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EXPERT KNOWLEDGE *STATUS QUO* IN THE INTERNET PROVIDED PUBLIC DEBATE ON FREE TRADE AGREEMENTS. META ANALYSIS OF POLISH LITERATURE

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ABSTRACT. Recently the Free Trade Agreements (FTAs) have been drawing public attention enormously being affected by new waves of political populism, alter-globalisation, and some other tendencies redefining the patterns in the world economic ties. From the European perspective, the Comprehensive Economic and Trade Agreement (CETA), and the Transatlantic Trade and Investment Partnership (TTIP) have brought "on board" serious public concerns about environmental protection, food quality, job security, and citizen rights. Donald Trump openly criticizes the North American Free Trade Agreement (NAFTA) calling it "the single worst trade deal ever approved in this [US] country". The main purpose of this paper is to define expert views on FTAs in a measurable way. We want to capture the expert dissemination effect in Polish language Internet sources. Defining a mismatch between social perception and expert knowledge is the main aim of our research project on "Social expectations concerning FTAs: perception versus reality", to which this paper, as we believe can contribute, at the same time contributing into diagnosing and analysing actual public debate on FTAs in Poland.

JEL Classification: F13, F14, F53, F55, Z13

Keywords: Free Trade Agreements (FTA), meta-analysis, social perception, Polish public opinion.

1. Introduction

At present, the new waves of populism, alter-globalism, and protectionism seem to be quite influential factors shaping Polish public discussion devoted to the perspectives of implementing the new generation of the Free Trade Agreements, FTAs (the Transatlantic Trade and Investment Partnership, TTIP and the Comprehensive Economic and Trade Agreement, CETA). However, this is not only Polish "*spécialité de la maison*". All over the world *vox*

populi seems to be quite distant from calm, objective judgements. The Internet power can easily disseminate both merits and nonsense. However, according to Eliasson (2016), public opinion is often shaped by various forms of stereotyping, superstitions, beliefs and preferences, often quite archetypal. Therefore, it is not surprising that those who want to benefit from "representing" *vox populi* smartly refer to its emotional layers, even flatter them. Although one should realize that shaking public opinion off the trail of rational judgment, moving away and rejecting expert opinions can have very harmful social consequences, such as creating and strengthening conflicts, making bad policy and suffering from economic inefficiency in the longer time horizon.

Recently, some content analysis of the Polish social perception of the FTAs has been conducted by Działo *et al.* (2017a, 2017b). The results reveal that Polish Internet contents (7 main Polish web portals investigated) have very low proportion of the so-called "expert" component (around 8%). Moreover, the more popular a portal is (like wp.pl, onet.pl and interia.pl), and the more vivid is the discussion on this portal, the lower percentage of the merit-oriented comments is observed. The public opinion does not distinguish between TTIP and CETA as such. They seem to be perceived as quite similar, if not to say identical. "GMO", "increased role of corporations" and "food quality" which belong to the most popular subject areas of the public discussion seem to be treated similarly both by media as well as by 'netizens', mostly as big social threats. The devil is in details, but who should present the details, and how?

Polish expert content seems to be qualitative and descriptive rather than computable. "(…) *the results of the Polish research, contrary to the foreign one, are much more diversified. This is quite surprising, as one cannot find the reason for that differentiation. All the authors use almost the same or very similar data/sources of information, but formulate quite different conclusions*" (Działo *et al.*, 2017b). In these circumstances, is it possible to formulate any kind of a single truth that could be easily distributed on a massive scale? In other words, public opinion may feel tempted to rely on "stereotyping, superstitions, beliefs and preferences" because the expert voice does not sound convincing enough.

