Trust and Growth: The Global Evidence over 40 Years

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Abstract

This paper analyzes the intertemporal variation of trust on economic growth. Constructing a unique global country panel dataset and applying a system-generalized method of moments (SYSGMM) estimation approach to a sample of 75 global economies over a 40-year time span (1980-2019), this paper finds evidence of a curvilinear (inverted U-shape) relationship between trust and growth. Only a minority of global economies can attain a position close to or above the optimum threshold for trust and growth. Most economies, in fact, fall well below that threshold, and for them, it is incumbent to consider trust-building measures in order to achieve higher growth. In countries that are close to the optimum threshold, however, such policies can likely be neglected. In fact, in countries where trust levels exceed the optimum, an increase in trust might even hamper growth. ***Keywords***: Trust, Growth, Intertemporal Variation, Panel Analysis, Curvilinear (inverted U-shape) Relationship ***JEL-codes***: C33, O43, O47, O50, Z13

1. Introduction

State of the Art: The empirical evidence concerning the impact of trust on economic growth at the country level remains ambivalent: the existing evidence renders mixed results: a positive, shaky, negative and curvilinear relationship between trust and growth.
Value Added: This paper goes beyond the seminal panel study in this field (Roth 2009) by i) extending the country sample from 41 to 75 (from 142), ii) extending the time-series evolution from 25 years to 40 years, iii) applying a tailor-fit synchronization procedure between trust and growth, iv) estimating the unique panel data (392 observations) with the help of a system-generalized method-of-moments (SYSGMM) estimation approach.

2. Trust and Economic Growth

Positive Relationship: Trust facilitates economic growth by i) lowering transaction costs in economic exchange, ii) solving dilemmas posed by collective action, and iii) diminishing principal-agent problems.
Negative and Curvilinear Relationship: Too much trust might hamper economic growth by i) allowing disproportionate collective action over time, ii) raising complacency within society, thereby inhibiting innovation and competition, and iii) hampering cooperation given the tendency of trust to act as a double-edged sword.

3. Previous Findings

Table 1 Previous Empirical Findings between Trust and Growth

Dependent Variable	Growth of GDP per Capita					
Equation	1	2	3	4	5	6
Authors	KK 1997	ZK 2001	BOS 2004	BEJ 2008	Roth 2009	This Paper
Growth of GDP per Capita	1980-92	1970-92	1970-92	1990-2000	1980-2005	1980-2019
Trust	0.086**	0.060***	0.061**	0.062***	0.18**	0.119***
Trust, squared	-	-	-	-	-0.003***	-0.0013**
Income	yes	yes	yes	yes	yes	yes
Education	yes	yes	yes	yes	yes	yes
Price Level of Investment	yes	yes	yes	yes	yes	yes
Fixed-Effects	no	no	no	no	yes	yes
Time-Effects	no	no	no	no	no	yes
WVS Waves	1-2	1-3	1-3	1-4	1-4	1-7
Further Trust Sources	no	yes	yes	yes	yes	yes
Synchronization	no	no	no	no	yes	yes
Control for Endogeneity	2SLS	2SLS	-	-	FE	GMM
Optimum Trust	63#	61.2#	61.2#	66.1#	30	44.4
Number of Countries	29	41	41	63	35	75
Number of Time-Periods	-	-	-	-	5	8
Number of Observations	29	41	41	63	115	392

Table 1: Previous papers (Zak and Knack 2001, Beugelsdijk et al. 2004, Berggren et al. 2008, Roth 2009) and this paper (Roth 2024a) follow the model specification by the seminal paper by Knack and Keefer (1997). The papers differ on three accounts: i) number of country-time observations, ii) research design, iii) estimation approach.

