EYD

Ekonomik Yaklaşım
Derneği / Association

***Ekonomik Yaklaşım* 2018, 29(106): 1-29**

www.ekonomikyaklasim.org
*doi: 10.5455/ey.38100*

# The Role of Social Capital in Understanding Entrepreneurship

Yeşim ÜÇDOĞRUK GÜREL [1, 2]

15 Ekim 2017'de alındı; 14 Aralık 2017'de kabul edildi.
15 Aralık 2017'den beri erişime açıktır.

Received 15 October 2017; accepted 14 December 2017.
Available online since 15 December 2017.

*Araştırma Makalesi/Original Article*

## Abstract

*This study explores the impact of social capital on entrepreneurial activities by using pseudo-panel approach constructed at an age-based cohort level. We assess the effects of social capital, in forms of generalized and institutional trust, civic norms, and networks through associational activities, on entrepreneurship using cohort panel data derived from the World Values Survey (WVS). Moreover, we construct a measure of social capital that incorporates all of these three dimensions. The data from the WVS covers five periods (1990-1994, 1995-1998, 1999-2004, 2005-2009 and 2010-2014) and includes a cross section of 40 countries. The findings indicate that trust measured by either generalized or institutional trust encourages entrepreneurship. Evidence suggests that stronger civic norms positively influence entrepreneurship, whereas participating associational activities has negative impact on entrepreneurship due to over-embeddedness. We also find evidence that a multidimensional measure of social capital is needed for linking social capital to entrepreneurship.*

***Keywords:*** *Entrepreneurship, social capital, trust, pseudo-panel approach.*
***JEL Codes:*** *J24, O43, O50, Z13.*



[1] *Dokuz Eylül Üniversitesi, İşletme Fakültesi, İngilizce İktisat Bölümü, İzmir, Türkiye.* E-mail: yesim.ucdogruk@deu.edu.tr

[2] I would like to thank Prof.Dr. Erol Taymaz and two anonymous referees for their constructive comments and suggestions that improved the manuscript substantially.

**Özet**

Sosyal Sermayenin Girişimciliği Anlamadaki Rolü

*Bu çalışma, sosyal sermayenin girişimcilik faaliyetleri üzerine etkisini, kişilerin yaş düzeyinde gruplandırılmasıyla elde edilen pseudo (sahte) panel yaklaşımını kullanarak araştırmaktadır. Dünya Değerler Araştırması'ndan (World Values Survey-WVS) elde edilen yaş düzeyi gruplarına ait panel veriler kullanılarak, sosyal sermayenin, genelleştirilmiş ve kurumsal güven, sivil normlar ve örgütsel faaliyetler yoluyla girişimcilik üzerindeki etkileri değerlendirilmektedir. Buna ek olarak, bu üç boyutun tümünü içeren bir sosyal sermaye ölçütü de oluşturulmaktadır. Veri seti Dünya Değerler Araştırması'nın uygulandığı beş dönemi (1990-1994, 1995-1998, 1999-2004, 2005-2009 ve 2010-2014) kapsamakta ve 40 ülkeden oluşan bir kesiti içermektedir. Bulgular, hem genelleştirilmiş hem de kurumsal düzeyde ölçülen güvenin girişimciliği teşvik ettiğini göstermektedir. İncelenen her yaş düzeyinde daha güçlü sivil normlar girişimciliği olumlu yönde etkilerken, örgütsel faaliyetlere katılımın aşırı bütünleşmeye bağlı olarak girişimciliği olumsuz etkilediği görülmektedir. Sonuçlar, sosyal sermayeyi girişimcilikle ilişkilendirmek için çok boyutlu bir sosyal sermaye ölçütüne ihtiyaç duyulduğunu göstermektedir.*

***Anahtar Kelimeler:*** Girişimcilik, sosyal sermaye, güven, pseudo-panel yaklaşımı
***JEL Kodları:*** J24, O43, O50, Z13.



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*The Role of Social Capital in Understanding Entrepreneurship*
*http://dx.doi.org/10.5455/ey.38100*

## I. Introduction

Knowledge and skills, namely human capital, have gained an increasingly central role in the economic success of nations and individuals due to evolving economic and social conditions (OECD, 2011). As a specific form of human capital, the notion of social capital has attracted much attention by economists and others, especially since the publication of Putnam's *Making Democracy Work* (1993). During the last ten years, the concept of social capital has gained attention almost in every field of social science research, and has been used to explain an immense range of phenomena, from political participation to the institutional performance, from productivity to investment behavior of firms, from health to corruption, from the efficiency of public

services to the economic success of countries (Knack and Keefer, 1997; Putnam et al., 1993; La Porta et al., 1997; Guiso et al., 2004; Sarracino and Mikucka, 2017).

One of the less investigated links of social capital with economic growth is entrepreneurship. Entrepreneurship is one of the driving engines of economic growth that gives dynamism and evolving nature of today's economy (Schumpeter, 1934; Dheer, 2017). A review of literature in entrepreneurship suggests that networks in the form of social capital can be one of the key elements for individuals to identify, value and capture opportunities for cultivating new businesses. However, the empirical evidence to support the link between social capital and entrepreneurship still remains ambiguous.

The aim of this paper is to contribute to this strand of literature by evaluating the effects of various types of social capital, including generalized and institutional trust, civic norms, and networks through associational activities, on entrepreneurship. While assessing the effect of social capital on entrepreneurship, we intend to contribute to the literature as follows. First, the empirical analysis is based on cohort panel data derived from the World Values Surveys (WVS) covering a longer time period: 1990-1994, 1995-1998, 1999-2004, 2005-2009 and 2010-2014[3]. Second, we exploit the feature of repeated cross sections to convert the original data from the WVS into a pseudo-panel dataset. This will help us to pursue the same age groups within a country throughout the five surveys and construct group averages of repeated cross sections of individual data. Third, this panel set-up enables us to use a fixed effects estimator that is more reliable than a cross sectional set-up. Finally, we will construct a multidimensional measure of social capital that includes indicators of trust, associational activity and civic norms in order to evaluate its relationship with entrepreneurship.

[3] We use integrated World Values Survey data available from http://www.wvsevsdb.com/wvs/WVSData.jsp

The paper proceeds as follows: Next section presents the conceptual framework behind our analysis reviewing the literature and developing the empirical question. Then we describe our data focusing on the social capital–entrepreneurship link in particular. Section 3 presents empirical strategy and provides the main results. Finally, Section 4 concludes with a discussion of the findings.

## II. Conceptual Framework on Social Capital and Entrepreneurship

Social capital is defined as "an element of human capital that allows members of a certain society to trust one another and to cooperate in the formation of new groups and associations" (Coleman, 1988). The above definition of social capital by Coleman (1988) emphasizes its complementarity with human capital. On the other hand, Putnam et al. (1993) emphasized the role of civic engagement in fostering democracy and social cohesion by defining social capital "as the features of social life – networks, norms, and trust – that enable participants to act together more effectively to pursue shared interests".

