Explore Determinants of Individual's Attitude Toward International Trade

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Abstract

This article examines existing theories about determinants of individual's trade attitude with relatively new datasets. This study also aims to explore how the influence of determinants over individual's trade attitude changes over time. Typically, how the influence of college level education would change is examined with special attention. The findings support the theory of college level education itself would make individual more favor in international trade. However, no statistically significant result is found to show the influence of college level education toward trade attitude has changed over time.

Introduction

Recently, political events with significant influence happened around the globe, from Brexit to American election, also the ongoing European elections. One of the main characteristics of this tide of political movement is anti-globalization, which usually includes public support for policies that would in theory restrict international trades. This situation leads to a question bothered many people. Though decades of globalization increase total wealth around the globe with no doubt, why closed to majority of people in those democratic countries would favor policies against international trades? Many studies has been done to try to reveal determines of individual's attitudes toward international trade, but many of them are based on relatively old survey data that may not be able to properly represent the current demographic. This study intents to exam the existing theory using relatively new data, and also identify possible changing trend for influential determinants, especially college level education.

Literature Review

The standard trade theory believes individual preferences on trade policy are determined crucially on how trade policy affects their income, also called income for factors of production. And how trade policy can affect income for factors of production depends crucially on the degree of intersectoral factor mobility, also called the degree of factor specificity. Two theoretical models, Ricardo-Viner Model and Heckscher-Ohlin model are built according to different level of degree of intersectoral factor mobility.

Ricardo-Viner Model

The Ricardian model is a general equilibrium mathematical model in international trade theory introduced by David Ricardo in 1833. The Ricardo-Viner Model (RV model), also known as the specific factors model, is an extension of the Ricardian model, developed by Jacob Viner. It was further developed by Paul Samuelson and Ronald Jones later. The model consists of two countries, two goods and three factors of production. The two countries can only trade goods, not factors of production. The model assumes some or all factors cannot move to other sectors. The result of the model suggests that factor incomes tend to vary by industry of employment (Krugman et al. 2015, pp: 83-97).

Heckscher-Ohlin Model

The Heckscher-Ohlin model (HO model) is a general mathematical model of international trade. It is another extension of the Ricardian model. The HO model is developed by Eli Hechscher and Bertil Ohlin. The model also consists of two countries, two goods and three factors of production. In contrast to the RV model, the HO model assumes that factors of production can move costlessly across sectors. As a result, the factor incomes tend to vary by factor type (Blaug 1992, pp: 190). In general, the HO

model is a better description of the worldwide trade after WWII. Part of the reason is that after WWII, the factors such as labor or capital could move less costly through different sectors.

Evidence for Theoretical Models

Based on the two theoretical models above, researchers start their empirical works to try to find determines of individual preferences toward international trade. Two key factors are considered at first. The effects of industry of employment, meaning which kind of industry the individual is working at, and factor type, meaning high skilled workers or low skilled workers, are tested through different works. Evidences supporting both theoretical models are found. Irwin (1994, 1996) finds evidence showing that industry interests rather than factor interests dominates individual preferences in both 1923 British general election and 1906 British general election. The studies used county-level data regress on votes reflecting county factor and industry issues. Magee (1978) also finds evidence supporting the RV model. The study shows in 19 out of 21 industries testifying before the House Ways and Means Committee on the Trade Reform Act of 1973 that unions agreed with management and industry trade associations. Unions are considered representatives of labor and management and industry trade associations are considered as representatives of capital. So little conflicts were found between factors, but industry type dominates their views of international trade policies.

However, evidences supporting the HO model are also found. Beaulieu (1996, 1998) using individual-level survey data from 1988 Canadian federal election, an election mostly viewed as a national referendum on the Canadian-U.S. Free-Trade Agreement (CAFTA), shows that factor type, rather than industry of employment dominates individual preference towards international trade. Kaempfer and Marks (1993) find that House votes are significantly correlated with the average wage in House districts. This finding also supports the HO model.

Other important findings outside the theatrical models

Other than factor type and industry of employment, new determines are found. According to Scheve and Slaughter (2001), not only factor type dominates industry of employment in explaining support for trade barriers, but home ownership in counties with a manufacturing mix concentrated in comparative-disadvantage industries is also correlated with support for trade barriers. This important finding indicates that asset value also determines individual preferences on trading policies. Prior studies mainly focus on how the trade policy would influence individual's future, in forms of predicted income. This study takes past accumulation of wealth, as housing value, into account, thus being very valuable. Scheve and Slaughter work combines 1992 NES survey data with data on average wages, tariffs, trade flows, and county manufacturing activity.

