

# **The university of Sheffield**

**what determines people's attitudes towards trade?**

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## **Abstract**

Based on cross-national data from The International 2013 Social Survey Programme (ISSP), different models were built and analysed using a probit regression in order to determine which factors motivate an individual's attitude towards trade to improve the development of trade policies. The main finding of this research is that trade attitudes are driven by the individual's economic self-interest rather than by sociotropic perceptions. The empirical analysis supports the Heckscher-Ohlin model and the Stolper-Samuelson theorem, finding that in skilled labour abundant countries skilled people are more pro-trade than unskilled people and the opposite for most of the unskilled labour abundant countries. This study also finds that other factors like relative income, upper social class, nationalism sentiments, and social values have a more influence on the individual's attitude towards trade.

Keywords: international trade, factor endowment

## 1. Introduction

International trade has gained strength during the last decades worldwide. The last technological advances (e.g. communication and lower transport costs) have facilitated trade growth between countries, even when distance represents a geographic constraint, and have fostered different ways of trade as well (e.g. offshoring). This development has generated the globalization of many firms and contributed to economic growth in many different countries. Despite all these benefits, people's opposition to trade has led some countries to adopt trade barriers and other policies to restrict free trade.

Questions about individuals' attitudes towards trade have arisen within trade literature. Also, recent empirical evidence is challenging traditional trade theories such as the Heckscher-Ohlin and the Stolper-Samuelson theories. It is important to address these questions to be aware of people's main concerns about trade and, from there, to design trade policies that improve the society welfare and reduce gaps between winners and losers because of trade.

Several debates around these questions have emerged, previous literature such as Mayda and Rodrik (2005) state that trade attitudes are motivated by economic self-interest<sup>1</sup> while others such as Mansfield and Mutz (2009) argue that trade preferences are shaped by sociotropic perceptions.

On one hand, the individual's economic self-interest is explained by scholars through the Heckscher-Ohlin model and the Stolper-Samuelson theorem. The first one states that trade is determined by differences in natural resources (labour, capital), so that an economy will export goods that use intensively its relatively abundant factors of

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<sup>1</sup> Income, job, skilled, among others.

production and will import goods that use intensively its relatively scarce factors. The second theorem argues that the price of goods which use intensively the abundant factor of the economy increases, thus, the real wage or rental rate of the abundant factor increases as well, while the real wage or rental rate of the scarce factors decreases. Therefore, there will be winners and losers because of trade, where people who are related to the country's abundant factor are the winners, and hence they present a positive attitude towards trade. In contrast, people who are related to the country's scarce factor are the losers, and they show a negative attitude to trade. On the other hand, the sociotropic perceptions are measured through individual's perception of the effect of trade on the economy as a whole.

This research is based on The International 2013 Social Survey Programme (ISSP) National Identity module, it uses a probit model to assess the Heckscher-Ohlin model and the Stolper-Samuelson theorem, as well as the sociotropic perceptions to determine whether individual's attitude towards trade is motivated by sociotropic perceptions or economic self-interest. In addition, non-economic factors such as gender, age, nationalism attachment, among others, are assessed in additional models to determine if these factors also influence on the attitudes to trade.

This document is structured as follows: i) Section 2, contains key literature review on the attitudes towards trade. ii) Section 3 presents the data description and methodology. iii) Results and discussion are presented in section 4 and iv) conclusions in section 5.

## 2. Literature Review

During the past 30 years, more information has become available to identify what determine people's attitudes to trade. This is because of the importance of this issue for the design of efficient policies aimed to mitigate the negative effects caused by trade.

The first serious discussions and analyses of the attitudes towards trade emerged during 1980s with Rogowski (1987). Based on the Stolper-Samuelson Theorem, he stated that free trade in any civilization benefits the owners and producers of the abundant factor and damages the owners and producers of the scarce factor. After the world War II, the United States (U.S.) was a capital and land abundant country but labour was scarce; thus, capitalists and landowners should have been favourable to trade, but labour should have been against. However, neither the empirical analysis developed by Rogowski could demonstrate that labour groups were against trade in the post war period, nor he could explain why some capitalists turned against trade whilst others were in favour.

Later, a broader perspective was adopted by Midford (1993), who gave an explanation of the differences in trade support among capitalists and labours. He argued that Rogowski did not take into account the difference between workers because he considered a uniform labour. Based on the Leontief paradox<sup>2</sup>, he showed that trade affects skilled and unskilled workers in different ways. Since U.S. is skilled labour abundant, skilled workers should be more pro-trade than unskilled workers regardless of the industry to which they belong. Therefore, factor endowment considered by Rogowski must be redefined. Moreover, Midford did not agree about the measure

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<sup>2</sup> Leontief found that U.S. exports were less capital-intensive than U.S. imports, even though the U.S. is the most capital-abundant country in the world. However, the exported products were skilled labour intensive.

used by Rogowski<sup>3</sup> to identify the relative abundant factor in a country, he stated that if a country is relatively well endowed in capital, thus the ratio of capital endowment of this country with respect to the world capital endowment should be above the share of the country's GDP in the world.

Following Midford reasoning and trying to explain trade preferences through the Heckscher-Ohlin model and the Stolper-Samuelson theorem, in 2005 Mayda and Rodrik studied people's attitudes towards trade considering that individuals are mainly motivated by economic self-interest. They also assumed two production factors only, skilled and unskilled labour measured through education and occupation. Unlike Midford, they estimated the relative factor endowment using the country's per-capita GDP value arguing that a higher per-capita GDP indicates a better endowment of skilled labour. The empirical results supported the Heckscher-Ohlin model and the Stolper-Samuelson theorem, since skilled workers are pro-trade in advanced economies (skilled labour abundant) and against trade in developing countries (unskilled labour abundant). However, in developing countries the latter only holds for very poor countries within this sample. They mentioned additionally that values, identity and attachments are related to a protectionist attitude.

Conversely, Baker (2005) reported a negative relationship among skilled workers and trade support in developed countries and a positive relationship in developing countries. He argued that Mayda and Rodrik failed to find the negative correlation between skilled workers and trade support in most developing countries and also they ignored other factors of production like land and capital. In his view consumer preferences and demand patterns are factors that determine attitudes to trade. He

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<sup>3</sup> Rogowski uses the GDP per-capita as a measure of the country's factor endowment.

stated that people who have high income level tend to consume more skill-intensive goods than low income earners. Therefore, with free trade, developing economies import skill-intensive goods from developed countries at a lower price, thus people with high income are more pro-trade than low income citizens in these countries. Contrary, in developed countries the price of skill intensive goods increases with trade, and for that reason high income people are more against trade than low income people. Nevertheless, these findings were contradictory with the traditional models of trade and with early empirical results that have shown a positive relation between income and trade support.

Beaulieu et al. (2005) expanded the previous empirical evidence with specific focus in Latin America countries (17 countries of Latin America)<sup>4</sup>. They analysed the attitudes to trade considering people and country characteristics. The authors found that on average more skilled workers are supporter of trade than unskilled workers in Latin America countries where unskilled workers are abundant. This result is contrary to the Heckscher-Ohlin and the Stolper-Samuelson models which state that people who are related to the country's abundant factor of the economy should be in favour of trade while people who are related to the country's scarce factor against trade. However, the authors mentioned that a possible explanation for this result is the skill-biased technological change<sup>5</sup> generated by trade liberalization because this latter induces firms to upgrade their technology.

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<sup>4</sup> Argentina, Bolivia, Brazil, Colombia, Chile, Ecuador, Paraguay, Peru, Uruguay, Venezuela, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama y Mexico.

<sup>5</sup> Technological change increases the wage of skilled workers because it induces to large productivity gains in the high-tech sector and consequently it leads to an increase in the demand of skilled workers. For that reason, skilled workers are more pro-trade even in developing countries.

