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Individual Attitudes Towards Trade: Stolper-Samuelson Revisited

by

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Abstract

This paper studies to what extent individuals form their preferences towards trade policies along the lines of the Stolper-Samuelson logic. We employ a novel international survey data set with an extensive coverage of high-, middle-, and low-income countries, address a subtle methodological shortcoming in previous studies and condition on aspects of individual "enlightenment". We find statistically significant and economically large Stolper-Samuelson effects. In the United States, being high-skilled increases an individual's probability of favoring free trade by up to twelve percentage points, other things equal. In Ethiopia, the effect amounts to eight percentage points, but in exactly the opposite direction.

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JEL classification: F11, F13

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1 Introduction

Low- and middle-income countries such as Brazil, China, India, and Russia have (re-)entered the stage of the world economy. These economies, home to a substantial portion of world population, show high degrees of trade openness and have recently boasted enormous output growth; see Freeman (2009, p. 63).[1] The rapid integration of emerging markets into the global economy promises substantial gains from trade. Yet, these gains seem endangered by anti-free trade campaigns motivated by globalization fears. Can we explain this tension by the well-known Stolper-Samuelson arguments? From a neoclassical point of view, the new global economic architecture implies that developed economies like the United States or Europe import low-skilled labor from developing countries like China, indirectly, through the factors embodied in traded goods. This will result in changes of relative wages or unemployment, making the scarce factors worse off and benefitting the abundant factors. In this sense, economic theory fuels the public debate on the potential link between "globalization" and contemporaneous increases in wage inequality in many advanced countries. This is despite the fact that it has turned out difficult to empirically disentangle the effects of globalization on wage inequality from those originating in skill-biased technological change; see Feenstra & Hanson (2003), Lawrence (2008), and Krugman (2008).

This paper takes an altogether different perspective on this discussion. It draws attention to how people *expect* international trade to affect their income situations. Looking through the lens of the Stolper-Samuelson theorem, we study empirically whether and to what extent the distributional predictions of free trade are shaping individuals' attitudes towards protection. We find a characteristic pattern which is consistent with endowment-based views of comparative advantage highlighted by the Heckscher-Ohlin-Samuelson model. Given that individual attitudes towards trade co-determine trade policy outcomes, this potentially has wider implications in a political economy context; see Rodrik (1995). It also sheds light on the rising demand for protection in developed countries; see Scheve & Slaughter (2007). Since unskilled labor makes the bulk of the labor force in *all* countries, but is intensively used in the comparative disadvantage sector only in *advanced* countries, the Western world would seem prone to a new wave of protectionism.[2]

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[1]From 2006 to 2007, real gross domestic products of Brazil, China, India, and Russia grew by 5.3%, 13.0%, 9.1%, and 8.1%, respectively; the degrees of trade openness (measured as the sum of the value of imports and exports over total output) for these economies range between 25% (Brazil) and 75% (China) in 2007; all four countries together comprise nearly 2.8 billion people in 2007, which was then as much as about 42% of total world population; all data come from the World Development Indicators (2007).

[2]In fact, there is not a single OECD economy with a majority of people having attained tertiary education, the level of education which is typically seen as essential in qualifying for a high-skilled job. The OECD average of people with tertiary education in 2007 is 28% for the population aged 25-64; see OECD (2009, p. 29f.).

Despite its narrow focus, this chain of reasoning finds support by two stylized facts. First, the countries with the least favorable views towards globalization are middle- and high-income countries, including the United States, France, and Japan. By contrast, people in the poorest countries, including China, India and many African states, exhibit on average the most positive attitudes towards trade; see Pew GAP (2007, p. 1). Second, the public's opinion on free trade has significantly changed to the worse during the last decade, but only in the developed world. In January 2000, 35 percent of the American adult population believed that trade is a *"threat to the economy from foreign imports"*. This number has almost steadily increased over the years, reaching a critical level of 52 percent in February 2008, an all time high since September 1992.[3] A similar trend can be found in Western Europe, but not in China or India; see Pew GAP (2007, p. 1).

Our paper builds on O'Rourke & Sinnott (2001) and Mayda & Rodrik (2005), who find that high-skilled individuals are more likely to be pro-trade than low-skilled individuals, but only in countries with high incomes per capita. Scheve & Slaughter (2006), O'Rourke (2006) and Mayda et al. (2007) provide evidence that is consistent with a factor endowments interpretation of this result.[4] Our work contributes to this strand of literature in three ways. First, we employ the 2007 wave of the Pew Global Attitudes Project (GAP), a novel international survey data set with an extensive coverage of high-, middle-, and low-income economies. We highlight that the performance of the existing approach to identifying Stolper-Samuelson effects is sensitive to the country coverage of the underlying survey data.

Secondly, we address a weakness on the methodological side in the literature and show that estimates in a Probit framework, as commonly applied in related studies, lack a proper interpretation. As a straightforward remedy to this shortcoming, we apply, inter alia, the simple linear probability model (LPM). In the present context, the advantage of our approach is that it consistently controls for any kind of country-specific influence on the formation of trade policy preferences. This includes potentially important "fundamentals" such as a country's political system, but also feedback effects from existing trade policies and previous trade exposure.

Finally, we consider a recent critique by Hainmueller & Hiscox (2006) and Mansfield & Mutz

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[3]The numbers come from Gallup's annual World Affairs poll, which since 1992 conducts telephone interviews with approximately one thousand randomly selected American adults, aged 18 or older. Interviewers ask the following question: *"What do you think foreign trade means for America? Do you see foreign trade as – an opportunity for economic growth through increased U.S. exports, or a threat to the economy from foreign imports?"* See http://www.gallup.com/poll/115240/Americans-Negative-Positive-Foreign-Trade.aspx for details.

[4]Recent years have seen a surge in empirical research on individual trade policy preferences. For example, evidence from purely national surveys come from Scheve & Slaughter (2001), Blonigen (2008), Hoffman (2009), and Ehrlich & Maestas (2010) for the United States and from Wolfe & Mendelsohn (2005) for Canada. Beaulieu et al. (2005) document cross-country evidence from Latin America.

(2009), who argue that high-skilled individuals are more likely to favor free trade due to a general "enlightenment" that comes with a better educational background. Arguably, this enlightenment could date from both a better understanding of the beneficial role of international trade (the *aggregate* gains from trade) and a general (classroom) stimulation of individuals' openness towards foreign cultures and ideas. With this enlightenment being stronger in rich countries with high-quality education systems, the numbers so far obtained from regression analyses could be subject to poor identification. For this reason, we explicitly capture individuals' economic awareness and their inclinations towards nationalist ideas and carry out baseline estimations of the effects of various aspects of individual enlightenment. Our data are not inconsistent with Hainmueller & Hiscox (2006) and Mansfield & Mutz (2009), but find the factor endowments model to survive all specifications.

The remainder of this paper is organized as follows. Section 2 presents our empirical strategy, starting out with a condensed Stolper-Samuelson view on free trade preferences and proceeding with a discussion of the econometric model and our survey data. Section 3 turns to a detailed presentation of our regression results. The final section concludes the paper.

2 Empirical Strategy

This section presents our empirical approach to studying Stolper-Samuelson effects on free trade preferences. The first subsection explains how the distributional effects of trade liberalization in the Heckscher-Ohlin-Samuelson model translate into different individual attitudes towards trade. In the second subsection, we set up a simple random utility framework to discuss the relevant econometric issues that arise in our context. In so doing, we slightly modify the existing modelling approach along several dimensions, as will become evident below. The final subsection presents our survey data in some detail. It also looks at whether and how trade preferences correlate with governments' policies and countries' stages of development.

2.1 A Stolper-Samuelson View on Free Trade Preferences

The distributional effects of trade policy interventions in a Heckscher-Ohlin-Samuelson setting with two factors of production and two goods can be appropriately discussed by recalling the Stolper-Samuelson theorem; see Stolper & Samuelson (1941). In its general version the theorem states that protection of domestic import-competing industries will raise the real reward of the scarce factor and lower the real return to the abundant factor.[5] This result emerges from the differentiated zero profit

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[5]The notion of a "general" version of the theorem was introduced by Bhagwati (1959); see also Deardorff (1993).

conditions, which in terms of proportional changes are given by

$$\hat{p}_\ell = \theta_{\ell L}\hat{w}_L + \theta_{\ell H}\hat{w}_H \qquad \text{for} \quad \ell = 1, 2, \tag{1}$$

where a 'hat' indicates a percentage change, the $\theta_{\ell j}$'s are the cost shares of high- and low-skilled labor (with $j = H, L$), the p_ℓ's are goods prices, and the w_j's are factor prices.[6]

Protection, for example through an import tariff, increases the domestic relative price of the imported good.[7] From equation (1), goods price changes are a cost-share weighted average of factor price changes. This implies that the $\hat{p}_\ell$'s lie in between the $\hat{w}_j$'s. Let p_1 denote the price of the imported commodity with $\hat{p}_1 > 0$ through the imposition of a tariff. The price of the factor which is intensively used in the import-competing sector, say low-skilled labor (i.e. $\theta_{1L} > \theta_{2L}$), rises disproportionately compared to the commodity price. By the same logic, high-skilled labor experiences a real income loss, $\hat{w}_L > \hat{p}_1 > \hat{p}_2 > \hat{w}_H$. If we further impose the assumptions necessary to establish the Heckscher-Ohlin theorem – identical technologies and preferences across countries and no factor intensity reversals – it follows that protection harms the country's abundant factor because it is intensively employed in the export industry.

Hypothesis 1. *In human-capital-abundant economies, high-skilled individuals favor free trade, while low-skilled individuals oppose free trade. In labor-abundant economies, this conflict of interests is reversed.*

One of the captivating features of the Stolper-Samuelson logic is that it reflects changes in a country's factor supply, because inputs are embodied in traded goods. Speaking with Deardorff (1993, p. 7), *"The Stolper-Samuelson Theorem [...] states what might appear obvious to many outside of economics. In its simple form [...] it says that protection helps the scarce factor, or, equivalently, that free trade hurts the scarce factor. [...] [Many politicians and others in the public at large] say that of course trade lowers wages in the United States, since it makes American labor compete with foreign labor that may be paid only a fraction as much."* In a wider sense, hypothesis 1 therefore draws on how people *expect* international trade to affect their incomes. Consequently, any empirical test of this hypothesis is informative as to the extent to which individuals are sensitive towards how an integrated world economy may affect the relative scarcity of their factors, compared to an autarky

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[6] In what follows, the terms 'high-skilled labor' and 'human capital' are used interchangeably. Analogously for 'low-skilled labor' and 'labor'.

[7] Metzler (1949) shows that the imposition of an import tariff raises the domestic relative price of the imported good only if the elasticity of foreign demand for domestic exports is greater than the domestic marginal propensity to consume the exported good. The restriction to the small economy case precludes any terms-of-trade effects and is therefore sufficient to obtain this result.

situation.[8]

Hypothesis 1 also implies that whether an individual will oppose or favor protection will entirely depend on the *direction*, but not the *magnitude* of the predicted utility change. The prediction for an individual's free trade preference is solely determined by whether the factor is relatively scarce or abundant compared to the rest of the world, essentially because individuals are confronted with a binary choice; see Balistreri (1997). To see why the *degree* of relative scarcity of the two factors may also be decisive for preference formation, we incorporate country-pair-specific trading costs.

If trade costs are prohibitively high for some country pairs, each country will only trade with a subset of the other countries. As a result, comparative advantage is no longer defined globally; see Deardorff (2004). We do not inspect the trade pattern of individual countries here. But it is clear that, other things equal, the probability that a certain factor in a given country is used intensively in the comparative advantage sector is the higher, the higher the relative abundance of this factor in that country. We get the following prediction.

Hypothesis 2. *A high-skilled individual is more likely to favor free trade, the higher a country's human-capital-to-labor ratio. The reverse holds true for a low-skilled individual.*

Importantly, both hypotheses are independent of whether or not tariffs are prohibitively high. This is because there is no role for the magnitude of an individual's trade-policy induced utility change, and because the direction of the goods price change does not depend on the degree of protection.