Another interesting finding is revealed when researchers use education level of individual as proxy variable to distinct high skill worker from low skill worker. Surprisingly, according to Hainmueller and Hiscox (2006), impact of education on attitudes toward trade is almost identical among respondents in the active labor force and those who are not. They further discover that while individuals with college-level educations are far more likely to favor trade openness than others, other types of education have no significant effects on attitudes, and actually reduce the support for trade. Their findings are based on NES data and ISSP data. Also, Mansfield and Mutz (2009) find strong evidence that trade attitudes are decided less by material self-interest than by perception of how the U.S. economy as a whole is affected by trade from a communication perspective. The above two studies suggest that people's general feelings, or exposure to economics ideas may also affects people's feelings about international trade.

Data and Model

Data Description

The datasets for the research are the 2003 and 2013 National Identity modules of the International Social Survey Program (ISSP). The ISSP dataset collects individual level cross-national data over time, and it is widely used by many famous studies of individual attitudes toward trade. The 2003 dataset contains information from 34 countries. The 2013 dataset contains information from 33 countries. The ISSP dataset contains questions about a variety of topics, from individual's feeling towards trade to regional attachment, to self-placement about social class in the society. The survey also collects information about individual economic and demographic variables enabled the investigation of reasons behind idea forming.

This study chooses 16 western countries in both dataset to form a new dataset, for the purpose of tracking changes over time. After the selection, there are 11,390 observations left in the 2003 dataset, and 17,450 observations left in the 2013 dataset. To measure individual's attitude towards trade, I use the answer for one particular question:

> *Now we would like to ask a few questions about relations between (respondent's country) and other countries. How much do you agree or disagree with the following statements: (Respondent's country) should limit the import of foreign products in order to protect its national economy.*
>
> *Options:*
> - *Agree strongly*
> - *Agree*
> - *Neither agree nor disagree*
> - *Disagree*

- *Disagree strongly*
- *Can't choose, don't know*
- *NA, refused*

Two binary variables are created, labeled as pro-trade-dummy and against-trade-dummy. If the individual chooses *Disagree* or *Disagree strongly*, the pro-trade-dummy will be labeled as 1, otherwise, the pro-trade-dummy will have value 0. Likewise, if the individual chooses *Agree Strongly* or *Agree*, the against-trade-dummy will have value 1, otherwise, the against-trade-dummy will be labeled as 0. Since the results from applying pro-trade-dummy and against-trade-dummy are very similar, only the results from pro-trade-dummy will be presented in the following discussion.

Two variables are used for measuring the effect of schooling on individual's trade preference. One is *educyrs*, which is a variable comes from the original dataset, reporting how many years of full-time education the respondent received. Another dummy variable called college is created to capture the typical characteristic of individual's college education. As pointed out in the literature review session, the college education is crucial to the formation of pro-trade attitude. One thing needs to be noticed is that this dummy variable also included post-college education. So if one individual received college or above college level education, the college dummy will be labeled as 1, otherwise it is 0.

The variable *wrkst* in the dataset is used to create sub-groups for the regression model. This variable in the two datasets has different coding in 2003 and 2013. Thus, proper adjustment is made when feeding model with different sub-groups. Typically, *wrkst* in 2013 dataset classified respondents into different groups as: *in paid work, unemployed and looking for a job, in education, not working permanently*. The 2003 dataset does not follow such grouping methodology, so it is converted when used.

Other variables are also used or created for the regression model. A brief introduction to all the variables is shown below.

TABLE 1.

Variable	Introduction
pro_trade	Binary variable measuring trade preference
educyrs	Continuous variable for length of full-time education
age	Continuous variable for age (>15)
male	Binary variable for sex
topbot	Discrete variable measuring social class
rural	Discrete variable measuring living region
logincome	Continuous variable measuring annual personal income

A Glance of Data

TABLE 2

Data from 2003

Statistic	N	Mean	St. Dev.	Min	Max
age	11,390	46.665	16.210	15	97
male	11,390	0.492	0.500	0	1
pro_trade	11,390	0.321	0.467	0	1
educyrs	11,390	15.229	16.289	1	97
wrkst	11,390	3.251	2.883	1	10
topbot	11,390	5.606	1.764	1	10
rural	11,390	2.007	0.773	1	3
college	11,390	0.343	0.475	0	1
logincome	11,390	8.940	2.107	-1.515	13.832

TABLE 3

Data from 2013

Statistic	N	Mean	St. Dev.	Min	Max
AGE	17,450	52.999	62.863	15	999
male	17,450	0.479	0.500	0	1
pro_trade	17,450	0.273	0.446	0	1
EDUCYRS	17,450	14.836	12.186	0	99
MAINSTAT	17,450	3.626	9.222	1	99
TOPBOT	17,450	10.011	20.250	0	99
rural	17,450	2.637	7.424	1	99
college	17,450	0.295	0.456	0	1
logincome	17,450	-Inf.000		-Inf.000	15.861

The take away point is that from 2003 to 2013, the pro-trade mean does drop from 0.321 to 0.273. This accord with the situation happened in the real world.