This paper is part of the broader output of the research project "*Social expectations concerning Free Trade Agreements: perception versus reality"*. The main purpose of the research project is to confront the social perception concerning FTA with the so-called "expert knowledge". Defining a mismatch between social perception and expert knowledge may contribute to better understanding of the controversies behind the FTA, as well as may lead to defining possible sources of social conflicts and vulnerabilities of the policy at its implementation level. In our research project we try to testify whether there is a mismatch between social perception and expert knowledge on FTA. In this paper we want to examine what is the quality of expert knowledge on FTAs available in Polish language data sources in the Internet. We want to find out and confirm in a statistically significant way that Polish FTA experts formulate a clear message and what it is like. In other words, whether "a single truth" about trade and its effects has been supported and disseminated by experts in Polish language sources in the Internet so far.

In section 2 we present the selected literature overview on social attitudes towards FTAs and briefly summarize the recent survey outputs concerning that issue. In sections 3 we present the descriptive analysis of Polish language expert databases. Section 4 covers our methodological approach towards meta-analysis and shows its results. In section 5 we discuss our results. Section 6 concludes.

2. Social attitudes towards the FTA: Preliminary view

2.1. Brief literature overview

In fact, there is substantial literature available, in which formation of attitudes towards Free Trade is discussed in details (for extensive literature overview see Jungherr et al., 2018). Economic self-interest (ESI) hypothesis plays an important role in it. The ESI implies that citizens are mainly interested in the consequences of free trade for themselves. Empirical studies testifying the ESI hypothesis have been concentrated on job-related attributes such as skill levels, income, and sector of employment. Hence individual employee's attitude towards free trade would be affected by her/his ability to adapt to a new market environment, which is much easier for a high skill worker (Scheve and Slaughter, 2001). It is also quite possible that individuals working for the same industry may have diverging economic self-interests towards free trade, depending on their firms' productivity level. The more productive firm is, the more free trade supporting its employees are (Bearce and Tuxhorn, 2017).

Hypothesis of socio-tropic formation (STF) of attitudes towards free trade is contrasting with aforementioned economic cost-benefit assessment process rooted in individualistic approach. Mansfield and Mutz (2009) notice that the citizens form their attitudes relying on their perception of free trade effects for the national economy rather than referring to their own jobs and incomes. Individuals may form their attitudes towards trade by socialising and interacting with each other through their group belonging patterns. Decisions to join any particular group are not random, and as an aware self-selection processes they must have an impact on free trade attitude. In this context Lü, Scheve, and Slaughter (2012) show that group identification may be based on universal value sharing route.

Kuo and Naoi (2015) postulate to examine medium and mechanism of information transmission from groups to individuals and among individuals and groups as crucial but sill underestimated factors of attitude formation. It is no doubt that a large strand of informational effect is generated by political persuasion. Describing influence of informational effect on attitudes towards free trade becomes really complicated if Internet is to be considered. Framing and priming channels do not belong exclusively to traditional media market any more in majority of countries. Briefing the framing theory (Chong, Druckman, 2007) one can say that the more complex the issue is (as free trade), the more tending people are to rely on the "cliches", which help them to form the attitude, no matter how false judgment lies behind it. Producing special "clichés" that easily reach social consciousness by simplifying or personalizing the message is spécialité de la maison of the populists and Internet is easily accessible dissemination channel. So-called elite cueing might work as heuristics for individuals to lower the costs of forming opinion on a specific Free Trade Agreement (Jungherr et al., 2018). Certainly, variation in the information environment, i.e. dispersion of framing sources, so natural for Internet makes evaluation of the partisan actors' and interest groups' relevance for attitudes towards free trade very difficult.

2.2. What the surveys tell us?

Latest Eurobarometer (Autumn 2017) survey does not contain any explicit question concerning FTA. Its previous issue (Spring 2017) in section "European Union's Political Priorities" still included responses of the Europeans concerning the TTIP. It should be emphasized that the TTIP issue was included in Eurobarometer in the fall of 2014 for the first time. Although majorities of respondents supported the TTIP, the Europeans were getting rather more skeptical in time till early 2016 (Table 1).

