Trade Liberalization and Children welfare:
Assessing the impact of a FTA between Peru and United States

Javier Escobal and Carmen Ponce[1]

1. Introduction

During the last 15 years Peruvian economy has experienced drastic changes that started with a stabilization program to curve down hyperinflation, immediately followed by a liberalization and structural reform program that changed the structure of the economy. Although such reforms were successful in aligning inflation towards international standards and started a process of growth, they have lagged behind in the social front, performing less than expected in terms of reducing poverty and expanding social services at the rate needed to reduce the extreme inequities that prevail in Peru.

Peru is today much more open to world than in the early nineties, both in terms of trade and foreign direct investments. Some of the export led growth that has occurred, benefited from unilateral trade concessions from the United States. Exports to the United States have been growing at a 9% annual rate, increasing its share from 20% of total exports to 25% in the last decade. First, in December 1991 the United States Congress approved the Andean Trade Preference Act (ATPA) which approved reductions of tariffs for importing into that country ATPA lasted between 1992 and 2001, and was envisage as a critical element in the strategy to "promote broad-base economic development, diversify exports, defeat drug trafficking and consolidate democracy" in Andean Countries. From 2002 onwards, slightly improved trade privileges were granted to Peru under the Andean Trade Program and Drug Eradication Act (ATPDEA), which will remain in place until December 2006.

Considering that these trade concessions were unilateral and are about to finish[2], the Peruvian government decided to engage in negotiations with the United States to sign a Free Trade Agreement (FTA) under which the trade concessions will be extended to other products and will become permanent. Of course, the additional benefits that this agreement may bring about will not be free. They will be paid with reciprocal tariff reductions that Peru will grant to U.S. exports entering Peruvian domestic market.

Even if one concedes that improved and sustained open export markets will generate sustained economic growth for Peru, the short term impacts of such policy and the long term distributional impacts need to be carefully assessed. Potential benefits from increases in export products, plus efficiency gains coming from "disciplining" import competing sectors need to be compared with the short term loses that import competing sectors may accrue. Further, it is important to assure that the opportunities and potential benefits of what is suppose to be an "engine of growth" will not enhance the already acute disparities in endowments, opportunities and income that Peru has.

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[1] Both authors are researchers at GRADE, Lima Peru. The paper was commissioned by Save the Children UK

[2] U.S. Government has stated publicly that has no intention to renew this Agreement.

This paper addresses, precisely, the distributional impacts for Peru of deepening trade liberalization through a FTA with the United States. We focus on the potential impacts that this FTA may have on children welfare. Children may be affected in many ways.[3] In the medium to long term it is expected that the growth brought about by this bilateral trade liberalization will increase wages and provide household with higher incomes that may be used to improve child welfare. However, if the FTA affects negatively some import competing sectors, income of people working in those sectors may be negatively affected pressing them to look for complementary sources of income which may involve child labor, affecting schooling decisions and potentially exposing the child to hazardous environments. On the other hand, even in sectors positively affected by the FTA (i.e. a sector producing an export commodity) there may be also child welfare concerns, as the sector expansion may increase female working hours, affecting the distribution of work within the household and reducing childcare time. Other impacts of a FTA on child welfare include health impacts driven by potential increases in the prices of pharmaceutical products due to extension of the patent terms or potential reduction in social expenditures due to the loss of tax income arising from the tariff cut. Considering the multiple and complex pathways through which a trade policy like a FTA may impact children welfare, policy-makers need to be aware of how this policy impacts both household behavior and child support mechanisms already in place, so as to device complementary measures to reinforce positive impacts and prevent potential negative effects.

To address these issues, this paper estimates the short run welfare impacts of a FTA between Peru and the United States and discusses the potential child related welfare outcomes that this agreement may bring about. In section 2 we review briefly the economic social context in which the FTA will be implemented. Here we highlight the fact that this FTA is done in a context where trade liberalization complemented with a number of structural reforms have been already in place for over a decade, contributing to export led growth but with insufficient progress in fighting poverty and improving the welfare of children. Section 3 presents a brief review of the literature on the impact of trade liberalization on child welfare, showing that the results are mixed depending on which sectors are more child labor-intensive and whether or not the income effect is strong enough to surpass the magnitude of the substitution effect. In section 4 we estimate the -first order- distributional effects of the full and abrupt elimination of tariffs in a general equilibrium framework, modeling both the connection between trade policy and domestic prices, and the connection between domestic prices and household welfare. As a complementary exercise, we show a simulation of the distribution of impacts across time assuming the initial position of Peruvian negotiators. As it is evident, this schedule of tariffs reduction is different from the one finally signed by both countries, however simulations may shed light on the time frame the government and all citizens would have to prepare for the new trade scenario.

Next we look at the demographic profile of those that are affected negatively in order to asses whether or not children will be at risk. We also look at the schooling profile of boys and girls to evaluate if they may be affected differently from potential welfare losses. In addition, we explore determinants of female head's labor choices in order to raise hypothesis about what would be happening with children roles within the house

[3] To begin with, both countries will formally comply with ILO Convention 182 Concerning the Prohibition and Immediate Action for the Elimination of the Worst Forms of Child Labor. They will also introduce a minimum age for the employment.

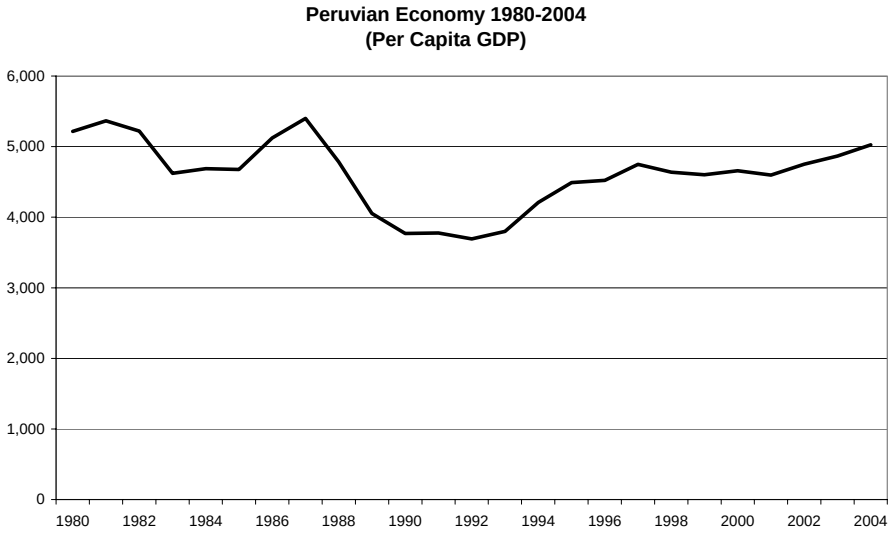
when the adult caretaker engages in wage employment (different from self-employment activities, in wage activities the employee is not allowed to take children with her, and she needs someone to take care of them instead while she is working, older siblings are potential replacements). Finally in section 5 we present the dilemmas that policy-makers may confront. We use as a motivation for this discussion not only the results obtained in the simulations performed in section 4, but also an account of some of the impacts that two other Latin American countries (i.e. México and Chile) have already faced after signing a bilateral FTA with the United States.

2. The Context

In 1990, Peru undertook a drastic program of macroeconomic adjustment and structural reforms designed to overcome the very serious problems of hyperinflation and generalized recession that characterized Peruvian economy at the end of the eighties. Structural reforms aimed for trade liberalization, the enhancement of competition in domestic product's and factor's markets, and the drastic reduction participation of the State in the market economy. These reforms put an end to more than thirty years of predominance of an "inwards" development scheme, that discriminated against the agrarian Rural –sector in favor of the Urban –industry. This market reform dynamism prevailed more or less only until 1996. From there on many reforms were halted and no major advance in the so called "second generation reforms" was pursue.

The outcome of the macroeconomic reform of the nineties, from the narrow point of view of macroeconomic stabilization, was undoubtedly successful, controlling inflation and allowing the recovery of global economic activity. During the last 14 years, in spite of innumerable political crises, Peruvian economy continued growing to an annual average rate of over 4%. Although the economy continued growing after 1996, the deceleration of the reform process, combined with negative external shocks (financial crises), decelerated the process of economic recovery. Although the economy seems to be somewhat buffered from the political crises in which the country has been permanently submerged (during both the Fujimori regime and during the regime of President Toledo) investment has slowed down, casting doubts about the long term growth trajectory of the economy.

Figure 1



2.1. Impacts of Early Liberalization

As was mentioned liberalization at the domestic and external front was the cornerstone of the economic reform that Peru implemented during the nineties. As can be seen in Table 1, compared to the early nineties Peru is today a much more open economy. Measured by the ratio trade to GDP, trade openness has increased sharply from 20.6% in 1991 to 32.7% in 2004. Similarly, foreign direct investment (excluding short term capital flows) has steadily increased from 4% of GDP in 1991 to almost 20% in 2004.

Table 1
Trade Liberalization and Poverty in Peru

	Early 1990s (1991)	Late 1990s (1997)	Early 2000s (2004)[1]
Real GDP Growth (per annum)	2.1	6.8	4.8
Real GDP Growth per capita (per annum)	0.1	5.0	3.3
Export Growth (US$) (per annum)	5.0	16.0	39.0
Trade Openness (X+M /GDP)	20.6	26.0	32.7
FDI Stock / GDP	4.0	13.1	19.4
Inflation (% per annum)	132.0	8.6	3.7
Poverty Rate	54.5	42.7	48.0
Extreme Poverty Rate	23.5	18.2	14.9
Inequality (Gini)	0.388	0.386	0.403

Notes: (1) All figures are for 2004 except poverty, extreme poverty and Gini coefficients which are based on 2000 figures to assure comparability with other estimates.
Sources: Central Reserve Bank, INEI and Instituto Cuanto

Although, as we have seen, the reforms did affect positively the growth pattern of the economy, trade liberalization did not increase the real exchange rate. On the contrary, real exchange rate drastically drop from 1990 to 1992; after that period, as can be seen in Figure 2, real exchange did not increase by much. Because of this, products targeted to the export market did not face a particularly profitable shock. However, general openness of the economy did improve overall productivity and allowed the economy to

start growing. This was specially the case for primary sectors (mining, agriculture) which grew at a faster pace than the non primary sectors did[4].

