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Distributive Effects of Regional Trade Agreements on the 'Small Trading Partners': Mercosur and the Case of Uruguay and Paraguay

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Distributive Effects of Regional Trade Agreements on the 'Small Trading Partners': Mercosur and the Case of Uruguay and Paraguay

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ABSTRACT *It is disputed whether trade liberalisation processes are sufficient for reducing poverty and inequality. We explore how 'gains from trade' have been distributed in the two minor trade partners of Mercosur, Uruguay and Paraguay, by analysing the impact of trade liberalisation on poverty and inequality through two main transmission channels: prices and income. In the case of Uruguay, trade liberalisation favoured a reduction in poverty indicators but had an almost zero effect on income inequality. In the case of Paraguay, trade liberalisation had a markedly negative impact in terms of poverty yet income distribution improved. We conclude that in the case of Mercosur, the effect of trade on poverty and income inequality varies per country and per region. In particular, we conclude that trade integration policies cannot be regarded as 'poverty-alleviating' per se.*

I. Introduction

Open regionalism and regional integration are broadly regarded as important components of development policy, and one which can play a positive role in poverty alleviation. In Latin America, the move towards a new wave of regionalism took place in the early 1990s. Across the region, the inward-looking policies had been largely discredited throughout the 1980s, to be replaced by a new paradigm that promoted 'open regionalism' as the most viable option for developing countries to integrate effectively within a global economy marked by increasing interdependence, liberalisation and competition for investments.

In Latin America, the most important arrangement in the 'open regionalism' context is Mercosur. Mercosur is embedded within a new policy framework; prior to joining, the signing members (Brazil, Argentina, Paraguay and Uruguay) were all democracies, with market-based economies. The formation of Mercosur was motivated by the need to strengthen diplomatic relations between member countries, by the common concern in enhancing regional competitiveness and by the interest in promoting regional development of the founding

members. Since its inception in 1991 to the mid-1990s, Mercosur achieved impressive growth in intra-regional trade. Following the Asian crisis (1997–1998), the bloc's performance has been somewhat erratic. More recent setbacks, such as Brazil's currency devaluation (1999) and the Argentine crisis (2001–2002), further stalled integration efforts.

In the case of Mercosur, the large trading partners (Argentina and Brazil) have been involved in constant disputes and conflicts on the subject of asymmetries and inequalities. Non-tariff barriers (NTBs) and rules of origin (RO) procedures acted as incentives to locate investment and production in the dominant market while leading to deindustrialisation in the peripheral ones. Both Uruguayan and Paraguayan interests often collided with the politically stronger positions of Argentina and Brazil. In sum, Mercosur full-members embraced the trade agreements with different enthusiasm and respect for trade disciplines.

Asymmetric political power and institutional factors are not the only reason for Mercosur's poor trade performance since 1999. Unequal distribution of benefits – across trading partners and inside each country – can be a crucial obstacle to regionalism and full economic integration. Even in the textbook case, traditional trade theory acknowledges that although the gains from trade might be positive for a country as a whole, they might not be distributed evenly across all the groups. There is increasing concern throughout the region over the asymmetric distribution of costs and benefits of trade integration. In this context, it is fundamental to determine whether trade integration can be regarded as a poverty reduction policy or, on the contrary, if it may be associated with intensified poverty effects.

During trade liberalisation, regressive outcomes are more likely in the absence of complementary domestic reforms and policies that would help maximise gains from trade, protect the most vulnerable from transitional costs and ensure an equitable distribution of net gains. Successful implementation of trade reforms that help the poor need to take into account different policy and institutional variables. In particular, there is a need for solutions that are tailored to specific country conditions. Initial conditions of infrastructure and education are key in determining the degree to which countries (subgroups or specific regions) benefit from trade liberalisation. In thinking about such policies, 'complementary measures' is actually a misnomer: these measures should be seen as a development agenda, of which trade is an important part. In order to design a domestic complementary agenda, it is therefore of the utmost importance to generate empirical evidence on the distributional impacts of trade liberalisation.

In our analysis we explore how 'gains from trade' have been distributed in the two minor trade partners of Mercosur: Uruguay and Paraguay. In our view, asymmetric distribution of benefits can be a crucial obstacle to trade growth, full economic integration and economic growth. Moreover, if benefits are not distributed across the entire population, poverty and inequality problems can be fostered. Such inequities can make regional integration efforts counter-productive.

The objective of this study is to assess the linkages between trade, poverty and inequality by analysing the impact of Mercosur through two main transmission channels: prices and income. Following a methodology developed by Porto (2006) and complemented by Nicita (2009), we first assess the implications of a given trade shock, that is Mercosur entry, on relative domestic prices of traded goods (imports and exports). Secondly, we analyse the response of labour income and consumption channels at the household level. This leads to the third step, which is the assessment of the induced change in the head count poverty ratio. This methodology will allow us to identify the new income that individuals would earn as a result of a policy change, in order to determine if trade liberalisation contributed to poverty reduction. Detailed data at the household level has been used to assess how inequality and poverty have evolved over time, across regions (for example urban areas compared to the rest of the country) and across different household types (for example ranked according to the education level; and so forth).

Our work has been inspired by previous efforts to identify the relationship between trade, poverty and inequality in emerging markets. We are aware that most economists accept that, in the long run, open economies do better than closed ones. Our study is motivated by trying to

assess whether in the shorter run, trade liberalisation may harm those who were initially worse off, or less prepared for transition. Our empirical work can be identified in the framework suggested by Winters et al. (2001) and Winters et al. (2004). This framework offers a complete overview of evidence on the different aspects to be analysed when studying trade liberalisation reforms: alternative policy instruments available and their effects; internal markets and labour market dynamics after liberalisation; the effects of specific complementary agendas (related to government spending and taxation) and the overall effect of liberalisation on growth and productivity.