A possible explanation to interpret the positive relationship found among skilled workers and trade support in developed and developing countries, is based on the sociotropic perceptions (rather than economic self-interest).

This view is supported by Hainmueller and Hiscox (2006) who, unlike Mayda and Rodrik (2005), discussed education role as measure of country's factor endowment since it can persuade individuals about the benefits of trade as a whole and make them to become less protectionist. Their empirical analysis was based on the survey of the United States where the effect of education on trade attitudes was tested among employed, unemployed and even people who were ceased. They found that this effect is almost the same among these groups of people. Hence, they stated that trade support is determined by sociotropic perceptions, which arise from information and economic ideas that educated individuals have, rather than the knowledge about how trade affects people's economic self-interest.

In the same vein Mansfield and Mutz (2009) argued that trade preferences are influenced by sociotropic perceptions rather than economic self-interest. These perceptions are originated by the mass media, local economy conditions, and through interpersonal contact and casual conversations. Since educated people are more exposed to information about the costs and benefits of trade and tend to be more tolerant to foreigners than less educated people, the authors stated that educated people are more pro-trade due to the information exposure rather than to economic self-interest. This latter offers an explanation about the positive relation between education and trade support in developing countries where unskilled workers are abundant. This empirical evidence gives support to the argument that trade attitudes are driven by sociotropic perceptions.



Similar to Mansfield and Mutz (2009), in a study conducted by Fordham and Kleinberg (2012), it is highlighted the important influence of politics groups, religious, co-workers, friends and family on attitude towards trade since these groups give opinions and information from which people can form their own impression about trade. Nonetheless, the researchers state that economic self-interest plays an indirect role in the formation of trade attitudes because these variables can establish the type of group which people belong to and the kind of information they have access to.

In contrast to Mansfield and Mutz, and Hainmueller and Hiscox, Medrano and Braun (2012) argue that information about trade is not common between people of the same economic status or level of education, stating that population are uninformed. Therefore, expectations or information cannot explain the different attitudes towards trade among the socioeconomic groups. They also demonstrate that attitudes towards trade are determined by economic-self-interest showing that individuals who have more resources, education and skills, are more likely to be pro-trade than uneducated people. As a result, in developing and developed countries skilled people are more pro-trade than unskilled people. Nonetheless, the authors highlight the necessity to investigate more about this issue since results were not conclusive about the drivers of people's support to trade.

A significant analysis and discussion on the subject was presented by Jäkel and Smolka (2013). Based on trade traditional theories, they demonstrate that trade preferences are related to people's expectations of trade impacts on their scarce resources, considering the likelihood of changes in their income. In this regard the authors show that high-skill workers are more pro-trade in developed economies and vice versa in developing countries within the group of people whose personal concerns are more important. This latter gives support to the traditional theories of trade.

However, for people whose social values and identity are relevant this pattern is not significant, and it is less explained by the traditional theories. These findings are opposed to those of Mansfield and Mutz concerning the role that economic self-interest plays on attitudes to trade.

Similarly, Drope and Chowdhury (2014) consider individual's economic self-interest as a factor that determines attitudes towards trade. They emphasize the differences between gender. They found a positive correlation between skilled women and trade support in advanced and less advanced economies, for that reason the authors suggest that the Heckscher-Ohlin and the Stolper-Samuelson approach are insufficient to explain attitudes towards trade in the current world.

Beaulieu et al. (2011) try to update the Heckscher-Ohlin and Stolper-Samuelson approach making some assumptions, they consider an intra-industry<sup>6</sup> trade rather than inter-industry<sup>7</sup> because nowadays most of trade are intra-industry which has caused an increased wage inequality in skilled and unskilled labour abundant countries. They find that under intra-industry trade and in the skill intensive sectors, skilled workers are more pro trade than unskilled workers in both developed and developing countries.

Recent studies analyse other factors to determine trade attitudes. Enrlich and Hearn (2014) explore compensation as a factor that determines attitudes to trade. The empirical analysis shows that compensation increases support to free trade among the losers of trade (unskilled people). However, it also can generate an opposition among the winners of trade (skilled people). The authors concluded that more

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<sup>6</sup> It means that a country can export and import different varieties of the same product.

<sup>7</sup> It means that a country can export or import one product.

research is necessary to demonstrate whether compensation increases or decreases the overall support to trade.

More recently Smolka and Jäkel (2017), based on the Heckscher-Ohlin model but with many production factors (categorized in different skill groups), introduce a trade policy in the form of import tariffs as a factor that determine attitudes towards trade. They find that changes on import prices, due to trade policy, affect negatively the abundant factor of a country. Therefore, people whose skills are related to the abundant factor are more pro-trade, since they are affected by the trade policy. This latter indicates that trade preferences are partially shaped by the effects of trade policy as predicted by theory. Nonetheless, the trade policy effects have not as high impact on trade preferences as education and income.

Other factor used by Nguyen (2017) to explain attitudes towards trade is the impact of trade on wage inequality. He finds that respondents associate income inequality with free trade. However, he also finds that individuals believe this association is fair and for that reason, their trade preferences are not influenced by the rising income inequality caused by trade.

Considering all this evidence, it seems that the main factor that determines attitudes towards trade is people's economic-self-interest. Though, these studies clearly indicate the existence of a positive correlation between skilled workers and trade support in advanced economies, this relation is still not clear for the case of developing countries. Hence, this study will update the research developed by Mayda and Rodrik (2005), using an international survey that includes updated information and more developing countries. This will allow to identify the correlation between skilled workers and trade support in the countries included. Moreover, the update data set also

includes variables about sociotropic perceptions and economic self-interest which allow to analyse if these factors determine attitudes to trade.

Therefore, the following research questions analyse: what factors determine people's attitude to trade? And, is there a positive relationship between trade preferences and skilled people in countries where skilled labour is abundant, and the opposite in countries where unskilled labour is abundant?

### 3. Data and Methodology

#### 3.1 Data

In this paper I use data from the International 2013 Social Survey Programme (ISSP) National Identity module, which collects cross-national data on social, economic and demographic topics. This data set includes individual information on 43,151 survey responders from 33 countries, 5 of them have the lowest income (i.e. Mexico, Philippines, India, South Africa and Georgia) according to the World Bank 2013. The central themes responded by each individual are about aspects of national pride and support for his own country, attitudes towards national and international subjects, such as trade opinion, and foreigners and foreign cultures. Besides, the ISSP survey contains information about individual's characteristics like age, gender, education, among others. Thus, this survey enables to determine the factors that shape individuals' attitudes to trade. Worth noting that data set worked by Mayda and Rodrik (2005) is from 1995 and only includes one developing country (Philippines).

Table 1 presents a summary statistics of trade preferences by country where Trade Opinion includes the answers to the following question: "how much do you agree or disagree with the following statement: (respondent's country) should limit the import of foreign products in order to protect its national economy"<sup>8</sup>. This question was labelled as Trade Opinion variable<sup>9</sup> which includes answers ranged from 1 (agree strongly) to 5 (disagree strongly). Therefore, higher values of this variable mean that people are more pro-trade while lower values mean that they are more protectionist. Likewise, two dummy variables were constructed from this question, Pro-Trade

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<sup>8</sup> The alternatives for this question are (1) Agree strongly, (2) Agree, (3) Neither agree nor disagree, (4) Disagree, (5) disagree strongly, (8) can't choose, (9) No answer.

<sup>9</sup> Missing values and "can't choose" responses are not considered.

dummy equals unity for individuals who reply “disagree” (4) and “disagree strongly” (5) and zero for the rest. In the same way, Against-Trade Dummy equals unity for lower values of Trade Opinion and zero for higher values of this variable.