Figure 2
Real Exchange Rate
(1994=100)

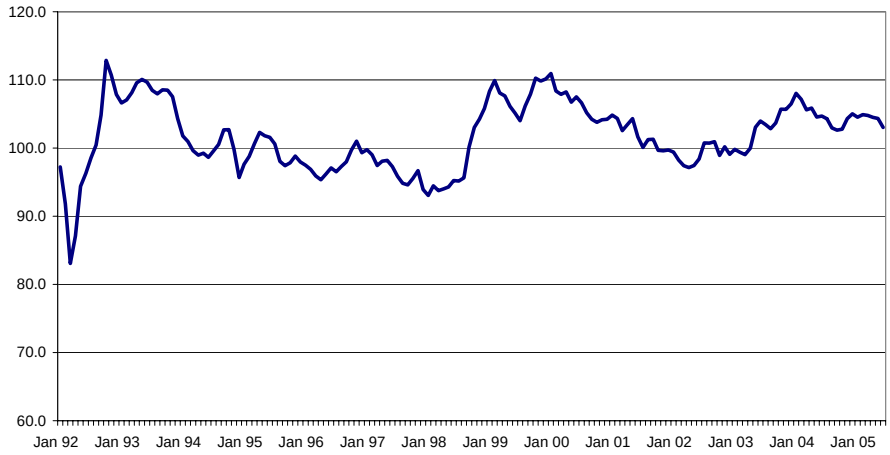


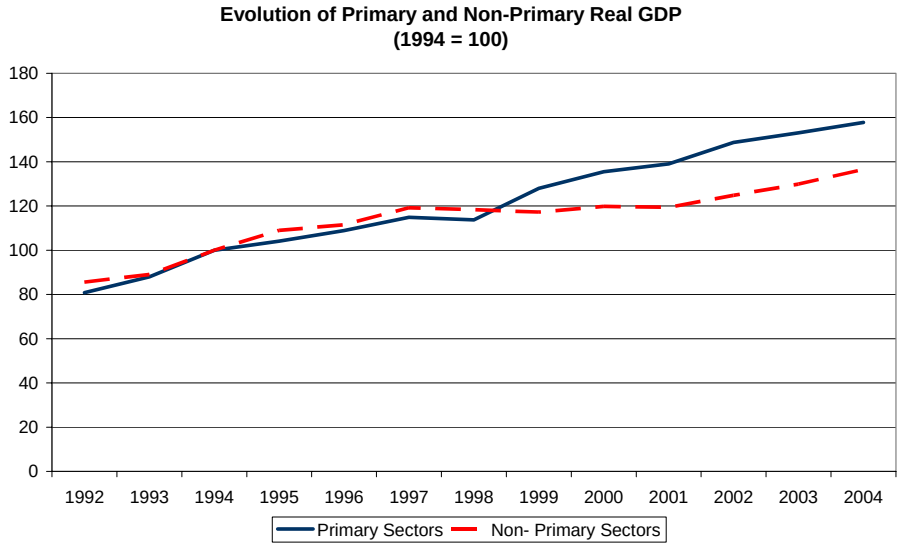
Table 2
Inflation, Real Exchange Rate and Price Increases in Tradable and Non-Tradable Sectors

Period	Inflation	Trandables	Non Tradables	Real Excange Rate
december 1992 - december 1997	16.16%	13.79%	17.47%	-2.73%
december 1997 - december 1999	4.80%	5.59%	4.37%	8.28%
december 1999 - december 2002	1.70%	1.83%	1.60%	-3.47%
december 2002 - december 2004	2.98%	3.07%	2.91%	2.96%

Sources: INEI and BCR

Figure 3

[4] In the case of agriculture, pacification during the 1990's brought back peasants to abandoned crop land, generating a important recovery of the agriculture sector.



Impacts on employment, wages and Poverty

After the stabilization program was implemented, Urban employment -as expected- dropped, continuing a trend that started in 1990 (Pasco Font y Saavedra, 2001: p. 136). However, after two years of reductions in employment, Urban employment started to grow at a larger pace than population. However, as expected, most of the new employment generated was under more "flexible" conditions which typically mean insecure employment conditions, long working schedule, poor working conditions and volatile earnings. In particular, temporary contracts rose sharply, especially between 1994 and 1997.

Although waged income in the Urban informal sector grew just after the stabilization, it had stopped improving by 1992 and remained stagnated from there on. For the Urban formal sector wages did keep growing after 1992, showing clear distinct trends depending on qualifications: the more qualified workers obtained larger wage increases than the less qualified (less educated) ones did.

For Rural areas, agriculture income dropped during the first years after the adjustment and was partially compensated with waged and non waged non agriculture income. After that initial adjustment period Rural income tended to recover although it rose more rapidly in the Coastal areas and, in a lesser extent, in Selva (jungle areas). For the Rural sierra, were the bulk of the Rural poor live, Escobal (2004) shows that real incomes were stagnated or falling, even in periods were the economy was growing.

According to LSMS surveys, Poverty in Peru rose dramatically between 1985 and 1991 from 41.6% to 54.5% (extreme poverty rose from 18.4% to 28.5%) reflecting both the effect of the macroeconomic crisis that led to hyperinflation in the late eighties and the initial impact of the macroeconomic adjustment program implemented in the early nineties. From there on it is difficult to discover a trend in poverty since changes in sampling frame, questionnaires and methodologies makes it particularly difficult to get comparable figures. Herrera (2002) and Escobal (2004) show that it is very likely that between 1994 and 1997 poverty was reduced specially in Urban areas and Rural coast, and increased again between 1997 and 2000. According to ENAHO poverty has

increased from 48.4% to 50% between 2000 and 2002, extreme poverty has also increased from 15% to 18.7% in the same period according to this source.

Several studies -Herrera (2002), Escobal (2004) – have shown that the bulk of the change in poverty during both the expansion period and the slowdown of the economy have more to do with growth effects than redistribution mechanisms. Thus, macroeconomic swings continue to explain most of the changes in poverty. In the case of extreme poverty, however, there is evidence of a number of governmental programs targeted to the poor that have achieved some success in lowering down this rate.

Public Income and Expenditure

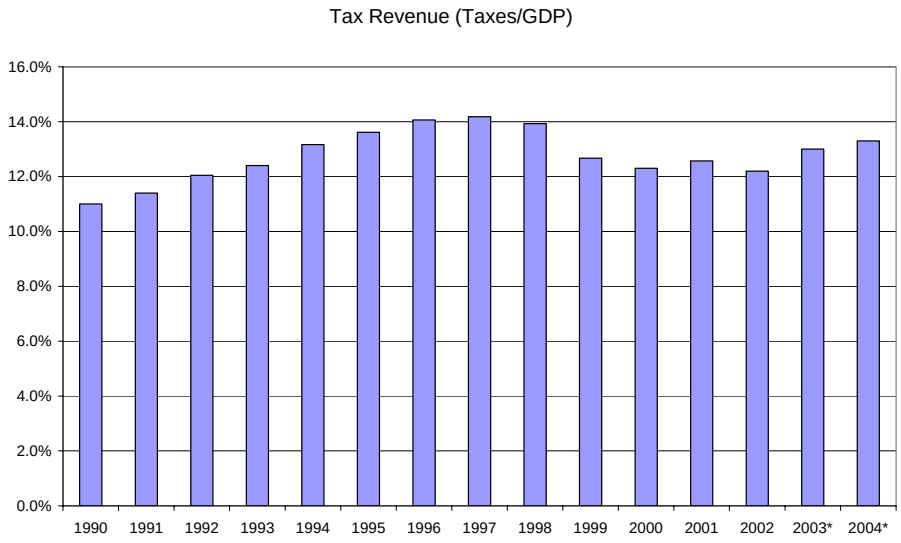
Trade liberalization drastically reduced import tariff rates from an average of 43% and a huge dispersion that raised effective protection rates to over 180% to few and less dispersed rates averaging 17% - with effective protection rates averaging 24%. (Pasco Font and Saavedra (2001) In addition export taxes were abolished. After initial tariff reduction, an additional tariff cut was done in 1997, leaving the average tariff in 13%. The combined effect of the rapid growth pace of the economy and the reduction of import tariffs reduced significantly the importance of import duties in the total tax collected by the government. As can be see in Table 3 the importance import duties represent today less than 9% of total taxes collected by the government, a decrease from the levels reached during the early nineties (around 15%). At the same time, tax revenues as percentage of GDP rose steadily from 1990 to 1997, were affected by the slowing down of the economy between 1998 and 2000, and started recovering again after that date.

Table 3
PERU: RELATIVE IMPORTANCE OF TAXES

Year	Income Tax	Property Tax	Import Duties	Sale Taxes	Selective Taxes (1)	Otros ingresos tributarios	Tax Deductions	Total	Taxes (in million soles)
1993	16.4%	3.0%	14.3%	41.2%	18.8%	7.4%	-1.0%	100%	5,416
1994	19.5%	0.7%	13.1%	45.9%	17.5%	7.2%	-3.8%	100%	8,589
1995	21.0%	0.2%	13.1%	46.5%	15.1%	8.3%	-4.2%	100%	12,979
1996	25.9%	0.0%	12.0%	44.6%	14.4%	7.5%	-4.3%	100%	19,256
1997	25.6%	0.0%	11.1%	46.4%	15.1%	8.6%	-6.8%	100%	22,304
1998	25.3%	0.0%	12.5%	47.8%	14.8%	7.7%	-8.2%	100%	23,144
1999	23.0%	0.1%	12.9%	50.0%	15.6%	8.1%	-9.7%	100%	22,072
2000	22.5%	0.0%	12.8%	52.8%	15.0%	9.0%	-12.2%	100%	22,769
2001	23.9%	0.0%	11.8%	50.2%	15.1%	11.1%	-12.1%	100%	23,541
2002	25.0%	0.0%	10.3%	52.4%	17.4%	7.2%	-12.4%	100%	24,062
2003*	29.1%	0.0%	9.3%	51.5%	16.5%	5.2%	-11.5%	100%	27,405
2004*	29.0%	0.0%	8.8%	52.0%	14.3%	6.9%	-11.1%	100%	31,144

Source: Statistics Institute (INEI) and Central Reserve Bank
*** Preliminary**
(1) = Includes special taxes to gasoline and luxury goods

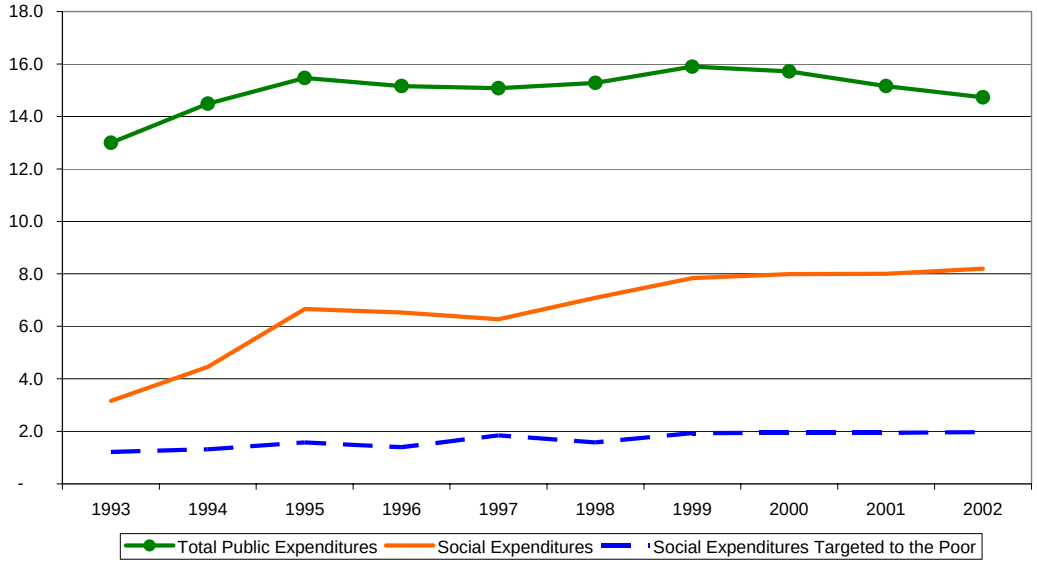
Figure 4



2.2. Social and child welfare outcomes

Recovery of the economy, following macroeconomic stabilization affect positively tax revenues and allowed the government to increase their expenditures.

Figure 5
Social Expenditures
(as percentage of GDP)



Source: Ministry of Economics and Finance

Even when total Public Expenditure as a percentage of GDP declined slightly between 1997 and 2002, Social Expenditure increased somewhat from 6.8% to 8.3% of GDP. However social expenditure targeted to the poor remained below 2% of GDP throughout the same period (this includes FONCODES expenditures, basic health care and birth control programs, Rural education; expenditure allocated to the agriculture sector (PRONAMACHCS, PETT, Rural roads); diverse feeding programs like glass of milk program, PRONAA, among the most important).

During the nineties the Peruvian government made significant improvements in the delivery of social services, especially in the primary health sector. According to Cotlear (2000) this improvement in coverage was the result of a reform focused on three areas: health provision, community participation and health financing. At the same time, according to Jaramillo (2005) public and private spending in health rose by over 50% in real terms as a result of a growing economy.