Model Design

Two series of logistic regression models, the baseline model and the demographic model are created to estimate the effect of different variables in different sub-groups. For different subsamples of respondents cross all two models, pro-trade-dummy is used as dependent variables.

The Baseline Model

Fewer variables are introduced in this model to ensure maximum inclusion of observations. Only educyrs, age, male, and college are chose for this model. I expect both the educyrs and college will be positively correlated with pro-trade-dummy. From the perspective of classical theory, higher education yields high-skilled labors. Then due to comparative advantage, high-skilled labor will favor trade. Or, the alternate explanation is, due to proper exposure to formal economics ideas through education, individual would understand the benefit of international trade, thus embrace trade. However, as suggested by Hainmueller and Hiscox, if the first reasoning holds, the effect of education or college to the sub-group of people who are permanently not in the labor force should be weak. When comparing the two baseline models over time, I expect the estimates of educyrs or college will become smaller from 2003 to 2013.

The key results from the estimates are shown in Table 4 and Table 5. Instead of showing the direct estimated coefficients of the logit models, the odd ratios are showed instead for the purpose of interpretation.

Comparing the results cross the subsamples within each dataset, results similar to Mayda and Rodrik, also Hainmueller and Hiscox, are found. From the baseline model using data in 2003, being male will increase the possibility of a person to support trade by around 0.54 times (at 0.01 significant level) using the full dataset, and the effect of being male are also very power in other sub-groups except for the group of people who are in education. The education length alone would not affect one's trade preference much. When adding in the college dummy, the dummy presents great influence over response varibale. For the full dataset, a college diploma would increase the chance of one person supporting trade by 1.408 times (at 0.01 significant level). The effect remains strong in all other sub-groups. Very similar results are found in the 2013 dataset too.

Comparing the results cross two datasets, little difference in the estimated college coefficient can be found. For example, using the full sample of the dataset from 2003 yields 2.408 for the odd ratio (at 0.01 significant level), and full sample of the dataset from 2013 yields 2.444 for the odd ratio (at 0.01 significant level). Similar pattern applies to each cross year comparison to the same sub-group.

TABLE 4

Baseline Model for 2003

	Dependent variable:									
	pro_trade									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
educyrs	1.008***	1.020***	1.008	1.004*	1.000	1.005***	1.011***	1.002	1.004*	0.991**
	(0.001)	(0.003)	(0.008)	(0.002)	(0.003)	(0.001)	(0.002)	(0.008)	(0.002)	(0.005)
age	0.991***	1.006***	0.984*	1.007	0.987***	0.993***	1.005**	0.983**	0.999	0.989***
	(0.001)	(0.002)	(0.009)	(0.012)	(0.003)	(0.001)	(0.002)	(0.009)	(0.013)	(0.003)
male	1.540***	1.476***	1.898***	1.186	1.708***	1.574***	1.528***	2.034***	1.254	1.656***
	(0.041)	(0.050)	(0.206)	(0.187)	(0.089)	(0.042)	(0.051)	(0.210)	(0.190)	(0.092)
college						2.408***	2.171***	2.094***	1.657***	3.291***
						(0.043)	(0.052)	(0.240)	(0.196)	(0.105)
Constant	0.511***	0.264***	0.471*	0.450**	0.529***	0.344***	0.216***	0.435**	0.428**	0.419***
	(0.072)	(0.107)	(0.392)	(0.372)	(0.215)	(0.077)	(0.109)	(0.398)	(0.379)	(0.226)
Observations	11,390	7,272	490	480	2,999	11,390	7,272	490	480	2,999
Log Likelihood	-7,032.794	-4,654.223	-282.214	-324.707	-1,612.940	-6,821.298	-4,543.440	-277.572	-321.352	-1,549.246
Akaike Inf. Crit.	14,073.590	9,316.445	572.427	657.414	3,233.879	13,652.600	9,096.881	565.144	652.704	3,108.492
Note:										*p<0.1; **p<0.05; ***p<0.01

For the table above, all coefficients are odds ratio. For k=1,2,3…. Model 1+5k represents using full sample data, 2+5k represents people in paid work, 3+5k represents people are unemployed and looking for job, 4+5k represents people in education, 5k represents people permanently not in labor force.

