

OPINIONES SOBRE LA COMPETENCIA Y CONFIANZA HACIA TERCEROS EVIDENCIA A PARTIR DE LA ENCUESTA MUNDIAL DE VALORES

FEELINGS ABOUT COMPETITION AND SELF-REPORTED TRUST EVIDENCE FROM THE WORLD VALUE SURVEYS

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- **Resumen:** Este artículo estima la relación entre las opiniones individuales sobre la competencia y la confianza hacia terceros. Las personas a las que les disgusta cada vez más la competencia reportan niveles más bajos de confianza hacia los demás. Este hallazgo es diferente y complementa la investigación previa que muestra una relación positiva o negativa. La evolución de las percepciones de la competencia puede estar causando perjuicios en términos de confianza y bienestar, y la política debe dirigir los esfuerzos para minimizar los efectos negativos de una de las instituciones más importantes del capitalismo de mercado: la competencia. El documento contribuye mediante el uso de medidas a nivel individual, al mismo tiempo que considera medidas objetivas de competencia. Probamos la solidez de nuestros resultados al considerar diferentes aproximaciones para la confianza. Conjeturamos sobre los posibles efectos negativos de la *disminución de la apreciación de los beneficios de la competencia.
- **PALABRAS CLAVE:** Confianza, Bienestar, Competencia, Econometría, Encuesta Mundial de Valores.
- **ABSTRACT:** This paper estimates the relation between individual feelings about competition and self-reported horizontal trust. Individuals who increasingly dislike competition report lower levels of trust towards others. But the association is not linear. This finding is different than and

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complements previous research which shows a positive or negative relation. We conclude that the evolution of perceptions of competition may be causing more harm than good in terms of trust and wellbeing, and policy should direct efforts at minimizing the negative effects of one of the most important institutions of market capitalism: competition. The paper improves over previous research by using individual-level measures while at the same time considering objective measures of competition. We test for robustness of our results by considering different approximations for trust. We conjecture about the potential negative effects on Trust and Social Capital of the declining appreciation of the benefits of competition.

▪ **KEYWORDS:** Trust, Well-being, Competition, Econometrics, World Values Surveys.

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1. INTRODUCTION

The importance of trust¹ as an engine for economic growth and welfare improvement has been considered as a relevant fact by many scholars (e.g. Knack and Keefer, 1997). As early as 1972, Arrow (1972) had already argued that “much of the economic backwardness in the world can be explained by the lack of mutual confidence”. Additionally, Fukuyama (1995) supports the view that trust is the basis for higher productivity and economic growth.

From an economic (theoretical) point of view, the research on trust has increased significantly in recent years since the development of incomplete contracts theory and behavioral economics². Trust has become a significant variable affecting relevant economic outcomes.

¹ By trust we mean horizontal or interpersonal trust that is “trust on others” as opposed to vertical trust, e.g. “trust in Government”

² Basic Neoclassical theory, which assumes complete contracts and perfect knowledge, implicitly assumes that trust is irrelevant and does not affect outcomes.

On the other hand, economists and other scholars argue that competition is good for trust within competing groups (Bowles, 2006) because, in part, it may create positive incentives for innovation and research. However, other scholars look at competition as a process which generates winners but also losers and that, at least, the potential positive outcomes should be contrasted with the potential negative effects that competition may have on consumer welfare and trust (Stucke (2013)).

Considering these differences, studying the association between competition and trust is important for economic growth and welfare. Further, looking at this association may shed light of a theoretically optimal level of competition, that is, the competitive level that maximizes trust, growth and development.

This paper thus attempts to empirically assess the association between competition and trust using subjective information from the sixth wave of the World Values Surveys. The intuition behind this association is that competition may affect the process of economic development and growth through its association to trust: if competition has a positive impact on trust, then more competition is good for growth and development. But if competition is regarded as a negative process which generates winners and losers and not verifiable positive outcomes, then more competition may harm growth and development.

Controlling for individual and contextual variables, we find a statistically positive relationship between our measures of competition and trust in the sense that increasingly negative views of competition are associated with higher levels of trust. This first result is supported by research based on Behavioral Economics.

However, this relation appears to be nonlinear, though: competition-lovers and competition-haters show relatively low levels of trust on others, while individuals who are relatively neutral with respect to their views about competition show higher levels of trust. This finding suggests an optimal level of competition which is associated with a maximum level of trust on others. This finding is, we believe, a crucial contribution of our paper.

Most of the literature focuses on the positive or negative association between competition and trust while missing the fact that there may be a combination of the two variables that will maximize the potential for economic growth and development.

Our paper improves over experimental studies by considering representative samples of individuals and departs from survey studies which consider objective measures of competition³.

As a limitation to our work, and due to the cross-section nature of the analysis, we do not attempt to draw any robust conclusions about the causality process between competition and trust. This suggest future lines of research based on longitudinal studies coupled with experimental studies which should include representative samples.

Finally, recent data suggest that both trust on others and views about competition have deteriorated through time in line with our findings, which may suggest that policy makers should carefully investigate the potential damaging effect on social capital when adopting policies which aim a fostering competition.

³ Since opinions are influenced by the social environment in which people live, we control for objective measures of competition in our regressions.

Next section reviews both theoretical and empirical literature on the determinants of trust and the role competition. Section 3 describes the data: definitions and sources while Section 4 describes the empirical model used in the paper. Section 5 shows the results and the final section discusses those results, the limitations of our study and the opportunities for future research.

2. LITERATURE REVIEW (DETERMINANTS OF TRUST AND ROLE OF COMPETITION)

2.1. Theory

Trust is a component of Social Capital, which plays an important role as a variable affecting the growth possibilities of a country: for example, Routledge et al (2003) show that social capital (i.e. trust) facilitates cooperative trade which in turn has a positive impact on the rate of economic growth. In other words, from an economic perspective, our model is a model of growth proxied by the level of horizontal trust.

The level of trust may depend on different factors (Arai, 2009): imagine a situation where some individual A (the truster) evaluate entering into a transaction with another individual B (the trustee), of which both individuals expect a return. A will effectively engage in such transaction depending on: (a) B's characteristics, (b) A's own characteristics, (c) the social environment influencing A and B's expectations about conduct, (d) the relation between A and B, and (e) the kind of transaction eventually linking A and B. Following Arai's approach to the determinants of trust, one of the variables included in the social environment which may affect behaviors is competition. We therefore explore the influence on growth (trust) of one contextual variable: competition.