According to Peruvian Demographic and Health Surveys (ENDES) there have been some improvements in child related outcomes. Infant mortality has fallen from 57/1000 to 33/1000 between 1991 and 2000.[5] Chronic malnutrition has fallen from 36.5% in 1991 to 25.4% in 2000. Maternal mortality has also declined from 3/1000 in 1990 to 1.85/1000 in 2000 and to 1.52/1000 in 2002 (According to the Ministry of Health).

However, despite these positive trends, inequities in the access to infrastructure and public services continue to be huge. According to Valdivia (2002), for example, children under 1-year of age are more likely to die if they have very young siblings, their mother is young and they live in the Sierra region (Andean region). In addition the mortality rate is much higher among those that have mothers with low education (below complete primary) and living in dwellings with no piped water or sewerage. These high inequities have also a gender dimension: while only 35% of boys (below 14) in the poorest quintile are likely to receive some health service just 29% of girls in the same age range will receive some health service. In the richest quintile these figures rise to 81% for boys and 65% for girls but the gender gap is maintained.

Child Labor and Schooling

According to official statistics, 28.6% of the children and youngsters between 6 and 17 years old work for a wage or compensation (approximately 2 million); 54% of these are boys and 46% are girls; 90% work in the informal sector, working more than 45 hours per week and 90% of them receiving less than the minimum wage. INEI (2002)

According to INEI (2005) the presence of children in the labor market has increased during the last decade. In 1996 20.8% children between 6 and 11 years old were working. This percentage increased to 26.9% in 2001. Although the methodologies behind each of these figures are different and we should take this assertion with caution, it is very likely that children have increased their presence in the labor market. In the case of children between 12 and 17 the trend is less strong, as the figures reveal that the participation of young children has rose from 30.3% in 1996 to 32.5% in 2001.

[5] Although the decline has occurred both in Urban and Rural areas, average infant mortality in Rural areas almost doubled the rate in Urban areas. Infant mortality is calculated for children under 1.

Of course the above figures hide the real importance of child work, as they do not report as work those activities done to "help their parents" either in their farms or small businesses or at home, caring after their siblings. They also under report child work because it is illegal: in Peru the minimum legal age to enter the labor market is 14 years. INEI (2002) also reports occupation rates, which also include parent's report of the activities their children perform, either helping in family business, household chores, agriculture activities or animal husbandry, or other activity. Under this more broad definition (still subject to underreporting), 42.4% children between 6 and 11 and 57.6% adolescents between 12 and 17 report labor activities. As follows we present some detailed information on type of activities performed by both groups, children between 6 and 13 years of age and adolescents of 14 years old and above. It is worth reminding the reader that Peruvian law permits certain types of jobs to be performed by the cohort of adolescents whose age ranges between 14 and 17 years of age.

Table 4
Children between 6 - 13 According to Main Occupation
PERU– 2001

Ocupation	Total	Urban	Rural
TOTAL CHILDREN (in thousands)	1,219,473	226,932	992,541
Helped in household business	11.0	43.1	3.6
Helped other households	3.7	10.0	2.2
Helped producing self consumption goods	2.0	5.9	1.1
Helped in Agriculture activity or animal husbandry	81.0	32.7	92.1
Helped in Street Vending	1.9	6.8	0.8
bulk loader, brickmakers and others	0.4	1.6	0.1

Source: INEI (2002)

Table 5
Children between 14 - 17 According to Main Occupation
PERU– 2001

Ocupation	TOTAL	URBAN	RURAL
TOTAL CHILDREN (in thousands)	767,692	378,786	388,906
Cook, walter/ waitress	2.3	3.5	1.3
Wholesaler, selling newspapers, selling at markets, etc.	11.6	19.3	4.1
Weavers, spinner, brickmakers, bakers, mechanics assistants	7.0	11.4	2.7
Street vendors	3.7	6.8	0.8
Fee collectors at Buses	1.0	1.6	0.5
Maid, housekeeper	8.6	15.3	2.1
Launderer, cleaner and assistant	3.9	6.9	1.1
Asistants	4.5	8.4	0.7
Laborers in farming	48.7	13.0	83.5
Laborers in construction	1.1	1.4	0.9
bulk loader	0.9	1.7	0.1
Other occupations	6.6	10.8	2.4

Source: INEI (2002)

Gender roles are much more pronounces in this age group (14-17) than in the younger children, with girls working as maids and selling at markets and boys as agriculture

laborers or as brick-makers. It is important to note that boys tend to be employed relatively more in tradable sector, whereas girls tend to be employed more in non tradable sectors. This may have an implication when one analyzes the impact of a FTA over child gender roles.

Table 6
Children between 14 - 17 According to Main Occupation and Gender
PERU– 2001

Ocupation	Total	Boys	Girls
TOTAL CHILDREN (in thousands)	767,692	428,593	339,099
Cook, walter/ waitress	2.3	1.4	3.6
Wholesaler, selling newspapers, selling at markets, etc.	11.6	8.0	16.0
Weavers, spinner, brickmakers, bakers, mechanics assistants	7.0	9.0	4.4
Street vendors	3.7	3.3	4.2
Fee collectors at Buses	1.0	1.8	0.1
Maid, housekeeper	8.6	0.9	18.3
Launderer, cleaner and assistant	3.9	2.5	5.7
Asistants	4.5	4.6	4.4
Laborers in farming	48.7	56.0	39.5
Laborers in construction	1.1	1.9	0.2
bulk loader	0.9	1.6	0.0
Other occupations	6.6	9.1	3.3

Source: INEI (2002)

Besides Agriculture activities and work at home, which are by far the two most important areas where children work, other activities where children work and might face risks at are the following:

- Gold Washeries
- Informal Mining
- Slaughterhouses
- Construction
- Fireworks
- Brick making
- Waste dumps
- Domestic servants
- Coca leaves gathering

It is important to note that INEI (2002) reports a much larger number for those that work and study in comparison to those that only work. This is consistent with the evidence presented by Escobal et al. (2005) which found evidence that economic shocks have an impact on the quality rather than the quantity of education, as parents are more prone to move the child from a private to a public school (for Urban households) or reduce the expenditure in complementary inputs, rather than withdraw the kid from school. However this is not the case for children going from primary to secondary school where withdraw rates are much higher and decision to work is reported as an

important reason to withdraw school.[6] In addition shocks may generate a number of indirect responses that may affect negatively enrollment rates. For example, as we will see in the next section, there is evidence that girls may be withdrawn from school to look after their younger siblings if new economic opportunities increase in the opportunity cost of their mother's time.

3. Trade Liberalization and Child Welfare: a brief review of the Literature

Trade liberalization has many different channels through which it may affect child welfare. The first and most obvious one is the impact of trade liberalization on child labor. In addition there may be also child welfare effects that come through changes in the goods and services that children consume (e.g. food, health or educational services) and the risks and vulnerabilities they may face. Although there is an enormous body of research that discusses the effects of trade liberalization on economic growth and household welfare there is not much research done regarding the effect of trade liberalization on child welfare.

At the aggregate level there are some studies that relate economic globalization with child poverty. In some cases as in Cornia (2002) evidence of child poverty increasing at a higher pace than overall poverty are reported and there is a suggestion that growing volatility of growth and a reduction in the poverty alleviation elasticity of growth affected by a rise in income inequality may be the explanation. Rising income inequality and increasing volatility, in turn, are suggested to be caused by globalization. Some authors stress that trade liberalization fostered by economic globalization is embedded in a rationale that favors poverty alleviation through growth, playing down the role of redistributive policies. For example, Aiguo and Zhong (2002) contend that insufficient attention to increase social expenditure in China, in a context where poverty reduction is achieved mainly through export-led growth, leaves to a secondary role redistribution efforts that may be focused towards improving child welfare. Vandemoortele (2000) shows that under-investment in basic social services, even in countries were robust economic growth has occurred as in many countries of South Asia and Latin America, makes evident that growth by itself will not reduce the prevailing inequities and reduce poverty effectively if it is not accompanied with complementary active public policies.

By far the most researched topic has been the impact of trade liberalization on child labor. Kar and Guha-Khasnobis (2003) present a theoretical model that determines the demand for child labor in the context of a small open economy and compares it to the child labor supply determined by household decisions. The model emphasizes the link between tariff reduction and wage and labor mobility in a context where household labor decisions are characterized by relative risk aversion. If households face income risk they might be more prone to send their kids to work, to better manage such risks. The model highlights the fact that child labor may increase or decrease depending on key parameters, including degree of substitutability between adult and child labor, relative size of the export and import-competing sectors, and the wage elasticity of demand for and supply of child labor.

[6] 10.6% of those children between 12 and 17 years of age report not attending school because they work. This percentage is 0.2 for children between 6 and 11 years of age. INEI (2002)

As trade liberalization has gained ground, there have been growing attempts to ban child labor through the introduction of harmonized international child labor standards and unilateral trade sanctions. Edmonds and Pavcnik (2005a) mention that under threat of such sanctions, export oriented garment factories in Bangladesh reduced significantly child labor. Brown et al. (1999) show that the use of trade restrictions to deter exploitation of foreign child labor may actually have the opposite to the desired effect: children are hurt while their employment may actually rise.

Edmonds and Pavcnik (2004) explore the relationship trade liberalization and child labor through the analysis of a cross country database. They found that countries that trade more have less child labor. This effect is mainly attributed to the relationship that the authors find between trade openness and income. Although their results are robust to different specifications, their framework is not capable of evaluating changes in relative prices within countries and the labor movements that such changes may bring about.

In general the effect of trade liberalization on child welfare outcomes will be ambiguous In the case of the effect on child labor it will depend on the changes in the opportunity cost of children's time and whether there is an income effect on child labor, brought by changes in employment or wages. Edmonds and Pavcnik (2005b) shows, for the case of Vietnam, that trade reform may reduce the incidence of child labor through its income effects. In this case, the authors show that producers that are net producers of the export commodity (in this case rice) experience large reductions in child labor as rice prices increase. This means that even in sectors experiencing growth as a result of trade liberalization, income effects can offset potential demand increases in child labor that lead to higher child wages. However, Melchior (1996) quoted by Kar and Guha-Khasnobis (2003) shows that if child labor serves as an specific factor of production for the export sector, lowering the tariffs may increase the returns to child labor and therefore may increase its supply. This argument presumes that child labor will continue to be used as a factor of production in the export sector, which may not be the case if exports come from a trade agreement that disincentives the use of child labor. In this case the child labor may move away from the export sector to other sectors that are less supervised for compliance.

Two key topics that have been researched in relationship with the child welfare impact of trade liberalization are child labor and schooling decisions in a context of credit constraints and in a context where female labor participation increases due to trade liberalization.

Ranjan (2001) presents a theoretical model that highlights the channel through which trade policy may affect child welfare in the presence of credit constraints. The argument is that trade sanctions for commodities produced with child labor will reduce the unskilled wage and increase the skilled wage through the standard Stolper–Samuelson effect[7]. Under this circumstance, income of the parents who are unskilled will go down, and that may increase the incidence of child labor for children of the unskilled if those families have a credit constraint. Edmonds and Pavcnik (2005a: p.21) reports that "...several recent studies confirm that credit market imperfections can cause children to work when all other aspects of their economic environment suggests they should not be working".

[7] The Stolper–Samuelson states that trade raise the real wage of the abundant factor of production (in this case unskilled labor), and protection from trade lowers it.

Increased female labor participation, either because of new access to labor opportunities thanks to trade liberalization or because there is a need for additional income due to a negative effect of trade liberalization, may have important effects on child welfare, especially for girls. Watkins (1997) shows that in cases were labor opportunities are affected negatively, households may respond to the reduced employment opportunities in Rural areas through male labor migration, which increases the workloads for women and children remaining behind. Elson and Evers (1997) as quoted by Winters et al. (2004: p. 91), mentions that a positive export supply response may generate a greater demand of female labor time that, in turn, may have damaging repercussions for the health and well being of children. In particular, "... increasing workloads of women have led to a decline in breast feeding and worsening child care practices and food insecurity has been intensified". Jenkins (2005) shows for the case of Kenya, Vietnam and Bangladesh that labor-intensive exports of manufactures and agricultural products have created employment opportunities for low-income women in these countries, especially for migrants from Rural areas. However it has also affected the security and vulnerability of their livelihoods. For example, since children are not permitted in the factories, mothers must make use of child-care services which may be costly. In some cases, child care activities may become responsibility of older siblings reducing their chances to attend school.

