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Abstract

Based on data on a cross section of individuals surveyed in the 1999-2002 wave of World and European Values Surveys, we investigate the extent to which bridging and bonding social capital as well as social trust interdependently affect individuals' earnings. Our analysis provides robust evidence that the impact of bridging social capital on earnings is inverted-U shaped whereas the impact of bonding social capital is unambiguously negative and approximately linear. It is carefully ascertained that neither of these results is driven by regressor endogeneity or omitted variables bias. We also identify significant interaction effects between social capital, trust, and employment status.

JEL codes: J24, J31, Z13

Keywords: bridging social capital, bonding social capital, social trust, earnings, nonlinearity

1 Introduction

As confirmed in numerous empirical studies, social capital can have sizeable effects on individuals' earnings. In particular, under the network operationalization of social capital (Lin, 2001; Sobel, 2002; Kadushin, 2012) and following Putnam's (2000) distinction between bridging social capital (social ties with dissimilar others) and bonding social capital (social ties with similar others), these two types of social capital have been found to have opposing influences on earnings. But for a few exceptions, it is usually argued that bridging social capital increases earnings whereas bonding social capital decreases them. Results of these studies are reviewed in Table 1.[1]

In this paper, we revisit these earlier empirical findings on the basis of worldwide World and European Values Surveys (WVS and EVS) data. Our claim is that the literature has in fact overlooked the possibility of a nonlinear impact of both social capital measures on individuals' earnings. This can be viewed as a potentially important gap in the literature because, as hypothesized by Growiec and Growiec (2010, 2014b) on the basis of theoretical models, there are reasons to seek an inverted-U shaped relationship between bridging social capital and earnings. On the one hand, bridging social ties can be a source of valuable resources, increasing one's earning potential; on the other hand, maintaining social ties necessarily incurs time costs and thereby at the margin, limits the potential for additional earnings. According to the models, if the individual's investment in social ties is sufficiently high ("too high"), these time costs can outweigh the pecuniary benefits of bridging social capital. Bonding social capital, on the other hand, does not provide the resource advantages typical for bridging ties, while still requiring one to incur the time costs, and thus its impact on earnings is hypothesized to be unambiguously negative.

The current study provides a robust empirical confirmation of the aforementioned theoretical hypotheses. Based on data on a cross section of individuals surveyed in the

[1] Table 1 reviews only studies where network operationalizations of social capital were adopted. We are particularly interested in articles acknowledging the distinction between bridging and bonding social capital. For this reason we omit the studies which take social trust as the key explanatory variable, and those which include some measures of trust as components of their social capital operationalizations (e.g., Knack and Keefer, 1997; Zak and Knack, 2001). In several cases, we have renamed some variables to keep them as close as possible to the current study.

1999-2002 wave of World and European Values Surveys, we identify the direction, curvature and strength of impact of bridging social capital, bonding social capital and social trust on individuals' earnings, controlling for respondents' employment status, education, and a wide range of other social characteristics. We find that bridging social capital indeed has an inverted-U shaped impact on earnings, whereas the impact of bonding social capital is unambiguously negative and roughly linear. We also confirm that social trust is positively related to individuals' earnings.

The methodological strength of our empirical analysis lies with the fact that in addition to looking for nonlinear effects, we are also very careful in controlling for the potential presence of omitted variables and the endogeneity of social capital variables in earnings regressions. We tackle the problem of social capital endogeneity by applying the instrumental variables (IV) estimation technique. By carefully testing the validity and identification properties of instrumental variables used in each regression specification, we sort out several empirical caveats arising in the related literature due to the endogeneity of social capital in earnings regressions. We also identify an important role of several confounding variables, able to influence both sides of the estimated equation. We conclude that omitting these variables and disregarding the endogeneity problem could have biased some of the earlier results, but it does not affect the main empirical finding of the current study: that the impact of bridging social capital on individuals' earnings has the inverted-U shape.

The remainder of the paper is structured as follows. Section 2 discusses the relevant theoretical literature underlying our empirical investigation. Section 3 discusses the important empirical measurement and instrumentation issues. Our main results are presented in Section 4. Section 5 discusses a range of robustness checks. Section 6 concludes.

Table 1: Summary of results of selected empirical studies.

Study	Data	Operationalization of social capital	Dependent variable	Estimation method	Impact on dependent var.
Beugelsdijk and Smulders (2003)	54 European regions 1990 (EVS)	Bonding: importance of family, friends, and acquaintances. Bridging: membership in certain voluntary organizations.	Regional economic growth 1950-98	2SLS [endogenous bridging]	Bonding: weak −. Bridging: +.
Mouw (2003)	USA panel 1982-94 (NLSY)	Present job found though social contacts.	Log wage	OLS / FE	Contacts: 0.
Franzen and Hangartner (2006)*	15 countries, 2011 (ISSP)	Bonding: present job found through contacts with kin or close friends. Bridging: present job found through acquaintances. Controlling for the number of friends.	Log wage	OLS / ML	Bonding: −. Bridging: −
Kim (2009)	Chicago lawyers 1995 (dedicated study)	Network characteristics: Network constraint, Network bridge, Strong ties.	Log income	OLS	Strong ties: −. Network constraint: 0. Network bridge: 0.
Sabatini (2009)	Italy 1998-2002 (household survey)	Bonding: strength of family ties. Bridging: informal networks of friends and neighbors.	Log income per person in household	Structural equations model [endogenous bridging]	Bonding: −. Bridging: −.
Alesina and Giuliano (2010)**	78 countries, mostly 1999-2001 (WVS)	Bonding: as here	Home production (from time use survey)	OLS	Bonding: +.
Growiec and Growiec (2010)	Poland 2005 (Social Diagnosis)	Bonding: number of often contacted family members. Bridging: number of often contacted friends.	Log income per person in household	OLS	Bonding: 0. Bridging: +.
Zhang et al. (2011)	USA panel 1987/1994 (NSFH)	Bonding: social activity and help, kin and friends. Bridging: participation in organizations.	Log income	OLS	Bonding: 0. Bridging: +.

List of abbreviations: OLS – Ordinary Least Squares, 2SLS – Two-Stage Least Squares, FE – Fixed Effects, ML – Maximum Likelihood, EVS – European Values Survey, NLSY – National Longitudinal Study of Youth, ISSP – International Social Survey Program, WVS – World Values Survey, NSFH – National Survey of Families and Households.

Notes: * In Franzen and Hangartner (2006), bonding and bridging social capital are measured according to qualitatively distinct operationalizations than ours.
** In Alesina and Giuliano (2010), the original dependent variable is home production, a proxy variable negatively related to income per person in the household.

2 Related literature

Regarding the underlying definition of social capital, we build on the principal idea to operationalize bridging and bonding social capital via the characteristics of individuals' social networks (cf. Lin, 2001). Such an approach is especially fruitful analytically because it enables one to delineate people's objective behavior (maintaining social contacts with others) from social norms (trust, reciprocity). Indeed, definitions which fail to acknowledge this distinction have been forcefully criticized in the literature, with the implication that they may even render the entire social capital concept defective (Bjørnskov and Sønderskov, 2013).

The social network perspective on social capital is widely shared in the literature (Lin, 2001; Kadushin, 2002; Li, Pickles, and Savage, 2005; Burt, 2005); moreover, this position leads to being more specific on social networks people form and, as a consequence, to what resources they have access (Bourdieu, 1986; Gittell and Vidal, 1998; Lin, 2001). Putnam's (2000) distinction between bridging social capital (social ties with dissimilar others) and bonding social capital (social ties with similar others) has by now become a standard in social capital studies; on the other hand, there is still little congruence in the literature on the appropriate empirical method of social capital measurement. In micro-level analyses, bridging social capital is often measured as the frequency of social contact with people in a different social-economic position to oneself. In large-scale survey datasets such as the WVS and EVS used here, however, there always remains the problem of data availability. In the current paper, this problem forced us to rely on a proxy operationalization of bonding social capital via declarations of importance of family in one's life and the content of the role of parent that one holds (see also Alesina and Giuliano, 2010).

Our main empirical hypotheses, on the other hand, are rooted in the theoretical literature which deals with the impact of social capital and trust on economic performance at the level of individuals, communities, regions, and whole countries. Some sociologists argue that bridging social capital, as opposed to bonding social capital, goes together with civil liberties and the support for gender and racial equality, and strengthens the functioning of democracy by reducing corruption (Putnam et al., 1993; Putnam, 2000). On the other hand, "bonding social capital (as distinct from bridging social capital) has negative

effects for society as a whole, but may have positive effects for the members belonging to this closed social group or network". (Beugelsdijk and Smulders, 2003). Beugelsdijk and Smulders (2003) proceed to show that bridging social capital is empirically good for economic growth at the level of European regions, whereas bonding social capital is bad for growth.