A large body of literature dwells upon the measurement of social capital and most available measures of social capital concentrate on trust, social co-operation, and levels of engagement in social or group activities. Trust may be viewed as both a source and an outcome of social capital since it represents a very close proxy for many of the norms, understandings and values that form the basis of social co-operation within groups (OECD, 2011, p. 41). Dakhli and de Clercq (2004) conceptualize trust into generalized and institutional trust. Generalized trust is related to the trust that people have in others in any given society that captures the interpersonal feature of trust. Institutional trust, on the other hand, is related to how much people have trust in institutions or organizations in the given society that assesses the efficiency of the institutions in protecting individuals against any breach of trust (Dakhli and de Clercq, 2004). Different levels of engagement or interaction in social or group activities refers to involvement into active or passive membership in

various types of organizations such as clubs, charitable organizations, and business associations. In addition, social co-operation in the form of civic norms and values refers to informal mechanisms that encourage people in a society to cooperate and to subordinate self-interest against the public good (Knack and Keefer, 1997).

Trust, norms, and networks reduce uncertainties and information asymmetry between parties engaged in transactions and initiate more efficient economic transactions (Kim and Kang, 2014, p. 47). Knack and Keefer (1997) suggest that individuals in higher-trust societies spend less to protect themselves from being exploited in economic transactions. With a similar reasoning, Fukuyama (1995) notes that trust acts as driver of reducing transaction costs by moderating the need for tight monitoring and control mechanisms. Furthermore, Doh and Zolnik (2011) regards trust as a facilitator of information exchange through reducing opportunistic exploitation. In the literature, norms of civic cooperation is also linked with economic outcomes in the same ways as trust. For instance, Knack and Keefer (1997) argues that civic norms effectively constrain opportunism, and hence the costs of monitoring and enforcing contracts are likely to be lower promoting productive investment. Regarding the associational activity, the benefits of social networks are reaped through accessing multiple sources for information, financial funding, and political support, among other desirable resources (Dakhli and de Celercq, 2004).

The link between trust and economic growth may first be highlighted by Arrow (1972) arguing that much of the economic backwardness can be explained by the lack of mutual confidence within every commercial transaction (Knack and Keefer, 1997, p. 1252). Over many years, analysis of the link between trust and growth has been enhanced through the use of international surveys that started with the seminal work of Knack and Keefer (1997). A large body of literature confirms the findings of Knack and Keefer (1997) on the positive effect of social capital on economic growth[4] (Algan and Cahuc, 2010). As different forms of social capital reinforce each other in

[4] For a detailed survey, see Westlund and Adam (2010).

coordinating activities for mutual benefits, they are conducive to economic growth through positive externalities.

However, the empirical strategies to identify the channels in which social capital may affect economic growth have not yet fully elaborated. La Porta et al. (1997) and Tabellini (2010) suggested the quality of institutions as one of the channels. Another important link is through investment that increases with the confidence of investors in the enforcement of contracts (Schneider et al., 2000; Peiro-Palomino and Tortosa-Ausina, 2015). Other channels including education (Papagapitos and Riley, 2009), financial development (Guiso et al., 2004), productivity through economic-judicial institutions (Bjornskov and Meon, 2015) and innovation (Dakhli and de Celercq, 2004; Akçomak and ter Weel, 2009; Doh and Acs, 2010; Akçomak and Müller-Zick, 2015) are also suggested.

Despite the variety of studies exploring the link between social capital and economic growth, little attention has been paid to entrepreneurship as an alternative channel. Entrepreneurship is one of the driving engines of economic growth through identifying, valuing and capturing opportunities that gives dynamism and evolving nature of today's economy (Schumpeter, 1934; Dheer, 2017). Many studies have demonstrated that social networks are important during the establishment, development, and growth of new and young businesses (Welter and Smallbone, 2006, p. 467). One of the major problems in promoting entrepreneurship is its associated risk in the effort to make investment. This risk can be reduced by complementary effect of strong ties through personal networks in order to mobilize resources. Social capital supports network relations that play a crucial role in recognizing opportunities, fostering business creation, mobilizing complementary resources, obtaining other forms of assistance, and establishing viable business relations (Welter, 2012, p. 197). High-trust environments foster enterprise growth and productive entrepreneurship. Furthermore, trust and social norms, reflected in public perception, reduce the transaction costs through providing information and a means to enforce contracts,

thereby diminishing the possibility of pursuing individual interests (Welter and Smallbone, 2006, p. 468). Thus, by reducing the complexity of business operations, trust facilitates an environment where entrepreneurs can start and expand new businesses more easily[5].

Even though there is a substantial literature evaluating the impact of social capital on economic growth, less is known, however, about the effects of social capital on entrepreneurship. Only a few empirical studies have investigated the relationship between social capital and entrepreneurship. These studies do not agree on how to interpret the link between social capital and entrepreneurship. Research by Giannetti and Simonov (2004), Bauernschuster et al. (2010), Doh and Zolnik (2011) and Kim and Kang (2014) contend that social capital in form of cultural values, associational membership and trust, are important determinants of an individual's likelihood to become an entrepreneur. Some studies acknowledge the dark sides of trust and associational activities in the form of relational inertia, blind trust and over-trusting behavior (see, Welter and Smallbone, 2011). These studies focus on the negative effects of social capital through exclusion of others, restrictions on individual freedoms, restrictions on developing new business partners beyond a circle of trust, lack of controls due to over-reliance on trust (Portes, 1998; Zahra et al., 2006; Goel and Karri, 2006). Thus, these studies draw attention to possible negative effects of trust on entrepreneurship, acknowledging the need for evaluating its complex role in entrepreneurship and the different contexts in which it occurs.

To sum up, this study is designed to address the relationship between entrepreneurship and social capital. We will use the most cited measures of social capital that are generalized and institutional trust, civic norms, and levels of engagement in social or group activities for this purpose. Moreover, we will construct an index of social capital made up from trust and associational activity in addition to civic norms, following Doh and Zolnik (2011). We will take a step further and

[5] For a detailed literature survey on the relationship between trust and entrepreneurship, see Welter (2012).

evaluate the effects of various types of social capital including the social capital index by employing a pseudo-panel approach instead of a cross-country one, following Kim and Kang (2014). Last but not least, we hope to fill the gap in the literature on social capital by combining these two novelties and going beyond their contribution.

## III. Data and Descriptive Findings

The World Values Surveys (WVS) contains survey data on thousands of respondents from various countries that is conducted in six waves. The first wave has been conducted for the period 1981–1984 and the last wave was conducted for 2010–2014 period. The numbers of countries included in the WVS are 10 in 1981–1984 wave[6], 18 in 1990–1994 wave, 54 in 1995–1998 wave, 40 in 1999–2004 wave, 57 in 2005–2009 wave and 60 in 2010–2014 wave[7]. The raw data are adjusted by population weights to avoid overrepresentation of some countries. The survey asks respondents about their approach to moral and social issues, the extent of their trust in others and in various institutions, as well as the extent of their civic norms.