2.2 Econometric Model

The fundamental idea in our regression analysis is that trade policy interventions in the form of import tariffs (or the withdrawal thereof) have effects on an individual's utility level due to changes in personal earnings, both in expectation terms. We provide a combined test of hypotheses 1 and 2 and closely follow previous studies in estimating the *interaction effect* between individual skill and a country's degree of human capital abundance.

For this purpose, we set up the following random utility framework. Let the expected utility change of individual i in country c when moving towards free trade ($E[\Delta U_{ic}|_{\text{Free Trade}}]$) be a linear function of the expected income change à la Heckscher-Ohlin-Samuelson ($E[\Delta w_{ic}|_{\text{HOS}}]$), which depends on individual skill h_{ic} and the residence country's degree of human capital abundance h_c. Let the effect of other individual attributes such as age, income, or education and that of other country

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[8]In a Ricardo-Viner setting, one can draw lines between sectors instead of factors for the distributional conflicts of trade liberalization; see Mayda & Rodrik (2005) for an empirical application to individual-level trade policy preferences. For an attempt to bring the distributional predictions of the "new new trade theory" with heterogeneous firms and workers to individual survey data see Walter (2010). For reasons of data availability and conciseness, in this paper we exclusively focus on the explanatory power of the factor endowments model.

characteristics such as the political system, the stage of development, or the actual trade policies be summarized in $A_{ic}(.)$ and $B_c(.)$, respectively. Decomposing $A_{ic}(.)$ into a function of observables $a_{ic} \equiv a(X_{ic1}, \ldots, X_{icL})$ and an unobservable random component α_{ic}, and analogously for $B_c(.)$ with $b_c \equiv b(Z_{c1}, \ldots, Z_{cK})$ and β_c, we have

$$E[\Delta U_{ic} | \text{Free Trade}] = E[\Delta w_{ic} | \text{HOS}](h_{ic}, h_c) + a_{ic} + b_c + \alpha_{ic} + \beta_c. \tag{2}$$

We aim for an estimable equation of (2). An individual's expected income change is unobserved. Our analysis must therefore take the link between such expectations and individual trade policy preferences as given. Assuming that this link exists, we ask whether parameter estimates on the arguments of $E[\Delta w_{ic} | \text{HOS}](h_{ic}, h_c)$ can be interpreted as reflecting a Stolper-Samuelson data generating process. Hence, we rewrite equation (2) as

$$E[\Delta U_{ic} | \text{Free Trade}] = \gamma_0 + \gamma_1 \cdot h_{ic} + \gamma_2 \cdot h_{ic} \times h_c + \gamma_c + a_{ic} + \alpha_{ic}, \tag{3}$$

where γ_1 and γ_2 are the parameters of interest and $\gamma_c \equiv \gamma(h_c, b_c, \beta_c)$ is a fixed effect which absorbs both observed and unobserved heterogeneity at the country level.

The left-hand side of equation (3), the expected utility change as such, is an unobservable latent variable. Following existing literature, we construct an individual-specific pro-trade dummy variable from our survey data which serves as an indicator for the sign of the expected change in utility, $Y_{ic} \stackrel{\text{def}}{=} 1(E[\Delta U_{ic} | \text{Free Trade}] > 0)$. If we additionally impose $\alpha_{ic} \sim \text{Normal}(0, 1)$, we can write an individual's probability of being in favor of free trade, conditional on all explanatory variables, as $\Pr(Y_{ic} = 1 | \cdot) = \Phi(\gamma_0 + \gamma_1 \cdot h_{ic} + \gamma_2 \cdot h_{ic} \times h_c + \gamma_c + a_{ic})$. This is the familiar Probit framework, where the main interest in our application is with the effect of individual skill on the probability of being pro-trade,

$$\frac{\Delta \Pr(Y_{ic} = 1 | \cdot)}{\Delta h_{ic}} = \Phi'(\cdot)[\gamma_1 + \gamma_2 h_c], \tag{4}$$

and how this effect varies with a country's degree of human capital abundance,

$$\frac{\Delta^2 \Pr(Y_{ic} = 1 | \cdot)}{\Delta h_{ic} \Delta h_c} = \Phi'(\cdot)\gamma_2 + \Phi''(\cdot)[\gamma_1 \gamma_2 h_{ic} + \gamma_2^2 h_{ic} h_c]. \tag{5}$$

This strategy involves a subtle technical issue. In non-linear models, the right hand sides of equations (4) and (5), given the country fixed effects specification in (3), cannot be computed without violating the ceteris paribus assumption of comparative statics analysis. The reason is that, in contrast to linear models, the derivatives (or differences) in (4) and (5) depend on all explanatory variables through $\Phi'(\cdot)$ and $\Phi''(\cdot)$. Hence, estimates of γ_c are used to evaluate the standard normal density function and its derivative. Given that this parameter depends on h_c, b_c, and β_c, however, it does not only

capture the effect of varying degrees of factor abundance across countries, but also any other (random and non-random) country-specific influence on individual trade policy preferences.[9] Note that our concern equally applies to a wider set of non-linear models with interaction terms.

We consider two simple and straightforward ways to circumvent the problems associated with estimating model (3). The first ignores the underlying latent variable framework and assumes the probability of being in favor of free trade, conditional on all explanatory variables, to be equal to the right-hand side of equation (3), $\Pr(Y_{ic} = 1|\cdot) = \gamma_0 + \gamma_1 \cdot h_{ic} + \gamma_2 \cdot h_{ic} \times h_c + \gamma_c + a_{ic}$. This is the linear probability model (LPM), which comes at the cost that predictions may lie outside the unit interval. Still, this is our preferred specification since it explicitly estimates all fixed country effects, which will be shown to explain a considerable part of the variation in trade policy preferences. Then, the left-hand sides of (4) (evaluated at $h_c = 0$) and (5) are equal to γ_1 and γ_2, respectively. Our second approach keeps the underlying latent variable model and takes care of all arguments of $\gamma(h_c, b_c, \beta_c)$. The model is then specified as

$$E[\Delta U_{ic}|_{\text{Free Trade}}] = \gamma_0 + \gamma_1 \cdot h_{ic} + \gamma_2 \cdot h_{ic} \times h_c + \gamma_3 \cdot h_c + a_{ic} + b_c + \eta_{ic}, \tag{3'}$$

where $\eta_{ic} = \alpha_{ic} + \beta_c$ and we assume that $\eta_{ic} \sim \text{Normal}(0,1)$. The effect of individual skill is as in equation (4), whereas the interaction effect now becomes

$$\frac{\Delta^2 \Pr(Y_{ic} = 1|\cdot)}{\Delta h_{ic} \Delta h_c} = \Phi'(\cdot)\gamma_2 + \Phi''(\cdot)[\gamma_1\gamma_3 + \gamma_1\gamma_2 h_{ic} + \gamma_2\gamma_3 h_c + \gamma_2^2 h_{ic} h_c]. \tag{5'}$$

It is only this model that permits a "clean" computation of these effects in a Probit framework.

In both econometric models, the effect of being high-skilled on an individual's attitude towards free trade is a function of the economy's human capital abundance. Hypothesis 1 suggests that high-skilled individuals exhibit more protectionist attitudes than low-skilled individuals in labor-abundant countries, and vice versa in human-capital-abundant countries. Hence, we expect that

$$\left.\frac{\Delta \Pr(Y_{ic} = 1|\cdot)}{\Delta h_{ic}}\right|_{h_c < h_c^*} < 0 < \left.\frac{\Delta \Pr(Y_{ic} = 1|\cdot)}{\Delta h_{ic}}\right|_{h_c > h_c^*}, \tag{6}$$

where h_c^* is the estimated threshold value which separates human-capital- from labor-abundant countries. Furthermore, hypothesis 2 states that a high-skilled individual's probability of favoring free trade is the higher, the higher his or her country's degree of human capital abundance. A positive cross-derivative,

$$\frac{\Delta^2 \Pr(Y_{ic} = 1|\cdot)}{\Delta h_{ic} \Delta h_c} > 0 \tag{7}$$

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[9]Apart from this issue, many authors have interpreted the marginal effect of the interaction term as the interaction effect; see Ai & Norton (2003).

would support this idea.

2.3 Data

We analyze the 2007 wave of the Pew Global Attitudes Project (GAP), an extensive internationally comparable survey data set with detailed information on more than 40,000 individuals worldwide. It comprises some 47 countries, 26 of which are developing countries from Latin America, Asia, the Middle East, and Africa.[10] For a combined test of hypotheses 1 and 2, the country coverage of the survey data is particularly important. Suppose you have two regions, *America* and *Europe. America* consists of human-capital-abundant *North* and labor-abundant *South*, and similarly for Europe with *West* and *East*. Given that transaction costs are prohibitive for trade between *America* and *Europe*, there is only intra-regional trade. In this world, the logic of comparative advantage predicts that high-skilled individuals in *Northern America* and *Western Europe* are equally affirmative towards free trade. In case the estimation sample is biased towards human-capital-abundant economies, the data could therefore lead the researcher to erroneously reject Stolper-Samuelson effects on preference formation.

We deduce an individual's preference towards trade policy by exploiting answers to the following question.

"What do you think about the growing trade and business ties between [respondent's country] and other countries – do you think it is a very good thing, somewhat good thing, somewhat bad thing or a very bad thing for our country?"

We drop all individuals who have refused to answer this question, about 5% of the entire sample, and construct a pro-trade dummy variable Y_{ic} which takes on the value one if the respondent's answer is *"very good"* or *"somewhat good"* and zero otherwise. We stick to this binary coding throughout the text since it readily eliminates any culturally driven preferences for extreme or moderate responses. These cannot be accounted for by country fixed effects since they come with country-specific dispersions of trade opinions instead of mean shifts.[11]

A qualification in our analysis could be that the question does not make the trade *policy* argument explicit. Yet, a respondent's skeptical view on his or her country's engagement in international trade can be plausibly associated only with the desire of a reduction in trade flows. Since the government is the political institution to pursue a pertinent policy, we argue that the relevant trade policy issue

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[10]We provide summary statistics, coding information, and data sources for all variables used in this paper in appendix A. For complementary information on the GAP survey data, see also `http://pewglobal.org/`.

[11]We have also applied alternative dummy definitions. In particular, we have assigned non-respondents to either the pro- or the anti-trade group of people. All qualitative results reported in this paper are insensitive to this type of recoding.

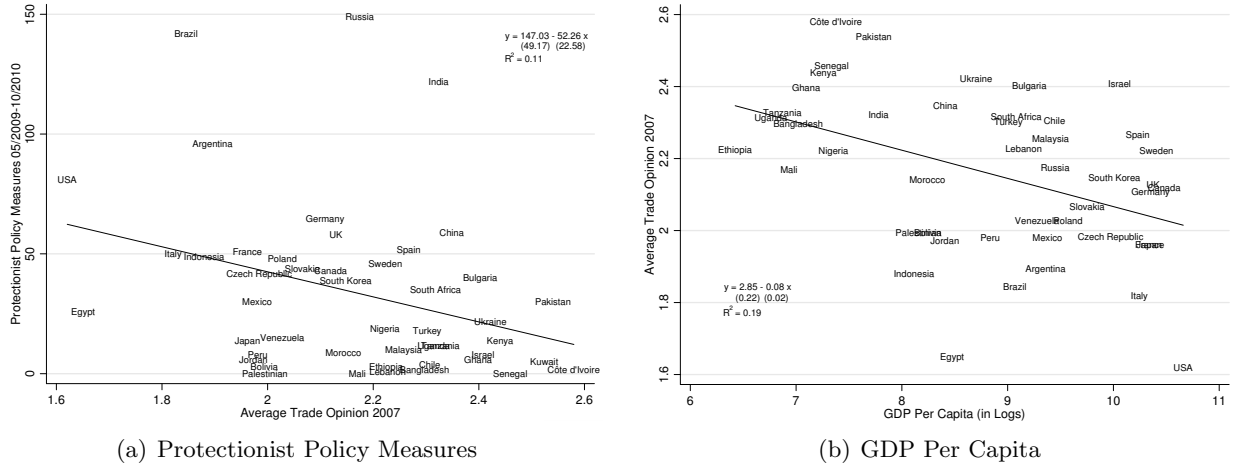(a) Protectionist Policy Measures   (b) GDP Per Capita

Figure 1: Trade Policy Preferences and Policy Outcomes/the Stage of Development

is sufficiently attached to the survey question.