TABLE 5

Baseline Model for 2013

	Dependent variable:									
	pro_trade									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
EDUCYRS	1.008***	1.008***	1.029***	0.997	1.007***	1.003**	1.000	1.022***	0.997	1.004
	(0.001)	(0.002)	(0.009)	(0.005)	(0.002)	(0.001)	(0.002)	(0.008)	(0.005)	(0.003)
AGE	0.999***	0.999**	0.991	1.021**	1.000	0.999***	0.999*	0.992	1.010	1.000
	(0.0004)	(0.0005)	(0.006)	(0.010)	(0.001)	(0.0003)	(0.0005)	(0.006)	(0.011)	(0.001)
male	1.437***	1.392***	1.264	1.588***	1.496***	1.481***	1.483***	1.328*	1.603***	1.463***
	(0.034)	(0.044)	(0.149)	(0.137)	(0.076)	(0.035)	(0.045)	(0.151)	(0.138)	(0.077)
college						2.444***	2.354***	2.094***	1.597***	2.918***
						(0.036)	(0.046)	(0.196)	(0.159)	(0.085)
Constant	0.298***	0.338***	0.273***	0.297***	0.188***	0.231***	0.260***	0.252***	0.336***	0.151***
	(0.036)	(0.049)	(0.287)	(0.264)	(0.075)	(0.039)	(0.054)	(0.285)	(0.263)	(0.080)
Observations	17,450	9,901	1,015	946	4,364	17,450	9,901	1,015	946	4,364
Log Likelihood	-10,154.090	-6,044.039	-550.524	-610.894	-2,195.108	-9,856.199	-5,870.952	-543.694	-606.615	-2,118.488
Akaike Inf. Crit.	20,316.190	12,096.080	1,109.048	1,229.788	4,398.216	19,722.400	11,751.900	1,097.388	1,223.231	4,246.977

Note: *p<0.1; **p<0.05; ***p<0.01

For the table above, all coefficients are odds ratio. For k=1,2,3…. Model 1+5k represents using full sample data, 2+5k represents people in paid work, 3+5k represents people are unemployed and looking for job, 4+5k represents people in education, 5k represents people permanently not in labor force.

The Demographic Model

More variables are selected or created to serve as covariates in this model, including *educyrs*, age, male, college, topbot, rural and logincome. Logincome is added to catch the relationship between individual's material income and individual's attitude towards trade. This relationship is suggested by the classical trade theory. Rural is selected as a proxy variable to measure the asset value individual holds. As Scheve and Slaughter points out, individual's asset may also determine one's attitude towards trade. Finally, topbot is the self-placed social class ranking. It served as a proxy variable to measure how individual classifies himself or herself within the society. The resulting self-placed social sub-groups are ranked and by nature indicate the level of involvement with out-groups in the society. How individuals' anxieties about involvement with out-groups in their own country affect their opinions towards trade is fully discussed by Mansfield and Mutz. I expect, after introducing above covariates, educyrs and college would still show strong influence to the response. Some variables may also show strong impact when considering sub-groups comparisons. Furthermore, I would expect the magnitude of the coefficient for college dummy would decrease from 2003 to 2013.

Results for running the demographic model for dataset from 2003 is shown in Table 6, and results for dataset from 2013 is shown in Table 7. Again, instead of showing the direct estimated coefficients of the logit models, the odd ratios are showed instead for the purpose of interpretation.

Before adding college dummy into the model for dataset 2003, male variable still shows large impact on the response. If applying full sample of dataset in 2003, being a male would increase the possibility of supporting trade 0.483 times (at 0.01 significant level). After the introduction of college dummy, male variable still shows a strong impact. And the college dummy again shows strong influence to individual's attitude towards trade.

Estimations from the 2013 dataset present variations. Before adding college dummy to the regression model, log income of the individual becomes the only variable which shows significant influence over all sub-groups. For instance, if applying full sample dataset from 2013, having one unit increase in the logincome will increase the chance of someone supporting the trade 0.525 times (at 0.01 significant level). After introducing the college dummy, log income is still the only factor which presents significant impact over all groups, though the college dummy itself also affects people's trade attitude heavily.