2.1.1. Competition and Trust

Studying the behavior of agents within organizations, Francois et al (2009) develop a theoretical model to try to explain why competition should have a positive effect on trust within those organizations and explore the link empirically (see below). The theoretical model classifies workers as free-riders or trustworthy. Each worker supplies unobservable effort for a wage. If a company has more workers of the free-rider type, then its position in the marketplace is weak (because free-riders look for personal gains at the expense of social (e.g. the firm's gains)). Therefore, strong competition may drive the company out of the market. A cultural evolutionary process based on expected returns due to being of a certain type makes workers want to switch from one type to another. Strong competition is assumed to force free riders to become trustworthy and avoid the death of the company in which they work. Thus, there is the positive link between market competition and trust.

On the other hand, Shleifer (2004) argues that competition may foster unethical behavior, at least in the short run, which suggests a negative effect of competition on trust on others. Although in the long run Shleifer adheres to the traditional arguments favoring the positive effects of competition on welfare, he points to five situations in which this may not be case, which allows at least for some speculation about the relation between competition and trust.⁴

Moreover, because individuals are not fully rational and may have limited willpower, they may show demand biases that may hamper

⁴ He exemplifies by analyzing positive incentives of competition to use child labor, to increase corruption, to grant "excessive" executive remunerations, to allow for corporate earnings manipulation, and to foster commercial activities by universities, all activities regarded as unethical and which in some sense, have to potential to erode trust among citizens.

maximization of well being and trust. In addition, since individual interests and group interests may also differ, the sum of individual (“good”) decisions may produce suboptimal outcomes and negatively affect society (Stucke, 2013).

Other authors (e.g. Hahnel, 2002, Khon, 1992) regard market competition as a process that can harm human behavior by creating conditions where the success of some (generally, a minority) must occur through the failure and disappointment of others (a majority) (cited in Barrios (2015)). Although competition may lead to a better allocation of resources (i.e. improve efficiency), it also conduces to the degradation of the environment and of good human characteristics such as solidarity and trust in favor of greed and selfishness. Moreover, research on management has found evidence that competition between members of a given organization weakens their tie strength, that is, the extent to which those individuals relate to each other (Reagans, 2005) somehow in contradiction with Francois’s (2009) theoretical conclusions above.

Considering these conceptual differences, it is at least surprising that empirical tests on the relation of economic institutions such as competition and behavioral variables such as trust have been relatively scarce (Berggren and Jordahl, 2006). This paper contributes to the empirical literature on the relation of competition and trust and tries to reconcile both views⁵ of the

⁵ These contradictory views of the effect of markets and competition on social issues and behavior are not new. On the one hand, markets and competition may lead to cordiality (Pame, 1984) and better manners (Montesquieu, 1989). However, Veblen (1994) argues that competition hurts judgment and Marx (2000) writes that they depredate judgment, and hurt altruism and cooperation (Bowles, 1998).

relation by using individual data on feelings about competition and self-reported measures of trust derived from the World Value Surveys⁶.

2.1. Empirics

Empirical research on the association between competition and trust, at least with respect to most of the economics literature, is based on survey and experimental studies. Huck et al (2006) use a sample of 366 students recruited on line at the University of Erfurt. They find that competition fosters trust. They build a stylized environment where individuals play the role of buyers and sellers of experience goods, where buyers choose for quality, the price being fixed. The information available to buyers and sellers is either private or public, while the competitive environment is built by letting buyers select sellers according to their history (given by the available information). The control group does not allow for any information or for competition among sellers. The buyer either selects not to trade (signaling for lack of trust) or to trade (signaling for trust). Sellers have the choice of delivering low or high-quality products. Relative to the control group, making information available doubles their measure of trust, while adding competition reaches the level of trust close to the optimal level. Trust is measured by the percent of cases buyers decide to buy.

In a related paper Huck et. al (2012) study the effects of reputation and competition on trust by playing a trust game in credit markets. In general, the results of this paper show that by allowing players to have information on the reputation of their partners, competition eliminates almost all the moral hazard problem of credit markets.

⁶ To avoid drawing conclusions from subjective measures, we also try to introduce objective measures of competition in our analysis (see below).

Conceptually, the notion of trust used in their papers is of a particularized type, that is, trust among individuals who know something of each other through previous market interactions. In this sense, competition acts as a disciplining device, fostering trust via reputation earned through market interactions.

Al-Ubaydii et.al (2011) runs a controlled experimental investigation using students from George Mason University. Before playing a standard Trust Game, some groups of students were (randomly) primed to think about markets and trade while others (the control group) were not. They find that those students primed to think about markets exhibit more trusting behavior. This study differs from other empirical studies in that participants are randomly assigned to think about markets, i.e. experimenters induce changes in behavior via changes in the contextual environment and not through changes in incentives. Nevertheless, the procedure they employ to prime participants casts doubts on the validity of the experiments (more below).

Based on the behavior of financial institutions during the 2009 financial crisis, Rud et al (2018) study agent behavior assuming two contexts: a) a competitive environment, where financial intermediaries recommend possible investments to their clients (and make money according to the quantity of investments sold), and b) a noncompetitive environment where financial agents face no competition and can recommend investments to only one client. They find that competition among agents undermines truth-telling if clients fully trust their recommendations and that this conduct is robust to an increase in fees for the monopolist agent. In other words, competition aggravates the moral hazard problem when intermediaries obtain profits based on the quantity of investments sold to their clients.

Francois et al (2009) test the association between competition and trust using data from the 2004 General Social Survey and private sources. The data suggest a positive relation between competition and trust beyond a certain threshold. Since data on competition is not available at the individual level, Francois et.al. (2009) compute the degree of competition of different productive sectors using different Herfindahl indexes and relate these concentration indexes to the sector of employment of everyone in the General Social Survey. After some manipulation, they end up with a little more of 600 observations for the year 2004. Controlling for socio-economic characteristics, they find that more competition on the worker sector of employment is associated with higher horizontal trustworthiness, which they find as supportive of their theoretical model mentioned above.

Fischer (2008) uses data of the combined 3rd and 4th waves of the World Values Survey (WVS) (1997–2001) to find that competition enhances the positive market integration effect on horizontal trust. Fischer measures competition using the ratio of the (adjusted) national investment price to the national goods' prices (total price index), averaged from 1990 until 2000. Lower values of this ratio suggest stronger competition. She does not focus on a direct relation between competition and trust, but on an indirect effect by which more competition should have a positive effect on trust via individual market integration⁷. Fischer uses individual income level as a proxy for market integration, or trade frequencies. Trust is measured by the usual question deployed in the World Value Surveys (see below).

⁷ Usually, market integration is measured as the frequency of trade actions between different individuals. Her hypothesis, following Tullock (1985) is that more repeated interactions act as disciplining devices which foster trust via reputation effects.