Table 1. *"Do you support or not a free trade and investment agreement between the EU and the US?*"

	Autumn 2014	Spring 2015	Autumn 2015	Spring 2016	Autumn 2016	Spring 2017
FOR	58%	56%	53%	51%	53%	54%
AGAINST	25%	28%	32%	34%	34%	32%
DO NOT KNOW	17%	16%	15%	15%	13%	14%

Source: Eurobarometers: 87, 86, 85, 84, 83.

In 2016 the most anti-TTIP were Austrians (70% "against"), Germans (59% "against"), Slovenians (52% "against"), and Luxembourgers (50% "against"), while the most approving were Lithuanians (77% "for"), the Irish (70% "for"), Romanians and Swedish (68% "for"), and Danish (67% "for"). The Polish people were among supporters (59% "for").

Another study, which included both European and American respondents' opinions on the TTIP, was conducted by YouGov on behalf of the Bertelsmann Foundation. On the 23rd of February 2016, the questionnaire available online was completed by 1,126 American citizens, and on 17-19 February 2016 by 2,019 German citizens. The published report (Bluth, 2016) shows that there are important differences between Germans and Americans in their attitudes to trade. Only 56% of the German respondents believe increased trade relations with other countries to be something good (27% of the respondents are of the opposite opinion), while in America a positive opinion on the subject is shared by 82% of the respondents (13% of the surveyed people are of the opposite opinion). The assessment of the TTIP impact on economic growth and competiveness is positive for both Germans and Americans. However, "consumer protection", "environmental standards" and "workers' rights" are the key concerns, especially for Germans. Americans do not have such strong "for or against" attitudes (Table 2). It is difficult not to notice that among the German and American respondents (such attitudes are definitely more present in the US) there is a visible lack of dominant views. Apart from the fairly equal number of mutually cancelling extreme views, people who declare their neutrality and people who do not have the appropriate knowledge of the issue constitute a large group.

As we know Donald Trump's election to the White House consigned the TTIP talks to the deep freeze. In the meantime, the negotiations on the CETA were concluded and the European Parliament approved the deal on the 15th of February 2017.

There has not been much research done on the FTA social perception. (Działo *et al.* 2017a, 2017b) conducted a content analysis of seven Polish web portals to describe the Polish public opinion attitude towards CETA. They have made several interesting observations. First of all, they point out that the Internet comments (that are treated as "*vox populi*") contain very low (8%) percentage of the "expert" content. Secondly, it seems that people do not distinguish between the CETA and the TTIP, which again may confirm a superficial character of social perception towards FTA. Thirdly, the most commonly mentioned topic in both articles and comments is category named as "trade and business" (96.1% and 32% of the content respectively).

Table 2. The distribution of responses to the question: *How do you think the TTIP will affect the following in your country?*

	Germany				United States			
	Positive	**Negative**	**Neutral**	**Don't know**	**Positive**	**Negative**	**Neutral**	**Don't know**
economic growth	27%	26%	19%	28%	29%	23%	8%	39%
employment and labour market conditions	23%	28%	22%	28%	21%	27%	11%	41%
international competiveness	29%	24%	19%	28%	24%	22%	11%	43%
your country's global influence	23%	21%	26%	29%	31%	15%	16%	38%
environmental standards	12%	46%	16%	27%	18%	19%	20%	44%
workers' rights/social standards	10%	40%	22%	29%	17%	24%	15%	45%
cultural diversity	24%	17%	30%	28%	26%	12%	22%	39%
public services	10%	27%	31%	31%	15%	13%	26%	46%
democracy	10%	28%	32%	29%	20%	14%	23%	43%
regulatory sovereignty	9%	37%	22%	32%	17%	22%	15%	47%

Source: Bluth (2016)

Some other issues well known as those causing a lot of social threats (food safety, GMO, etc.) are less frequently occurring. Therefore, it enhances our motivation to define what is the "expert" opinion in this aspect, if it is clear enough to be capable to confront and satisfy the social interest but in the merit oriented way. Especially, if to consider what Działo *et al.* (2017b, p. 132) have noticed: "*Comparative analysis of the Polish and foreign expert debate on the FTA points to a significant difference concerning the methodology of research. The current Polish debate on the FTA is based predominantly upon qualitative, descriptive analysis, while most of foreign research is based on the computable general equilibrium models, used to attempt to estimate the expected effects of the FTA"*. The Authors also underline that the Polish research outcomes are much more diversified than the foreign reference literature, which can be surprising to an extent, as one cannot find the reason for such a differentiation. All the authors use almost the same or very similar data/sources of information, but formulate quite different conclusions.

