NATIONAL BANK OF POLAND
WORKING PAPER
No. 94

Trusting only whom you know, knowing only whom you trust: the joint impact of social capital and trust on individuals' economic performance and happiness in CEE countries

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Warsaw 2011

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This research was supported by a grant from the CERGE-EI Foundation under a program of the Global Development Network, administered by the Institute for Structural Research, Warsaw, Poland. All opinions expressed here are those of the authors and have not been endorsed by CERGE-EI, the GDN, or the institutions the authors are affiliated with. The authors thank Tom Coupé, Randall Filer, Peter Katuščák, Zuzana Fungáčová, an anonymous Referee, and participants of the GDN Workshop (Prague, 2009) for their helpful comments and suggestions which helped significantly improve the paper. All errors belong to the authors.

Design:

Oliwka s.c.

Layout and print:

NBP Printshop

Published by:

National Bank of Poland
Education and Publishing Department
00-919 Warszawa, 11/21 Świętokrzyska Street
phone: +48 22 653 23 35, fax +48 22 653 13 21

http://www.nbp.pl

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Abstract. This paper demonstrates that bridging and bonding social capital as well as social trust interdependently affect individuals' earnings and happiness. Based on cross-sectional World Values Survey 2000 data on individuals from eight Central and Eastern European countries (CEECs), we provide evidence that majority of citizens of these countries have likely fallen in a "low trust trap" where deficits of bridging social capital and trust reinforce each other in lowering individuals' incomes and happiness. Apart from gradual modernization and economic growth, also increases in labor market participation are identified as a potential way out of this "trap", because employed people in CEECs tend to have statistically significantly more bridging social capital and more trust. While assessing robustness of our empirical results, we have found a high risk of regressor endogeneity and omitted variables bias, generally overlooked in earlier studies. These issues are carefully addressed in the current contribution.

Keywords: bridging social capital, bonding social capital, social trust, CEE countries, earnings, happiness

JEL Classification Numbers: D10, J20

1 Introduction

Central and Eastern European countries (CEECs) – in the case of the current paper, this category encompasses Poland, the Czech Republic, Slovakia, Hungary, Slovenia, Lithuania, Latvia, and Estonia – have managed to achieve tremendous economic and political progress in the last twenty years. Not only have they succeeded in building robust democratic and free market institutions in these years, but also in restructuring their economies, which had been suffering from serious underdevelopment and mismanagement in the communist years. Furthermore, their association with the European Union (EU), and the subsequent EU accession in 2004, were remarkable achievements which further boosted their economic convergence with Western Europe. Yet, social change in CEECs was certainly not as fast as the institutional and economic one. Patterns of social ties people form and their attitudes towards others, inherited from the communist past and then only petrified in the turbulent years of transition – rare social ties, predominantly confined to a narrow circle of family and friends, and a strong imperative not to trust strangers – are now often named as important impediments to CEECs' further economic development and their catch-up with the EU-15.

It is however not yet well understood how such social background might affect individuals' economic activity at large. The objective of the current paper is thus to shed new light on this issue by testing the hypothesis that extremely low levels of bridging social capital and trust, formed in the post-socialist EU countries in their communist and transition years, might slow down their current economic catch-up with the EU-15. The mechanism tested here is based on the conjecture that citizens of CEECs may be trapped in a low bridging social capital–low trust equilibrium where forming social ties with dissimilar people is discouraged by the lack of general trust, and conversely – forming social trust is hampered by little social exposure – thus generating a vicious circle. The basis for this conjecture is the fact that bridging social capital and trust are robustly correlated, both between and within countries, even if a wide range of individuals' characteristics is controlled for.

The aforementioned vicious-circle hypothesis has been formalized in a companion paper to this one, Growiec and Growiec (2010b). There, we have put forward a microfounded economic model where social networks and trust attitudes of optimally behaved individuals influence their economic decisions, giving rise to multiple equilibria. Here, we quote some of the results from those theoretical investigations and then confront them with World Values Survey (WVS) data from the CEECs. Our empirical approach consists in estimating micro-level regression equations, explaining individuals' earnings and happiness. Our preferred econometric technique is instrumental variables (IV) regression, which allows us to control for the endogeneity of social capital formation – both predicted by theory and confirmed in appropriate econometric tests – and the endogeneity of income, which is a naturally important determinant of individual happiness.

Hence, the primary contribution of the current paper to the existing literature lies in adding an important social dimension to the discussion on CEECs' economic convergence with the EU, assessing the impact of the specific shape of social networks and attitudes which have formed in CEE countries in their communist as well as transition years, on their current economic performance. These underlying social characteristics will then also be related to the levels of individuals' happiness. This will help us confirm that they indeed have a profound impact not only on economic performance, but also on the self-reported levels of happiness, even after controlling for income disparities. Our paper can thus improve the understanding why CEECs, on average, lag behind EU-15 not only economically, but also in terms of reported happiness.

The second contribution of this paper is a methodological one: by applying a number of instrumental variables (IV) regressions, controlling for endogeneity of regressors and potential omitted variables bias, and carefully testing the validity and identification properties of instruments used in each regression specification, we shall sort out several empirical caveats arising in the related literature due to the endogeneity of social capital in income and happiness regressions.

As regards the primary contribution of this paper, two complementary hypotheses will be tested here, regarding bridging and bonding social capital, respectively. The first of these hypotheses is that very low levels of bridging social capital (i.e. very rare social ties with people in a different socio-economic position, cf. Putnam 2000; Leonard, 2008) found in post-socialist countries of the European Union (EU) – cf. Cook, Rice, and Gerbasi (2004), Kääriäinen and Lehtonen (2006) – act as an impediment for their economic catch-up with wealthier EU countries. More specifically, we will investigate the possibility that several CEE countries could be trapped in a low bridging social capital–low trust equilibrium where the formation of social ties with dissimilar people is systematically discouraged by the lack of general trust, and conversely, where the low levels of trust are reinforced by the lack of contact with dissimilar others (cf. K. Growiec, 2009a,b). Being "trapped" in the currently discussed equilibrium would then hamper the pace of economic convergence by introducing substantial transaction costs, slowing down the flow of information, preventing the introduction of innovative ideas, and limiting people's cooperativeness and thrift (Knack and Keefer, 1997; Zak and Knack, 2001; Inglehart and Baker, 2000; Florida, 2004; Czapiński, 2007; Klapwijk and Van Lange, 2009). These effects are also present in our data, where bridging social capital, trust, and individual earnings are significantly and positively correlated, even if a wide range of individual characteristics and country effects are controlled for.

Having checked whether our data provide sufficient support for this view of contemporary socio-economic change in CEE countries, we shall proceed to the discussion of the possible ways out of the low bridging social capital–low trust trap. Apart from the obvious one, through gradual modernization and aggregate economic convergence with the wealthier EU countries (Czapiński, 2007), we shall also discuss a policy-

relevant alternative – through increased labor market participation. Indeed, there is evidence that the employed not only create wealthier households, but also have more bridging social capital, less bonding social capital, and are on average more inclined to trust strangers.

Our second hypothesis relates to bonding social capital. We suppose that this form of social capital, based on exclusive networks with people in a similar socio-economic position (primarily family members) should, as opposed to bridging social capital, work against quick modernization and economic development by attaching people to their traditional values and modes of behavior, lowering their innovativeness, adaptivity and mobility (Florida, 2004, Alesina and Giuliano, 2007; Guiso, Sapienza and Zingales, 2008), and adding extra transaction costs due to the limited trust towards others (Williamson, 1987). We will try to quantify how important these mechanisms are in CEE countries. At this point, it should be noted that, as opposed to bridging social capital, the experiences of CEECs with respect to bonding social capital are quite mixed: on the one hand, Poland lies among the countries with strongest family ties in the world (cf. Alesina and Giuliano, 2007), whereas, e.g., in the Czech Republic, Estonia, or Lithuania, these ties are not at all stronger than in an average EU country. We would like to take advantage of this variation in our data to obtain clearer results on the effects of bonding social capital on individuals' economic performance which have hitherto been rather inconclusive (Chiesi, 2007).

The remainder of the paper is structured as follows. Section 2 provides the sociological background to our considerations. Section 3 discusses measurement issues and presents the preliminary evidence on the patterns of social capital, trust, and economic development observed in CEECs, and highlights the similarities and differences between them. It thereby provides the foundations for our main hypotheses, thoroughly tested in Section 4. Section 5 concludes.

2 Related literature

The current paper relates to five complementary strands of sociological and psychological literature. The first of them relates to the definition and measurement of social capital. The principal idea which we build on here is 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). The social network perspective on social capital is widely shared (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; 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, partly driven by the lack of sufficiently close proxies in large-scale survey datasets. 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. With such an approach, there always remains the problem of data availability, though. In the current paper, this problem will force 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.