2.1. Objective of our paper

The fundamental objective of our paper is to examine the association between feelings about competition and trust on others. The intuition underlying the analysis is that one environmental variable (competition) may have positive or negative effects on a variable which proxy for economic growth (trust). A positive association would support the intuition that individuals regard competition as representing gains in welfare and a means to improve trust among peers (e.g. in a corporation facing competition from rivals). A negative association would support the view of competition as a process that may lead to poor economic and social outcomes, one in which winners take advantage on losers, or companies on consumers, deteriorating trust on others. In this latter case, a more negative attitude towards competition may be then associated with a pro-trust behavior.

We consider a subjective measure of competition (more below) which is derived from the opinions of individuals gathered in the World Values Survey. Individuals declare whether they think competition is good or not considering a scale of 1 (competition is good) through 10 (competition is harmful).

This intuition suggests that those who like competition the most are those of high socio-economic status and those with higher incomes. This association appears to be supported by preliminary analysis of longitudinal data of the World Value Surveys: while almost 60% of high-status individuals think competition is good, only 45% of low-status folks agree with that statement. On the other hand, less than 10% of those within the high-status category think competition is harmful, compared to more than 16% in the low-status category.

But there is a related but no less important issue which can be gauged by inspecting Figure 4 below: a simple association between trust on others and individuals' aversion towards competition based on data from the World Values Survey depicts an inverted-U relation: the percentage of people trusting others increases when we move from individuals who like competition the most towards those who have more "neutral" views about competition, and decreases thereafter, that is, as we move towards more competition-averse individuals. This suggests a non-linear association between our main variables, trust and competition.

In sum, we test the following hypotheses:

H1. The association between competition and trust is statistically positive (that is, the more you dislike competition, the more you trust others), and

H2. This relation is nonlinear, of the type of an inverted-U.

This paper contributes to current empirical literature on the relation between competition and generalized trust in at least three ways. First, we use self-reported opinions about competition derived from the World Value Surveys (WVS). To our knowledge, this is the first paper which attempts to approximate a view of competition through the opinions of individuals rather than using aggregate measures such as the degree of openness of an economy or the volume of capital inflows and outflows which may measure the actual competitive environment at one point in time and in a certain location⁸. Our approximation to competition can be regarded as an ex-ante view: people have, at certain moment and country, a specific view of the competitive

⁸ As stated above, we complement our analysis by trying to control for objective approximations to competition.

process (more below) which they may considered good, not so good, or harmful. Therefore, our measure is an individual rather than an aggregate measure which may prove more useful to draw behavioral conclusions.

Our measure of competition is a subjective one, and as such, it can be influenced by many other factors, for example, the competitive situation of the location where the individual lives. In this paper, we control for this situation, incorporating objective measures of competition into the analysis and using country fixed effects. Moreover, we evaluate whether the association of opinions of competition on trust changes for each level of the competitive environment (see below).

As a second contribution, unlike Huck et.al (2007) and Al-Ubaydii et.al (2011), we consider representative samples by using data of the 2008 wave of the World Values Surveys which comprises more than 60 countries. Since both studies work with student samples, their measure of trust may fail to meet the test of external validity: their result cannot be generalized to an entire population. Unlike Al-Ubaydii et.al (2011), whose design is targeted to think about markets, our paper focuses mainly on opinions about competition, which is an aspect of markets. Although Fischer (2008) considers representative samples from the WVS, she uses only an aggregated measure of market competition that has already been mentioned. On the other hand we use individuals' feelings about competition: for example, the 2008 wave of the World Value Surveys asks each person how she feels about "competition", which, although a self-reported measure (with all its imperfections, starting with the axiom of revealed preferences), allows us to set a direct link of an aspect of competition and a measure of trust towards others. Finally, Francois et.al also use aggregate measures of sector concentration as a proxy for competition, then look at the sector where the individual works and assign to

that individual the corresponding measure of concentration which corresponds to his or her sector of employment. Consequently, competition ends up as being some sort of fixed effect and its direct relation with generalized trust is not clear. As mentioned previously, our study considers not only opinions about competition but also controls for objective and aggregate measures of competition (see below) which improves over these previous studies.

As a third contribution, the measure of competition considered in this paper resembles the view of competition that was present in the opinions of old political economists such as Adam Smith and David Ricardo which is generally ignored in current research. While mainstream economists conceptualize competition as an “end-state” where competitive markets achieve efficient social outcomes, the opinions collected in the WVS may not coincide with the economist’s vision of competition in that it may be representing a “process” in which firms attempt to maximize their stake of the market, sometimes achieving a zero-sum outcome: what one firm gains, other firm loses. Moreover, consumers may not always feel competition benefits them because the available goods and services they can potentially buy fail to achieve adequate quality standards for a given price.

Finally, this competitive process may lead to satisfactory outcomes, e.g. lower prices, but may also lead to higher unemployment, lower quality products, or what is commonly denominated a “race to the bottom”. Under this view competition may drive firms to undertaking unfair, unjust and environmentally damaging strategies to get a larger share of the market⁹, thus

⁹ These strategies may include deceiving costumers through advertising, for example. Some critics of corporate global capitalism have also argued that multinationals foster environmentally unsustainable growth strategies, which harm us all.

a bad thing (Hahnel, 2011). This vision of competition as a process resembling old political economist's views can be expressed by the answers collected in the WVS, which is the view of what ordinary people probably understand by competition (more below).

3. THE MODEL

Our econometric model specifies individual's "i" generalized trust ($Trust_i$) as a function of how individual "i" feels about competition (Competition), controlling for other socio-demographic variables (X_i) which include town size and country fixed effects. This relation can be expressed as follows:

$$Trust_i = \alpha Competition_i + \beta X_i + \varepsilon_i \quad (1)$$

Where ε_i is an individual-specific error term

The previous model can be extended to test for nonlinearities by including a quadratic term on subjective competition. We also extend the model to test if the effect of competition (subjective) on trust varies with the level of objective competition by including the interaction between subjective competition and the objective measure of competition in the regression:

$$Trust_i = \alpha Competition_i + bCompetition_i^2 + \partial Competition_i * ObjCompetition_i + \beta X_i + \varepsilon_i \quad (2)$$

The interaction term attempts to capture the impact of the competitive environment on the individual's view of competition and his or her trust on others. In other words, it is possible that the effect of competition on trust on others is stronger or weaker depending on the state of competition where the individual lives. Should this variable be omitted, results should be biased and reflected only on the subjective view of competition. The overall effect of subjective competition on trust on others is the sum of the coefficients $\alpha + \partial$.