The two pivotal variables in our econometric models are those capturing an individual's skill level h_{ic} and a country's degree of human capital abundance h_c. We proxy the former by an individual's educational background, measured through an ordered six-valued variable of educational attainment.[12] We follow established literature in assuming that a higher formal education is associated with a higher probability of being employed in a job with high skill requirements. Existing literature on individual trade policy preferences mostly proxies a country's degree of human capital abundance h_c by its GDP per capita. We adopt this approach as well, but we are aware of the fact that GDP per capita is positively correlated with the quality of schooling across countries and the extent to which countries participate in intra-industry trade; see Hainmueller & Hiscox (2006) and Beaulieu et al. (2011), respectively. Both relations may alter the effect of individual skill on trade policy preferences and can thus exacerbate the analysis. Therefore, we exploit the fact that each national survey sample is representative for the country's population as a whole and additionally compute explicit measures of factor abundance from within the survey data. More precisely, we define the degree of human capital abundance as each country's weighted average of the individual skill variable.[13] This procedure guarantees the inner consistency of the empirical test to the highest possible extent.

We capture a number of further individual attributes in both the LPM and the Probit model. In particular, we control for a respondent's age, gender, real income, employment status, and religiousness. In addition, the Probit model identifies country-specific parameters on a bunch of polity

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[12]Strictly hierarchical classes are (0) no formal education or incomplete primary education, (1) complete primary education, (2) incomplete secondary education (technical/vocational), (3) complete secondary education (technical/vocational) / incomplete secondary education (university-preparatory) / complete secondary education (university-preparatory), (4) some university education (without degree), (5) university education (with degree).

[13]Sampling weights correct for deviations from random sampling.

and demographic variables from Freedom House and the World Development Indicators (WDI), trade openness (imports plus exports over GDP) from the Penn World Tables (PWT), human capital abundance from the GAP, and GDP per capita from the WDI.[14] This comes at the cost of potentially introducing an estimation bias from omitted variables at the country level. Since the main interest of this study is with consistent estimates of γ_1 and γ_2, we consider the country fixed effects specification of the LPM to be our benchmark model.

Rodrik (1995) points out that individual trade policy preferences are an input in the political decision process and will therefore co-determine actual trade policies. Our survey data allow for a rough inspection of this claim. Combining information from Global Trade Alert (GTA) and the GAP survey, figure 1(a) plots the plain count of protectionist policy measures between May 01, 2009, and October 31, 2010, against average trade opinions in 2007 for the cross-section of 47 countries.[15]

The figure suggests a relationship between voting bodies' preferences and implemented trade policies consistent with common political economy ideas. Countries in which people hold more trade-skeptical views tend to have governments which are more inclined towards protectionist policies. The linear prediction shows that a one-point increase in the four-valued ordered trade opinion variable is associated with a reduction by 50 protectionist policy measures in the considered time span. This is more than double the median number of registered policy measures. The overall picture is consistent with evidence from Mayda & Rodrik (2005) on the link between trade attitudes and average tariffs, while drawing on a significantly larger set of countries. A natural question is whether this relationship becomes tighter, the more democratic a political regime is. The evidence suggests that the answer is broadly yes; see appendix B.

Figure 1(b) unveils an important link between a country's stage of development and people's attitudes towards trade. Rich countries are on average more trade-skeptical than poor countries. Pure country-average income differences account for as much as one-fifth of the variation in average trade opinions. For example, there is very high acceptance of international trade in extremely poor African countries such as the Senegal, Kenya, and Côte d'Ivoire. The situation is similar in Bangladesh, which is among the least developed countries in the world, but also in emerging Asian and East-Asian markets such as China, India, and Malaysia. Individuals in Arab and Latin American countries are significantly less pro-trade, while the evidence from European Union member countries is mixed with

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[14]See tables A.3 and A.5 in the appendix for comprehensive descriptions of all variables.

[15]GTA is a recently established academic initiative for monitoring state policies that may detrimentally affect global trade integration in one way or the other. It is coordinated by the Centre for Economic Policy Research (CEPR), London, UK. See table A.5 in the appendix for a definition of protectionist policy measures and http://www.globaltradealert.org for more information on this data source.

Spanish, Swedish, and Bulgarian people expressing relatively positive views and French and Italian people being less enthusiastic. Finally, on average, U.S. citizens hold the least positive opinions towards international trade.

3   Regression Results

Subsection 3.1 presents Probit estimates of a naïve model of free trade preferences, meaning that it does not allow for non-linearities in the effect of individual skill on trade attitudes. The two subsequent subsections turn to estimates of equations (3) and (3') in the LPM and the Probit model, respectively. They reveal statistically significant and economically large Stolper-Samuelson effects on individual trade attitudes and represent the core of our regression analysis. Subsection 3.4 evaluates the robustness of our results across a number of alternative specifications and models. Amongst other things, it argues that the relevance of the factor endowments model is entirely independent of other factors such as individual economic awareness and openness towards foreign cultures and ideas.

Throughout our analysis, we estimate heteroskedastic robust standard errors to immunize inference against misspecification; see White (1980). Contrary to our approach, existing literature computes country-cluster robust standard errors. Given our assumptions in section 2.2, stochastic and non-stochastic country effects (β_c and b_c) indeed induce correlation among individual observations within country clusters. Whenever we introduce country fixed effects, however, the γ_c's capture any such type of within-country correlation. At any rate, inference based on cluster robust standard errors may be misleading if the number of clusters is small (< 50); see Cameron & Miller (2010).

3.1   Naïve Probit Model

Our naïve regression model does not include the interaction term between individual skill and a country's degree of human capital abundance, $h_{ic} \times h_c$. The main motivation for this model is to make two sources of endogeneity visible which existing literature has not been able to address simultaneously. The first is omitted variable bias, and we show individual income, if excluded from the model, to bias estimated coefficients of individual skill upwards. The second has to do with the fact that the estimation sample's country composition exerts a significant influence on estimated coefficients of individual skill, our main variable of interest. In particular, estimation based on a sample excluding countries rich in raw labor (or, alternatively, rich in human capital) suffers from sampling bias.

For our purposes, we split our sample of 47 countries into two subsamples. The first covers the top 50% of countries by their GDP per capita ("higher-income countries"), the second all the remaining countries ("lower-income countries"). Table 1 reports estimation results of the naïve model in a Probit

framework.

Columns (1) to (4) are based on the sample with higher-income countries and report marginal effects for the average individual in the estimation sample. First and foremost, we find a positive and robustly significant effect of individual skill on free trade preferences. The probability of being pro-trade increases by more than one-and-a-half percentage points for each discrete "jump" to the next higher level of educational attainment. This effect is significant in both a statistical and an economic sense, given that we distinguish among six education groups. Apart from individual skill, the column (1) model explains trade attitudes by an individual's age, gender, and a comprehensive set of country fixed effects. Our results are in line with those reported in related literature. Specifically, we find that older and female people hold more skeptical views towards trade.

Table 1: Naïve Probit Model[†]

	Dependent Variable: Individual-Specific Pro-Trade Dummy							
	Higher-Income Countries				*Lower-Income Countries*			
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Skill	0.017***	0.016***	0.016***	0.015***	0.006***	-0.001	-0.001	-0.001
	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)
Income		0.017***	0.016***	0.016***		0.029***	0.029***	0.030***
		(0.005)	(0.005)	(0.005)		(0.003)	(0.003)	(0.003)
Religious			-0.005	-0.005			-0.001	-0.003
			(0.008)	(0.008)			(0.006)	(0.006)
Unemployed				-0.020**				0.006
				(0.008)				(0.007)
Age	-0.001***	-0.001***	-0.001***	-0.001***	-0.000	-0.000*	-0.000*	-0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Male	0.019***	0.017**	0.015**	0.015**	0.001	0.002	0.002	0.001
	(0.006)	(0.007)	(0.007)	(0.007)	(0.004)	(0.005)	(0.005)	(0.005)
Observations	15,208	13,055	13,011	13,011	23,129	20,207	20,051	19,431
Countries	24	23	23	23	23	23	23	22
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.064	0.062	0.063	0.063	0.087	0.089	0.090	0.093

[†] The table gives the marginal effects, evaluated at estimation sample averages, for each explanatory variable on the probability of being pro-trade in a Probit model. For a comprehensive description of all individual-specific variables see table A.3 in the appendix. Heteroskedastic robust standard errors are given in parentheses. *,**,*** denote significance at the 10%, 5%, 1% levels, respectively.

In columns (2) to (4) we successively control for individual income, religiousness, and employment status, in addition to the other covariates. For our sample of higher-income countries, the skill effect is marginally reduced when controlling for *Income* in column (2). An increase in income by one percent raises the predicted probability of being pro-trade by more than one-and-a-half percentage points. Being tied to religious beliefs is associated with more protectionist attitudes, but the effect is quantitatively small and not statistically different from zero. The opposite holds true for employed people, who feature a predicted probability of favoring free trade which is two percentage points higher than that of their unemployed peers.

Columns (5) to (8) report regression results for the sample of lower-income countries. The picture is quite different from that based on higher-income countries. For example, we find an enhanced role for individual income with a marginal effect equal to three percentage points. In turn, other individual

attributes such as religiousness, gender, and employment status are no significant predictors for free trade preferences. More importantly, the marginal effect of individual skill loses a great deal of its strength, even if we do not control for income; see column (5). Once we do control for it in columns (6) to (8), it vanishes completely.

These results uncover two important points. The first is that estimated coefficients of *Skill* are biased upwards if the estimation sample mostly comprises rich human capital abundant countries (*sampling bias*). The second states that individual income is positively correlated with both individual skill and free trade preferences and, if omitted from the model, results in overestimation of the skill effect (*omitted variable bias*).

3.2 HOS Linear Probability Model (Benchmark Regressions)

The preliminary analysis in the previous subsection suggests that the effect of individual skill on free trade preferences correlates with country characteristics. Although the results are quite in line with the Stolper-Samuelson logic, they do not serve as a test of hypotheses 1 and 2. This test is the purpose of this and the following subsection, exploiting the full country coverage of our sample. We first turn to OLS estimates of the interaction effect between individual skill and a country's degree of human capital abundance, as in equation (3).[16]

Table 2 contrasts the results of two slightly different approaches, the first of which interacts individual skill h_{ic} with a country's GDP per capita, a proxy variable for human capital abundance h_c; see columns (1) to (4). Our second approach applies a country's weighted mean of individual skill as an explicit and therefore more reliable measure of relative factor endowments; see columns (5) to (8). Intentionally, this entire strategy includes the possibility of obtaining differing results for the two applied measures, which would cast some doubt on the conclusions drawn in previous studies.

We find, however, contrary evidence. Throughout all specifications employed, the estimated coefficient of individual skill has a negative sign while that of the interaction term is positive. The estimation outcome is robust (in a qualitative sense) to using alternative measures of human capital abundance, controlling for individual income and including other individual-level covariates such as religiousness and employment status. Our estimates suggest that the effect of individual skill is an increasing function of a country's degree of human capital abundance. In accordance with hypotheses 1 and 2, high-skilled individuals are more likely to favor free trade than low-skilled individuals, but only if they live in countries with sufficiently high relative levels of human capital. By contrast,

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[16]Throughout most of our regression analysis, the linear models predict probabilities of being pro-trade outside the closed unit interval for about half a percent of all estimation sample observations. Whenever outside the unit interval, predictions exceed one, but only by a marginal amount.

in labor-abundant economies it is the low-skilled people who are more inclined towards free trade, other things equal. Our evidence substantially strengthens the findings in Mayda & Rodrik (2005), Scheve & Slaughter (2006), and O'Rourke (2006), because it is based on a "clean" estimation of the interaction effect, explicit endowment information, and a novel extensive data set.