The second relevant strand of sociological literature relates to welfare state regimes (as defined by Standing, 1998), and the specificity of post-socialist countries in this respect. Standing (1998) uses two criteria to identify welfare state regimes: the degree of de-commodification and the type of stratification. The former refers to the degree to which social-political benefits are social rights independent of markets (and family relations), and the latter one captures the extent of social-political systems, i.e. the universality of benefits (Standing, 1998; Kääriäinen and Lehtonen, 2006). According to these authors, five welfare state regimes can be distinguished in Europe along these lines: liberal, conservative, Nordic, Mediterranean, and post-socialist. Welfare state regimes identified by Standing correspond with associated Inglehart and Baker's (2000) findings in the following way: Inglehart and Baker argue that "Protestant cultural heritage is associated with the syndrome of general trust, tolerance, well-being, and postmaterialism that constitutes self-expression values while an Orthodox religious heritage and communist historical heritage both show a negative impact on these values, even after controlling for differences in economic level and social structure" (Inglehart and Baker, 2000: 39-40). Moreover, as discussed by Sztompka (2004) and Kornai and Rose-Ackerman (2004), the difficult economic and political situation in the CEE countries in the communist era forced people to form closed social networks, which helped "get by", but to which was their trust limited, and

learned not to trust anyone outside of the ingroup. Since social networks and people's attitudes are, in principle, very persistent, the lack of bridging social capital and general trust was carried forward into the years of political and economic transition, which made the subsequent social change even more "traumatic".[1] Despite forming a common welfare state regime, CEE countries are not homogenous in terms of their social capital, though: for example, bonding social capital is widely present in Poland but not that much in other CEE countries (Alesina and Giuliano, 2007).[2]

The third strand of sociological and psychological literature related to the current study deals with general trust. Arguably, modern societies are more then ever based on general trust and social interactions (Simmel, 1971; Giddens, 1991; Sztompka, 1999; Yamagishi, 2002; Glanville and Paxton, 2007; Klapwijk and Van Lange, 2009); without trust societies would disintegrate as trust is a synthetic force within the society (Simmel, 1950; Putnam, Leonardi and Nanetti, 1993). At the same time, general trust turns out to be closely related to bridging social capital while distrust – with bonding social capital; previous findings show that there are mutually reinforcing relationships between social capital and general trust (K. Growiec, 2009a,b). At the individual level, people whose prevailing form of social capital is the bonding one are significantly more likely to present general distrust than those with abundant bridging social capital.[3]

The fourth strand of literature which we shall refer to deals with individuals' motivations to accumulate social capital. Indeed, while forming their social networks,

[1]Complementarily, despite these overlapping differences between welfare state regimes and countries with Protestant, Orthodox, or Communist historical heritage, it is found that the worldviews of rich societies differ markedly from those of poor societies. The rich, postindustrial societies have already gone through a shift from the emphasis on economic and physical security toward the emphasis on expressive values, whereas the poorer post-socialist CEE countries have not experienced such a shift yet.

[2]A closer look at the characteristics of CEECs proves that these countries are clearly heterogeneous in terms of their social capital resources. According to Wallace and Pichler (2007), "Slovenia is more like a Nordic welfare regime" in terms of its social capital stock; Romania and Bulgaria "resemble Southern welfare states with a declining coverage of social risks for much of the population since the transition from communism"; and the Czech Republic "has adopted many aspects of the insurance-based German system". Based on their research results, Wallace and Pichler claim that it is more reasonable to divide the group of CEE countries into three separate sub-groups: the Czech Republic, Latvia, Slovenia and Slovakia would form the first group, characterized by medium bridging social capital resources and medium bonding social capital resources; Lithuania and Bulgaria as the second group with high bonding social capital and low bridging social capital, and Poland, Estonia, Romania and Hungary as a third group with low bonding social capital and low bridging social capital resources. One has to remember that their operationalization of bridging and bonding social capital is markedly different from Putnam's or Lin's, however, and hence follow these somewhat surprising results.

[3]Apart from social capital, general trust is also related to risk taking and coping with uncertainty (Dasgupta, 1988; Molm, Takahashi and Peterson, 2000; Cook, Yamagishi, Cheshire, Cooper, Matsuda, and Mashima, 2005). Low-trust societies which primarily avoid risk taking, put themselves at a competitive disadvantage in global markets by doing so, as they can't build complex social institutions (Fukuyama, 1995).

individuals may be driven by a number of motivations: in particular, they may seek to satisfy their safety drive or their effectiveness drive (Bowlby 1969; Greenberg, 1991). Safety is associated with affiliation and the density of networks, whereas effectiveness – with competition and structural holes (Burt, 1992). These different functions are served by the different forms of social capital which people build: the "motivation for support [provided by bonding social capital] is satisfying basic needs or sustaining status quo. Structural holes [related to bridging social capital] are (...) for creating change and movement" (Kadushin, 2002: 86). Furthermore, different psychological predispositions of individuals can have a marked impact on their social networks. Individuals who value their personal identity more than their social identity are more likely to maintain diverse social networks (Kalish and Robins, 2006), i.e., a large stock of bridging social capital. Surprisingly, people who have many structural holes in their network are also those who are more neurotic, but reveal a strong conviction of control over their lives (Kalish and Robins, 2006) and are more creative (Burt, 1992).

The fifth strand of related literature deals with the impact of social capital and trust on economic performance at the level of individuals, communities, regions, and whole countries. Given the aforementioned findings, one should naturally expect large differences between the impacts of bridging and bonding social capital here. And indeed, sociological literature argues that bridging social capital, but not 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) most prominent discovery is that weak ties (i.e., ties between dissimilar people) facilitate better job finding 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.

Despite Burt's (2005) clear suggestions that bridging social capital should be positively related to individuals' happiness, the issue of whether social networks influence happiness has not been fully settled either. Even more worryingly, earnings and happiness are directly interrelated as well, complicating the matter even further (Helliwell, 2003), e.g., people with higher relative incomes have been found to show significantly higher measures of subjective well-being (Diener, Suh, Lucas, and Smith, 1999). It could also be true that these ambiguous results were due to a non-linear relation between happiness (or subjective well-being) and income: "Theory and some previous research suggest that the effects of individual and national incomes may be non-linear in nature, with smaller well-being effects attached to increases in income beyond levels set by each individual's or society's expectations and habits" (Helliwell, 2003, p. 344).

Finally, in a complementary paper to the current one (Growiec and Growiec, 2010b), we have put forward a theoretical model aimed at capturing the hypothesis that bridging social capital and social trust can form both virtuous and vicious circles, leading to multiple equilibria in economic performance. One of the aims of the current contribution is to test these predictions empirically.

3 Measurement and preliminary evidence on intra-country and cross-country differences

Patterns and mechanisms described in the theoretical model as well as in the associated literature are also visible in our data. Let us however discuss measurement issues first.

As already indicated above, our study is based on World Values Survey (WVS) data. The WVS is an international survey program. In each member country, a survey based on the same standardized questionnaire is conducted by a local public opinion survey institution, in the local language, on a representative sample of the country's population aged 18+, in the same year (±1 year). Sample sizes vary around 1000 respondents per country, regardless of country size. There are however numerous gaps in data regarding some variables, including the ones used for constructing our social capital scales. As far as we were able to check, these gaps don't exhibit any systematic pattern within countries. However, as regards the country coverage of the current study, Baltic countries have by far most missing observations. In particular, for the most data-demanding IV regresions discussed here, we could use about 3800 observations in total, including around 900 observations from the Czech Republic, 700 from Poland, Slovakia and Hungary, and only 50 observations from Latvia and 80 from Estonia.[4]

3.1 Measurement of social capital and trust

Throughout our empirical analysis, we make use of data from the 2000 wave of the WVS. The choice of this particular wave is due to the fact that only the 2000 wave of the WVS includes an extended list of questions relevant to the measurement of social capital. We can thus provide a sufficiently accurate description of the bridging and bonding social capital variables in CEECs only for 2000.

As already discussed above, bridging social capital refers to forming social ties across social cleavages and requires people to transcend their simple social identity. For this reason, it makes sense to operationalize bridging social capital as time investments in socializing with friends, colleagues from work, friends from church, sports clubs, voluntary organizations, etc.[5] Our bridging social capital measure will be constructed as a summary scale based on the following questions:

[4] These numbers also explain why conducting our IV study on a country-by-country basis might lead to unreliable results (very high standard errors, few significant variables). These results are available from the authors upon request.

[5] Unfortunately, the WVS (nor any other known large-scale survey dataset) does not provide data suitable for assessing the *closeness* and *number* of ties with people from each of these categories. Due to this fact, our measure of bridging social capital includes also the information on contacts with close friends and fellow churchgoers. From the theoretical point of view, these contacts should rather be classified as bonding, not bridging social capital. There is no way to disentangle them using our data, though.

- "How often do you spend time with your friends", answers: weekly, once or twice a month, only a few times in a year, not at all.
- "How often do you spend time socially with your colleagues from work or your profession", answers: weekly, once or twice a month, only a few times in a year, not at all.
- "How often do you spend time with people at your church, mosque or synagogue", answers: weekly, once or twice a month, only a few times in a year, not at all.
- "How often do you spend time socially with people at sports clubs, voluntary or service organization", 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 the Cronbach's alpha analysis shows that its validity cannot be improved by removing any of its constituent items.

Bonding social capital, on the other hand, will be operationalized as the strength of family ties and the tendency to form kinship groups based on unconditioned loyalty (cf. Alesina and Giuliano, 2007). Kinship ties have been already used as a proxy measure for bonding social capital by Kääriäinen and Lehtonen (2006) who worked on ISSP data. In the current research, bonding social capital will be operationalized with 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"). These three proxy measures will be normalized and plugged into an additive scale. Again, analyzing this summary scale reveals that its validity cannot be improved by removing any of items.[6]

We will simultaneously monitor the mean level of social trust in each society, measured by the frequency of affirmative answers to the survey statement: "Most people can be trusted" (as opposed to "Can't be too careful"). We shall also distinguish between individuals' self-reported 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. In our analysis, we will stratify individuals by their country of residence and education level.