Numerous measures of social capital have been used in the literature. However, there is a growing consensus in the literature that there are three different components of social capital. These three components are trust, social networks and civic norms. The limitations of failing to use these components together and empirical testing for their correlations suggests that it is important to incorporate these three core dimensions of social capital[8]. In order to understand how social capital relates to entrepreneurship, we first measure every single component of social capital alone and then construct a social capital index that incorporates all three dimensions.

[6] The list countries included in this wave are Argentina, Australia, Finland, Hungary, Japan, Mexico, South Africa, Sweden, and United States.

[7] The list of countries included in this wave are Algeria, Azerbaijan, Argentina, Australia, Bahrain, Armenia, Brazil, Belarus, Chile, China, Taiwan, Colombia, Cyprus, Ecuador, Estonia, Georgia, Palestine, Germany, Ghana, Hong Kong, India, Iraq, Japan, Kazakhstan, Jordan, South Korea, Kuwait, Kyrgyzstan, Lebanon, Libya, Malaysia, Mexico, Morocco, Netherlands, New Zealand, Nigeria, Pakistan, Peru, Philippines, Poland, Qatar, Romania, Russia, Rwanda, Singapore, Slovenia, South Africa, Zimbabwe, Spain, Sweden, Thailand, Trinidad and Tobago, Tunisia, Turkey, Ukraine, Egypt, United States, Uruguay, Uzbekistan and Yemen.

[8] Doh and Zolnik (2011) summarizes the methodologies used to develop social capital measures using World Values Survey data.

Following the tradition in the literature, we measure social capital by dividing it into three aspects: trust, social networks and civic norms. For trust, we include two measures namely, generalized trust and institutional trust. Generalized trust, capturing how much people trust each other, is based on the following question in the WVS, respectively: "*Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?*". To measure generalized trust, respondents were asked to indicate whether "most people can be trusted or you can't be too careful" (0 indicates "you can't be too careful" and 1 "most people can be trusted"). Our indicator of generalized trust is the percentage of respondents in each cohort within the country who reply, "most people can be trusted" out of the total number of respondents.

Second type of trust, namely institutional trust, is related to how much people trust in organizations and institutions. The index of institutional trust is based on answers to question concerning *how much confidence respondents have in a variety of organizations or institutions, such as the armed forces, the press, labor unions, the police, parliament and the civil service*. To measure trust in various institutions, we aggregate the percentage of respondents who reply "a great deal of confidence" and "quite a lot of confidence" out of total number of respondents based on the above question. The values are averaged over the six items for each age cohort to construct an institutional trust score.

For civic norms, the replies to the following questions are used to construct the proxy on norms of civic behavior:

"For each of the following statements, tell me whether you think it can always be justified, never be justified, or something in between, using this card

1. *Claiming government benefits to which you are not entitled*
2. *Avoiding paying the fare in public transport*
3. *Cheating on taxes if you have the chance*

4. *Someone accepting a bribe in the course of their duties*"

The respondents can choose from a range of scale representing 1(never justifiable) to 10 (always justifiable) for all four items. For the purpose of our analysis, each of these variables has been reversed so that higher values represent stronger norms of civic. In other words, we assign 10 and 1 points to the answers "never justified" and "always justified", respectively, and 2–9 for in between responses according to the extent of justification. Our indicator of civic norm is the average scale of respondents in each cohort within the country who reply that any form of "claiming government benefits to which you are not entitled", "avoiding a fair on public transport", "cheating on taxes", "accepting a bribe", can be acceptable out of 1 to 10. The values are averaged over the four items as a scale for each age cohort to measure the "civic norms" dimension of social capital.

We measure the extent of social networks as associational activity that is the active membership of various groups and organizations, including religious organizations, organizations for education, arts, music or cultural activities, labor unions, political parties, human rights organizations, environmental, ecological and animal rights organizations, professional organizations and sports or recreational organizations. A dichotomous variable is set to 1 if the respondent has an active membership and 0 otherwise. The indicator of associational activity is the percentage of respondents in each cohort within the country who reply that they have membership to each one of organizations, out of the total number of respondents. The values are averaged over eights types of organizational membership to create associational activity for each age cohort.

Applying the appropriate weighting scheme is important in order to build a social capital index. In the empirical literature, there is an ongoing debate about the fact that weighting schemes should be used in order to create social capital index although it is usually arbitrary choice to decide which element is more crucial than others (Doh and

Zolnik, 2011, p. 4968). As equal weighting makes it relatively easy for researchers to create an index, it is usually chosen by researchers to avoid complexity in interpretation. In line with Doh and Zolnik (2011), we used unweighted social capital index that was created using three dimensions of social capital because there is no well-established weighting method in the area of social capital research. We first construct a trust indicator by using the mean score on generalized and institutional trust for all respondents in each age cohort. In order to create the social capital index used in the analysis, first we replaced the scores on trust, associational activity and civic norms by a 100–point scale. Then, the scores on trust, associational activity and civic norms are averaged to construct social capital index. As our focus is on the relationship between social capital and entrepreneurship using different social capital measures at age based cohorts, determining the appropriate weighting scheme is left to a further study[9]. Moreover, the impact of different components of social capital index is also evaluated through empirical analysis in the later sections.

Another problem is to measure the level of entrepreneurial activity due to the fact that the appropriate definition of entrepreneurship should be compatible with uncertainty bearing, profit opportunity seeking, innovation producing and ambition emphasizing side of new business creating individuals (Kodila-Tedika and Agbor, 2016; Acs and Szerb, 2009; Doh and Zolnik, 2011; OECD, 2011). As our study evaluates the relationship between entrepreneurial activity and social capital at the individual level based on age cohorts, aggregate level measures of entrepreneurship such as self-employment rates and the Global Entrepreneurship Monitor (GEM) cannot be used in this study. Although the previous literature argues that self-employment is not the best indicator of entrepreneurship, considering the availability of data at the individual level through World Values Survey, we will use the information on employment status in detail, that is whether the respondent is full-time employed, part-time

[9] In the literature, there are also studies that perform factor analysis in order to see whether grouping social capital index factors into three dimensions is proper or not. The factor analysis conducted by Doh and Zolnik (2011), Beugelsdijk and Van Schaik (2005), Akçomak and Müller-Zick (2015) also suggests that using three above-mentioned constructs of social capital index is reliable.

employed, or self-employed or not. We measure the proportion of respondents who reply as self-employed against the total number of respondents and use it as a proxy for entrepreneurship in this study.