The structure of the article is as follows. Section II provides an overview of the main trade reforms associated with Mercosur and a description of stylised facts of poverty and inequality in Paraguay and Uruguay. The methodology is presented in section III. Results are presented in section IV while conclusions are presented in section V.

II. Trade Reforms, Poverty and Inequality in Uruguay and Paraguay

In 1991, Uruguay and Paraguay joined Argentina and Brazil giving birth to Mercosur, a Regional Trade Agreement (Treaty of Asuncion). The regional agreement fostered two main objectives: to eliminate any duties, charges and other restrictions applied to members' reciprocal trade and to begin a programme of gradual, linear and automatic tariff reductions for imports from third countries (not members of Mercosur).

The Treaty of Asuncion allowed for a list of exceptions submitted by each member. This should not be regarded as a minor detail as it has represented a possibility of weakening regional integration. Since 1991, exceptions have created disputes and negotiations among state parties, blocking further integration programmes. The Ouro Preto Treaty signed in December 1994 established the institutional structure of Mercosur and defined a general procedure for complaints to the Mercosur Trade Commission, a body created to monitor the application of the common trade policy instruments. Although it was not originally intended, Ouro Preto also implied a change in the liberalisation schedule within Mercosur and relaxed the speed of the liberalisation process and changed the mechanism of convergence.

From January 1995, Mercosur began to operate like an imperfect customs union. Ideally, Mercosur would enable the small trading partners to obtain preferential access to a large and closed market. Soon, reality showed that the integration process had weakened. At the beginning of the integration process it was possible to think about industrialisation processes taking place in Paraguay or Uruguay in order to sell to Brazilian or Argentine consumers. At this time, few investors (local or multinational firms) really considered that intra-zone trade flows were as smooth as they were supposed to be. At the extra-zone level, after more than a decade, the degree of compliance of national trade policies with the regional agreement is low. This is clearly observed when looking at current levels of the common external tariff in each country. Consequently the process is not meeting with universal free movement that should characterise a customs union and the rules for intra-regional trade are still those of a free trade area.

The creation of Mercosur marked the acceleration in the fall of import tariffs in both the Uruguayan and the Paraguayan cases (see Table 1). In the case of Uruguay, in the early 1990s, the average tariff levels ranged between 21 and 24 per cent, depending on the goods-category, both at the intra-zone and extra-zone levels. For Uruguay, Mercosur imposed a sharp reduction in the intra-zone tariff and a slight decrease in the non-Mercosur tariffs. In particular, member parties agreed to set intra-zone tariff levels at 0 per cent for almost all goods categories by 1996. Although there were a few exemptions, such as the sugar and automobile industries, Mercosur was an effective regional trade agreement for rapidly eliminating almost all intra-zone tariffs. With respect to the extra-zone tariff (Common External Tariff, CET), reductions in tariff levels were minor. By 2006, average CETs ranged between 12 and 20 per cent, depending on the goods-category.

Table 1. Tariff structure

	Weighted average (by expenditure shares)			
	Food and beverages	Clothing and footwear	House equipment and electronics	Other traded goods
Uruguay				
Intrazone				
1992	21	24	21	23
1996	5	9	6	11
1999	0	0	0	0
2006	0	0	0	0
Extrazone				
1992	21	24	21	23
1996	15	21	18	18
1999	17	23	21	21
2006	14	20	18	17
Paraguay				
Intrazone				
1992	14	21	12	21
1996	5	10	1	5
1999	1	3	0	1
2004	0	0	0	0
Extrazone				
1992	14	21	12	21
1996	14	22	15	16
1999	15	22	18	19
2004	12	21	17	17

Source: Asociación Latinoamericana de Integración (ALADI) and Secretaría del Mercosur (SM).

Additionally, Table 1 shows the evolution of tariff levels in Paraguay between 1992 and 2004. In the early-1990s, the average tariff levels in Uruguay ranged between 26 and 39 per cent, depending on the category of product, both at the intra-zone and extra-zone levels. Similar to what happened in the case of Uruguay, in the case of Paraguay Mercosur imposed a sharp reduction in the intra-zone tariff but only a slight decrease in the non-Mercosur tariffs. In fact, average CET still ranged between 12 and 21 per cent, depending on the category, by 2004.

In the case of Uruguay, poverty indicators have been historically below the Latin American average and income distribution is considerably better (more equal) than in the rest of the region (see De Ferranti et al., 2004). In general, poverty and inequality indicators have been quite stable over time in Uruguay, and trends have been similar for men and women (Bucheli and Rossi, 1994; Gradín and Rossi, 2001; Rossi, 2001; Borraz and González, 2009).

In the case of Paraguay, it is difficult to evaluate historical data on poverty and inequality (Morley and Vos, 1997; Robles, 2001).[1] In general, different sources of information in the 1970s and 1980s provide very different indicators. Only after the mid 1990s has there been a consistent study of poverty and inequality based on microdata at the national level. Enhanced quality of poverty and inequality analysis has been possible due to the implementation of MECOVl (*Programa para el Mejoramiento de las Encuestas y la Medición de las Condiciones de Vida en América Latina y el Caribe*). MECOVI was a plan to enhance the availability and consistency of national household surveys, jointly coordinated and financed by the World Bank (WB), the Inter-American Development Bank (IADB), the Economic Commission for Latin American and the Caribbean (ECLAC) and a number of Latin American countries (including Paraguay). National poverty has been around 20 per cent for three decades, much higher in rural than in urban areas. Table 2 reports poverty and inequality in the Asunción Metropolitan area and in all Paraguay in 1997 and 2002. Notice that the poverty estimates

Table 2. Poverty and inequality in Paraguay

	Asunción and national levels			
	1995		2002	
Poverty				
USD 1	1.5	9.4	6.8	21.2
USD 2	4.0	21.9	14.1	37.2
Inequality (Gini Coefficient)				
Per capita income	0.51	0.57	0.56	0.57
Equivalised income	0.50	0.55	0.55	0.55
Labour household income	0.49	0.51	0.55	0.49

Source: Fazio (2005: 21).

are considerably higher when computed over the whole country (accounting for rural areas) and the increase in poverty for Paraguay between 1995 and 2002 has been larger than for Asunción. Similar trends are observed for inequality.