Bridging social capital is also found to be individually beneficial for those who possess it, though. Granovetter's (1973) prominent discovery is that weak ties (i.e., ties between dissimilar people) are more useful for finding better jobs than strong ties (between similar people). Friendship ties have also been shown to be positively related to individuals' wages and upward mobility in the workplace (Podolny and Baron 1997; Słomczyński and Tomescu-Dubrow 2005). Most strongly perhaps, Burt (2005) claims that bridging social capital, as opposed to bonding social capital, is positively related to individuals' economic performance, creativity, social trust, and happiness. The question whether sophisticated social networks indeed improve the individuals' earnings potential remains unsettled, though: recent research from Franzen and Hangartner (2006) indicates that using social networks might not necessarily increase the monetary payoff but improve the nonpecuniary characteristics of the job like better career perspectives instead. Another caveat is that social networks are endogenous to individuals' economic position because high-paying jobs tend to generate more opportunities for building resourceful bridging ties with dissimilar others than low-paying jobs.

Finally, in two closely related papers (Growiec and Growiec, 2010, 2014b), we have put forward theoretical models which formalize the hypothesis that bridging social capital can have a nonlinear, inverted-U shaped impact on individuals' earnings. The hypothesized nonlinearity comes up as a result of the interplay of two opposing forces: (i) the positive productivity spillover stemming from bridging social capital in the production function, and (ii) the time cost associated with the accumulation and maintenance of social capital by individuals. To our knowledge, this hypothesis has not been addressed in the empirical literature so far.

Moreover, in the latter contribution we argue that bridging social capital and social trust can also form virtuous and vicious circles, leading to multiple equilibria in economic performance. In one of the extensions of our main empirical study, we test these predictions

empirically by checking the signs and statistical significance of interaction terms between both types of social capital, trust, and employment status, leading to mixed results.

An extended review of the background literature can also be found in our two closely related studies (Growiec and Growiec, 2014a,b).

3 Measurement and instrumentation

Our study is based on data from the World and European Values Surveys (WVS and EVS) which are an international survey program based on a standardized questionnaire. The survey is conducted in each member country by a local public opinion survey institution, in the local language, on a representative sample of the country's population aged 18+. We use cross-sectional data from the 1999-2002 wave of the WVS and EVS, which was the only wave to include an extended list of questions relevant to the measurement of bridging and bonding social capital. For our main regressions, we use around 14–16 thousand observations from 29 countries.[2]

3.1 Measurement of social capital and social trust

Bridging social capital refers to forming social ties across social cleavages, outside of the family and close neighborhoods, requiring people to transcend their simple social identity (Gittell and Vidal, 1998; Putnam, 2000; Leonard, 2008). It should be identified by people's objective behavior and not the social norms to which they adhere. In line with this definition, we measure it as a summary scale based on the following questions: "How often do you spend time with your friends", "How often do you spend time socially with your colleagues from work or your profession", "How often do you spend time with people at your church, mosque or synagogue", "How often do you spend time socially with people at sports clubs, voluntary or service organization", with available answers: weekly, once or twice a month, only a few times in a year, not at all. The choice of this summary scale is optimal in the sense that Cronbach's alpha analysis shows that its validity cannot be improved by removing any of its constituent items. Our approach is also justified by the fact that factor analysis confirms that the scale is unidimensional, and all items are included in the primary factor with similar loadings.

Bonding social capital, on the other hand, is operationalized as the strength of family

[2]Since most of the variables feature (at least some) missing data, the exact number of observations in each given regression specification depends on the choice of regressors and instruments. As a robustness check, we have also compared our main results against a few additional regressions where some of the relevant regressors with most missing values (such as household size) were dropped. In that case we were able to use 35–50 thousand observations from 68 countries. Our main results remain virtually unchanged.

ties and the tendency to form kinship groups based on unconditional loyalty (Kääriäinen and Lehtonen, 2006; Alesina and Giuliano, 2010). We construct this variable as a scale of WVS questions measuring the importance of family in one's life (very important, rather important, not very important, not at all important), the perception of parents' duties to their children (the respondents had to choose between the following statements: "It is parents' duty to do their best for their children" or "Parents have a life of their own"), and the opinion about the respect and love children owe their parents regardless of parents' deeds (the pair of statements: "Regardless of what the qualities and faults of one's parents are, one must always love and respect them" or "One does not have the duty to respect and love the parents who have not earned it by their behavior and attitudes"). Again, Cronbach's alpha analysis of this summary scale reveals that its validity cannot be improved by removing any of the items. Factor analysis confirms that the scale is unidimensional, and all items are included in the primary factor with similar loadings.[3]

We simultaneously monitor individuals' self-reported social trust, measured by their choice among two statements: "Most people can be trusted" or "One can't be too careful [with other people]". We shall also distinguish between individuals' own level of trust towards strangers and the degree to which they themselves are trusted. As a proxy measure of the latter, we shall use the average level of trust in the individuals' reference group. We stratify individuals by their country of residence and education level.

3.2 Measurement of earnings

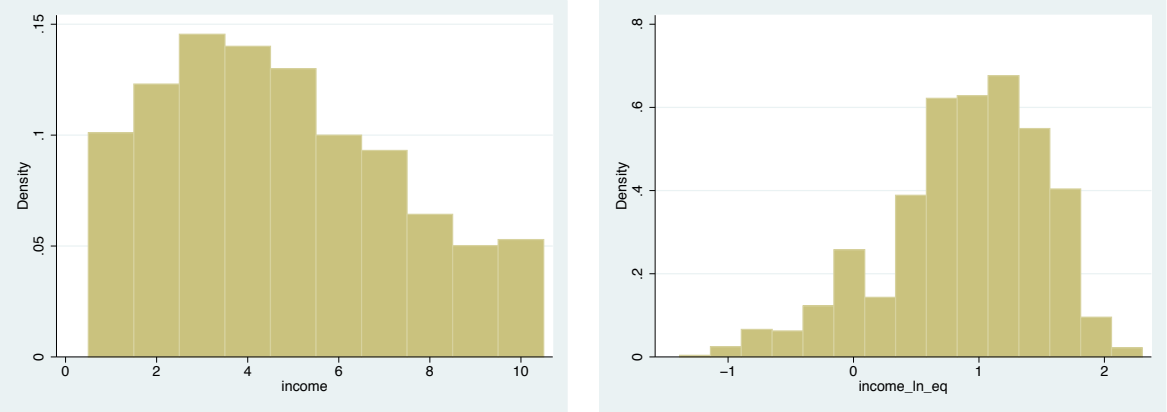
Our dependent variable is constructed on the basis of the WVS ten-degree scale of *total household income*. The exact survey question used to this end is: "Here is a scale of incomes. We would like to know in what group your household is, counting all wages, salaries, pensions, and other incomes that come in. Just give the letter of the group your household falls into, before taxes and other deductions." Respondents are asked to identify the earnings decile to which their household belongs.

[3]We work with a measure of attitudes here because, unfortunately, no relevant variables measuring actual behaviors of respondents are available in the WVS dataset. Additional justifications for the current proxy operationalization of bridging and bonding social capital can be found in Growiec and Growiec (2014a) as well as K. Growiec (2011).

To bring this measure as close as possible to a measure of *individuals' earnings*, we transform the aforementioned WVS scale into a scale of equivalent household earnings. To this end, we divide total household income by the square root of the total number of persons in the household, including children.[4] As the explained variable in our preferred regression equation, we take the natural logarithm of such a measure (denoted as *income_ln_eq*). This approach allows us to treat our model as a Mincerian earnings equation.

As a robustness check, we confirm that our main findings are robust to replacing this variable with the original WVS measure of household incomes, its logarithm, as well as household income per person in the household. They also remain in force when the model is estimated as an ordered logit, i.e., when the explained variable is treated as an ordinal and not an interval scale.

Figure 1: Histograms: household incomes (left panel) and log equivalent incomes (right panel).



Histograms presented in Figure 1 reveal that the distribution of household earnings tend to be right-skewed despite the fact that respondents were supposed to divide themselves in deciles. This can be a consequence of cognitive bias of respondents in the sample (e.g., due to comparing one's wage to the mean instead of the median wage in the population) or a systematically wider incidence of missing data from households located in upper deciles of the income distribution. Upon applying the logarithmic transformation,

[4]The approach to computing equivalent incomes by dividing total household incomes by the number of its members taken to a power $\alpha \in [0, 1]$ has been first proposed by Buhmann et al. (1988). The square root assumption ($\alpha = 0.5$) is likely the most popular parametrization.

we obtain a left-skewed distribution, though. This property is shared also by log equivalent earnings, our dependent variable.