3. The Polish expert database

To collect the "expert data base" contents Działo *et al.* (2017b) have relied on the Google Scholar results that they have received using well-known Polish International Trade experts' surnames and some professional FTA related vocabulary as key words. They have managed to gather 37 documents including papers, books and reports. Our database consists of

59 documents. We use the same database as Działo *et al.* (2017b) and extend it by 22 papers obtained as a result of the Google Scholar search adding to Działo *et al.* more key words. Now we have all possible FTA names (other than the CETA and the TTIP, i.e. ASEAN, CEFTA, NAFTA, TPP, etc.), advanced econometric terminology and references to some models (gravity model, CGE model, etc.), more names of some worldwide agreements and institutions (GATT, WTO) as well as we try to capture the character of the FTA by using "regional", and "preferential" terms. Finally, we also enlarge the list of some contemporary concepts of international trade (for instance diversion and creation effects are now included). The time restriction is used in the search. We cover ten-year period: 2007 – 2017 (Table 3).

Table 3. Time distribution of the "expert" documents

2007	2009	2012	2013	2014	2015	2016	2017
1	2	1	6	13	18	15	3

Source: *own elaboration.*

We wonder if the CETA and the TTIP negotiations have prevailed the expert debate, which could have caused increase of interest and therefore increase in number of produced papers in the recent time. The TTIP theme is dominating indeed (Table 4). The EU and Polish trade issues take second and third place in the ranking. CETA theme occurred in the database in 2015, and is fourth important.

Table 4. Theme allocation in the documents

Theme	Number of documents
TTIP	18
The Polish Trade in the EU and with some Trading Partners (different from the well defined FTA)	12
The EU trade (inside and with some Trading Partners different from the well defined FTA)	9
CETA	6
Trade Theory and Research Methodology	4
Regional Trade Agreements	2
TPP	2
ASEAN	1
CEFTA	1
NAFTA	1
Trade between China and Switzerland	1
Trade sanctions	1
Trade and economic development	1
TOTAL	**59**

Source: *own elaboration.*

Only 2 out of 18 papers devoted to the TTIP contain model-based approach, i.e. Hagemejer (2015, CGE), and Przybyliński (2015, input-output analysis). In case of the CETA analysis only Ambroziak (2016) using SMART model estimates trade creation effect for Poland. Other four papers contain descriptive analysis, mostly legal aspects of the CETA implementation. Conclusions for TTIP and CETA are rather moderately positive. However,

there are some risks defined too. On the risk side there are issues like: food safety, environmental care, consumer rights, labour rights and access to public services in the European Union. Especially the ISDS poses a threat in the context of the TTIP. It is a pity that we have not found any publication explaining that CETA introduces a completely different, much more objective and transparent standard in this area.

We keep in mind that the key category mentioned in the Polish Internet discussion is "trade and business". Still the question, if there is a coherent message that could be generated from the expert works clearly stating if the FTA-s result in positive or negative effects, remains open. We want to conduct the meta-analysis to find the answer. Therefore, we need a set of the papers that use the comparable methodology and focus on the similar issue. In our database there are six papers that use gravity model and use variables enabling to explore the FTA impact on trade. Moreover, the complexity of the models employed provides us with a sufficient statistical material that could be processed in meta-analysis. And that is why finally, we work with: Maciejewski (2017); Klimczak (2015); Molendowski & Klimczak (2015); Śledziewska & Witkowski (2012); Cieślik, Michałek, & Mycielski (2008); Cieślik (2007).

