

A Service of



Leibniz-Informationszentrum Wirtschaft Leibniz Information Centre

Kukharskyy, Bohdan

Working Paper

Trust and Foreign Direct Investment: An Empirical Analysis

BGPE Discussion Paper, No. 127

Provided in Cooperation with:

Friedrich-Alexander University of Erlangen-Nuremberg (FAU), Bavarian Graduate Program in Economics (BGPE)

Suggested Citation: Kukharskyy, Bohdan (2012): Trust and Foreign Direct Investment: An Empirical Analysis, BGPE Discussion Paper, No. 127, Friedrich-Alexander-Universität Erlangen-Nürnberg, Bavarian Graduate Program in Economics (BGPE), Nürnberg

This Version is available at: https://hdl.handle.net/10419/73424

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.







BGPE Discussion Paper

No. 127

Trust and Foreign Direct Investment: An Empirical Analysis

Bohdan Kukharskyy

November 2012

ISSN 1863-5733

Editor: Prof. Regina T. Riphahn, Ph.D. Friedrich-Alexander-University Erlangen-Nuremberg © Bohdan Kukharskyy

Trust and Foreign Direct Investment: An Empirical Analysis*

Bohdan Kukharskyy[†] November 22, 2012

Abstract

This paper studies the relationship between trust and foreign direct investment (FDI) in a cross-section of countries. Accounting for the issue endogeneity, this paper suggests that countries with a higher level of generalized trust attract more FDI than the low-trust countries.

Keywords: Trust, Foreign Direct Investment, Causality

JEL-Classifications: F14, F21

^{*}I am grateful to Pol Antràs, Stefan Bauernschuster, Carsten Eckel, Philipp Ehrl, Elhanan Helpman, Roberto Magdaleno, Marc Melitz, Malte Mosel, Michael Pflüger, Monika Schnitzer, Gabriel Smagghue and seminar participants in Harvard and Munich for helpful comments and suggestions. All errors are my own. Financial support from the Bavarian Graduate Program in Economics is gratefully acknowledged.

 $^{^\}dagger Bohdan Kukharskyy, Faculty of Economics, University of Passau, Innstrasse 27, 94032 Passau, Germany, Tel (Fax) + 49 (0) 851 509-2536 (2532), E-mail: bohdan.kukharskyy@uni-passau.de.$

1 Introduction

"The advantage that is to mankind of being able to trust one another, penetrates into every crevice and cranny of human life: the economical is perhaps the smallest part of it, yet even this is incalculable."

John Stuart Mill (1849: 134)

Since pioneering contributions by Knack and Keefer (1997) and La Porta et al. (1997), economists, albeit agreeing with Mill on the paramountcy of trust, challenge his view regarding the incalculability of its impact. The discussion has recently entered a new round due to numerous contributions that account for the issue of causality (see, e.g., Guiso et al. 2010 for an overview). The current paper contributes to this literature strand by empirically analyzing a less established link between trust and FDI.

A rationale behind this link stems from the recent theoretical work by Kukharskyy and Pflüger (2010). The authors show that the well-known inefficiencies associated with incomplete contractual environment (cf. Antràs and Helpman, 2004) can be mitigated if cooperation parties are willing to enter relational agreements on the trust basis. Given that international investors will primarily seek for sub-contractors in those countries where cooperation partners are perceived to be more trustworthy, high-trust countries are expected to attract ceteris paribus more FDI than the low-trust ones.

This paper provides supporting empirical evidence for the positive relationship between a country's level of trust and its inward FDI stock. Approximating the main explanatory variable with a commonly used measure of generalized trust from the World Values Survey and controlling for a standard set of omitted variables, simple linear regressions show a quantitatively large and highly significant impact of trust on inward FDI in a cross-section of countries.¹ In order to account for the issue of reverse causality, I employ the instrumental variables approach, whereby the current level of trust is being instrumented with the inherited trust of US immigrants and historical and current shares of Protestants in the population. The positive effect of trust on inward FDI stock remains highly significant.

To the best of my knowledge, the only existing paper studying the link between trust and FDI is Guiso et al. (2009). Constructing a measure of bilateral trust between European countries and instrumenting it with a commonality in religion and ethnic origin, the authors find that the level of trust positively affects a country's inward FDI. This paper complements their finding by using a larger set of countries and two alternative instruments for trust.

The remainder of the paper is organized as follows. Section 2 describes the data on trust. Section 3 presents a simple regression meant to capture the correlation between trust and FDI. Section 4 pursues the issue of causality using instruments. Section 5 concludes.