[6] We work with a measure of attitudes here because, unfortunately, no relevant variables measuring actual behaviors of respondents are available in the WVS dataset. The worry that attitudes and actions might not be perfectly correlated is a valid one but we have no means to address it.

We are going to be very careful about the distinction and mutual relationships between bridging social capital, bonding social capital, and social trust: it might help us show how the low bridging social capital–low trust equilibrium could pertain.

3.2 Measurement of other variables

The key dependent variables in the current study are individuals' incomes and happiness. The former of these two measures is the WVS scale of incomes per person in the household with 10 available intervals for the respondents to pick, and the latter is the variable "feeling of happiness", with 4 available answers (very happy, quite happy, not very happy, not at all happy). Since income is measured per person in the household, one must control for household size in all income regressions.[7] Also, the scale of incomes has country-specific income thresholds, given in the local currency, and thus one cannot directly compare the results internationally. The (approximately) logarithmic scale of incomes is maintained for all countries, though. Thanks to this fact, country fixed effects should take care of the differences in definition of income categories across countries.

Apart from these variables, we shall also include several other measures[8] from the WVS in our empirical regressions, potentially useful for explaining incomes and happiness directly, or for instrumenting the endogenous measures of bridging and bonding social capital.

Having described our operationalization of the most important variables of the current study, and before we plunge into the main empirical investigation, we shall now present some of the basic properties of our data.

3.3 Correlations at the individual level

In agreement with the established literature reviewed in Section 2, the societies of CEECs record significant individual-level correlations between bridging social capital, bonding social capital, social trust, and happiness.

As we see in Table 1, bridging social capital and trust are positively and robustly correlated, both in the aggregate dataset and within each of the eight CEECs (that is, controlling for country dummies), even if a wide range of additional control variables is included. These controls include, first and foremost, bonding social capital, and also income per adult person in the household, size of town of residence, education, sex, the stable relationship dummy, age, age squared, and subjectively reported happiness.

[7] The relevant variable used in the regressions is *number of adult persons in the household* aged 18+.

[8] The list includes: sex, age, age squared, employment status, student status, housewife status, size of town of residence, household size, and being in a stable relationship. We also control for the sense of autonomy the individual perceives to have over her own life, participation in professional organizations, sports and recreation organizations, or education and arts organizations, as well as the importance of religion and politics in her life.

Even though all these correlation coefficients are significant, it must be said that they are relatively small, and indeed much smaller than we had expected. The potential reasons for this result are the unobserved heterogeneity of respondents, and very noisy measurement of trust, captured by a single survey question.

Table 1: Spearman rank correlations and partial correlations.

Bridging social capital vs trust		
Controls	Corr.	p-value
none	0,078	0
bonding	0,074	0
bonding + country dummies	0,092	0
range of controls	0,074	0
range of controls + happiness	0,062	0

In Table 2 we demonstrate that bonding social capital is, on the contrary, essentially uncorrelated with social trust. The raw correlation coefficient is negative but insignificant, and partial correlation controlling for bridging social capital and country dummies is zero. A further addition of the above-described range of controls makes the coefficient positive, yet still insignificant at the 10% level. This confirms that we should not seek a consistent relationship between bonding social capital and trust in CEECs where trust levels are generally very low.

Table 2: Spearman rank correlations and partial correlations.

Bonding social capital vs trust		
Controls	Corr.	p-value
none	-0,01	0,137
bridging	-0,015	0,285
bridging + country dummies	0,001	0,947
range of controls	0,024	0,113
range of controls + happiness	0,022	0,148

Table 3 confirms that bridging and bonding social capital are distinct phenomena not only in their relationship with social trust, but also in their own mutual correlation. This correlation is marginal in the whole sample, essentially zero within countries, and significantly positive but less than 0,05 if a range of controls (income per adult person in the household, size of town of residence, education, sex, the stable relationship dummy, age, age squared, happiness) is added to the regression.

Table 4 confirms that the relationship between bridging social capital and happiness is close. The correlation coefficient between these two variables is large (0,2 in individual survey data is a lot) and strongly significant. It is however gradually reduced as certain control variables are taken care of, indicating that some of the relationship can be captured by differences in earnings, size of town of residence, age, etc. This issue will be scrutinized in much more detail in Section 4.

Table 3: Pearson correlations and partial correlations.

Bridging vs bonding social capital		
Controls	Corr.	p-value
none	0,027	0,054
country dummies	0,005	0,707
range of controls	0,049	0,001
range of controls + happiness	0,043	0,003

Table 4: Pearson correlations and partial correlations.

Bridging social capital vs happiness		
Controls	Corr.	p-value
none	0,201	0
country dummies	0,168	0
range of controls	0,128	0

3.4 The importance of employment status

In our data, there are clear differences between the employed and non-employed, both in terms of patterns of social capital formation, and levels of social trust. In the descriptive Table 5, we see that the non-employed have (statistically) significantly more bonding social capital, and significantly less bridging social capital and social trust. Understandably, they also report lower incomes on average, and lower levels of happiness.

Hence, one could conjecture that not only is economic growth able to alleviate the postulated problem of a vicious circle of low bridging social capital and low social trust, but there should also be a link between employment and the ability to form bridging social capital. There is abundant anecdotal evidence that if an individual is employed, then the pool of people with whom she can establish social ties is significantly larger than if she does not work. At the same time, her earning potential is also markedly higher. It follows that in a society with a higher labor market participation rate, there should be both a higher level of average earnings (i.e., GDP per capita), and higher levels of bridging social capital and trust. This conjecture will be verified empirically in further sections of the current paper.

Having identified the intra-country variation in our variables, let us now identify the most apparent similarities and differences between the eight CEECs at the country level.

Table 5: Differences in social networks and attitudes between the employed and the non-employed: means, and results of the t-test for equality of means (with unequal variances). Positive t-statistics indicate that the non-employed have higher values of the respective characteristics, and conversely.

	Group	Obs	Mean	Std Dev	t-Stat	p-value
bridging	non-employed	2280	0,3674	0,2190	-8,3028	0,0000
	employed	2801	0,4176	0,2084		
bonding	non-employed	2280	0,8382	0,2180	3,7034	0,0001
	employed	2801	0,8149	0,2273		
trust	non-employed	2233	0,1885	0,3912	-3,5328	0,0002
	employed	2748	0,2293	0,4204		
income pc	non-employed	2029	3,3815	2,0945	-28,5218	0,0000
	employed	2532	5,2792	2,3948		
happiness	non-employed	2214	1,7611	0,7223	-8,7101	0,0000
	employed	2726	1,9299	0,6183		

3.5 Similarities and differences among CEECs

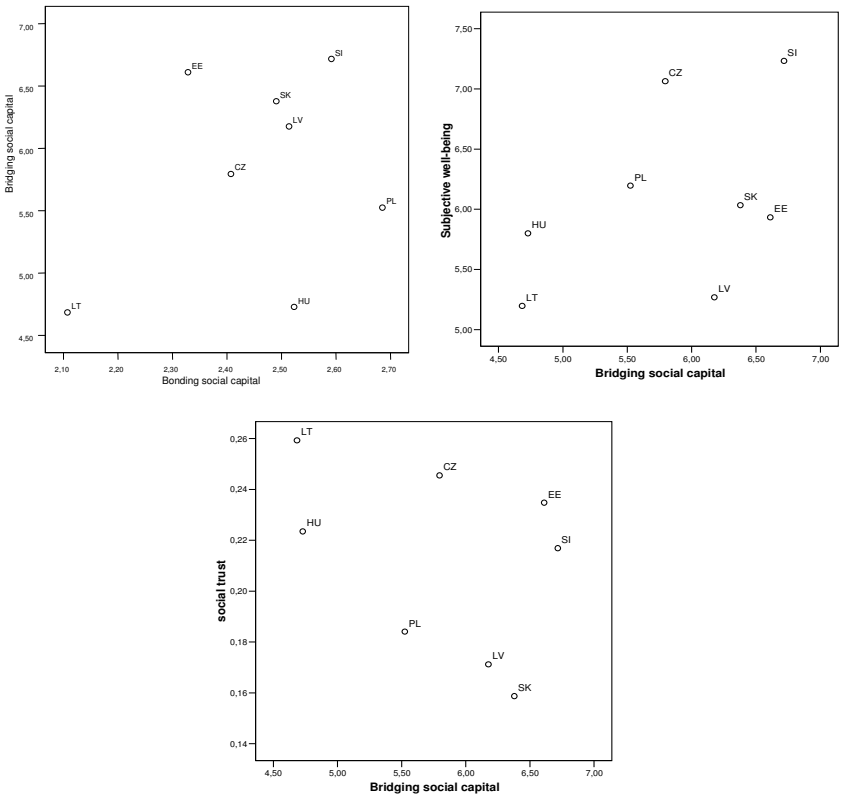
The first glance at country-wise averaged data in Figure 1 confirms that CEECs are heterogeneous in terms of their social capital resources (cf. Kääriäinen and Lehtonen, 2006; Alesina and Giuliano, 2007; Wallace and Pichler, 2007). It is straightforward to point out the leaders of the region in terms of bridging social capital – the "innovative" power – which are Estonia and Slovenia, and the leaders in terms of bonding social capital – the traditional and "status quo maintainer" power – namely Poland. We also can see in Figure 1 that at the international level, bridging social capital and bonding social capital seem to be rather independent dimensions of social capital, which is congruent with Putnam (2000).