Since our explained measure is naturally sensitive to the number of adult persons in the household, we control for household size (*hh_size*: number of persons aged 18+ in the household) in all our regressions. Given that the WVS definition refers to income deciles within the respondent's country, we always include country fixed effects.

3.3 Instrumental variables

If there is regressor endogeneity, i.e., if apart from the sought causal link from individuals' bridging and bonding social capital stocks to their earnings there also exists a reverse causal link from earnings to social capital, the strength of the actual impact of both social capital variables can only be identified thanks to an auxiliary use of instrumental variables. Such variables, by construction, should be exogenous, i.e., uncorrelated with the error term of the estimated regression equation, and sufficiently strongly correlated with the endogenous regressors.

Although it is an admittedly hard task to find good (i.e., both exogenous and strong) instruments for bridging and bonding social capital in cross-sectional data, our results indicate that we have succeeded in finding such variables. Our final list includes three measures of religiosity (survey questions: "How often do you attend religious services?", "Do you get comfort and strength from religion?", and "Is religion important in your life?"), and two measures of interest in politics (survey questions: "How often do you discuss political matters with friends?" and "Is politics important in your life?").

The IV procedure has been carried out in the following way.[5] We begin with estimating first-stage regression equations where the two endogenous regressors (bridging and bonding social capital) are taken as dependent variables, and the aforementioned set of exogenous instruments as well as the exogenous regressors included also in the main regression equation – are taken as independent variables. First-stage equations are estimated with OLS in a reduced-form system, which allows the error terms to be correlated between the equations. The theoretical values from this model are stored for later use in the second stage. In the second stage, we set up the main regression equation explaining

[5]Technically, we have used the Stata command *ivreg2*.

earnings, including these theoretical values instead of the endogenous regressors alongside the exogenous regressors. Our first-stage regression results (not reported) indicate that, in line with the associated literature, bridging social capital is positively determined by interest in politics (Putnam, 2000), social trust (K. Growiec, 2011), freedom of choice and control, church attendance, employment status, being male, and negatively affected by household size, number of children, and age. Bonding social capital, on the other hand, is determined by household size and the number of children (stronger family ties go together with higher fertility, Alesina and Giuliano, 2010), staying in a stable relationship, all three measures of religiosity, gender (on average, women have stronger kinship ties, Alesina and Giuliano, 2010), and the size of town of residence (bonding social capital is more prevalent in villages and smaller towns).

The results of Sargan tests indicate that our instruments are valid, whereas underidentification tests prove that our auxiliary regressions are able to identify the endogenous regressors correctly with instruments. Anderson-Rubin tests indicate that both endogenous variables are jointly significant in the main equation. At the same time, Chi-square endogeneity tests confirm that bridging and bonding social capital are indeed correlated with the error term of the OLS regression, and thus OLS results are biased because of endogeneity.

4 Results

Let us now proceed to the presentation of our principal results. We shall first provide a graphical demonstration of the inverted-U relationship between bridging social capital and individual earnings. We shall also argue that for bonding social capital, this relationship is unambiguously negative. In the second subsection, we will provide our main set of empirical results which confirms robustness of this result to a range of control variables and the endogeneity of both social capital variables. Further extensions and robustness checks are relegated to the consecutive section.

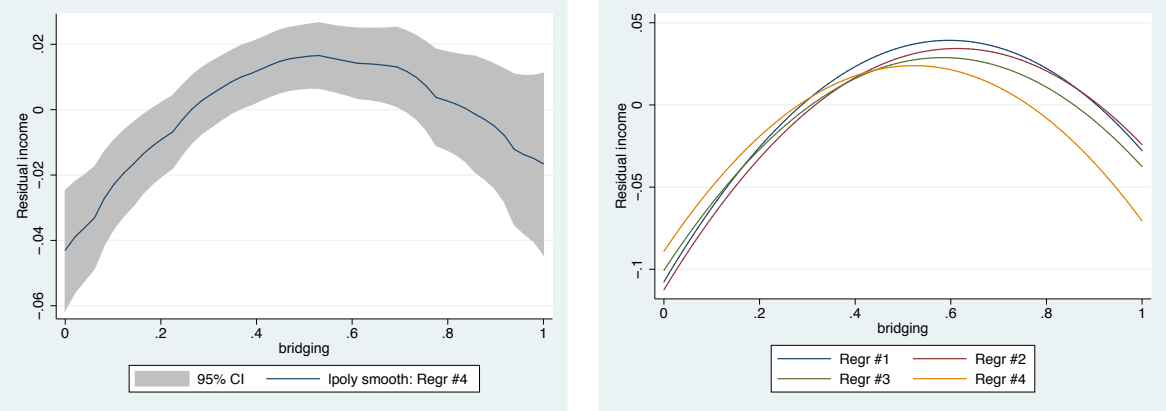
4.1 Bridging and bonding social capital vs. earnings: Empirical evidence for the inverted U

To visualize the nonlinear effects of bridging social capital on individual earnings, we have carried out a simple two-step procedure. In the first step, we have regressed a range of explanatory variables – all variables from Regression (4) in Table 2 excluding bridging social capital – on individual earnings and stored the residuals. In the second step, we have performed a kernel-weighted local polynomial regression (with the Epanechnikov kernel), explaining these residual earnings with bridging social capital. The results are presented in the left panel of Figure 2. Using non-parametric kernel smoothing techniques allows us to remain agnostic about the functional form of the relationship between both variables and let the data decide about it instead.

The striking property of our findings is that the data strongly favor a non-monotonic, inverted-U shape of the relationship between bridging social capital and (residual) earnings. In fact, this regression can be just as well fitted with a very parsimonious quadratic specification.

Furthermore, as demonstrated in the right panel of Figure 2, the shape of the bridging social capital–earnings relationship remains essentially unaffected when one limits the number of control variables in the regression. The respective parabolas illustrate the quadratic regressions of bridging social capital on residual earnings, with residuals computed taking explanatory variables from Regressions (1)–(4) in Table 2, respectively. The only important difference is that the maximum appears shifted to the right (i.e., the range

Figure 2: The impact of bridging social capital on residual earninigs. Evidence for an inverted U.



of positive impact appears wider) when one fails to control for the relevant regressors.

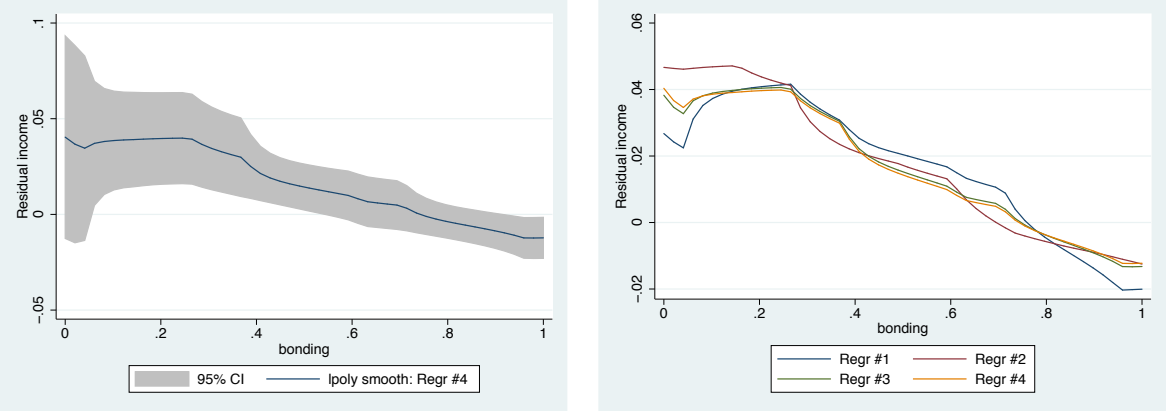
This principal result can be viewed as an empirical confirmation of Proposition 4 in Growiec and Growiec (2010) and Proposition 5 in Growiec and Growiec (2014b), originating from theoretical models. On the other hand, it stands in sharp contrast to earlier empirical results due to, e.g., Beugelsdijk and Smulders (2003), Florida (2004) and Growiec and Growiec (2010), who have only sought for a linear relationship, and found a positive one.

