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**EXPLORING THE RELATIONSHIP BETWEEN TRUST  
AND BUSINESS START-UPS IN 52 COUNTRIES OVER 16 YEARS**

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**Abstract:**

A well-functioning social network involves attributes such as honesty, benevolence, fairness and confidence. When this network – trust - has formed, participants can count on reliable and consistent economic transactions. This has the effect of higher level of co-operation, but also co-dependence. Strong social networks, as measured in this study by the degree of interpersonal trust and trust in institutions, are foundational elements for societies wishing to progress to new higher levels of entrepreneurship and development. In a pooled OLS of up to 52 countries and 16 years, this study estimates how changes in interpersonal trust and trust in institutions affect new business creation. The four entrepreneurship categories considered include the total early-stage entrepreneurial activity, new business formation, necessity-driven entrepreneurial activity, and improvement-driven opportunity entrepreneurial activity.

JEL codes: D02, H11, M13, Z13

Keywords: Entrepreneurship; Improvement-driven Opportunity Entrepreneurial Activity; Institutional Quality; Necessity-driven Entrepreneurial Activity; New Business Density; Total Early-stage Entrepreneurial Activity (TEA); Trust

# EXPLORING THE RELATIONSHIP BETWEEN TRUST AND BUSINESS START-UPS IN 52 COUNTRIES OVER 16 YEARS

## I. INTRODUCTION

In many developed countries small businesses employ 70-80% of the labor force. Select few – think Airbnb, Amazon, Facebook, Google, Uber - become so good in innovating and disrupting existing business practices that their actions can affect the entire economy.

Unsurprisingly, politicians are keenly interested in entrepreneurship. In macroeconomic downturns new firms also reduce unemployment and the severity of business cycles. By creating competition, they lower prices, increase the quality of goods and services and improve the economy's productivity, which is the single most important factor behind rising incomes.

One often overlooked factor behind new businesses is interpersonal trust and trust in institutions. Merriam-Webster online dictionary defines trust as a “*belief that someone or something is reliable, good, honest, effective, [...].*” Trust is a form of social capital that makes economies run better (Coleman 1988, Putnam 1993). When people are willing to trust each other and the institutions around them, it lowers the cost of economic transactions, thereby opening new economic opportunities. In a meta-analysis of 65 countries Westlund & Adam (2010) found trust indeed to be a highly robust variable explaining income growth.

People's trust in the strength of property rights, impartial law courts, police, stable money, access to foreign markets, predictable government regulations and other such may further strengthen interpersonal trust. The intuition behind trust's positive effect on entrepreneurship is quite plausible: if a person can trust her transaction counterparts, she can be more confident about the future, and about founding and running a business.

In this study, a data set of 52 countries and years 1999-2014 is used to answer two questions. First, interpersonal trust's effect on four types/measures of entrepreneurship: (1) Total Early-stage Entrepreneurial Activity (TEA), (2) New Business Density, (3) Necessity-driven Entrepreneurial Activity, and (4) Improvement-driven Opportunity Entrepreneurial Activity. Second, the effect of trust in institutions on business formation.

The results of the study can potentially provide governments a new tool - trust - to fine-tune policies. Fortuitously, as Hodgson (2012) notes, trust has a quality that works in policymakers' favor. Previous studies in psychology and related fields have shown, given trust's positive effect on individual well-being, that people have an innate tendency to want to trust each other.

This study adds to only a few existing studies on trust and entrepreneurship in several ways. First, we use four different definitions of entrepreneurship in econometric estimations. Second, the data sample includes a mix of countries from various income levels. Third, instead of cross-section estimation, pooled OLS is used to incorporate a time dimension to the findings. Fourth, the sample size of the study is considerably larger than in previous studies. Finally, as a robustness check, the pooled OLS model is complemented with the random effects model.

## **2. LITERATURE REVIEW**

Terjesen et al. (2016) point out that the comparative international entrepreneurship (CIE) research is "[...] highly fragmented with substantial gaps related to content, theory and methodology." They note that while there are formal theories of entrepreneurship, these deal mostly with the internal workings of the firms; financing, technology usage, founders' psycho-social characteristics and enterprise outcomes, not interpersonal and institutional trust in the context of new business creation. Nevertheless, despite the theoretical limitations,

Aldrich (2000) notes that even small econometric studies have been adding to researchers' understanding of the entrepreneurial creation process.