Furthermore, the most satisfied with their lives are the societies of Slovenia and Czech Republic, and the least – of Latvia and Lithuania. For the second time Slovenia appears to be a leader of the region here – both in terms of bridging social capital and happiness.

As regards the cross-country relationship between bridging social capital and social trust, these two phenomena do not appear to be positively correlated (somewhat contrasting with the predictions of underlying sociological theories). Instead, we see two distinct groups of countries: the (marginally) more trusting are the Lithuanians, Czechs, Estonians, Hungarians, and Slovenians. The most distrustful are the Slovakians, Latvians, and Polish. The possible reason for this finding is that there might exist substantial country-specific factors interfering with this relationship. Indeed, correlation analysis at the individual level confirms a positive relationship between bridging social capital and trust.

In sum, scatterplots presented in Figure 1 indicate that CEE countries are clearly heterogeneous in terms of their social background despite some common features

Figure 1: Bridging and bonding social capital stocks across CEE countries.



(e.g. social trust is uniformly low in all considered countries, much lower than the EU average). Interestingly, there are both "leaders" and "laggards" in social development in the region and our task here is to investigate the factors responsible for their position in the region, and the mechanisms which may lead to persistence of these observed patterns. It must be remembered that country-level averages hide vast intra-country heterogeneity in social capital patterns and social trust, a feature which we will take into account in our econometric investigation.

4 The joint impact of social capital and trust on individuals' incomes and happiness

Let us now pass to the main results of the current study. We have run several cross-sectional regressions explaining individuals' incomes and happiness, and choosing the explanatory variables in line with the underlying social capital literature and the implications of our theoretical model, in a manner similar to our earlier study (Growiec and Growiec, 2010a). We have also included a number of control variables in these regressions, found to have a significant impact on the dependent variables, such as education, age, size of town of residence, etc. We have been very careful with the treatment of endogeneity, which – alongside potential omitted variables bias – turns out to be the crucial problem here. All "central" equations of this paper have been estimated with the instrumental variables method.

4.1 Bridging and bonding social capital and trust as determinants of individual incomes

We have conducted a number of linear regression analyses, aiming at finding robust socio-economic determinants of individual incomes. The first set of results is contained in Tables 6–7. The equations have been estimated with the instrumental variables technique, to control for endogeneity of bridging and bonding social capital. Although it is an admittedly hard task to find good instruments for these social variables in cross-sectional data, our final results indicate that we have succeeded in finding such variables. As instruments for bridging and bonding social capital in the earnings equation, we used: sex, number of children, 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?"), one measure of interest in politics (survey question: "How often do you discuss political matters with friends?"), a range of dummy variables characterizing the respondent's membership in organizations, and a range of dummy variables on what she perceives to be important child qualities (e.g., good manners, independence, honesty, imagination, etc.). Sargan tests indicate that these instruments are valid, whereas underidentification tests prove that our auxiliary regressions are able to identify the endogenous regressors correctly with instruments. Chi-square endogeneity tests confirm that bridging and bonding social capital are indeed correlated with the error term of the OLS regression. Anderson-Rubin tests indicate that both endogenous variables are jointly significant in the main equation. Our preferred specification – the central one for the current subsection of the paper – is model (8) in Table 6, which both utilizes the instrumental variables estimation procedure, and controls for all relevant individual characteristics.

Our results confirm that bonding social capital indeed decreases income: the more an individual is confined to her kinship group, the less income she has, other things equal. A tentative conclusion 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. In a previous paper (Growiec and Growiec, 2010a), we have put forward a theoretical model formalizing this idea. We have however failed to support it with the Polish dataset we used there (bonding social capital turned out insignificant in the earnings regression). Here, a broader dataset including also individuals from other CEECs helps draw more robust conclusions on this relationship, strongly supporting the theory. As is demonstrated in the appendix, however, there is quite some heterogeneity in the strength of this effect across CEE countries.

As opposed to Beugelsdijk and Smulders (2003), Florida (2004), and Growiec and Growiec (2010a), in our baseline specification we do not find a positive relationship between bridging social capital and earnings. If anything, this relationship is negative here; it is however sensitive to the choice of model specification. This result may be due to three reasons: first, the amount of time spent with friends, co-workers, people from one's church or voluntary organization, etc., can be heavily dependent on people's choice between materialist and post-materialist values. CEE countries are known for inclination toward the former (Inglehart and Baker, 2000), so if someone decides to devote some of her time to her circle of friends and acquaintances, it may mean that at the same time, she would also withdraw some of her activity from the labour market, thus lowering her earnings. The second mechanism, on the other hand, relates to the fact that bridging social capital is relatively scarce in CEE countries, and the employed people tend to work long hours, much longer than e.g., in Western Europe. This would imply that the positive external effects of bridging social capital on earnings are rather small in CEE countries, and easily neutralized by the aforementioned time-substitution effects. Please note that, in line with this mechanism, the positive impact of bridging social capital on earnings disappears once we begin to control for employment status. The third potential reason for this result, slightly more technical, might be due to the imperfect instrumentation of endogenous bridging social capital in our empirical model. Perhaps in a different dataset, one could find stronger instruments for bridging social capital, able to identify the external effects on earnings with higher precision.

Table 6 is illustrative on the vital issue of endogeneity and omitted variables bias. If neither of these issues is controlled for, bridging social capital is found to influence earnings positively, and statistically significantly at 1% level. However, if one takes into account the fact that there exists also a reverse causal link from earnings to bridging and bonding social capital, this result disappears. It also disappears when one controls for the impact of social trust and individuals' freedom of choice and

control (measured by the survey question: "How much freedom of choice and control over your actions do you have?").[9]

Our another finding is that, in line with our prior expectations, trust and earnings are positively related to each other. This refers both to the extent to which one trust others, and 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 and is trusted, the better is she off. It supports the idea (K. Growiec, 2009a) that bridging social capital and social trust both enhance incomes, and operate in the same way: they both open individuals for more beneficial situations. High trust standards probably also make contacts at the workplace more favorable in terms of information flow, less stressful, and 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), size of town of residence, and country specific effects. We find that better education, being employed, and living in a bigger town or city go together with higher income. Controlling for a range of individual characteristics, housewife status goes together with higher income (per person in the household aged 18+), which may suggest that this option is more common among households with higher income. The relation between age and income is generally inverse U-shaped, which means that the youth entering the job market, probably 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. This usual result is reversed, however, and the earnings profile becomes U-shaped, once one controls for employment status and living in a stable relationship. This reversed result holds even when we control for being a student or a retired person, and is probably due to two reasons: first, the WVS defines income as income per person in the household. Both old and young people are much more likely to live alone than the middle-aged, however, and they are also much less likely to live in a stable relationship. Second, with cross-sectional data, there is no way to trace the actual income path of each individual; furthermore, in CEECs countries which have experienced economic transition approximately 8-11 years before the WVS 2000 survey took place, the effects of differential wage growth across cohorts and obsolescence of skills of middle-aged and older workers could have been especially important.

Because the income classes in WVS are country-specific, country dummies[10] in Table 6 have no interpretation. For the same reason, we included all these dummies in all regressions.

[9]This psychological variable turned out to be important in many regressions. We have confirmed statistically that it is not affected by the problem of endogeneity.

[10]The reference country is Poland.

Let us now pass to the question whether there are any direct signs of interdependence between social capital and social trust. In Table 7, we present a few extensions of regressions (7)–(8) from Table 6, allowing for extra interaction terms between our social capital variables, trust, and employment status. As instruments for these endogenous interaction terms, we use interaction terms between trust and employment status, and sex and the measures of religiosity.

Table 6: Explaining incomes: finding the appropriate regression specification.