Comparing between Table 6 and Table 7, some trends could be identified. The effect of being male towards supporting trade drops in most of the sub-groups whether or not introducing the college dummy from 2003 to 2013. For instance, in 2003, being a male who are permanently not in the labor force raises one's chance to support trade 0.618 times (at 0.01 significant level), but in 2013, individual with similar characteristics will

TABLE 6

Demographic Model for 2003

	Dependent variable:									
	pro_trade									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
educyrs	1.007***	1.017***	1.008	1.003	0.999	1.005***	1.010***	1.003	1.003	0.990**
	(0.001)	(0.002)	(0.008)	(0.003)	(0.004)	(0.001)	(0.002)	(0.008)	(0.003)	(0.005)
age	0.993***	1.005**	0.986	1.010	0.986***	0.994***	1.005**	0.985*	1.001	0.987***
	(0.001)	(0.002)	(0.009)	(0.013)	(0.003)	(0.001)	(0.002)	(0.009)	(0.013)	(0.004)
male	1.483***	1.438***	1.975***	1.183	1.642***	1.530***	1.494***	2.076***	1.262	1.618***
	(0.041)	(0.050)	(0.210)	(0.190)	(0.091)	(0.042)	(0.051)	(0.213)	(0.193)	(0.093)
college						2.089***	1.920***	1.949***	1.632**	2.793***
						(0.045)	(0.055)	(0.255)	(0.205)	(0.111)
topbot	1.191***	1.183***	1.084	1.161***	1.193***	1.122***	1.123***	1.046	1.134**	1.113***
	(0.012)	(0.016)	(0.053)	(0.058)	(0.025)	(0.013)	(0.016)	(0.055)	(0.059)	(0.026)
rural	0.916***	0.916***	0.715**	1.107	0.877**	0.959	0.954	0.741**	1.178	0.907*
	(0.027)	(0.033)	(0.139)	(0.128)	(0.057)	(0.027)	(0.033)	(0.142)	(0.131)	(0.058)
logincome	1.037***	1.023*	0.856**	1.057	1.072***	1.022**	1.011	0.852***	1.058	1.059**
	(0.010)	(0.012)	(0.061)	(0.041)	(0.024)	(0.010)	(0.012)	(0.061)	(0.041)	(0.024)
Constant	0.154***	0.103***	2.152	0.098***	0.171***	0.165***	0.119***	2.295	0.099***	0.208***
	(0.144)	(0.184)	(0.736)	(0.644)	(0.343)	(0.145)	(0.185)	(0.743)	(0.649)	(0.348)

Observations	11,390	7,272	490	480	2,999	11,390	7,272	490	480	2,999
Log Likelihood	-6,908.259	-4,587.180	-275.254	-320.099	-1,578.749	-6,776.039	-4,516.442	-271.884	-317.219	-1,536.261
Akaike Inf. Crit.	13,830.520	9,188.360	564.509	654.199	3,171.499	13,568.080	9,048.885	559.769	650.437	3,088.522

Note: $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

For the table above, all coefficients are odds ratio. For k=1,2,3…. Model 1+5k represents using full sample data, 2+5k represents people in paid work, 3+5k represents people are unemployed and looking for job, 4+5k represents people in education, 5k represents people permanently not in labor force.

TABLE 7

Demographic Model for 2013

	Dependent variable:									
	pro_trade									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
EDUCYRS	1.007***	1.007***	1.003	1.012	1.004	1.002	1.003	0.999	1.010	1.000
	(0.002)	(0.002)	(0.007)	(0.007)	(0.003)	(0.002)	(0.003)	(0.007)	(0.008)	(0.004)
AGE	0.998***	0.999**	0.987**	0.988**	0.999	0.999**	0.999	0.989**	0.989**	0.999
	(0.001)	(0.001)	(0.005)	(0.005)	(0.001)	(0.0005)	(0.001)	(0.005)	(0.005)	(0.001)
male	1.272***	1.360***	1.193	1.095	1.181**	1.373***	1.475***	1.337*	1.136	1.283***
	(0.040)	(0.053)	(0.167)	(0.160)	(0.079)	(0.040)	(0.054)	(0.172)	(0.163)	(0.080)
college						1.915***	1.920***	2.395***	1.296	2.090***
						(0.044)	(0.059)	(0.180)	(0.177)	(0.088)
TOPBOT	1.002**	1.004**	0.999	1.003	1.000	1.002*	1.003**	1.000	1.003	0.999
	(0.001)	(0.001)	(0.005)	(0.005)	(0.002)	(0.001)	(0.001)	(0.005)	(0.005)	(0.002)
rural	0.997	1.002	1.006	0.897	0.989	0.998	1.003	1.005	0.909	0.991
	(0.003)	(0.004)	(0.015)	(0.112)	(0.007)	(0.003)	(0.004)	(0.015)	(0.112)	(0.007)
logincome	1.525***	1.530***	1.627***	1.437***	1.574***	1.333***	1.333***	1.374***	1.366***	1.344***
	(0.024)	(0.032)	(0.101)	(0.098)	(0.048)	(0.025)	(0.034)	(0.106)	(0.104)	(0.051)
Constant	0.005***	0.004***	0.004***	0.019***	0.004***	0.015***	0.014***	0.015***	0.027***	0.015***
	(0.242)	(0.324)	(1.024)	(0.999)	(0.484)	(0.252)	(0.337)	(1.050)	(1.024)	(0.505)