Table 1: Summary statistic on individual attitudes towards trade

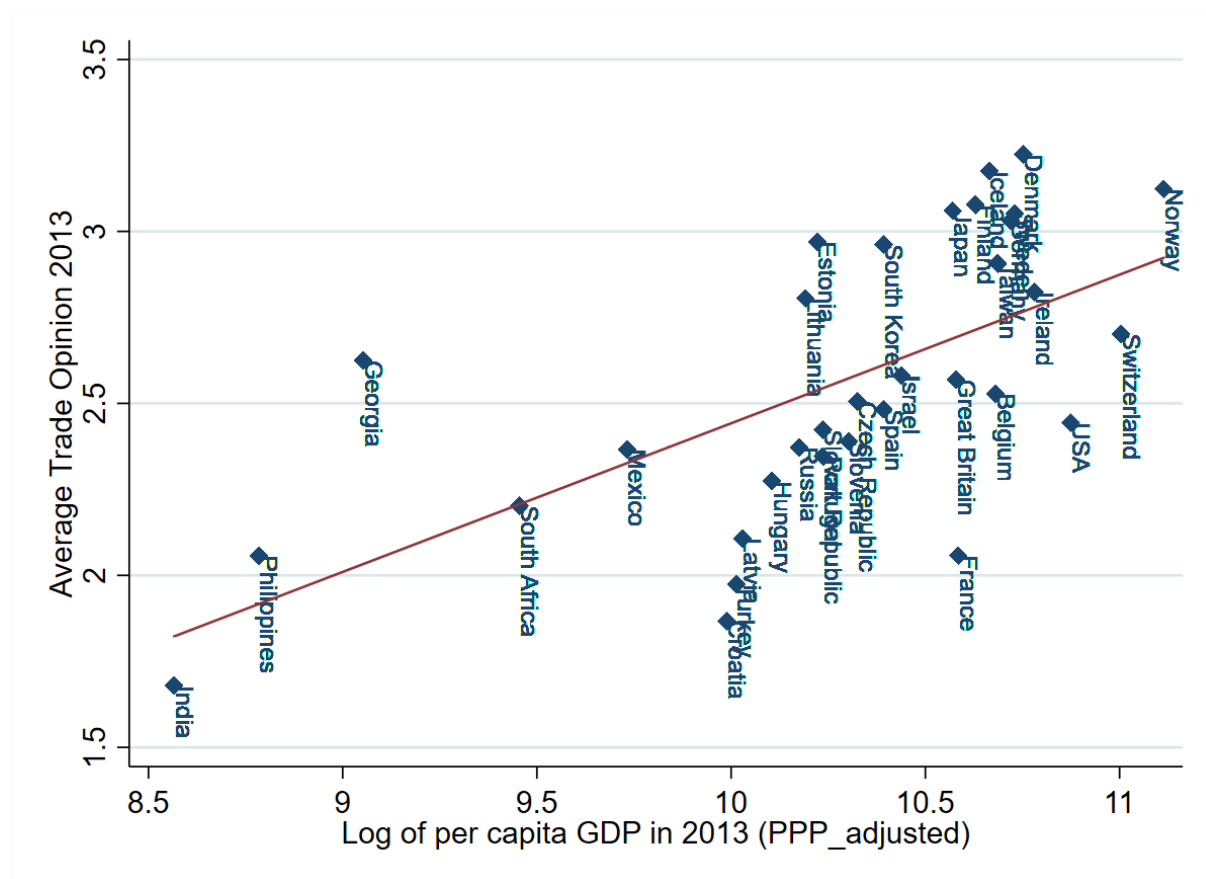
Country	Trade Opinion					Average Trade Opinion	Pro-Trade Dummy	Against-Trade Dummy			
	Agree strongly (1)	Agree (2)	Neither agree nor disagree (3)	Disagree (4)	Disagree strongly (5)						
Belgium	0.0739	0.2877	0.2845	0.2435	0.1105	2.5282	17	0.2098	18	0.5505	17
Croatia	0.2403	0.3785	0.1710	0.1376	0.0726	1.8675	32	0.0914	32	0.8022	2
Czech Republic	0.1019	0.2466	0.2365	0.2419	0.1731	2.5054	18	0.2382	17	0.5642	16
Denmark	0.0245	0.1599	0.2204	0.2651	0.3301	<b>3.2237</b>	1	0.4265	2	0.3367	27
Estonia	0.0440	0.1385	0.3319	0.3136	0.1722	2.9706	8	0.3351	10	0.3362	28
Finland	0.0296	0.1489	0.2759	0.3961	0.1495	3.0773	4	0.3967	3	0.3203	29
France	0.1784	0.3483	0.2224	0.1811	0.0697	2.0579	29	0.1219	29	0.7256	5
Georgia	0.0937	0.2208	0.1454	0.4082	0.1319	2.6247	14	0.3371	8	0.5357	18
Germany	0.0348	0.1569	0.2651	0.3947	0.1486	3.0306	7	0.3891	4	0.3431	26
Great Br	0.0527	0.2976	0.3391	0.2502	0.0603	2.5695	16	0.1917	22	0.5178	20
Hungary	0.0969	0.3671	0.3304	0.1592	0.0464	2.2746	26	0.1117	30	0.6378	9
Iceland	0.0194	0.1465	0.2548	0.4282	0.1510	3.1757	2	<b>0.4359</b>	1	0.2944	32
India	0.3185	0.3710	0.1888	0.0800	0.0417	<b>1.6800</b>	33	<b>0.0476</b>	33	<b>0.8466</b>	1
Ireland	0.0406	0.2393	0.2264	0.3938	0.0999	2.8239	11	0.3345	11	0.4524	23
Israel	0.0719	0.2611	0.2763	0.2928	0.0978	2.5819	15	0.2395	15	0.5226	19
Japan	0.0319	0.1182	0.4192	0.1997	0.2310	3.0597	5	0.2941	12	<b>0.2783</b>	33
Latvia	0.1514	0.3895	0.2074	0.1811	0.0706	2.1067	28	0.1251	28	0.7292	4
Lithuania	0.0254	0.2770	0.2697	0.3405	0.0874	2.8057	12	0.2879	13	0.4599	22
Mexico	0.1042	0.3127	0.2303	0.2941	0.0586	2.3662	24	0.2017	20	0.6166	10
Norway	0.0159	0.1577	0.3036	0.3920	0.1307	3.1235	3	0.3878	5	0.2961	31
Philippi	0.1842	0.3309	0.2157	0.2141	0.0551	2.0571	30	0.1328	27	0.7193	6
Portugal	0.0727	0.4400	0.1745	0.2582	0.0545	2.3454	25	0.1770	25	0.6866	8
Russia	0.1078	0.2908	0.2759	0.2256	0.0999	2.3721	23	0.1812	24	0.6007	11
Slovak Republic	0.0942	0.2930	0.2814	0.2362	0.0953	2.4239	21	0.1893	23	0.5833	15
Slovenia	0.1135	0.2702	0.2516	0.2609	0.1038	2.3897	22	0.2055	19	0.5941	12
South Africa	0.1007	0.4730	0.1553	0.2185	0.0527	2.2024	27	0.1435	26	0.7425	3
South Korea	0.0248	0.2103	0.2822	0.3404	0.1423	2.9625	9	0.3365	9	0.3849	25
Spain	0.1019	0.2687	0.2103	0.2516	0.1675	2.4830	19	0.2394	16	0.5866	14
Sweden	0.0237	0.1576	0.3421	0.3165	0.1602	3.0518	6	0.3392	7	0.3128	30
Switzerland	0.0429	0.2833	0.2613	0.3180	0.0944	2.7021	13	0.2658	14	0.4988	21
Taiwan	0.0369	0.2172	0.1968	0.4617	0.0873	2.9065	10	0.3862	6	0.4231	24
Turkey	0.2153	0.2968	0.2738	0.1717	0.0423	1.9746	31	0.1015	31	0.7183	7
USA	0.0775	0.3287	0.2596	0.2804	0.0537	2.4434	20	0.1975	21	0.5910	13
<b>Mean</b>	<b>0.0811</b>	<b>0.2612</b>	<b>0.2526</b>	<b>0.2889</b>	<b>0.1163</b>	<b>2.5552</b>		<b>0.2440</b>		<b>0.5409</b>	

Notes: The answers that were reported as “Can’t choose” or as missing value were eliminated from the data set, only was considered the valid answers, it means the answers that have been coded from 1 to 5.