See Tabellini (2008) and Guiso et al. (2010) for extensive discussions of the adequacy of this survey-based proxy for capturing the actual level of trust(worthiness).

2 Data on Trust

This paper uses two proxies for the level of trust. In both cases, individual perception of trust is measured by the generalized trust question: "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?"

The *first* measure of trust is constructed using the integrated dataset of the European Values Survey and the World Values Survey (EVS/WVS, 1980-2008). I choose the most recent 2005-2007 WVS wave as a benchmark wave due to the largest number of surveyed countries.² Missing data for several European and non-European countries is gathered from the most recent EVS 2008 wave and former WVS waves, respectively.³ With respect to the above mentioned trust question, all respondents were asked to choose one of the following two answers: "Most people can be trusted", and "Can't be too careful". The fraction of individuals in a given country choosing the first option will be referred to as (a country's measure of) *Trust*. As documented in Table 3, this measure varies strongly across countries, ranging from .03 in Trinidad and Tobago to .75 in Denmark.

The second proxy will serve as an instrument for Trust and is constructed using the 1972-2010 General Social Survey (GSS).⁴ In contrast to EVS/WVS, GSS measures social attitudes exclusively of the US residents. I further restrict the relevant sample to those respondents who were born in the US, but whose parents and/or grandparents immigrated to the US. More specifically, respondents indicate since 1977 their birthplace and the number of parents and/or grandparents that were born in the US. To maximize the number of observations, I define a US immigrant as a person who was born in the US and who has at least one abroadborn ancestor (parent and/or grandparent).⁵ The variable for the country of origin of the respondent's forbears reads as follows: "From what countries or part of the world did your ancestors come?" Up to the year 1984 the dataset contains information on a single country of origin. Thereafter, the respondents were allowed to report up to three countries of origin and indicate which of these countries they feel closest to.⁶ In order to make the comparison across years feasible, I consider the country which a respondent feels mostly associated with as an immigrant's country of origin. Among those countries which are represented in the EVS/WVS dataset the GSS contains a subset of 29 countries of origin (cf. Table 4 in Appendix). Regarding the above mentioned trust question, respondents were able to choose one of the following three options: "Most people can be trusted", "Can't be too careful",

The results are similar by considering previous waves or taking averages across waves in a given country.

Table 3 in Appendix reports the country list and the respective survey wave.

This instrument for trust has been previously used by Algan and Cahuc (2010) and Tabellini (2010).

All results remain robust to imposing a narrower definition of an immigrant (e.g., having at least one parent and grandparent that were born abroad).

⁶ Nevertheless, the great majority of respondents still reported a single country of origin.

and "Depends". I construct a trust indicator which is equal to 1 if the respondent selected the first option and 0 if the respondent indicated one of the latter two options.⁷ As before, I calculate for each country the mean fraction of individuals choosing the first option and borrow from Algan and Cahuc (2010) the label *Inherited Trust* for this measure.

As shown in Figure 1, the two measures of trust are positively correlated. This association can be explained in the light of the recent literature, which argues that social norms are transmitted mostly inside the family (see, e.g., Bisin and Verdier (2010) for an overview). Column (1) of Table 1 reports the results of the corresponding OLS regression and argues that a one percent increase in the *Inherited Trust* is associated with the very same rise in *Trust* and that this correlation is highly significant.

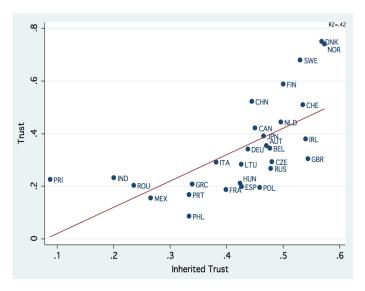


Figure 1: Correlation between Inherited Trust and Trust.

This correlation could be spurious since both ancestor's and current trust level might have been co-determined by some persistent confounding factors. Guiso et al. (2010) consider religion, education, institutions, and economic development as key factors for the formation of the social capital. Table 1 controls for all these factors by including respective historical proxies from the year 1900, unless indicated otherwise. Protestant₁₉₀₀ and Catholic₁₉₀₀ denote the fractions of Protestants and Catholics in the population, taken from Barro (2003). I include primary school enrollment from Benavot and Riddle (1988), SchoolEnroll₁₉₀₀, as a proxy for education. Polity 2_{1900} is a combined score for political institutions (e.g. competitiveness of political participation, the openness and competitiveness of executive recruitment, and constraints on the executive) from the Polity IV database. ODP₁₉₀₀ denotes the log of

⁷ I run robustness checks by putting together the first and the third option or dropping the answer "Depends". The results are qualitatively unchanged.

