Trust and Foreign Direct Investment: An Empirical Analysis

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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.

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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.

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[1]   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 abroad-born 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",

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[2]   The results are similar by considering previous waves or taking averages across waves in a given country.
[3]   Table 3 in Appendix reports the country list and the respective survey wave.
[4]   This instrument for trust has been previously used by Algan and Cahuc (2010) and Tabellini (2010).
[5]   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.
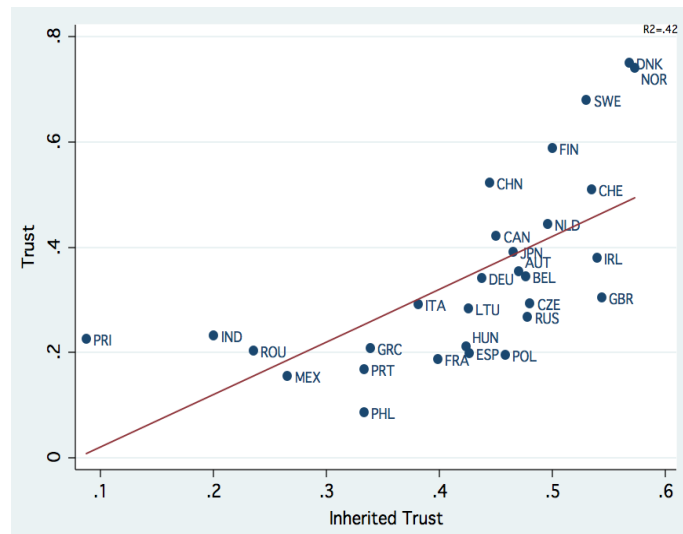

Figure 1: *Correlation between Inherited Trust and Trust.*

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.[8] *Protestant*$_{1900}$ and *Catholic*$_{1900}$ denote the fractions of Protestants and Catholics in the population, taken from Barro (2003). I include primary school enrollment from Benavot and Riddle (1988), *SchoolEnroll*$_{1900}$, as a proxy for education.[9] *Polity2*$_{1900}$ 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.[10] *GDP*$_{1900}$ denotes the log of

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

[8] 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.

[10] 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).[12] Assuming that religious adherence is exogenous to FDI stock, it will be used alongside with *Inherited Trust* as an additional instrument for *Trust*.

	(1)	(2)	(3)	(4)	(5)	(6)
	Dependent variable: *Trust*					
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

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[11]   Values for Philippines stem from 1902 and for Ireland from 1913.
[12]   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 variable: *USFDI*							
	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				
1st R^2					.575	.504	.788	.753
1st 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 $Protect_{07}$ 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.

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[13] I show, however, that the results are robust to considering different years or taking averages.
[14] 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).[15] 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.

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

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Country	N	"Trust most people"	"Can't be too careful"	Trust	Country	N	"Trust most people"	"Can't be too careful"	Trust	Country	N	"Trust most people"	"Can't be too careful"	Trust
Albania[b]	1452	145	1307	.09	Great Britain[a]	1022	311	711	.30	Norway[a]	1018	755	263	.74
Algeria[c]	1230	138	1092	.11	Greece[b]	1463	305	1158	.20	Pakistan[c]	1826	563	1263	.30
Andorra[a]	994	206	788	.20	Ghana[a]	1527	130	1397	.08	Peru[a]	1480	95	1385	.06
Argentina[a]	983	166	817	.16	Guatemala[a]	995	156	839	.15	Philippines[c]	1185	102	1083	.08
Armenia[b]	1488	302	1186	.20	Hong Kong[a]	1230	505	725	.40	Poland[b]	955	186	769	.19
Australia[a]	1403	676	727	.48	Hungary[a]	1512	319	1193	.21	Portugal[b]	1550	261	1289	.16
Austria[b]	1509	534	975	.35	Iceland[b]	797	401	396	.50	Puerto Rico[c]	712	161	551	.22
Azerbaijan[b]	1504	661	843	.43	India[a]	1778	414	1364	.23	Romania[a]	1685	342	1343	.20
Bangladesh[c]	1483	349	1134	.23	Indonesia[a]	1775	755	1020	.42	Russia[a]	1904	509	1395	.26
Belarus[b]	1499	613	886	.40	Iran[a]	2647	281	2366	.10	Rwanda[a]	1499	73	1426	.04
Belgium[b]	1509	519	990	.34	Iraq[a]	2555	1043	1512	.40	Saudi Arabia[c]	1431	759	672	.53
Bosnia & Herz.[b]	1490	389	1101	.26	Ireland[b]	1008	383	625	.37	Serbia[a]	1086	166	920	.15
Brazil[a]	1478	136	1342	.09	Israel[c]	1168	274	894	.23	Singapore[c]	1496	220	1276	.14
Bulgaria[a]	883	194	689	.21	Italy[a]	953	278	675	.29	Slovakia[b]	1458	180	1278	.12
Burkina Faso[a]	1443	212	1231	.14	Japan[a]	1026	401	625	.39	Slovenia[a]	999	181	818	.18
Canada[a]	2107	888	1219	.42	Jordan[a]	1191	373	818	.31	South Africa[a]	2967	519	2448	.17
Chile[a]	984	122	862	.12	Korea[a]	1184	357	827	.30	Spain[a]	1184	236	948	.19
China[a]	1873	979	894	.52	Kyrgyzstan[c]	1038	173	865	.16	Sweden[a]	963	655	308	.68
Colombia[a]	2993	433	2560	.14	Latvia[b]	1482	374	1108	.25	Switzerland[a]	1187	606	581	.51
Croatia[b]	1513	290	1223	.19	Lithuania[b]	1471	418	1053	.28	Thailand[a]	1525	633	892	.41
Cyprus[a]	1037	133	904	.12	Luxembourg[b]	1587	475	1112	.29	Taiwan[a]	1225	297	928	.24
Czech Republic[b]	1798	527	1271	.29	Macedonia[b]	1443	273	1170	.18	Tanzania[c]	1112	90	1022	.08
Denmark[b]	1506	1130	376	.75	Malaysia[a]	1201	106	1095	.08	Trinidad & T.[a]	1000	38	962	.03
Dominican Rep.[d]	397	105	292	.26	Mali[a]	1303	228	1075	.17	Turkey[a]	1339	64	1275	.04
Egypt[a]	3045	561	2484	.18	Malta[b]	1487	309	1178	.20	Uganda[c]	998	78	920	.07
El Salvador[d]	1210	177	1033	.14	Mexico[a]	1548	241	1307	.15	Ukraine[a]	891	252	639	.28
Estonia[b]	1516	486	1030	.32	Moldova[a]	1030	184	846	.17	United States[a]	1241	491	750	.39
Ethiopia[a]	1314	321	993	.24	Montenegro[b]	1486	360	1126	.24	Uruguay[c]	865	246	619	.28
Finland[a]	1000	588	412	.58	Morocco[a]	1177	153	1024	.12	Venezuela[c]	1193	190	1003	.15
France[a]	996	186	810	.18	Netherlands[a]	996	443	553	.44	Viet Nam[a]	1460	761	699	.52
Georgia[a]	1455	264	1191	.18	New Zealand[a]	905	463	442	.51	Zambia[a]	1403	162	1241	.11
Germany[a]	1898	647	1251	.34	Nigeria[c]	2001	512	1489	.34	Zimbabwe[c]	984	110	874	.11

[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. "N" represents the number of observations. Data source: EVS/WVS

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

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Country	N	"Trust most people"	"Can't be too careful"	"Depends"	*Inherited trust*
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

"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.