Trust is made of social networks and the norms of reciprocity and trustworthiness that arise from them. The formation of trust usually requires many encounters, but when it occurs, participants can count on more reliable and consistent economic transactions. This leads to further expansion of cooperation and co-dependence, promoting economic specialization (Alfani & Gourdon 2012). Interpersonal trust and trust in institutions smooth the workings of the market transaction mechanism. However, the creation of trust is time-consuming, and it can also degrade quickly (Zucker 1986).

One modern conceptualization of trust is associated with reputation. Rational, self-interested individuals value private reputation because of its positive effect on trustworthiness (Bruni & Sugden 2000). Trustworthiness is transmitted through networks of trading relationships. The denser the network of trading relationships, the greater is the value of reputation and degree of trust in creating new valuable social interactions and entrepreneurial activity.

Bjørnskov & Foss (2016) could find only 28 economics studies on pure business creation. These studies typically combine an eclectic mix of macro-level data, plus some economic, legal, social, cultural and political institutions. As of today, there is no solid theoretical foundation on which to base empirical models. As a rule, existing entrepreneurial trust studies do not choose business creation but some other entrepreneurial activity as their dependent variable. Therefore, researchers can only indirectly derive information about the level of new entrepreneurial activity from these studies.

For instance, in a survey of 122 Slovenian SMEs, trust-based coordination in interfirm co-operative relationships was a good predictor of firm performance, and potential future business creation (Fink et al. 2009). In another study of 32,665 Italian households, a decrease

in trust was found to increase the probability of a borrower being denied a loan. On the other hand: a high level of trust was a good predictor of an area's level of financial development and business vigor (Guiso et al. 2004).

A study using data from 2001 to 2003 found that trust matters more for enterprise creation in the developing than developed countries. This implies that interpersonal trust and trust in institutions may be substitutes for each other. The study also found that the Schumpeterian entrepreneurs benefit disproportionately from trust (Troilo 2010).

Trust can increase the nascent entrepreneur's self-confidence by removing doubt (and its associated costs) about one's employees' and competitors' potentially adverse activities (McEvily et al. 2003). Conversely, overestimating the existing level of trust can also lead a naïve entrepreneur being taken an advantage of (Welter 2012). Finally, a 2010 cross-sectional study of 60 countries found that changes in interpersonal trust explain about half of entrepreneurial spirit in a country with the causality running from trust to entrepreneurship (Kodila-Tedika & Agbor 2016). The study used the Global Entrepreneurship and Development Index (GEDI) as its proxy for entrepreneurial spirit.

The benefits of trust in high quality institutional environments are easy to summarize. Employers in high-trust societies can start businesses while investing and innovating at a greater level knowing that quality institutions will protect them from asset appropriation, intellectual property rights abuses, runaway inflation, punitive taxes, international trade restrictions or overregulation, providing entrepreneurs the opportunity to focus on business development.

The interpretation of institutions' effects can be tricky since any institution may have opposing forces within it, some promoting and others stifling new business. For instance, a large government size can imply a high present or future tax burden on entrepreneurs; a

distinct disincentive to start a business. On the other hand, the extracted taxes may be used to strengthen property rights and create a supportive regulatory framework, both encouraging business creation. Governments must deal with dauntingly many such trade-offs simultaneously (Krichevskiy & Snyder 2015).

Well thought-out laws and regulations affect trust and work incentives positively.

Conversely, misguided institutions will cause the opposite effect, decreasing entrepreneurial activity and spirit (Mann & Shideler 2015, Méndez-Picazo et al. 2012).

### **3. DATA**

The entrepreneurship data for this study's four forms of entrepreneurship is drawn from two sources; the Global Entrepreneurship Monitor (GEM) and the World Bank's annual World Development Indicators. GEM runs an annual survey of a minimum of 2,000 adults and 36 experts in each country. GEM defines its most comprehensive measure of entrepreneurship, (1) Total Early-stage Entrepreneurial Activity (TEA), as "the sum of nascent entrepreneurship and new business ownership. Nascent entrepreneurship is the percent of population age 18 to 64 that are currently setting up a business that still has not paid any income. New business ownership is the percent of population age 18 to 64 owning and running a business that has paid incomes for more than three months but for no more than forty-two months."

The second measure of entrepreneurship, (2) New Business Density (NBD), is obtained from the World Bank's World Development Indicators. The NBD is defined as new business registration per 1,000 populations age 15 to 64. It measures "the number of new limited liability corporations (LLC) in internationally comparable units." Partnerships and sole proprietorships are not included due to differences in definitions and regulations worldwide. Hence, NBD entails a considerably narrower definition of entrepreneurship than TEA. The

advantage of the NBD measure, however, is its country coverage and reliance on objective data.