The correlation remains significant if we include historical controls from different years or decades.

⁹ Values for Czech Republic stem from 1910, and for Lithuania from 1920.

Values for Finland stem from 1917, Czech Republic and Lithuania from 1918, and Ireland from 1921.

per capita income from Maddison (2001).¹¹ Notice from column (4) that correlation between *Trust* and *Inherited Trust* remains robust to the inclusion of all historical controls.

In addition, I use Barro's (2003) dataset to regress *Trust* against the shares of adherents to a particular religion in a given country (both in 1900 and 2000). The idea behind this test relies on Putnam's (1993) hypothesis that less hierarchical religions might foster horizontal ties among its followers and, thereby, promote trust. In fact, among all religious denominations represented in this dataset, only the share of Protestants in a population (both in 1900 and 2000) is positively and significantly associated with the current level of trust, cf. Columns (5) and (6). Assuming that religious adherence is exogenous to FDI stock, it will be used alongside with *Inherited Trust* as an additional instrument for *Trust*.

	Dej	pendent va	riable: Tr	ust		
	(1)	(2)	(3)	(4)	(5)	(6)
Inherited Trust	1.000***	.807***	.906***	.838**		
	(.288)	(.206)	(.266)	(.304)		
$Protestant_{1900}$.172*	.191**	.227**	.358***	
		(.085)	(.076)	(.079)	(.047)	
$Catholic_{1900}$		111*	091*	063		
		(.054)	(.047)	(.045)		
$SchoolEnroll_{1900}$			000	000		
			(000.)	(000.)		
$Polity2_{1900}$				002		
				(.003)		
GDP_{1900}				.014		
				(.010)		
$Protestant_{2000}$.406***
						(.072)
Observations	29	28	28	25	93	92
R^2	.424	.735	.742	.801	.416	.297

Note: OLS regression with robust standard errors in parenthesis. Coefficient is statistically different from 0 at the ***1%, **5% and *10% level.

Table 1: Correlation between Trust, Inherited Trust, and Protestant_{1900, 2000}.

3 OLS regression

In this section, I test the following simple econometric model:

$$Y_i = \alpha_0 + \alpha_1 Trust_i + \alpha_2 \mathbf{X}_i + u_i, \tag{1}$$

where α_0 is the intercept, $Trust_i$ is country i's level of trust, \mathbf{X}_i a vector of controls, and u_i the residual. I use data from the Bureau of Economic Analysis (BEA) on the US Foreign Direct Investment position abroad to construct the left-hand side variable. The reason for using BEA data instead of other existing measures of a country's *overall* FDI stock is twofold. First, the former data is widely recognized to be more accurate since it is gathered

Values for Philippines stem from 1902 and for Ireland from 1913.

To address the relative frequency of zero values, I deploy as robustness checks a series of alternative statistical models (Tobit and Probit), or exclude countries with a low representation of Protestants.

on a firm level and is not affected by the cross-country variation in definitions and reporting requirements. Second, it allows for the inclusion of a well-defined distance (both geographical and cultural) between a host and a donor economy (US) as a control variable. In what follows, *USFDI* will denote the log of the US FDI position abroad in the (pre-crisis) year 2007.¹³

]	Dependent va	riable: <i>USFD</i>	I		
	OLS				IV			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Trust	3.336**	3.966***	3.603***	3.433**	3.404***	3.285***	3.715***	4.424***
	(1.484)	(1.397)	(1.290)	(1.325)	(1.122)	(1.131)	(1.400)	(1.69)
GDP_{07}	1.598***	1.570***	1.611***	1.496***	1.576***	1.579***	1.182***	1.023***
	(.179)	(.162)	(.145)	(.167)	(.141)	(.141)	(.245)	(.261)
Distance	, ,	-1.965***	-1.323***	-1.993***	-1.298***	-1.295***	-1.317**	-1.806***
		(.592)	(.496)	(.611)	(.494)	(.489)	(.551)	(.677)
English		1.821***	1.572**	1.090*	1.529***	1.525***	.996	1.281**
		(.607)	(.611)	(.556)	(.571)	(.571)	(.654)	(.532)
$Polity2_{07}$, ,	.097*		.100*	.100*	.151***	, ,
			(.054)		(.052)	(.052)	(.044)	
$Protect_{07}$, ,	.400**	, ,	, ,	, ,	179
				(.161)				(.245)
Observ.	79	79	75	79	73	73	28	28
R^2	.590	.667	.735	.671				
$1^{st} R^2$.575	.504	.788	.753
1^{st} F-stat					18.43	22.87	12.08	15.24

Note: Robust standard errors in parenthesis. Coefficient is statistically different from 0 at the ***1%, **5% and *10% level.