In order to evaluate the link between social capital in form of trust, associational activity and civic norms with entrepreneurship that is constructed by being self-employed, we also included additional two variables to control for education and income level of the respondent. Interviewees are asked about their education status in detail, that is, whether they completed, for example, elementary education, secondary education, intermediate vocational qualification, university without degree (lower-level tertiary certificate) and university with degree (upper-level tertiary certificate). The indicator of university degree is the percentage of respondents in each age cohort within the country who reply that they hold a university degree, out of the total number of respondents. Interviewees are also asked about their income level on a subjective scale that varies 10 and 1 points between the answers “highest step” and “lower step”, respectively, and 2–9 for in between responses according to the extent of reported income level. Our indicator of reported income level is the average scale of respondents in each age cohort within the country.

Table 1 presents the descriptive statistics of social capital indicators according to different employment status using the data at the individual level. Our indicator of employed is the average of the responses of employed individuals excluding the entrepreneurs that are the average of the responses of self-employed individuals. The average of respondents who reply that most people can be trusted as a share of total number of respondents is 25.5%. The average number of respondents that trust in organizations and institutions is higher than respondents that trust in others (45.7%). The level of entrepreneurs’ trust in others and institutions are higher compared to that of employed and unemployed respondents. Moreover, entrepreneurs are more likely to be involved in associational activities than those who are employed. The surprising outcome is that entrepreneurs are less likely to support civic norms than the other two

groups. This may indicate that entrepreneurial activities are less sensitive to the percentage of people disapproving of tax evasion, cheating government benefits and fares and bribery in the total population depending on their perception of ease of doing business.

**Table 1** Social Capital Indicators According to Employment Status (%)

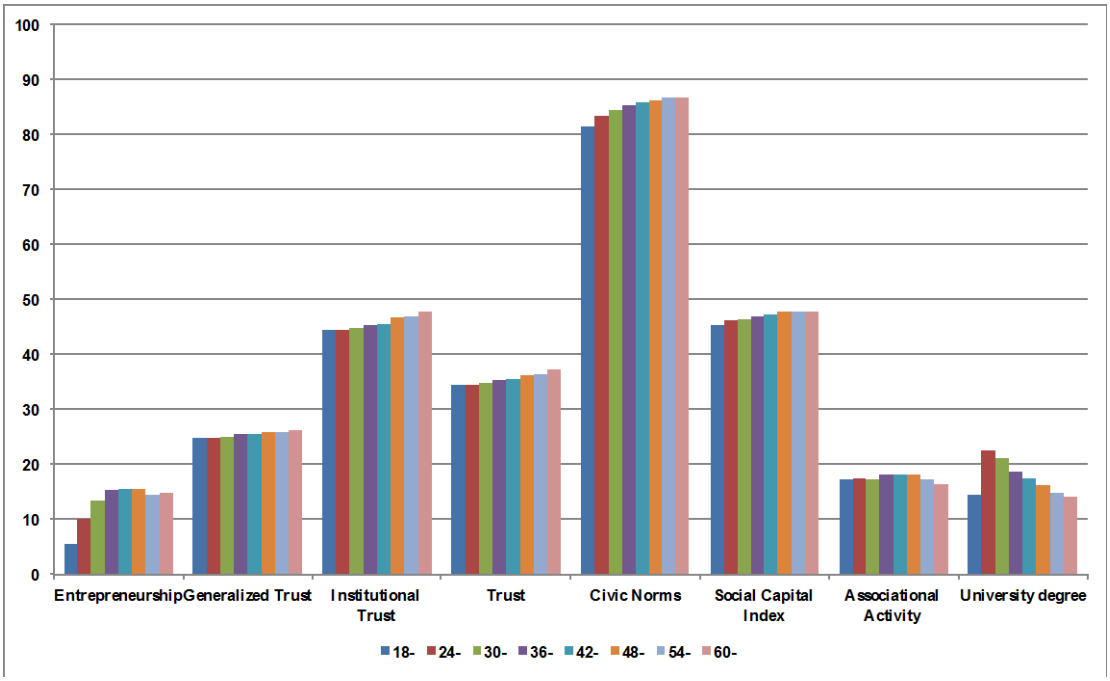
| | *(1) Unemployed (st.dev)* | *(2) Employed (st.dev)* | *(3) Entrepreneurs (st.dev)* | *Mean difference (3)–(2) [p-value]* |
|---|---|---|---|---|
| Generalized Trust | 24.2 | 27.1 | 30 | 2.9*** |
| | (14.8) | (16.2) | (21.2) | [0.00] |
| Institutional Trust | 45.4 | 46.7 | 49 | 2.3*** |
| | (14.7) | 15 | (18.6) | [0.00] |
| Trust | 34.9 | 37.4 | 41.5 | 4.1*** |
| | (12.4) | (13.6) | (18.6) | [0.00] |
| Civic Norms | 84.4 | 85.3 | 84.1 | -1.2*** |
| | (8.58) | (8.4) | (11.2) | [0.00] |
| Associational Activity | 16.6 | 21.3 | 27.5 | 6.2*** |
| | (12.5) | (14.8) | (18.8) | [0.00] |
| Social Capital Index | 46.4 | 49 | 52.7 | 3.7*** |
| | (9.61) | (10.1) | (13.5) | [0.00] |
| University degree | 13.6 | 24.5 | 21.9 | -2.6*** |
| | (11.9) | (14.8) | (18.2) | [0.00] |

*Note:* *** Significance at 1% confidence interval.
*Source:* Authors' calculations based on World Values Surveys (1990–2014) data.

We construct a pseudo-panel dataset from the World Values Survey by identifying the individuals belonging to the same age group within a country defined in six-year intervals. As the number of countries in 1981–1984 wave is small, we used the last five surveys starting from 1990–1994 wave and ending with 2010–2014 wave. We average the values of the responses of the individuals within the age cohort and track the average values over the five surveys. For example, a group of individuals belonging to the 18–23 age cohort in a county in the 1990 survey must be aged 23–28 in 1995, 28–33 in 2000, 33–38 in 2005, and 38 to 43 in 2010 when the subsequent waves of the survey was carried out. The averages of the variables in each age cohort are obtained from these five survey data and treated as a unit in the panel data. In our sample, we include individuals aged between 18 and 65, considering the typical ages

of becoming entrepreneurs that is discussed in the previous studies[10]. Moreover, we use the mean values of the variables within the cohort at the country level to capture the effects of those variables on entrepreneurship.