Observations	13,234	7,441	797	784	3,342	13,234	7,441	797	784	3,342
Log Likelihood	-7,777.083	-4,363.871	-450.025	-467.588	-1,966.997	-7,667.676	-4,302.234	-438.306	-466.523	-1,931.971
Akaike Inf. Crit.	15,568.170	8,741.741	914.049	949.176	3,947.994	15,351.350	8,620.469	892.611	949.045	3,879.942

Note: *p<0.1; **p<0.05; ***p<0.01

For the table above, all coefficients are odds ratio. For k=1,2,3…. Model 1+5k represents using full sample data, 2+5k represents people in paid work, 3+5k represents people are unemployed and looking for job, 4+5k represents people in education, 5k represents people permanently not in labor force.

only raise the chance of supporting the trade 0.283 times (at 0.01 significant level). Another finding coincides with the real world situation. The chance of favoring trade raised by one unit increment in individual's log income increases fairly large portion from 2003 to 2013. In 2003, applying full sample of data without adding college dummy, the chance will only increase 0.037 times (at 0.01 significant level). But, in 2013, the chance will raise 0.525 times. Clearly the impact of individual's income exerts more influence on one's preference over international trade. However, the expected decrease of magnitude of college education does not appear.

The Interaction Model

In order to statistically exam the influence of time. A year-dummy is created to capture the change of time, as 0 labeled for 2003 and 1 labeled for 2013. Then the interaction term of year-dummy and college dummy is introduced, to discover the statistical relation of time over the effect college degree towards trade. The interaction term is added into both baseline model as well as demographic model.

The results are shown in Table 8 and Table 9. The coefficients are odd ratios rather than raw estimates of coefficients.

As we can see in the table, neither interaction terms in the two models achieved statistically significant level. So we could conclude that the effect of college education towards individual's trade attitude does not change much over time.

Findings and Implications

Existing literatures based on 20th century's data discovered that education, especially college level education, will increase chances for individual to support international trade. The interpretation of such phenomenon follows two ways. The classical theory suggests that college level education trains high-skill labors, and then through increased material income related to international trade, individual's support towards international trade is formed. The other way points out that, it is the exposure to the formal economics idea that enables people's favor to international trade. My research exams existing theories with more updated datasets, and also applied cross time tread analysis for chosen variables.

Using ISSP National Identity model from 2003 and 2013, I find strong evidence supporting the claim that college level education has strong effect on individual's attitude towards international trade. However, the individual income does not always have significant influence over different sub-groups. Several trends are also identified. The influence of sex over trade preference is weakening, but overall the personal income is presenting stronger influence on individual's trade preference. Unfortunately, the

TABLE 8

Baseline Model for Combine Data

	Dependent variable:																			
	pro_trade																			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
educyrs	1.010***	1.014***	1.019***	1.003*	1.005**	1.005***	1.006***	1.009	1.003	1.000	1.010***	1.015***	1.019***	1.004	1.006***	1.005***	1.006***	1.010	1.003	1.000
	(0.001)	(0.002)	(0.007)	(0.002)	(0.002)	(0.001)	(0.002)	(0.007)	(0.002)	(0.002)	(0.001)	(0.002)	(0.007)	(0.002)	(0.002)	(0.001)	(0.002)	(0.007)	(0.002)	(0.002)
age	0.997***	1.000	0.986**	1.007	1.000	0.998***	1.000	0.986**	0.999	1.000	0.997***	1.000	0.986**	1.008	1.000	0.998***	1.000	0.986**	0.999	1.000
	(0.001)	(0.0005)	(0.006)	(0.009)	(0.001)	(0.001)	(0.0005)	(0.006)	(0.010)	(0.001)	(0.001)	(0.0005)	(0.006)	(0.009)	(0.001)	(0.001)	(0.0005)	(0.006)	(0.010)	(0.001)
male	1.485***	1.449***	1.546***	1.462***	1.524***	1.537***	1.525***	1.674***	1.508***	1.487***	1.486***	1.447***	1.550***	1.460***	1.529***	1.536***	1.522***	1.686***	1.511***	1.494***
	(0.028)	(0.034)	(0.139)	(0.131)	(0.062)	(0.028)	(0.035)	(0.142)	(0.132)	(0.063)	(0.028)	(0.034)	(0.139)	(0.131)	(0.062)	(0.028)	(0.035)	(0.142)	(0.132)	(0.063)
college						2.370***	2.215***	2.274***	1.543***	2.997***						2.452***	2.219***	1.918***	1.698***	3.167***
						(0.029)	(0.036)	(0.175)	(0.141)	(0.071)						(0.042)	(0.051)	(0.236)	(0.193)	(0.101)
year_dummy											0.894***	0.843***	0.952	1.056	0.926	0.924**	0.872***	0.942	1.164	0.916