Table 2: HOS Linear Probability Model[†]

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Dependent Variable: Individual-Specific Pro-Trade Dummy							
Skill	-0.057***	-0.068***	-0.067***	-0.065***	-0.018***	-0.027***	-0.028***	-0.029***
	(0.010)	(0.011)	(0.011)	(0.011)	(0.005)	(0.005)	(0.005)	(0.005)
Skill × *GDP Per Capita*	0.008***	0.009***	0.008***	0.008***				
	(0.001)	(0.001)	(0.001)	(0.001)				
Skill × *Country Mean of Skill*					0.012***	0.014***	0.014***	0.014***
					(0.002)	(0.002)	(0.002)	(0.002)
Income		0.026***	0.026***	0.026***		0.026***	0.026***	0.026***
		(0.003)	(0.003)	(0.003)		(0.003)	(0.003)	(0.003)
Religious			-0.003	-0.005			-0.004	-0.006
			(0.005)	(0.005)			(0.005)	(0.005)
Unemployed				-0.008				-0.008
				(0.005)				(0.005)
Age	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Male	0.009**	0.008**	0.007*	0.007	0.009**	0.008*	0.007	0.006
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Observations	37,859	33,262	33,062	32,442	38,337	33,262	33,062	32,442
Countries	46	46	46	45	47	46	46	45
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.066	0.066	0.066	0.068	0.066	0.066	0.066	0.068

[†] The table gives the marginal effects for each explanatory variable on the probability of being pro-trade in a linear probability model. For a comprehensive description of all individual-specific variables see table A.3 in the appendix. Heteroskedastic robust standard errors are given in parentheses. *,**,*** denote significance at the 10%, 5%, 1% levels, respectively.

To fully grasp the estimation outcome, it is helpful to plot the marginal effect of individual skill on the probability of being pro-trade against a country's relative endowment with human capital. Figure 2 visualizes

$$\frac{\Delta \widehat{\Pr(Y_{ic} = 1|\cdot)}}{\Delta h_{ic}} = \hat{\gamma}_1 + \hat{\gamma}_2 \cdot h_c \tag{8}$$

as well as the 90% confidence intervals for the regressions that correspond to columns (4) and (8) in table 2. The left-hand figure (with GDP per capita as a proxy for human capital abundance) demonstrates that in countries with relatively low incomes per capita the model predicts a negative skill effect on the probability of favoring free trade. In Ethiopia, the poorest country in the sample, a one-point increase in individual skill exerts a negative and significant impact on free trade preferences in the vicinity of one-and-a-half percentage points. In sufficiently rich countries the effect is in turn positive and statistically significant, considerably exceeding two percentage points for the countries at the upper extreme of the world income distribution. The threshold value separating countries with a predicted positive effect of *Skill* from those where it is negative is at a log GDP per capita of around 8 ($\approx$ 3,000 Int. Dollars), and therefore significantly below the threshold value that we employed to split our sample in section 3.1 (log GDP per capita of 9.07).
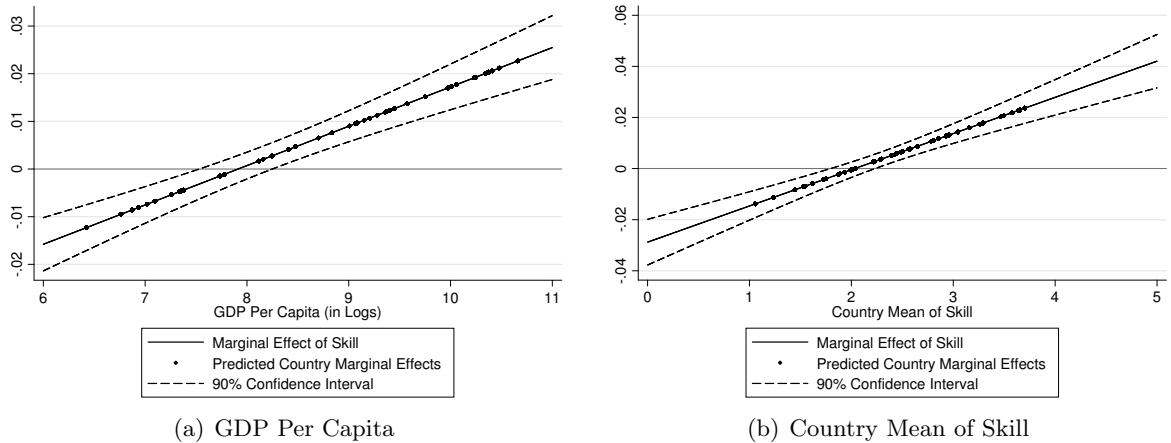
| (a) GDP Per Capita | (b) Country Mean of Skill |

Figure 2: The Marginal Effect of Skill h_{ic} as a Function of h_c (LPM Estimates)

Similarly, our preferred estimates with explicit endowment information (right-hand figure) again fully support hypotheses 1 and 2. The marginal effect of individual skill has a positive sign for countries with a weighted mean of that variable above $h_c^* = 2$ and a negative sign for countries below that threshold. Strikingly, in Morocco and Tanzania, individuals with the highest skill level (university eduction with degree) feature a predicted probability of opposing free trade which is almost seven percentage points higher than that of an individual with the lowest skill level (no formal or incomplete primary education), other things equal. In the U.S., on the other end of the distribution of human capital abundance, the skill effect runs into the opposite direction: going from the lowest to the highest skill level increases an individual's predicted probability of being in favor of free trade by twelve percentage points. In countries with intermediate degrees of human capital abundance, the model predicts a zero-effect on individual trade preferences for a given change in individual skill.

3.3 HOS Probit Model

We now evaluate the robustness of the above findings in a Probit framework. Since the Probit model does no longer allow us to include country fixed effects, two threats to valid inference arise. First, omitted variables at the country level (contributing to b_c) could render parameter estimates inconsistent. Second, stochastic and (unobserved components of) non-stochastic country effects (β_c and b_c) in the error term cast doubt on the validity of ordinary and heteroskedastic robust standard errors alike. We tackle this problem by assigning each country to one out of a total of eight world regions and controlling for effects common to all countries located in the same world region. These regions are Northern America, Southern America, Western Europe, Eastern Europe, Northern Africa, Sub-Saharan Africa, Asia, and the Middle East; see table A.5 in the appendix.

Table 3: HOS Probit Model[†]

| | Dependent Variable: Individual-Specific Pro-Trade Dummy | | | | | | | |
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Skill	-0.007***	-0.005***	-0.005***	-0.004***	-0.018***	-0.021***	-0.021***	-0.022***
	(0.002)	(0.002)	(0.002)	(0.001)	(0.004)	(0.005)	(0.005)	(0.005)
Skill ×	0.002***	0.001***	0.001***	0.001***				
GDP Per Capita	(0.000)	(0.000)	(0.000)	(0.000)				
Skill ×					0.013***	0.013***	0.013***	0.013***
Country Mean of Skill					(0.002)	(0.002)	(0.002)	(0.002)
Income		0.012***	0.011***	0.011***		0.011***	0.011***	0.011***
		(0.002)	(0.002)	(0.002)		(0.002)	(0.002)	(0.002)
Religious			-0.007	-0.008			-0.007	-0.008*
			(0.005)	(0.005)			(0.005)	(0.005)
Unemployed				-0.022***				-0.022***
				(0.005)				(0.005)
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)	(0.000)	(0.000)
Male	0.010**	0.009**	0.007*	0.006	0.010***	0.009**	0.007	0.006
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
GDP Per Capita	-0.008***	-0.006***	-0.006***	-0.005***	-0.017***	-0.023***	-0.023***	-0.024***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.004)	(0.005)	(0.005)	(0.005)
Country Mean of Skill	-0.006	-0.002	-0.003	-0.008	-0.039***	-0.038***	-0.039***	-0.042***
	(0.004)	(0.005)	(0.005)	(0.005)	(0.006)	(0.007)	(0.007)	(0.007)
Electoral Process	0.002	0.001	0.001	0.001	0.004	0.002	0.002	0.003
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Political Pluralism &	-0.028***	-0.030***	-0.030***	-0.030***	-0.028***	-0.031***	-0.031***	-0.032***
Participation	(0.003)	(0.004)	(0.004)	(0.004)	(0.003)	(0.004)	(0.004)	(0.004)
Functioning of	0.018***	0.017***	0.017***	0.018***	0.016***	0.016***	0.015***	0.018***
Government	(0.002)	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)	(0.003)
Freedom of Speech &	-0.005**	-0.002	-0.001	-0.002	-0.005**	-0.002	-0.001	-0.002
Belief	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Associational &	0.032***	0.033***	0.033***	0.035***	0.031***	0.032***	0.032***	0.036***
Organizational Rights	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Rule of Law	0.002	0.000	0.000	-0.000	0.002	0.000	0.000	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Personal Autonomy &	-0.009***	-0.006**	-0.006**	-0.009***	-0.008***	-0.005*	-0.005*	-0.008***
Individual Rights	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Trade Openness	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)	(0.000)	(0.000)
Labor Force Share	0.242***	0.319***	0.310***	0.322***	0.222***	0.303***	0.293***	0.326***
	(0.047)	(0.052)	(0.052)	(0.061)	(0.048)	(0.052)	(0.052)	(0.061)
Observations	37,111	32,545	32,354	31,734	37,111	32,545	32,354	31,734
Countries	45	45	45	44	45	45	45	44
Region Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.050	0.049	0.049	0.052	0.052	0.050	0.051	0.053

[†] The table gives the marginal effects, evaluated at estimation sample averages, for each explanatory variable on the probability of being pro-trade in a Probit model. Row (1) evaluates the marginal effect of *Skill* at $h_c = 0$ and at estimation sample averages of all other covariates. Similarly, reported marginal effects of *GDP Per Capita* and *Country Mean of Skill* are evaluated at $h_{ic} = 0$ when interacted with *Skill*. For comprehensive descriptions of all variables see tables A.3 and A.5 in the appendix. Region-fixed effects refer to world regions as in table A.4 in the appendix. Heteroskedastic robust standard errors are given in parentheses. *,**,*** denote significance at the 10%, 5%, 1% levels, respectively.

Table 3 reports marginal and interaction effects, computed from parameter estimates of variants of equation (3') and evaluated at estimation sample averages of all covariates.[17] As before, columns (1) to (4) and (5) to (8) employ different specifications in which *Skill* is interacted with *GDP Per Capita* and *Country Mean of Skill*, respectively. The model again reveals a non-linearity in the relationship between individual skill and free trade preferences consistent with distributional predictions of free trade in the Heckscher-Ohlin-Samuelson model. In human-capital-abundant countries high-skilled

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[17]To facilitate comparison across tables 2 and 3, row (1) instead evaluates the marginal effect of *Skill* at $h_c = 0$ and at estimation sample averages of all other covariates. Similarly, reported marginal effects of *GDP Per Capita* and *Country Mean of Skill* are evaluated at $h_{ic} = 0$ when interacted with *Skill*.
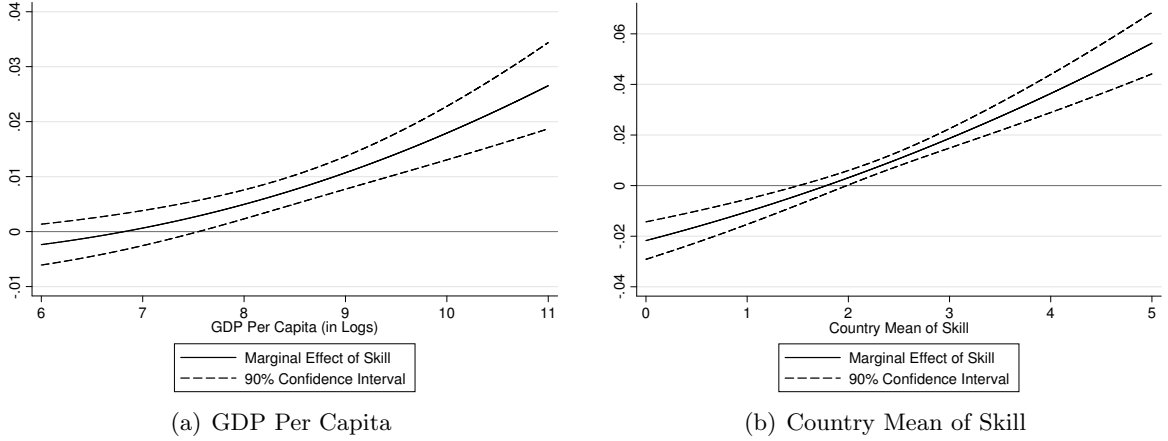
(a) GDP Per Capita

(b) Country Mean of Skill

Figure 3: The Marginal Effect of Skill h_{ic} as a Function of h_c (Probit Estimates)

individuals hold on average less protectionist attitudes than low-skilled individuals, and vice versa in labor-abundant countries. Yet, the effects are different in strength to those in the LPM, at least for cases in which the interaction term is based on a country's GDP per capita.