Maciejewski (2017) tries to define some determinants of the use of production factors in the export structure of the EU countries. The aim of this article is to demonstrate the differences in the intensity of use of production factors in the export of the European Union countries, which cannot be explained only by resources that the country possesses.

Klimczak (2015) and Molendowski & Klimczak (2015) verify the hypothesis saying that that the CEFTA-2006 significantly intensified the trade links among its members. They concentrate on the region of Western Balkans.

Śledziewska & Witkowski (2012) analyse an impact of the global financial crisis on macroeconomic factors determining the development of the world trade. They consider the gravity model as a reliable method of estimating changes in trade turnover value during the economic crises.

Cieślik, Michałek, & Mycielski (2008) deals with the trade effects of Poland's accession to the Eurozone using the gravity model.

And last but not least Cieślik (2007) investigates the impact of Poland's FTA on its trade. According to the Author the effects of free trade agreements are not immediate and often come with a few year delay from the dates of their entry into force.

4. Methodology

In order to analyse impact of free trade agreements (FTA) meta-analysis of the results of the research into this subject has been performed using the sample of 6 Polish articles. Detail description of each research is depicted in Table 5. In our research we included models in which natural logarithm of some measure of trade was regressed on FTA dummy variable along with other explanatory variables. Regressand in case of each of the Polish language papers is expressed in terms of natural logarithms of exports and trade as a whole. Due to that construction of the models if the estimated coefficient is β, then countries with FTA memberships experience on average $(e^{\beta} - 1) * 100$ percent more trade than countries outside the free trade area (Halvorsen and Palmquist, 1980). Still two points need to be made about this interpretation. Positive value of the coefficient does not unequivocally testify to trade creation of FTAs, as the additional trade can be a consequence of trade diversion. Secondly, this measure suffers form endogeneity issue, because *a priori* one can expect that countries that trade with one another a lot are more likely to establish free trade association. The estimation strategy follows (Viechtbauer, 2010).

In meta-analysis values of the point estimate for the FTA dummy variables were considered along with their respective standard errors. We assume that for i = 1, 2, …, k independent point estimates:

$$y_i = \theta + u_i, \quad (1)$$

where y_i denotes the observed point estimate, θ is the true value of the point estimate, and u_i is the sampling error, and $u_i \sim N(0, \sigma_i^2)$. Under this assumption, obtained coefficients are unbiased and normally distributed estimates of the true effect of FTA on trade. σ_i^2 - the sampling variances are assumed to be known.

Of course in each of the researches presented in tables, different methodology has been used – estimation method, set of control variables – as well as the analysed sample of countries and time period. This introduces heterogeneity (variability) among the true values of the regression coefficients. There are several ways one can deal with this problem. Firstly, random effects model can be applied, which is given by:

$$\theta_i = \mu + v_i, \quad (2)$$

where $v_i \sim N(0, \tau^2)$. In such model structure, the true coefficient is assumed to be normally distributed with mean μ and variance τ^2(Viechtbauer, 2010). μ is the value of the true coefficient, while τ^2 measures the total heterogeneity among the true coefficients – with $\tau^2 = 0$ implying homogeneity.

Random effects model provides an unconditional inference about the true value of the coefficient under consideration (Hedges and Vevea, 1998). The k studies included in the meta-analysis are treated as a random sample taken from a hypothetical population of studies that have been conducted, will be conducted or might have been conducted. So inferences taken from random effects model consider average coefficient from the population from which studies under consideration are a random sample.

On the other hand, fixed effects models provide conditional inference, about the k researches under consideration in a meta-analysis (Hedges and Vevea, 1998). In other words, fixed effects model are helpful in assessing the value of the true coefficient under consideration in the k studies included in the analysis. Fixed effects model can be applied with unweighted least squares as:

$$\bar{\theta}_u = \frac{\sum_{i=1}^{k} \theta_i}{k}, \quad (4)$$

where $\bar{\theta}_u$ is a simple average of true effects (Laird and Mosteller, 1990). Weighted least squares estimates are given by:

$$\bar{\theta}_w = \frac{\sum_{i=1}^{k} w_i \theta_i}{w_i}, \quad (5)$$

with weights given by $w_i = 1/v_i$.