**Figure 1** Social Capital Indicators According to Age Cohorts



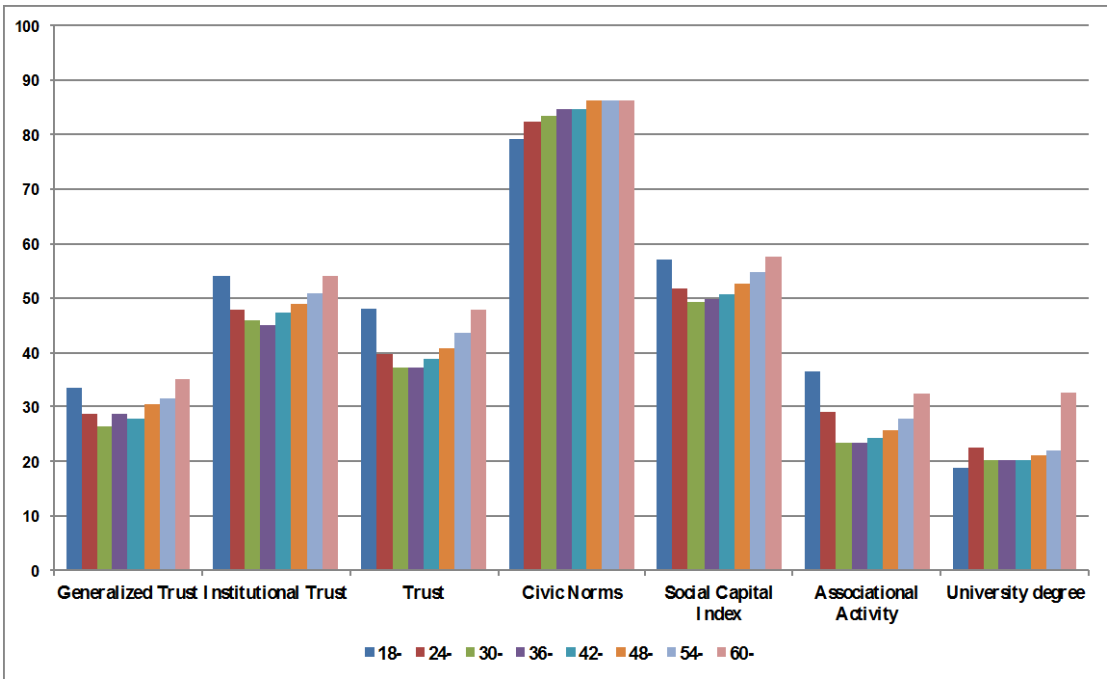

*Source:* Authors' calculations based on World Values Surveys (1990–2014) data.

Figure 1 illustrates the age cohort variation of various social capital indicators and entrepreneurship for all of the individuals included in our sample. The percentage of entrepreneurship increases with age and reaches the maximum of 16% at the age cohort of 42–47. Trust in others does not change with age but trust in institutions and organizations increases with age. Trust indicator that is measured by the average of generalized and institutional trust is lower when the respondents are aged between 18 and 23 but higher as they get older (37% for the 60–65 age cohort). The main difference between age cohorts is observed in the percentage of respondents

[10] For a detailed survey of 14 pillars of entrepreneurship that are used to develop *The Global Entrepreneurship and Development Index* and a discussion on the choice of age interval of 18–64 years for entrepreneurship that is used in *The Global Entrepreneurship Monitor*, see Acs and Szerb (2009).

supporting civic norms. As the respondents get older, the percentage of respondents that is likely to support civic norms increases noticeably and reaches to 87%. Moreover, social capital index is also positively correlated with age. Both the percentage of respondents participating associational activity and the respondents holding university degree decreases with older age cohorts. The percentage of respondents that participate associational activity and holding university degree begins to decrease at age 30.

**Figure 2** Social Capital Indicators According to Age Cohorts for Self-employed

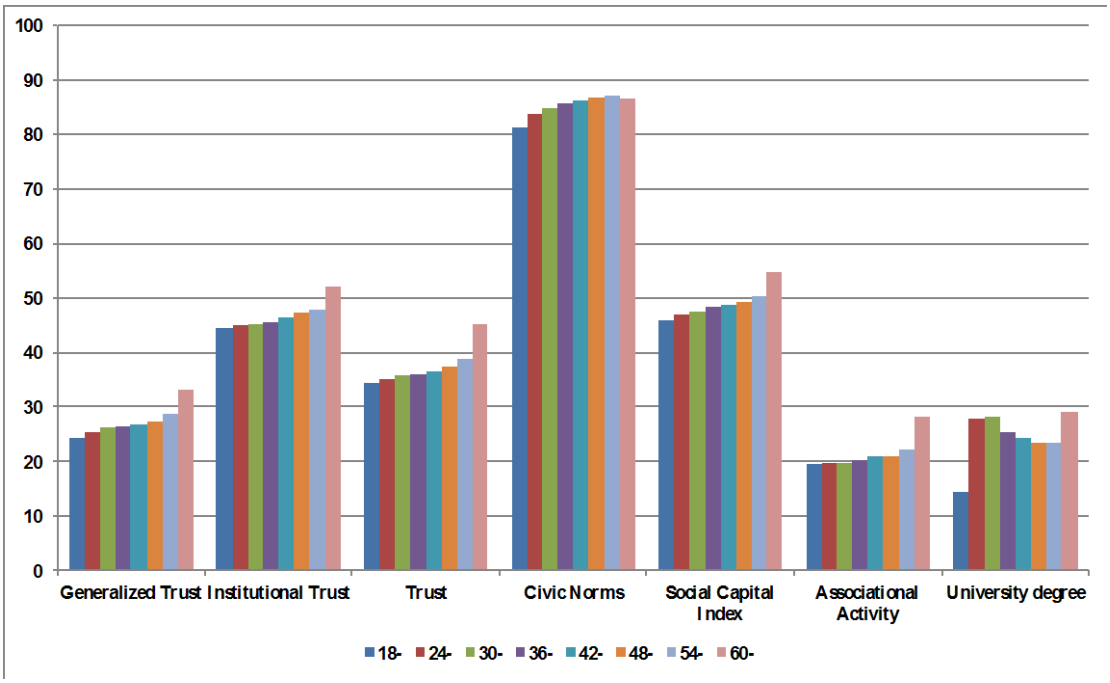



*Source:* Authors' calculations based on World Values Surveys (1990–2014) data.

Figure 2 to Figure 4 illustrates the age cohort variation of social capital indicators according to employment status. The average number of self-employed respondents, namely entrepreneurs that trust in others is high at age 18 but then begins to decrease at age 24 and later increases with age. This is also true for entrepreneurs that trust in organizations and institutions. Therefore, generalized and institutional trusts of self-employed respondents both have a U-shaped pattern with age cohorts. Moreover, the

average number of entrepreneurs that participate in associational activity also increases with age after a threshold age of 36. As self-employed respondents get older, the percentage of respondents that is likely to support civic norms increases noticeably and reaches to 86% at age of 60.