The appearance of a range of negative dependence of individuals' earnings of their bridging social capital stocks may be due to two reasons. First, from the psychological perspective, the amount of time people spend with their friends, co-workers, people from one's church or voluntary organization, etc., can be heavily dependent on their choice between materialist and post-materialist values (Inglehart and Baker, 2000). Respondents who have an inclination towards the latter may be relatively more willing to devote additional time to their circle of friends and acquaintances and withdraw some of their activity from the labor market, thus lowering their earnings. The second mechanism is an economic one and applies to employed people who work long hours. Given their tight time constraints, the positive external effects of additional bridging social capital on their earnings will be likely dominated by time-substitution effects.

An analogous procedure has been also carried out with respect to bonding social capital, with strikingly different results. As shown in Figure 3, the relationship between

bonding social capital and (residual) earnings is unambiguously negative, with the possible exception of the range of lowest bonding social capital levels, where the relationship appears roughly flat. This exception is however subject to substantial uncertainty given the relative rarity of respondents with such characteristics in the data.

Figure 3: The impact of bonding social capital on residual earninigs. An unambiguously negative relationship.



Furthermore, as demonstrated in the right panel of Figure 3, the shape of this relationship remains essentially unaffected when one limits the number of control variables in the regression. The respective lines illustrate kernel-weighted local polynomial regressions of bonding social capital on residual earnings, with residuals computed taking explanatory variables from Regressions (1)–(4) in Table 2, respectively. It is confirmed that, with the possible exception of the range of lowest bonding social capital levels, the discussed relationship is negative and linear.

This finding can be viewed as an empirical confirmation of Proposition 2 in Growiec and Growiec (2010), stemming from a theoretical model. It is also in line with a host of related literature, reviewed in Table 1. A tentative conclusion from this result might be that unless individuals get out of closed kinship groups and in-group loyalty, they will face certain limitations in their prospects for financial success. A further interpretation of this result is that strong family ties may restrict the scope of exploration of the labor market by an individual and limit searching for a job on a competitive basis. Instead, individuals would rely on job opportunities offered by the members of the kinship group

that are usually limited and might be not in line with their qualifications or expectations.

4.2 Bridging and bonding social capital and social trust as determinants of individual earnings

The key regression results of the current study are contained in Table 2. Models (1)–(4) have been estimated with OLS. By gradually increasing the number of relevant control variables from one equation to another, we quantify the extent to which the initial estimates have been affected by omitted variables bias. Models (5)–(8), on the other hand, have been estimated with instrumental variables (IV), allowing us to control for endogeneity of bridging and bonding social capital in earnings regressions. Indeed, our Chi-square endogeneity tests confirm that bridging and bonding social capital are correlated with the error term in the OLS regressions, and thus one should expect OLS results to be biased.

As shown in Table 2, the result of an inverted-U shaped impact of bridging social capital on earnings and an unambiguously negative impact of bonding social capital is robust to controlling for social capital endogeneity and confounding variables. Statistical significance at 1% level is maintained for all regression specifications.[6]

Our another finding is that earnings are also positively related to social trust, even when (endogenous) social capital stocks are controlled for. This result refers to the extent to which one trust others but not to the level to which she experiences trust in return (cf. Knack and Keefer, 1997; Zak and Knack, 2001). On average, and keeping other things equal, the more individual trusts others, the better is she off. It supports the idea that social trust enhances incomes by opening individuals to more beneficial situations (K. Growiec, 2011). High trust standards also make contacts at the workplace more favorable in terms of information flow, less stressful, and thus they effectively reduce transaction costs in doing business (Ostrom and Walker, 2003; Williamson, 1981).

Our results have also been tested for robustness against a few sets of control variables that are known from the literature to have a significant impact on individual income, like education, age, age squared (the Mincerian wage equation, cf. Heckman, Lochner, and Todd, 2005), size of town of residence, as well as psychological factors such as the

[6] We have also tried including the square of bonding social capital in the regressions, but the second-order term never appeared significant. These results are available upon request.

Table 2: Bridging and bonding social capital as determinants of individual earnings: a comparison of regression specifications.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	inc_ln_eq	inc_ln_eq	inc_ln_eq	inc_ln_eq	inc_ln_eq	inc_ln_eq	inc_ln_eq	inc_ln_eq
	OLS	OLS	OLS	OLS	IV	IV	IV	IV
bridging	0.758***	0.585***	0.525***	0.471***	8.889***	4.428***	4.381***	3.866***
	[10.59]	[8.473]	[7.425]	[6.759]	[7.456]	[4.914]	[4.708]	[4.337]
bridg2	-0.633***	-0.471***	-0.418***	-0.395***	-8.687***	-4.185***	-4.131***	-3.669***
	[-8.436]	[-6.553]	[-5.703]	[-5.464]	[-7.315]	[-4.712]	[-4.522]	[-4.196]
bonding	-0.100***	-0.0763***	-0.0919***	-0.0762***	-0.818***	-1.198***	-1.179***	-0.897***
	[-5.221]	[-4.118]	[-4.869]	[-4.084]	[-5.745]	[-8.587]	[-8.321]	[-6.527]
trust	0.0573***		0.0457***	0.0455***	0.0283*		0.0297**	0.0307***
	[5.880]		[4.834]	[4.871]	[1.938]		[2.429]	[2.662]
trust (mean)	1.385***		0.103	0.126	0.692***		-0.159	-0.0765
	[27.43]		[1.317]	[1.645]	[6.945]		[-1.562]	[-0.792]
employed		0.237***	0.227***	0.370***		0.204***	0.186***	0.336***
		[18.37]	[17.40]	[19.02]		[11.52]	[10.24]	[13.43]
hh_size	-0.00901**	-0.0304***	-0.0366***	-0.0388***	-0.00902	-0.0158***	-0.0265***	-0.0304***
	[-2.049]	[-6.729]	[-7.886]	[-8.215]	[-1.382]	[-2.663]	[-4.480]	[-5.240]
education		0.0658***	0.0592***	0.0556***		0.0483***	0.0521***	0.0498***
		[29.98]	[16.89]	[16.04]		[13.57]	[11.50]	[11.70]
town_size		0.0237***	0.0239***	0.0218***		0.0209***	0.0218***	0.0208***
		[13.19]	[13.11]	[12.07]		[8.879]	[9.253]	[9.363]
stab_rel			0.0894***	0.0992***			0.140***	0.132***
			[8.840]	[9.437]			[9.790]	[9.561]
age		0.00176	-0.00221	0.00975***		0.00901***	0.00270	0.0121***
		[1.160]	[-1.362]	[5.707]		[4.437]	[1.291]	[5.936]
age2		5.26e-05***	9.02e-05***	-3.12e-05*		1.93e-05	7.76e-05***	-2.91e-05
		[3.246]	[5.257]	[-1.737]		[0.941]	[3.647]	[-1.358]
choice_c			0.0166***	0.0158***			0.0128***	0.0126***
			[8.537]	[8.271]			[4.643]	[4.903]
female				-0.103***				-0.0879***
				[-10.64]				[-7.407]
housewife				0.166***				0.177***
				[6.746]				[5.979]
student				0.180***				0.153***
				[6.404]				[4.509]
retired				0.267***				0.269***
				[11.92]				[9.924]
chief		-0.130***	-0.118***	-0.175***		-0.161***	-0.138***	-0.186***
		[-13.79]	[-12.20]	[-16.30]		[-13.10]	[-11.27]	[-14.46]
chief_works		0.211***	0.202***	0.225***		0.204***	0.196***	0.219***
		[14.98]	[14.12]	[15.16]		[11.45]	[10.89]	[12.36]
children				-0.0549***				-0.0467***
				[-15.22]				[-10.38]
Constant	0.0133	-0.439***	-0.454***	-0.249***	-0.277	0.396*	0.419*	0.105
	[0.183]	[-5.695]	[-5.573]	[-3.447]	[-0.967]	[1.806]	[1.946]	[0.524]
Observations	17,120	16,639	15,944	15,799	15,328	14,859	14,310	14,183
R^2	0.176	0.269	0.275	0.300	-0.539	-0.037	-0.021	0.101
Adjusted R^2	0.174	0.267	0.273	0.298	-0.543	-0.0394	-0.0244	0.0974
Endogeneity test					198.1	108.8	96.76	55.21
Endogeneity p					0	0	0	0
Sargan Chi-sq					24.62	13.88	9.724	5.500
Sargan p					1.85e-05	0.00307	0.0211	0.139
Anderson-Rubin F					56.96	28.98	25.35	14.53
Anderson-Rubin p					0	0	0	0
Underid. Chi-sq					113.5	135.3	125.4	118.4
Underid. p					0	0	0	0

Notes: t-statistics in brackets. *** p<0.01, ** p<0.05, * p<0.1. Country dummies included but not reported.

freedom of choice and control over one's actions and living in a stable relationship. We find that better education, being employed, living in a stable relationship, and residing in a bigger town or city go together with higher income. The relation between age and income is generally inverse U-shaped (though not robustly so), which means that the youth entering the job market, lacking work experience, are paid less than older cohorts. The opposite is true for older people, who despite their abundant experience, get paid less for their work than the middle-aged cohort, too. Both the number of children (*children*) and adult persons in the household (*hh_size*) have a negative impact on equivalent income of the household. The latter outcome can be interpreted that the data perhaps favor a somewhat less sharp discounting of income by the number of household members in the computation of equivalent income than the one we have used in the current analysis. On average, women earn less than men.