III. Methodology

Trade reforms cause direct changes in local relative prices which indirectly affect household income, expenditure and welfare. On the expenditure side, net effects depend on the composition of the consumption basket and on whether individuals are net producers or net consumers. Changes in household income are explained by the fact that the trade reforms imply a reallocation of resources between sectors, resulting in changes in factor prices, particularly wages. As we analyse both changes in prices and variations in income, we are able to determine the overall change in household welfare. Recent literature provides methods to measure the net effect of trade reform on income distribution and poverty, taking into consideration both income and expenditure effects (Giordano and Florez, 2009). We expand the methodology used by Porto (2003, 2006) for Argentina.

From a theoretical perspective, the impact of trade on wage inequality could go in either direction. In a Heckscher-Ohlin model, workers should see wages increase relative to capital owners' rents (alternatively, unskilled wages should go up relative to skilled wages) in a developing country relatively well-endowed with labour (or unskilled labour). In that case, workers would benefit relative to capital owners (or more skilled workers) and income distribution would improve. Under a specific factors model, however, workers that are unable to relocate to labour-intensive industries would lose, and the distributional impact of trade liberalisation is ambiguous. Moreover, empirical studies show that the wage gap between skilled and unskilled workers may increase after reform. This could occur, for example, if foreign-owned firms bring with them technology that increases the demand for skilled workers. In that case, the distributional impact is adverse.

We study the link between trade, poverty and inequality by analysing the impact of trade liberalisation through prices and income. The price changes are derived from the new tariff levels that result from trade reforms. Price changes may affect individuals in different ways, depending on the share of each good in their consumption basket or if individuals are net producers (as in the case of farmers) or net consumers. Changes in household income occur if trade liberalisation implies a reallocation of resources between sectors, resulting in changes in factor prices in the process.

We restrict the analysis to four traded goods categories – food and beverages (FB), clothing and footwear (CF), house equipment and electronics (HQ), other traded goods (OT) – and four

non traded goods: health and education (HE), transport and communications (TC), housing (HO) and other (ON).

To analyse the distributional impact on households we use a model based on Dixit and Norman (1980) and extended by Porto (2006). The variation in exogenous income (Y^0) needed to compensate household i to keep the same utility after a change in the price of traded good k ($k = 1, \ldots, 4$) because of the trade reform can be approximated by:

$$\frac{d\,Y_i^0}{dLn\tau_k}\frac{1}{e_i} = s_{ik}\frac{dLnP_k}{dLn\tau_k} + \sum_{n \in NT}s_{in}\frac{\partial LnP_n}{\partial LnP_k}\frac{dLnP_k}{dLn\tau_k} - \varepsilon_{wiP_k}\theta_{wi}\frac{dLnP_k}{dLn\tau_k} \tag{1}$$

where Y_i^0 is the exogenous income and e_i the expenditure level of household i, τ_k is the tariff for traded good k, S_{ik} is the budget share spent on the good k by household i, P_k is the price of good k, P_n is the price of non traded good n, S_{in} is the budget share of n for household i, ε_{wiP_k} is the wage price elasticity with respect to traded good k and θ_{wi} is the share of labour income in total household income.

The first term in Equation (1) shows that for a given increase in the price of the traded good, the higher the share the higher will be the income necessary to compensate the consumer. The budget share approximates the consumption effect. The second term of (1) shows the compensation generated by the change in the price of the non-traded good due to the trade reform, related to the share spent on non-traded goods. The first and second terms in (1) approximate the consumption effect of Mercosur. Finally, the last term is the labour effect. The trade reform changes the price of traded goods that changes household wages. In order to assess the distributional effect to Mercosur we have to estimate the three terms.

III.i Impact of Tariffs on Prices of Traded Goods

Initially, we estimate the impact of tariffs on prices. Following Deaton (1997) it is possible to approximate the change in consumption explained by the changes in prices using the expenditure shares of each of the goods. This method considers only the direct impact and not indirect effects (such as product substitution by consumers). The distributional effects of these price changes are estimated in two stages. The first stage involves the estimation of price indices for each household based on pre-trade reform expenditure shares with both prices (namely pre and post reform prices). Second, the effects of the price change due to reforms is quantified following Deaton (1997) with a nonparametric estimation of expenditure shares across the entire distribution of consumption, and computing average shares for different incomes (results are sensitive to the choice of bandwidth).

To estimate the impact of the changes in tariffs on domestic traded prices we first follow Porto (2006) to define the traded price as an import–share weighted average of the price of imports from Mercosur and from the rest of the word. Therefore, the change in domestic traded prices k is given by:

$$\Delta LogP_k = \delta_{km}Log(1 + \tau_{km}) + \delta_{krw}Log(1 + \tau_{krw}) \tag{2}$$

where δ_{km} is the fraction of imports of good k from Mercosur, δ_{krm} is the fraction from the rest of the world, τ_{km} is the internal tariff and τ_{krm} is the external tariff.