Such differences can conveniently be identified through inspection of figures 3(a) and 3(b), which show

$$\frac{\Delta \widehat{\Pr(Y_{ic} = 1|\cdot)}}{\Delta h_{ic}} = \Phi'(\hat{\gamma}_0 + \hat{\gamma}_1 \cdot \bar{h}_{ic} + \hat{\gamma}_2 \cdot \bar{h}_{ic} \times h_c + \hat{\gamma}_3 \cdot h_c + \widehat{a(\mathbf{X}_{ic})} + \widehat{b(\mathbf{Z}_c)})[\hat{\gamma}_1 + \hat{\gamma}_2 \cdot h_c], \qquad (8')$$

for the interaction with *GDP Per Capita* and, alternatively, *Country Mean of Skill*; see the corresponding regression results in columns (4) and (8), respectively. In equation (8') 'bars' indicate estimation sample averages and bold letters represent vectors.

Both figures show that the marginal effect of individual skill on free trade preferences increases with a country's relative endowment with human capital. They can therefore be interpreted as lending support to hypothesis 2. However, in figure 3(a) the interval of *GDP Per Capita* for which the model predicts a negative skill effect is substantially reduced. Where this effect applies, it is also smaller than in the LPM and at most marginally significant. Overall, the figure suggests positive and economically large skill effects for the overwhelming majority of countries in the sample. This stands in contrast to the corresponding figure in the LPM. We suggest that this highlights the importance of *(i)* unobserved country effects, which will only partly be captured by the region fixed effects and *(ii)* the nature of the proxy variable. This second argument follows from figure 3(b) which largely reproduces figure 2(b) in a non-linear fashion. The data therefore support both hypotheses as soon as we employ explicit information on countries' relative factor endowments.

Our polity and demographic variables also carry some interesting implications. Each of these variables reflects aspects of a country's political, institutional, and social setting. Although we think it is natural to assume the formation of policy preferences to be partly governed by this setting, the

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precise channels through which this occurs are largely unclear. The same holds true, obviously, for their directions of influence. Estimation results in table 3 show most such country characteristics to be significant predictors of individual attitudes towards trade. For example, better functioning governments and better associational and organizational rights are associated with more favorable views on trade. The opposite holds true for higher degrees of political pluralism and participation as well as personal autonomy and individual rights. These findings corroborate our view that further research is needed to better understand why free trade preferences respond differently to different aspects of the institutional architecture in which states and countries are embedded. An interesting step into this direction can be found in Ehrlich (2007).

3.4 Robustness Analysis

Our robustness analysis is based on the LPM and comes in three parts. Subsection 3.4.1 takes care of further individual characteristics, all of which could be correlated with both educational attainment and free trade preferences. In subsection 3.4.2, we address the rather general concern that individuals' policy preferences are rarely driven by economic self-interest. Finally, subsection 3.4.3 asks whether our results are simple artifacts of our coding choice for skill h_{ic}.

3.4.1 Conditioning on Aspects of Individual Enlightenment

Hainmueller & Hiscox (2006) argue that education is not a "clean" device for factor ownership, because it could *(i)* spur people's awareness of the aggregate gains from trade and *(ii)* make individuals less amenable to nationalist ideas; see also Mayda & Rodrik (2005).[18] To the extent that these aspects of individual "enlightenment" have a relevant impact on preference formation, our model could suffer from omitted variable bias, provided their effect is not already absorbed by other controls. However, this bias would apply equally to all countries, at least in principle. Hence, our previous estimation results may *overstate* the positive effect of skill in human-capital-abundant countries such as the United States and, by the same token, *understate* the negative effect of skill in labor-abundant countries such as Tanzania. These considerations reinforce rather than contradict our Stolper-Samuelson interpretation.

In our regressions in table 4, we aim at conditioning on aspects of both people's economic awareness and their openness towards foreign cultures and habits. Provided that stated free trade preferences are also correlated with expected *individual* income effects of trade, our model then consistently

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[18]The first aspect is a particularly serious concern in our application, because the question on trade preferences does not address the distributional consequences of international trade within the respondent's country, but rather the implications for the country at large; see also Mansfield & Mutz (2009). From this perspective, free trade in goods and services may be the first best policy choice.

identifies any Stolper-Samuelson forces. Many of the additional individual-specific controls are not applicable for a subset of eight countries in the GAP survey data set. This subset includes Canada, the Czech Republic, France, Germany, the Slovak Republic, Sweden, the United Kingdom and the United States. To exclude the possibility that changes in estimated coefficients reflect mere changes in sample composition, we employ exactly the same estimation sample in all specifications. The most parsimonious model in column (1) explains free trade preferences by an individual's income, age, gender, skill and its interaction with *Country Mean of Skill*.[19] This baseline model largely reproduces the full-sample estimates of the previous subsections, even though the magnitude of Stolper-Samuelson effects is somewhat reduced.

Table 4: Conditioning on Aspects of Individual Enlightenment[†]

	Dependent Variable: Individual-Specific Pro-Trade Dummy							
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Skill	-0.018***	-0.018***	-0.018***	-0.018***	-0.018***	-0.018***	-0.019***	-0.018***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Skill ×	0.008***	0.008***	0.008***	0.008***	0.008***	0.008***	0.008***	0.008***
Country Mean of Skill	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Income	0.022***	0.022***	0.022***	0.022***	0.022***	0.022***	0.021***	0.021***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Economic Awareness		0.015***						0.012***
		(0.003)						(0.003)
Informed			-0.005					-0.004
			(0.005)					(0.005)
Sociotropic Views				0.010***				0.007**
				(0.003)				(0.003)
Fears of Cultural Spill-Overs					-0.025***			-0.021***
					(0.005)			(0.005)
Nationalism						0.007**		0.006*
						(0.003)		(0.003)
Fears of Internt'l Competition							-0.074***	-0.072***
							(0.007)	(0.007)
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)	(0.000)	(0.000)
Male	0.002	0.003	0.003	0.002	0.003	0.003	0.001	0.002
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Observations	22,378	22,378	22,378	22,378	22,378	22,378	22,378	22,378
Countries	38	38	38	38	38	38	38	38
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.070	0.071	0.070	0.070	0.071	0.070	0.077	0.080

[†] The table gives the marginal effects for each explanatory variable on the probability of being pro-trade in a linear probability model. For a comprehensive description of all individual-specific variables see table A.3 in the appendix. Heteroskedastic robust standard errors are given in parentheses. *,**,*** denote significance at the 10%, 5%, 1% levels, respectively.

In column (2), we add a four-valued ordered proxy variable to capture an individual's economic understanding, which could make individuals responsive to the aggregate gains from trade (*Economic Awareness*). The survey design confronts respondents with a statement which, we believe, calls for an affirmative reply of a person with some training in economics: *"Please tell me whether you completely agree, mostly agree, mostly disagree or completely disagree with the following statement. 'Most people*

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[19]To economize on space, we do not report regression output for estimations in which we interact individual skill with *GDP Per Capita* instead of *Country Mean of Skill*. The results allow us to draw fully identical conclusions and are available from the authors upon request.

are better off in a free market economy, even though some people are rich and some are poor.'" The statement nicely encapsulates a basic principle of economics: that *"free markets are usually a good way to organize economic activity"* but that they *"can nonetheless leave sizable disparities in economic well-being."*[20] Moreover, it does not refer to issues such as international trade, trade liberalization, or globalization, at least not explicitly. Answers to this question are thus not subject to what has been dubbed justification bias in the literature on opinion polls. This type of bias would arise if individuals were partly using their answers as a means of ex post justification for their (positive or negative) preferences towards trade; see Bonsall et al. (1992). *Economic Awareness* enters the model with a significant and positive coefficient, as expected. Its quantitative relevance is relatively high. Going from the answer category with the lowest value (0 = *"completely disagree"*) to that with the highest value (3 = *"completely agree"*), an individual's probability of favoring free trade increases by four-and-a-half percentage points.

Column (3) inspects the role of information in attitude formation. Mansfield & Mutz (2009) discuss the possibility that highly educated individuals are more likely to be exposed to relevant information on the (aggregate) economic effects of trade policies. We include a measure of an individual's exposure to international news (*Informed*). This variable is based on the following survey question: *"Which of the following two statements best describes you: 'I follow INTERNATIONAL news closely ONLY when something important is happening.' OR 'I follow INTERNATIONAL news closely most of the time, whether or not something important is happening'?"* Our assumption is that following international news regularly, independent of whether or not something important is happening, increases an individual's exposure to relevant information (*Informed* coded one). In line with arguments brought forward in the literature, the variable is indeed positively correlated with an individual's skill level; see table A.2 in the appendix. Yet, our regression results suggest that exposure to information does not exert any significant impact on trade policy preferences.

In the spirit of Hainmueller & Hiscox (2006), Mansfield & Mutz (2009) argue that material self-interest is less important for trade attitudes than perceptions of the effects of trade on the economy as a whole. We will try to take care of a similar concern below. Here we ask whether the extent to which individuals hold sociotropic views makes a difference for perceptions of international trade. An individual's answer to the following survey question may yield informative insights in this regard: *"Please tell me whether you completely agree, mostly agree, mostly disagree or completely disagree with the following statement. 'Protecting the environment should be given priority, even if it causes*

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[20]The quotations are respectively from Mankiw (2008, pp. 8 & 12), one of the most widely used introductory economics textbooks.

slower economic growth and some loss of jobs.'" The variable *Sociotropic Views* takes on integer values from (0) *"completely disagree"* to (3) *"completely agree"*. The underlying statement posits a trade-off between environmental protection, a durable public good generating benefits for many years, and economic growth and the availability of jobs, the latter securing personal income. We argue that a tendency towards environmental protection reveals sociotropic attitudes. Regression results in column (4) are consistent with this interpretation, reporting a positive and significant coefficient of *Sociotropic Views*.

We next turn to aspects of nationalist attitudes. Column (5) controls for fears that increasing globalization may crowd out local traditions. We exploit the following survey information: *"I am going to read some phrases which have opposite meanings. Tell me which comes closer to describing your views. 'It's good that American ideas and customs are spreading around the world.' — 'It's bad that American ideas and customs are spreading around the world.'"* The dichotomous variable *Fears of Cultural Spill-Overs* is coded one (zero) if respondents take a positive (negative) stance on spreading American ideas and customs. Obviously, answers to this question are heavily loaded by the explicit reference to the United States. Our data show that anti-American sentiments are popular in both developing and developed countries. That said, we argue that our indicator variable also captures fears of the cultural impact of globalization in general, and we expect the purely American-specific element to be independent of individual trade policy preferences. The negative and significant coefficient of *Fears of Cultural Spill-Overs* shows that pro-trade views go hand in hand with openness towards foreign cultures and habits. Again, this is in line with our expectations.

Column (6) incorporates feelings of national superiority through a four-valued ordered variable constructed from individual responses towards the following statement (*Nationalism*): *"As I read another list of statements, for each one, please tell me whether you completely agree, mostly agree, mostly disagree or completely disagree with it. 'Our people are not perfect, but our culture is superior to others.'"* Our estimates reveal that "nationalist" people are, at first sight surprisingly, more likely to be pro-trade. This finding runs opposite to the intuition that nationalist sentiments should foster preferences for isolationist policies. On the other hand, feelings of national superiority may mitigate worries that the domestic economy is not able to cope with foreign competition. Seen in this light, the positive albeit small coefficient estimate on *Nationalism* is quite intuitive.