How do the TEA and NBD compare empirically? The average annual score of TEA in the data set is about 11.1, which means that about 11% of working-age population was in some way engaged in early-stage entrepreneurship. In contrast, the average new business density is 3.4, which translates to about 0.34% of population being involved in new entrepreneurial activity. TEA includes entrepreneurial activities in both the formal and informal sectors as well the time before and after the founding of the business. The NBD, on the other hand, captures business registrations of only limited liability corporations, and most likely only in the formal sector.

GEM also provides information on “Necessity-driven Entrepreneurial Activity,” and “Improvement-driven Opportunity Entrepreneurial Activity.” (3) The Necessity-driven Entrepreneurial Activity (eNecessity) is “the share in TEA of individuals 15-65 of age who engage in entrepreneurial activities because there are no other feasible options for employment.” The eNecessity thus pertains to people who have not found paid employment; for them becoming an entrepreneur has become the last resort solution to employment.

(4) The Improvement-driven Opportunity Entrepreneurial Activity (eImprovement) is sometimes called Schumpeterian entrepreneurship. It gauges the share in TEA of individuals who become entrepreneurially active to track new business opportunities and through “creative destruction” attempt to create new rules-breaking products and processes. This is also the riskiest type of business. The eImprovement definition is: “the relative prevalence percentage of those involved in TEA who (i) claim to be driven by opportunity as opposed to finding no other option for work; and (ii) who indicate the main driver for being involved in



this opportunity is being independent or increasing their income, rather than just maintaining their income.”

The interpersonal trust data comes from the World Values Survey. Its definition has the benefit of unambiguity (Welter 2012). The trust survey question in WVS is: “Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?” WVS is run on participating countries every three-four years. A minimum of 1,000 participants between ages 18 and 85 are chosen for face-to-face interviews by random sampling. Since the European Values Study (EVS) has the same question as the WVS, we combine them to calculate the percent of respondents in each country who answered “Yes, most people can be trusted.”

The trust in institutions comes from the The Wall Street Journal/ Heritage Foundation’s Index of Economic Freedom (IEF), which measures the quality of nearly 50 institutions in over 150 countries. We assume a solid positive relationship between the quality of institutions and people’s trust in them. In this study, all data is averaged over three five-year periods that correspond to WVS waves 1999-2004, 2005-2009 and 2010-2014.

Table 1 includes the study’s descriptive statistics. The dependent variables are the four forms of entrepreneurship. The two independent variables of interest are interpersonal trust and trust in institutions. In addition to the two trust variables, the control variables include real income per capita, unemployment rate, share in labor force of people with secondary and tertiary education, domestic credit to private sector as percentage of GDP, real interest rate, Gini coefficient, life expectancy at birth, and society’s general attitude towards entrepreneurship. These variables are sourced from the World Bank World Development Indicators and the Global Entrepreneurship Monitor database. The list of included countries can be found in Table B of the Appendix.

Table 1. Summary Statistics

Variable	N	mean	sd	min	max	median
TEA (%)	186	11.11	7.26	2.26	40.27	8.84
New Business Density (/1,000 pop.)	238	3.44	4.54	0.02	28.48	1.99
Necessity-driven Entrepreneurship (% of TEA)	186	24.17	11.72	4.76	57.20	22.61
Improvement-driven Entrepreneurship (ibid.)	144	48.87	12.76	13.01	78.94	49.53
Interpersonal Trust (% of adults)	212	27.07	15.86	2.84	76.04	23.68
Trust in Institutions (0-100)	292	62.59	11.07	16.67	89.72	62.77
GDP per Capita (in '000s, 2011 PPP, int. USD)	302	21.87	20.64	0.63	133.89	15.50
Unemployment rate (%)	303	9.06	6.06	0.50	34.84	7.56
Labor Force with Secondary Education (%)	204	43.12	17.31	2.00	79.50	44.01
Labor Force with Tertiary Education (%)	205	22.64	9.29	1.30	52.05	22.75
Share of Private Credit (% of GDP)	294	63.40	51.88	1.27	248.33	46.81
Real Interest Rate (%)						
Gini Coefficient (0-100)	266	37.07	8.67	16.64	63.90	34.24
Life Expectancy (years)	306	72.44	8.03	43.21	83.43	74.03
Desirability of Entrepreneurship (%)	177	65.78	13.70	18.22	95.29	65.99

Sources: Global Entrepreneurship Monitor, World Development Indicators, World Values Survey, European Values Study

In the sample, 27% of populations across countries and time periods agreed that most people can be trusted. Significant variations in the level of interpersonal trust, however, are observed across countries. In 2014 about 64% of Swedes trusted their fellow citizens, while only 4% of Colombians did. For the trust in institutions the sample average (scale 0-100) over all three time periods was about 63 but ranging from a low of 17 (Iraq) to a high of 90 (Hong Kong).