Finally, the basic model can be modified by considering other measures of trust as our dependent variable $Trust_i$: trust on family, trust on neighbours, people known personally, etc.

As Fischer (2008) states, given the cross-section nature of our sample, we avoid multi-collinearity of macro-variables by including country fixed effects. Nevertheless, doing this we cannot include directly the objective measure of objective competition because it will be closely related with the country fixed effects, so we can only include the objective measure of competition interacted with the subjective one.

Since the dependent variable is dichotomous, OLS results may be biased. Nevertheless, we first run OLS since we wish to gauge for any non-linear relation between competition and trust. Following the OLS regression, we run logit regressions to take account of the dichotomous nature of the variables involved.

4. DATA

4.1 Dependent and Main Independent Variable

Since our goal is to study the association between trust on others and competition, we need to collect data on approximations to those variables. We use subjective measures of both variables. Additionally, the subjective opinion a person has about competition is influenced by a host of circumstances and personal characteristics, such as the general environment of competition in a country, whether the person lives in a small town or not, his or her income, his or her education, etc. We therefore need to take account of the impact of these circumstances and personal characteristics to obtain a

“pure” effect of competition on trust. Should we not include We proceed as follows.

To analyze the association between competition and generalized trust we employ data gathered in the sixth wave (2005-2008) of the World Values Surveys (WVS)¹⁰. This wave collected the opinions of more than 60.000 individuals from 56 countries about their perceptions of life, which includes self-assessments of trust on others (our measure of generalized trust), other opinions about trust on different institutions, feelings about competition and socio-demographic information.

Since our dependent variable is trust on others, we employ the WVS measure of the individual’s generalized trust which arises from the answers to the following question: *“Generally speaking, would you say that most people can be trusted, or that you need to be careful in dealing with people?”* This variable is dichotomous measure of generalized horizontal trust taking value 1 if the person declares that “most people can be trusted” and taking value 0 if it the person says that we “need to be careful”.

This measure of trust is a subjective one and attempts to capture a state of mind the person has with respect to other people. It represents what scholars consider a measure of horizontal trust (trust on others) as opposed to vertical trust (e.g. trust on superiors, governments, etc.). Also, it does not represent a revealed measure of trust. Revealed measures of trust are better explained in experimental studies such as the Trust Game, where players are asked (under certain conditions) to give money to are person who is playing the Trust game. Opinions on what is the appropriate measure to use differ. Our paper does not attempt to discuss the issue.

¹⁰ www.worldvaluessurvey.org

Our explanatory variable of interest is competition. The World Values Survey asks individuals what they think about competition. This subjective perception about competition is approximated by computing the feelings individuals express about competition. Specifically, individuals are asked the following question: *“How would you place your views on this scale? 1 means you agree completely with the statement on the left; 10 means you agree completely with the statement on the right; and if your views fall somewhere in between, you can choose any number in between. Sentences: Competition is good. It stimulates people to work hard and develop new ideas vs Competition is harmful. It brings the worst in people”*. If the person chooses option 1 it means she believes competition is good. If he or she chooses option 10, he or she thinks competition is harmful. Subjective competition is then an ordered categorical variable that takes 10 values¹¹.

4.1 Control Variables

4.1.1 Objective Competition and other fixed effects

As mentioned above, we also explore the relevance of objective measures of competition to take account of the environment and context which may influence the opinions individuals may have with respect to competition. We use Fisher’s (2008) measures of objective competition computed as the ratio of investment price over GDP price for the years between 1990 and 2000. The former variable is taken from the World Penn Tables, while the World Bank Indicators data base was used to collect data on average GDP per capita for the same period¹². Lower values of this ratio suggest stronger competition: the ratio takes values between 0 and 4, where 0 is strong competition and 4 low competition. Using Fisher’s (2008) measure of objective competition and

¹¹ Only Iraq, Andorra and Serbia lack information on subjective competition and were excluded from the data base.

¹² In any case, we compute the average of available data for the 1990-2000 period.

the residual of this measure regressed against GDP per capita; we test for the correlation between them and our subjective measure (more below) Additionally we control for the effect of a) town size, and b) country fixed effects both of which may affect our views about competition.

4.1.2 Socio-demographic variables and extensions

To control for personal characteristics, we follow Alesina and La Ferrara (2002). We include a) self-reported income (1 if the individual reports himself is from the lowest decile and 10 if he is from the top decile), social class (1 if the individual perceives himself as from the upper class and 5 if he perceives himself from the lowest class), b) educational level (1 if the individual has no education and 10 if he has a completed college), c) gender, d) age, e) employment, f) marital status, g) religiosity, and h) involvement in humanitarian organizations.

In the case of the religiously active, we want to check if there is a relationship between having a religion and trusting people, which has been the subject of many studies. In the case of the humanitarian activities, we can speculate that individuals that decide to help others might have an unobserved common trust in human kind. Finally, living in a large city where a lot of strangers are around might trigger less generalized trust on others (Bauman 2003).

Additionally, to avoid the potential unobserved effect of happiness on competition, we add self-reported happiness as a new control. The association between happiness and Trust have been analyzed by many scholars, and some find a positive relation among the two (Hamamura et al.

2016)¹³ Happiness takes four values: 1 if individual is completely happy 4 if the individual is completely unhappy.

Finally, as an extension, we consider different measures of trust to check if subjective views of competition may affect them. Since our main focus is on trust on others, we do not expand in our analysis of these additional effects. We consider five different dichotomous measures of trust in different groups of people based on the answers to the following question posed in the World Values Survey: *“I ‘d like to ask you how much you trust people from various groups. Could you tell me for each whether you trust people from this group completely, somewhat, not very much or not at all?”* The groups are family members, neighbors, people known personally, people known for the first time and people from other nationality.

Descriptive statistics of dependent, explanatory and control variables are shown in Table 1.

5 RESULTS

5.1 General results

Table 2 shows the fitted values of Self-reported trust and feelings about competition derived from the original OLS regression and the logistic regression. At a first sight we can see that both models give consistent estimates in terms of sign and significance.

Inspection of Figure 3 and the sign of the coefficients of competition and competition (squared) in the OLS and logistic regressions (Table 2) suggest support for both of our hypotheses. First, the sign of competition is positive, which means that, on average, trust increases with less optimistic

¹³ Although in their model the dependent variable was Happiness and not generalized trust.

views about competition. Additionally, Figure 3 shows that people who think competition is good are those less likely to trust others, and something similar happens to those who think competition is harmful. A third result, however, indicates that individuals who neither dislike nor like competition show a higher probability of trusting others. This confirms the non-linearity of the association: as we move from more positive to less positive views about competition, the probability of trusting others increases, but at some point this relation changes its sign and becomes negative in the sense that higher (lower) trust is associated with higher (lower) positive feelings about competition.