The model in column (7) takes a closer look at the extent to which individuals are afraid of negative economy-wide effects from international competition. The binary variable *Fears of International Competition* is based on the following survey question: *"Turning to China, overall do you think that China's growing economy is a good thing or a bad thing for our country?"* Including this variable in

the model is different from controlling for economic awareness, since there are arguments for both why economic growth of one country may be good or bad for another country. Nevertheless, we expect people who perceive another country's growth as a threat rather than an opportunity to be more likely to retain protectionist attitudes. Our results strikingly confirm this expectation. Individuals who fear negative repercussions from China's growing economy have a significantly lower probability of favoring free trade. The quantitative impact is huge and amounts to a fall in predicted probability of more than seven percentage points.

We have so far separately augmented the model by each of the above mentioned control variables in columns (2) to (7). All qualitative results survive if we estimate a more encompassing model which conditions on all aspects of individual enlightenment simultaneously; see column (8). These findings are interesting in their own right. They give quite strong support to the idea that various aspects of individual enlightenment exist, and that most of them are significantly linked to individual trade policy preferences. However, our main focus is on parameter estimates for *Skill* and its interaction with *Country Mean of Skill*. These do not change in any significant way, relative to the baseline specification in column (1). We therefore conclude that the Stolper-Samuelson result is independent of individuals' economic awareness and their openness towards foreign cultures and ideas.

3.4.2 Economic Self-Interest versus Social Values and Identity

There is an ongoing debate among economists, sociologists, and political scientists about the roles played by social values and identity and, juxtaposed, pure material self-interest in shaping individual political behavior. The literature as it currently stands takes the view that both factors are potentially important, depending on how clear-cut the policy alternatives and implications are and how long the time horizon is to which these apply; see Chong et al. (2001), Ehrlich et al. (2010), and Hunt et al. (2010) as well as the references cited there. Admittedly, this paper takes an extreme view on this issue. Recall that a prerequisite for free trade preferences to emerge along the lines of the Heckscher-Ohlin-Samuelson model is that individuals prefer a certain policy choice over another if it brings about a greater (expected) *personal* income. Given the nature of our survey data, we are not in a position to fully assess the reliability of this prerequisite. Yet, we can make an important step into this direction. The point of departure is the idea that in individual decision making the weight put on material self-interest is larger for some individuals than for others. We expect this weight to broadly correlate with the extent to which hypotheses 1 and 2 are borne out by the data. The challenge is to find a sound signalling device from which we can systematically exploit this heterogeneity. Our view is that the absence of economic and financial concerns is such a device because it erodes the need for

individuals to base their decisions on mere pocketbook considerations.

Our strategy is to divide the entire sample into two groups, the first of which includes only individuals who express economic and/or financial concerns and the second all the remaining individuals. This distinction is based on answers to the following question in the GAP survey: *"What do you think is the most important problem facing you and your family today?"* The question is open in the sense that pollers do not present or read out a list with possible answers to individuals. A maximum of three answers is allowed, and each of them is subsequently assigned to one of the following categories: *"Economic/financial problems"*, *"Health"*, *"Education and children"*, *"Housing"*, *"Social relations"*, *"Work"*, *"Transportation"*, *"Crime"*, *"Problems related to government"*, *"Terrorism and war"*, *"Other"*. Each category comprises two to six pre-specified subcategories plus a "residual" group for answers which do not fit into any one of the given subcategories. We identify subcategories referring to problems which are relevant from a very economic/financial perspective and classify individuals whose answers fall into at least one such subcategory as *"economically/financially concerned"*. These subcategories are *"Low wages"*, *"Unemployment"*, *"Poverty"*, *"Other economic/financial problems"*, and *"Lack of good jobs"*.

Table 5: Economic Self-Interest versus Social Values and Identity[†]

| | Dependent Variable: Individual-Specific Pro-Trade Dummy | | | | | | | |
| | "Economically/Financially Concerned" | | | | "Economically/Financially Unconcerned" | | | |
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Skill	-0.017**	-0.015**	-0.015**	-0.022***	-0.011	-0.013	-0.013	-0.013
	(0.007)	(0.007)	(0.007)	(0.009)	(0.008)	(0.008)	(0.009)	(0.010)
Skill ×	0.008**	0.007**	0.007**	0.009**	0.007**	0.008**	0.008**	0.007*
Country Mean of Skill	(0.003)	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)	(0.004)	(0.004)
Income	0.022***	0.023***	0.024***	0.023***	0.018***	0.017***	0.017***	0.015**
	(0.004)	(0.004)	(0.004)	(0.005)	(0.005)	(0.005)	(0.005)	(0.006)
Religious		-0.000	-0.001	-0.000		-0.012	-0.012	-0.016*
		(0.007)	(0.007)	(0.008)		(0.008)	(0.008)	(0.010)
Unemployed			0.003	0.007			-0.008	-0.008
			(0.007)	(0.008)			(0.008)	(0.009)
Age	-0.000**	-0.000**	-0.000**	-0.001**	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Male	0.002	0.002	0.002	0.006	0.005	0.005	0.003	-0.003
	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)	(0.007)	(0.008)
Observations	17,136	16,655	16,538	12,575	12,303	12,160	12,094	9,272
Countries	38	37	37	37	38	37	37	37
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Additional Controls	No	No	No	Yes	No	No	No	Yes
R^2	0.057	0.059	0.059	0.081	0.068	0.069	0.070	0.093

[†] The table gives the marginal effects for each explanatory variable on the probability of being pro-trade in a linear probability model. Additional controls are *Economic Awareness*, *Informed*, *Sociotropic Views*, *Fears of Cultural Spill-Overs*, *Nationalism* and *Fears of Internt'l Competition*. For a comprehensive description of all individual-specific variables see table A.3 in the appendix. Heteroskedastic robust standard errors are given in parentheses. *,**,*** denote significance at the 10%, 5%, 1% levels, respectively.

With this procedure, we are left with roughly 20,000 individual observations with economic and/or financial concerns and 15,000 without. One might be tempted to expect the skill distribution to draw a sharp line between the two groups of individuals, but the evidence proves contrary. For example, close to one sixth of individuals who express economic and/or financial concerns have exposure to

at least some university education, as opposed to 23 percent for the other group. We run the same regressions separately on each of the two subsamples, estimating the effect of *Skill* and its interaction with *Country Mean of Skill* and bringing in different sets of control variables; see table 5. As in the previous subsection, answers to the above survey question are not applicable for a relevant subset of countries in the GAP. Thus, we again end up with a maximum number of 38 countries in the estimation sample.

We find the estimates based on the sample with *"economically/financially concerned"* individuals to neatly reflect the Stolper-Samuelson logic; see columns (1) to (4). The quantitative implications are similar to those in the previous subsection, at least for models in which we use the same set of control variables as in our benchmark regressions. Column (4) applies a specification similar to that in column (8) of table 4, controlling for all aspects of individual enlightenment. In this model, the predicted negative skill effect extends to a larger set of countries, compared to our benchmark regressions in section 3.2. This set now includes labor-abundant China, for example. Estimates on the subsample with individuals who do not express economic and/or financial concerns, while similar with respect to all control variables, yield complementary insights; see columns (5) to (8). In particular, the data do not confirm hypothesis 1 as there is no country in the sample for which a given positive change in *Skill* entails a significant decline in individual support for free trade. A careful interpretation of these findings could be that the factor endowments model has significant explanatory power in understanding trade attitudes of individuals whose concerns about their personal financial situation loom large in their preference structures. With other factors such as social values and identity gaining relative importance in individual decision making, this explanatory power is reduced.

3.4.3 Skill Group-Specific Effects on Free Trade Preferences

To assess whether and to what extent our previous results are due to the specific coding of *Skill* and *Country Mean of Skill*, we estimate the same model for alternative measures of both individual skill and a country's relative endowment with human capital. In so doing, we pay attention to the fact that values on *Skill* reflect an ordinal instead of a cardinal scale. Indeed, there is no quantifiable distance between any two educational categories, although the variable definition suggests there is (and that it is the same between any two adjacent categories).

We first allow for skill group-specific effects on free trade preferences. By skill groups we mean groups of individuals with the same educational background, where we represent each of the six strictly hierarchical classes of educational attainment by a unique skill group, enumerated from zero to five. Individual-specific indicator variables *Skill Group 1* to *Skill Group 5* then take on the value

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one if the individual belongs to the corresponding skill group and zero otherwise. Columns (1) and (2) in table 6 report estimation results for regressions in which we employ these indicator variables and their interactions with *Country Mean of Skill* as exogenous variables. Individuals with no formal or incomplete primary education (*Skill Group 0*) form the omitted category against which estimated skill group-specific effects and the interactions are to be interpreted. In light of hypotheses 1 and 2 we expect each skill group effect on free trade preferences to exhibit the same qualitative non-linearity as above: compared to the lowest skill group, any other skill group should have a lower probability of favoring free trade in labor-abundant economies and a higher probability in human-capital-abundant countries. Furthermore, the quantitative implications (both positive and negative) should be the larger in absolute size, the higher the skill group category of educational attainment. This follows from the assumption that the probability of holding a high-skilled occupation is the higher, the higher the skill category.

Table 6: Skill Group-Specific Effects on Free Trade Preferences[†]

| VARIABLES | Dependent Variable: Individual-Specific Pro-Trade Dummy | | | |
| | Interaction Terms with h_c = Country Mean of Skill | | Interaction Terms with h_c = Country Median of Skill | |
	(1)	(2)	(3)	(4)
Skill Group 1	0.024	-0.006	0.024	0.003
	(0.032)	(0.036)	(0.022)	(0.024)
Skill Group 2	-0.029	-0.030	-0.026	-0.025
	(0.030)	(0.032)	(0.027)	(0.029)
Skill Group 3	-0.035	-0.070**	-0.015	-0.040*
	(0.025)	(0.028)	(0.019)	(0.021)
Skill Group 4	-0.045	-0.094**	-0.045	-0.082**
	(0.038)	(0.041)	(0.035)	(0.037)
Skill Group 5	-0.082***	-0.132***	-0.115***	-0.136***
	(0.031)	(0.034)	(0.029)	(0.031)
Skill Group 1 × h_c	-0.011	-0.002	-0.010	-0.006
	(0.016)	(0.018)	(0.009)	(0.011)
Skill Group 2 × h_c	0.021	0.018	0.017	0.013
	(0.014)	(0.016)	(0.012)	(0.013)
Skill Group 3 × h_c	0.026**	0.033**	0.015*	0.018*
	(0.013)	(0.014)	(0.008)	(0.009)
Skill Group 4 × h_c	0.038**	0.047***	0.036***	0.039***
	(0.016)	(0.017)	(0.013)	(0.014)
Skill Group 5 × h_c	0.054***	0.063***	0.063***	0.061***
	(0.014)	(0.015)	(0.011)	(0.012)
Income		0.026***		0.026***
		(0.003)		(0.003)
Age	-0.000***	-0.001***	-0.000***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
Male	0.008**	0.008*	0.008**	0.008*
	(0.004)	(0.004)	(0.004)	(0.004)
Observations	38,337	33,262	38,337	33,262
Countries	47	46	47	46
Country Fixed Effects	Yes	Yes	Yes	Yes
R^2	0.066	0.066	0.067	0.066

[†] The table gives the marginal effects for each explanatory variable on the probability of being pro-trade in a linear probability model. Baseline category: *Skill Group 0*. For a comprehensive description of all individual-specific variables see table A.3 in the appendix. Heteroskedastic robust standard errors are given in parentheses. *,**,*** denote significance at the 10%, 5%, 1% levels, respectively.