Because the assumption of full pass through can be too restrictive, we estimate the impact of reduced tariffs on domestic traded prices following the methodology proposed by Nicita (2009). This is flexible enough to allow for the consideration that 'local prices in different areas (of the country) may react differently to a specific trade policy (...) Consequently, the effects of tariffs on retail prices will likely be diverse within the country' (Nicita, 2009: 20). Thus, we estimate (the log

of) consumer price for households for good k in time t ($LogP_{kt}$) as a function of the log of producer prices ($LogPP_{kt}$) and the international prices in local currency ($LogPX_{kt}$) by[2]

$$LogP_{kt} = \beta_0 + \beta_1 LogPP_{kt} + \beta_2 LogPX_{kt} + \gamma Log(1 + \tau_{kt}) + \varepsilon_{kt} \quad (3)$$

In Equation (3) τ is the tariff and γ measures the pass through from tariffs to domestic prices. A coefficient equal to one represents full pass-through; changes in tariff translate entirely to changes in prices. Due to data limitations we pool all goods together and estimate a common pass-through.

III.ii Impact of Tariffs on the Price of Non Traded Goods

To estimate the impact of prices of traded goods on prices of non traded goods we estimate the following translog equation:

$$LnP_{nt} = \alpha + \sum_{k \in T} \beta_k LnP_{kt} + \sum_{k \in T} \gamma_k LnP_{kt-1} + 0.5 \sum_{k \in T} \sum_{h \in T} \phi_{kh} LnP_{kt} LnP_{ht}$$
$$+ 0.5 \sum_{k \in T} \sum_{h \in T} \lambda_{kh} LnP_{kt-1} LnP_{ht-1} + u_t \quad (4)$$

We regress the prices of non-traded goods on monthly prices of traded goods and their interactions.

III.iii Impact of Prices on Income

Some of the papers in this literature focus only on distribution effects of price changes after the reforms, without considering effects on factor markets. To estimate the impact on total income with the wage-price elasticity we regress the log of the real wage of i (w_i,) against completed years of schooling (s), exogenous variables (z) such as age, marital status, children at home, region, etc, and the log prices of traded goods interacted with schooling and region.

$$Ln(w_i) = \alpha + \sum_k \beta_k Ln(p_i^k) + \gamma s_i + \delta z_i + \sum_k \lambda_k Ln(p_i^k) s_i + \sum_k \phi_k Ln(p_k^i) \text{Region}_i + u_i \quad (5)$$

Since the dependent variable, w_i, is zero-censored the estimation of (5) should not be conducted using OLS so we estimate a Heckman selection model with a bias selection correction factor based on a Probit model for labour market participation. We incorporate this into Equation (5) only for those wage levels that are strictly greater than zero.

The Heckman selection model is estimated using maximum likelihood. As usual in the literature we use a dummy variable for the presence of children in the households (children less than six years old and between 6 and 13) as exclusion restrictions. In the second stage equation, we incorporate the prices of the four categories of goods as exploratory variables. The source of identification is the variation of prices across time because we pool observations from different years. All regressions include year and geographic location dummies.

Estimates from this model allow us to calculate the impact of the price of traded goods on labour income and the impact of changes in prices of traded goods on labour market participation for each individual. We allow the impact of the price of traded goods on wages to vary according to individual characteristics including schooling, age and geographical location of the household. This implies that the elasticities of wage and labour market participation with respect to prices vary from one individual to another. This is fundamental to estimate the impact of changes in prices on household wages at different points of the whole income distribution. We also take into consideration the fact that labour market rewards may differ for men and women

and estimate separate wage equations by gender. Our wage equations are limited to individuals aged 18 through 55. We also included interactions between the prices and other explanatory variables. For these reasons, the obtained estimates of price-elasticity of labour income vary by level of education, region, and sector of activity.

IV. Results

In this section we present the results for Uruguay and Paraguay for the effect of Mercosur on the price of traded goods, the price of non-traded goods, the wage-price elasticities, the total effect and the poverty and inequality effects.[3] When interpreting results, it is important to bear in mind that while intra-regional tariffs were reduced once Mercosur was established, external tariffs were also decreased slightly over 1992–2006. While tariffs for the food and beverage category were drastically reduced early, other tariffs experienced a more gradual reduction.

IV.i Impact of Tariffs on Traded Goods

Table 3 reports the induced change in tradable prices in Uruguay and Paraguay after Mercosur for the four categories of traded goods considered under the assumption of full pass through for the 1992–1996 period. In the case of Uruguay, the decrease in the price of traded goods is very similar across the four goods. The highest decrease was for the other traded goods (6.1%) and the lowest was for house equipment (4.7%). The pass through of tariffs to domestic prices in Uruguay is estimated as 0.41 (Table 4); slightly higher than Nicita (2009) for the Mexican case (0.33) but clearly less than full pass-through. Additionally, Table 3 reports the induced change in tradable prices in Paraguay under the assumption of full pass-through for 1992–1996. In this case the decrease in the price of traded goods was markedly different across the four goods. The highest decrease was for the other traded goods (5.51%) and the lowest was for clothing and food (0.9%). The estimated pass-trough of tariffs to the domestic price of trade goods is 0.87 (Table 4).

Figure 1 shows the consumption effect in Uruguay for each of the traded good categories based on Kernel regressions. We reverse the sign of the reported compensation variation (CV) therefore a positive CV implies the price change increased welfare. The effect is positive for all households but only for beverages and food is the consumption effect pro-poor (the consumption gain is higher for poor than for richer households). Figure 1 shows the pro-poor consumption effect of traded goods in the case of Uruguay.