It can be seen from the data in table 1 that on average 24% of people are pro-trade while 54% are against trade. The table also shows that Iceland is the most pro-trade country with 44% whilst India is the most protectionist country with 85%. These results are similar to those found by Mayda and Rodrick (2005), where 22% of people were

pro-trade and 55% against. The only difference is in the most pro-trade or protectionist country since the data set from 1995 does not include Iceland and India.

Figure 1: Relationship between trade opinion and log per-capita GDP 2013



From the graph above we can see the positive relationship between the attitude towards trade and log per-capita GDP 2013<sup>10</sup>, this unveils that rich countries are on average less protectionist than poor countries with some exceptions such as Georgia which depicts a low-income level but is more pro-trade than other high-income countries like USA and France. India is the poorest country and is also the most protectionist country.

<sup>10</sup> Per-capita GDP (in 2013, PPP-adjusted) values for the countries contained in this data set are presented in table 7 of the appendix.

## 3.2 Methodology

Many researchers have utilised a Binomial Probit Model to measure attitudes towards trade because a major advantage of this model is that it allows the use of a binary dependent variable. Unlike the linear probability model, probit constraints the value of explanatory variables ( $\beta'x$ ) to lie between 0 and 1, this way the heteroscedasticity problem is avoided. Besides, this model is based upon the standard normal distribution such that  $z \sim N(0,1)$  and uses the accumulative distribution function of the standard normal distribution  $\Phi(\beta'x)$  to transform the linear prediction model in a non-linear prediction model. Logit model could be an alternative since both models give similar results. Therefore, a probit model is used to measure the individual's probability of being in favour of trade conditional to different variables.

Since the coefficients of the probit model lack interpretation in terms of magnitude, because the derivative of the probability of the dependent variable with respect to a given covariate also depends on other covariate, marginal effects<sup>11</sup> are calculated.

Before applying the probit model a systematic review of the data (including data analysis and recodification) was performed following the codebook provided by the 2013 ISSP National Identity module.

The following models were considered to identify the factors that determine individual's attitude towards trade.

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<sup>11</sup> The value of the derivatives is calculated at the mean values of all the explanatory variables in the sample.



### 3.2.1 Model 1: Demographic model

This model is based on demographic variables like age, citizen, gender, education, area of residence, real income, social class, trade membership, and political party affiliation.

$$\Pr(Y = 1|0) = \Phi (\beta_0 + \beta_1 \text{Age}_i + \beta_2 \text{Citizen}_i + \beta_3 \text{Male}_i + \beta_4 \text{Education}_i + \beta_5 \text{Income}_i + \beta_6 \text{Rural}_i + \beta_7 \text{SocialClass}_i + \beta_8 \text{TradeMember}_i + \beta_9 \text{PoliticalAffiliation}_i + \varepsilon_i)$$

Where:

The dependent variable is the Pro-Trade dummy variable of being in favour of or against trade,  $\varepsilon_i$  is the error term and the explanatory variables were obtained through the following steps:

- First, the variable “citizen” is related to the following question: “How important do you think is to have [country nationality] citizenship?” to identify the influence of being citizen in trade preferences. This variable is coded as follows: (1) “Not important at all”, (2) “Not very important”, (3) “Neither nor”, (4) “Fairly important” and (5) “Very important”.
- Second, the variable “male” is created as a dummy variable, where male equals unity and zero otherwise.
- Third, “education” is referred to years of education and is coded from 1 to 20 according to the education degree attained by individuals.
- Fourth, the variable “income” is referred to the logarithm of real income, to get this variable the information about individuals’ personal yearly income was divided by the purchasing power parity conversion factors 2013 from World Bank then the logarithm of this value was calculated.
- Fifth, “Rural” indicates the individual's area of residence and is coded as follows: (1) “urban”, (2) “suburbs/city-town” and (3) “rural”.

- Sixth, “SocialClass” is the subjective social class reported by respondents and is coded as follows: (1) “lower”, (2) “working”, (3) “lower middle”, (4) “middle”, (5) “upper middle” and (6) “upper”.
- Seventh, “TradeMember” specifies if an individual is a member of a trade union or similar organisations, it is created as a dummy variable where if an individual belongs to a trade union it is coded equal to unity and zero otherwise.
- Eighth, “PoliticalAffiliation” is referred to the political party which is supported by respondents and it is coded as follows: (1) “far left”, (2) “centre left”, (3) “centre”, (4) “right” and (5) “far right”.
- Finally, “Age” is referred to the individual’s years old and not change was made.

Since the survey respondents of different countries can face different realities such as the economic situation and others, their answers about trade preferences can be influenced. For that reason, a set of country dummy variables are introduced (fixed effects) to control for average difference across countries in any observable or unobservable variables like economy recession and in this way avoid the bias of omitted variable. Besides, the standard errors are clustered by country to consider correlation across individuals within the same country. The fixed effects and the clustered of the standard errors by country are applied to following models as well. It is important to remark that missing values were dropped from the sample.

### **3.2.2 Model 2: The Heckscher-Ohlin model and the Stolper Samuelson-Theorem.**

Following the Heckscher-Ohlin model, in this economy there are only two main factors endowment, skilled and unskilled people measured through the years of education, this is why the variable Education appears as one of the explanatory variables that are determinant to be in favour or against trade. Moreover, the relative abundant factor of each country is determined by the per-capita GDP (2013, PPP-adjusted), the latter means that higher values of per-capita GDP imply that a country is better endowed with skilled workers, then high-income economies are skilled labour abundant and low-income economies are unskilled labour abundant.

Given this economy, the Stolper-Samuelson Theorem argues that in a country which is relative well-endowed of skilled workers (abundant factor), wages and therefore income of these skilled workers will increase with trade. Wages of unskilled workers (scarce factor) will decrease because this kind of country will export products that use more intensively skilled workers and import product that use intensively its scarce factor (unskilled workers). Hence, in this economy skilled people will be pro-trade and unskilled people will be against-trade. The reverse holds for countries which are well-endowed of unskilled workers, wages for them will increase and wages for skilled workers will decrease with trade. Therefore, in this kind of countries unskilled workers will be more pro-trade than skilled workers.

In order to prove the Stolper-Samuelson Theorem thesis, the hypothesis is defined as follows: There is a positive relationship between the attitude towards trade and skilled people in countries where skilled labour is abundant and a negative relationship in countries where unskilled labour is abundant.

This model considers only four demographic variables (Age, male, citizen and education) as control variables since keeping all demographic variables implies too many missing values. The probit model is built as follows:

$$\Pr(Y = 1|0) = \Phi (\beta_0 + \beta_1 \text{Age}_i + \beta_2 \text{Citizen}_i + \beta_3 \text{Male}_i + \beta_4 \text{Education}_i + \beta_5 \text{Education} * \text{GDP}_i + \beta_6 \text{lincome}_i + \beta_7 \text{lincome} * \text{GDP}_i + \varepsilon_i)$$

Where, as in the previous model, the dependent variable is a Pro-trade dummy variable of being in favour of or against trade,  $\varepsilon_i$  is the error term and the explanatory variables are the four control variables plus the interaction between education and log per-capita GDP (Education\*GDP). This interaction ensures that the impact of education on trade attitudes depends on the level of per-capita GDP, this latter means that education impact depends on the country's factor endowment. Besides, log real income and the interaction of log real income and log per-capita GDP are added to control for individual income and to ensure that the model has captured the impact of education and not the effect of income or earnings.