**Figure 3** Social Capital Indicators According to Age Cohorts for Employed

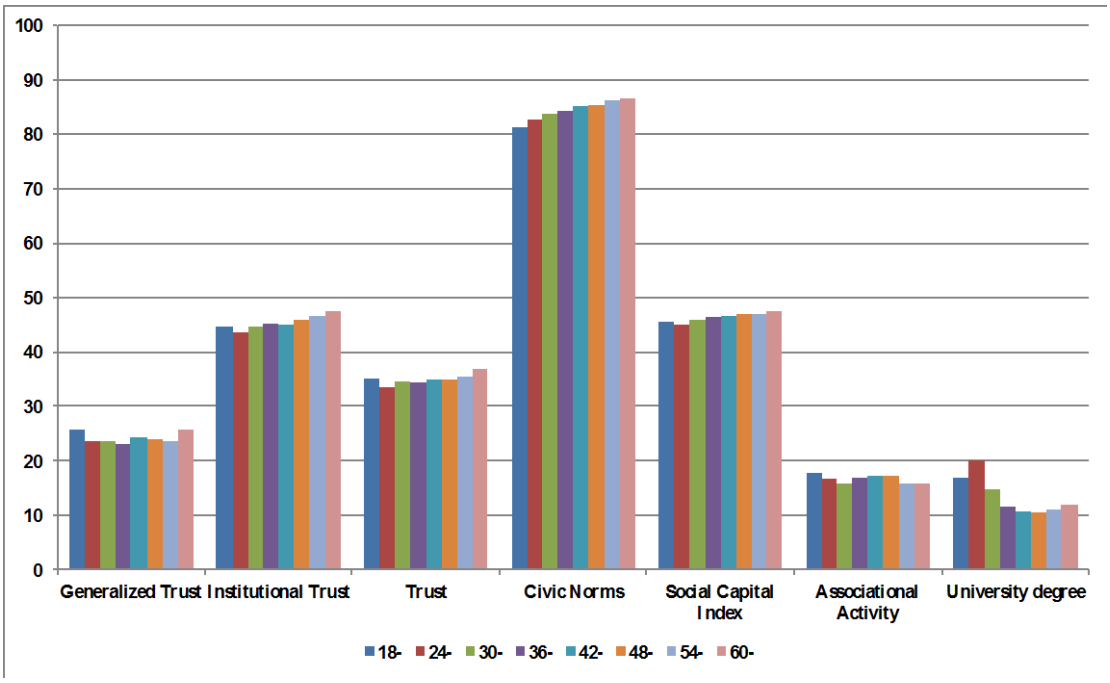



*Source:* Authors' calculations based on World Values Surveys (1990–2014) data.

Although entrepreneurs appear to trust more in others and institutions and to participate more in associations at the later stages of their life span, the level of entrepreneurs' trust in others, trust in institutions and participation in associational activities are higher compared to that of employed and unemployed respondents. Different than entrepreneurs, the average number of employed respondents those trust in others, those trust in institutions, those participate in associational activity and those support civic norms increases with age. The respondents, regardless of their employment status, is more likely to disapprove tax evasion, cheating benefits and fares and bribery, as they get older. Additionally, the average number of respondents

that participate in associations and those holding university degree decreases through age cohorts for unemployed respondents.

**Figure 4** Social Capital Indicators According to Age Cohorts for Unemployed




*Source:* Authors' calculations based on World Values Surveys (1990–2014) data.

## IV. Empirical Strategy and Results

In order to investigate the extent to which social capital accounts for differences in entrepreneurial activities, we use pseudo-panel data in our estimation. The data is derived from The World Values Surveys (WVS) and includes five waves covering five periods: 1990–1994 wave, 1995–1998 wave, 1999–2004 wave, 2005–2009 wave and 2010–2014 wave. Even if the WVS is a large-scale repeated cross-sectional survey, samples for these surveys are drawn new each year so that individuals cannot be traced over time. Hence, we will use the repeated cross sections feature of the data to build "cohorts" so that we can have the possibility of tracking individuals through "cohorts". This method of building a pseudo-panel dataset is discussed extensively in

Deaton (1985). In pseudo-panel analyses, individuals are grouped according to criteria that do not change from one survey to another (a set of characteristics that are fixed over time) and this involves defining cohorts using time-constant individual characteristics, such as birth year, gender, age, ethnicity and education (Gardes et al., 2005) By this way, longitudinal analysis can be undertaken quite easily using the cohort as the units of analysis.

The literature on pseudo-panel data analysis is rapidly growing since Deaton (1985) suggested using panel methods on independent repeated cross-sectional data (Guillerm, 2017). As the principle of pseudo-panels is to follow cohorts rather than individuals, the observed variables are replaced by the means of these variables within each cohort. By this way, empirical studies claim that pseudo-panel data estimations lead to smaller biases than those cross-section or true panel data through reducing measurement errors (Deaton, 1985; Kim and Kang, 2014; Gardes et al., 2005; Guillerm, 2017).

The second advantage of using pseudo-panel data at the age-based cohort is that it reduces bias due to individuals' response errors (Deaton, 1985; Florez and Perales, 2016). In this regard, the averages of the subjective variables, such as trust and civic norms, within the age-based cohort of a specific community members can deviate less from the extent of the perception of the individual genuinely seizes (Kim and Kang, 2014, p. 52). Thus, shared belief by age-based cohort within a country may influence one's decision to become an entrepreneur.

The main principle of pseudo-panels is to construct cohorts that are defined by time invariant characteristics such as year of birth or age (Verbeek, 2008). The subgroups in a pseudo-panel should be defined with a trade-off between the number and size of cohorts so that large enough cohorts can be generated without losing too much variability. In practice, even if using a small number of cohorts maximizes cohort size, this may lead to inefficient estimation due to larger within-cohort heterogeneity.

Moreover, using larger cohorts decrease the average number of individuals per subgroup, resulting in less precise estimates of the subgroup means (Meng et al., 2014; Florez and Perales, 2016; Guillerm, 2017).

Following Verbeek and Nijman (1993) and many others, we construct a pseudo-panel with 240 subgroups based on survey installment (5 waves), country (n=30) and respondents' date of birth (born between year 1925–1930 and subsequent 6 year intervals until 1989–1995) (8 cohorts). The resulting average number of individuals per subgroup is 90. As some countries did not participate in some WVS installments or had missing data on employment status variables (namely, being self-employed), the average number of individuals within the cell varies between 85 and 100. These repeated numbers of observations are acceptable when compared to the optimal cohort size of 100 individuals recommended by Verbeek and Nijman (1993).