Figure 2 shows the consumption effect in Paraguay. The effect is positive for all households but, as in the case of Uruguay, only for FB is the consumption effect clearly pro-poor. For the

Table 3. Price changes from Mercosur under full pass through

Category/Country	Tariff	Consumption share	Intrazone tariff	Extrazone tariff	Price change
Uruguay	1992	1994–95	1996	1996	from Mercosur
Food and beverages	21	62	5	15	−5.1
Clothing and footwear	24	15	9	21	−4.8
House equipment	21	13	6	18	−4.7
Other traded goods	23	10	11	18	−6.1
Paraguay					
Food and beverages	14	67	5	14	−3.5
Clothing and footwear	21	13	10	22	−0.9
House equipment	12	11	1	15	−1.4
Other traded goods	21	9	5	16	−5.5

Note: The price change in the last column is computed using Equation (2).

Table 4. Pass through estimation of tariffs to domestic prices

Dependent variable: log of domestic prices		
OLS estimation		
Exploratory variables	Uruguay	Paraguay
Log of producer prices	1.143***	0.325***
	−0.012	−0.025
Log of international prices	0.001	−0.098***
	−0.0044	−0.017
Log of (1+tariff)	0.411*	0.872***
	−0.243	−0.215
Constant	−0.805***	3.442***
	−0.022	−0.087
Observations	120	109
Sample	1990:M1 to 1999:M12	1995:M12 to 2004:M12

Notes: standard errors in parentheses.
* stands for significance at the 10 per cent level, *** stands for significance at the 1 per cent level.
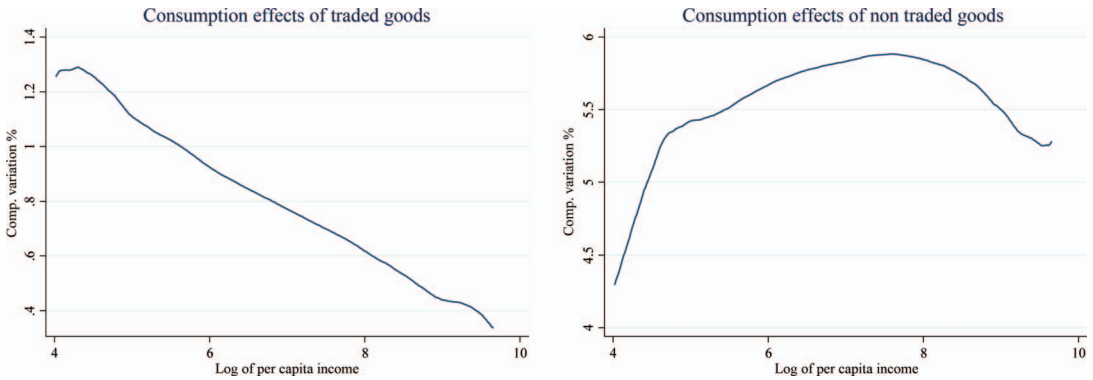

Figure 1. Uruguay: compensating variation as per cent of income by income distribution traded and non-traded goods
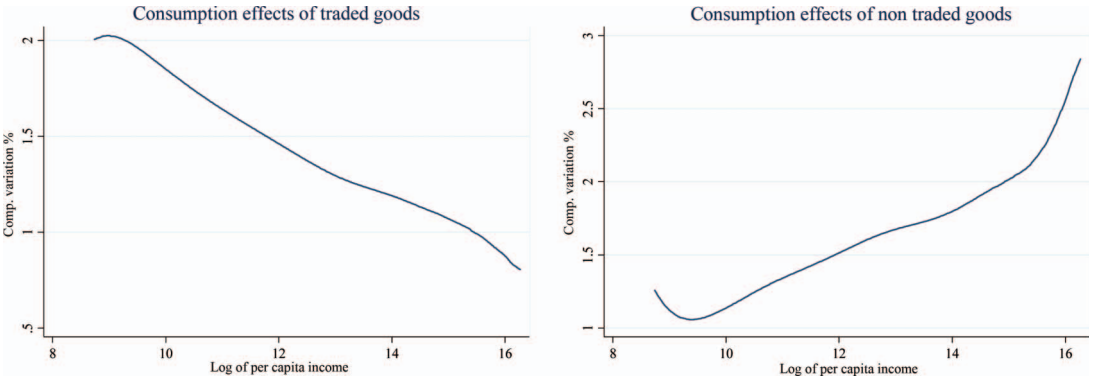

Figure 2. Paraguay: compensating variation as per cent of income by income distribution traded and non-traded goods

other traded goods the effect is pro-rich (regressive). Figure 2 shows the pro poor consumption effect of traded goods. The magnitude of the gains for traded goods is similar between Uruguay and Paraguay ranging from 0.4 to 2 per cent.

IV.ii Impact of Tariffs on Non-Traded Goods

To avoid the spurious regression problem we apply the Engle-Granger co-integration test (based on residuals) to determine the long term equilibrium co-integrating relationship between each of the prices of non-traded good and the prices of the traded goods. The result of the Engle-Granger based on residual co-integration tests indicates that the prices of non-traded and traded goods are co-integrated in Uruguay and Paraguay.[4] Note that Figures 1 and 2 show a pro-rich consumption effect of non traded goods in Uruguay and Paraguay, respectively. Interestingly, the gains for the decrease in prices of non-traded goods in Uruguay are double those in Paraguay.