### 3.2.3 Model 3: Sociotropic perceptions

This model is based on people perception about the trade impact on the economy as a whole, the probit model is defined as follows:

$$\Pr(Y = 1|0) = \Phi (\beta_0 + \beta_1 \text{Age}_i + \beta_2 \text{Citizen}_i + \beta_3 \text{Male}_i + \beta_4 \text{Education}_i + \beta_5 \text{Education} * \text{GDP}_i + \beta_6 \text{SociotropicPercep} + \varepsilon_i)$$

Where:

Pro-trade dummy variable is the dependent variable of being in favour of or against trade,  $\varepsilon_i$  is the error term and the independent variables are the same as model 2 except for income variable which was not considered because of the number of

missing values. In addition, SociotropicPercep variable is included in the model to identify people perception about the effects of trade on their country. This variable responds to the question: “How much do you agree or disagree with the following statement: Free trade leads to better products in [Country]?”. This question is coded as follows: (1) “Disagree strongly”, (2) “Disagree”, (3) “Neither agree nor disagree”, (4) “Agree” and (5) “Agree strongly”, without considering the missing values.

### 3.2.4 Model 4: Values and Identity

Values, identity and nationalism attachment are analysed through this model to measure the effect of these variables on an individual's attitude towards trade. The probit model is as follows:

$$\Pr(Y = 1|0) = \Phi (\beta_0 + \beta_1 \text{Age}_i + \beta_2 \text{Citizen}_i + \beta_3 \text{Male}_i + \beta_4 \text{Education}_i + \beta_5 \text{TownAttachment}_i + \beta_6 \text{CountyAttachment}_i + \beta_7 \text{ContinentAttachment}_i + \beta_8 \text{NationalPride1}_i + \beta_9 \text{NationalPride2}_i + \beta_{10} \text{NationalPride3}_i + \beta_{11} \text{NationalPride4}_i + \beta_{12} \text{PrideDemocracy}_i + \beta_{13} \text{PridePolitic}_i + \beta_{14} \text{EconomicPride}_i + \beta_{15} \text{PrideSecuritySystem}_i + \varepsilon_i)$$

Where:

The dependent variable is the Pro-trade dummy variable,  $\varepsilon_i$  is the error term and this model includes the four control variables used before plus eleven extra variables. The first extra four variables (town attachment, county attachment, continent attachment, National Pride 1) are referred to questions “How close do you feel to respondent’s town/city?”; respondent’s county/region?”; respondent’s continent?”; respondent’s country?”; respectively. The answers of these questions range from (1) “not close at all” to (4) “very close”. Respect to the next National Pride variables, these focus on following questions: “How much do you agree or disagree with the following statements?: I would rather be a citizen of respondent’s country rather than of any other country of the world” (national pride 2); respondent’s country is a better country

than most other countries” (national pride 3); respondent’s country should follow its own interest, even if this leads to conflicts with other nations” (national pride 4). These questions are coded from (1) “disagree strongly” to (5) “agree strongly”. The last variables are referred to following questions: “How proud are you of respondent’s country in each of the following: The way democracy works?” (pride democracy); political influence in world?” (pride politic); economic achievements?” (economic pride); social security system?” (pride security system). The answers of these variables range from (1) “Not proud at all” to (4) “Very Proud”. Missing values of each variable were dropped.

## **4. Results and Discussion**

In this section, the four models are analysed individually using a probit model with a set of country dummy variables. This section is important to determine the factors that influence on people attitude towards trade and to show the relevance of the Heckscher-Ohlin model and the Stolper-Samuelson Theorem in this subject.

The results present the estimated marginal effect on the likelihood of being pro-trade, given an increase in the value of the significant explanatory variable, holding the remain covariates at their mean value.

### **4.1 Model 1: Demographic model**

The main reason for a regression on demographic model is to determine which demographic characteristics play an important influence on the attitude towards trade and from there those characteristics are taken as control variables for the next models.

Table 2 provides the estimated marginal effect obtained from the regression between the dependent dummy variable Pro-trade and demographic regressors.

What stands out in the table is that most of the explanatory variables are statistically significant at 1% level. A negative correlation was found between some demographic variables and the dependent variable Pro-trade, such as the case of Rural variable, where people who live outside the city tend to be less pro-trade than people who live in the city. A citizen of a country is less pro-trade than immigrants or non-residents of that country. Similarly, members of a trade union have 12% lower probability of being pro-trade than non-members of a trade union, and older people tend to be less pro-trade than younger people at 5% of significance level.

Table 2: Demographic model results

Probit with country dummy variables	Model 1
Dependent variable	Pro-Trade dummy
Age	-0.0026** (0.0012)
Male	0.2025*** (0.0324)
Citizen	-0.1058*** (0.0128)
Education (years of education)	0.0415*** (0.0075)
Rural	-0.1082*** (0.0315)
Log of real income	0.0877*** (0.0272)
Upper Social Class	0.0728*** (0.0146)
Trade union member	-0.1185*** (0.0346)
Political affiliation with the right	0.0102 (0.0245)
Observations	16,953
Pseudo R <sup>2</sup>	0.1164

Notes: Robust standard errors are clustered by country and appear in parentheses, \*\*\* significant at 1%, \*\* significant at 5%, \* significant at 10%.

A positive correlation was found in the case of male variable; males have 20% higher probability of being pro-trade than females. Besides, an additional year of education increases the probability of being pro-trade by 4%, this means that more educated people tend to be pro-trade. Since, this model includes a set of country dummy variables, the effect of changes on individual's income in each country is captured by the marginal effect of the log of real income. Hence, an increase of 1% on income increases the probability of being pro-trade by 9%. The upper social class is also positively correlated with Pro-trade attitudes, people who consider themselves within an upper class have 7.2% higher probability of being pro-trade. Finally, no significant correlation was found between pro-trade and political affiliation with the right wing. This latter suggests that a political party has no influence on individuals' attitudes towards trade.



These results are similar to those found by Mayda and Rodrik (2005), Jäkel and Smolka (2013), and those reported by Drope and Chowdhury (2014), where male tend to be more pro-trade than women and older people are more protectionist than younger people. Unlike Mayda and Rodrik (2005), table 2 shows that there is no significant correlation between political affiliation and trade preferences. Overall, this model indicates that there is a relationship between demographic characteristics and trade preferences.

One concern about this model is that not all the countries are included since some of them did not reply to some variables like Great Britain with respect to Upper social class and the trade union, plus Taiwan and Israel with respect to political affiliation. For that reason, the number of control variables is reduced to four for the next models.

#### **4.2 Model 2: Heckscher-Ohlin model and Stolper Samuelson Theorem**

The relevance of this model lies in the assessment of the hypothesis stated in the methodology section to confirm the indicated by traditional trade theories about trade preferences and to demonstrate that attitude towards trade is driven by economic self-interest. Table 3 presents a set of regressions between the dummy dependent variable (Pro-trade) and different regressors.

The first regression presents the estimated marginal effects of being pro-trade in high-income economies<sup>12</sup>, where there is a positive relationship between educated people and pro-trade. For one additional year of education the probability of being pro-trade increases by 2%, at 1% significance level. The other variables show the same pattern as in demographic model. In contrast regression 2 includes only lower-income

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<sup>12</sup> The Lower-income countries were dropped (Mexico, South Africa, Georgia, Philippines and India)

countries and, although the variables present the same signs as in regression 1, most of them are not significant. Only citizen variable is still significant at 5% level.