Indeed, point estimates of the coefficients in table 6 suggest that the main effects of all skill groups are negative and the interaction effects positive. As before, the quantitative implications of
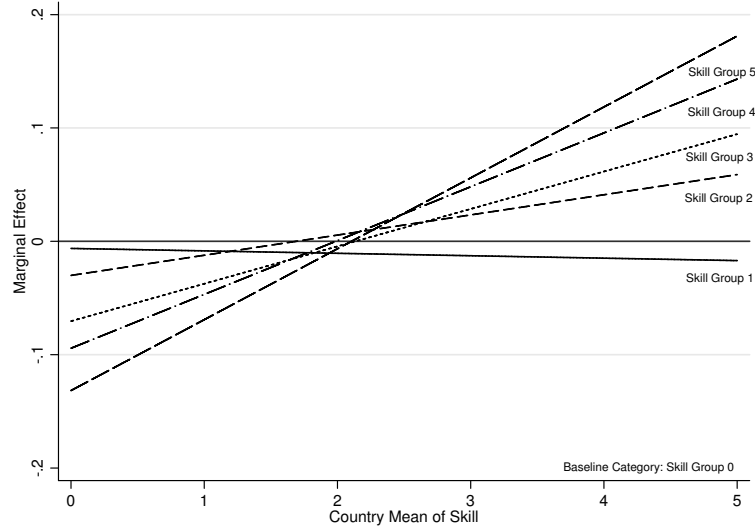
Figure 4: Skill Group-Specific Effects on Free Trade Preferences

the model are reinforced once *Income* is controlled for. Importantly, both main and interaction effects are increasing (in absolute size) in the skill group category of educational attainment, and they are statistically significant at the five percent confidence level in case of the top three categories. Figure 4 makes visible how the skill group effects vary with a country's relative endowment with human capital. It shows that the threshold value of relative factor abundance is strikingly similar for the top four skill groups ($h_c^* \approx 2$). Furthermore, the straight lines depicting predicted changes in trade attitudes rotate left around this threshold value for higher levels of educational attainment.[21] We therefore interpret the results of this more flexible estimation approach as fully compatible with the Stolper-Samuelson logic.

As a final robustness check, in columns (3) and (4) in table 6 we interact skill group dummy variables with the country median of *Skill* instead of the country average. We do so because the median may be more suitable for data on an ordinal scale and because it is less sensitive to outliers. The use of this measure does not alter our estimation results in any remarkable way.

4   Conclusion

Motivated by the incidence of the growing North-South share in world trade and the rising demand for protection in high-income countries, this paper adds an empirical piece to the literature on individual attitudes towards trade. Using a wide cross section of 47 countries from all over the world, we primarily focus on the interplay between individual factor ownership and countries' relative factor

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[21]Given that the model predicts a zero-effect for *Skill Group 1*, irrespective of a country's relative endowment with human capital, we conclude that the probability to qualify for a high-skilled job does not differ across *Skill Group 0* and *Skill Group 1*. Similarly for *Skill Group 2*.

endowments. Our paper shows how the linear probability model can be used to straightforwardly examine how this interplay is shaping free trade preferences, and that this approach has relevant advantages over the commonly applied Probit model.

Our evidence suggests that the Heckscher-Ohlin-Samuelson model, one of the most influential models in the theory of international trade, has a significant stake in explaining the formation of trade policy preference at the individual level. Stolper-Samuelson-type distributional effects of trade policy interventions account for a significant share of the heterogeneity of free trade preferences across individuals and countries both in statistical and economic terms. In the United States, being high-skilled increases an individual's predicted probability of favoring free trade by up to twelve percentage points. In Ethiopia, the effect amounts to eight percentage points, but in exactly the opposite direction. Our results derive from a novel survey data set, and they are robust to conditioning on aspects of individual enlightenment. Our analysis shows, however, that these aspects are significant predictors of preferences towards trade. For example, individuals are more open to international trade, the higher their economic awareness. The opposite applies to people with reservations against foreign cultures and international competition. These findings corroborate part of the conclusions drawn by Hainmueller & Hiscox (2006) and Mansfield & Mutz (2009), but not at the expense of a rejection of the factor endowments model.

The empirical support for the factor endowments model may appear puzzling, given that the neoclassical assumptions are obviously false. The fact that economists have long struggled with bringing the Heckscher-Ohlin model to actual trading data in a meaningful way only reinforces this argument. That said, our empirical analysis does prove that an individual's revealed preference towards trade policy includes an element which is responsive to the relative abundance of his or her production factor in the domestic economy. This element turns out to shape attitudes towards trade policies in a way that exactly mirrors the predictions of the Heckscher-Ohlin-Samuelson model. This result becomes elucidating if interpreted against the notion of factors being embodied in trade goods and services. Broadly speaking, it tells us that people are sensitive towards how an integrated world economy may affect the relative scarcity of their factors, compared to an autarky situation.

References

Ai, C., & Norton, E. C. (2003). Interaction terms in logit and probit models. *Economics Letters*, *80*(1), 123–29.

Balistreri, E. J. (1997). The performance of the Heckscher-Ohlin-Vanek model in predicting endogenous policy forces at the individual level. *Canadian Journal of Economics*, *30*(1), 1–17.

Beaulieu, E., Benarroch, M., & Gaisford, J. (2011). Intra-industry trade liberalization: Why skilled workers are more likely to support free trade. *Forthcoming in Review of International Economics*.

Beaulieu, E., Yatawara, R. A., & Wang, W. G. (2005). Who supports free trade in Latin America? *The World Economy*, *28*(7), 941–59.

Bhagwati, J. (1959). Protection, real wages and real incomes. *The Economic Journal*, *69*(276), 733–48.

Blinder, A. S. (2009). Offshoring: Big deal, or business as usual? In B. M. Friedman (Ed.) *Offshoring of American Jobs - What Response from U.S. Economic Policy?*, chap. 2, (pp. 19–59). MIT Press.

Blonigen, B. (2008). New evidence on the formation of trade policy preferences. Working Paper 14627, National Bureau of Economic Research.

Bonsall, P. W., Wardman, M., Nash, C., & Hopkinson, P. (1992). Development of a survey instrument to measure subjective valuations: Approaches to the estimation of non-use benefits of local public transport services. In E. S. Ampt, A. J. Richardson, & A. H. Meyburg (Eds.) *Selected readings in transport survey methodology: edited proceedings of the 3rd International Conference on Survey Methods in Transportation, Washington D.C., January 5-7, 1990*. Eucalyptus Press: Sydney.

Cameron, A. C., & Miller, D. L. (2010). Robust inference with clustered data. In A. Ullah, & D. E. Giles (Eds.) *Handbook of Empirical Economics and Finance*, chap. 1, (pp. 1–28). Chapman & Hall/CRC Press.

Chong, D., Citrin, J., & Conley, P. (2001). When self-interest matters. *Political Psychology*, *22*(3), 541–70.

Deardorff, A. V. (1993). Overview of the Stolper-Samuelson theorem. In A. V. Deardorff, & R. M. Stern (Eds.) *The Stolper-Samuelson Theorem: A Golden Jubilee*, chap. 2, (pp. 7–34).

Deardorff, A. V. (2004). Local comparative advantage: Trade costs and the pattern of trade. Working Paper 500, Research Seminar in International Economics, University of Michigan.

Ehrlich, S. D. (2007). Access to protection: Domestic institutions and trade policy in democracies. *International Organization*, *61*(3), 571–605.

Ehrlich, S. D., & Maestas, C. (2010). Risk orientation, risk exposure, and policy opinions: The case of free trade. *Political Psychology*, *31*(5), 657–84.

Ehrlich, S. D., Maestas, C., Hearn, E., & Urbanski, P. (2010). Trade policy preferences and concern about your job. Paper presented at 2010 Midwest Political Science Association Conference.

Feenstra, R. C., & Hanson, G. H. (2003). Global production sharing and rising inequality: A survey of trade and wages. In E. K. Choi, & J. Harrigan (Eds.) *Handbook of International Trade*, vol. 1, chap. 6, (pp. 146–85). Blackwell.

Freeman, R. B. (2009). Comment on Blinder (2009). In B. M. Friedman (Ed.) *Offshoring of American Jobs - What Response from U.S. Economic Policy?*, chap. 3. MIT Press.

Hainmueller, J., & Hiscox, M. J. (2006). Learning to love globalization: Education and individual attitudes toward international trade. *International Organization*, *60*(02), 469–98.

Hoffman, M. E. (2009). What explains attitudes across US trade policies? *Public Choice*, *138*(3-4), 447–60.

Hunt, C. V., Kim, A., Borgida, E., & Chaiken, S. (2010). Revisiting the self-interest versus values debate: The role of temporal perspective. *Journal of Experimental Social Psychology*, *46*(6), 1155–58.

Krugman, P. R. (2008). Trade and wages, reconsidered. *Brookings Papers on Economic Activity*, *1*, 103–54.

Lawrence, R. Z. (2008). *Is trade to blame for rising US income inequality?*. Peterson Institute for International Economics.

Mankiw, N. G. (2008). *Principles of Economics*. Cengage Learning, 5th ed.

Mansfield, E. D., & Mutz, D. C. (2009). Support for free trade: Self-interest, sociotropic politics, and out-group anxiety. *International Organization*, *63*(3), 425–57.

Mayda, A. M., O'Rourke, K. H., & Sinnott, R. (2007). Risk, government and globalization: International survey evidence. Working Paper 13037, National Bureau of Economic Research.

Mayda, A. M., & Rodrik, D. (2005). Why are some people (and countries) more protectionist than others? *European Economic Review*, *49*(6), 1393–430.

Metzler, L. A. (1949). Tariffs, the terms of trade, and the distribution of national income. *Journal of Political Economy*, *57*, 1.

OECD (2009). Education at a Glance 2009: OECD Indicators.

O'Rourke, K. H. (2006). Heckscher-Ohlin theory and individual attitudes towards globalization. In R. Findlay, R. Henriksson, H. Lindgren, & M. Lundahl (Eds.) *Eli Heckscher, International Trade, and Economic History*, (pp. 107–38). MIT Press.

O'Rourke, K. H., & Sinnott, R. (2001). The determinants of individual trade policy preferences: International survey evidence. In S. M. Collins, & D. Rodrik (Eds.) *Brookings Trade Forum 2001*, (pp. 157–96). Brookings Institute Press.

Pew GAP (2007). *World Publics Welcome Global Trade – But Not Immigration.* Survey Report of the Pew Global Attitudes Project, October 4th, 2007. Washington D.C.

Rodrik, D. (1995). Political economy of trade policy. In G. M. Grossman, & K. Rogoff (Eds.) *Handbook of International Economics*, vol. 3, chap. 28, (pp. 1457–94). Elsevier.

Scheve, K. F., & Slaughter, M. J. (2001). What determines individual trade-policy preferences? *Journal of International Economics*, *54*(2), 267–92.

Scheve, K. F., & Slaughter, M. J. (2006). Public opinion, international economic integration, and the welfare state. In S. B. Pranab K. Bardhan, & M. Wallerstein (Eds.) *Globalization and egalitarian redistribution*, chap. 9, (pp. 217–60). Princeton: Princeton University Press.

Scheve, K. F., & Slaughter, M. J. (2007). A new deal for globalization. *Foreign Affairs*, *86*(4), 34–47.

Stolper, W. F., & Samuelson, P. A. (1941). Protection and real wages. *The Review of Economic Studies*, *9*(1), 58–73.

Walter, S. (2010). Globalization and the demand-side of politics: How globalization shapes individual perceptions of labor market risk and policy preferences. Paper prepared for presentation at the 2010 IPES Conference at Harvard University, Cambridge MA, 12-13 November 2010.

White, H. (1980). A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica*, *48*(4), 817–38.

Wolfe, R., & Mendelsohn, M. (2005). Values and interests in attitudes toward trade and globalization: The continuing compromise of embedded liberalism. *Canadian Journal of Political Science*, *38*(1), 45–68.

A Individual and Country Data

This appendix provides summary statistics, coding information, and data sources for all variables used in this paper.

Table A.1: Summary Statistics for Individual-Level Variables[†]

Variable	Observations	Arithmetic Mean	Standard Deviation	Minimum	Maximum
Pro-Trade Dummy	38,684	0.86	0.34	0	1
Trade Opinion	38,684	2.19	0.75	0	3
Skill	40,637	2.50	1.56	0	5
Income	35,131	6.16	1.60	-0.55	9.81
Religious	39,826	0.62	0.49	0	1
Unemployed	40,515	0.34	0.47	0	1
Age	40,614	39.57	15.55	18	97
Male	40,826	0.49	0.50	0	1
Economic Awareness	33,978	1.86	0.92	0	3
Informed	38,842	0.54	0.50	0	1
Sociotropic Views	34,713	2.02	0.90	0	3
Fears of Cultural Spill-Overs	35,712	0.70	0.46	0	1
Nationalism	34,807	2.03	0.86	0	3
Fears of International Competition	30,987	0.28	0.45	0	1

[†] See table A.3 for coding information on all variables. Summary statistics are not corrected for deviations from random sampling.