Table 2: Trust and USFDI.

Column (1) of Table 2 shows the effect of Trust on USFDI, while controlling for the log of a country's real GDP in 2007 at purchasing power parity, taken from the World Bank. Column (2) includes two exogenous proxies for transport cost and cultural distance drawn from Mayer and Zignago (2011): Distance denotes the log of a country's distance to the US, weighted by the geographic distribution of population inside each nation, and English is a dummy variable set equal to 1 if English is an official language. Column (3) includes the above mentioned combined score for institutions from the Polity IV database. This measure turns out to be a convenient proxy for the current institutional development since, albeit being a good predictor of USFDI, it is not correlated with Trust. Variable Protect₀₇ in column (4) denotes the strength of investment protection index from the World Bank's Ease of Doing Business database and represents an alternative proxy for a country's institutional environment.¹⁴ The effect of Trust on inward FDI is highly significant in all specification of Table 2. A one per cent increase in a country's level of trust is associated with a more than three percent increase of the US foreign direct investment position in a given country.

¹³ I show, however, that the results are robust to considering different years or taking averages.

Further institutional proxies from this database include an index for strength of legal rights and estimates of cost, time and procedures needed for starting a business, registering a property, enforcing a contract or resolving an insolvency etc. Since the marginal effects of *Trust* remains fairly robust to the inclusion of these alternative controls (both considered jointly and as separate regressors), I refrain from documenting these robustness checks and provide them upon request.

4 IV regressions

Clearly, the simple regression presented above is not sufficient to claim a causal impact of trust on the inward FDI. On the one hand, since the presence of multinational cooperations may affect a country's perception of trust, the econometric model from equation (1) is prone to reverse causality. On the other hand, it may be subject to unobserved heterogeneity across countries, for instance, with respect to the current institutional development.

In order to deal with the issue of endogeneity at stake, I use $Protestant_{1900}$, $Protestant_{2000}$, and $Inherited\ Trust$ as instruments for the current level of Trust. It has been already established in section 2 that each of these measures is a good predictor of the current trust level. At the same time, all three instruments fulfill the exclusion restriction. It is fairly reasonable to assume that religious adherence is exogenous to economic and institutional factors (cf. Guiso et al. 2009 for discussion). Similarly, the inherited trust of the descendants of US immigrants is not affected neither by the presence of multinational enterprises nor by the current institutional development in the ancestors' country of origin.

Columns (5) to (8) of Table 2 present the results of the IV regression of *USFDI* on *Trust*, whereby the latter has been instrumented by *Protestant*₁₉₀₀ in Column (5), by *Protestant*₂₀₀₀ in Column (6), and both by *Protestant*₂₀₀₀ and *Inherited Trust* in Columns (7) and (8). Notice that all *Trust* coefficients in the IV regression are highly significant. A one per cent increase in a country's level of trust leads to a more than three percent increase of the US foreign direct investment in this country. Since the first stage fit is strong in all specifications the results are not likely to suffer from problems associated with using weak instruments. Of course, given the small sample size, the interpretation of the IV regression should be taken with a pinch of salt. Yet, a similar order of magnitude of the *Trust* coefficients both in the OLS and IV regressions can be seen as a sign of robustness of the impact of trust.

5 Summary

This paper contributes to the understanding of the impact of trust on the economic exchange by studying the link between trust and inward FDI in a cross-section of countries. Correcting for the potential endogeneity of trust and controlling for market size, geographical and cultural distance, and a wide range of institutional proxies, this paper argues that trust appears conducive to FDI.

If instrumented solely by *Inherited Trust*, the marginal effect of *Trust* remains highly significant but the first-stage F-statistic falls below 10.

References

Agan, Y., P. Cahuc (2010): Inherited Trust and Growth. *American Economic Review*, 100, 2060-2092.

Antràs, P., E. Helpman (2004): Global Sourcing. *Journal of Political Economy*, 112, 552-580.

Barro, R. (2003): Religion Adherence Data. Available online at http://rbarro.com

Benavot, A., P. Riddle (1988): The Expansion of Primary Education, 1870-1940: Trends and Issues. *Sociology of Education*, 61(3), 191-210.

Bisin, A., T. Verdier (2011): The Economics of Cultural Transmission and Socialization.

NBER Working Paper 16512.