											(0.028)	(0.034)	(0.139)	(0.159)	(0.062)	(0.037)	(0.047)	(0.161)	(0.194)	(0.075)
college:year_dummy																0.936	0.987	1.455	0.826	0.909
																(0.058)	(0.070)	(0.336)	(0.269)	(0.139)
Constant	0.355***	0.338***	0.410***	0.442***	0.232***	0.261***	0.265***	0.376***	0.462***	0.187***	0.375***	0.366***	0.420***	0.420***	0.238***	0.271***	0.283***	0.383***	0.408***	0.192***
	(0.040)	(0.041)	(0.271)	(0.251)	(0.073)	(0.038)	(0.043)	(0.275)	(0.255)	(0.076)	(0.042)	(0.044)	(0.279)	(0.292)	(0.076)	(0.042)	(0.049)	(0.285)	(0.305)	(0.081)
Observations	24,624	15,755	1,088	991	6,037	24,624	15,755	1,088	991	6,037	24,624	15,755	1,088	991	6,037	24,624	15,755	1,088	991	6,037
Log Likelihood	-15,004.740	-9,938.569	-622.582	-665.474	-3,233.359	-14,574.540	-9,688.571	-611.807	-660.736	-3,116.231	-14,996.740	-9,926.160	-622.520	-665.415	-3,232.592	-14,567.060	-9,680.097	-611.165	-660.379	-3,114.356
Akaike Inf. Crit.	30,017.480	19,885.140	1,253.163	1,338.947	6,474.718	29,159.080	19,387.140	1,233.615	1,331.473	6,242.462	30,003.470	19,862.320	1,255.041	1,340.829	6,475.184	29,148.110	19,374.190	1,236.331	1,334.757	6,242.713

Note: *p<0.1; **p<0.05; ***p<0.01

For the table above, all coefficients are odds ratio. For k=1,2,3…. Model 1+5k represents using full sample data, 2+5k represents people in paid work, 3+5k represents people are unemployed and looking for job, 4+5k represents people in education, 5k represents people permanently not in labor force.

TABLE 9

Demographic Model for Combine Data

	Dependent variable:																			
	pro_trade																			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
educyrs	1.010***	1.014***	1.019***	1.003	1.005**	1.005***	1.005***	1.010	1.002	1.000	1.009***	1.014***	1.019***	1.002	1.005**	1.005***	1.006***	1.010	1.002	1.000
	(0.001)	(0.002)	(0.007)	(0.002)	(0.002)	(0.001)	(0.002)	(0.007)	(0.002)	(0.003)	(0.001)	(0.002)	(0.007)	(0.002)	(0.002)	(0.001)	(0.002)	(0.007)	(0.002)	(0.002)
age	0.997***	1.000	0.988**	1.005	0.999	0.998***	1.000	0.988**	0.996	1.000	0.997***	1.000	0.988**	1.004	1.000	0.998***	1.000	0.988**	0.996	1.000
	(0.001)	(0.0005)	(0.006)	(0.009)	(0.001)	(0.001)	(0.0005)	(0.006)	(0.010)	(0.001)	(0.001)	(0.0005)	(0.006)	(0.009)	(0.001)	(0.001)	(0.0005)	(0.006)	(0.010)	(0.001)
male	1.447***	1.424***	1.541***	1.455***	1.454***	1.516***	1.510***	1.673***	1.501***	1.449***	1.434***	1.407***	1.542***	1.456***	1.449***	1.504***	1.493***	1.685***	1.508***	1.446***
	(0.028)	(0.034)	(0.139)	(0.131)	(0.062)	(0.029)	(0.035)	(0.142)	(0.132)	(0.064)	(0.028)	(0.034)	(0.139)	(0.131)	(0.063)	(0.029)	(0.035)	(0.143)	(0.132)	(0.064)
college						2.311***	2.171***	2.281***	1.543***	2.896***						2.384***	2.163***	1.898***	1.711***	3.089***
						(0.030)	(0.036)	(0.178)	(0.141)	(0.072)						(0.043)	(0.052)	(0.239)	(0.194)	(0.102)
year_dummy											0.788***	0.747***	0.988	0.915	0.783***	0.862***	0.811***	0.990	1.019	0.828**