Table 3: Heckscher-Ohlin model and Stolper Samuelson Theorem results

Probit with country dummy variables	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable	Pro-trade dummy					
Age	-0.0008*** (0.0003)	-0.0006 (0.0009)	-0.0008*** (0.0003)	-0.0009*** (0.0003)	-0.0009*** (0.0003)	-0.0009*** (0.0003)
Male	0.0659*** (0.0075)	0.0145 (0.0131)	0.0568*** (0.0070)	0.0662*** (0.0075)	0.0644*** (0.0070)	0.0644*** (0.0069)
Citizen	-0.0278*** (0.0027)	-0.0161** (0.0074)	-0.0257*** (0.0026)	-0.0276*** (0.0028)	-0.0307*** (0.0031)	-0.0307*** (0.0031)
Education	0.0188*** (0.0017)	0.0007 (0.0025)	-0.1223*** (0.0228)	-0.1490* (0.0851)	-0.1110 (0.0956)	-0.1059 (0.0887)
Education*gdp			0.0133*** (0.0023)	0.0159* (0.0081)	0.0122 (0.0091)	0.0117 (0.0085)
Log of real income					0.0280*** (0.0040)	-0.0553 (0.1607)
Log of real income*gdp						0.0078 (0.0151)
Observations	34,421	7,481	41,902	34,421	25,690	25,690
Pseudo R <sup>2</sup>	0.0856	0.0738	0.0911	0.0867	0.0892	0.0892

Notes: Robust standard errors are clustered by country and appear in parentheses, \*\*\* significant at 1%, \*\* significant at 5%, \* significant at 10%.

These results suggest that for high-income economies skilled people (measured by years of education) tend to be more pro-trade than unskilled whilst for low-income economies the reverse holds. Since the coefficient is not significant, therefore the stated hypothesis could be accepted. However, due to the positive relationship between trade opinion and per-capita GDP (see graph 1), a bias on the estimated coefficient of education in rich countries is presented. Thus, in order to avoid this bias and to ensure that the impact of education depends on the country's relative factor endowment (measured by per-capita GDP) the interaction between the log of per-capita GDP and education was added where the education coefficient should be negative, and the interaction coefficient should be positive.

Regression 3, which includes all countries, shows that all variables have the signs predicted, and they are significant at 1% level. The same happens in regression 4 where low-income economies were dropped, suggesting that the impact of education

in rich countries is positive, hence skilled people are more pro-trade in high-income economies. These results are similar to those found by Mayda and Rodrik (2005) and Jäkel and Smolka (2013).

However, to prove the robustness of this model and to confirm that it captures the impact of education and not the impact of income, regression 5 and 6 were run. These regressions include the log of income and the interaction between the log of income and log of per-capita GDP respectively. However, these variables are no longer significant in these regressions, although the variable education and education\*gdp keep the same signs as before. At least in regression 5, income variable is significant at 1% level, implying that preferences towards trade depend mostly on income. While in regression 6 neither income nor the interaction of this variable are significant, which means that the impact of income does not vary across countries.

Unlike results of regression 3 and 4, outcomes of regressions 5 and 6 differ from those found by Mayda and Rodrik (2005) and Jäkel and Smolka (2013). They found that when income variable is introduced education and interaction between education and GDP are still significant, although estimated coefficients of these variables are reduced. Hence, they concluded that omission of income variable leads to overestimating the education coefficient and since they found robustness in their model when income variable is introduced, their conclusion is that trade attitudes are significantly explained by traditional trade theories.

One possible explanation for these differences, in the case of Mayda and Rodrik (2005), is the way of coding the years of education since they did not specify the criteria used to code this variable. Besides, they were based on the International 1995 Social Survey Programme (ISSP), which includes general categories of education

level. In contrast, the current data (2013) presents detailed categories of education level, making the codification more accurate. In the case of Jäkel and Smolka (2013), it is the way of measuring the country's factor endowment, since they used the country's mean of skill (years of education) instead of per-capita GDP as a measure of the capital human endowment.

On the other hand, to see in more detail the educational impact on trade preferences within low-income countries, a set of regressions are presented in table 4, this table shows that education in low-income countries such Philippines and India is negatively associated with trade, at least in Philippines this relation is significant at 1% level. These results are in line with the Heckscher-Ohlin model and Stolper-Samuelson, since unskilled people are more pro-trade than skilled people in three of the low-income economies but differ from Hainmueller and Hiscox (2006) as they indicate that skilled people are more pro-trade because of the availability of information and a better understanding of gains from trade, rather than the economic self-interest.

Table 4: Model 2 results (low-income economies)

Probit model	India	Philippines	Georgia	South Africa	Mexico
Dependent variable	Pro-trade dummy				
Age	-0.0008* (0.0004)	0.0020*** (0.0006)	-0.0040*** (0.0007)	-0.0006 (0.0004)	0.0025*** (0.0009)
Male	-0.0172 (0.0117)	0.0146 (0.0193)	-0.0163 (0.0261)	0.0323** (0.0144)	0.0447* (0.0260)
Citizen	0.0034 (0.0070)	-0.0174 (0.0127)	-0.0077 (0.0097)	-0.0375*** (0.0088)	-0.0251** (0.0119)
Education	-0.0011 (0.0011)	-0.0085*** (0.0027)	0.0010 (0.0045)	0.0040** (0.0020)	0.0103*** (0.0032)
Observations	1,422	1,181	1,411	2,499	968

Notes: Robust standard errors are clustered by country and appear in parentheses, \*\*\* significant at 1%, \*\* significant at 5%, \* significant at 10%.

Education in Georgia is positively related to pro-trade, but this relationship is not significant. By contrast, in South Africa and Mexico this relationship is positive and significant at 5% and 1% respectively: for one additional year of education the

probability of being pro-trade increases by 1% in Mexico. This latter unveils that traditional trade theories are only backed in the poorest countries.

The outcomes in low-income countries are similar with those found by Mayda and Rodrik (2005) with some exceptions like Mexico, this is due to the data set used by them which did not include countries such as Mexico or South Africa. The case of Mexico is exceptional since the result is similar to that found by Beaulieu et al. (2005) in Latin America countries (unskilled labour abundant countries). Here skilled people are more pro-trade than unskilled people possibly because of skill-biased technological change. Other possible explanation, according to Robertson (2000), may be that Mexico and other Latin America countries are not abundant in unskilled workers as is assumed, since the introduction of low-wages countries like China to the world trading increase the probability that countries like Mexico become skilled labour abundant. Recent studies such as Beaulieu et al. (2011) and Jäkel and Smolka (2017) attribute this positive relationship to the increase of wage inequality in developed and developing countries.

Taken together, these results suggest that there is an association between the level of education and the attitude towards trade. Although the outcomes are not robust when the model is controlled by income, these results provide important insights into the Heckscher-Ohlin model and the Stolper-Samuelson theorem, since from regression 1 to 4 of table 3, the estimate outcomes indicate that skilled people are more pro-trade than unskilled for skilled labour abundant countries and the reverse for unskilled labour abundant countries. This latter is supported by table 4 which shows the negative relationship between education and trade preferences in low-income economies with few exceptions like Mexico. These results also prove that trade attitudes are motivated by the economic self-interest.

### 4.3 Model 3: Sociotropic perceptions

Previous literature also argues that the attitude towards trade is determined by the individual's perception about the impact of trade on the economy as a whole rather than individual's economic self-interest. Unlike research that supports this view, a question directly referred to trade and its impact on the economy is used in this study to assess this argument.

Table 5: Sociotropic perceptions results

Probit with country dummy variables	(1)	(2)	(3)
Dependent variable	Pro-trade dummy		
Age	-0.0007** (0.0003)	-0.0007*** (0.0003)	-0.0006 (0.0009)
Male	0.0527*** (0.0067)	0.0602*** (0.0073)	0.0149 (0.0144)
Citizen	-0.0283*** (0.0027)	-0.0308*** (0.0027)	-0.0169** (0.0078)
Education	-0.1288*** (0.0228)	-0.1607* (0.0859)	-0.0001 (0.0024)
Education*gdp	0.0139*** (0.0023)	0.0170** (0.0082)	
Sociotropic Perception	0.0601*** (0.0079)	0.0730*** (0.0083)	0.0121 (0.0114)
Observations	39,753	32,675	7,078
Pseudo R <sup>2</sup>	0.1058	0.1063	0.0730

Notes: Robust standard errors are clustered by country and appear in parentheses, \*\*\* significant at 1%, \*\* significant at 5%, \* significant at 10%. Regression 1 includes all the countries while in regression 2 low-income economies are dropped. Regression 3 includes only low-income countries. Income variable is not considered due to many missing values.