Figure 4 supports this association: the percent of people who trust others increases up to those who have somewhat a neutral view of competition, but then starts decreasing as the dislike for competition increases. The figure also highlights the non-linearity of the relationship and, we see for the sample distribution of “trustees”, the level of disgust of competition that maximizes trust is 5¹⁴. This suggests an optimal level of competition beyond which trust, and growth are not maximized.

5.2 Consideration of contextual variables: objective competition

One contextual variable is how competitive the environment is where the individual lives. As mentioned above, we control for this potential impact by considering objective measures of competition in our analysis. First, we find a statistically significant and negative (0.10 and 0.09) correlation between objective and subjective competition (Figures 1 and 2)¹⁵. Countries facing

¹⁴ This result arises from deriving the trust OLS equation with respect to subjective competition.

¹⁵ Note that Fisher's (2008) measure of objective competition goes from 0 (strong competition) to 1 (weak competition) and our (subjective) measure of competition takes the value 1 if people like competition a lot and 10 if people find competition harmful.

weak (strong) competitive environments also show individuals who show less (stronger) disgust for competition.

Table 3 shows the results of the logit regression incorporating Fischer's measure of objective competition. At first sight, the positive sign of the interactive term suggests that for each level of objective competition, individuals who dislike competition more would increase the probability of trusting others, that is, people e.g. in less competitive environments who show more dislike for competition would trust others more.

However, as Fischer (2008) suggests, (objective) market competition might cause and thus proxy for economic development and inequality so these variables would be leading the association instead of objective competition. To correct this potential bias (at least for economic development) we run a regression of this objective measure of completion to GDP per capita, and then use the residuals of this regression as the measure of objective competition that is not related to economic development. When we correct for this, the interaction effect loses significance (column 2 of table 3). In other words, our results suggest that the competitive environment does not significantly affect the impact of subjective views of competition on trust and that we can trust on the direct effect of subjective competition to reflect a pure effect.

In sum, the competitive environment does not change our general result: less optimistic views about competition are associated with higher levels of trust.

5.3 Consideration of personal characteristics

We control for those personal characteristics that may blur the pure association between subjective competition and trust on others. First, older persons do not significantly trust others more than their younger counterparts which contradicts some literature (e.g. Tianyuan et al (2013) but also finds support in other studies (e.g. Bailey et.al. (2015). Second, women do not trust others more than men do which is consistent with much of the economics literature (e.g. Imke et.al (2017), and Eckel et.al (2008)) Third, more educated people seem to trust others more which is in line with most relevant literature, although lately some authors have found a negative relation for high corruption countries (e.g. Frederiksen et.al (2017) , while those employed trust people more relative to the unemployed. Fourth, happier and wealthier individuals trust others more, which confirm the results of prior studies. Fifth, people involved in religious or humanitarian activities also trust more. Finally, people living in larger towns trust other less, a rather reasonable intuitive result in line with Bauman (2003).

5.4. Other measures of Trust

We also tested for the association of different measures of trust and competition. Table 4 presents the logit regressions for five kinds of trust measures. Here we find that subjective taste for competition also verifies the non-linear relationship to trust; in all cases the quadratic term of competition is significant and negative. All in all, except for Trust in Relatives, results are consistent with those found above with respect to trust on others.

Controls are also consistent in general with the results found above. Age is not significant for trust in family members and does not show a clear pattern across different kinds of trust. Differences in the probability of trusting others

related to gender only occur for trust in neighbors and in people known for the first time. In both cases, women trust less than men. Education has 5% significance for all types of trust and 1% significance for trust in people which are known personally, trust in people which are known for the first time and trust in people from other nations. In these cases, and in the case of trust in familiars, more educated people trust more than less educated people, but when dealing with trust in neighbors the opposite arises: more educated people trust less. The impact of being employed is mixed: it is (slightly) significant for some regressions, not significant in other regressions and only 5 % significance for trust in people known personally. Social class show a significantly negative relationship for trust in members of the family and in people from other countries. Income is positively associated to all kinds of trust except in people from other nations. Happiness has a solid relationship with all kinds of trust at 1% level. Happier people trust more. People involved in religious activities trust more in their families, in people known personally (both at 1% level), in neighbors and in people known for the first time (both at 5% level) but show no significant relation to people from other nations. People involved in humanitarian activities trust more in people known for the first time and in people from other nations (both at 1% level). People living in larger towns systematically trust less in all kinds of people, this is true at 1% level of significance except for people known personally that is true at 5% level. Besides these results, these regressions of different measures of trust on competition help us observe the robustness of the nonlinear relationship between trust and subjective competition.

6 DISCUSSION

Drawing on data from the World Value Surveys, this paper attempts to analyze the relation between feelings about competition and trust. We also

aim to present stylized facts of trust on individuals that were widely described in the results section and are shown in the tables in the appendix.

Our results differ from the other results reported by the literature reviewed, which postulates either a positive or a negative relation between competition and trust, but not both.

Our first hypothesis is supported by the data: less optimistic views with respect to competition are associated with higher levels of trust on others. - There is some support in the literature which argues that “competition is not always good”: Stuke (2013) discusses Irving Fisher’s two fundamental assumptions which need to be verified for competition to achieve “good” results: “first, each individual is the best judge of what subserves his own interest, and the motive of self-interest leads him to secure the maximum of well-being for himself; and, secondly, since society is merely the sum of individuals, the effort of each to secure the maximum of well-being for himself has as its necessary effect to secure thereby also the maximum of well-being for society as a whole”.

However, Behavioral Economics (Bowles, 2006) teaches us that neither of these assumptions are likely to be met, the consequence of which is that competition may yield suboptimal results with respect to consumers satisfaction, leading to lower trust on others, e.g. corporations. In this sense, our results suggest that those competition-lovers may trust others less precisely because being competitively successful requires exploiting consumers’ absence of information with respect to e.g. the characteristics of products sold. On the other hand, individuals who shun away from competition are precisely those who trust others more and recognize that competition may harm more than benefit them.

There is further theoretical research that may shed some light on our empirical conclusions: Bowles (2006) suggests that group competition promotes within-group cooperation most strongly when the group members gain in equal measures from outcompeting another group. It can be assumed that those outperformed should trust members of other groups less. Accordingly, on average, one could conclude that competition should foster trust if the first effect is stronger than the latter. Our results may be the consequence of a “negative” impact: although competition may enhance within-group trust, the second effect may have a larger social impact, leading to an overall decrease in social trust.

