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# Who supports Free Trade in Latin America?\*

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**ABSTRACT:** This paper examines individual trade policy preferences across the 17 countries in Latin America. The focus is on whether skilled or unskilled workers are more likely to support liberalized trade and on whether country characteristics, such as factor endowments, alter the preferences of skilled and unskilled workers. Based on the standard Heckscher-Ohlin model and the Stolper-Samuelson theorem, wage inequality in developing countries will decrease under free trade and unskilled workers will benefit. We find that on average skilled workers are more likely than unskilled workers to support free trade in Latin American countries. Separate country regressions reveal that this pattern is only statistically significant in 8 out of 17 Latin American countries. However, there are no countries in our sample in which unskilled workers are statistically more likely to support free trade than skilled workers. Not even in the lowest skill endowed country among our 17 Latin American countries. We also find that people from Latin American countries with higher GDP, faster growth, more cropland, and a longer period of time since reform were more likely on average to support free trade.

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## 1. Introduction

Examining the impact of international trade liberalization on the wage and employment of different workers (and hence their support for trade) is a large and growing literature. One empirical finding that has emerged from this literature is that the wage gap between skilled and unskilled workers has been increasing recently in both developed and developing countries. According to Das (2002), wage inequality has increased in Mexico and Chile but decreased in the Philippines, Singapore and Taiwan. Robbins (1996) found that the wage gap grew in Chile, Columbia, Costa Rica and Argentina, but it fell in Malaysia and the Philippines. Zhu and Trefler (2001) examine evidence from Gini coefficients of 29 developing and newly industrialized countries and found wage gaps increased in 16 countries, decreased in 12 countries, and did not change in one country. Wage inequality has increased in some, but not all developing countries. The two most often cited causes of this labor market phenomenon are trade liberalization and skill-biased technological change.

Based on the standard Heckscher-Ohlin model and the Stolper-Samuelson theorem, wage inequality in developing countries will decrease under free trade and unskilled workers will benefit. Moreover, the Stolper-Samuelson theorem within the Heckscher-Ohlin model suggests that trade could not be the driving force behind increased wage inequality in both developed and developing countries because according to this theorem, wage inequality would increase in the relatively skill-abundant (developed) countries and decline in the relatively skill-scarce (developing) countries. Skilled-biased technological change may be the culprit but requires an explanation for why wage inequality is increasing in some, but not all, developing countries.

Here we depart from the traditional literature by using opinion surveys on trade in Latin America, taken at a time after many of these developing countries embarked on large policy changes towards liberalization. We examine individual level characteristics with a focus on the skill level of the respondent. We also examine country level characteristics to explore who supports and who opposes free trade in Latin America. We examine what country-level characteristics affected the overall probability of support for trade and whether country characteristics modified the difference in preference between skilled and unskilled workers. That is, we examine whether skilled workers from relatively skill-endowed countries support trade and whether unskilled workers from relatively unskill-endowed countries support trade.

This line of research contributes to recent research on trade and wages that looks at trade policy preferences from survey data. Recent research by O'Rourke and Sinnott (2001), Beaulieu et al (2004), Baker (2005), and Mayda and Rodrik (2005) find that skilled workers are more likely to support free trade than unskilled workers across 24 high-income and transitional economies. However, the notable exception from this result is the Philippines, where unskilled workers are more supportive of trade liberalization than skilled workers. The Philippines is the poorest country in the sample of countries. Mayda and Rodrik (2005) interpret these results as being consistent with the Stolper-Samuelson theorem of the HOS model. Beaulieu et al (2004) interpret these results as inconsistent with the Stolper-Samuelson theorem.

The main hurdle in resolving this debate is that the countries examined in the two papers are limited in the coverage of developing countries. In this paper we provide evidence exclusively from developing countries and extend the empirical analysis to

examine individual level trade preferences during 1996 from 17 countries in the South America (Argentina, Bolivia, Brazil, Colombia, Chile, Ecuador, Paraguay, Peru, Uruguay, and Venezuela), Central America (Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama), and North America (Mexico). In 1996 the GDP per capita among the 17 Latin American countries ranged from US\$2150 in Bolivia to US\$11,010 of Argentina. The interesting question is: what are the preferences of trade policy of individuals who live in these Latin American countries?

We find that on average across the 17 countries in the sample, skilled workers in Latin America are more likely than unskilled workers to support trade. However, when we examine preferences in each country separately we find that although skilled were more likely to support trade in 15 out of the 17 countries – the relationship was only statistically significant in 8 of the countries. There are no countries in our sample in which unskilled workers are statistically more likely to support free trade than skilled workers. Not even in the lowest skill endowed country among our 17 Latin American countries. We also find that people from Latin American countries with higher GDP, faster growth, more cropland, and a longer period of time since reform were more likely on average to support free trade.