The data sample highlights a few interesting pairwise relationships at glance. Countries with relatively high score of interpersonal trust such as the Nordic countries have markedly low entrepreneurship rates. Also, there are significant differences in entrepreneurship rates among the low trust countries. Nigeria, Zambia, and Peru, for example, have rates passing 30%, while Romania, Turkey, and Kosovo score below 10%. For trust in institutions, the story is equally multifaceted.

#### 4. EMPIRICAL ANALYSIS: ESTIMATION STRATEGY

To examine the relationship between entrepreneurship and trust, we use the equation:

$Entrepreneurship_{it} = \beta_0 + \beta_1 trust_{it1} + \sum \beta_k x_{itk} + u_{it}$  for cross-country  $i$  and time period  $t$ , with several macroeconomic and socio-economic control variables,  $x_{itk}$ . While each variable has total number of observations in the range of 150 to 300, estimating the model in panel would reduce available observations significantly. Furthermore, entrepreneurship, interpersonal trust and trust in institutions vary relatively little over time. The same applies to the Gini coefficient and the desirability of entrepreneurship, making fixed panel estimation inefficient. While we use pooled OLS to estimate the regression coefficients, the estimation results from the random effects model are also shown in Table A of the Appendix. The results from the random effects model are qualitatively no different from the pooled OLS.

Tables 2 and 3 show coefficient estimates for pooled OLS regressions with robust standard errors. The number of observations varies from 49 to 87.<sup>1</sup> Table 2 presents the analysis on TEA and NBD, and Table 3 provides the analysis on eNecessity and eImprovement. A parsimonious base model and a model with a complete set of control variables are presented in both tables.

#### 5. THE IMPACT OF TRUST ON TOTAL EARLY-STAGE ENTREPRENEURIAL ACTIVITY AND NEW BUSINESS DENSITY

The results show that interpersonal trust and trust in institutions affect entrepreneurship rates positively with both trust variables being statistically and economically significant predictors of new entrepreneurial activity. The size and significance of estimated regression coefficients stay steady throughout between the base model and the models with more control variables.

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<sup>1</sup> While the number of observations vary from 49 to 87, it is worth remembering that behind each observation are thousands of people who were surveyed.

With 99% confidence level, interpersonal trust is strongly positive and significant in TEA equations (1) and (2). The estimated coefficient of 0.12 suggests that a 1%-point increase in trust among adult population increases entrepreneurial activity by 0.12% points.

In the U.S., for instance, there were 204.9 million adults (18-65 age) and 679,000 newly found firms employing 3.02 million people in 2015, and the U.S. average TEA between 2010 and 2014 was 11.86%. These numbers translate to an active TEA population of 24.30 million adults. Thus, it took about 35.8 self-declared TEA adults to create and run one new firm, which in turn translates to an average of 4.45 new employees.<sup>2</sup> Using the above government data and the estimated regression coefficient of equation (1), a 10%-point increase of interpersonal trust in the U.S. would lead to a creation of 68,110 new firms and 302,930 new jobs.

Even if only half of the new firms survive their first five years, as has been the case in the U.S. historically, there are still enough surviving firms left to have a major effect on employment, the competitive environment and the overall vigor of the economy. If the same coefficients held true for all countries in the sample, countries with particularly low trust values, such as Colombia at 4%, could reap formidable economic benefits by moving up the trust scale.

Interpersonal trust is not statistically significant in explaining new business density (NBD), shown in equations (3) and (4). As mentioned earlier, this measure of entrepreneurship is limited to the activities in formal sector and to the legal form of limited liability corporations (LLCs). Thus, while change in trust does not seem to impact LLC creation, this does not exclude the possibility that it could influence several other legal forms of entrepreneurship,

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<sup>2</sup> The Federal Reserve Bank of St. Louis, FRED database ([fred.stlouisfed.org](http://fred.stlouisfed.org), accessed 01-20-2020), The U.S. Bureau of Labor Statistics Online ([www.bls.gov](http://www.bls.gov), accessed 01-20-2020), Global Entrepreneurship Monitor (GEM)

such as sole proprietorship. Unfortunately, there are currently no data sets that would allow for a coherent cross-country estimation of other legal business forms.

Overall, interpersonal trust appears to be an important factor in stimulating entrepreneurship in developing countries, perhaps substituting for lacking quality institutions. The coefficients estimated for interpersonal trust were about three times larger for countries with per capita GDP of less than \$15,500 than for the other countries.