If trade liberalization reduces the chances of children going to school this may have critical implications in the inter-generational transmission of poverty. Thomas et al. (1999) identified that the response to a trade shock for Rural families following the Indonesian crisis of 1997 was to reduce expenditure on education or on child nutrition or on health services. For Peru, Ray (2000) shows that when families fall into poverty children are not withdrawn from school. This results contradicts what the same author found for Pakistan, but is consistent with Escobal et al. (2005) results. They found no evidence that negative shock policies entail further overage (i.e. at least one year older than the age expected for their grade) and hence there may be no effect on the school drop-out rate either. However, even when a negative shock does not produce a change in the time spent on education, they found that it does reduce the effective accumulation of human capital through cuts in expenditure on education.

Levison and Moe (1998) show also for Peru that domestic work competes as much as market work with schooling. If this is the case as trade liberalization expands opportunities for women in the labor market, it may generate unintended consequences by affecting negatively schooling decisions.

Although there does not seem to exist policies specifically designed for addressing child related vulnerabilities in a trade liberalization, there are some policies that have shown positive impacts. Recent empirical studies evaluate the direct link between conditional cash transfers and the probability of staying at school (which is one of the conditions under which transfers are made) and, further, the link between these transfers and additional child related welfare outcomes. Examples of these policies are increasingly common in developing countries. They include PETI and Bolsa Escola in Brazil, the Mid-day meals program in India, or the Progresa/Oportunidades program in Mexico. Schultz (2004) finds that Progresa/Oportunidades not only significantly increased schooling attendance but also increased schooling attainment from 6.8 to 7.4 years. Moreover, it significantly reduced child market work.

In Peru, a similar program labeled "Juntos" (Together) has just been launched and, if properly managed, can be very helpful to reduce vulnerabilities that a free trade agreement with the United Sates may bring about. We will pursue this further in the last section of this study.

4. Assessing the Welfare Impacts of a FTA between Peru and the United States

A number of simulation exercises regarding the potential impact of a bilateral or multilateral liberalization on Peruvian agriculture sector have been done recently. One of these modeling exercises has been done by the Ministry of Foreign Trade and Tourism (MINCETUR)[8]. The model is a Computational General Equilibrium Model (CGE) that has been constructed to evaluate the direct and indirect impacts of the FTA in the Peruvian economy. In this model, the additional impact of the FTA (over ATPDEA) in the Peruvian economy represents approximately one percentage point of GDP growth as compared to the current situation (with includes advantages already obtained from ATPDEA), and 2 percentage points of GDP comparing with a situation without ATPDEA. These are important positive effects that can make the difference in the trajectory of growth of the Peruvian economy in the next 20 years.

Cuadra et al. (2004) and Fairlie (2004) report a number of simulation exercises based on a variant of the MINCETUR GTAP model. The authors incorporate key modifications to that base model to allow for unemployment, capital accumulation and productivity increases through trade related externalities. The base scenario reflects a standard GTAP model which assumes full employment, exchange rate is fixed and trade balance is determined endogenously. Results here are much more optimistic than those reported by MINCETUR and may hint the potential additional gains (over what has already been obtained through ATPDEA) that could occur if complementary policies are put into place to allow for productivity increases.

These kinds of modeling exercises share several common features. The most critical feature is that these models assume perfect mobility of capital; which implies that trade liberalization triggers changes across all sectors of the economy in such a way that all production factors (including labor and capital) are instantaneously reallocated in the most efficient way (changing from one sector to another, according to each sector's relative profitability, which has been affected by the FTA). Because of this, these modeling exercises tend to overestimate the impacts of markets liberalization, as they do not introduce structural restrictions that may lower the speed of adjustment of the economy. As such, these results should be taken cautiously as they represent long term potential gains that a FTA with the USA may bring about. In addition these models are based on a "representative agent" setting, so they cannot give answers on the impacts on poverty or income distribution.

Because of these limitations there is a need for complementing these models with others that may show the short term impacts of a FTA with the United States and may, as well, indicate the potential welfare distribution effects that these trade policies may generate.

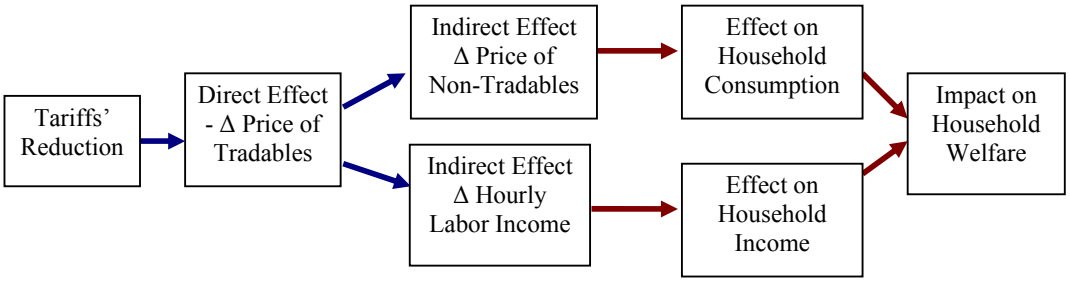
[8] This Model is based on a GTAP Model (Hertel (1997); Chapter 2), which is a static multiregional, multi-sector model which assumes perfectly competitive product and factor markets, producing under constant returns to scale. The aim of these models is to simulate the effects of trade policy and resource-related shocks on the medium term patterns of global production and trade.

4.1. Simulating the Short term Welfare Effect of a FTA between Peru and the United States

This section focuses on analyzing potential impacts of a free trade agreement with the USA (which would lead to a zero-tariff scenario) on households' welfare. The methodology used here is based on the model that Porto (2003) developed to analyze distributional effects of MERCOSUR on Argentinean households. The model assumes that there is only one mobile factor, labor, whereas the other production factors such as capital remain specific to each production sector. In this sense this is a short term analysis. Welfare impact of the FTA is measured here as the negative value of the income transfers (expressed as percentage of households' expenditure) that would be required to compensate households for the welfare loss induced by the trade liberalization. In this sense, if compensating variation estimates are negative (positive) the FTA would induce a welfare loss (gain), since it would indicate that a positive compensation is needed to guarantee households the same welfare level they had before the liberalization occurred.

The welfare effects are modeled through two links (see Figure 6). A first link consists of the impact of trade liberalization on domestic prices. Since Peru is a small open economy, there is a direct effect on prices of tradable goods due to its direct equalization to exogenous international prices. In turn, this change in prices of tradable goods induces changes in prices of non-tradable goods. Also, the change in prices of consumption goods induces a change in hourly labor income. The second link consists on the effects that these price changes (consumption goods prices and hourly labor income) have on both household consumption and income. A more formal presentation of the model is presented in Annex 1.

Figure 6
Short Term Effects on Well-being: Transmission channels



Modeling microeconomic channels by introducing some rigidity into the economy, as we do in this section, allows getting estimators that are more robust to short term responses. This is so because of the assumption that some factors in the economy are specific to certain sectors, and so they cannot be easily/rapidly reallocated to other sectors that suddenly become more profitable. This is the approach we take for the present study; with labor being the only mobile factor in the economy (capital and land

are sector-specific). We take into consideration two types of labor in Urban areas: self-employment and wage labor, and four types of labor in Rural areas, wage agriculture, wage non-agriculture, agriculture self-employment and non-agriculture self-employment.

Table 7 shows the result of our modeling exercise. We estimate an aggregate welfare gain of about US$ 417 million. However, welfare gains and losses are unevenly distributed within the country. In particular, Urban households gain in the aggregate US$ 575 million while Rural households suffer a welfare loss of US$158 million. At the regional level, Urban Costa and Lima are the regions where welfare gains are the largest, while Rural Sierra and Selva are the areas where most of the welfare losses are concentrated.

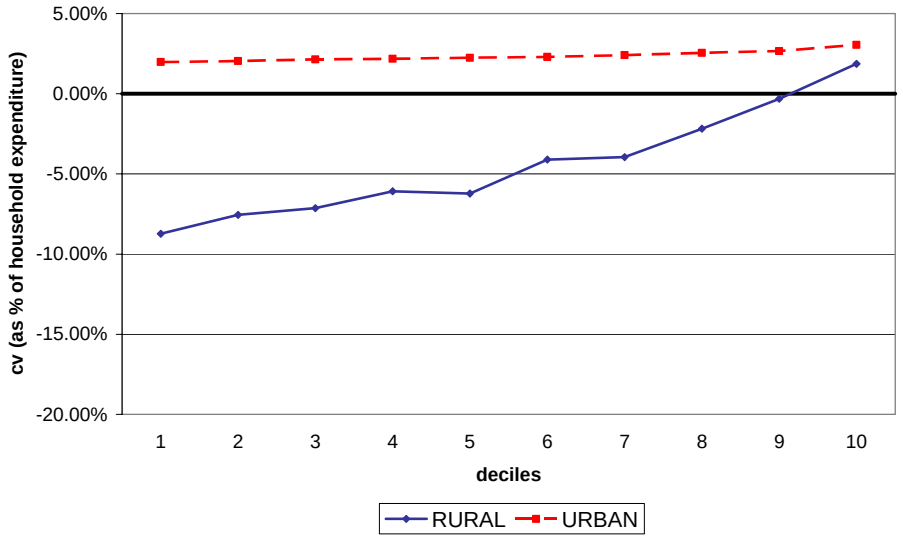
Table 7
Impact of a tariffs' elimination for USA imports
on Peruvian households well being

	Impact on household well being (% of household expenditure)			**US$**
Indicator	Estimator	Confidence interval (95%)		millions
Rural Peru	-3.36%	-3.87%	-2.85%	-158.2
Costa	-1.45%	-2.70%	-0.20%	-13.0
Sierra	-3.53%	-4.24%	-2.82%	-100.2
Selva	-4.60%	-5.57%	-3.62%	-45.0
Urban Peru	2.54%	2.49%	2.59%	575.1
Costa	2.29%	2.26%	2.33%	112.2
Sierra	2.30%	2.25%	2.34%	80.5
Selva	2.09%	2.02%	2.16%	31.1
Lima Metrop	2.75%	2.68%	2.81%	351.3

Source: Own simulations

Mapping the results across the income distribution is very revealing (Figure 7). The results show that most of the Urban sector obtains a welfare gain equivalent to 2% of their household expenditures, with the richest deciles doing just slightly better than the poorest Urban deciles. However, differences in the Rural sector are much more striking: while the richest Rural decile may get a welfare gain of about 2% of their household expenditure, the poorer deciles increasingly loose. The poorest 10% of the Rural population gets a welfare loss equivalent to almost 9% of their household expenditure if an abrupt reduction of import tariffs is agreed between Peru and the United States.

Figure 7
Welfare effects in Rural and Urban Areas



What is driving these results? A summary of the driving intermediate impacts is presented in Table 8. Both, Rural and Urban areas show similar positive impact through the consumption channel. This channel, as mentioned before, works through a change in prices of consumption goods. This Price Effect is positive when looking at consumption of tradables as well as at consumption of non tradables, separately. On the other hand, the Income Effect is negative for both Urban and Rural areas. What is behind the differences observed in Figure 7 is that in Rural areas the welfare gains derived from the decrease in price of tradable goods are outweighed by the income losses coming from the reduction in tariffs. In Urban areas, on the contrary, the welfare loss derived from the income effects is outweighed by the welfare gains derived from cheaper products.