The remainder of the paper is organized as follows. Section two summarizes international trade theories, which includes the standard view of inter-industry trade and new trade theory view of intra-industry trade and the human capital. The section also summarizes the empirical literature on trade preferences. Section 3 describes the data and presents the empirical results on who supports trade in Latin America. The last section concludes.

## **2. Inter-industry Trade and The Stolper-Samuelson theorem**

The Heckscher-Ohlin theorem demonstrates the possibility that the pattern of comparative advantage and international trade is determined in part by national differences in relative factor endowments. It is evident that trade must influence the price of productive factors. The Stolper-Samuelson theorem, which relates changes in commodity prices to changes in real factor price, provides a fundamental prediction about the effects of trade on the distribution of the real income between factors. It follows that the relatively abundant factor gains real income in each country and the scarce factor loses real income under free trade.

An alternative human capital model developed by Gabel (1988) states that a high degree of formal skills makes an individual more adaptable to a changing labor market. As trade liberalization shifts employers' demands among high-skilled and low-skilled workers, workers with a relatively large pool of skills will be more likely to maintain their value in the market. Therefore, high-skilled individuals should be more likely to support free trade than low-skilled individuals in all countries, and this positive relationship between skill-level and support free trade sentiments should be invariant to a country's factor endowment or comparative advantage.

The Heckscher-Ohlin and Stolper-Samuelson theorems explain why some individuals and countries are more protectionist than others. Skill is found to be a critical factor (Baker 2003). According to Beaulieu et al (2004a), the empirical evidence is that for most countries, regardless of the country endowments, skilled workers are more likely to oppose protectionism than unskilled workers when the country is actively engaged in intra-industry trade and trade policy is liberalized in this sector. Beaulieu et al (2004a)

find a direct relationship between the degree of intra-industry trade and the strength of resistance to protectionism by skilled workers within a country. They conclude that skilled workers in high IIT countries are more likely to support free trade than unskilled worker.

Robbins (1996) examined data from nine developing countries to study the impact of trade liberalization upon wages. He examined labour markets in Argentina, Chile, Costa Rica, Colombia, Malaysia, Mexico, the Philippines, Chinese Taipei, and Uruguay and found that trade liberalization was accompanied by rising relative wages and labor demand. His study focused on whether the evidence of these country studies supports the traditional HOS prediction that trade liberalization will lower wage inequality, and their broader implications for theory. He found that in all these countries the relative labour supply grew very rapidly, and that for all except Chinese Taipei, supply shifts had large negative effects upon relative wages. Based on this finding, he argue that to identify relative demand shifts for these countries the impact of relative supply on relative wages needs to be netted out to identify relative demand shifts, which may be subsequently related to trade liberalization and the predicted Stolper-Samuelson effects. With his estimation of relative demand shifts, he found that trade liberalization led not to falling, but *rising* relative wages. These findings go contrary to the “naïve” Stolper-Samuelson model. He also found that rising levels of imported capital stock to GDP strongly track rising relative demand, and argued that this is consistent with what he refers to as the Skill-Enhancing-Trade hypothesis. This hypothesis suggests an additional channel by which trade liberalization could induce rising relative demand-by rising the imported capital/GDP ratio, tending to raise the overall capital/GDP ratio and serving to accelerate

the transfer of, what in recent years appears to be skill-biased technology. He argued that with Skill-Enhancing Trade hypothesis, the attendant capital-skill complementarities and bundled technology would then raise the relative demand for skilled workers. Therefore trade liberalization may sometimes widen wage inequality in developing countries.

Baker (2004) analyzed the 1995-1997 World Values Survey (WVS), which measured trade attitudes in 43 countries ranging in per capita income (at PPP) from US\$832 in Nigeria to US\$27,395 in the U.S. The 43 countries include 16 that were below the worldwide median per capita income (US\$4,000), which is based on the 166 countries for which data are available (World Bank 2000). That is, the survey data is from 43 developed and developing countries. Based on the Heckscher-Ohlin theory of international trade, Baker asks why some individuals and countries are more protectionist than others. Baker concludes that skill is found to be a critical factor, with individual skill being more positively correlated with free trade support in high skill than in low-skill countries.

Beaulieu et al (2004a,b) used both inter- and intra-industry North-South trade models to examine the effects of trade liberalization on the wage inequality. They present a modified Heckscher-Ohlin- Samuelson trade model with Ricardian intra-industry trade in the skill-intensive high-tech sector driven by international differences in technology lags. They found that with different technological progress and adoption lags, with intra-industry trade within high-tech sector, a reduction in the trade barriers can simultaneously raise the wage gap in both developed and developing countries. They argue that trade liberalization makes different wage gaps effect in North and South countries. For example, when the South lowers barriers to a greater degree than the

North, a reduction in high-tech trade barriers may result in a high wage gap in the North but a smaller wage gap in the South. This result is consistent with Zhu and Trefler (2001), which states there is a positive correlation between increasing inequality and growth in exports.