What is interesting about the data in table 5 is that all the estimated marginal effects in regression 1 and 2 are significant. Education and interaction between education and GDP are significant, so that education impact depends on per-capita GDP even when a sociotropic variable is included. The sociotropic variable indicates that the probability of being pro-trade increases by 6% for people who believe that trade leads to better products. A similar pattern holds for regression 2. These results imply that the attitude towards trade is determined by sociotropic perceptions. However, regression 3 shows that this pattern does not hold for low-income economies, since the estimated coefficient is not significant.

Figure 2: Relationship between average trade opinion and average sociotropic perceptions

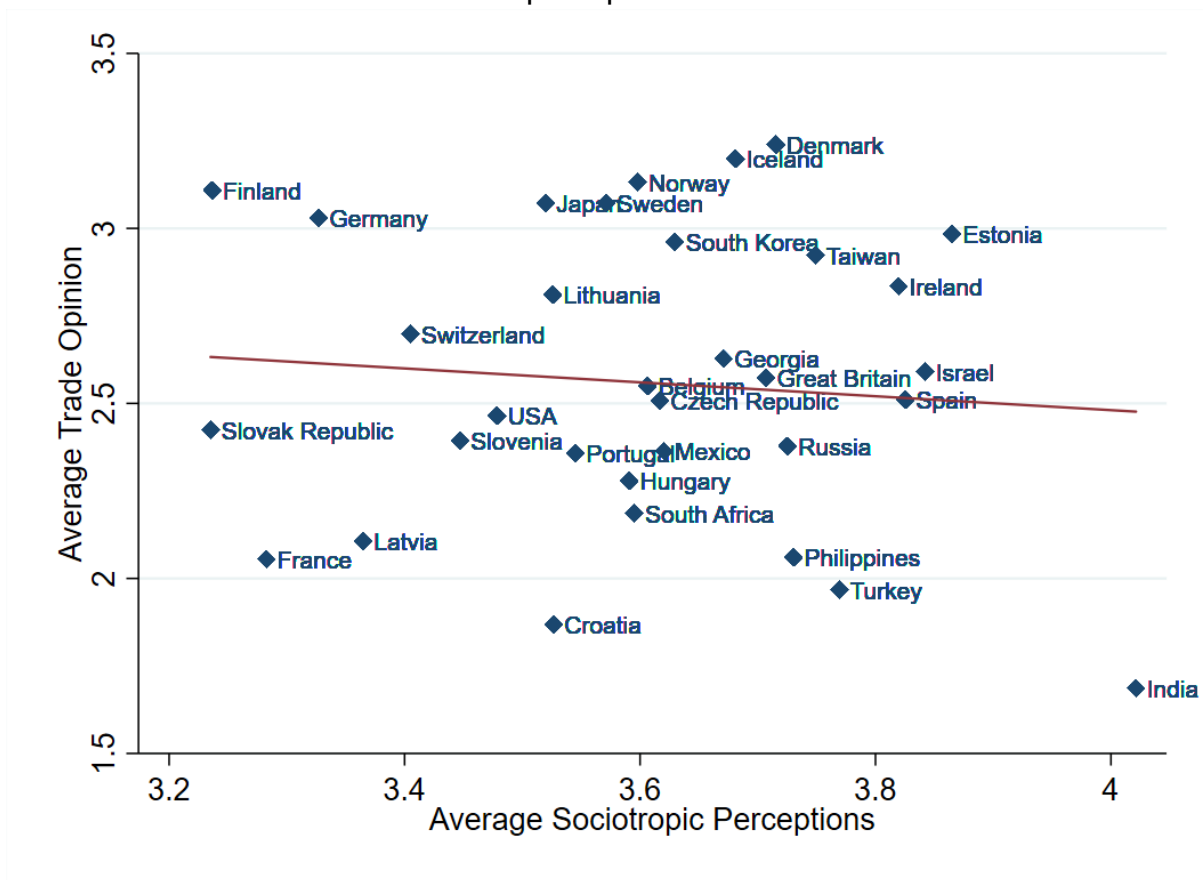


Figure 2 presents a different way to display these results, it illustrates that there is not a relationship between average sociotropic perceptions and the average trade opinion. For instance, India is on average the most protectionist country, however, its average perception is that trade leads to better products. By contrast, Finland is on average more pro-trade, but its average perception is that trade leads to bad products. Therefore, this graph shows there is not necessarily a positive relationship between these two variables, in fact, most of developing countries show a negative relationship, such as Philippines, Turkey, Mexico, South Africa, among others. From the producer point of view, a possible explanation for this negative relationship in low-income economies (unskilled labour abundant) is that, even when individuals may assume that imported products are better than national products; they show a protectionist

attitude towards imported products since these represent a threat to local production. Conversely, in some high-income economies which are skilled labour abundant, even when individuals may believe that their national products are better than those imported, they show a pro-trade attitude since they are not afraid to compete against imported products; if that holds, it would confirm that trade attitudes are driven by economic self-interest rather than sociotropic perception.

Overall, the outcomes indicate that the relationship between trade preferences and sociotropic perceptions does not hold for most of the survey respondents, since only 40% of 24,513 people who indicated that trade leads to better products, is in favour of trade, and 60% is against-trade or neither in favour nor against. Therefore, the attitude to trade cannot be explained by sociotropic perception because there is no clear relationship between these two variables.

This result is in line with Medrano and Braun (2012) who assert that perceptions about trade differ among people of the same socioeconomic status or level of education, and therefore sociotropic perceptions cannot be a good indicator of trade preferences. By contrast, this result is opposite to those found by Mansfield and Mutz (2009) and Fordham and Kleinberg (2012), as they affirm that trade attitudes are driven by people perception about the trade impact on their countries rather than economic self-interest. This dissimilar result would be explained by the different way of measuring this variable, because the authors infer people's perception of trade impact on the economy from a general statement<sup>13</sup> about the trade-off between economy protection and personal income, instead of a specific trade question, as this model does, allowing for a proper measure of trade perception.

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<sup>13</sup> The statement was: "Protecting the environment should be given priority, even if it causes slower economic growth and some loss of jobs".



#### 4.4 Model 4: Values and Identity

The purpose of this model is to identify non-economic variables such as nationalism sentiment, identity and values, that can influence an individual's attitude towards trade.

Therefore, a set of regression are considered in table 6, which presents the estimated marginal effects of being in favour of trade, given these non-economic variables.

First regression includes variables related to community, country and continent attachment, almost all these variables are significant with exception of town attachment. Individuals who are more attached to their region and country tend to be less pro-trade while the probability of being pro-trade increases by 2% for people who are more attached to their continent.