We define our baseline empirical specification as follows:

$$\mathrm{Entrep}_{ijt} = \alpha + \beta(\mathrm{gentrust})_{ijt} + \gamma(\mathrm{instrust})_{ijt} + \delta(\mathrm{assoc})_{ijt} + \theta(\mathrm{cvnorms})_{ijt} + \varphi(\mathrm{unidegree})_{ijt} + \phi(\mathrm{income})_{ijt} + \varepsilon_{ijt} \quad (1)$$

*Entrep* represents the percentage of entrepreneurs out of the number of individuals self-employed in cohort *i* in country *j* in year *t*. *gentrust* is the variable related to the extent of trust in others in cohort *i* in country *j* in year *t* whereas *instrust* is the variable related to the extent of trust in institutions. *assoc* is the average number of respondents that participate in associational activity in a given cohort. *cvnorms* is the vectors of the variables related to social norms in cohort *i* in year *j*. This includes the average scale of disapproving of tax evasion, cheating government benefits and fares and bribery in the total population. There are also demographic variables such as *income* that refers to average scale of reported income level (in logarithms) to measure the income effect on entrepreneurship and *unidegree* that of university graduates (education effect).

In order to check for robustness, we further estimate the baseline specification by replacing generalized and institutional trust with an index of *trust* that is constructed by the averages of generalized and institutional trust.

The second estimation equation takes the following form:

$$\text{Entrep}_{ijt} = \alpha + \mu(\text{trust})_{ijt} + \delta(\text{assoc})_{ijt} + \theta(\text{cvnorms})_{ijt} + \varphi(\text{unidegree})_{ijt} + \phi(\text{income})_{ijt} + \varepsilon_{ijt} \quad (2)$$

A third specification is also estimated by only using *social capital index* that is been constructed by averages of trust, associational activity and civic norms. Hence, our third empirical specification is as follows:

$$\text{Entrep}_{ijt} = \alpha + \sigma(\text{scindex})_{ijt} + \varphi(\text{unidegree})_{ijt} + \phi(\text{income})_{ijt} + \varepsilon_{ijt} \quad (3)$$

We also include Gross Domestic Product (GDP) per capita (PPP US$ in 2011) of each country in logarithms in each specifications to control the effect of the stage of economic development on entrepreneurship. Moreover, wave dummies were included to control for the survey trend and any potentially omitted independent variables that change linearly over time.

In the literature, when the cohort selection criterion has the qualities required to consider model (1) as a fixed effects model, the parameters are generally estimated based on standard panel data estimation techniques. Verbeek and Vella (2005) argued that fixed effects model is the natural choice for pseudo-panel data when subgroup averages are based on a large number of individuals. We used the Hausman test to check whether the underlying correlation structure favored the assumption of either fixed effects or random effects. The initial hypothesis that the individual level effects

are adequately modeled by a random effects model is rejected and we conclude that the fixed effects model is more appropriate for modeling our data[11].

Another issue discussed in the literature is to handle heteroscedasticity that is caused by the aggregation inherent in pseudo-panel data (Gardes et al., 2005). Guillerm (2017) argues that cohorts vary in size from one to the other may result in heteroscedasticity in model. In the presence of heteroscedasticity, the estimator will be unbiased but the estimator of its precision will be biased and the statistical tests will therefore be invalid. The efficient within estimator can be obtained by weighting the observations by the cohort's size. We used a modified Wald statistic for group-wise heteroscedasticity in the residuals of a fixed effect regression model, following Greene (2012)[12]. As the null hypothesis is homoscedasticity (or constant variance), we reject the null and conclude heteroscedasticity. Thus, we use heteroscedasticity-robust standard errors (also known as Huber/White or sandwich estimators).

Table 2 presents the estimates of the impact of social capital on entrepreneurial activity at the cohort level using three specifications: Model 1is based on decomposed version of trust into generalized and institutional trust; Model 2 is based on integrated version of two different trust related indicators into one trust index and Model 3 is based on social capital index incorporating trust, associational activity and civic norms into one index. All diagnostic tests for fixed effect estimations suggest no violations of serial correlation of the residuals.

The results suggest that trust indicators are consistently significant in determining the percentage of entrepreneurial activities. The number of entrepreneurs in a cohort within a country increases as the level of general and institutional trust of the cohort increases. Disapproving "avoiding a fair on public transport" and "cheating on taxes"

[11] The Hausman test's null hypothesis, that the random effect estimator is consistent, is rejected with chi2(10) = (b–B)'[(V_b–V_B)^(-1)](b–B)= 177.59 with Prob>chi2 = 0.000.

[12] A test for heteroskedasticiy is available for the fixed effects model using the command *xttest3* in Stata. This is a user-written program. *xttest3* tests the hypothesis that sigma^2(i)==sigma for i=1,N_g, where N_g is the number of cross-sectional units. The resulting test statistic is distributed Chi-squared (N_g) under the null hypothesis of homoscedasticity. For a detailed discussion, see Baum (2001).

as civic norms are not significant in Model 1. However, the number of entrepreneurs in a cohort decreases, as disapproving "cheating on government benefits" becomes stronger norms of civic. On the contrary, the number of entrepreneurs in a cohort rises with an increase in the level of disapproving bribery. Even if corruption through bribery and favoritism is negatively related with economic growth, there is an ongoing debate about its consequences for the creation of new business[13]. Some studies suggested that corrupt practices, such as government benefits incurred during the process of entrepreneurship, may sometimes facilitate the process of starting business through eliminating time constraint and minimizing the impact of lengthy administrative procedure (Dheer, 2017). Thus, entrepreneurs may evaluate the benefits of socially normalized corruption against the cost of not-realizing their new ideas depending on the ease of doing business.

We find that associational activities are negatively related with entrepreneurship. The previous literature suggests that joining various types of organizations and groups increase embeddedness of entrepreneurs in social networks (Coleman, 1988; Putnam et al., 1993). However, Olson (1982) argues that too high level of associational activity can also have a negative effect because of over-embeddedness. High cohesive networks may restrict the inflow of new ideas and hence individual freedoms through lock-in effect. Knack and Keefer (1997) concluded that the harmful effects of groups as rent-seeking organizations theorized by Olson (1982) offsets positive effects of groups pointed out by Putnam et al. (1993) on output growth and investment. In a recent study, Kim and Kang (2014) also found that Olson-type association to membership in political parties has a negative impact on entrepreneurship.

[13] For a detailed discussion, see Dheer (2017).