Beaulieu et al (2004a) examine individual trade policy preferences across 24 countries with different human capital endowment. They used data that from the international Social Survey Programme (ISSP) to examine individual trade policy preference across 24 countries in which intra-industry trade is heavily engaged (higher IIT index). They found that skilled workers in 22 of the 24 countries surveyed are more likely to support free trade than unskilled workers, regardless of whether or not the country is skilled-worker abundant. Less support free trade only in the Philippines and Bulgaria.

### **3. Trade Policy Reform**

The trade policy landscape in Latin America was dramatically transformed over the decade from the mid-1980s to the mid-1990s. Dramatic trade liberalizations occurred, overhauling the long-standing system of protectionist policies under import substitution. Liberal trade policies were the cornerstone of much broader reform packages that aimed to give a dominant role to the operation of private markets in economic activities, in an effort to improve economic efficiency and reduce the distortionary effects of state intervention. The now (in)famous Washington Consensus set of policies was in fact initially developed as a guideline for the new Latin American reform strategy. Besides trade liberalization, this included financial reform, tax reform, privatization and labor market reform.

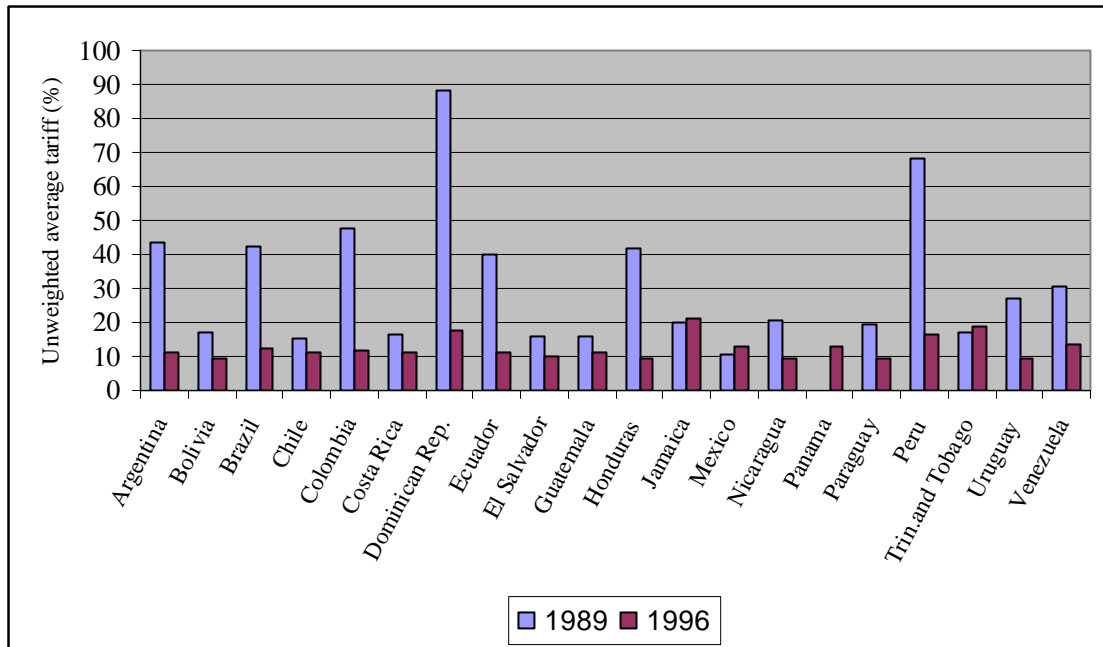
While our survey data includes individuals from countries with diverse political and economic conditions, there were many common themes in the reform process. First, with respect to the timing of reform many countries reformed in the aftermath of the accumulated crises in the early 1980s of the oil price hike (1979-81), the debt shock after the Mexican default, the rise in US interest rates and the ensuing world recession. Caveats to this are the early liberalizations in Chile and Uruguay in the early 1970s, as well as the Colombia liberalization under President Gavaria that was undertaken without crisis. In fact, the Latin American story is one of increased protection as an initial reaction to crisis followed by liberalization under new leadership that was no longer politically beholden to older protectionist interests (see Yatawara, 2001, Rajapatirana et al 1997).