The estimates do show, however, that NBD is affected by the trust in institutions. The effect of institutional trust on NBD is positive at the 99% confidence level in equation (3) and 90% level in (4). The coefficients of 0.15 and 0.20 correspond to about one-third and one-half of standard deviation of new business density respectively. In terms of economic significance, a 10% increase in trust in institutions from the sample mean (62.59) would increase new business density by 1.25 firms/1,000 residents.

Table 2. Impact of Trust on Total Entrepreneurial Activity (TEA) and New Business Density (NBD)

Independent Variables \ Dependent Variables	(1)	(2)	(3)	(4)
	TEA	TEA	New Business Density (NBD)	New Business Density (NBD)
	Coef. (S.E.)	Coef. (S.E.)	Coef. (S.E.)	Coef. (S.E.)
<b>Interpersonal Trust</b> (% yes)	0.119*** (0.036)	0.124*** (0.046)	0.003 (0.018)	0.003 (0.027)
<b>Trust in Institutions</b> (0-100)	0.151* (0.086)	0.194* (0.115)	0.197*** (0.067)	0.152* (0.084)
GDP per Capita (ln, USD 2005 PPP)	-0.358*** (0.080)	-0.353*** (0.097)	0.018 (0.046)	-0.008 (0.061)
Unemployment (%)	-0.306*** (0.098)	-0.291*** (0.105)	0.075* (0.038)	0.083 (0.054)
Labor Force with Secondary Education (%)	0.032 (0.034)	0.009 (0.035)	0.014 (0.016)	0.031* (0.018)
Labor Force with Tertiary Education (%)	--	0.071 (0.107)	--	0.009 (0.066)
Private Credit (%/GDP) (Credit Availability)	--	-0.010 (0.015)	--	0.019 (0.017)
Real Interest Rate (%) (Cost of Money)	--	0.194 (0.173)	--	0.066 (0.053)
Gini Coefficient (0-100) (Income Distribution)	0.321*** (0.092)	0.228*** (0.082)	-0.033 (0.036)	-0.025 (0.044)
Life Expectancy (Years) (Health)	0.294** (0.125)	0.164 (0.152)	-0.121** (0.052)	-0.057 (0.082)
Desirability of Entrepreneurship (% yes)	0.148*** (0.049)	0.184*** (0.055)	-0.021 (0.027)	-0.061* (0.033)
Constant	-37.07*** (11.009)	-30.204*** (11.253)	0.279 (5.086)	-1.194 (5.974)
Observations	87	71	82	67
R-squared	0.63	0.66	0.30	0.40

Inside parentheses robust standard errors. \*\*\*, \*\*, \* denote statistical significance at the 99%, 95% 90% level of confidence. Data sources: Global Entrepreneurship Monitor (GEM), World Values Survey / European Values Study (WVS, EVS), World Development Indicators (WDI)

In the data set most LLCs are in developed countries, where entrepreneurs can benefit from the protection of highly developed institutions. The findings suggest that interpersonal trust and trust in institutions complement (both coefficients are positive), but also substitute each

other (stronger significance of interpersonal trust on TEA but of institutional trust on NBD). An entrepreneur may feel less need for interpersonal trust if the nation's institutions (security of property rights, stable money, judicious regulations, etc.) have already removed most obstacles of founding a new business. Having both types of trust in place simultaneously is an extra plus for business creation.

The coefficients of trust in institutions are also positive in TEA estimates with 90% confidence level in both equations (1) and (2). One standard deviation increase in trust in institutions raises TEA by about one-fourth of a standard deviation. The trust in institutions' economic significance on TEA is like that of NBD. A 10% increase in trust in institutions would move the percentage of TEA adults from the sample average of 11.11% to 12.62%, in the case of the U.S. an increase of about 3.1 million TEA adults.

## **6. THE IMPACT OF TRUST ON NECESSITY- AND IMPROVEMENT-DRIVEN ENTREPRENEURIAL OPPORTUNITY ACTIVITY**

This section examines whether the two types of trust affect Necessity-driven Entrepreneurial Activity (eNecessity) and Improvement-driven Opportunity (Schumpeterian) Entrepreneurial Activity (eImprovement) rates. The results are shown in Table 3. The equations (5) and (7) are the base models and equations (6) and (8) include more control variables.