The random effects model was fitted using two stage approach (Raudenbush, 2009). In the first stage residual heterogeneity was estimated using one of the following estimators: the Hunter-Schmidt estimator (Hunter and Schmidt, 2004) – "HS", the Hedges estimator (Hedges and Olkin, 1985; Raudenbush, 2009) – "HE", the DerSimonian-Laird estimator (DerSimonian and Laird 1986; Raudenbush, 2009) – "DL", the Sidik-Jonkman estimator (Sidik and Jonkman, 2005a, 2005b) – "SJ", the maximum-likelihood – "ML" – and restricted maximum-likelihood estimator (Viechtbauer, 2005; Raudenbush, 2009) – "REML", and the empirical Bayes estimator (Morris, 1983; Berkey *et al.* 1995) – "EB". In the second stage μ was estimated using weighted least squares with weights $w_i = 1/(v_i + \widehat{\tau^2})$, where $\widehat{\tau^2}$ is the estimate of τ^2. Later on, the null hypothesis of τ^2=0 for random effects models was tested using Cochran's Q-test (Hedges and Olkin, 1985). Moreover, I^2 denotes ratio of total heterogeneity to total variability, while H^2 ratio of total variability to sampling variability.

For the Polish language papers, two sessions of estimations were run. In the first one all models from all the articles were taken as the sample – in that instance, *k* amounted to 30 observations. In the second one author's preferred models were chosen, and in this case, k is given by 6 observations. All the calculations were performed using metafor package for R (Viechtbauer, 2010).

Table 5. Polish language database – Empirical research

Study	Model ID	Authors	Year of publication	Estimated coefficient	Standard error	Method	Time period of analysis	Sample of countries used	Dependent variable	Control variables
1	1	Cieślik	2007	3.51	0.131	Pooled OLS	1992-2004	105 Polish Trading Partners	Trade	GDP per capital, country dummy
	2			2.219	0.082					GV (without distance), country dummy,
	3			0.978	0.087					GV, country dummy
	4			0.692	0.096					GV, GDP per capita, country dummy
	5			1.082	0.113					GV, GDP per capita (for one country), country dummy, common language dummy, common border, common history
	6			1.080	0.113					GV, GDP per capita, country dummy, common language dummy, common border, common history
2	7	Sledziewska, Witkowski	2012	0.118	0.022	Pooled OLS	1995-2010	202 countries		GV, GDP per capita, monetary union dummy, common language, year of crises dummies, interaction terms
	8			0.32	0.054			Developed countries		
	9			-0.0279	0.024			Developing countries		
	10			0.216	0.544			Transformation countries		GV, GDP per capita, common language, year of crises dummies, interaction terms
3	11	Cieślik, Michałek, Mycielski	2008	0.23	0.032	Random effects OLS	1993-2006	100 countries		GV, GDP per capita, arable land, common border, monetary union, exchange rate variability, participation in WTO and OECD,
4	12	Maciejewski	2017	0.444	0.027	Pooled OLS	1995-2015	UE-28	export - raw materials	GV, GDP per capita, GDP per capita differential, GDP differential, common border, monetary union
	13			0.185	0.022				export - labour intensive	GV, GDP per capita, GDP per capita differential, GDP, common border, monetary union