The trade reforms in the early 1990s involved very large reductions in applied tariff rates with un-weighted average tariffs in our sample of countries dropping from over 40 per cent to 10 per cent by 1996, with all tariffs under 15 per cent. Figure 1 compares the average tariffs of 20 Latin American countries in 1989 and 1996. In addition to the reduction of average tariffs, the trade reforms were typically combined with less dispersion in tariff rates and reduced tariff escalation, as well as the reduced use of non-tariff barriers such as quotas. The greatest progress took place between 1989 and 1994, although modest advances continued thereafter. Setbacks include the growth in the use of anti-dumping initiations by countries such as Mexico in the 1990s.

In addition to unilateral efforts, trade policies have had a multilateral and regional component. Since the mid-1980s, 15 Latin American countries joined the General Agreement on Tariffs and Trade (GATT) and/or its successor the World Trade

Organization (WTO). This multilateral approach has expanded market access to formerly closed economies, bound their tariffs and facilitated a more transparent trade regime. These initiatives were complemented by a rapid recourse to regional integration agreements in the early 1990s. The movement to preferential liberalization was so strong and rampant it created a complex system of overlapping preferences, dubbed a “spaghetti” bowl of preferences by the always eloquent Jagdish Bhagwati. For an overview of the trade reforms at the time see Hester and Beaulieu (2001). Lora (2001) points out that from all the reform initiatives that were embarked upon, the trade reform process is the one that showed the most significant progress, whereas labor reform showed the least. Progress on tax reform, privatization and labor reform has proven more difficult. Thus given that the policy change was large and effective, it is interesting to investigate the public’s preferences over these trade policies.

**Figure 1: Extent of Tariff Liberalization , 1989-96**



Source: WTO and Lora (2001)

#### 4. Who supports free trade?

The following analysis uses the 1996 Latinobarometro to examine trade policy preferences. There are 18,709 respondents and the data were collected by face-to-face interviews. When we exclude respondents from Spain there are 14,703 respondents with observations on both trade preferences and education level. The survey question is a general question about the impact of trade on the national economy rather than a direct question on the level of support for a specific trade policy reform. The question from the survey is: “Generally speaking, do you think that trade with other countries, both the buying and selling of products, helps [nation's] economy or harms [nation's] economy?” An advantage of the generic question (versus a question about a specific piece of trade legislation) is that it avoids the potential endogeneity of interactions between policy preferences and political institutions.<sup>1</sup> Although the question refers to the benefit of trade in general and does not ask respondents of their views on trade policy per se, we broadly interpret positive responses to the trade question as a general endorsement of trade liberalization versus protectionism.

We are primarily interested in whether skilled or unskilled workers are more supportive of trade. However we do not observe skill directly so we use the highest level of formal education achieved to measure individual skill. Beaulieu (2002) found that occupation based measures of skill are highly correlated with education based measures of skill (as used in the current paper) and, not surprisingly have a similar affect on trade policy preferences in Canada. Mayda and Rodrik (2005) found similar effects on trade preferences whether education or occupation data were used to measure skill across a

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<sup>1</sup> See Beaulieu (2002) for a discussion about the wording of different survey questions.

broad range of countries. In the survey data we use here, education level is defined using years of education completed. In the results below we classify respondents into three education categories: unskilled workers are those with primary education level measured as those with less than 6 years of education; medium skilled are those with secondary education (between 7 and 12 years of education); and skilled workers are those with tertiary education those with 13 years of education or more.

Table 1 presents a contingency table with preferences on trade policy by education level. The last column of the table reveals that 11,581 (79 percent) of the respondents believe that trade will help their nation's economy, while 3,122 (21 percent) are of the view that trade will harm their nation's economy. It is perhaps surprising that views on international trade from Latin America are so positive. However Baker (2004) examines preferences on trade policy in Latin America from several different surveys and finds the same result.<sup>2</sup> This evidence supports the contention by Bhagwati (2004) that people from the south are more supportive of free trade than northern opponents of globalization recognize.

Although the overall view of trade is important and interesting, in this paper we are more interested in the difference in preferences between the skilled and unskilled respondents. Looking across the columns of Table 1 we see that support for free trade increases with educational level. Column 1 reveals that 75 percent of those with primary education support international trade while the third column shows that 82 percent of those with tertiary education support trade. We can compute a Pearson Chi-squared statistic to determine whether trade preferences and education are statistically

independent. The Pearson Chi square statistic of 144.67, reported in the table, rejects the null hypothesis that trade-policy preferences and educational attainment are statistically independent. This is prima facie evidence that preferences on trade policy in Latin America are different for skilled and unskilled workers.