Bureau of Economic Analysis, U.S. Direct Investment Abroad. Available online at: http://www.bea.gov

European Value Survey and World Value Survey Data. Available online at http://www.worldvaluessurvey.org

General Social Survey Cross-Sectional Cumulative Data. Available online at http://www3.norc.org/gss+website

Guiso, L., P. Sapienza, L. Zingales (2009): Cultural Biases in Economic Exchange. *Quarterly Journal of Economics*, 124(3), 1095-1131.

Guiso, L., P. Sapienza, L. Zingales (2010): Civic Capital as the Missing Link. *NBER Working Paper 15845*.

Knack, S., P. Keefer (1997): Does social capital have an economic payoff? A cross-country investigation. *Quarterly Journal of Economics*, 112, 1251-1288.

Kukharskyy, B., M. Pflüger (2010): Relational Contracts and the Economic Well-Being of Nations. *IZA Discussion Paper No. 5394*.

La Porta, R., F. Lopez de Silanes, A. Shleifer, R. Vishny (1997): Trust in large organizations. *American Economic Review*, 87(2), 333-338.

Maddison, A. (2001): The World Economy: Historical Statistics. Available online at: http://www.ggdc.net/maddison

Mayer T., S. Zignago (2011): Notes on CEPII's distances measures: The GeoDist database. *CEPII Working Paper 2011-25*. Data available online at: http://www.cepii.fr/anglaisgraph/bdd/distances.htm

Mill, J. (1849): Principles of Political Economy with some of their Applications to Social Philosophy. London: John W. Parker, West Strand, Vol. I.

Polity IV: Annual Time-Series 1800-2010. Available at: http://www.systemicpeace.org

Putnam (1993): Making Democracy Work. Princeton: Princeton University Press.

Tabellini, G. (2008): Institutions and Culture: Presidential Address. *Journal of the European Economic Association*, 6(2-3): 255-94.

World Bank: The World Bank Indicators. Available online at: http://data.worldbank.org

"Trust most "Can't be people" too careful"
.09 Great B
.11 Greece ^b
.20 Ghana ^{a}
.16 Guatemala ^a
.20 Hong
.48 Hung
.35 Iceland ^b
$.43 India^a$
.23 Indonesi
$.40 Iran^a$
.34 Iraq ^a
.26 Ireland ^b
.09 Israel ^c
.14 Japan ^a
.52 Kyrgyzstan ^c
19 Lithuania ^b
$.26 \text{Mali}^a$
.18 Malta ^{b}
$.32 \text{Moldova}^a$
.24 Montenegro ^b
.18 Netherlands ^a
.34 Nige
.34 INIGETIA

^a Wave 2005-2007 of the World Values Survey (WVS); ^b wave 2008 of the European Value Survey; ^c wave 1999-2004 of the WVS; ^d wave 1994-1999 of the WVS. "The represents the number of observations. Data source: EVS/WVS

Table 3: Descriptive statistics for the "Trust question" in the WVS.

9

Country	N	"Trust most	"Can't be	"Depends"	Inherited trust
		people"	too careful"		
Austria	83	39	38	6	.47
Belgium	21	10	11	0	.47
Canada	282	127	142	13	.45
China	27	12	14	1	.44
Czech Republic	202	97	95	10	.48
Denmark	81	46	32	3	.57
Finland	62	31	27	12	.5
France	128	51	65	57	.44
Germany	1312	574	681	57	.44
Greece	59	20	32	7	.34
Hungary	92	39	49	4	.42
India	10	2	6	2	.2
Ireland	797	430	335	32	.54
Italy	918	350	526	42	.38
Japan	43	20	21	2	.46
Lithuania	47	20	24	3	.42
Mexico	422	112	297	13	.26
Netherlands	127	63	57	7	.5
Norway	239	137	95	7	.57
Philippines	24	8	16	20	.33
Poland	465	213	227	25	.46
Puerto Rico	103	9	89	22	.43
Portugal	45	15	24	6	.33
Romania	17	4	12	1	.23
Russia	205	98	94	13	.48
Spain	68	29	35	4	.43
Sweden	215	114	89	12	.53
Switzerland	43	23	19	1	.53
United Kingdom	791	430	328	33	.54

[&]quot;N" represents the number of US-born American residents with at least one abroad-born ancestor. Canada summarizes the entries for "French Canada" and "Other Canada"; United Kingdom summarizes the entries for "England & Wales" and "Scotland"; Czech Republic contains the observations for "Czechoslovakia". Data source: GSS.

Table 4: Descriptive statistics for the "Trust question" in the GSS.