As far as further control variables included in Regressions (4) and (8) are considered, we obtain a few puzzling results. Namely, it turns out that controlling for a range of individual characteristics, housewife, student, and retired status goes together with higher earnings.

Finally, we also control if the respondent declares to be the chief wage earner of the household, and whether the chief wage earner is employed (which has a differential impact from the respondent's employment status only if the respondent is not the chief wage earner). As expected, the latter variable robustly positively affects individuals' earnings. Surprisingly, however, chief wage earners tend to have *lower* earnings than non-chief wage earners. This last result is a consequence of the fact that already in the raw data, household incomes and equivalent incomes are (according to t-tests) actually statistically significantly lower for chief wage earners (predominantly men, often living alone). Earnings *per person in the household* are significantly higher if the respondent is a chief wage earner, though, because on average, chief wage earners tend to live in smaller households.

5 Robustness checks

The purpose of the current section is to provide additional extensions and robustness checks for our main set of results. It turns out that our main result is robust to: (a) including an extended set of countries (which is possible thanks to eliminating control variables with most missing values), (b) estimating the regression models with an ordered logit estimator, (c) using different definitions of individuals' earnings as the explained variable, and (d) restricting the sample to chief wage earners. We also address the question of possible interaction effects between bridging and bonding social capital, trust, and employment status (Growiec and Growiec, 2014b).

5.1 Larger set of countries

The key problem with data availability, limiting the sample size in our main study from 68 to 29 countries,[7] concerns household size variables (i.e., number of persons in the household aged 18+, total number of persons in the household) as well as the "stable relationship" dummy. The size of the considered sample can be substantially expanded only if these important variables are dropped from the regressions. Moreover, unavailability of household size variables makes it also impossible to construct equivalent income and per capita income measures. As our explained variable, we can only use the original WVS scale of household earnings or its logarithm.

Since these steps increase the number of degrees of freedom only at the cost of incurring potentially severe omitted variables bias, we have decided to treat the current analysis as a robustness check. Fortunately, from Table 3 we learn that the main finding of the current study – that bridging social capital has an inverted-U shaped impact on individuals earnings – is valid for an extended set of countries as well. Signs of all other explanatory variables are also preserved. The inverted-U shaped age profile of earnings regains its statistical significance. The impact of the mean level of social trust in the respondent's reference group becomes significantly positive in OLS regressions (though again, not so anymore in the IV case). The signs of parameters for the chief wage earner, housewife, student, and retired dummies remain puzzling in the extended sample as well.

[7] The exact list of countries is available upon request.

Table 3: Explaining individual earnings in an extended set of countries.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	inc_ln	inc_ln	inc_ln	inc_ln	inc_ln	inc_ln	inc_ln	inc_ln
	OLS	OLS	OLS	OLS	IV	IV	IV	IV
bridging	0.650***	0.371***	0.342***	0.325***	5.365***	4.274***	4.208***	3.479***
	[16.21]	[8.604]	[7.777]	[7.545]	[10.72]	[8.183]	[8.069]	[6.741]
bridg2	-0.401***	-0.268***	-0.253***	-0.271***	-4.717***	-3.819***	-3.765***	-3.140***
	[-10.37]	[-6.438]	[-5.983]	[-6.527]	[-10.30]	[-7.985]	[-7.901]	[-6.673]
bonding	-0.0597***	-0.00570	-0.0127	-0.00816	-1.769***	-1.151***	-1.133***	-0.872***
	[-4.592]	[-0.417]	[-0.918]	[-0.597]	[-17.30]	[-9.824]	[-9.604]	[-7.514]
trust	0.0404***	0.0504***	0.0482***	0.0507***	0.0278***	0.0345***	0.0338***	0.0368***
	[7.012]	[8.456]	[7.991]	[8.529]	[3.551]	[4.542]	[4.437]	[5.079]
trust (mean)	1.287***	0.179***	0.192***	0.201***	0.677***	-0.129**	-0.117**	-0.0452
	[34.12]	[4.383]	[4.656]	[4.916]	[11.13]	[-2.299]	[-2.065]	[-0.818]
employed		0.156***	0.155***	0.252***		0.0827***	0.0845***	0.200***
		[21.42]	[21.02]	[23.63]		[6.757]	[6.977]	[13.85]
education		0.0694***	0.0667***	0.0692***		0.0608***	0.0586***	0.0616***
		[50.46]	[47.69]	[49.15]		[33.09]	[31.72]	[35.57]
town_size		0.0219***	0.0204***	0.0225***		0.0206***	0.0194***	0.0205***
		[18.53]	[17.07]	[19.08]		[14.04]	[13.03]	[14.54]
age		0.0101***	0.0104***	0.0132***		0.0165***	0.0169***	0.0159***
		[10.55]	[10.74]	[12.47]		[12.55]	[12.71]	[12.49]
age2		-8.46e-05***	-8.67e-05***	-0.000133***		-0.000124***	-0.000127***	-0.000143***
		[-8.122]	[-8.206]	[-11.82]		[-9.377]	[-9.537]	[-10.79]
chief		-0.190***	-0.190***	-0.256***		-0.217***	-0.215***	-0.266***
		[-31.46]	[-31.25]	[-38.94]		[-27.50]	[-27.43]	[-34.06]
chief_works		0.248***	0.247***	0.255***		0.261***	0.260***	0.262***
		[29.67]	[29.22]	[29.23]		[24.98]	[24.79]	[25.29]
choice_c			0.0189***				0.0157***	0.0153***
			[16.50]				[10.46]	[10.67]
female				-0.143***				-0.124***
				[-23.31]				[-16.43]
housewife				0.116***				0.147***
				[9.274]				[9.177]
student				0.149***				0.107***
				[10.33]				[6.073]
retired				0.192***				0.191***
				[13.99]				[11.73]
children				0.0100***				0.0141***
				[5.326]				[6.203]
Constant	1.157***	0.608***	0.520***	0.559***	1.789***	0.727***	0.641***	0.557***
	[42.21]	[18.21]	[15.14]	[15.96]	[13.01]	[5.453]	[4.931]	[4.587]
Observations	55,969	40,929	39,867	40,411	49,573	36,717	35,830	35,391
R^2	0.145	0.276	0.277	0.290	-0.338	0.005	0.014	0.125
Adjusted R^2	0.144	0.274	0.275	0.289	-0.340	0.00288	0.0119	0.124
Endogeneity test					541.1	160.9	151.6	83.09
Endogeneity p					0	0	0	0
Sargan Chi-sq					100.6	32.01	35.02	25.19
Sargan p					0	5.22e-07	1.21e-07	1.41e-05
Anderson-Rubin F					150.7	42.78	41.71	24.07
Anderson-Rubin p					0	0	0	0
Underid. Chi-sq					562.7	343.3	339.9	300.4
Underid. p					0	0	0	0

Notes: t-statistics in brackets. *** p<0.01, ** p<0.05, * p<0.1. Country dummies included but not reported.

5.2 Ordered logit results

Another robustness check of our main results consists in relaxing the assumption that the WVS scale of incomes is an interval scale, in line with its "income decile" interpretation, and assuming that it is an ordinal scale instead. In such case, the appropriate empirical methodology should be based on ordered logit/probit estimates. In the following analysis, we shall use ordered logit. Moreover, this approach also precludes the use of equivalent incomes as the explained variable (where the income decile is divided by the square root of the number of household members).

Results of the current investigation are shown in Table 4. It turns out that the main findings of the current study are robust to the considered change in methodology. Unsurprisingly, household size is now positively related to total household earnings. The signs of all other explanatory variables are unchanged. In the most sophisticated regression equation (6), we also find that considering politics important, membership in professional associations and sports and recreational organizations, all tend to go together with higher incomes. Neither of these results should be considered as particularly surprising.