Our second hypothesis is also verified by the data. We find the association between competition and trust to be non-linear: as individuals become less optimistic about competition, they tend to report higher levels of trust towards others. At some point, however, the relation reverses: we report less trust towards others as we increasingly dislike competition. Although the results on average indicate that less optimistic views about competition are associated with higher levels of trust, they are highly influenced by the opinions of those who think competition is neither good or bad. What the current literature fails to show is that both “competition lovers” and “competition haters” trust others less. It appears that most individuals see competition as a “neutral process”, relatively harmless and this view is associated with the highest levels of trust. This result is absent in both the theoretical and empirical literature and represents a contribution of our work to the relevant literature. Most importantly however, is what the inverted-U shape of the association suggests: there may be an optimal level of competition for which trust on others is maximized. This finding should be of interest for policy makers and economists in general when they recommend that competition should be fostered vis a vis less competitive markets (e.g.

monopoly, oligopoly). Some literature (Stucke, 2013) is supportive of this finding: too much competition is not good and should be regulated.

This relationship of trust and competition is solid to several kinds of human characteristics and fixed effects (objective views of competition and general country fixed effects).

These results may indicate that people are regarding competition as a process which implies multiple tradeoffs among individuals where, e.g., a few winners may get a lot of the pie from many of losers. This is in line with the opinions of Hahnel (2011) and Kohn (1992), among others. On the other hand, since the relation appears to be positive on average, economists can argue that the average citizen may regard competition as a good thing in terms of achieving some socially efficient outcome.

What does the data tell us about the evolution of these two variables? A look at the data contained in the World Value Surveys shows that a positive view about competition decreases from 35% in 1990 to 25% in 2005¹⁶. If the findings of this paper are accurate, the implications for horizontal trust are negative, *ceteris paribus*, that is, the level of social trust should decrease. In fact, this is what has been happening: in 1980 almost 35% of respondents thought that most people could be trusted, while in 2005 only 24% of respondents answered in the same way. As a practical implication, this data suggests that the world could be witnessing a situation where competition has surpassed the level at which welfare (in our case, trust) is maximized and that policy makers should aim at less, not more competition. This is a preliminary conclusion and further research is needed.

¹⁶ The figures correspond to the percent of individuals who respond "Competition is good". In 1990, 35% considered competition as a good thing, 28% in 1995, 33% in 2000 and 25% in 2005.

For policy makers, if the findings of this paper reflect the true relation between competition and a key component of social capital, what should we expect of the consequences of fostering competition for long time growth, and long-time welfare? If the actual level of competition creates negative incentives to produce and to consume goods and services and harm the environment, or if competition creates negative incentives by which people do not develop feelings of solidarity and trust, we should also expect negative consequences for the well-being of future generations. Figure 4 shows us that, regardless on the opinion about competition, no more than one third say they trust other persons, and that percentage has been falling over time.

What about the opinions of the authors who find competition good for trust? Francois et.al (2009) seems to consider the existence of a company as a public good where some individuals free ride on the companies' benefits, which constitute an extreme view of a company, in our opinion. Second, competition appears as a disciplining device by which free riders may reconvert themselves in trustworthy individuals within their companies, which we believe confuses the notion of "convenience" with the notion of "trust". And finally, the eventual transformation from free riders to trustworthy within a company is assumed to percolate to the entire society, and the authors do not explain why.

Fischer (2008) is the closest to the spirit of this article. However, Fischer disentangles the potential effect of competition in fostering trust through market interactions but does not address the direct effect of competition on trust. She also uses an aggregate measure of competition instead of an individual measure, as we use in this paper.

Al-Ubaydii et.al (2011) primes students to think about markets and trade. Besides the fact that they use non-representative samples, the way the authors prime students about markets seems to be leading the students to a positive conclusion. For example, students in the treatment group are asked to make a grammatical four-word phrase or sentence out of the following words: “him loves trade she to”. That phrase or sentence could be “she loves to trade”. On the other hand, those in the control group are required to form a four-word phrase or sentence out of the following words: “him love analyze she to”. I believe it is possible that the phrase itself is leading to a positive feeling about trade and markets which may be reflected in the way a subject behaves, that is, a person who is induced to think that “she loves to trade” may be willing to give others more, to trust more on others. So, it may not be “the market” that is leading to more trusting behavior but the positive feeling that arises from thinking about how “she loves to trade”.

In sum, as Bowles (2006) and Stucke (2013) suggest, we believe the evolution of perceptions of competition may be causing more harm than good in terms of trust and wellbeing, and policy should direct efforts at minimizing the negative effects of one of the most important institutions of market capitalism: competition, the alternative being a reconsideration of the incentives in place in the worldwide structure of production and consumption.

7 LIMITATIONS AND FUTURE RESEARCH

Our study suffers from several limitations and offers opportunities for future research. Although we work with representative samples, our data is cross section which precludes us from drawing any conclusion with respect to causality. Although we use Trust as a dependent variable, we are careful to

draw any causality relation: in fact, higher levels of horizontal trust may boost or damage competition the same way that more favorable views of competition may cause trust to decrease. Further research on this topic should use panel data, or at least pooled cross section data to gauge into causality issues.

Second, the intuition behind our model is that trust is a proxy for economic growth and development and that competition, by affecting trust, has an impact on growth. Our regression strategy assumes this line of thought, but not actually models it. The appropriate way to do it should be to use a hierarchical (multilevel) econometric strategy, which would allow to study the impact of competition on trust and a second regression where growth would be the dependent variable and trust the independent factor. Again, interested researchers should follow this path in future studies by building a formal theoretical model and the corresponding econometric strategy.

Our work could be improved by using other measures of objective competition. Our study finds no impact of the competitive environment on trust on others through the subjective measure of competition. This is a dubious conclusion and further research should investigate this topic.

Experimental studies should be used to complement the findings of this paper, especially that of the nonlinear association and that of causality. Experiments are useful to gauge into causality but almost always employ non-representative samples, which limits the scope of their conclusions.

The nonlinear association deserves closer scrutiny both at the theoretical and the practical level. If there exists a level of competition (subjective and objective) which can maximize trust and growth, then policy makers should put extra efforts in the framework which attempts to regulate

competition. This, for us, constitutes a very interesting path for future research.