VARIABLES	(1) income	(2) income	(3) income	(4) income	(5) income	(6) income	(7) income	(8) income
	OLS	OLS	OLS	OLS	OLS	OLS	IV	IV
bridging	1.034***	0.672***	0.310**	0.272*	0.157	-0.0691	-0.438	-0.868*
	[6.395]	[4.295]	[2.006]	[1.745]	[1.024]	[-0.430]	[-0.978]	[-1.711]
bonding	-0.645***	-0.438***	-0.188	-0.186	-0.319**	-0.312**	-1.517***	-1.415**
	[-4.222]	[-2.985]	[-1.326]	[-1.303]	[-2.293]	[-2.243]	[-2.624]	[-2.372]
trust		0.230***		0.236***	0.236***	0.215***	0.268***	0.247***
		[2.881]		[3.069]	[3.151]	[2.873]	[3.322]	[3.077]
trust (mean)		10.81***		2.387**	2.841***	2.652***	2.612***	2.498***
		[20.47]		[2.566]	[3.144]	[2.930]	[2.696]	[2.589]
employed					1.106***	1.384***	1.101***	1.463***
					[14.67]	[11.69]	[13.57]	[11.55]
czech	0.563***	-0.295***	0.383***	0.210*	0.00453	-0.0546	-0.0856	-0.171
	[5.317]	[-2.690]	[3.902]	[1.817]	[0.0400]	[-0.478]	[-0.668]	[-1.335]
hungary	0.176	-0.307***	0.120	0.00463	-0.112	-0.0946	-0.200*	-0.190
	[1.569]	[-2.780]	[1.162]	[0.0410]	[-1.010]	[-0.851]	[-1.662]	[-1.579]
latvia	-1.336***	-1.424***	-1.491***	-1.448***	-1.205***	-1.198***	-1.290***	-1.276***
	[-4.721]	[-5.169]	[-5.685]	[-5.411]	[-4.507]	[-4.495]	[-4.420]	[-4.388]
lithuania	0.821***	0.0930	0.271**	0.203	0.0712	0.0958	-0.129	-0.107
	[6.006]	[0.682]	[2.096]	[1.530]	[0.551]	[0.734]	[-0.778]	[-0.633]
estonia	0.985***	0.497**	0.595***	0.503**	0.328	0.277	0.146	0.106
	[4.051]	[2.103]	[2.659]	[2.206]	[1.498]	[1.268]	[0.598]	[0.434]
slovakia	1.408***	1.283***	1.347***	1.329***	1.254***	1.253***	1.230***	1.243***
	[12.77]	[12.04]	[13.23]	[12.90]	[12.52]	[12.43]	[10.44]	[10.66]
slovenia	1.297***	1.099***	1.321***	1.275***	0.992***	0.985***	0.988***	0.992***
	[9.634]	[8.491]	[10.59]	[10.11]	[8.080]	[7.962]	[7.506]	[7.545]
hh size	0.675***	0.688***	0.623***	0.618***	0.560***	0.549***	0.543***	0.533***
	[20.19]	[21.38]	[19.63]	[19.33]	[17.54]	[17.06]	[16.00]	[15.57]
education			0.320***	0.249***	0.175***	0.165***	0.174***	0.158***
			[19.18]	[8.300]	[5.976]	[5.611]	[5.527]	[5.014]
town size			0.107***	0.106***	0.103***	0.0963***	0.0950***	0.0884***
			[7.839]	[7.676]	[7.649]	[7.119]	[6.517]	[6.031]
stable relationship					0.862***	0.852***	0.887***	0.868***
					[11.66]	[11.36]	[10.47]	[10.14]
age			0.0224**	0.0240**	-0.0716***	-0.0578***	-0.0772***	-0.0623***
			[2.106]	[2.225]	[-6.185]	[-4.827]	[-6.045]	[-4.794]
age2			-0.000478***	-0.000499***	0.000622***	0.000494***	0.000674***	0.000525***
			[-4.382]	[-4.512]	[5.121]	[3.934]	[5.148]	[3.921]
choice & control					0.0945***	0.0904***	0.0963***	0.0927***
					[6.955]	[6.639]	[6.288]	[6.074]
politics important						-0.0419		-0.0679*
						[-1.135]		[-1.690]
housewife						0.543***		0.684***
						[2.710]		[3.130]
student						0.958***		1.141***
						[4.449]		[4.822]
retired						0.269*		0.367**
						[1.797]		[2.290]
educ.,arts org.						0.156		0.319**
						[1.199]		[2.194]
professional org.						0.475***		0.418***
						[3.246]		[2.701]
sports, recr. org.						0.286***		0.329***
						[2.879]		[2.668]
Constant	2.314***	0.223	0.743**	0.564*	1.101***	0.813**	2.627***	2.332***
	[12.55]	[1.096]	[2.426]	[1.767]	[3.357]	[2.142]	[4.822]	[3.977]
Observations	4619	4535	4607	4524	4325	4299	3884	3867
R-squared	0.156	0.232	0.288	0.288	0.358	0.366	0.341	0.349
Adjusted R-squared	0.154	0.229	0.286	0.285	0.355	0.362	0.338	0.345
Sargan Chi-sq							32.91	31.97
Sargan p							0.133	0.159
Anderson-Rubin F							1.696	1.790
Anderson-Rubin p							0.0138	0.00731
Underidentification Chi-sq							237.8	213.6
Underidentification p							0	0

In principle, this extension does not change our results too much, especially with regard to the control variables. Also, under instrumental variables estimation, there are no signs of significance of the interactions between any type of social capital and employment status. On the other hand, there are interesting results regarding the

Table 7: Explaining incomes: interactions between social capital, trust, and employment status.

VARIABLES	(1) income	(2) income	(3) income	(4) income	(5) income	(6) income
	IV	IV	IV	IV	IV	IV
bridging	-0.438	-0.0581	-0.121	-0.868*	-0.448	-0.436
	[-0.978]	[-0.103]	[-0.151]	[-1.711]	[-0.737]	[-0.535]
bonding	-1.517***	-2.609***	-0.657	-1.415**	-2.461***	-0.771
	[-2.624]	[-3.643]	[-0.528]	[-2.372]	[-3.364]	[-0.596]
bridXtrust		-0.939			-1.097	
		[-0.656]			[-0.769]	
bondXtrust		3.678***			3.626***	
		[2.613]			[2.581]	
emplXbridg			-0.456			-0.759
			[-0.328]			[-0.539]
emplXbond			-1.530			-1.120
			[-0.941]			[-0.657]
trust	0.268***	-2.400**	0.269***	0.247***	-2.310**	0.250***
	[3.322]	[-2.358]	[3.320]	[3.077]	[-2.281]	[3.096]
trust (mean)	2.612***	2.261**	2.710***	2.498***	2.161**	2.622***
	[2.696]	[2.256]	[2.766]	[2.589]	[2.165]	[2.685]
employed	1.101***	1.089***	2.541**	1.463***	1.454***	2.671**
	[13.57]	[13.07]	[2.391]	[11.55]	[11.19]	[2.474]
czech	-0.0856	-0.102	-0.0969	-0.171	-0.176	-0.177
	[-0.668]	[-0.777]	[-0.754]	[-1.335]	[-1.348]	[-1.369]
hungary	-0.200*	-0.172	-0.196	-0.190	-0.163	-0.188
	[-1.662]	[-1.381]	[-1.629]	[-1.579]	[-1.310]	[-1.550]
latvia	-1.290***	-1.283***	-1.282***	-1.276***	-1.270***	-1.271***
	[-4.420]	[-4.293]	[-4.367]	[-4.388]	[-4.270]	[-4.338]
lithuania	-0.129	-0.111	-0.128	-0.107	-0.0787	-0.109
	[-0.778]	[-0.654]	[-0.759]	[-0.633]	[-0.458]	[-0.636]
estonia	0.146	0.0979	0.114	0.106	0.0647	0.0836
	[0.598]	[0.391]	[0.464]	[0.434]	[0.259]	[0.343]
slovakia	1.230***	1.203***	1.230***	1.243***	1.222***	1.245***
	[10.44]	[10.02]	[10.30]	[10.66]	[10.28]	[10.42]
slovenia	0.988***	1.011***	1.004***	0.992***	1.016***	1.010***
	[7.506]	[7.460]	[7.527]	[7.545]	[7.522]	[7.571]
hh size	0.543***	0.546***	0.541***	0.533***	0.537***	0.531***
	[16.00]	[15.66]	[15.77]	[15.57]	[15.29]	[15.41]
education	0.174***	0.179***	0.170***	0.158***	0.165***	0.154***
	[5.527]	[5.538]	[5.340]	[5.014]	[5.070]	[4.832]
town size	0.0950***	0.0954***	0.0955***	0.0884***	0.0891***	0.0880***
	[6.517]	[6.391]	[6.254]	[6.031]	[5.950]	[5.828]
stable relationship	0.887***	0.906***	0.885***	0.868***	0.883***	0.863***
	[10.47]	[10.46]	[10.18]	[10.14]	[10.10]	[9.963]
age	-0.0772***	-0.0791***	-0.0761***	-0.0623***	-0.0650***	-0.0639***
	[-6.045]	[-6.036]	[-5.605]	[-4.794]	[-4.869]	[-4.299]
age2	0.000674***	0.000700***	0.000657***	0.000525***	0.000557***	0.000537***
	[5.148]	[5.199]	[4.543]	[3.921]	[4.039]	[3.552]
choice & control	0.0963***	0.0944***	0.0967***	0.0927***	0.0911***	0.0932***
	[6.288]	[5.982]	[6.182]	[6.074]	[5.798]	[5.972]
politics important				-0.0679*	-0.0565	-0.0686*
				[-1.690]	[-1.366]	[-1.699]
housewife				0.684***	0.710***	0.673***
				[3.130]	[3.178]	[2.863]
student				1.141***	1.105***	1.053***
				[4.822]	[4.560]	[3.391]
retired				0.367**	0.375**	0.351*
				[2.290]	[2.287]	[1.886]
educ.,arts org.				0.319**	0.308**	0.311**
				[2.194]	[2.043]	[2.117]
professional org.				0.418***	0.432***	0.418***
				[2.701]	[2.730]	[2.679]
sports, recr. org.				0.329***	0.294**	0.327**
				[2.668]	[2.345]	[2.390]
Constant	2.627***	3.459***	1.773*	2.332***	3.084***	1.690
	[4.822]	[5.318]	[1.820]	[3.977]	[4.533]	[1.619]
Observations	3884	3884	3884	3867	3867	3867
R-squared	0.341	0.310	0.338	0.349	0.319	0.345
Adjusted R-squared	0.338	0.306	0.334	0.345	0.314	0.340
Sargan Chi-sq	32.91	43.06	41.09	31.97	40.79	39.01
Sargan p	0.133	0.0734	0.0676	0.159	0.112	0.101
Anderson-Rubin F	1.696	1.848	1.740	1.790	1.847	1.743
Anderson-Rubin p	0.0138	0.00177	0.00557	0.00731	0.00180	0.00542
Underidentification Chi-sq	237.8	168.9	93.67	213.6	163.9	88.73
Underidentification p	0	0	1.80e-08	0	0	1.02e-07

interaction between bonding social capital and trust. It turns out that the impact of one's individual level of trust on earnings is negative, but it may become zero or positive if she has bonding social capital in sufficient abundance.