4. Methodology

Operationalization: Trust is measured by asking *"Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?"*
- Trust value is calculated as: *"Most people can be trusted" / ("Most people can be trusted"* + *"Can´t be too careful")*

Data: Data on Trust are a subsample taken from Roth (2024b) and consist of i) Integrated Value Study (1981-2020), ii) 20 waves from the Latinobarómetro (1996-2018), iii) First five waves of the Arab Barometer (2006-2019), iv) First four waves of the Asianbarometer (2001-2014), v) First, third and fifth waves of the Afrobarometer (1999-2013) and vi) 25th wave of the Eurobarometer (1986). Data on GDP, population, education and price level of investment were taken from Penn World Table 10.0. Data on economic freedom were taken from The Heritage Foundation. Data on political freedom were taken from the Freedom House Index.
Research Design: To address endogeneity via research design, a precise tailor-fit synchronization procedure between trust and growth is used. Trust levels are matched with 8 five-year growth rates of Real GDP per capita, e.g. Trust levels in 1980 are matched with growth rates from 1981-1985, Trust in 1985 with growth in 1986-1990, etc.
Sample Selection: Starting from 142 countries, we excluded 20 with missing time-series, 12 with missing data on human capital, 4 oil-producing and 31 characterized by "Unfreedom". For 17 transition economies, we only include information from 2005 onwards.
Model Specification: $Growth_{i,t} = \alpha_i + \beta_1 Trust_{i,t-1} + \beta_2 Trust, Squared_{i,t-1} + \beta_3 Income_{i,t-1} + \beta_4 Education_{i,t-1} + \beta_5 PI_{i,t-1} + \delta_t + \omega_{i,t}$

where $Growth_{i,t}$: five-year growth rates of real GDP per capita, $Trust_{i,t-1}$: Trust, $Trust, Squared_{i,t-1}$: Trust, Squared, $Income_{i,t-1}$: ln of real GDP per capita, $Education_{i,t-1}$: Education, $PI_{i,t-1}$: price level of investment α_i: country fixed effects- δ_t: time fixed effects- $\omega_{i,t}$: error term.

5.-6. Descriptive and Econometric Results

Table 4: With an average cv-value of 15.6 percent, Table 4 shows a pronounced intertemporal variation in the level of trust over the 40 years among our 75 countries. More than two-thirds (52/75) of countries display coefficient of variance (cv)-values larger than 10, and more than one-quarter (20/75) of countries have cv-values larger than 20.
Figure 1: A substantial intertemporal variation of trust can be found in the cases of Greece, with a cv-value of 45.5 percent, and Denmark, with a cv-value of 12 percent.
Table 5: Fixed-Effects and Difference GMM estimations yield curvilinear results for trust and growth with an optimum point at close to 33 percent (Reg. 1-3 and Fig. 2). However, Education is insignificant and negative. System GMM estimation (Reg. 5) yields the best econometric results establishing a curvilinear (inverted U-shape) relationship between Trust and growth with an optimum level of trust at **44.4** percent. All other variables are highly significant and coefficients have the expected size and signs.
Figure 3: It illustrates the predicted values for Trust and growth. We find a positive influence as trust rises to **44.4** percent, from there onward, the impact turns negative.