Study	Model ID	Authors	Year of publication	Estimated coefficient	Standard error	Method	Time period of analysis	Sample of countries used	Dependent variable	Control variables
	14			0.379	0.024				export - capital intensive	GV, GDP per capita, GDP per capita differential, GDP differential, common border
	15			0.379	0.026				export - high technology	GV, GDP per capita, GDP per capita differential, GDP differential, common border
	16			0.05	0.023				export - high technology	GV, GDP per capita, GDP per capita differential, GDP differential, common border, monetary union
	17			0.12	0.016				export - raw materials	GV (without distance), GDP per capita, monetary union
	18			0.21	0.016	Fixed effects OLS			export - capital intensive	GV (without distance), GDP per capita, GDP distance, monetary union
	19			0.38	0.019				export - high technology	GV (without distance), GDP per capita, GDP distance, GDP per capita differential, monetary union
	20			0.04	0.016				export - high technology	GV (without distance), GDP per capita, GDP distance, monetary union
	21			0.24	0.032				export - raw materials	GV, GDP per capita, GDP per capita differential, common border, monetary union
	22			0.10	0.048	Dynamic OLS			export - labour intensive	GV, GDP per capita, GDP per capita differential, common border
	23			0.15	0.029				export - capital intensive	GV, GDP per capita, GDP differential, common border
	24			0.10	0.018				export - high technology	GV, GDP per capita differential, common border
5	**25**	Molendowski, Klimczak	2015	1.37	0.22	Pooled OLS	1993-2013	Albania, Bosnia and Hercegowina, Croatia, Macedonia, Serbia and Montenegro	Exports	GV, common border, common language, religion similarity, war, year of crisis
	26			0.4	0.16	Fixed effects OLS				
	27			0.62	0.17	Random effects OLS				
6	**28**	Klimczak	2015	1.22	0.23	Pooled OLS	1993-2013	Albania, Bosnia and Hercegowina, Croatia, Macedonia, Serbia and Montenegro		GV, common border, common language, religion similarity, war, FDI, GDP per capita difference, minority
	29			0.22	0.17	Fixed effects OLS				
	30			0.33	0.17	Random effects OLS				

Source: *own elaboration.*

Abbreviations: GV – gravity variables.

5. Results

Meta-analysis was performed for all Polish language studies. The analysis was conducted at the study level and at the model level. The models chosen for the study level were the ones preferred by the authors of the papers. Firstly, we present the results at the model level. Results of the random effects models have been reported in Table 6.

Table 6. Results of random effects estimation for 30 models from Polish language studies

Estimator	HS	HE	DL	SJ	ML	REML	EB	MAX	MIN
Θ	0.536	0.575	0.539	0.575	0.574	0.575	0.575	0.575	0.536
se(θ)	0.048	0.136	0.050	0.136	0.134	0.136	0.136	0.136	0.048
Z	11.067	4.235	10.746	4.222	4.290	4.218	4.222	11.07	4.218
P	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
95%low	0.441	0.309	0.440	0.308	0.312	0.308	0.308	0.441	0.308
95%upp	0.631	0.840	0.637	0.841	0.837	0.841	0.841	0.841	0.631
τ^2	0.061	0.536	0.066	0.539	0.522	0.540	0.540	0.540	0.061
T	0.246	0.732	0.256	0.735	0.722	0.735	0.735	0.735	0.246
I^2	98.52%	99.83%	98.63%	99.83%	99.83%	99.83%	99.83%	0.998	0.985
H^2	67.400	588.190	72.730	592.170	527.870	593.280	592.250	593.3	67.4
Q	2109.257								
p(Q)	0.000								

Source: *own elaboration.*
All abbreviations are explained in section 4.

The outcome of random effects estimation at the model level are shown in the table 6. Here the results are clear-cut. Regardless of which estimator has been used size effect is positive and statistically different from zero at any conventional level. Values of the effect ranges from 0.536 to 0.575, which translates to FTA members trading with one another on average more by 70.8 to 77.6 percent more than the countries outside these agreements. The obtained estimates are stable and robust across all used estimators. The Cochrane Q-test shows that the hypothesis of homogeneity in true effects can be rejected at any conventional level.