APPENDIX

Table 1: Summary Statistics

Variable	Observations	Mean	s.d	Min	Max
Trust	77802	0.3	0.4	0	1
Trust in relatives	74403	0.1	0.2	0	1
Trust in neighbors	73466	0.7	0.4	0	1
Trust in known people	73774	0.8	0.4	0	1
Trust in recently known people	71982	0.3	0.4	0	1
Trust in other nationals	68585	0.4	0.5	0	1
Competition (subjective)	77922	3.8	2.5	1	10
Competition (objective)	79051	1.7	0.9	0.8	4.0
Residual objective competition on GDP per capita	77824	0.0	0.7	0.9	2.0
Happiness	83097	1.9	0.7	1	4
Religious participation	78291	0.6	0.8	0	2
Participation in Humanitarian activities	77647		0.6	0	2
			16.		
Age	83708	41.5	5	15	98
Education l	83416	5.2	2.5	1	9
Social class	69864	3.4	1.0	1	5
Income	76788	4.6	2.3	1	10
Town size	56342	4.8	2.5	1	8
Married (%)	83714	0.6	0.5	0	1
Coupled (%)	83714	0.1	0.3	0	1
Divorce (%)	83714	0.0	0.2	0	1
Separated (%)	83714	0.0	0.1	0	1
Widow (%)	83714	0.1	0.2	0	1
Single (%)	83714	0.3	0.4	0	1
Female (%)	83879	0.5	0.5	0	1
Employed (%)	81422	0.5	0.5	0	1

Table 2: Regression Results
 Dependent Variable: Self-Reported Trust

Explanatory Variables	Regression I OLS	Regression II Logit
Competition (Subjective)	0.02140*** (0.00325)	0.14717*** (0.02168)
Competition (Subjective) Squared	-0.00215*** (0.00033)	-0.01491*** (0.00227)
Age	-0.00134 (0.00090)	-0.00633 (0.00562)
Age Squared	0.00003*** (0.00001)	0.00014** (0.00006)
Female	-0.00650 (0.00464)	-0.04497 (0.02911)
Education	0.00984*** (0.00120)	0.06146*** (0.00759)
Employment	0.01742*** (0.00524)	0.11496*** (0.03376)
Social Class	-0.00065 (0.00275)	-0.00752 (0.01863)
Income Level	0.00396*** (0.00128)	0.02241*** (0.00793)
Happiness	-0.02917*** (0.00323)	-0.19915*** (0.02217)
Religious participation	0.00887*** (0.00335)	0.05626*** (0.02126)
Participation in Humanitarian activities	0.02617*** (0.00400)	0.15585*** (0.02337)
Town size	-0.00437*** (0.00114)	-0.02716*** (0.00721)
Constant	-0.11501 (0.10049)	-16.06603*** (2.14552)
Marital Status Controls	Yes	Yes
Ethnic Group Controls	Yes	Yes
Country Controls	Yes	Yes
Observations	32,583	32,516
R-squared	0.16750	
Robust standard errors in parentheses		
*** p<0.01, ** p<0.05, * p<0.1		

Table 3: Regression Results
 Dependent Variable: Trust on others

Explanatory Variables	Regression n III	Regression n IV
Competition (subjective)	0.10286*** (0.02687)	0.14216*** (0.02267)
Competition squared (subjective)	- 0.01463*** (0.00233)	- 0.01448*** (0.00240)
Competition (subjective)*Competition (objective)	0.02492*** (0.00883)	
Competition (subjective)*Competition (objective, corrected)		0.00021 (0.01192)
Constant	-0.64811 (0.39680)	-0.72483* (0.39692)
Other Controls	Yes	Yes
Marital Status Controls	Yes	Yes
Ethnic Group Controls	Yes	Yes
Country Controls	Yes	Yes
Observations	30,698	29,489
Robust standard errors in parentheses		
*** p<0.01, ** p<0.05, * p<0.1		

Table 4: Regression Results

VARIABLES	Dependent Variables				
	Trust in Relatives	Trust in neighbors	Trust in known people	Trust in recently known people	Trust in other nationals
Competition (subjective)	0.08356 (0.05462)	0.09461*** (0.02030)	0.04019* (0.02174)	0.15073*** (0.02106)	0.06343*** (0.01973)
Competition squared (subjective)	-0.01381*** (0.00513)	-0.01133*** (0.00203)	-0.00785*** (0.00216)	-0.01373*** (0.00214)	-0.00653*** (0.00200)
Age	-0.02184 (0.01519)	0.01446*** (0.00555)	-0.01068* (0.00609)	-0.01133** (0.00547)	-0.00789 (0.00521)
Age squared	0.00016 (0.00016)	0.00001 (0.00006)	0.00015** (0.00007)	0.00019*** (0.00006)	0.00015*** (0.00005)
Female	0.06988 (0.08048)	-0.09891*** (0.02839)	0.02249 (0.03062)	-0.09162*** (0.02891)	-0.03077 (0.02746)
Education	0.05765** (0.02353)	-0.01790** (0.00767)	0.02290*** (0.00824)	0.03249*** (0.00772)	0.08458*** (0.00729)
Employed	0.09225 (0.09122)	-0.05864* (0.03264)	0.08184** (0.03420)	0.06668** (0.03353)	0.03514 (0.03129)
Social Class	-0.14353*** (0.05072)	-0.01262 (0.01764)	-0.00598 (0.01900)	-0.01715 (0.01797)	-0.04090** (0.01716)
Income level	0.06233*** (0.02375)	0.04062*** (0.00793)	0.04342*** (0.00883)	0.03301*** (0.00788)	0.00280 (0.00756)
Happiness	-0.52372*** (0.05453)	-0.24788*** (0.02067)	-0.20263*** (0.02192)	-0.14319*** (0.02173)	-0.12758*** (0.01999)
Religious activities	0.22479*** (0.06065)	0.05458** (0.02122)	0.11010*** (0.02331)	0.04950** (0.02076)	-0.00269 (0.02006)
Participation in humanitarian activities	-0.03106 (0.06875)	0.01422 (0.02448)	0.02052 (0.02731)	0.12876*** (0.02242)	0.19154*** (0.02271)
Town size	-0.09331*** (0.02215)	-0.08565*** (0.00744)	-0.01792** (0.00833)	-0.02861*** (0.00730)	0.02313*** (0.00683)
Constant	5.03966 (37.53762)	0.76239 (1.24167)	14.57153*** (0.68109)	-15.14125 (.)	1.91033 (1.17067)
Marital Status Controls	Yes	Yes	Yes	Yes	Yes
Ethnic Group Controls	Yes	Yes	Yes	Yes	Yes
Country Controls	Yes	Yes	Yes	Yes	Yes
Observations	30,630	31,039	30,990	30,777	29,614
Robust standard errors in parentheses					
*** p<0.01, ** p<0.05, * p<0.1					

Figure 1. Relationship between subjective competition (y axis) and objective competition (x axis)