Table 4 Levels and Changes of Trust in 75 Economies, 1980-2015

No.	Country	μ	σ	cv	n	Δ	No.	Country	μ	σ	cv	n	Δ	No.	Country	μ	σ	cv	n	Δ
1	Albania	11.4	5.1	44.3	3	-12.4	26	Greece	28.2	12.8	45.5	7	-39.7	51	Norway	67.9	4.8	7.0	8	11.7
2	Argentina	22.6	5.6	24.8	8	-1.4	27	Guatemala	20.6	4.4	21.3	5	-12.4	52	Panama	20.1	3.5	17.1	5	0.6
3	Armenia	17.6	3.1	17.8	3	0.5	28	Hong Kong	39.0	5.8	14.8	4	15.9	53	Paraguay	16.8	1.9	11.1	5	-1
4	Australia	46.0	3.5	7.5	8	2.3	29	Hungary	26.0	1.6	6.1	3	2.9	54	Peru	14.1	2.7	19.1	5	7.1
5	Austria	36.8	5.5	14.8	6	16.7	30	Iceland	46.4	6.5	14.1	8	19.6	55	Poland	22.6	2.6	11.4	3	5.2
6	Belgium	32.0	2.3	7.3	7	7.1	31	India	29.6	8.5	28.7	6	-15.7	56	Portugal	18.8	5.0	26.5	7	-10.4
7	Benin	30.2	2.0	6.6	3	4	32	Ireland	39.3	4.0	10.1	7	-2.9	57	Romania	14.9	3.9	26.1	3	-9.1
8	Botswana	11.0	3.0	27.0	5	-2.7	33	Italy	30.4	2.5	8.4	8	2.6	58	Senegal	28.7	1.4	4.9	3	3.3
9	Brazil	7.1	2.0	27.4	6	0.8	34	Japan	40.5	1.9	4.6	8	-3.6	59	Serbia	15.2	1.2	8.1	3	1.3
10	Bulgaria	19.8	1.6	8.3	3	-3.9	35	Jordan	25.3	5.9	23.2	4	-11.2	60	Singapore	28.1	5.6	19.8	4	15.2
11	Canada	45.9	4.1	8.9	8	-3.6	36	Kazakhstan	33.6	4.5	13.4	2	-9	61	Slovakia	16.9	3.0	17.5	3	5.2
12	Chile	18.0	2.6	14.3	6	-7.2	37	Kyrgyzstan	27.9	7.6	27.4	3	8.8	62	Slovenia	21.1	2.5	11.8	3	6.1
13	Colombia	18.2	2.5	13.5	5	-4.7	38	Latvia	24.6	0.8	3.1	2	1.5	63	South Africa	22.3	4.8	21.6	8	-6.7
14	Costa Rica	14.8	2.8	18.6	5	-5.6	39	Lithuania	30.0	1.5	5.1	3	3.7	64	South Korea	32.0	3.7	11.6	8	-4
15	Croatia	18.1	2.5	13.8	3	-5.4	40	Luxembourg	29.8	2.4	8.0	6	2	65	Spain	35.0	2.4	7.0	8	3
16	Cyprus	8.4	0.9	10.8	3	-2.1	41	Madagascar	29.7	2.2	7.3	3	-5.1	66	Sweden	63.4	3.5	5.6	8	6.6
17	Czech Rep.	27.2	3.0	10.8	3	-5.7	42	Malaysia	9.8	1.9	19.3	3	4.3	67	Switzerland	48.8	6.3	12.9	7	14.7
18	Denmark	65.6	7.9	12.0	8	22.2	43	Mali	20.1	4.0	19.9	4	9.4	68	Taiwan	37.2	3.9	10.5	5	4.8
19	Dom. Rep.	23.8	6.1	25.7	5	-13.6	44	Malta	19.1	4.9	25.5	7	11.1	69	Thailand	31.0	7.6	24.5	4	12.6
20	El Salvador	22.2	4.2	19.0	5	-6.2	45	Mexico	24.6	5.6	22.9	8	-2	70	T. and T.	3.5	0.3	8.6	2	-0.6
21	Estonia	35.0	2.9	8.2	3	4.2	46	Mongolia	15.1	4.2	28.0	3	9.8	71	Turkey	10.7	2.7	25.3	6	2.6
22	Finland	59.8	5.2	8.7	8	11.3	47	Morocco	17.0	4.1	24.1	4	-9.8	72	Uganda	15.7	0.6	4.1	4	0.0
23	France	23.0	1.9	8.2	8	2	48	Namibia	29.6	4.1	13.7	5	-8.6	73	UK	37.6	5.0	13.3	8	-4.4
24	Germany	37.4	4.1	11.0	8	12.3	49	Netherlands	54.3	6.3	11.6	8	17.3	74	US	39.8	5.0	12.7	8	-3.8
25	Ghana	11.1	3.3	29.3	3	-7	50	New Zealand	52.9	3.3	6.3	5	7.5	75	Uruguay	28.1	5.0	17.7	5	-6.9
															World Average	27.9	3.8	15.6	5.2	0.7