With respect to eNecessity and eImprovement, the regressions yield mixed results. For the estimates on necessity-type, the coefficient of interpersonal trust is negative and significant at 95% level of confidence in equation (5), while it is insignificant in (6). For the estimates on improvement-type, trust is positive and significant at 95% level confidence in equation (7), though insignificant in (8). Inclusion of extra control variables reduces the significance of trust estimates, while the sizes and signs of coefficient estimates of all variables remain virtually unchanged.

In terms of economic significance, interpersonal trust affects both the necessity-driven and opportunity-driven entrepreneurial activity in an economically significant way. When interpersonal trust increases by 10% points, eNecessity decreases by 1.2% points. This means that as society fosters more interpersonal trust, there is a change in the distribution of entrepreneurial types. From Table 2 we know that extra interpersonal trust leads to more TEA (ceteris paribus). Hence, some of the new entrepreneurs may be of necessity-type, while some old necessity-type entrepreneurs may simultaneously have shifted to improvement-type. Or, all the new entrepreneurs may be of improvement-type. In any case, more trust leads to a reduction in the share of the necessity-type entrepreneurship in TEA and to an increase in the share of the opportunity-type in TEA.

Getting back to the example of the U.S., in the period 2010-2014 the share of eImprovement in TEA was 58.84%. Given the overall TEA rate of 11.86%, this means that about 6.98% (or 14.3 million) American adults during that period took part in eImprovement activities. If the interpersonal trust rose by 10% points, the number of eImprovement adults among the 204.9 million adults aged between 18 and 65 would rise by about 486,000 people. Using the same adults-to-firms coefficient (35.8) as before yields an estimated 13,580 new Schumpeterian firms due to improved trust between people.



Table 3. Impact of Trust on Necessity- and Improvement-driven Opportunity Entrepreneurial Activity

Independent Variables \ Dependent Variables	(5) <b>Necessity-driven</b> Coef. (S.E.)	(6) <b>Necessity-driven</b> Coef. (S.E.)	(7) <b>Improvement-driven</b> Coef. (S.E.)	(8) <b>Improvement-driven</b> Coef. (S.E.)
<b>Interpersonal Trust</b> (% of adults)	-0.120** (0.057)	-0.110 (0.069)	0.200** (0.096)	0.194 (0.156)
<b>Trust in Institutions</b> (1-100)	-0.219* (0.130)	-0.237 (0.164)	0.078 (0.168)	0.011 (0.195)
GDP per Capita (ln, USD 2005 PPP)	-0.187* (0.107)	-0.222 (0.136)	0.147 (0.171)	0.142 (0.181)
Unemployment (%)	0.585*** (0.092)	0.581*** (0.128)	-0.981*** (0.183)	-0.981*** (0.217)
Labor Force with Secondary Education (%)	0.186*** (0.048)	0.162** (0.062)	-0.054 (0.069)	0.025 (0.108)
Labor Force with Tertiary Education (%)	--	0.047 (0.094)	--	-0.215 (0.192)
Private Credit (%/GDP) (Credit Availability)	--	0.006 (0.021)	--	0.062* (0.032)
Real Interest Rate (%) (Cost of Money)	--	0.165 (0.160)	--	0.108 (0.146)
Gini Coefficient (0-100) (Income Distribution)	0.129 (0.122)	0.077 (0.129)	-0.169 (0.193)	-0.153 (0.235)
Life Expectancy (Years) (Health)	0.065 (0.158)	0.052 (0.176)	0.238 (0.481)	0.240 (0.434)
Desirability of Entrepreneurship (% yes)	0.158*** (0.059)	0.171*** (0.064)	0.157* (0.080)	0.109 (0.111)
Constant	11.302 (13.174)	13.219 (13.140)	23.816 (36.009)	27.338 (34.097)
Number of observations	87	71	65	49
R-squared	0.71	0.75	0.65	0.69

Inside parentheses robust standard errors. \*\*\*, \*\*, \* denote statistical significance at the 99%, 95% 90% level of confidence. Data sources: Global Entrepreneurship Monitor (GEM), World Values Survey / European Values Study (WVS, EVS), World Development Indicators (WDI)

At the same time, the regression coefficient for eNecessity was a -0.12. While a 10% increase in interpersonal trust created 13,580 new firms on the eImprovement side, there was a

simultaneous decrease of about 8,150 eNecessity firms. Assuming that eImprovement firms attend to be more efficiency improving and productive entities than eNecessity firms, the above trade-off indicates high value-added firms replacing low value-added firms.

In contrast to interpersonal trust, trust in institutions has a mostly insignificant effect on the distribution of entrepreneurial types. One exception is necessity-type in equation (6), where the estimate of trust in institutions is negative, though only significant at 90% level of confidence.