											(0.030)	(0.037)	(0.144)	(0.185)	(0.068)	(0.038)	(0.049)	(0.165)	(0.215)	(0.079)
topbot	1.003***	1.006***	1.005	0.994	1.002	1.002**	1.004***	1.004	0.994	1.001	1.004***	1.007***	1.005	0.995	1.003	1.003***	1.005***	1.004	0.995	1.002
	(0.001)	(0.001)	(0.006)	(0.006)	(0.002)	(0.001)	(0.001)	(0.006)	(0.006)	(0.002)	(0.001)	(0.001)	(0.006)	(0.006)	(0.002)	(0.001)	(0.001)	(0.006)	(0.006)	(0.002)
rural	0.994*	0.997	0.849*	0.993	0.985	0.997	0.999	0.891	0.994	0.989	0.995	0.998	0.849*	0.994	0.986	0.998	1.001	0.888	0.994	0.990
	(0.003)	(0.004)	(0.094)	(0.012)	(0.010)	(0.003)	(0.004)	(0.095)	(0.012)	(0.009)	(0.003)	(0.004)	(0.094)	(0.012)	(0.010)	(0.003)	(0.004)	(0.096)	(0.012)	(0.009)
logincome	1.084***	1.067***	0.943	1.057*	1.121***	1.040***	1.034***	0.922	1.057*	1.067***	1.112***	1.100***	0.944	1.067*	1.158***	1.061***	1.059***	0.910*	1.066*	1.098***
	(0.009)	(0.011)	(0.051)	(0.033)	(0.023)	(0.009)	(0.011)	(0.051)	(0.033)	(0.021)	(0.010)	(0.012)	(0.052)	(0.038)	(0.025)	(0.009)	(0.012)	(0.053)	(0.038)	(0.023)
college:year_dummy																0.920	0.970	1.545	0.806	0.876
																(0.058)	(0.070)	(0.339)	(0.271)	(0.140)
Constant	0.167***	0.178***	0.883	0.316***	0.085***	0.181***	0.189***	0.894	0.329***	0.108***	0.147***	0.151***	0.880	0.320***	0.069***	0.162***	0.166***	0.998	0.310***	0.088***
	(0.094)	(0.112)	(0.531)	(0.351)	(0.221)	(0.089)	(0.110)	(0.533)	(0.353)	(0.205)	(0.096)	(0.115)	(0.533)	(0.352)	(0.233)	(0.092)	(0.114)	(0.538)	(0.366)	(0.216)
Observati	24,62	15,75	1,08	991	6,03	24,62	15,75	1,08	991	6,03	24,62	15,75	1,08	991	6,03	24,62	15,75	1,08	991	6,03

ons	4	5	8		7	4	5	8		7	4	5	8		7	4	5	8		7
Log Likelihood	-14,954.680	-9,911.602	-620.213	-663.363	-3,217.368	-14,561.310	-9,679.140	-609.694	-658.641	-3,110.308	-14,922.890	-9,879.911	-620.210	-663.248	-3,210.827	-14,542.840	-9,661.307	-608.698	-658.261	-3,104.565
Akaike Inf. Crit.	29,923.360	19,837.210	1,254.426	1,340.725	6,448.737	29,138.620	19,374.280	1,235.389	1,333.283	6,236.616	29,861.780	19,775.820	1,256.419	1,342.495	6,437.653	29,105.680	19,342.610	1,237.396	1,336.521	6,229.130

Note: $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

For the table above, all coefficients are odds ratio. For k=1,2,3…. Model 1+5k represents using full sample data, 2+5k represents people in paid work, 3+5k represents people are unemployed and looking for job, 4+5k represents people in education, 5k represents people permanently not in labor force.

proposed decay of the influence from college education towards trade over time is not found.

Conclusion

My research verified that college level education has strong influence over individual's trade preference. And the data supports less for the reasoning that such phenomenon is due to college trained high-skilled workers could earn more income through international trade. The main proposed trend analysis of college effect over trade preference over time does not show statistically significant result.

There are several aspects of the research can be improved. The size of the dataset could be expanded larger. Although the total sample size is over 10 thousand, the sample size of some sub-groups is small. So if better dataset could be found, the accuracy and reliability of the research could improve further. In addition to the sample size issue, finding another dataset with more variables related to time changing may be helpful for future trend analysis. Although the ISSP dataset provides a rich set of variables to serve as covariates, the actual variable that could one step further explain, or helping locate the changing trend is limited.

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