Table 7. Results of fixed effects estimation for Polish language papers at a model and at a study level

LEVEL	Model		Study	
Method	Weighted	Unweighted	Weighted	Unweighted
θ	0.204	0.577	0.269	0.743
se(θ)	0.005	0.0256	0.015	0.057
z	37.865	22.571	17.963	13.064
p	0.000	0.000	0.000	0.000
95%low	0.194	0.527	0.239	0.631
95%upp	0.215	0.628	0.298	0.854
Q	2109.257		183.517	
p(Q)	0.000		0.000	

Source: *own elaboration.*
All abbreviations are explained in section 4.

Table 7 present the results of the fixed effects estimation at the model level. For both weighted and unweighted least squares size effects are positive and statistically significant. For weighted least squares FTA's are associated with trade higher by 22.7%, while 78.2% higher for unweighted least squares. These results shows that all the surveyed models point that free trade areas are associated with higher value of trade. Table 8 shows the results of random effects estimation for the preferred models in 6 Polish studies. Regardless of the used estimator size effect is positive and statistically significant. Values of the size effect ranges from 0.596 to 0.711. Accordingly, FTA members trade with one another by from 81.4 to 103.5 percent more than countries outside these agreements. Null hypothesis of homogeneity is rejected at any

conventional level.

Table 8. Results of random effects estimation for 6 preferred models from Polish language studies

Estimator	HS	HE	DL	SJ	ML	REML	EB	MAX	MIN
Θ	0.596	0.711	0.632	0.710	0.704	0.710	0.711	0.711	0.596
se(θ)	0.093	0.222	0.112	0.220	0.200	0.220	0.221	0.222	0.093
Z	6.402	3.207	5.660	3.229	3.523	3.234	3.218	6.402	3.21
P	0.000	0.001	0.000	0.001	0.000	0.001	0.001	0.001	0.000
95%low	0.413	0.276	0.413	0.279	0.312	0.280	0.278	0.413	0.276
95%upp	0.778	1.145	0.851	1.141	1.095	1.141	1.143	1.145	0.778
τ^2	0.040	0.277	0.061	0.273	0.222	0.272	0.275	0.277	0.040
T	0.199	0.526	0.247	0.522	0.471	0.521	0.524	0.526	0.199
I^2	95.88%	99.39%	97.28%	99.38%	99.24%	99.38%	99.38%	0.994	0.959
H^2	24.25	163.47	36.70	160.84	131.16	160.31	162.12	163.5	24.250
Q					183.517				
p(Q)					0.000				

Source: *own elaboration.*
All abbreviations are explained in section 4.

Finally, table 7 contains results for fixed effects estimations for preferred models – study level. These results also confirm the presence of positive relationship between trade and membership in free trade agreements, as size effects are positive and statistically significant. FTA membership is associated with trade higher by 30.8% for weighted and 110.2% for unweighted least squares. So for Polish language studies there is an overwhelming evidence of positive impact of FTA agreements on trade.

Summarizing, Polish language literature gives a lot of the support to the notion that free trade agreements are associated with higher trade. Of course, due to the measure of FTA participation considered in the present meta-analysis, the exact size effect can be brought to question. As mentioned before, with FTA dummy variable increased traded can have its sources both in trade creation and trade diversion. Also endogeneity issue might results in overestimation of the effect, as countries that trade more are more likely to establish free trade agreements. Having this in mind random effects models show that the underlying true effect of participation in FTA is both positive and significant. Weighted and unweighted least squares fixed effects models at both study and model level supports this notion. Still, the analysis shows that the bulk of researches give a lot of support to the notion that FTA brings about higher trade.

6. Conclusion

All our estimates prove that research on the trade effects in Polish literature contain very coherent message concerning participation in the FTA. The countries that participate in that type of agreements on average trade more than the countries that do not participate in the FTA. Even if the message is coherent there are two important things to be considered while confronting this output with the public opinion. Firstly, how this message should be disseminated. And secondly, if "more trading" sounds positive to the public opinion, and therefore convincing enough to participate in the FTA.

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