According to our estimates, the most important component of the welfare loss suffered by Rural households is the negative impact on self-employment agricultural activities. In turn, non-agricultural activities show a significant positive impact from trade liberalization. The distributional differences in welfare impact across deciles (Figure 7) result from the differences in the composition of household income in Rural areas. Since richer households obtain a larger proportion of income from non-agricultural sources than poorer households, the aggregate income effect is less severe[9]. As for Urban households, the wage employment sources of income are not significantly affected, however self-employment sources are negatively affected.

[9] In Rural Costa, the 20% of poorest households obtain 82% of their annual income from agricultural sources (both wage and non-wage), whereas the richest 20% obtains only 52% of income from agricultural sources. Similarly, the poorest quintile in Sierra obtains 75% and in Selva 86%, compared to the following shares among households in the richest quintile: 34% and 41%, respectively.

Table 8

Components of Welfare Gains and Losses

Indicator	Rural		Urban	
	Estimate (%)	US$ Millions	Estimate (%)	US$ Millions
Self-Employment Agricultural Income Eff	-7.76%	-365.7		
Self-Employment Non-Agricultural Incom	1.43%	67.5		
Self-Employment Income Effect [1/]			-0.16%	-37.1
Wage Agricultural Income Effect	-0.86%	-40.4		
Wage Non-Agricultural Income Effect	1.95%	91.9		
Wage Income Effect [1/]			-0.03%	-6.8
Labor Income Effect	-5.24%	-246.7	-0.19%	-44.0
Price Effect	1.88%	88.5	2.73%	619.0
Total Welfare Effect	-3.36%	-158.2	2.54%	575.1

[1/] For urban areas these figures include sel-employment and wage employment activities.

Source: Own simulations

As we have already mentioned, the estimated impacts reported in this section are those we may expect in the short run (i.e. if we assume that production factors are not mobile) if tariffs are abruptly eliminated after the signature of the FTA. It is important to emphasize the fact that if some sectors are able to respond in the short run through increases in productivity some of the welfare losses may be less pronounced. Because of this fact, these results should be read together with other long term impact evaluation (typically done by using CGE modeling) to better asses the overall short and long term impacts of a FTA. In addition it is important to fully acknowledge the limitations of the analysis due mainly to restrictions in information available: (i) the model captures first order effects only (because of the difficulty of estimating own price and cross price demand elasticities), and (ii) since we had access to prices in Lima only, we could not capture difference in velocity of price transmission across regions.

In any case, we do believe that our results shed light about the potential welfare losses that an FTA with the United States may create for at least some segments of Peruvian population. Complementarily to the analysis discussed above, we explore the distribution of welfare impacts across time by performing several simulations that assume gradual reductions of import tariffs along a 20-year period. It is worth noting that, since the tariffs´ reduction schedule used here is the initial stand that Peru took to the negotiation table when the FTA talks started, it does not reflect with accuracy the actual schedule that Peruvians would need to implement if the Congress approves the agreement.

According to the simulations, if we consider a gradual tariff reduction as the one initially proposed by Peru (as expected, more ambitious than the one finally negotiated), households in Urban areas would be benefited from the very beginning, especially the capital city, whereas Rural Costa would not be significantly affected and Rural Sierra and Selva would face the first negative impacts (see Table 9).

Table 9

Initial Impact of Tariff Reduction of US Imports

	% of Household Expenditures	US$ millons
Rural	-2.1%	-99.6
Rural Costa	-0.9%	-8.4
Rural Sierra	-2.2%	-63.4
Rural Selva	-2.8%	-27.9
Urban	1.4%	314.9
Urban Costa	1.3%	63.9
Urban Sierra	1.3%	45.7
Urban Selva	1.2%	18.6
Metrop. Lima	1.5%	186.7
PERU		215.3

A closer look at the distributional impacts in Rural areas across time would reveal that the distributional differences in welfare impact become relatively more important with time. This would suggest that the pervasive distributional impacts of liberalization could be reduced or even avoided with public intervention planned within an optimal time frame. Indeed, Figure 8 shows that the bulk of negative impacts in Rural areas would happen from year 10 and afterwards.

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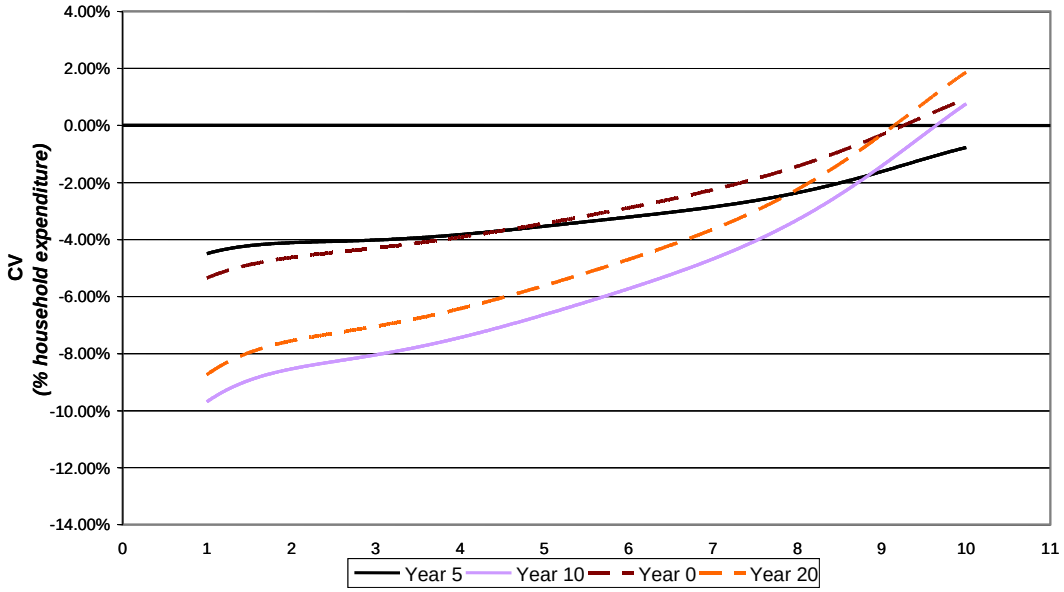
Figure 8

Welfare impact of a gradual reduction of tariffs of US imports

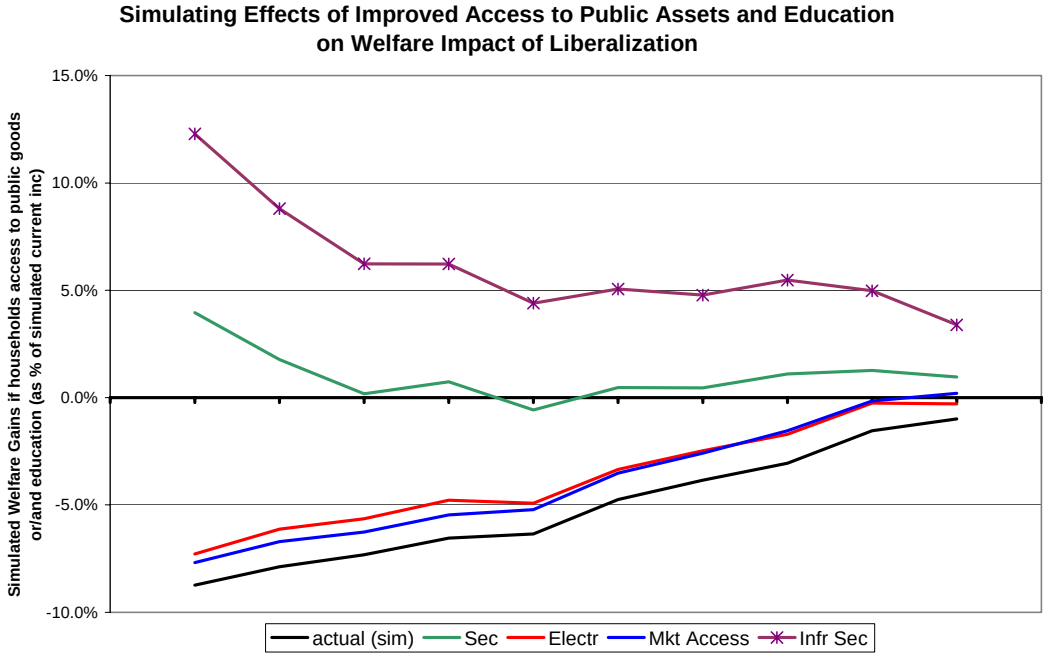


Complementary to the analysis presented before, we explored the potential impacts of eliminating tariffs under different scenarios of public investment in key assets endowment. The simulations performed were the following[10]:

(a) Base simulation: Tariff go to zero under the FTA. This is the base simulation in the sense that all households show the private and public assets they actually access to (the following scenarios assume changes in at least one asset endowment for at least some of the households, these changes allow to perform simulations with better endowed households and compare the resulting impacts of the FTA with the base scenario).
(b) Base simulation except for this change: all Rural households have at least one member with complete secondary education (this scenario is labeled *Sec* in Figure 9)
(c) Base simulation except for this change: all households have access to electricity (this scenario is labeled *Elec* in Figure 9)
(d) Base simulation except for this change: all Rural households have improved market access, taking at most two hours to arrive to the nearest town with 75,000 (or more) inhabitants (this scenario is labeled *MktAccess* in Figure 9)
(e) Base simulation except for this change: simultaneous access to (b) and (c) and (d) (this scenario is called *InfrSec* in Figure 9)

As shown in Figure 9, any transfer of public assets or education reduces the welfare loss caused by the elimination of tariffs across the whole distribution, being education the individual asset that reverses the most the unequal distribution of proportional welfare losses. It is clear, also, that accessing to complementary assets like education, electricity and faster access to markets not only reverses the unequal distribution of proportional welfare loss, but more importantly, enhances households' capacity to overcome the perverse effects of the tariff elimination.

Figure 9



[10] No assumptions about how these changes (better endowed households) could be financed are made.

4.2. Some Child Welfare Impacts

Are the welfare gains/loss reported in the previous section evenly distributed across different type of households? In this section we assess if this gains and losses are unevenly distributed across:

a) households with different number of children, being more severely affected those with more children
b) households with more children attending school compared to those with less children attending school and more having dropped out (for instance, in order to perform either domestic or market full time work)
c) Households (with children) whose female head works in a wage employment vs. those with female head not working at all or working in self-employed activities. ("female head" is understood here as the "female head of household" or the "wife" of a male head of household)

In addition we explore what may be the impact of the welfare gain/loss due to the FTA on the probability that a child keeps attending school after the FTA, and on the probability that the female head enters the wage labor market, which may have an indirect effect on children time usage (specially girls that may need to cover their mothers in child bearing activities).

Table 10 compares per capita welfare gains and losses between households that have no children and household that has at least one child (13 year old or younger). Results show that in Urban areas, Peruvian households with no children gain more than household with children. Differences are particularly strong in Lima.

Table 10

Comparison of Per Capita Welfare Impacts between household with and without children (US$)

Regions	Household with no Children		Household with Children	
	impact (US$)	% of hh Expenditure	impact (US$)	% of hh Expenditure
Urban				
Costa	42.5	27.9%	22.9	72.1%
Sierra	40.4	31.7%	21.9	68.3%
Selva	36.5	20.4%	19.7	79.6%
Lima	91.9	30.9%	40.1	69.1%
Rural				
Costa	-30.6	29.0%	-5.4	71.0%
Sierra	-36.9	28.8%	-15.4	71.2%
Selva	-34.0	19.1%	-22.8	80.9%
Peru	31.4	28.5%	13.6	71.5%

En Rural areas, however, the results are different: household with children tend to have lower welfare loses than those household with no children. It seems that household with children tend to protect themselves better from a negative shock. Why is this so? It is very likely that this has to do with the fact that children may be perceived more as "productive assets" in Rural areas. If this is the case we may expect that in those household were children are very young and are not part of the household labor force Urban and Rural household may be equally exposed to a negative shock. However if the child is old enough to work, the parents may opt to send their kids to work, to better manage such risks.