**Table 2** The Estimation Results for The Impact of Social Capital on Entrepreneurship

| *Dependent variable: entrepreneurship* | | | | | | |
|---|---|---|---|---|---|---|
| *Variables* | *Model (1)* | | *Model (2)* | | *Model (3)* | |
| gentrust | 0.052* | 0.048* | | | | |
| | (0.029) | (0.029) | | | | |
| instrust | 0.106*** | 0.073** | | | | |
| | (0.034) | (0.034) | | | | |
| trust | | | 0.105*** | 0.086*** | | |
| | | | (0.028) | (0.026) | | |
| jgov | -0.009** | -0.009** | -0.008** | -0.008** | | |
| | (0.004) | (0.004) | (0.004) | (0.004) | | |
| jfare | -0.008 | -0.005 | -0.009* | -0.005 | | |
| | (0.005) | (0.005) | (0.005) | (0.005) | | |
| jtax | -0.005 | -0.008 | 0.003 | -0.0002 | | |
| | (0.007) | (0.008) | (0.007) | (0.007) | | |
| jbribe | 0.014** | 0.017*** | 0.013** | 0.014** | | |
| | (0.006) | (0.006) | (0.006) | (0.006) | | |
| assoc | -0.056** | -0.040* | -0.041* | -0.033* | | |
| | (0.022) | (0.021) | (0.021) | (0.020) | | |
| scindex | | | | | 0.038* | 0.039** |
| | | | | | (0.021) | (0.022) |
| unidegree | -0.124*** | -0.115*** | -0.134*** | -0.121*** | -0.118*** | -0.113*** |
| | (0.028) | (0.027) | (0.028) | (0.027) | (0.025) | (0.024) |
| lincome | -0.037*** | -0.043*** | -0.021** | -0.027*** | 0.005 | -0.001 |
| | (0.010) | (0.010) | (0.010) | (0.010) | (0.009) | (0.009) |
| lgdp | | -0.017* | | -0.038*** | | -0.032*** |
| | | (0.009) | | (0.010) | | (0.008) |
| constant | 0.158*** | 0.304*** | 0.112*** | 0.442*** | 0.113*** | 0.403*** |
| | (0.030) | (0.086) | (0.031) | (0.088) | (0.018) | (0.074) |
| Wave dummies | YES | YES | YES | YES | YES | YES |
| Wooldridge test for autocorrelation | 0.862 | 1.298 | 1.591 | 1.298 | 0.258 | 0.114 |
| Prob>F | 0.358 | 0.260 | 0.212 | 0.260 | 0.613 | 0.736 |
| R-squared | 0.101 | 0.107 | 0.083 | 0.100 | 0.043 | 0.050 |
| Number of observations | 1274 | 1228 | 1307 | 1261 | 1483 | 1437 |

*Note:* Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

With regard to control variables, higher education and higher income level leads to less entrepreneurial activity. These results are not in line with previous studies that indicate higher levels of educational attainment to be associated with higher levels of entrepreneurial activity (Acs, 2010). Doh and Zolnik (2011) also found that university graduation is negatively related with entrepreneurship. They propose two justifications for this outcome in line with previous empirical findings. The first one

states that education makes individuals more risk averse due to greater insight. The second one underlies the importance of Baumol (1990)'s definition of entrepreneurship and states that if there is a lot of unproductive entrepreneurship as measured by self-employment then the negative relationship between education and entrepreneurship should hold (Doh and Zolnik, 2011, p. 4969).

The finding that higher level of income does not always have a positive association with entrepreneurship also contradicts with previous studies. One explanation for this outcome is that "sufficiently low income might constrain some individuals who would be entrepreneurs from realizing their dreams while also potentially motivate some others into entrepreneurial activity as a means of breaking out of poverty" (Kodila-Tedika and Agbor, 2016). Our results indicate that the number of entrepreneurs in a cohort within a country decreases as the number of individuals reporting higher level of income increases. Additionally, controlling for country specific factors do not change the impact and direction of trust related variables on entrepreneurship.

The relationship between trust and entrepreneurship remains intact when the model is modified by replacing generalized and institutional trust with a unified index of trust. The results in Model 2 also show positive relationship of disapproving of bribery, negative relationship of disapproving government benefits and negative relationship of associational activity with entrepreneurial activity. Model 3 is designed to empirically test the relationship between social capital and entrepreneurship by introducing a theoretically justified index of social capital that bring together all dimensions of the concept. The impact of social capital index on entrepreneurship is positive and statistically significant at the 10% level. Thus, higher level of social capital is positively related to a higher level of entrepreneurship.

## V. Conclusions and Discussion

This paper investigates the effects of various indicators of social capital, including generalized and institutional trust, civic norms, and networks, on entrepreneurship.

Our empirical analysis is based on cohort panel data derived from the World Values Surveys (WVS) covering a longer time period: 1990-1994, 1995-1998, 1999-2004, 2005-2009 and 2010-2014. Second, we exploit the feature of repeated cross sections to pursue the same age groups within a country throughout the five surveys and construct group averages of repeated cross sections of individual data. Following Doh and Zonik (2011), we construct a multidimensional measure of social capital that includes indicators of trust, associational activity and civic norms in order to evaluate its complex relationship with entrepreneurship.

The findings show that trust is an important determinant of entrepreneurial activity. Both generalized and institutional trust increases the percentage of entrepreneurs in a given society. Our results obtained by using the panel data approach reinforces the previous finding that social capital, particularly trust in any form, accounts for entrepreneurship and possibly for economic growth. Evidence shows that social norms represented by the extent of approving dishonesty affect entrepreneurship negatively. On one hand, entrepreneurs may evaluate disapproving bribery as a greasing effect on the creation of new business ventures. But on the other hand, they tolerate cheating on government benefits depending on the extent to which practices are socially normalized on the ease of doing business. We find that associational activities are negatively related with entrepreneurship. Our findings on associational activity is also consistent with the previous empirical findings suggesting that joining various types of organizations and groups can have negative effects on entrepreneurship because of over-embeddedness.

The results in this paper suggest that the overall level of social capital, consisting of (generalized and institutional) trust, and norms of civic behavior across all individuals within an age cohort, has a positive influence on overall entrepreneurial activity. The social capital index incorporating three core dimensions of social capital is empirically justified through acknowledging the multidimensional nature of the

concept. Thus, social capital, not only in terms of generalized and institutional trust but also as a composite index, is conducive to becoming entrepreneur.

Raising trust, honesty, and transparency reduces the uncertainty and risk associated with businesses environment and encourages people to become entrepreneurs. Any policy fostering social capital would also be promoting entrepreneurship. Overall, the results of this study indicate that government policies designed to create and accumulate social capital should seek to increase trust in governmental institutions, foster social networks and raise civic norms. One channel that social capital can be tied to entrepreneurial activity is through professional and social networks. The government should enhance participation in networks so that the dark sides of social capital should be avoided in the form of over-embeddedness, over-reliance and lock-in. The policy makers should exploit the potential of intercultural communication and trust by providing people with more opportunities to participate in various social networks so that entrepreneurs can access useful information for their economic activities (OECD, 2011).

Another channel that social capital can be tied to entrepreneurial activity is through raising trust in institutions. Priority and greater emphasis should be given to policies designed to fight corruption, to increase trust and transparency in governmental institutions. Institutional trust should complement the institutional framework and support the enforcement of laws and regulations. Empowerment of citizens and proximity of government to the people can help to have a balanced social capital. Additionally, new forms of ICT, offers new opportunities for governments to consult and communicate with their citizens so that they can promote bridging and bonding people via social networks by crossing boundaries of social class, ethnicity and gender. Finally, social capital is critical for entrepreneurship and its nature of being complex and multidimensional should be analyzed within and across different contexts, suggesting the need for more longitudinal work as well as comparative studies.

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