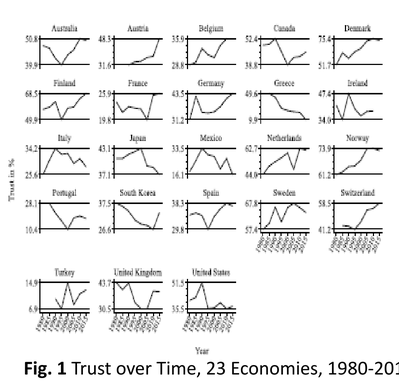

Fig. 1 Trust over Time, 23 Economies, 1980-2015

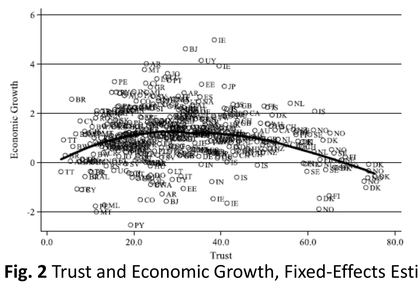

Fig. 2 Trust and Economic Growth, Fixed-Effects Estimation

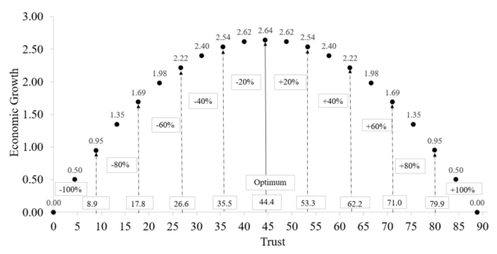

Fig. 3 Trust and Economic Growth, Predicted Values

Table 5 Trust and Economic Growth – Curvilinear Estimations

Dependent Variable	Growth	Growth	Growth	Growth	Growth
Estimation Method	FE	DIFFGMM	DIFFGMM	SYSGMM	SYSGMM
Equation	1	2	3	4	5
$Trust_{i,t-1}$	0.080**	0.128**	0.205**	0.110**	0.119***
	(2.10)	(2.31)	(2.19)	(2.25)	(3.21)
$Trust, Squared_{i,t-1}$	-0.00120***	-0.00197***	-0.00306**	-0.00119**	-0.00134***
	(-2.71)	(-2.76)	(-2.59)	(-2.85)	(-2.86)
$Income_{i,t-1}$	-4.14***	-5.17***	-6.80***	-1.38***	-1.31***
	(-6.98)	(-5.16)	(-2.34)	(-2.85)	(-2.98)
$Education_{i,t-1}$	-0.86	-0.15	-2.32	1.71**	1.73***
	(-1.10)	(-0.11)	(-0.83)	(2.63)	(3.18)
$PI_{i,t-1}$	-0.02**	-0.02*	-0.01	-0.03***	-0.03***
	(-2.65)	(-1.91)	(-1.27)	(-2.93)	(-2.84)
Constant	42.45***	-	-	9.61***	8.78***
	(5.44)	-	-	(2.79)	(2.77)
N° of Instruments	-	113	35	141	86
Specification	RO	FI	CI	FI	2nd-3rd
AB Test AR(2)	-	0.10	0.17	0.08	0.09
AB Test AR(3)	-	0.09	0.09	0.16	0.17
Hansen Test	-	1.00	0.13	1.00	0.66
R-Squared	0.34	-	-	-	-
Optimum Point	33.3	32.5	33.5	46.2	44.4
Countries	75	75	75	75	75
Waves	8	8	8	8	8
Observations	392	317	317	392	392
Period	1980-2019	1980-2020	1980-2019	1980-2019	1980-2019

7.-8. Discussion and Policy Implications

- Finding validates theoretical channels that assert a curvilinear relationship.
- A large majority of countries with too low levels of trust should implement trust-building public policies (increased political freedoms, redistributive transfers of wealth and enhanced educational opportunities) to improve economic growth.
- Countries close to the optimum levels of trust do not need to take further action.
- Countries with very high levels of trust should accept slightly lower economic growth for the benefits of high levels of trust, including democratic stability.

Fig. 4 Optimum levels of trust across 75 economies, 1980-2015

Fig. E4 Distance to the Optimum Trust Levels

9. Conclusion

- Using a unique global country panel dataset and applying a system-GMM estimation approach this paper finds evidence of a curvilinear (inverted U-shape) relationship between trust and growth, with an optimum level of trust for growth at 44.4 percent.
- The curvilinear relationship corroborates earlier panel data results, but it calls into question findings of a general positive relationship between trust and growth.
- More theoretical and empirical research is needed in order to clarify the relationship.
- The paper opens up two avenues for future research: i) an in-depth analysis of the determinants of trust over time for our 75 economies from 1980 to 2019, ii) an extension of our country sample and time-series evolution using upcoming data from the Integrated Value Survey and the five international Barometer survey programs.

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