5.3 Comparison across various measures of earnings

In the course of the next robustness check, we shall also confirm the validity of our main set of findings across various measures of earnings: (i) household earnings (WVS measure), (ii) earnings per person in the household (*inc_pc*), (iii) log earnings per person in the household (*inc_ln_pc*), and (iv) our baseline: log equivalent earnings (*inc_ln_eq*). We shall maintain the assumption that earnings are measured here with an interval scale, and estimate the regression coefficients with OLS.

As one can see in Table 5, we confirm robustness of our main results to the variety of definitions of our explained variable. The impact of bridging social capital on earnings remains inverted-U shaped, whereas the impact of bonding social capital remains negative. The signs of parameters relating to other control variables are preserved as well. It is noteworthy to observe that while household size has a significantly positive impact on household income (Regressions (1) and (5)), it negatively affects income per capita and equivalent income. Moreover, controlling for household size, the number of children has

Table 4: Ordered logit results.

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	income	income	income	income	income	income
	o-logit	o-logit	o-logit	o-logit	o-logit	o-logit
bridging	2.145***	1.660***	1.937***	1.828***	1.497***	1.320***
	[9.466]	[7.174]	[8.334]	[7.734]	[6.156]	[5.400]
bridg2	-1.660***	-1.413***	-1.520***	-1.446***	-1.170***	-1.268***
	[-7.021]	[-5.854]	[-6.294]	[-5.890]	[-4.657]	[-5.026]
bonding	-0.217***	-0.0410	-0.0632	-0.0343	-0.181***	-0.169***
	[-3.618]	[-0.670]	[-1.025]	[-0.548]	[-2.836]	[-2.638]
trust		0.191***		0.183***	0.177***	0.161***
		[6.164]		[5.832]	[5.546]	[5.000]
trust (mean)		4.989***		0.878***	1.138***	0.963***
		[29.56]		[3.318]	[4.236]	[3.549]
employed					0.771***	1.227***
					[17.12]	[17.69]
hh_size	0.458***	0.489***	0.510***	0.514***	0.469***	0.440***
	[29.20]	[30.52]	[31.64]	[31.46]	[27.84]	[25.55]
chief	-0.266***	-0.293***	-0.377***	-0.372***	-0.502***	-0.750***
	[-9.292]	[-10.10]	[-12.62]	[-12.31]	[-15.37]	[-19.82]
chief_works	1.488***	1.383***	1.347***	1.334***	0.806***	0.853***
	[44.57]	[40.81]	[32.96]	[32.25]	[16.19]	[16.20]
education			0.262***	0.231***	0.213***	0.208***
			[34.64]	[19.42]	[17.55]	[16.99]
town_size			0.0650***	0.0646***	0.0721***	0.0722***
			[10.76]	[10.53]	[11.52]	[11.45]
stab_rel					0.762***	0.673***
					[21.52]	[18.45]
age			0.0534***	0.0527***	0.00238	0.0185***
			[10.57]	[10.30]	[0.425]	[3.162]
age2			-0.000461***	-0.000462***	6.87e-05	-0.000153**
			[-8.576]	[-8.492]	[1.159]	[-2.443]
choice_c					0.0638***	0.0602***
					[9.583]	[8.994]
female						-0.371***
						[-10.95]
politics important						0.0590***
						[3.464]
housewife						0.484***
						[5.589]
student						0.463***
						[4.547]
retired						0.789***
						[9.875]
edu, arts, cult.						0.0600
						[1.203]
prof. assoc.						0.348***
						[5.752]
sports, recr.						0.258***
						[6.262]
Observations	17,314	16,867	16,885	16,451	15,976	15,858

Notes: "edu, arts, cult.": respondent belongs to organizations performing education, arts, music or cultural activities; "prof. assoc.": respondent belongs to professional associations; "sports, recr.": respondent belongs to sports or recreation institutions. z-statistics in brackets. *** p<0.01, ** p<0.05, * p<0.1. Country dummies included but not reported.

Table 5: Comparison of various income measures. OLS regressions.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	income	inc_pc	inc_ln_pc	inc_ln_eq	income	inc_pc	inc_ln_pc	inc_ln_eq
	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
bridging	1.636***	0.819***	0.600***	0.525***	1.502***	0.691***	0.527***	0.471***
	[5.945]	[5.596]	[7.754]	[7.425]	[5.480]	[4.841]	[7.039]	[6.759]
bridg2	-1.262***	-0.630***	-0.478***	-0.418***	-1.226***	-0.550***	-0.440***	-0.395***
	[-4.421]	[-4.145]	[-5.954]	[-5.703]	[-4.309]	[-3.711]	[-5.657]	[-5.464]
bonding	-0.196***	-0.296***	-0.141***	-0.0919***	-0.194***	-0.239***	-0.111***	-0.0762***
	[-2.660]	[-7.570]	[-6.838]	[-4.869]	[-2.649]	[-6.256]	[-5.529]	[-4.084]
trust	0.199***	0.0718***	0.0454***	0.0457***	0.199***	0.0734***	0.0446***	0.0455***
	[5.402]	[3.665]	[4.389]	[4.834]	[5.413]	[3.834]	[4.442]	[4.871]
trust (mean)	1.498***	0.446***	0.0863	0.103	1.537***	0.556***	0.127	0.126
	[4.940]	[2.763]	[1.012]	[1.317]	[5.083]	[3.528]	[1.538]	[1.645]
employed	0.880***	0.397***	0.248***	0.227***	1.358***	0.525***	0.389***	0.370***
	[17.30]	[14.65]	[17.33]	[17.40]	[17.70]	[13.15]	[18.53]	[19.02]
hh_size	0.514***	-0.363***	-0.191***	-0.0366***	0.484***	-0.358***	-0.187***	-0.0388***
	[28.39]	[-37.72]	[-37.47]	[-7.886]	[26.06]	[-37.00]	[-36.78]	[-8.215]
education	0.236***	0.105***	0.0605***	0.0592***	0.239***	0.0908***	0.0525***	0.0556***
	[17.32]	[14.50]	[15.75]	[16.89]	[17.49]	[12.78]	[14.07]	[16.04]
town_size	0.0818***	0.0464***	0.0290***	0.0239***	0.0821***	0.0395***	0.0247***	0.0218***
	[11.50]	[12.25]	[14.50]	[13.11]	[11.55]	[10.66]	[12.72]	[12.07]
stab_rel	0.790***	-0.244***	-0.0526***	0.0894***	0.696***	-0.173***	-0.00801	0.0992***
	[20.06]	[-11.63]	[-4.751]	[8.840]	[16.82]	[-8.038]	[-0.708]	[9.437]
age	0.00459	-0.00227	-0.00612***	-0.00221	0.0213***	0.0273***	0.0126***	0.00975***
	[0.729]	[-0.678]	[-3.453]	[-1.362]	[3.169]	[7.785]	[6.855]	[5.707]
age2	6.37e-05	0.000204***	0.000172***	9.02e-05***	-0.000174**	-4.49e-05	1.27e-06	-3.12e-05*
	[0.956]	[5.751]	[9.143]	[5.257]	[-2.464]	[-1.219]	[0.0657]	[-1.737]
choice_c	0.0701***	0.0279***	0.0165***	0.0166***	0.0678***	0.0267***	0.0158***	0.0158***
	[9.281]	[6.925]	[7.788]	[8.537]	[9.006]	[6.794]	[7.655]	[8.271]
female					-0.401***	-0.202***	-0.0938***	-0.103***
					[-10.59]	[-10.20]	[-9.038]	[-10.64]
housewife					0.523***	0.242***	0.168***	0.166***
					[5.396]	[4.785]	[6.335]	[6.746]
student					0.496***	0.151***	0.218***	0.180***
					[4.475]	[2.620]	[7.197]	[6.404]
retired					0.864***	0.273***	0.274***	0.267***
					[9.782]	[5.936]	[11.32]	[11.92]
chief	-0.568***	-0.125***	-0.0968***	-0.118***	-0.795***	-0.225***	-0.149***	-0.175***
	[-15.15]	[-6.236]	[-9.172]	[-12.20]	[-18.78]	[-10.22]	[-12.88]	[-16.30]
chief_works	0.850***	0.271***	0.146***	0.202***	0.901***	0.308***	0.177***	0.225***
	[15.26]	[9.123]	[9.288]	[14.12]	[15.46]	[10.13]	[11.07]	[15.16]
children					0.0111	-0.198***	-0.110***	-0.0549***
					[0.782]	[-26.69]	[-28.32]	[-15.22]
Constant	-2.313***	0.350**	-0.520***	-0.454***	-1.144***	0.628***	-0.422***	-0.249***
	[-7.295]	[2.074]	[-5.834]	[-5.573]	[-4.025]	[4.244]	[-5.427]	[-3.447]
Observations	15,976	15,944	15,944	15,944	15,830	15,799	15,799	15,799
R^2	0.394	0.287	0.304	0.275	0.403	0.326	0.349	0.300
Adjusted R^2	0.392	0.285	0.302	0.273	0.402	0.324	0.347	0.298

Notes: t-statistics in brackets. *** p<0.01, ** p<0.05, * p<0.1. Country dummies included but not reported.

very similar effects: while not significantly affecting total household income, it decreases per capita and equivalent household incomes.