Table 1: Preferences on free trade and education level

Education level	Primary	Secondary	Tertiary	Total
<b>Oppose free trade</b>	374	1436	1312	3122
Row (percent)	11.98%	46.00%	42.02%	100%
Column (percent)	24.52%	23.98%	18.25%	<b>21.23%</b>
<b>Support free trade</b>	1151	4552	5878	11581
Row (percent)	9.94%	39.31%	50.75%	100%
Column (percent)	<b>75.48%</b>	<b>76.02%</b>	<b>81.75%</b>	<b>78.77%</b>
<b>Total</b>	1525	5988	7190	<b>14703</b>
Row (percent)	10.37%	40.73%	48.90%	100.00%
Pearson chi2 test for independence: 144.67				
Based on the survey question "Generally speaking, do you think that trade with other countries, both the buying and selling of products, helps [nation's] economy or harms [nation's] economy?"				
Source: 1996 Latinobarometro for 17 Latin American countries.				

Next we will look at the preference patterns of individuals within countries and examine the statistical significance of the difference between skilled and unskilled workers by country and after controlling for other variables that may help determine trade preferences. We will then examine whether the patterns are different across countries and determine whether country characteristics are important determinants of individual trade preferences.

Table 2 presents the overall support for trade among the 17 countries and compares the distribution of support for trade to country characteristics. The countries in the table are sorted from low to high average support for trade in that country. The first column

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<sup>2</sup> In fact, as the title of his paper suggests, Baker (2004) is trying to understand why trade reform is so popular in Latin America.

reports that even in the low support countries – the support for trade is strong with 70 percent of respondents supporting trade from the five countries with lower support. Support was 77 percent for the next group of countries and 87 percent for the group with the strongest support.

**Table 2: Support trade and country characteristics**

Country	Support for trade	GDP per capita	Country education	IIT	Growth	Share of Cropland	Ave. 1995 tariff	Years since reform
<b>Countries with lower support for trade</b>								
Paraguay	63.3%	5260	0.84	0.05	1.8	0.2	9.3	5
Honduras	70.3%	2800	0.71	0.14	3.1	3.2	9.8	
Mexico	70.7%	7100	0.86	0.61	3.0	1.3	13.1	11
Venezuela	73.0%	5670	0.84	0.17	1.1	0.9	13.4	7
Guatemala	74.5%	4000	0.65	0.32	4.0	5.0	10.0	
<b>Overall</b>	<b>70.3%</b>	<b>4966</b>	<b>0.78</b>	<b>0.26</b>	<b>2.6</b>	<b>2.1</b>	<b>11.1</b>	<b>8</b>
<b>Countries with medium support for trade</b>								
Brazil	75.2%	6580	0.90	0.50	2.7	0.9	11.1	6
Bolivia	76.1%	2150	0.85	0.06	3.6	0.2	9.7	11
Peru	77.3%	4260	0.88	0.12	4.1	0.4	16.3	6
Uruguay	77.7%	8090	0.93	0.32	2.0	0.2	9.3	2
Argentina	79.0%	11010	0.94	0.43	2.7	0.5	10.5	7
Ecuador	80.0%	3140	0.85	0.13	1.9	4.9	12.3	6
<b>Overall</b>	<b>77.6%</b>	<b>5872</b>	<b>0.89</b>	<b>0.21</b>	<b>2.9</b>	<b>1.2</b>	<b>11.6</b>	<b>6</b>
<b>Countries with highest support for trade</b>								
Costa Rica	82.0%	7880	0.86	0.33	4.9	5.9	10.3	9
El Salvador	84.2%	4670	0.74	0.35	4.3	12.1	10.2	
Chile	86.9%	7090	0.89	0.16	5.9	0.4	11.0	20
Nicaragua	87.2%	2520	0.66	0.06	4.3	1.9	10.7	
Colombia	89.2%	7730	0.85	0.27	2.3	1.7	13.3	6
Panama	90.7%	5040	0.86	0.28	4.2	2.0	10.0	
<b>Overall</b>	<b>86.7%</b>	<b>5822</b>	<b>0.81</b>	<b>0.24</b>	<b>4.3</b>	<b>4.0</b>	<b>10.9</b>	<b>12</b>
<b>All countries</b>	<b>78.4%</b>	<b>6188</b>	<b>0.84</b>	<b>0.28</b>	<b>3.29</b>	<b>2.45</b>	<b>11.19</b>	<b>8</b>

The next seven columns in the table present statistics describing the countries based on: GDP per capita; education endowment; intra-industry trade (IIT); average annual economic growth in the 1990s; the share of cropland; average 1995 tariffs; and the number of years since trade reforms. This comparison provides a look at whether the average support for trade differs by country based on these characteristics of the

countries. We will present some econometric evidence on the relationships later, but this provides a first look at the patterns.

GDP per capita allows us to see if the pattern of support for relatively high-income countries in the region is different than the pattern of support in low-income countries. GDP per capita also acts as a proxy for country skill endowments. Mayda and Rodrik (2005) are very critical and skeptical of the measures of education attainment reported by UNCTAD and prefer to use GDP per capita. In this paper we use GDP per capita and an education index from the Human Development Indicators. This index is based on the adult literacy rate and the combined primary secondary and tertiary gross enrolment ratio.<sup>3</sup> As the second column shows, GDP per capita is higher in countries that are more supportive of trade. On the other hand, there does not seem to be a strong pattern for the measure of country education endowment.