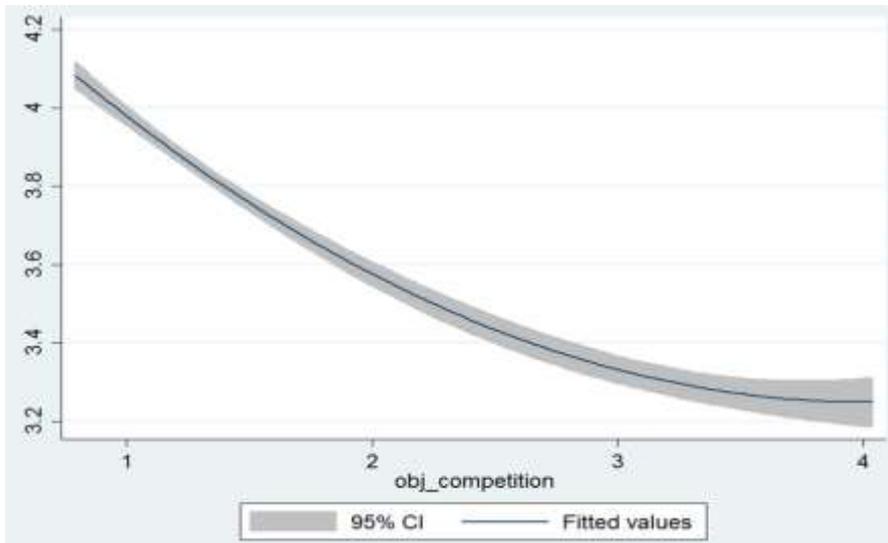


Figure 2. Relationship between subjective competition (y axis) and the residual of the regression of objective competition to GDP per capita (x axis).

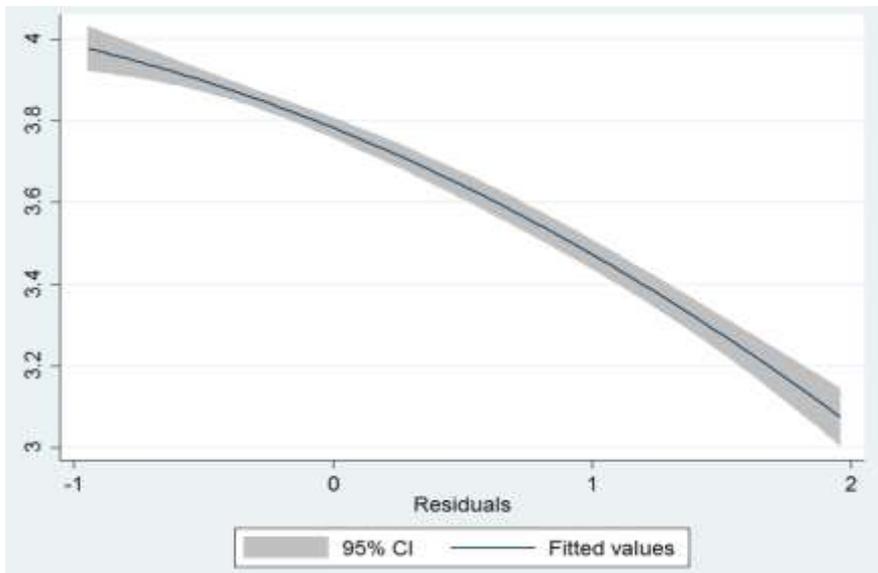


Figure 3. Relationship between Trust (y axis) and subjective competition (x axis). Competition is good (0), competition is bad (10).

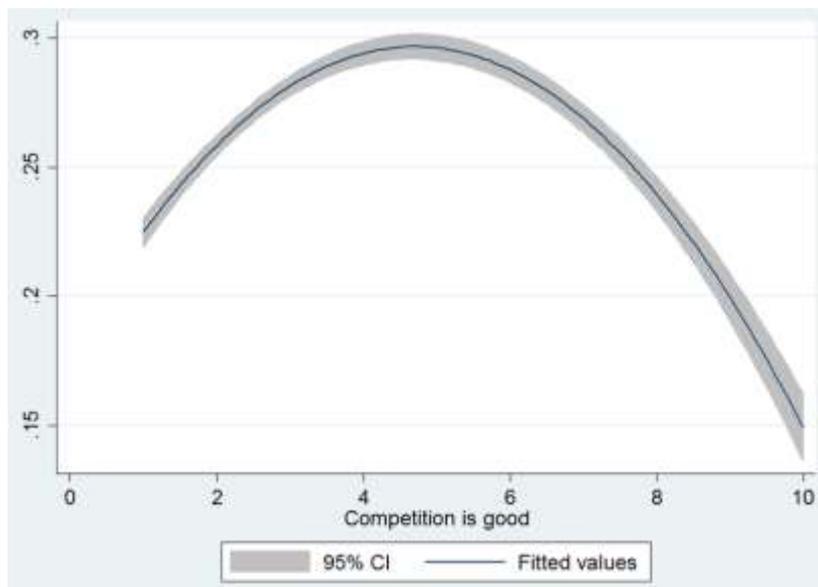
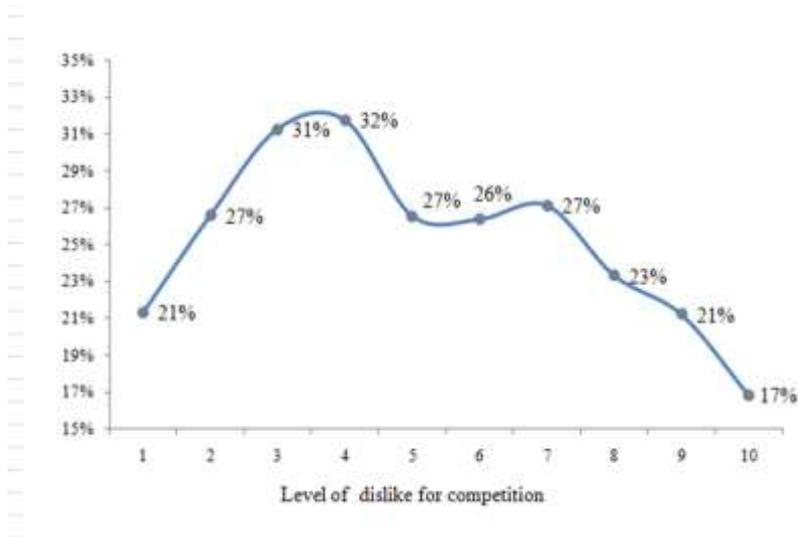


Figure 4. Share of people trusting others by level of dislike of competition



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