IV.iii Impact of Tariffs on Wage-Price Elasticities

Because a large number of individuals do not work (especially women) and report zero wage, the dependent variable is censored at zero. Thus, we estimate a Heckman selection model using maximum likelihood as outlined above. Figure 3 shows that the labour effect is negative in the case of Uruguay. This can be explained by the effect of the change of the price of traded goods having the greatest impact on the wage of low and high income individuals. Figure 4 shows that the labour effect is more strikingly negative in the case of Paraguay, as the change in the price of traded goods has the greatest impact on the wage of high income individuals; labour income loss ranges from approximately 10 per cent for low to 30 per cent for high income individuals. We consider the labour income result as key to understanding the poverty and distributional impact of trade policy in Paraguay.

IV.iv Estimation of Total Effect

Figure 3 presents the consumption and labour income effects for Uruguay. Trade liberalisation had a clear positive impact for both the high and low paid: the gains from trade range from 4 per cent for high income individuals to 6 per cent for low income individuals. The gains from Mercosur for Uruguay for low income individuals are similar to those observed in Argentina (Porto, 2006).

Figure 4 presents the consumption and labour income effects for Paraguay. Trade liberalisation had a clear negative impact: the losses from trade range from 5 per cent for low
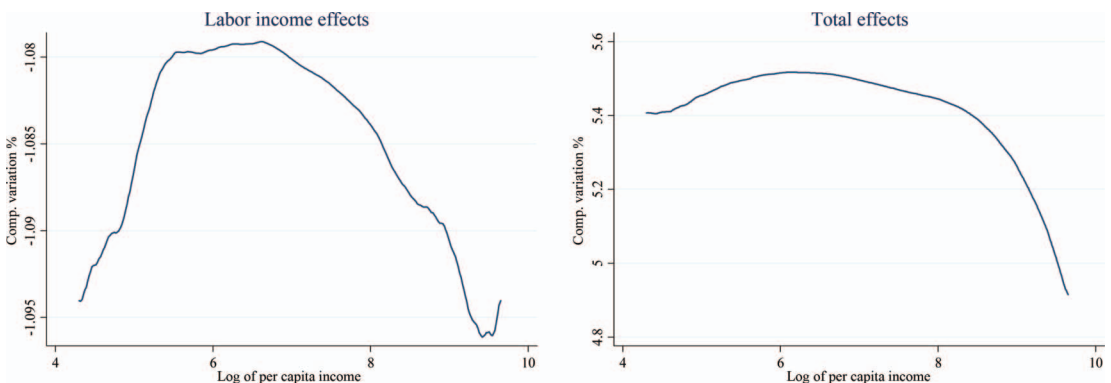

Figure 3. Uruguay: compensating variation as per cent of income by income distribution labour income and total effects

income to 25 per cent for high income individuals. As mentioned in the previous section, the negative labour income effect associated with liberalisation is the main reason for these welfare losses.

IV.v Poverty and Inequality Effects

We use the estimated wage price elasticities to quantify the change in the head count ratio and income inequality indicators attributable to Mercosur. Table 5 shows a reduction in poverty for low educated persons located in the border and central regions of Uruguay. We do not observe
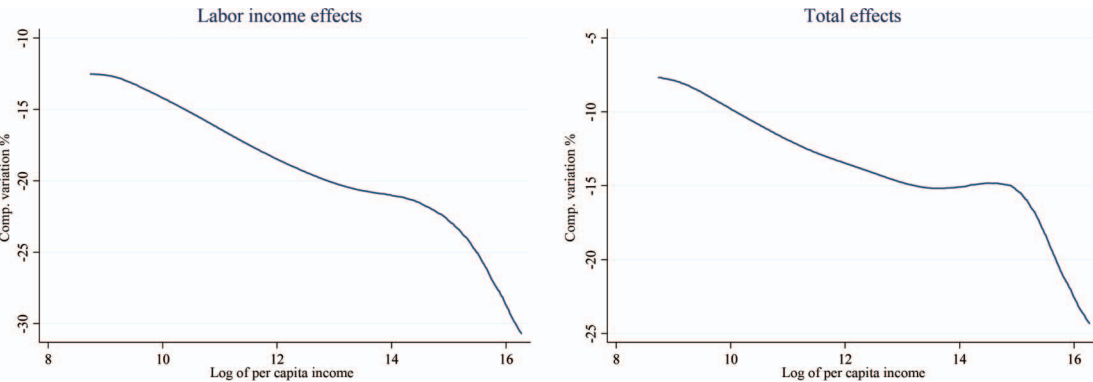

Figure 4. Paraguay: compensating variation as per cent of income by income distribution Labour income and total effects

Table 5. Poverty: before and after trade reform

Headcount Ratio (P0), Poverty Gap Index (P1) and Squared Poverty Gap Index (P2)

	Uruguay			Paraguay		
	Change P0	Change P1	Change P2	Change P0	Change P1	Change P2
1. Men						
Total	−0.009**	−0.002**	−0.001**	0.038**	0.012**	0.005**
Education < =6 years	−0.016**	−0.004**	−0.001**	0.044**	0.014**	0.006**
Education 7–12 years	−0.008**	−0.002**	0.000	0.029**	0.005**	0.001**
Education > 12 years	−0.002	0.000	−0.001	0.005	0.000	−0.000
Montevideo/Asunción	−0.004**	−0.001**	−0.000**	0.085**	0.020**	0.006**
Border/Central Urban	−0.021**	−0.005**	−0.002**	0.020**	0.003**	0.000
South/Central Rural	−0.001**	−0.002**	−0.001**	0.040**	0.017**	0.007**
Central/Rest Urban Country	−0.020**	−0.005**	−0.002**	0.040**	0.007**	0.002**
2. Women						
Total	−0.007**	−0.001**	−0.000**	0.072**	0.019**	0.005**
Education < =6 years	−0.012**	−0.003**	−0.001**	0.085**	0.024**	0.001**
Education 7–12 years	−0.006**	−0.001**	−0.000**	0.049**	0.009**	0.003**
Education > 12 years	0.000	−0.001	0.000	0.006	0.000	0.000
Montevideo/Asunción	−0.002**	−0.004**	−0.000**	0.110**	0.021**	0.006**
Border/Central Urban	−0.019**	−0.003**	−0.001**	0.019*	0.006**	0.002**
South/Central Rural	−0.006**	−0.001**	−0.000**	0.107**	0.030**	0.013**
Central/Rest Urban Country	−0.001**	−0.003**	−0.001**	0.040**	0.016**	0.006*