We include an index of intra-industry trade IIT. Contrary to the results found in Beaulieu et al (2004) there does not seem to be a pattern between country IIT and support for trade. This could be because the group of countries examined by Beaulieu et al (2004) is predominantly higher income countries in which intra-industry trade is a large share of total trade.

There does seem to be a pattern between trade support and economic growth in the country. Countries with higher support for trade tended to be countries that grew faster in the 1990s. Growth rates were 4 percent on average for countries with more support and were only 2.6 percent for countries with the lowest level of support for trade. The share

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<sup>3</sup> Note that Beaulieu et al (2004) use GDP per capita, education enrollment, and the number of research scientists and technicians per population as a proxy for country skill endowment. Baker (2004) uses the average GDP per capita (at PPP) from 1990 to 1995 (World Bank 2000) and the percent of the population

of cropland in the country also seems to be correlated with trade preferences. It looks like support for trade may be higher in countries with a higher percent of cropland. Again, below we examine whether these relationships are statistically significant.

There does not seem to be a pattern between the average level of a tariff in 1995 and support for trade. Similarly, the number of years since reform does not seem to be related to support for trade. Before examining whether these patterns have a statistical relationship we take a closer look at whether skilled or unskilled workers in the 17 countries are more supportive of trade as indicated in Table 1. First we will look at the results separately for each country and then we will examine the econometric results from pooling the data together.

Table 3 presents the marginal effects from regressing trade preferences on individual characteristics including education levels; gender, age, and marital status. Age is years of age, gender is a categorical variable that is 1 for males and 0 for females; the marital variable is category variable that is 1 for married and 0 for single, separate, or other.

In Table 3, only the marginal effects for education are reported due to space constraints but all of the control variables (age, gender and marital status) are included in the regressions. The education variables are categorical variables with “edu2” representing those with secondary education and “edu3” representing those with tertiary education. Those with primary education are the omitted category. The countries are sorted from low to high GDP per capita. The marginal effects on dummy variables are interpreted as the effect on the probability of support free trade for a discrete change.

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that had at least some tertiary education in 1995. The results are similar for these different proxies for, and

**Table 3: Marginal effects of education on support free trade by country sort by IIT index**

Country	GDP per capita	Secondary education (edu2)		Tertiary education (edu3)		Joint significance	Fre-quency	Pseudo R2
		Marg effect	Std error	Marg effect	Std error			
BOLIVIA	2150	0.13	(0.047) *	0.20	(0.060) **	12.8 **	686	0.036
NICARAGUA	2520	0.01	(0.032)	0.03	(0.032)	0.6	857	0.004
HONDURAS	2800	-0.07	(0.055)	0.01	(0.053)	5.2	744	0.007
ECUADOR	3140	0.11	(0.038) **	0.16	(0.043) **	14.7 **	1126	0.025
GUATEMALA	4000	0.25	(0.242)	0.14	(0.212)	1.9	467	0.031
PERU	4260	-0.06	(0.060)	-0.02	(0.056)	3.1	961	0.009
EL SALVADOR	4670	0.13	(0.044) **	0.23	(0.065) **	15.8 **	633	0.032
PANAMA	5040	-0.06	(0.243)	0.13	(0.212)	1.0	458	0.046
PARAGUAY	5260	-0.06	(0.086)	0.07	(0.084)	7.6 *	476	0.025
VENEZUELA	5670	0.00	(0.039)	0.11	(0.038) **	15.9 **	1235	0.025
BRAZIL	6580	-0.02	(0.122)	0.37	(0.148) *	10.8 **	1000	0.015
CHILE	7090	-0.05	(0.052)	0.00	(0.048)	4.3	1001	0.007
MEXICO	7100	-0.14	(0.178)	0.10	(0.177)	9.2 **	1282	0.013
COLOMBIA	7730	0.03	(0.027)	0.08	(0.028) **	11.8 **	1138	0.028
COSTA RICA	7880	0.31	(0.172)	0.31	(0.184)	3.5	681	0.009
URUGUAY	8090	-0.28	(0.162)	-0.15	(0.165)	3.7	1056	0.005
ARGENTINA	11010	0.09	(0.211)	0.21	(0.213)	1.9	902	0.006

Note: Marginal effects are reported for education variables only and based on the probit model that includes control variables. The dependent variable Y=1 if respondent support free trade and Y=0 otherwise. Thus a positive marginal effect coefficient implies a higher probability of support free trade. Edu2 is a categorical variable equal to 1 if the respondent's highest level of education is secondary; Edu3 a categorical variable equal to 1 if the respondent's highest level of education is tertiary. The omitted category is primary education.