Table 6: Values and Identity results

Probit with country dummy variables	(1)	(2)	(3)	(4)
Dependent Variable	Pro-trade dummy			
Age	-0.0006** (0.0003)	-0.0003 (0.0003)	-0.0007*** (0.0003)	-0.0002 (0.0003)
Male	0.0556*** (0.0071)	0.0619*** (0.0074)	0.0546*** (0.0070)	0.0604*** (0.0073)
Citizen	-0.0249*** (0.0029)	-0.0111*** (0.0030)	-0.0264*** (0.0028)	-0.0115*** (0.0034)
Education	0.0144*** (0.0017)	0.0127*** (0.0017)	0.0148*** (0.0018)	0.0118*** (0.0014)
Town attachment	0.0017 (0.0031)			0.0011 (0.0033)
County attachment	-0.0202*** (0.0048)			-0.0175*** (0.0046)
Continent attachment	0.0246*** (0.0049)			0.0163*** (0.0042)
National Pride (1)	-0.0088* (0.0051)	0.0106** (0.0042)		0.0088* (0.0045)
National Pride (2)		-0.0331*** (0.0040)		-0.0321*** (0.0037)
National Pride (3)		-0.0104*** (0.0028)		-0.0140*** (0.0030)
National Pride (4)		-0.0557*** (0.0040)		-0.0557*** (0.0041)
Pride in democracy			0.0076 (0.0061)	0.0124** (0.0062)
Pride in political influence			-0.0150*** (0.0052)	-0.0089* (0.0049)
Economic pride			0.0091* (0.0054)	0.0167*** (0.0053)
Pride in social security system			0.0062 (0.0055)	0.0076 (0.0057)
Observations	39,320	38,893	37,033	33,937
Pseudo R <sup>2</sup>	0.0897	0.1161	0.0916	0.1225

Notes: Robust standard errors are clustered by country and appears in parentheses, \*\*\* significant at 1%, \*\* significant at 5%, \* significant at 10%.

Second regression includes National pride 1, 2 and 4, which are associated with nationalism and patriotism sentiments, and national pride 3 which is associated with chauvinism (i.e. feeling of superiority of respondent's country). The outcomes of this regression show a negative relationship between nationalism variables and pro-trade. In the case of national pride 2, the probability of being pro-trade decreases by 3% for people agreeing in that being citizen of their own country is preferred than any other country. The same relationship is present in national pride 3, where people who believe that their country is better than any other one are less pro-trade. Besides, for people who believe that their country "should follow its own interest, even if this leads to conflicts with other nations", the probability of being in favour of trade decreases by 6%.

Third regression includes variables related to pride feelings about national achievement, as column 3 shows, economic pride is positively correlated with pro-trade, it means that people who are proud of their country economic achievements are more pro-trade, perhaps because these people trust their country's economic policy. By contrast, individuals who are proud about their country's political influence on the world are negatively associated with pro-trade. Finally, column 4 includes all the variables specified in table 6 where every regressor presents the same pattern as before.

Overall, these results indicate that more nationalist people tend to be more protectionist and that trade preferences are shaped by values and identity as well. This latter corroborates the results found by Mayda and Rodrik (2005), who concluded that values and identity are factors that play a relevant role in attitudes towards trade.

## 5. Conclusions

This empirical evidence expands previous literature on individuals' attitude towards trade. Using a cross-section data survey of 33 countries around the world and probit modelling, four models are examined to determine what factors play a significant role in the formation of trade attitudes. The main discussion within the empirical literature is whether trade preferences are shaped by individuals' economic self-interest or by sociotropic perceptions. The first one is assessed through the Heckscher-Ohlin model and the Stolper-Samuelson theorem while the second one is examined by a specific question about the effect of trade on the respondent's country. The empirical results suggest the following:

First, there is a significant relationship between some demographic variables such as gender, age, citizen, education, and trade attitudes. The main limitation of this model is the reduction in the number of observations when a new variable is added due to the missing values. For that reason, only four variables are used as control variables within the models.

Second, there is a significant correlation between trade preferences and individuals' level of education (skill) in the way predicted by the Heckscher-Ohlin and the Stolper-Samuelson theorem, where skilled people on average tend to be more pro-trade than unskilled people in high-income economies, whilst in low-income countries, on average unskilled people are more supportive of trade than skilled people. The latter holds for three of the five low-income economies. This finding indicates that individuals' trade preferences are motivated by how trade can affect their economy according to their type of factor (skilled or unskilled labour), and hence that trade attitudes are shaped by economic self-interest. For instance; in high-income countries unskilled

people will be affected negatively by trade, therefore they will be less pro-trade than skilled people.

However, the positive correlation between skilled people and pro-trade found in Mexico and South Africa cannot be explained by the traditional models of trade. This result might be explained by the current ways of world trade<sup>14</sup>, since recent technological changes, occurred in the communication sector (internet, computers, satellites, among others), have allowed firms to become global and to increase their productivity gains, which in turn lead to a higher demand of skilled people in developed and developing countries. Unfortunately, the data-set used in this study does not include information on capital stock or foreign direct investment for the measurement of these variables' impact on trade preferences.

Third, unlike the current literature, a question referred directly to trade is used to measure people's perceptions of trade impact on the economy as a whole, which produces an interesting and important result. Although, there is a positive and significant relationship between trade preferences and this variable, the same does not hold for low-income countries such as India, Philippines, South Africa, among others. In fact, there is a negative relationship between these two variables in low-income countries, meaning that even though the probability is high, people who have a good perception about trade not necessarily are in favour of it. This result suggests that since low-income countries are unskilled labour abundant, individuals do not trust their national production and perceive imported products as better. However, they are

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<sup>14</sup> Almost one-third of world trade is intra-firm trade (Antras 2003)

against trade because they want to avoid competition with these imported products. Hence, attitudes towards trade cannot be determined by sociotropic perceptions.

Finally, a significant correlation is found between values, identity, and attachment variables, with trade attitudes, where variables concerned to attachment feelings are negatively correlated with trade. Individuals who feel closer ties to their region and country are less pro-trade. Variables related to patriotism, nationalism, and chauvinism have a negative relation with trade as well. For instance, people who believe their country is better than other countries are more protectionist. Besides, two of the four variables concerned to pride of national achievements are significant, individuals who are prouder of their country's economic achievement are more pro-trade, and this latter could be explained because they trust on their country's economic policy.

Overall, it is clear that attitudes towards trade are determined by people's economic self-interest rather than sociotropic perceptions. Also, while it is true that Heckscher-Ohlin and the Stolper-Samuelson theorem are supported by the results, other elements have a more important role explaining the attitudes towards trade: among them, relative income, upper social class, attachment sentiments and values. For example, people with lower relative incomes tend to be more protectionist than those with higher relative incomes. Findings also unveil that recent changes on technology (e.g. rapid access to internet) and media worldwide (e.g. social media) might influence people's attitude towards trade, however this topic still represent a challenge due to lack of information. Thus, more research is needed in this field. Additionally, these findings have important implications for the design of trade policies, since the economic self-interest characteristics represent the main concern for individuals on

attitudes towards trade. Thus, individuals' concerns about trade should be analysed and understood in order to make policies that benefit the society as a whole and not only to small groups of interest parties.

## 6. References

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## 7. Appendix

Table 7: Per-capita GDP of the countries within the sample

Country	Per capita GDP in 2013 (PPP-adjusted)	Log of per capita GDP in 2013
Norway	67056.117	11.113
Switzerland	60108.516	11.004
USA	52782.087	10.874
Ireland	48067.121	10.780
Denmark	46726.853	10.752
Sweden	45673.171	10.729
Germany	45232.198	10.720
Taiwan	43739.000	10.686
Belgium	43519.778	10.681
Iceland	42821.285	10.665
Finland	41293.516	10.628
France	39523.870	10.585
Great Britain	39308.135	10.579
Japan	38974.079	10.571
Israel	34128.956	10.438
South Korea	32615.773	10.393
Spain	32603.906	10.392
Czech Republic	30485.714	10.325
Slovenia	29796.812	10.302
Portugal	27899.509	10.236
Slovak Republic	27897.599	10.236
Estonia	27495.734	10.222
Lithuania	26660.560	10.191
Russia	26240.275	10.175
Hungary	24463.199	10.105
Latvia	22676.380	10.029
Turkey	22310.536	10.013
Croatia	21779.984	9.989
Mexico	16848.040	9.732
South Africa	12769.995	9.455
Georgia	8541.812	9.053
Philippines	6526.650	8.784
India	5250.512	8.566

Source: World Bank 2013