Source: Author's estimations.
Notes: ** stands for significance at the 5 per cent level. Poverty line = half of mean labour income.

Table 6. Income inequality: before and after trade reform

	Uruguay		Paraguay	
	Gini change	Theil change	Gini change	Theil change
1. Men				
Total	No effect	No effect	− 0.015**	− 0.016**
Education < = 6 years	No effect	No effect	− 0.008**	− 0.007**
Education 7–12 years	No effect	No effect	− 0.006**	− 0.007**
Education > 12 years	No effect	No effect	0.010	0.009
Montevideo/Asunción	No effect	No effect	No effect	No effect
Border/Central Urban	No effect	No effect	No effect	No effect
South/Central Rural	No effect	No effect	No effect	No effect
Central/Rest Urban Country	No effect	No effect	No effect	No effect
2. Women				
Total	No effect	No effect	− 0.019**	− 0.020**
Education < = 6 years	No effect	No effect	− 0.015**	− 0.014**
Education 7–12 years	No effect	No effect	− 0.013**	− 0.012**
Education > 12 years	No effect	No effect	− 0.002	− 0.001
Montevideo/Asunción	No effect	No effect	No effect	No effect
Border/Central Urban	No effect	No effect	No effect	No effect
South/Central Rural	No effect	No effect	No effect	No effect
Central/Rest Urban Country	No effect	No effect	No effect	No effect

Source: Author's estimations.
Notes: ** stands for significance at the 5 per cent level. Poverty line = half of mean labour income.

differences by gender and there are no significant changes in income inequality (see Table 6). It is interesting to note that we observe a decrease in poverty but income inequality remains constant.

We observe an increase in poverty for all groups in Paraguay except men and women with education of more than 12 years (see Table 5). The less educated individuals (especially women with lower education) and the inhabitants of Asuncion suffered the largest losses from trade liberalisation. Nevertheless, Table 6 shows that there has been a mild improvement in income inequality in Paraguay, as richer households tended to experience a greater loss in income (as reported above).

V. Conclusions and Policy Implications

Although it is commonly believed that trade liberalisation results in higher GDP, the limited evidence is mixed about its effect on poverty and inequality. As many developing countries embrace trade integration and liberalisation, it is fundamental to obtain evidence on the distributional impact in different countries. This article analysed the poverty and inequality effects of trade integration in Uruguay and Paraguay during the 1990s. In the case of Uruguay, there has been a constant commitment to trade liberalisation at the regional and extra-regional levels. In the case of Paraguay, succeeding administrations embraced trade integration and Mercosur as a growth-enhancing economic policy. Both Uruguayan and Paraguayan interests often collided with the politically stronger positions of Argentina and Brazil. In sum, Mercosur members embraced the trade agreements with different enthusiasm and respect for trade disciplines.

We measure the variation in income needed to compensate each household to keep the same utility after a change in the price of tradable goods. A positive change means that household welfare has improved when compared to the pre-liberalisation scenario. An important limitation of the analysis is that it only covers labour wage income; agricultural and informal incomes are omitted due to lack of data. This may not affect the broad results as agricultural resources in Paraguay are highly concentrated whereas in Uruguay it is more diversified.

In the case of Uruguay, results indicate that: (1) the decrease in tradable goods prices largely benefited the lower-income segment of the Uruguayan population; (2) the dynamics of the non-tradable goods prices had a clear pro-rich impact and (3) trade liberalisation had a clear positive impact for both the highly paid and for those lower in the salary distribution. Going further, one could say that the evolution of the prices of housing, health and education negatively affected the lower income population, while the decrease in food and beverages prices positively affected them. These findings have clear policy implications: as tariffs are reduced, the price of non-tradable goods (notably housing) adversely affected the poor; if public authorities aim to develop pro-poor policies, then efforts should target the housing, health and education categories.

Results at the aggregate level, when changes in prices of tradable and non-tradable goods and labour income are considered together, show that average income (measured as compensating income) increased across the entire income distribution. For the case of Uruguay, the income effect of trade liberalisation does not display the typical winners and losers pattern. Evidently, specific groups obtained higher benefits than others, but we could not find any evidence of absolute losers due to Mercosur. The impact of trade liberalisation on poverty and income in Uruguay is one of (mild) gains from trade spread widely albeit not evenly across households.

In the case of Paraguay, the results differ: (1) the decrease in tradable goods prices only mildly benefited the lower-income segment of the population; (2) the dynamics of non-tradable goods prices had only a minor pro-rich impact; and (3) trade liberalisation had a negative impact across the population. Specifically, the loss in labour income was more significant for those with high wages; although income distribution improved, the negative impact on labour income more than offset the positive effect of lower consumer prices.

At the aggregate level (taking price and labour income changes together), average income decreased across the entire income distribution. The case of Paraguay is one of losses from trade due to adverse effects on wage incomes. In particular, female rural workers were worse off after trade liberalisation and poverty increased more among those with lower levels of education (especially for the rural population, possibly reflecting low education among female rural workers). Further research is required to identify specific policies that could prevent this negative impact and why such policies were not implemented.