Superscript \* represents statistically significant at the 5% level and \*\* is 1% level.

The results are mixed. As seen in Table 3, the highly skilled (those with tertiary education) are more likely to support trade than those with primary education in 15 out of 17 Latin American countries. However, this difference in preferences between skilled and unskilled is statistically significant at the 1 or 5 percent level in only 6 out of 17 Latin American countries. In a seventh country, Paraguay, skilled workers are more supportive of trade than unskilled workers and although the individual education variables are not statistically significant, the secondary and tertiary variables are jointly significant. So in these seven countries there is a statistically significant difference in

measurements of trade policy.

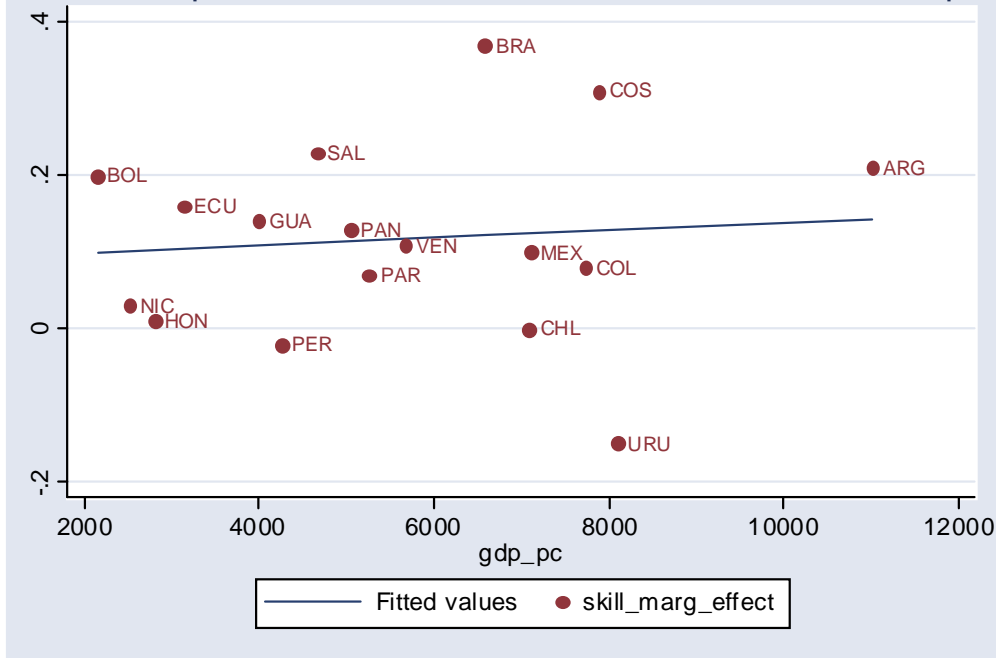
trade preferences between skilled and unskilled. A striking result on trade preferences in Latin America is that those with tertiary education are less likely to support trade than those with primary education in only two countries: Peru and Uruguay. In neither case is this difference statistically significant.

There does not appear to be a pattern in terms of the level of GDP. That is, there does not appear to be a correlation between country GDP per capita and the countries where there is a statistically significant difference between skilled and unskilled workers in preferences on trade policy. Skilled workers are more supportive of trade than unskilled in some of the countries with the lowest GDP per capita like Bolivia, Ecuador and El Salvador. On the other hand, Venezuela, Brazil, Mexico and Columbia are the only higher income countries in Latin America where skilled workers are more supportive of trade than unskilled workers in a statistically significant manner. Figure 2 presents a scatter plot of the marginal effect of skill on trade preferences by GDP per capita. The diagram reveals that there is a weak positive relationship between the trade preferences of skilled workers and the GDP per capita. Beaulieu et al (2004) and Mayda and Rodrik (2005) show a similar diagram covering a broader cross section of countries and find a stronger relationship between GDP per capita and skilled preferences (a stronger positive slope). However, Figure 2 also shows that the marginal effect is negative in only two countries. In Peru (PER) the marginal effect is almost zero and in Uruguay the result is large in absolute terms. However, as pointed out above in neither case are the marginal effects statistically significant.

As mentioned above, GDP per capita is a good proxy for the education endowment of a country. Previous research found that the difference in support of trade between

skilled and unskilled workers was larger in high GDP per capita countries and smaller in low GDP per capita countries. There does not appear to be a strong pattern appearing in these data for Latin American countries.