It is instructive to take a look at the interaction terms in specifications (2) and (5) in Table 7 (see Brambor, Clark, and Golder, 2006, for a methodological discussion). Marginal income effects of bonding social capital and trust, computed according to regression (5), are as follows:

$$\begin{aligned} \frac{\partial \text{income}_i}{\partial \text{bonding}_i} &= -2.461 + 3.626 \times \text{trust}_i, \\ \frac{\partial \text{income}_i}{\partial \text{trust}_i} &= -2.310 + 3.626 \times \text{bonding}_i, \end{aligned}$$

where for each individual, bonding social capital takes a value in the interval $[0, 1]$ (the sample mean is 0.8257), and trust is either zero or one (the mean is 0.2117). 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 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. Somewhat in contrast to our expectations, no such effect is found for bridging social capital.[11]

As regards the interaction terms between bridging and bonding social capital, and employment status, we have not found any statistically significant effects. This implies that as the percentage of employed people increases, the indirect effects on earnings via increased bridging social capital and trust should add up to the direct increases in people's earnings due to becoming employed.

4.2 Bridging and bonding social capital and trust as determinants of happiness

Let us now discuss the impacts of bridging and bonding social capital and social trust on individuals' happiness. In Table 8 it is demonstrated that, other things equal, both bridging and bonding social capital make people more satisfied with their lives. It seems that people derive satisfaction both from contacts with non-kin and with kin. This result is robust across all specifications tested in Table 8.

The structure of this table is similar to the one of Table 6. Going from left to right, we observe increasing complexity of the estimation technique. At the same time, more and more control variables are taken care of, whose omission might have affected specifications (1)–(2). In models (3)–(4), we use the IV technique to capture the endogeneity of individuals' incomes (discussed in the previous subsection). In models (5)–(6), we address endogeneity of social capital variables as well, but we

[11] These results should be interpreted with caution, though. Please keep in mind that the current analysis is constrained by the rather low correlation of instruments with the endogenous explanatory variables, especially the interaction terms. Hence, it could also be the case that the instruments fail to capture some relationships.

do not account for the simultaneous impact of social trust. Models (7)–(8) control for both issues. In each "pair" of specifications mentioned above, the former does not include several important conditioning variables such as employment status, sex, household size, and whether the respondent is in a stable relationship, and the latter does.

In addition to the instruments used in income regressions, here we also used as instruments: individuals' education, size of town of residence, number of children, the status of a student, retired person, and housewife. We did not use the sex variable as instrument this time because it turned out to be correlated with the error term. Model (8) in Table 8 is our preferred specification because it controls for most caveats, and passes all relevant econometric tests, including the Sargan test for instrument validity and the underidentification test for instrument relevance.

Our results are the following. First, as opposed to some earlier studies (e.g., Growiec, 2009a), we find that other things equal, both bridging and bonding social capital increase individuals' happiness. This may be due to the fact that people who have social contacts are generally happier than those who don't have them, disregarding with whom they keep in touch (Diener and Seligman, 2002). It is also likely that more detailed measures of happiness are needed to identify the differences between the impacts of contacts with kin and non-kin in this respect (Growiec, 2009a).

We also find that individuals' trust is generally positively related to happiness, even if one controls for social capital and earnings, but the mean level of trust in one's reference group exerts a negative impact on their happiness.

When it comes to our control variables, we analyzed the impact on happiness of sex, age, age squared, income, employment status, household size, retired status, housewife status, perceived freedom of choice and control, and being in a stable relationship. Income is found to have a positive impact on one's happiness. The same holds for being retired and being a housewife. Household size (number of adult persons in the household) has a negative impact on happiness, indicating that other things equal, living together with extended family lowers one's happiness.

As far as further control variables are concerned, women are more satisfied with their lives then men.[12] This result contradicts the common idea that men are usually happier then women, and it holds here specifically because of the large set of control variables we use (including, e.g., household size and income).

The relationship between age and happiness is U-shaped which means that young and old people are generally happier then people in their middle age. This finding is in good agreement with the established literature.

We also find that individuals who experience more freedom of choice and control are significantly more satisfied with their lives than those who don't. This finding likely relates to the historical background of CEE countries which underwent tran-

[12]This is only true if one controls for a range of individual characteristics included in the regression. In raw data, women are significantly *less* happy than men.

sition from communist regimes to democracy and market economy. As argued by Sztompka (2004) on the representative example of Poland, social change after the revolution of 1989 was a traumatogenic one: the Polish society experienced a sudden, comprehensive, fundamental, and unexpected change. The same holds for all CEE countries: people from CEE countries had to switch rapidly from trained incapacity – a long-run consequence of the communist system – to making proper use of their personal opportunities and the new institutions. The former culture was based on a philosophy of dependence instead of self-reliance, "political apathy, lack of entrepreneurial initiative, opportunistic double standards, disinterested envy against all achievers and interpersonal distrust" (Sztompka, 1996), but later, those who managed to reveal the sense of autonomy and control over their lives were in a better starting position in the market economy and in their individual pursuit of happiness in the new system.

We also find that people in a stable relationship are significantly more satisfied with their lives – a result in line both with conventional knowledge and earlier research

Table 8: Explaining individual happiness: finding the appropriate regression specification.

VARIABLES	(1) happiness	(2) happiness	(3) happiness	(4) happiness	(5) happiness	(6) happiness	(7) happiness	(8) happiness
	OLS	OLS	IV[income]	IV[income]	IV	IV	IV	IV
bridging	0.148***	0.184***	0.135***	0.169***	0.535***	0.498***	0.394***	0.343***
	[3.093]	[3.805]	[2.675]	[3.364]	[3.620]	[3.808]	[2.595]	[2.614]
bonding	0.281***	0.222***	0.282***	0.245***	0.708***	0.577***	0.871***	0.747***
	[6.473]	[5.066]	[6.254]	[5.355]	[3.549]	[2.721]	[4.464]	[3.581]
income	0.0436***	0.0328***	0.129***	0.109***	0.104***	0.0997***	0.105***	0.111***
	[10.06]	[6.955]	[4.480]	[4.401]	[6.061]	[5.903]	[4.102]	[4.264]
trust	0.0709***	0.0818***	0.0465*	0.0600**			0.0368	0.0487*
	[3.023]	[3.463]	[1.826]	[2.394]			[1.337]	[1.776]
trust (mean)	0.0259	0.000508	-0.635**	-0.601**			-0.449	-0.553**
	[0.161]	[0.00310]	[-2.253]	[-2.313]			[-1.620]	[-2.093]
employed		0.0376		-0.00587		-0.0216		-0.0641
		[1.544]		[-0.128]		[-0.494]		[-1.593]
czech	0.0270	0.0122	0.0618*	0.0386	0.103***	0.0773**	0.108***	0.0884**
	[0.838]	[0.378]	[1.777]	[1.135]	[2.765]	[2.055]	[2.703]	[2.178]
hungary	-0.0124	-0.0258	0.0136	-0.00132	0.0632*	0.0489	0.0718*	0.0576
	[-0.383]	[-0.785]	[0.394]	[-0.0380]	[1.766]	[1.360]	[1.856]	[1.498]
latvia	-0.102	-0.0811	0.0330	0.0119	0.0463	0.0477	0.0775	0.0780
	[-1.233]	[-0.980]	[0.340]	[0.132]	[0.477]	[0.505]	[0.743]	[0.777]
lithuania	-0.104**	-0.113***	-0.0879**	-0.101**	0.0181	-0.0204	0.0435	0.00754
	[-2.478]	[-2.708]	[-2.006]	[-2.350]	[0.331]	[-0.370]	[0.771]	[0.132]
estonia	-0.224***	-0.247***	-0.238***	-0.264***	-0.198**	-0.225***	-0.173**	-0.202**
	[-3.244]	[-3.623]	[-3.315]	[-3.755]	[-2.519]	[-2.900]	[-2.155]	[-2.541]
slovakia	-0.230***	-0.222***	-0.325***	-0.308***	-0.294***	-0.295***	-0.277***	-0.286***
	[-7.224]	[-6.989]	[-6.970]	[-7.129]	[-7.066]	[-7.231]	[-5.704]	[-6.131]
slovenia	-0.125***	-0.135***	-0.207***	-0.192***	-0.129***	-0.125***	-0.165***	-0.163***
	[-3.258]	[-3.528]	[-4.182]	[-4.355]	[-2.757]	[-2.805]	[-3.242]	[-3.504]
hh size		-0.00337		-0.0421**		-0.0362**		-0.0462***
		[-0.327]		[-2.502]		[-2.546]		[-2.609]
stable relationship		0.248***		0.178***		0.165***		0.155***
		[10.49]		[5.595]		[4.909]		[4.083]
age	-0.0133***	-0.0265***	-0.0140***	-0.0215***	-0.0146***	-0.0217***	-0.0159***	-0.0206***
	[-4.062]	[-7.258]	[-4.039]	[-5.281]	[-3.747]	[-5.192]	[-4.048]	[-4.589]
age2	9.66e-05***	0.000238***	0.000109***	0.000183***	0.000116***	0.000190***	0.000146***	0.000186***
	[2.892]	[6.233]	[2.887]	[4.353]	[2.885]	[4.376]	[3.528]	[4.076]
choice & control	0.0663***	0.0664***	0.0564***	0.0577***			0.0537***	0.0530***
	[15.49]	[15.50]	[10.57]	[11.42]			[9.460]	[9.633]
female		0.0674***		0.0580***		0.0583**		0.0510**
		[3.471]		[2.859]		[2.474]		[2.168]
retired			0.125**	0.0994**	0.0756*	0.0542		
			[2.506]	[2.152]	[1.750]	[1.093]		
housewife			0.132**	0.0541	0.168***	0.0910		
			[2.239]	[0.851]	[2.660]	[1.309]		
Constant	1.369***	1.501***	1.189***	1.400***	1.009***	1.267***	0.677***	0.937***
	[14.43]	[14.69]	[10.23]	[12.78]	[5.076]	[6.576]	[3.424]	[4.813]
Observations	4422	4243	4403	4226	4102	3917	3978	3799
R-squared	0.144	0.166	0.070	0.111	0.034	0.059	0.052	0.071
Adjusted R-squared	0.141	0.162	0.0660	0.107	0.0309	0.0545	0.0489	0.0663
Sargan Chi-sq			11.21	11.61	27.56	30.40	25.46	27.14
Sargan p			0.593	0.771	0.153	0.251	0.228	0.511
Anderson-Rubin F			2.373	1.912	4.686	3.945	3.276	2.485
Anderson-Rubin p			0.00275	0.0133	0	0	1.24e-07	1.01e-05
Underidentification Chi-sq			112.3	162.6	189.3	176.2	132.7	133.2
Underidentification p			0	0	0	0	0	0