5.4 Role of chief wage earners

One of the biggest caveats implied by our study is the positive sign of the parameter on the chief wage earner dummy. Does this puzzling result affect the main message of the current paper? The current robustness check confirms that this is not the case.

In Table 6 we present the results of our regression analyses – both with and without a battery of additional control variables – carried out for (i) the entire population (regressions (1) and (4)), (ii) chief wage earners only (regressions (2) and (5)), and (iii) the entire population but controlling for the chief wage earner dummy (regressions (3) and (6)). The inverted-U result and the negative effect of bonding social capital are preserved across all specifications. The signs of other coefficients are also preserved.

5.5 Interactions between social capital, trust, and employment status

Finally, we have also investigated if there is any interdependence between social capital, social trust, and employment status in earnings regressions. Such interaction effects would be in line with the hypotheses put forward in our related theoretical study (Growiec and Growiec, 2014b). In Table 7, we present a few extensions of regressions (4) and (8) from Table 2, allowing for extra interaction terms between both social capital variables, trust, and employment status. With slight abuse of methodology and due to the lack of reliable instruments, we treat our interaction terms as exogenous regressors.

This extension does not have much of an impact for our main results or the signs of coefficients on control variables. On the other hand, we obtain a few interesting additional findings related to the interaction terms. However, statistical significance of these estimates is not entirely robust to the choice of the estimation method, because of very strong correlations between the interaction terms and some of the interacted variables.[8]

In particular, we find an interesting *robust* interaction effect between bonding social capital and social trust (regressions (2), (4), (6) and (8)): it turns out that the impact

[8] For example, the correlation coefficient between the interaction term *empl*bond* and employment status is 0.94, even though bonding social capital itself is mildly negatively correlated with employment status.

Table 6: Role of chief wage earners. IV regressions.

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	inc_ln_eq	inc_ln_eq	inc_ln_eq	inc_ln_eq	inc_ln_eq	inc_ln_eq
	IV	IV	IV	IV	IV	IV
bridging	3.748***	4.056***	4.381***	3.601***	3.675***	3.866***
	[4.299]	[3.078]	[4.708]	[4.101]	[2.875]	[4.337]
bridg2	-3.539***	-3.827***	-4.131***	-3.413***	-3.481***	-3.669***
	[-4.135]	[-2.952]	[-4.522]	[-3.964]	[-2.771]	[-4.196]
bonding	-1.011***	-1.028***	-1.179***	-0.917***	-0.689***	-0.897***
	[-7.436]	[-6.339]	[-8.321]	[-6.657]	[-4.415]	[-6.527]
trust	0.0329***	0.0369**	0.0297**	0.0324***	0.0434***	0.0307***
	[2.799]	[2.471]	[2.429]	[2.799]	[3.091]	[2.662]
trust (mean)	-0.138	-0.188	-0.159	-0.0924	-0.0569	-0.0765
	[-1.404]	[-1.524]	[-1.562]	[-0.951]	[-0.485]	[-0.792]
employed	0.244***	0.376***	0.186***	0.385***	0.447***	0.336***
	[16.52]	[17.53]	[10.24]	[16.80]	[11.25]	[13.43]
hh_size	-0.00707	-0.0544***	-0.0265***	-0.00245	-0.0549***	-0.0304***
	[-1.277]	[-6.537]	[-4.480]	[-0.441]	[-6.923]	[-5.240]
education	0.0547***	0.0602***	0.0521***	0.0511***	0.0600***	0.0498***
	[12.57]	[10.90]	[11.50]	[11.98]	[11.56]	[11.70]
town_size	0.0230***	0.0190***	0.0218***	0.0212***	0.0204***	0.0208***
	[10.13]	[6.377]	[9.253]	[9.522]	[7.257]	[9.363]
stab_rel	0.165***	0.212***	0.140***	0.181***	0.160***	0.132***
	[11.99]	[12.41]	[9.790]	[13.28]	[9.119]	[9.561]
age	0.000561	0.0104***	0.00270	0.00829***	0.0146***	0.0121***
	[0.283]	[3.899]	[1.291]	[4.086]	[5.608]	[5.936]
age2	6.17e-05***	4.35e-06	7.76e-05***	-1.25e-05	-5.53e-05**	-2.91e-05
	[3.034]	[0.157]	[3.647]	[-0.585]	[-1.988]	[-1.358]
choice_c	0.0132***	0.0120***	0.0128***	0.0130***	0.0116***	0.0126***
	[4.984]	[3.309]	[4.643]	[5.018]	[3.396]	[4.903]
female				-0.00982	-0.140***	-0.0879***
				[-0.913]	[-8.769]	[-7.407]
housewife				0.220***	0.176***	0.177***
				[7.474]	[2.601]	[5.979]
student				0.180***	-0.396***	0.153***
				[5.304]	[-6.144]	[4.509]
retired				0.187***	0.176***	0.269***
				[6.953]	[4.055]	[9.924]
children				-0.0486***	-0.0418***	-0.0467***
				[-10.83]	[-7.972]	[-10.38]
chief			-0.138***			-0.186***
			[-11.27]			[-14.46]
chief_works			0.196***			0.219***
			[10.89]			[12.36]
Constant	0.479**	0.0795	0.419*	0.198	-0.150	0.105
	[2.351]	[0.264]	[1.946]	[0.998]	[-0.543]	[0.524]
Observations	14,424	8,532	14,310	14,295	8,476	14,183
R^2	0.045	0.058	-0.021	0.087	0.176	0.101
Adjusted R^2	0.0425	0.0529	-0.0244	0.0844	0.172	0.0974
Endogeneity test	69.14	54.62	96.76	53.71	24.92	55.21
Endogeneity p	0	0	0	0	3.88e-06	0
Sargan Chi-sq	8.004	8.569	9.724	6.488	5.571	5.500
Sargan p	0.0459	0.0356	0.0211	0.0901	0.134	0.139
Anderson-Rubin F	18.72	15.12	25.35	14.45	7.490	14.53
Anderson-Rubin p	0	0	0	0	5.04e-07	0
Underid. Chi-sq	134.1	59.55	125.4	123.9	55.01	118.4
Underid. p	0	0	0	0	0	0

Notes: t-statistics in brackets. *** p<0.01, ** p<0.05, * p<0.1. Country dummies included but not reported.