Figure 2: Trade preferences of skilled versus unskilled and GDP per capita



When the respondents from all countries are pooled together we find that skilled workers in Latin America systematically tend to have a greater preference for trade liberalization than their unskilled counterparts. The results from estimating seven different models using pooled data are reported in Table 4. The first model presents the results from the same sort of regression as presented in Table 3. It regresses support for trade on the individual education variables, on age, sex, and marital status. Country dummy variables are used to control for fixed country effects. The next seven models presented in Table 4 examine whether country characteristics affect individual trade preferences. As seen in Table 4, those with tertiary education are more likely to support

trade than those with primary education in all models and the result is statistically significant in six out of the seven models. This can be seen by looking across the row of tertiary education where the coefficient is statistically significant in six of the models.

The bottom row of the table presents the joint significance of education and the education variables are statistically significant in all cases except columns 2 and 6.

Table 4: Pooled regression results

	No interactions <sup>+</sup> (1)	GDP (2)	IIT (3)	Growth (4)	Share of Cropland (5)	Average 1995 tariff (6)	Years since reform (7)
Secondary education (edu2)	0.013 (0.011)	0.043 (0.030)	0.027 (0.022)	0.005 (0.029)	<b>-0.032 *</b> <b>(0.016)</b>	0.026 (0.073)	0.005 (0.027)
Tertiary education (edu3)	<b>0.071 **</b> <b>(0.012)</b>	<b>0.101 **</b> <b>(0.030)</b>	<b>0.084 **</b> <b>(0.022)</b>	<b>0.088 **</b> <b>(0.029)</b>	<b>0.033 **</b> <b>(0.015)*</b>	0.046 (0.073)	<b>0.064 *</b> <b>(0.027)</b>
Gender (male = 1)	<b>0.038 **</b> <b>(0.007)</b>	<b>0.036 **</b> <b>(0.007)</b>	<b>0.036 **</b> <b>(0.007)</b>	<b>0.036 **</b> <b>(0.007)</b>	<b>0.035 **</b> <b>(0.007)</b>	<b>0.036 **</b> <b>(0.007)</b>	<b>0.04 **</b> <b>(0.008)</b>
Age	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Married	0.000 (0.007)	-0.002 (0.007)	-0.002 (0.007)	-0.005 (0.007)	-0.003 (0.007)	-0.002 (0.007)	0.000 (0.008)
Country interaction with edu2		-0.007 (0.005)	-0.084 (0.074)	0.001 (0.009)	<b>0.018 **</b> <b>(0.005)</b>	-0.002 (0.006)	0.001 (0.003)
Country interaction with edu3		-0.007 (0.005)	-0.085 (0.073)	-0.01 (0.009)	<b>0.013 **</b> <b>(0.005)</b>	0.001 (0.006)	0.001 (0.003)
Country characteristic		<b>0.010 *</b> <b>(0.005)</b>	0.008 (0.067)	<b>0.027 **</b> <b>(0.008)</b>	<b>-0.009 *</b> <b>(0.004)</b>	-0.001 (0.006)	0.002 (0.003)
Observations	14703	14703	14703	14703	14703	14703	11544
Pseudo R <sup>2</sup>	0.033	0.007	0.008	0.012	0.009	0.007	0.009
Joint significance of education	<b>76.30 **</b>	<b>15.97 **</b>	<b>24.21 **</b>	<b>22.73 **</b>	<b>49.46 **</b>	0.48	<b>14.80 **</b>
Joint significance of country characteristics		7.34	<b>12.34 **</b>	<b>79.40 **</b>	<b>23.31 **</b>	0.88	<b>14.17 **</b>

The dependent variable is dichotomous equal to "1" for support for trade as defined above. The results reported here are marginal coefficients. The tests for joint significance reported are Chi-squared statistics.

+ In the regression with no country interactions country fixed effects were included.

Robust standard errors in parentheses

Statistical significance: \* significant at 5%; \*\* significant at 1%

The results on education are robust to including interaction terms into the regression.

The focus here is on whether or not country characteristics like IIT or GDP per capita affect the relationship between individual education level and preferences on trade

policy. In this case the interaction terms are not significant. These results are starkly different from the results of previous researchers. One result that holds true is that on average people from higher GDP per capita countries are more supportive of trade. However, GDP per capita does not modify the difference in preferences between skilled and unskilled.

## **5. CONCLUSION**

While free trade may result in aggregate consumption gains, these gains are not necessarily distributed evenly among the members of society. Indeed, it is possible that certain groups will actually be worse off in a situation of free trade than in an autarky or a restricted trade situation. This paper extends the empirical analysis of who supports free trade to Latin America. It finds that on average in Latin America, skilled workers are more supportive of trade than unskilled. It also finds that on average, people from high GDP per capita countries are more supportive than those from low GDP per capita countries. Skilled workers are only more likely to support trade than unskilled workers in 8 out of 17 Latin American countries. This is in stark contrast to earlier work that found stronger support among skilled workers across a range of transition economies.

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