Tables 11, 12 and 13 shows some evidence that it is precisely this behavior what might be explaining the differences in welfare losses between those having children and those household with no children. Table 11 shows that among those households having at least 1 children of age 0-5, those with more children have larger losses than those with fewer children (similar trend as the one observed in Urban areas) However, in households of the Rural Sierra and Selva regions having at least one child between 6 and 13 years (Table 12) or at least one youngster between 14 and 17 years (Table 13), this pattern gets reversed: household with more children get lower losses than households with less children.

Table 11
Per Capita Welfare Impacts
in Households with children of 0 - 6 years of age
(US$)

	1 Children	2 Children	3 or more Children
Urban			
Costa	20.5	20.2	13.8
Sierra	22.2	13.9	10.5
Selva	20.0	13.6	11.4
Lima	37.5	37.2	20.8
Rural			
Costa	-1.9	-15.9	-0.8
Sierra	-12.6	-17.3	-9.6
Selva	-20.6	-22.7	-27.3
Peru	13.9	3.2	-1.8

Table 12

Per Capita Welfare Impacts
in Households with children of 6 - 13 years of age
(US$)

	1 Children	2 Children	3 or more Children
Urban			
Costa	24.1	18.9	12.6
Sierra	22.6	18.3	10.8
Selva	19.6	16.3	10.2
Lima	40.9	29.6	20.3
Rural			
Costa	-2.8	-9.4	-12.7
Sierra	-14.6	-12.0	-16.9
Selva	-20.8	-16.4	-22.5
Peru	17.5	8.3	-4.7

Table 13
Per Capita Welfare Impacts
in Households with youngster of 14 - 17 years of age
(US$)

	1 Children	2 Children	3 or more Children
Urban			
Costa	22.8	18.7	15.2
Sierra	22.0	16.6	13.0
Selva	19.9	13.7	13.4
Lima	36.8	28.5	17.8
Rural			
Costa	-11.7	-1.2	-21.5
Sierra	-15.5	-7.6	0.8
Selva	-20.9	-18.5	-20.8
Peru	12.5	9.8	8.8

These results are just descriptive; however they are consistent with other evidence that contends that a child in Rural areas is perceived as an important asset that may help reduce vulnerabilities when facing a negative shock. If this is the case the opportunity cost of attending school may increase after a negative shock, reducing attendance.

Another way of splitting the sample is dividing it between household where children do not attend school and household where children do attend school. Such division of the sample is presented in Table 14, where we show welfare impacts in households with children according to their school attendance. Here it is evident here that welfare losses are higher (or gains are lower) in household where children do not attend school for boys and girls in Urban areas and for girls in Rural areas. If this is the case it is very unlikely that these household will have any incentive to send their kids back to school. In the case of boys of 6 years of age or older, in Rural areas, it is interesting to note that welfare losses are slightly larger in households were boys attend school. This again is an indication that child labor force may be a way through which Rural households are coping with negative shocks, at the expense facilitating the inter-generational transmission of poverty.

Table 14
Per Capita Welfare Impacts in households with children
(according to schooling)
(US$)

Age Ranges	Urban		Rural	
	Attends	Not Attends	Attends	Not Attends
3 to 5 years *(Pre School)*				
Girls	31.4	22.1	-10.3	-17.3
Boys	29.8	20.4	-13.8	-18.7
6 to 11 years *(Primary)*				
Girls	26.8	21.5	-15.7	-15.9
Boys	23.7	20.5	-16.5	-14.3
12 to 17 years *(Secondary)*				
Girls	23.6	22.8	-9.4	-14.3
Boys	26.8	24.0	-15.0	-13.4

Regarding time dedication to taking care of children, we observed that household with female working in waged activities come from households that get lower losses in Rural areas and get larger gains in Urban areas (Table 15). This may reflect the positive income effect of waged labor but may hide the negative impact of reduce take caring time and/or substitution of take care through younger siblings (girls).

Table 15

Per Capita Welfare Impacts in households with children under 6 years of age (US$)

Age Ranges	*Care taker works in waged labaor ?*			
	Rural		Urban	
	No	Yes	No	Yes
Children 0 to 5 years				
Per Capita Welfare Impacts	-17.0	20.5	25.4	36.1
% of households	93.4%	6.6%	82.4%	17.6%
Children 6 to 13 years				
Per Capita Welfare Impacts	-17.1	14.4	24.2	37.1
% of households	92.0%	8.0%	80.3%	19.7%
Adolescents 14 to 17 years				
Per Capita Welfare Impacts	-15.7	3.4	24.1	34.6
% of households	91.8%	8.2%	79.9%	20.1%
Fot those having children or Adolescents (between 0 and 17)				
Per Capita Welfare Impacts	-18.0	13.9	27.2	40.2
% of households	92.2%	7.8%	80.2%	19.8%
No Children in Household				
Per Capita Welfare Impacts	-46.0	40.9	61.3	77.4
% of households	87.9%	12.1%	79.8%	20.2%

A complementary Modeling Exercise

Previous charts are just different ways of splitting the sample. In these cases one should be careful about the causal implications since we are just characterizing those household having, for example, more or less children or having children attending or not attending school. To explore further the connection between the welfare impact of an FTA and possible behavioral responses we have estimated the determinants of school attendance (Table 16) and the determinants that a the female head of the household –which is the potential caretaker- engages in waged activities (Table 17). To avoid endogeneity problems each of these probit estimations has been corrected using instruments for income. In the case of schooling decisions, we have included as instruments a variable related to wealth (total value of durable assets) and another variable related to whether or not there is a room in the dwelling assigned to income generating activities, which we presume do not affect directly schooling decisions but only indirectly through their effect in income. Similarly, in the case of female head of the household labor decisions, we have included as an instrument the maximum education available to the household, which we presume do not affect directly female labor decisions but only indirectly through its effect on income.

It is important to note that it is very important to properly instrument income in both of these equations, since a Wald test for exogeneity, indicates that income is clearly endogenous in all estimations.

Table 16

Determinants of School Attendance
(Probit - with instruments for Income)

	Rural		Urban	
Total Income	0.138	***	0.053	***
Age	-0.091	***	-0.064	***
Gender	-0.206	***	0.013	***
Age*Gender	0.026	***	-0.001	**
Old hh members (66-99)	-0.104	***	-0.026	***
Sibblings (0 - 5 years)	-0.046	***	-0.049	***
At least one Person with non-waged Income	-0.158	***	-0.024	***
Coastal Region	0.057	***	0.048	***
Andean Region			0.164	***
Jungle Region	-0.063		0.131	***
Constant	1.387	***	1.146	***
Overall Fit				
Wald chi2(9)	131860.34		132992.63	
Prob > chi2	0.000		0.000	
Wald test of exogeneity:				
chi2(1)	100.07		10.88	
Prob > chi2	0.000		0.001	

(1): In Rural areas the reference cathegory is the andean region, while in Urban areas the reference cathegory is Lima

Source: Own Estimations based on ENAHO (2003)

Table 17

Determinants of Cartetaker Engaging in Waged Labor
(Probit - with instruments for Income)

	Rural		Urban	
Total Income	-0.614	***	-0.099	***
Children in 0-5 age range	-0.129	***	-0.098	***
Children in 6-13 age range	0.017	***	0.015	***
Girls in 14-17 age range	0.027	***	0.066	***
Boys in 14-17 age range	0.166	***	0.109	***
Education	0.085	***	0.087	***
Old hh Members (66-99)	-0.137	***	-0.312	***
Gender of Head of Household	-0.530	***	-0.208	***
Coastal Region (except Lima)	0.373	***	-0.181	***
Andean Region			-0.224	***
Jungle Region	0.005		-0.153	***
Constant	-0.971	***	-1.148	***
Overall Fit				
Wald chi2(10)	58929.93		181730	
Prob > chi2	0.000		0.000	
Wald test of exogeneity:				
chi2(1)	5442.22		2010.61	
Prob > chi2	0.000		0.000	

(1): In Rural areas the reference cathegory is the andean region, while in Urban areas the reference cathegory is Lima

Source: Own Estimations based on ENAHO (2003)

Results in table 16 and 17 show that, as expected, increases in income may increase the probability of children going to school[11] and may reduce the probability of the female head of the household working in waged labor activities, once we control for other key factors like, household size and composition, gender differences of children and regional differences. If we use these predictions to assess changes in these probabilities due to changes induced by the FTA (formerly simulated and discussed), we find that a FTA may reduce the probability of attending school by 0.3% in Rural areas, whereas it may increase the probability of attending school by in Urban areas by 0.2%. Similarly we found that the probability that the female head of the household[12] works in a wage employment rises in Rural areas due to the FTA, whereas it falls by 0.4% in average among Urban households

As showed in Figures 10 and 11, once we explore the distributional impacts of the FTA, we do not find important differences for the first seven deciles. As expected, the positive welfare impact on Urban households yields a positive impact on the probability of children attendance to school, whereas the negative welfare impact on Rural households yields a negative impact on the probability of children attendance. The distributional differences are important for the last three deciles of the distribution. Is there a plausible hypothesis of why these richer households show a sharper impact? If we look at both graphs together for the case of Rural households, we perceive an acute increase on the probability that the caretaker is employed at a wage job, together with a decrease in the probability that children attend school. Putting this piece of information together with former results from Table 8, it might suggest that returns to wage employment increase after the FTA, so the female head's time-at-home would increase its opportunity cost. Correspondingly, this might imply that children's opportunity cost of attending school would increase and so some of them would stay at home performing activities formerly done by the. This is of course a suggested hypothesis that needs further analysis.

Figure 10

[11] Children with ages ranging between 6 and 17 years old.
[12] The female head of a household is either a female head of household or a female spouse of the head of household.

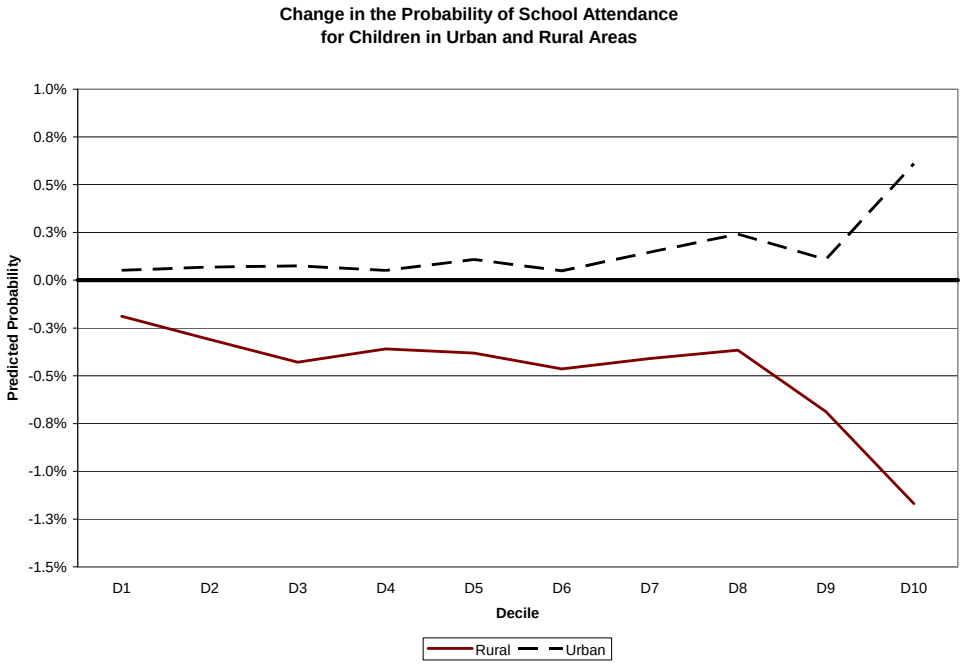
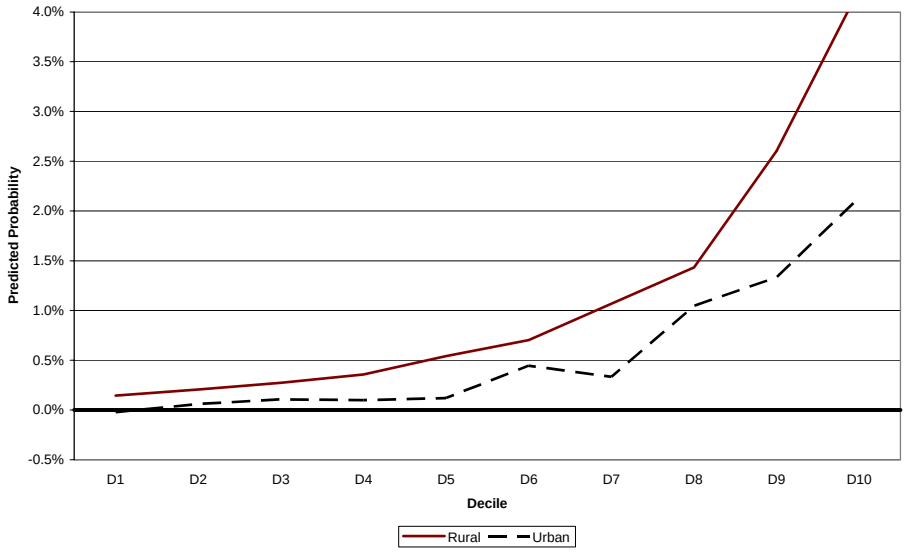