From the poverty perspective country results are different. Uruguay experienced a major decrease in poverty levels, related to the decrease in consumption prices, with unchanged income inequality. Paraguay experienced no improvement in poverty, especially rural poverty (given the rural female population with low levels of education), although income inequality was reduced (because relatively rich households suffered greater losses in wages).

For Mercosur, the effect of trade reform on poverty and income inequality varies by country and by region within each country, even for the two small members covered here. Trade integration is not inherently growth-enhancing or poverty reducing, and may not have beneficial effects on incomes or income distribution. Moreover, trade integration should not be considered as a remedy for poverty. Specific groups of people, especially in Paraguay, have been unable to benefit from trade. One implication is to address Mercosur asymmetries in terms of the size of the economies and negotiating power of the members to identify policies and actions to ensure a more even spread of benefits. Another is to further analyse the mechanisms that caused the regressive impact of the change in the prices of non-traded goods in Uruguay and identify policies to address this. The other highly critical issue is improving our understanding of the institutional aspects of labour markets that may explain the negative wage impacts in Paraguay.

Notes

1. There is not a long tradition in studying distributional issues in Paraguay. It has been pointed out that the long dictatorship (1954–1989) was one of the main factors that contributed to restrict the analysis of poverty and inequality issues (MECOVI, 2002).
2. We do not include transportation costs because they are the same inside the countries because we are considering very small countries like Paraguay and Uruguay.
3. In the Appendixes A and B we describe the data used in the estimation.
4. Results are available upon request. The sample for Uruguay ranges from January 1990 to December 1999 and in Paraguay from January 1995 to March 2006.

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Appendix A: Uruguayan Data

To undertake this study we use the annual Uruguayan national household survey *Encuesta Continua de Hogares* (ECH), conducted by the *Instituto Nacional de Estadística* (INE). Each survey wave contains approximately 56,000 persons from about 18,000 households. The ECH is administered throughout the year with the purpose of generating an accurate picture of the

urban Uruguayan employment situation along with the socio-economic characteristics of the population. We use ECH data for estimating the price-wage elasticity for the 1990–2001 period.

We also use data from *Encuesta Nacional de Gastos e Ingresos de los Hogares* (ENGIH). The national household expenditure and income survey (we use the 1996 wave). This survey identifies the consumption structure of an average family in Uruguay. The survey is conducted every 10 years and targets both rural and urban households. We use this data in order to estimate the consumption share of each of the relevant consumption categories for our study (food and beverages; clothes and footwear; furniture and electronics; other traded goods; health and education; transport and telecommunications; housing and other non-traded goods). ENGIH also contains socio-economic information about Uruguayan households. This fact is crucial for us because it allows us to identify the consumption structure of households of the same socio–economic group. We use this information in order to assess the impact of change in prices on changes in the value of the consumed basket of each household.

Asociación Latinoamericana de Integración (ALADI) and Uruguay's Ministry of Finance (MF) provided historical information about the Mercosur common external tariffs for the period between 1986 and 2006. *Secretaría del Mercosur* (SM) provided data about intra-zone tariff levels (for the same time horizon). Both ALADI and SM provided raw data at a per-item desegregation level. Our work consisted in identifying relevant expenditure categories and unifying disaggregated items into one of the four tradable goods categories so that we could process data from both tariffs and consumer price levels. Additionally, ALADI and the Central Bank of Uruguay (BCU) sourced our information about trade flows for the four-product categories with Mercosur and the rest of the world. We use this information in order to determine the impact of change in tariffs on prices of tradable and non-tradable goods. Information about price levels comes from the Consumer Price Index constructed by INE.

Appendix B: Paraguayan Data

To undertake this study we use the annual Paraguayan national household survey *Encuesta de Hogares* (EH), conducted by the *Dirección General de Estadística y Censos* (DGEEC). Each survey wave contains approximately 12,000 persons from about 2,500 households. The EH is administered throughout the year with the purpose of generating an accurate picture of the urban and rural Paraguayan employment situation along with the socio-economic characteristics of the population. We use EH data for estimating the price-wage elasticity for the 1995–2000 period.

We also use data from *Encuesta de Hogares – Mano de Obra* (EHMO), the national household expenditure and income survey (we use the 1996 wave). This survey identifies the consumption structure of an average family in Paraguay. The survey targets both rural and urban households. We use this data in order to estimate the consumption share of each of the relevant consumption categories for our study (food and beverages; clothes and footwear; furniture and electronics; other traded goods; health and education; transport and telecommunications; housing and other non-traded goods). EHMO also contains socio-economic information about Paraguayan households. This fact is crucial for us, because it allows us to identify the consumption structure of households of the same socio-economic group. We use this information in order to assess the impact of change in prices on changes in the value of the consumed basket of each household.

Asociación Latinoamericana de Integración (ALADI) provided historical information about the Mercosur common external tariffs for the period between 1986 and 2006. *Secretaría del Mercosur* (SM) provided data about intra-zone tariff levels (for the same time horizon). Both ALADI and SM provided raw data at a per-item desegregation level. Our work consisted in identifying relevant expenditure categories and unifying disaggregated items into one of the

four tradable goods categories so that we could process data from both tariffs and consumer price levels. Additionally, ALADI and the Central Bank of Paraguay (CBP) sourced our information about trade flows for the four-product categories with Mercosur and the rest of the world. We use this information in order to determine the impact of change in tariffs on prices of tradable and non-tradable goods. Information about price levels comes from CBP.