Table A.2: Correlation Matrix: Aspects of Individual Enlightenment[†]

	Skill	Economic Awareness	Informed	Sociotropic Views	Fears of Cultural Spill-Overs	Nationalism	Fears of Internt'l Competition
Skill	1.000						
Economic Awareness	0.019	1.000					
Informed	0.055	-0.025	1.000				
Sociotropic Views	0.025	0.193	0.018	1.000			
Fears of Cultural Spill-Overs	-0.067	-0.087	0.009	-0.012	1.000		
Nationalism	-0.034	0.058	-0.026	0.107	0.038	1.000	
Fears of Internt'l Competition	0.057	-0.042	0.001	-0.006	0.094	0.024	1.000

[†] The table gives correlation coefficients based on the estimation sample in table 4. For a comprehensive description of all variables see table A.3.

Table A.3: Coding Information for Individual-Level Data[†]

Variable	Description and Coding (Survey Questions in Italics)
Pro-Trade Dummy	"What do you think about the growing trade and business ties between [respondent's country] and other countries – do you think it is a very good thing, somewhat good, somewhat bad or a very bad thing for our country?"; coded (1) "very good" or "somewhat good", (0) "somewhat bad" or "very bad".
Trade Opinion	Survey question as above; coded (3) "very good", (2) "somewhat good", (1) "somewhat bad", and (0) "very bad".
Age	Respondent's age in years.
Male	Coded (1) male, (0) female.
Skill	Respondent's educational attainment. Coded (0) no formal or incomplete primary education, (1) complete primary education, (2) incomplete secondary education (technical/vocational), (3) complete secondary education (technical/vocational) / incomplete secondary education (university-preparatory) / complete secondary education (university-preparatory), (4) some university education (without degree), and (5) university education (with degree). Skill Group dummy variables (1 to 5) represent the top five categories of educational attainment, each capturing a single category in a binary way. There is some cross-country heterogeneity in the survey categories of educational attainment. More information on how we map country-specific groups of educational attainment into the above hierarchical structure is available upon request.
Income	Log of monthly real income. Survey respondents sort themselves into income groups, based on (country-specific) lists of incomes. As a general rule, we compute individual income as the middle value of the income interval chosen by the individual, adjusted by PPP conversion factors from the World Development Indicators, expressed in logs, and, if necessary, converted to a monthly basis. More detailed information on this procedure is available upon request.
Unemployed	Coded (1) unemployed/not employed, (0) employed.
Religious	"Which one of these comes closest to your opinion, number 1 or number 2?"; coded (1) "Number 2 – It is necessary to believe in God in order to be moral and have good values"/NA/refused, (0) "Number 1 – It is not necessary to believe in God in order to be moral and have good values".
Economic Awareness	"Please tell me whether you completely agree, mostly agree, mostly disagree or completely disagree with the following statement. 'Most people are better off in a free market economy, even though some people are rich and some are poor'"; coded (0) "completely disagree", (1) "disagree", (2) "agree", (3) "completely agree".
Informed	"Which of the following two statements best describes you: 'I follow INTERNATIONAL news closely ONLY when something important is happening' OR 'I follow INTERNATIONAL news closely most of the time, whether or not something important is happening'?"; coded (1) "Most of the time, whether or not something important is happening", (0) "Only when something important is happening".
Sociotropic Views	"Please tell me whether you completely agree, mostly agree, mostly disagree or completely disagree with the following statement. 'Protecting the environment should be given priority, even if it causes slower economic growth and some loss of jobs.'"; coded (0) "completely disagree", (1) "mostly disagree", (2) "mostly agree", (3) "completely agree".
Fears of Cultural Spill-Overs	"I am going to read some phrases which have opposite meanings. Tell me which comes closer to describing your views."; coded (1) "It's bad that American ideas and customs are spreading around the world", (0) "It's good that American ideas and customs are spreading around the world".
Nationalism	"As I read another list of statements, for each one, please tell me whether you completely agree, mostly agree, mostly disagree or completely disagree with it. 'Our people are not perfect, but our culture is superior to others.'"; coded (0) "completely disagree", (1) "mostly disagree", (2) "mostly agree", (3) "completely agree".
Fears of International Competition	"Turning to China, overall do you think that China's growing economy is a good thing or a bad thing for our country?"; coded (1) "bad thing", (0) "good thing".

[†] See table A.1 for summary statistics on all variables. All information come from the GAP survey data.

Table A.4: Country-Level Information[†]

Country	Observations	Country Mean of *Pro-Trade Dummy*	GDP Per Capita (in Logs)	Country Mean of *Skill*	Country Median of *Skill*
Asia					
China	2,998	0.96	8.41	2.01	3
Pakistan	1,728	0.95	7.74	1.69	2
Malaysia	670	0.95	9.41	2.47	3
India	1,988	0.92	7.78	3.65	3
Bangladesh	986	0.91	7.02	1.63	2
South Korea	681	0.90	10.01	3.70	3
Indonesia	949	0.75	8.12	2.26	3
Japan	683	0.80	10.34	3.34	3
Eastern Europe					
Bulgaria	461	0.95	9.21	2.95	3
Ukraine	478	0.94	8.70	3.48	3
Russia	941	0.87	9.45	2.95	3
Slovakia	440	0.85	9.75	3.06	3
Poland	468	0.83	9.57	2.49	2
Czech Republic	446	0.80	9.97	2.94	3
Middle East					
Kuwait	481	0.95		3.61	3
Israel	865	0.93	10.06	3.60	3
Lebanon	972	0.85	9.15	2.58	3
Turkey	830	0.85	9.01	1.97	1
Jordan	974	0.74	8.41	1.74	1
Palestinian Territories	771	0.72	8.16	2.83	3
Northern Africa					
Morocco	864	0.80	8.24	1.16	0
Egypt	957	0.63	8.48	1.74	2
Northern America					
Canada	485	0.85	10.48	3.48	3
USA	964	0.63	10.66	3.66	4
Rest of Africa					
Senegal	694	0.96	7.34	1.45	1
Ghana	662	0.95	7.10	2.37	3
Kenya	981	0.95	7.26	1.95	2
Côte d'Ivoire	700	0.95	7.38	2.64	3
South Africa	949	0.91	9.08	2.48	3
Ethiopia	686	0.90	6.42	2.06	3
Tanzania	650	0.89	6.87	1.29	1
Nigeria	1,107	0.87	7.35	2.67	3
Mali	695	0.86	6.93	1.90	2
Uganda	1,063	0.86	6.76	1.58	2
Southern America					
Chile	769	0.91	9.44	2.54	2
Peru	774	0.84	8.84	2.31	3
Bolivia	791	0.84	8.25	2.59	3
Venezuela	790	0.80	9.28	2.82	3
Mexico	796	0.80	9.38	2.25	3
Argentina	700	0.78	9.36	2.10	2
Brazil	958	0.74	9.07	2.61	3
Western Europe					
Sweden	471	0.91	10.41	3.71	3
Spain	456	0.91	10.23	2.49	2
Germany	495	0.86	10.35	3.16	3
UK	467	0.84	10.38	3.29	3
France	500	0.79	10.34	2.96	3
Italy	450	0.77	10.25	2.84	3

[†] In each world region, countries are ranked according to the country mean of *Pro-Trade Dummy*. Sampling weights correct for deviations from random sampling. See tables A.3 and A.5 for coding information on all variables.

Table A.5: Coding Information and Data Sources for Country-Level Data[†]

Variable	Description and Coding
GDP Per Capita[a]	GDP per capita (in logs) as of 2006 in international dollars, calculated based on PPP conversion factors.
Country Mean of Skill[b]	Country average of *Skill*. Sampling weights correct for deviations from random sampling.
Country Median of Skill[b]	Country median of *Skill*. Sampling weights correct for deviations from random sampling.
Electoral Process[c]	Variable takes on integer values from 0 to 12; higher values correspond to better institutional quality.
Political Pluralism & Participation[c]	Variable takes on integer values from 0 to 16; higher values correspond to higher degrees of pluralism and participation.
Functioning of Government[c]	Variable takes on integer values from 0 to 12; higher values correspond to better functioning of governments.
Freedom of Speech & Belief[c]	Variable takes on integer values from 0 to 16; higher values correspond to higher degrees of freedom.
Associational & Organizational Rights[c]	Variable takes on integer values from 0 to 12; higher values correspond to stronger rights.
Rule of Law[c]	Variable takes on integer values from 0 to 16; higher values correspond to better qualities of judicial institutions.
Personal Autonomy & Individual Rights[c]	Variable takes on integer values from 0 to 16; higher values correspond to higher degrees of autonomy.
Trade Openness[d]	Exports plus imports over GDP.
Labor Force Share[a]	Share of labor force in total population as of 2006.
PPM[e]	Count of protectionist policy measures between May 01, 2009, and October 31, 2010. By definition, protectionist policy measures have been *"implemented and almost certainly discriminate against foreign commercial interests"* (red measures) or have been *"either implemented and may involve discrimination against foreign commercial interests"* or have been *announced/are under consideration and would (if implemented) almost certainly involve discrimination against foreign commercial interests"* (amber measures).
TRADEOP[b]	Country average of *Trade Opinion*. Sampling weights correct for deviations from random sampling.
DEMO[f]	Democracy index as of 2006; variable takes on values from 0 to 10; higher values correspond to more democratic regimes.

[†] *Data sources:* [a] World Development Indicators. [b] GAP survey data. [c] Freedom House; data as of 2007. [d] Penn World Tables. [e] Global Trade Alert. [f] Economist Intelligence Unit (EIU).

B Transmission of Preferences to Policies

This appendix asks whether the transmission of people's trade preferences into governments' policy measures is correlated with a country's political regime. To answer this question, we run a regression of the following form on the cross-sectional sample of 47 countries in the GAP:

$$PPM_c = \alpha_0 + \alpha_1 \cdot TRADEOP_c + \alpha_2 TRADEOP_c \times DEMO_c + \alpha_3 DEMO_c + \epsilon_c, \qquad (A.1)$$

where PPM_c is the Global Trade Alert count of protectionist policy measures in country c between May 01, 2009, and October 31, 2010, $TRADEOP_c$ is the country-average of the four-valued ordered trade opinion variable from the GAP, $DEMO_c$ is a democracy index from the Economist Intelligence Unit as of 2006, and ϵ_c is the error term; see appendix A for details on these variables. Figure A.1
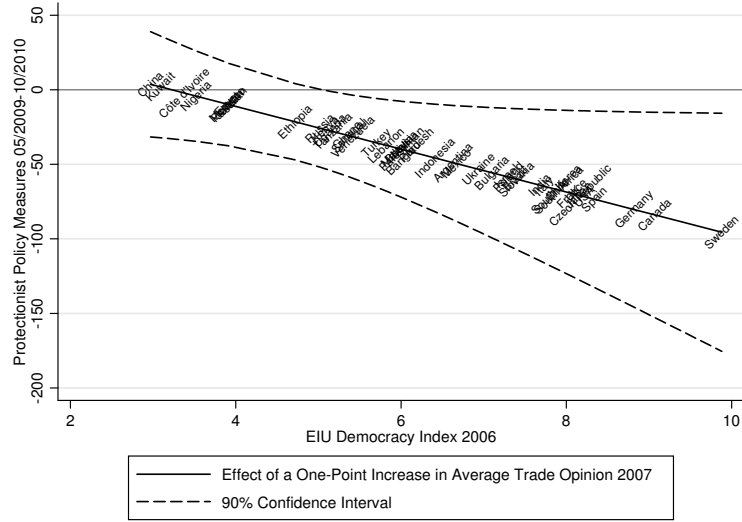
Figure A.1: Transmission of Trade Preferences to Policy Measures

uses parameter estimates of equation (A.1) to visualize

$$\frac{\Delta PPM_c}{\Delta TRADEOP_c} = \alpha_1 + \alpha_2 \cdot DEMO_c \tag{A.2}$$

together with the corresponding confidence intervals based on estimation of robust standard errors. Point estimates from this regression exercise suggest that the link between free trade preferences and governments' policy measures is strongest for Sweden, the country with the highest democracy index in the estimation sample. In turn, Chinese trade policy seems to be independent of people's attitudes towards trade.