Figure 11
Change in the Probability that the Caretaker is employed at a Wage Job in Urban and Rural Areas



5. Policy Dilemmas

We have shown that although there is evidence that in the long run there may be important positive economic impacts of a FTA with the United States short run impacts may be quite heterogeneous. In particular there is evidence that Rural areas may be negatively affected in the short run. These negative impacts maybe partially offset if there is a gradual reduction in tariffs that "buys time" in order to put in place

complementary policies that may allow productivity increases in Rural areas so they can be better prepared to face external competition.

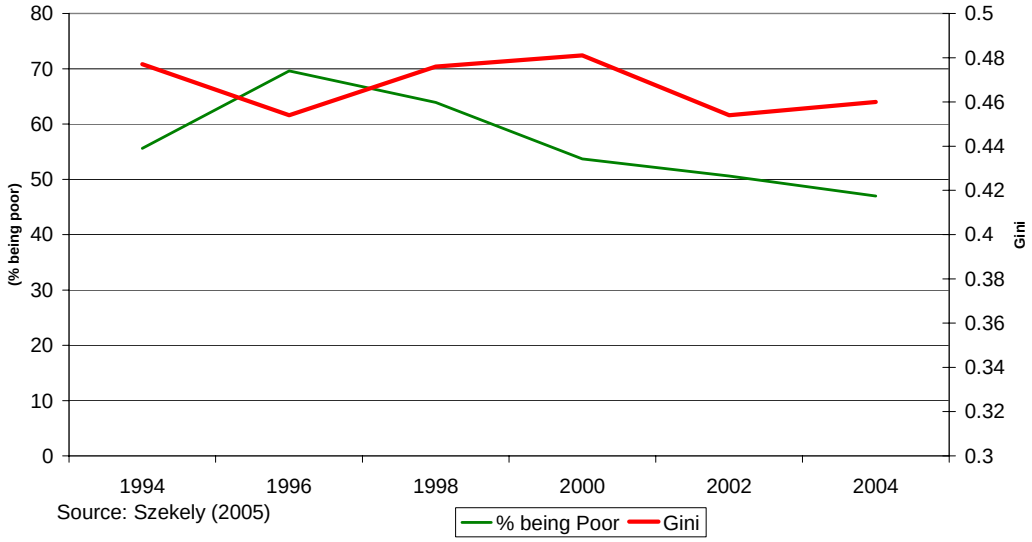
We have also shown that there might be some child related welfare impacts that the government is not foreseen and that need to be addressed to assure that those vulnerable sectors will not be affected by the FTA. Before addressing what might these policies be, we briefly present some evidence on the child welfare impacts that Mexico faced – a country that follow a similar trade liberalization pattern. We believe that looking at these impacts and the effects of some of the policies implemented in that country will enlighten our policy debate.

5.1. Recent Evidence and Policy Dilemmas From Mexico

In 1993 Mexico and the United States signed a FTA, which became effective since 1994. After more than a decade, the Mexican economy has shown an important growth record (with the exception of a short crisis just after the signature of the trade agreement)[13].

Recent evidence from Szekely (2005) shows that, after an initial increase just after 1994, poverty has been declining in Mexico (see Figure 12). In the case of income distribution the pattern is less clear with an increase in inequality during the first years and a reduction between 2000 and 2002. Initial assessments of what the impacts of this FTA were show that, after controlling for changes in returns to education and demographic variables, the deteriorating conditions in Rural communities in the Southern states of the country account for around one fourth of the increase in inequality experienced in the country after the trade reform (Bouillon et al. (2003)).

Figure 12
Poverty and Inequality in México
(1994-2004)



Source: Szekely (2005)

[13] There was a sharp drop in the real value of the Peso due to the "Tequila Crisis".

Starting in 2000 waged labor participation of boys (especially between 12 and 14) and girls (especially between 15 and 17) dropped.

Figure 13
Child Labor in México
(gender differences)

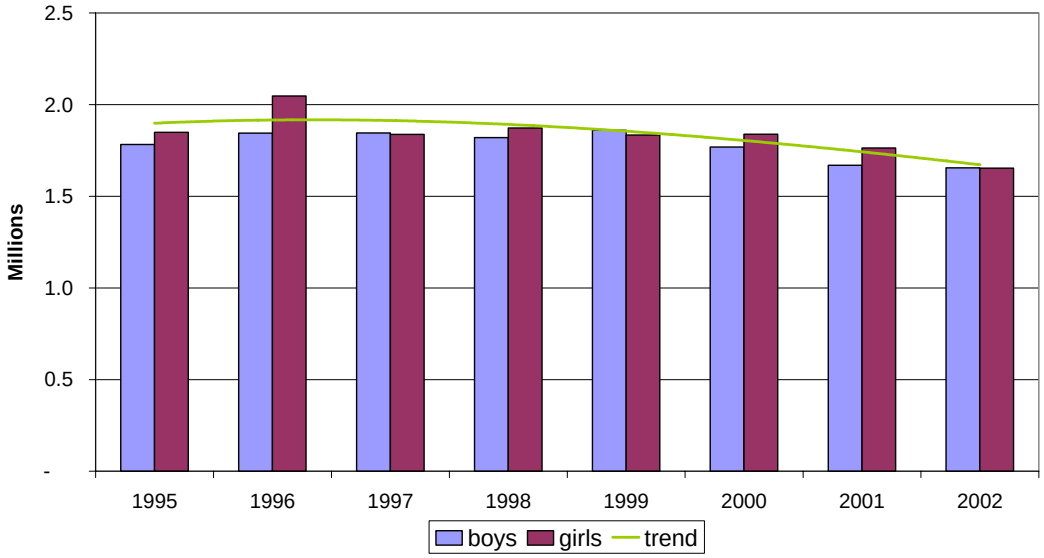
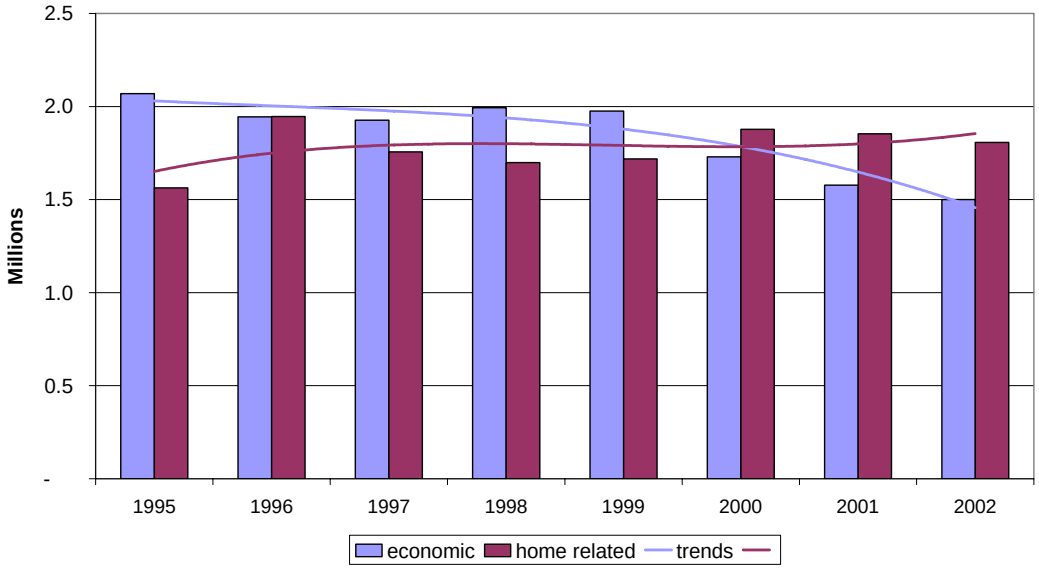


Figure 14
Child Labor in Mexico
(by type of activity)



Several export crops demand female labor intensively (vegetables and strawberry – through all the production and processing phases- and avocado and mangoes – in packing)

Progresa /Oportunidades may have been an important factor counteracting the higher child labor demand in Mexico City and the Northern states (Chihuahua, Sonora and

Nuevo León) and the higher child labor supply (associated with higher vulnerabilities) in Southern States (Guerrero, Oaxaca, Chiapas).

Conditional cash transfers increase with age of the child in order to compensate the household for the increasing opportunity cost of schooling as the children grow up. In addition, at ages where children are supposed to attend secondary school, girls receive larger cash payments than boys for attending school. As Edmonds and Pavcnik (2005a) highlight, these programs not only raise family income but lower the costs of schooling, compounding the effect of maintaining children at school.

Schultz (2004) finds, as expected that Progresa/Oportunidades not only increased significantly schooling attendance but also increase schooling attainment from 6.8 to 7.4 years. More over, it significantly reduce child market work.

Edmonds and Pavcnik (2005a) : "The advantage of this type of positive program that indirectly discourages child labor through increasing schooling is that it also addresses the agency problems, credit market imperfections, and difficulty in monitoring most forms of child labor that may interfere with the efficacy of other child labor related interventions such as child labor bans, compulsory schooling laws, etc."

5.2. Policy Dilemmas for Peru

Little work at the government level that evaluates the social impacto of this FTA.

- Some work on costs of medicines
- Little or nothing in child related impacts (beyond application of already approved ILO norms)
- The idea behind this paper is alert that there may be important not expected indirect welfare impacts that need to be taken into consideration .. They may call for complementary policies that help vulnerable groups (those with no voice)

for example: in households where a female is the only earning income, vulnerability coming from changes in income (precarious or unstable income) generates the need to increase the supply of child labor.