(e.g. Pahl and Pevalin, 2005). A little surprisingly, it is also found that controlling for incomes, employment status does not have any significant impact on happiness.

As is visible in Table 9, we find no direct evidence of interactions between social capital, trust, and employment status in explaining happiness. Model (8) in Table 8, reproduced as model (4) in Table 9, delivers essentially the same results as models including interaction terms. On the other hand, it must be kept in mind, that the instruments used in these regressions, although valid and relevant, are relatively weakly correlated with the endogenous interaction terms. Hence, it might also be the case that some interactions are important in reality, only that our instruments fail to

Table 9: Explaining individual happiness: interactions between social capital, trust, and employment status.

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	happiness	happiness	happiness	happiness	happiness	happiness
	IV	IV	IV	IV	IV	IV
bridging	0.394***	0.446**	0.524*	0.343***	0.362**	0.350*
	[2.595]	[2.247]	[1.892]	[2.614]	[2.125]	[1.797]
bonding	0.871***	0.821***	0.677**	0.747***	0.801***	0.353
	[4.464]	[3.464]	[2.492]	[3.581]	[3.130]	[0.958]
bridXtrust		-0.207			-0.179	
		[-0.428]			[-0.399]	
bondXtrust		-0.263			-0.264	
		[-0.595]			[-0.589]	
emplXbridg			-0.303			0.0315
			[-0.615]			[0.110]
emplXbond			0.153			0.563
			[0.564]			[1.337]
income	0.105***	0.0934***	0.0947***	0.111***	0.0978***	0.103***
	[4.102]	[4.666]	[3.169]	[4.264]	[3.924]	[3.948]
trust	0.0368	0.344	0.0386	0.0487*	0.348	0.0506*
	[1.337]	[1.070]	[1.396]	[1.776]	[1.053]	[1.850]
trust (mean)	-0.449	-0.383	-0.409	-0.553**	-0.434*	-0.514*
	[-1.620]	[-1.553]	[-1.469]	[-2.093]	[-1.698]	[-1.940]
czech	0.108***	0.0894**	0.0912**	0.0884**	0.0851**	0.0828**
	[2.703]	[2.274]	[2.251]	[2.178]	[2.113]	[2.046]
hungary	0.0718*	0.0635*	0.0631	0.0576	0.0523	0.0547
	[1.856]	[1.653]	[1.643]	[1.498]	[1.364]	[1.429]
latvia	0.0775	0.0384	0.0432	0.0780	0.0601	0.0596
	[0.743]	[0.383]	[0.404]	[0.777]	[0.608]	[0.593]
lithuania	0.0435	0.0254	0.0238	0.00754	0.00412	-0.00164
	[0.771]	[0.459]	[0.425]	[0.132]	[0.0734]	[-0.0289]
estonia	-0.173**	-0.172**	-0.177**	-0.202**	-0.193**	-0.202**
	[-2.155]	[-2.170]	[-2.247]	[-2.541]	[-2.436]	[-2.558]
slovakia	-0.277***	-0.269***	-0.269***	-0.286***	-0.269***	-0.284***
	[-5.704]	[-5.972]	[-5.418]	[-6.131]	[-5.895]	[-6.024]
slovenia	-0.165***	-0.152***	-0.149***	-0.163***	-0.153***	-0.166***
	[-3.242]	[-3.229]	[-2.876]	[-3.504]	[-3.301]	[-3.484]
age	-0.0159***	-0.0138***	-0.0151***	-0.0206***	-0.0216***	-0.0215***
	[-4.048]	[-3.546]	[-3.282]	[-4.589]	[-4.821]	[-4.651]
age2	0.000146***	0.000125***	0.000140***	0.000186***	0.000193***	0.000199***
	[3.528]	[3.140]	[2.889]	[4.076]	[4.254]	[4.176]
choice & control	0.0537***	0.0536***	0.0538***	0.0530***	0.0542***	0.0529***
	[9.460]	[9.712]	[9.366]	[9.633]	[9.882]	[9.543]
employed				-0.0641	-0.0490	-0.531
				[-1.593]	[-1.249]	[-1.589]
hh size				-0.0462***	-0.0394**	-0.0412**
				[-2.609]	[-2.280]	[-2.344]
stable relationship				0.155***	0.165***	0.169***
				[4.083]	[4.443]	[4.356]
female				0.0510**	0.0508**	0.0593**
				[2.168]	[2.170]	[2.429]
Constant	0.677***	0.691***	0.801***	0.937***	0.899***	1.269***
	[3.424]	[3.128]	[3.284]	[4.813]	[3.911]	[4.277]
Observations	3978	3867	3867	3799	3799	3799
R-squared	0.052	0.073	0.074	0.071	0.087	0.079
Adjusted R-squared	0.0489	0.0690	0.0696	0.0663	0.0823	0.0743
Sargan Chi-sq	25.46	30.11	28.71	27.14	34.33	31.14
Sargan p	0.228	0.309	0.276	0.511	0.452	0.510
Anderson-Rubin F	3.276	2.585	2.759	2.485	2.051	2.163
Anderson-Rubin p	1.24e-07	2.72e-06	9.52e-07	1.01e-05	0.000136	6.06e-05
Underidentification Chi-sq	132.7	153.4	81.24	133.2	120.8	118.9
Underidentification p	0	0	1.35e-07	0	0	0

identify these effects. But if these results are taken at face value, they indicate that as the percentage of employed people increases, the indirect effects on happiness via increased bridging social capital and trust (both individual and average) should simply add up to the (slightly more direct) increases in people's happiness due to increased earnings thanks to becoming employed. This is an important policy implication of our work.

The construction of the survey scale of happiness in WVS is the same across all countries, so we can also interpret the coefficients on country dummies. Our reference country is Poland, and therefore a positive sign on a country dummy implies that citizens of this country are, on average, and controlling for differences in all other characteristics included in the regression, more satisfied with life than the Poles. Such "residual satisfaction" is found to be positive in the Czech Republic, and negative in Slovakia, Estonia, and Slovenia.

In sum, our results are in agreement with the theory presented in Growiec and Growiec (2010a) where an inverse U-shaped relationship between both types of social capital and happiness was proposed. In Polish data, we found an insignificant relationship between bonding social capital and happiness, and interpreted it as being on the "top" of the theoretical inverse U-shaped relationship. Despite the methodological differences between both papers, WVS data confirm this finding for Poland here (see the appendix); we see however that in other CEECs, where bonding social capital is generally less abundant than in Poland, there is a positive relationship between the two variables, locating most of CEECs on the increasing part of the curve.

5 Conclusion

The results provided in this paper provide a certain refinement of our understanding of the impact of social capital and trust on earnings and happiness across Central and Eastern European countries (CEECs), based on cross-sectional World Values Survey 2000 data. These results align with the predictions of our theoretical model specified in Growiec and Growiec (2010b) and are suggestive of existence of a "low trust trap" in these countries, where the stocks of bridging social capital and trust levels are both persistently low and create a vicious circle (trusting only whom you know, knowing only whom you trust) which cannot be escaped without a sufficiently strong push from outside.