While statistically insignificant, the coefficients in the eImprovement equations (7) and (8) do suggest an interesting story. Whereas the nascent Schumpeterian entrepreneurs appear encouraged by increases in interpersonal trust, the same is not true with trust in institutions. At first glance this is surprising since the Schumpeterian type entrepreneurship is the riskiest of types of entrepreneurship and plausibly, those entrepreneurs would be the beneficiaries of institutional protections. On the other hand, it may be that the new Schumpeterian entrepreneurs view society's institutions as constraining (level of taxes and regulations) rather than enabling. As per behavioral economics, discounting those institutional benefits is also consistent with the stereotype of overconfident entrepreneurs.

## **7. OTHER INDEPENDENT VARIABLES EXPLAINING ENTREPRENEURIAL ACTIVITY**

The study's results on control variables confirm the findings of previous research. In TEA equations a negative relationship was found between income per capita and total entrepreneurial activity (McMullen et al 2008, Bjørnskov & Foss 2008, Nyström 2008, Salazar-Fumas & Sanchez-Asin 2013). Entrepreneurship in the developed world often takes the form of intrapreneurship: one works and thinks like an entrepreneur would, but from within the confines of an established firm as a paid employee.

The TEA as well as the eImprovement regressions show that when unemployment increases, entrepreneurial activity decreases (Peren Arin et al. 2015). This term may capture the role of the welfare state: when a firm experiences trouble, a reasonable alternative to keeping the business as an ongoing concern is to fold it and start collecting social insurance payments. To the Schumpeterian entrepreneurs rising unemployment may also serve as an overconfidence reset; a reminder of the riskiness of starting a new business in the face of economic downturn. The positive unemployment coefficient in the eNecessity equation may imply that all potential sources of income have dried up; starting a new business is the natural last resort option.

Interestingly, the financial measures were mostly statistically insignificant in explaining changes in the level of entrepreneurship (Chowdhury et al 2015). Education was also not statistically significant in any of the eight equations (Kodila-Tedika & Agbor 2016). Conversely, income inequality had a positive coefficient and was statistically (and economically) significant in TEA equations at 99% level of confidence (Mendez-Picazo et al 2012). Maybe rising inequality is a sign of income mobility, through entrepreneurship.

Finally, the desirability of entrepreneurship as a career choice was statistically and economically significant at 99% confidence level in the TEA and eNecessity equations (Ovaska et al 2014). In the full data set about 66% of respondents had a positive view on entrepreneurship as a career choice. A 10% rise would move TEA up by between 1.48 and 1.84% points; a change comparable to trust in economic significance. In short: it is important that your fellow citizens approve of your actions.

Because of their anti-entrepreneurship values, many countries seem to be leaving a lot of potential income unpicked on the sidewalk. Finally, an interesting finding is how little society's general views on the desirability of entrepreneurship as a career choice seem to

affect Improvement-driven opportunity entrepreneurial activity. The Schumpeterian entrepreneurs plow ahead regardless of what most of the others think about their projects, thereby displaying a strong independent trait.

## **8. CONCLUSION**

This study covered 52 countries over time periods 1999-2004, 2005-2009 and 2009-2014. The main purpose of the study was to discover the effect trust (interpersonal, in institutions) has on four different measures of entrepreneurship: Total Early-stage Entrepreneurial Activity (TEA), New Business Density (NBD), Necessity-driven Entrepreneurial Activity (eNecessity) and Improvement-driven Opportunity Entrepreneurial Activity (eImprovement). The trust effects were estimated using pooled OLS, the random effects model serving as a complementary method.

A major finding of the study was that an increase in interpersonal trust increases overall entrepreneurship rate and changes the composition of the type of businesses from low- to high-value added activity. For instance, a 1%-point increase in interpersonal trust leads to an increase in total entrepreneurship (TEA) by 0.12% points, and by an estimated 0.20%-point increase of the improvement-driven opportunity entrepreneurial (Schumpeterian) activity share, but it also decrease the necessity-driven entrepreneurial activity share by 0.12% points. The findings are statistically and economically highly significant.

A second major finding was that increases in the trust in institutions affect entrepreneurship positively, although the effect varies by the entrepreneurship form. The effect for TEA and NBD were positive: every extra 1%-point in trust in institutions increases TEA / NBD by between 0.15 and 0.20% points. In the case of necessity-driven entrepreneurial activity share, the effect of trust in institutions ranged from zero to negative 0.22% points, while the improvement-driven opportunity entrepreneurial activity was not significant. The eNecessity

finding may imply that with government-provided safety nets, people are less willing to take unwanted chances with entrepreneurship by necessity. The Schumpeterian entrepreneurs, on the other hand, seem to be insusceptible to institutional trust. To them interpersonal trust is the key to deciding whether to enter entrepreneurship.