Is foreseeable that there will be winners and losers from a FTA

Trade openness increase the "flexibility"/instability of labor contracts

In sectors that will grow is likely that new labor opportunities for women will appear

- Contributes to improve power relations within the household … but may generate an increase in child labor (mainly girls) for domestic chores. Differentiated incentives by gender in public programs like "Juntos" may contribute to overcome this problem
- Public child care programs like Wawa Wasi can also contribute to a better labor insertion of female improving girls schooling opportunities

Targeting and Compensations

- If there is an activity that is expected to demand Child labor (and there is no substitution between child and adult labor), development of labor saving

technologies may help (e.g. asparagus harvest) … The enforcement labor regulations will also be important

In sector that are going to be affected negatively

- Households associated with this households may still maintain their children at school if proper incentives are placed
- Compensations may reduce this impact … but they need to be carefully designed to avoid that producers/household continuing engaging in activities that have lost competitiveness: need for detached compensation scheme

"When children work to help their families meet subsistence needs, the loss of a child's income, however small, might hurt the working child as well as her siblings."

Policies to improve the establishment of safety nets and welfare programs (particularly those targeted at children) and the enforcement of reasonable labor standards - especially for small and medium-sized firms - are also necessary to reinforce a trend towards a more inclusive economic growth pattern.

"The main advantage of the conditional cash transfers programs is that they directly tackle the issue of agency and imperfect credit markets by giving parents direct incentives (i.e. education subsidies) to send children to school."

While the costs of schooling or conditional transfers may be a significant factor affecting children school and work decisions, the economic return to schooling may be equally important.

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Annex 1
The model

Porto (2003) proposes a methodology to empirically estimate the first order distributional effects of trade policy in a general equilibrium framework, modeling both the connection between trade policy and domestic prices, and the connection between domestic prices and household welfare (consumption and income -wise).

Under the assumption of a small open economy, changes in prices of tradable goods are set exogenously by international markets, so the domestic price of tradable good *i* is:

$$p_i = p_i^*(1+ \tau_i) \quad (1)$$

where τ_i is the tariff and p_i^* is the international price of the good *i*. Assuming constant returns to scale and competitive markets, the price p_i is equal to the unit production cost:

$$p_i = c_i \text{ (vector of factor prices)} \quad (2)$$

In this model the only mobile factor is labor, so "wage" is the only factor price that adjusts to changes in tradable goods prices. In the case of Rural areas, because of the typically diversified portfolio of economic activities among Rural households, we classified the labor factor as (i) agricultural wage labor, (ii) non-agricultural wage labor, (iii) agricultural self employment (or non-wage labor) and (iv) non-agricultural self employment (or non-wage labor), and the unit of analysis is the household. In the case of the Urban sector, we classified labor factor as (i) wage labor and (ii) self employment (or non-wage labor). Thus, "wage" adjustments are introduced in the analysis as adjustments in hourly household income derived from each type of labor (i.e., adjustments in "hourly income" for self-employment and in "hourly wage" for wage jobs). Regarding the tradable goods, this study included the following groups: (i) food and beverages, (ii) clothing, (iii) house equipment and maintenance, and (iv) other goods and services.

It is worth noting that as long as there are as many factors as tradable goods, the system of equations that characterizes the price-wage functional relationships fully determines the factor prices as a function of the price of tradable goods. Nevertheless, since the present study considers four sectors of tradable goods and four labor types, the predictions on the correlation between prices of goods and factor prices is not as general as the well known Stolper-Samuelson Theorem predicts for two-good-two-factor models[14].

With respect to non-tradable goods in the domestic economy, this study identified four groups: (i) health, (ii) transportation and communication, (iii) education and leisure, and (iv) housing and utilities. The equilibrium prices of non-tradable goods are derived from the general equilibrium condition of demand – supply equality in domestic markets, given by the following condition:

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[14]. In the two-good-two-factor model, according to the Stolper Samuelson Theorem: "an increase in the relative price of a good will increase the real return to the factor used intensively in that good, and reduce the real return to the other factor." (Feenstra 2004: 15)

$$\Sigma_j \left[\partial\, e^j(P_T,P_{NT},u^j) / \partial p_k \right] = \partial\, r(P_T,P_{NT},v) \;/ \partial p_k \qquad (3)$$

Where the subscript *k* denotes a non-tradable good, P_T and P_{NT} refer to the price vector of tradable and non-tradable goods, respectively; and *v* refers to the vector of factor endowment of the economy. In the lhs, e^j is the household *j´*s expenditure function that describes the minimum amount of money required to get a utility level of u^j given price-vectors P_T and P_{NT}. In the rhs, *r(.)* stands for the GDP function of the economy. Thus, this equation equals the demand for a non tradable good *k* (derived following Shepard´s Lemma in the lhs), and the supply of k (derived following the Hotelling Lemma in the rhs of the equation).

Summarizing, given that factor endowments of the economy and prices of tradable goods are exogenous to the model, and given that the "zero-profit condition" holds in the non-tradable sectors as much as it holds in the tradable sectors, and that prices of tradable goods fully determine factor prices (as discussed in (2)), equation 3 implies that prices of non-tradable goods are endogenously determined by the function:

$$p_k = p_k \text{ (vector of prices of tradable goods)} \qquad (4)$$

This is an important corollary of Porto´s model because it implies that neither factor endowments nor demand conditions affect equilibrium prices of non-tradable goods. This in turn means that we can estimate the welfare impacts of trade liberalization in two separated steps (once we define the new price vector of tradable goods). So, first we estimate the general equilibrium response of non-tradable goods prices; and second we estimate the general equilibrium response of factor prices (hourly labor income). As follows we discuss the estimation of welfare changes based on these two steps, the first step allows estimate the consumption effects of the FTA induced by changes in both tradables' prices and non-tradables' prices, whereas the second one accounts for the labor income effects.

In order to estimate household welfare changes due to trade liberalization, accounting for both price and income effects, let's first look at the household budget constraint evaluated at optimal bundles of consumption goods and labor allocation (dual):

$$e^j (p_T,p_{NT},u^j) \;=\; x^j{}_0 + \Sigma_s\, y^j{}_s \;+ k^j \;+\; \psi^j \qquad (5)$$

where y^j_s is household *j´*s labor income from source s (s=wage agricultural, self employment agricultural and so on), k^j accounts for capital income, x^j_0 for exogenous income, and ψ^j represents government transfers. In order to calculate the compensating variation required to outweigh the welfare effects of the FTA on household *j*, taking into account the general equilibrium responses operating in the aggregate, Porto totally differentiates equation (5) and obtains the following measure of compensating variation [15]:

$$CV=-dx_0{}^j /e^j = -(\; s_i{}^j \;+ \Sigma_\kappa \left[\; s_k{}^j \left(\; \partial \ln p_k \,/\, \partial \ln p_i \;\right)\right] - \Sigma_{\,s} \left[\; \theta_s \;\varepsilon_{ys\; pi}\;\right]\;)\; (\partial \ln p_i \,/\partial \ln \tau_i)\; \partial \ln \tau_i \qquad (5)$$

where s^j_i and s^j_k represents the share of household expenditure spent in tradable goods and non-tradable goods respectively; the elasticity $\partial lnp_k / \partial lnp_i$ measures the proportional

[15]. In (6), Porto assumes there is no public transfer or capital income change after the FTA.

change in non-tradable price *k* induced by a change in tradable price *i*, whereas the elasticity ε_{yspi} accounts for the proportional change in hourly labor income from source *s* induced by a change in tradable price *i*; and $(\partial lnp_i / \partial ln\,\tau_i)\,\partial ln\,\tau_i$ measures the price change of tradable goods induced by changes in tariffs. Thus, three sources of welfare change are modeled here: (i) the direct consumption effects, induced by changes in prices of tradable goods, (ii) the indirect consumption effects, induced by changes in prices of non-tradable goods, and (iii) the labor income effects weighted by the relative importance of each labor income source in the total labor income of the household. As stated before, a positive estimate of CV implies welfare gains due to FTA whereas a negative estimate implies welfare loss.

Two restrictions derived from the theoretical framework were imposed in the econometric specifications: (i) homogeneity of degree one in prices for the labor demands (derived from the assumption of constant returns to scale in the production of tradable goods) when estimating wage elasticities, and (ii) homogeneity of degree one in prices and symmetry when estimating the elasticities of non-tradable goods prices with respect to changes in tradable goods prices.

The critical issues in the estimation procedure are summarized in five steps:

1. Calculate the price change of tradable goods induced by changes in tariffs - $(\partial lnp_i/\partial ln\,\tau_i)\partial ln\,\tau_i$. This estimation was approximated by:

$$dlnp_i = \theta_{US}\, dln(1+\tau_{iUS}) + \theta_{RW}\, dln\,(1+\tau_{iRW}) \qquad (6)$$

where $\theta_{US}\,(\tau_{iUS})$ *and* $\theta_{RW}\,(\tau_{iRW})$ represent the import shares (tariff) of tradable *i* from the USA and from the Rest of the World, respectively. Since the FTA with the USA does not involve changes in tariffs with the rest of the world, the second component of the rhs of (6) is zero. It is worth noting that τ_{iUS} was calculated as the weighted average of import tariffs of all the subgroups belonging to group *i*, weighted by the import share of each subgroup in *i*.

2. Estimate the elasticity of price of non-tradable goods with respect to changes in price of tradable goods - $\partial lnp_k / \partial lnp_i$. As equation (4) indicates, this elasticity will depend on price of tradable goods only. The data used here consists in monthly price index series from January 1994 to December 2004 gathered by the National Institute of Statistics INEI in Lima Metropolitana[16]. These price index series were available for the four groups of tradable goods: (i) food and beverages, (ii) clothing, (iii) house equipment and maintenance, and (iv) other goods and services; and the four groups of non-tradable goods: (i) health, (ii) transportation and communication, (iii) education and leisure, and (iv) housing and utilities. In order to get more stable non-tradables price elasticities, we generated an index for tradable goods p_T (based on the referred 4 subgroups), and the econometric specification was:

$$lnp_{kt} = a_0 + a_1\, lnp_{Tt} + a_2\, lnp_{Tt-1} + c_t'\gamma_c + \mu_t \qquad (7)$$

Equation (7) was estimated in first differences and restrictions of homogeneity of degree one were imposed.

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[16]. Regional price index series long enough and disaggregated in tradables and non-tradables groups were not available.

3. Estimate the labor income elasticity with respect to changes in price of tradable goods - $\varepsilon_{ys\,pi}$. In order to estimate the labor income elasticities, the following specification was used:

$$\ln HLY_s = \ln p_i \alpha_s + \delta \beta + \varepsilon \qquad (8)$$

where lnp_i is the price-vector of tradable goods in logarithms, δ is the (nxk) matrix of household characteristics that includes the usual demographic controls such as age and gender of the head of household, maximum education level achieved by a household member, household size, non-labor income, and also, it includes indicators of local access to public goods like neighbors access to water, sewerage, electricity, access to health and education services, and market access indicators. The lhs variable is hourly labor income obtained from source *s* by household *j*. As mentioned before, the restriction of homogeneity of degree one was imposed in each equation. This estimation was performed using three national household surveys (INEI; 2001, 2002, 2003-4).

4. Calculate the compensating variation according to equation (5) for Urban and Rural households sampled in the survey performed by INEI between May 2003 and April 2004.

5. Obtain confidence intervals for the compensating variation estimates. Since the procedure required the use of several data bases and intermediate estimates, it was not possible to obtain standard errors in an analytical way. The confidence intervals showed next were obtained using bootstrap procedures over the third and fourth steps.

Annex 2
The Peruvian Household Survey
Performed by INEI

The surveys used in this study are gathered by the National Institute of Statistics and Informatics (INEI) and provide information on Standards of Living and Poverty of Peruvian households across the country. These surveys collect information on consumption, income, health, education, access to public services, labor force participation, wages and salaries and a variety of other social and economic variables.

Three surveys were used to estimate labor income elasticity with respect to changes in price of tradable goods: (i) ENAHO 2001, gathered during the fourth trimester of 2001, (ii) ENAHO 2002, gathered during the fourth trimester of 2002, and (iii) ENAHO 2003-4, gathered between May 2003 and April 2004. In order to calculate household compensating variations, we used the last survey only.

These surveys are representative at regional and national Rural and Urban levels of aggregation.