We find that both bridging and bonding social capital exert a positive effect on individuals' happiness, and bonding social capital also has a decidedly negative effect on their earnings. The direction of impact of bridging social capital on incomes is generally ambiguous, although a negative impact is found in our "final" specification. Both these adverse effects on earnings should be also treated as indirect adverse effects on happiness, as earnings are robustly positively correlated with happiness, even after controlling for a range of auxiliary variables, and after instrumenting for earnings to avoid the endogeneity problem.

The broad relationships identified here between bridging and bonding social capital, trust, happiness, and individuals' earnings are robust to the inclusion of a range of personal characteristics (such as education, size of town of residence, the degree of freedom of choice and control, living in a stable relationship, etc.) as control variables.

An important contribution of the current paper has been to sort out the endogeneity and omitted variables bias issues which are a common (yet often overlooked) problem in the related literature. We find these problems to be quite serious in the context of analyses of the impact of social capital and trust on socio-economic variables such as individual earnings or happiness. When these problems are not adequately addressed, one can likely obtain spurious results, such as, e.g., a strong positive causal impact of bridging social capital on earnings, which disappears precisely in the moment when employment status is controlled for, and can even become slightly negative if the endogeneity of bridging social capital is also taken into account.

As far as the policy implications of our results are concerned, we argue that an increase in labor market participation can be perceived as a potential way out of the "low trust trap", because employed people in CEECs have statistically significantly more bridging social capital, less bonding social capital, and more trust. Furthermore, quite naturally, being employed provides also direct increases in individuals' earnings, which then subsequently increase their happiness as well. Since we have not found any interaction effects between social capital and employment in any of our IV regressions, we can safely argue that these direct and indirect (via increased bridging social capital and trust) effects of increases in labor market participation will add up to each other in case the percentage of employed people increases.

What remains on our research agenda is to pursue a more macro-oriented empirical analysis aimed at assessing, to which extent bridging and bonding social capital should be considered parts of "social infrastructure", or more generally – socio-economic institutions – driving cross-country differences in productivity. We think that international survey data from the WVS might be useful in this respect.

Another line of research which ought to be done is to use panel data to draw more precise conclusions on causal links between social capital variables, trust, and economic performance of individuals and countries. Unfortunately, in this respect, we are facing an unsurmountable data availability problem, at least with WVS data.

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A Appendix

A.1 Robustness to changes in methodology

As mentioned in the text, the main regressions of the current study have been run using the instrumental variables estimation technique. We have however also conducted an additional robustness check, with the objective to check how strongly affected our results could have been if we had failed to detect this endogeneity.

Another worry with the results is that our dependent variables are categorical (income class is an integer between 1 and 10; happiness is measured as a 4-step scale), so that the assumption of equal step widths, standing behind OLS or IV, might be invalid. In such case, the appropriate estimation technique should be ordered logit/probit. On the other hand, according to Ferrer-i-Carbonell and Frijters (2004), one generally should not expect large differences between results of OLS and ordered logit/probit regressions in explaining happiness. As shown in Table 10, our dataset confirms broadly their findings. OLS and ordered logit estimates are very different from the estimates obtained when potential endogeneity is controlled for. A further comforting feature of these results is that the threshold levels estimated in the ordered logit regression are roughly equally-spaced, thus somewhat supporting our initial linearity assumption. In the case of earnings, this reassuring result is likely because the country-specific income thresholds follow an approximately logarithmic scale, and are thus in line with the Mincerian specification of the wage equation (cf. Heckman, Lochner and Todd, 2003).

The results presented in Table 10 indicate that endogeneity of bridging and bonding social capital is clearly a serious problem in our analysis. Not only is endogeneity confirmed with the Chi-square test; it has also an important impact on the obtained results. If one uses OLS or ordered logit instead of instrumental variables, then the obtained estimates change significantly.

Table 10: Robustness to changes in estimation methodology

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	income	income	income	happiness	happiness	happiness
	OLS	O Logit	IV	OLS	O Logit	IV
bridging	-0.0691	-0.143	-0.868*	0.184***	0.575***	0.343***
	[-0.430]	[-0.977]	[-1.711]	[3.805]	[3.479]	[2.614]
bonding	-0.312**	-0.330***	-1.415**	0.222***	0.739***	0.747***
	[-2.243]	[-2.624]	[-2.372]	[5.066]	[5.049]	[3.581]
trust	0.215***	0.202***	0.247***	0.0818***	0.287***	0.0487*
	[2.873]	[2.992]	[3.077]	[3.463]	[3.560]	[1.776]
trust (mean)	2.652***	2.121***	2.498***	0.000508	-0.00920	-0.553**
	[2.930]	[2.593]	[2.589]	[0.00310]	[-0.0165]	[-2.093]
employed	1.384***	1.253***	1.463***	0.0376	0.126	-0.0641
	[11.69]	[11.11]	[11.55]	[1.544]	[1.534]	[-1.593]
czech	-0.0546	-0.288***	-0.171	0.0122	0.00576	0.0884**
	[-0.478]	[-2.764]	[-1.335]	[0.378]	[0.0521]	[2.178]
hungary	-0.0946	-0.0622	-0.190	-0.0258	-0.0801	0.0576
	[-0.851]	[-0.625]	[-1.579]	[-0.785]	[-0.702]	[1.498]
latvia	-1.198***	-1.031***	-1.276***	-0.0811	-0.375	0.0780
	[-4.495]	[-4.377]	[-4.388]	[-0.980]	[-1.371]	[0.777]
lithuania	0.0958	0.0294	-0.107	-0.113***	-0.432***	0.00754
	[0.734]	[0.260]	[-0.633]	[-2.708]	[-3.092]	[0.132]
estonia	0.277	0.165	0.106	-0.247***	-0.800***	-0.202**
	[1.268]	[0.829]	[0.434]	[-3.623]	[-3.579]	[-2.541]

slovakia	1.253***	0.958***	1.243***	-0.222***	-0.739***	-0.286***
	[12.43]	[10.26]	[10.66]	[-6.989]	[-6.818]	[-6.131]
slovenia	0.985***	0.745***	0.992***	-0.135***	-0.490***	-0.163***
	[7.962]	[6.511]	[7.545]	[-3.528]	[-3.764]	[-3.504]
hh size	0.549***	0.510***	0.533***	-0.00337	-0.0137	-0.0462***
	[17.06]	[16.36]	[15.57]	[-0.327]	[-0.392]	[-2.609]
education	0.165***	0.150***	0.158***			
	[5.611]	[5.594]	[5.014]			
town size	0.0963***	0.0886***	0.0884***			
	[7.119]	[7.184]	[6.031]			
stable relationship	0.852***	0.936***	0.868***	0.248***	0.825***	0.155***
	[11.36]	[13.20]	[10.14]	[10.49]	[10.24]	[4.083]
age	-0.0578***	-0.0508***	-0.0623***	-0.0265***	-0.0930***	-0.0206***
	[-4.827]	[-4.573]	[-4.794]	[-7.258]	[-7.450]	[-4.589]
age2	0.000494***	0.000411***	0.000525***	0.000238***	0.000844***	0.000186***
	[3.934]	[3.523]	[3.921]	[6.233]	[6.482]	[4.076]
choice & control	0.0904***	0.0826***	0.0927***	0.0664***	0.230***	0.0530***
	[6.639]	[6.648]	[6.074]	[15.50]	[15.13]	[9.633]
politics important	-0.0419	-0.0571*	-0.0679*			
	[-1.135]	[-1.694]	[-1.690]			
housewife	0.543***	0.418**	0.684***			
	[2.710]	[2.256]	[3.130]			
student	0.958***	0.984***	1.141***			
	[4.449]	[4.895]	[4.822]			
retired	0.269*	0.256*	0.367**			
	[1.797]	[1.834]	[2.290]			
educ.,arts org.	0.156	0.207*	0.319**			
	[1.199]	[1.764]	[2.194]			
professional org.	0.475***	0.379***	0.418***			
	[3.246]	[2.830]	[2.701]			
sports, recr. org.	0.286***	0.281***	0.329***			
	[2.879]	[3.129]	[2.668]			
income				0.0328***	0.108***	0.111***
				[6.955]	[6.696]	[4.264]
female				0.0674***	0.229***	0.0510**
				[3.471]	[3.487]	[2.168]
Constant	0.813**		2.332***	1.501***		0.937***
	[2.142]		[3.977]	[14.69]		[4.813]
Observations	4299	4299	3867	4243	4243	3799
R-squared	0.366		0.349	0.166		0.071
Adjusted R-squared	0.362		0.345	0.162		0.0663
Sargan Chi-sq			31.97			27.14
Sargan p			0.159			0.511
Anderson-Rubin F			1.790			2.485
Anderson-Rubin p			0.00731			1.01e-05
Underidentification Chi-sq			213.6			133.2
Underidentification p			0			0
	cut1	0.653*	[1.860]	cut1	-2.630***	[-7.412]
	cut2	1.638***	[4.670]	cut2	-0.251	[-0.719]
	cut3	2.583***	[7.350]	cut3	3.313***	[9.386]
	cut4	3.345***	[9.486]			
	cut5	4.247***	[11.97]			
	cut6	4.854***	[13.62]			
	cut7	5.635***	[15.70]			
	cut8	6.344***	[17.52]			
	cut9	7.091***	[19.31]			