Table 7: The role of interactions between social capital, trust, and employment status.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	inc_ln_eq	inc_ln_eq	inc_ln_eq	inc_ln_eq	inc_ln_eq	inc_ln_eq	inc_ln_eq	inc_ln_eq
	OLS	OLS	OLS	OLS	IV	IV	IV	IV
bridging	0.471***	0.472***	0.441***	0.442***	3.866***	3.980***	4.100***	4.166***
	[6.759]	[6.776]	[6.233]	[6.240]	[4.337]	[4.282]	[4.245]	[4.187]
bridg2	-0.395***	-0.389***	-0.427***	-0.421***	-3.669***	-3.777***	-3.701***	-3.779***
	[-5.464]	[-5.309]	[-5.817]	[-5.655]	[-4.196]	[-4.161]	[-4.177]	[-4.144]
bonding	-0.0762***	-0.0981***	-0.0821***	-0.101***	-0.897***	-1.344***	-2.357***	-2.705***
	[-4.084]	[-4.364]	[-2.668]	[-3.098]	[-6.527]	[-6.175]	[-5.651]	[-5.419]
bridg*trust		-0.0231		-0.0283		-0.0438		-0.00796
		[-0.559]		[-0.686]		[-0.837]		[-0.144]
bond*trust		0.0651*		0.0659*		1.228***		1.031***
		[1.753]		[1.769]		[5.983]		[5.364]
bridg*empl			0.0981**	0.101**			-0.310***	-0.301***
			[2.420]	[2.476]			[-2.806]	[-2.672]
bond*empl			0.00976	0.00501			2.236***	2.208***
			[0.262]	[0.134]			[5.498]	[5.251]
trust	0.0455***	0.00378	0.0452***	0.00527	0.0307***	-0.936***	0.0328***	-0.792***
	[4.871]	[0.104]	[4.842]	[0.145]	[2.662]	[-5.620]	[2.650]	[-4.990]
trust (mean)	0.126	0.132*	0.120	0.125	-0.0765	-0.00256	0.0175	0.0788
	[1.645]	[1.714]	[1.554]	[1.624]	[-0.792]	[-0.0263]	[0.173]	[0.769]
employed	0.370***	0.370***	0.322***	0.325***	0.336***	0.331***	-1.314***	-1.299***
	[19.02]	[19.01]	[8.295]	[8.348]	[13.43]	[12.80]	[-4.247]	[-4.048]
hh_size	-0.0388***	-0.0389***	-0.0387***	-0.0388***	-0.0304***	-0.0316***	-0.0288***	-0.0300***
	[-8.215]	[-8.234]	[-8.207]	[-8.226]	[-5.240]	[-5.322]	[-4.519]	[-4.637]
education	0.0556***	0.0555***	0.0558***	0.0557***	0.0498***	0.0478***	0.0468***	0.0453***
	[16.04]	[16.00]	[16.10]	[16.07]	[11.70]	[10.75]	[9.844]	[9.166]
town_size	0.0218***	0.0218***	0.0218***	0.0218***	0.0208***	0.0196***	0.0191***	0.0181***
	[12.07]	[12.05]	[12.09]	[12.07]	[9.363]	[8.440]	[7.746]	[7.061]
stab_rel	0.0992***	0.0995***	0.0997***	0.100***	0.132***	0.139***	0.130***	0.136***
	[9.437]	[9.462]	[9.487]	[9.514]	[9.561]	[9.374]	[8.679]	[8.570]
age	0.00975***	0.00975***	0.0100***	0.0100***	0.0121***	0.0120***	0.00991***	0.00982***
	[5.707]	[5.705]	[5.845]	[5.850]	[5.936]	[5.690]	[4.461]	[4.324]
age2	-3.12e-05*	-3.13e-05*	-3.34e-05*	-3.36e-05*	-2.91e-05	-2.80e-05	-3.52e-06	-3.03e-06
	[-1.737]	[-1.740]	[-1.856]	[-1.866]	[-1.358]	[-1.265]	[-0.145]	[-0.122]
choice_c	0.0158***	0.0158***	0.0159***	0.0159***	0.0126***	0.0125***	0.0117***	0.0117***
	[8.271]	[8.271]	[8.316]	[8.317]	[4.903]	[4.706]	[4.145]	[4.042]
female	-0.103***	-0.102***	-0.102***	-0.101***	-0.0879***	-0.0831***	-0.0804***	-0.0768***
	[-10.64]	[-10.59]	[-10.55]	[-10.50]	[-7.407]	[-6.700]	[-6.135]	[-5.642]
housewife	0.166***	0.166***	0.166***	0.166***	0.177***	0.174***	0.254***	0.252***
	[6.746]	[6.733]	[6.735]	[6.712]	[5.979]	[5.729]	[6.978]	[6.760]
student	0.180***	0.181***	0.194***	0.195***	0.153***	0.161***	0.0160	0.0256
	[6.404]	[6.417]	[6.735]	[6.766]	[4.509]	[4.609]	[0.331]	[0.526]
retired	0.267***	0.268***	0.265***	0.265***	0.269***	0.271***	0.351***	0.351***
	[11.92]	[11.92]	[11.79]	[11.79]	[9.924]	[9.661]	[10.49]	[10.21]
chief	-0.175***	-0.175***	-0.175***	-0.174***	-0.186***	-0.184***	-0.199***	-0.197***
	[-16.30]	[-16.27]	[-16.22]	[-16.19]	[-14.46]	[-13.84]	[-13.92]	[-13.54]
chief_works	0.225***	0.225***	0.224***	0.224***	0.219***	0.221***	0.221***	0.222***
	[15.16]	[15.18]	[15.12]	[15.14]	[12.36]	[12.07]	[11.47]	[11.30]
children	-0.0549***	-0.0548***	-0.0548***	-0.0547***	-0.0467***	-0.0453***	-0.0486***	-0.0476***
	[-15.22]	[-15.19]	[-15.19]	[-15.16]	[-10.38]	[-9.615]	[-10.15]	[-9.624]
Constant	-0.249***	-0.235***	-0.232***	-0.220***	0.105	0.415*	1.211***	1.458***
	[-3.447]	[-3.221]	[-3.099]	[-2.924]	[0.524]	[1.802]	[3.690]	[3.850]
Observations	15,799	15,799	15,799	15,799	14,183	14,183	14,183	14,183
R^2	0.300	0.300	0.300	0.300	0.101	0.042	-0.062	-0.107
Adjusted R^2	0.298	0.298	0.298	0.298	0.0974	0.0390	-0.0656	-0.111

Notes: t-statistics in brackets. *** p<0.01, ** p<0.05, * p<0.1. Country dummies included but not reported.

of trust on earnings is mediated by bonding social capital. Other, *non-robust* due to multicollinearity – and thus potentially questionable – effects are found for the interactions terms between employment status and both social capital variables.

The marginal income effects of both social capital variables, social trust, and employment status, computed according to regression (8), are as follows:

$$\begin{aligned}
\frac{\partial \text{income}_i}{\partial \text{bridging}_i} &= 4.166 - 2 \times 3.779 \times \text{bridging}_i - 0.301 \times \text{empl}_i, \\
\frac{\partial \text{income}_i}{\partial \text{bonding}_i} &= -2.705 + 1.031 \times \text{trust}_i + 2.208 \times \text{empl}_i, \\
\frac{\partial \text{income}_i}{\partial \text{trust}_i} &= -0.792 + 1.031 \times \text{bonding}_i, \\
\frac{\partial \text{income}_i}{\partial \text{empl}_i} &= -1.299 - 0.301 \times \text{bridging}_i + 2.208 \times \text{bonding}_i,
\end{aligned}$$

where for each individual, bridging social capital takes a value in the interval $[0, 1]$ (the sample mean is 0.4873), bonding social capital belongs to $[0, 1]$ as well (the sample mean is 0.8114), employment status is either zero or one (the mean is 0.5256), and trust is either zero or one (the mean is 0.3044).

Hence, our results suggest that if one trusts strangers, more contacts with family should increase her earnings, *ceteris paribus*; if one doesn't, they should lower them. If one trusts strangers and at the same time one has strong family ties, one may for example use the kinship group's resources and support to cooperate with strangers to set up a business and make greater profits out of the family resources one already has. No such effect is found for bridging social capital.

Taking Regression (8) in Table 7 literally, our findings also imply that the impact of employment status on individual earnings is the higher, the higher is the stock of individual bonding social capital or the lower is the stock of bringing social capital. Conversely, being employed diminishes the positive earnings effects of bridging, and negative effects of bonding social capital. These findings, which stand in partial agreement with the theoretical hypotheses of our related study, should be treated with caution, though: we cannot rule out that they may be due to regressor endogeneity or model misspecification.

6 Conclusion

The current paper has revisited the earlier findings (reviewed in Table 1) that bridging social capital generally increases earnings, whereas bonding social capital decreases them. These papers have not considered the possibility for non-linear effects, though. Our empirical investigation fills this gap in the literature, revealing that the impact of bridging social capital on individual earnings is in fact *inverted-U shaped*. The familiar positive earnings effects of bridging social ties, arising due to a range of possible resource advantages, can in fact be outweighed by negative effects – due to time costs of social capital accumulation and maintenance – if the individual's stock of bridging social capital is "too large". On the other hand, we confirm the unambiguously negative earnings effect of bonding social capital and identify its shape as approximately linear. Both results are extremely robust to a wide range of manipulations in the estimated regression equations.

In one of our extensions, we have also identified significant and robust interaction effects between bonding social capital and social trust: if one trusts strangers, more contacts with family should increase her earnings; if one doesn't, they should lower them.

A methodological contribution of the current paper has been to sort out the endogeneity and omitted variables bias issues which are common, yet often overlooked problems in the related literature. We find these problems to be generally valid but not crucial for our principal research question.

What remains to be done is to collect and use panel data to draw more precise conclusions on the causal links between social capital, trust, and economic performance of individuals and countries. Unfortunately, in this respect, we are facing an unsurmountable data availability problem, at least with WVS/EVS data.

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