Regarding policy, governments should focus their entrepreneurship promotion efforts more towards creating trust among citizenry. In general, governments would do well to try to identify the kind of actions within their institutions that are most consistent in creating trust. Increases in societies' level of trust could enrich the lives of people all over the world by opening up new opportunities in self-realization through entrepreneurship. Potentially, increased trust among nations could bolster trade and financial flows, helping further in the fight against poverty.

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## APPENDIX

Table A. Impact of Trust on Entrepreneurship: The Random Effects Model

	(1)	(2)	(3)	(4)
	TEA	TEA	New Business Density	New Business Density
	Coef.	Coef.	Coef.	Coef.
<b>Interpersonal Trust</b>	0.118*** (0.043)	0.124** (0.051)	0.029 (0.026)	0.023 (0.026)
<b>Trust in Institutions</b>	0.135 (0.083)	0.152 (0.112)	0.168*** (0.058)	0.120** (0.059)
Unemployment	-0.247*** (0.102)	-0.253** (0.110)	0.023 (0.052)	0.055 (0.052)
Secondary Education	0.021 (0.039)	0.006 (0.036)	0.013 (0.018)	0.023 (0.018)
Tertiary Education	--	0.081 (0.124)	--	-0.049 (0.033)
Gini Coefficient	0.313*** (0.108)	0.224*** (0.071)	-0.021 (0.046)	0.041 (0.045)
Life Expectancy	0.302** (0.134)	0.181 (0.146)	-0.059 (0.089)	-0.006 (0.070)
Desirability of Entrepreneurship	0.127** (0.052)	0.173*** (0.062)	-0.004 (0.024)	-0.043* (0.023)
Credit Availability	--	-0.005 (0.014)	--	0.009 (0.012)
Real Interest Rate	--	0.195 (0.213)	--	-0.070 (0.049)
Constant	-35.636*** (10.560)	-29.109*** (9.219)	-4.149 (5.962)	-4.445 (6.282)
Number of observations	87	71	82	67
R-squared	0.63	0.66	0.26	0.29

Robust standard errors under the parentheses. \*\*\*, \*\*, \* denote statistical significance at the 99%, 95% 90% level of confidence.

Table A Continues

	(5) Necessity-driven Coef.	(6) Necessity-driven Coef.	(7) Improvement-driven Coef.	(8) Improvement-driven Coef.
<b>Interpersonal Trust</b>	-0.101 (0.064)	-0.095 (0.079)	0.200** (0.092)	[Lacking number of observations to calculate]
<b>Trust in Institutions</b>	-0.228* (0.130)	-0.249 (0.160)	0.078 (0.174)	
Unemployment	0.580*** (0.101)	0.591*** (0.137)	-0.981*** (0.180)	
Secondary Education	0.185*** (0.050)	0.157** (0.066)	-0.054 (0.066)	
Tertiary Education	--	0.061 (0.098)	--	
Gini Coefficient	0.163 (0.122)	0.105 (0.127)	-0.169 (0.202)	
Life Expectancy	0.111 (0.171)	0.082 (0.189)	0.238 (0.488)	
Desirability of Entrepreneurship	0.167** (0.067)	0.183** (0.075)	0.157* (0.086)	
Credit Availability	--	0.001 (0.019)	--	
Real Interest Rate	--	0.188 (0.143)	--	
Constant	6.449 (14.165)	9.617 (13.912)	23.816 (37.427)	
Number of observations	87	71	65	--
R-squared	0.71	0.75	0.65	--

Robust standard errors under the parentheses. \*\*\*, \*\*, \* denote statistical significance at the 99%, 95% 90% level of confidence.



Table B. List of Countries

Australia	Jordan
Austria	Latvia
Belgium	Macedonia, FYR
Bosnia and Herzegovina	Malaysia
Brazil	Mexico
Canada	Montenegro
Chile	Morocco
Colombia	Netherlands
Croatia	Norway
Czech Republic	Peru
Denmark	Poland
Egypt	Portugal
Estonia	Romania
Finland	Russian Federation
France	Serbia
Georgia	Slovenia
Germany	South Africa
Greece	Spain
Guatemala	Sweden
Hungary	Switzerland
Iceland	Thailand
India	Tunisia
Indonesia	Turkey
Iran, Islamic Rep.	United Kingdom
Ireland	United States
Italy	Uruguay