Research note

The effect of social capital on wage income: an analysis of the EU-SILC module on social participation

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ABSTRACT

This research note is concerned with the effects of social capital on wage income in European countries. More specifically, it seeks to answer the following questions: first, whether social capital has an effect on individual income; secondly, whether weak ties (remote friends, acquaintances) have a stronger effect on income than strong ties (relatives, close friends); thirdly, whether the income effect of social connections is more pronounced in the post-socialist countries than in countries with a different past.

For the estimations, data for 26 European countries (the EU-25 except Malta, plus Norway and Iceland) are used and in order to explore the impact of social capital on income, wage regressions are estimated for each country and for the pooled sample of 26 countries.

The estimations reveal a significant and positive association between social capital and wage income on the pooled sample and on the national samples of 19 countries. The income effect of social capital is found to be more pronounced in the post-socialist countries than in other EU Member States. Cross-country differences, however, are evident not only between the post-socialist and the other European countries but also within the latter group. No earnings effect of social capital is found in Denmark, Finland, Iceland, Netherlands, and Sweden. At the other extreme, in France and Spain, all social capital proxies seem to have an effect on earnings.

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I. Introduction

It is a widely held view both in sociology and economics that human capital is the most important factor in determining life chances in Western societies. Over recent years, however, a number of studies have demonstrated the role of social connections in life chances, including those on the labour market.

This research note is concerned with the effects of social capital on wage income in European countries. More specifically, it is aimed at answering the following questions: first, whether social capital has an effect on the income of individuals; secondly, whether weak ties in the form of remote friends and acquaintances have a greater effect on income than strong ties in the form of relatives or close friends). In other words, the question is whether the strength of ties matters as theory suggests it does. The third question addressed is whether the income effect of social connections is more pronounced in post-socialist countries than in countries with a different past.

A number of previous studies have tested the earnings effects of social ties. A majority of them have been limited to small samples and/or to certain occupations, such as managers (Boxman et al., 1991; Barros, 2006), or to self-employed (Gomez and Santor, 2001). The present study appears to be the first attempt to assess the earnings effect of social capital on nationally representative samples in a multi-country context. The approach adopted is to estimate earnings regressions for 26 countries, the EU-25 countries minus Malta plus two non-EU countries, Norway and Iceland. On the basis of data from the 2006 wave of the EU-SILC.

The research note is structured as follows. Section 2 outlines the theoretical background and provides a brief overview of previous research findings. Section 3 discusses the measurement of social capital and presents descriptive statistics on the levels of social capital in the countries examined. Section 4 briefly explains the methodology used to estimate the earnings effect of social capital and Section 5 presents the estimation results, Finally, the main findings are summarised in Section 6.

II. Theoretical background

Social capital can be conceptualised at both the level of individuals and 'collectivities' (groups, regions, countries and so on). Social capital is treated here at the individual level. Following Lin's (2001; 2008) definition, social capital is conceived "*as resources embedded in one's social network, resources that can be accessed or mobilized through ties in the networks*". Social capital so conceived has been argued to have a number of positive effects, such as better educational attainment, jobs with higher earnings, higher occupational status, entrepreneurial success, better physical or mental health and better subjective well-being. The focus here is on the income effects of social capital.

The first question addressed is whether social connections have positive effects on individual income as theory suggests *(Question 1).* Social networks may generate benefits in terms of higher income through at least three different mechanisms. First, networks facilitate the flow of information. Social ties – especially with those in a strategic position and/or with those of high social status – can provide an individual with useful information about job opportunities otherwise unavailable. A related advantage is that the information provided by social connections is richer in content than the information acquired through impersonal mechanisms (Ganovetter 1995). Secondly, social ties may have an influence on people who play an important role in decisions on hiring or promotions (Lin 1999). Thirdly, having access to social networks reassures decision-makers (e.g. recruiters) that the individual can provide additional resources beyond his/her personal capabilities which might be useful to the organisation concerned. In other words, social networks may function as a certification of a

person's *"*social credentials*"* (Lin, 1999). In addition, as Flap et al. (1986) point out, social capital not only helps an individual obtain a better job and more quickly, but it also helps them keep it for a longer time.

Previous empirical research provides evidence for the earnings effects of social capital. In a study on the income attainment of Dutch managers, Boxman et al. (1991) found that social capital has a positive effect on income. They also conclude that social capital and human capital can act as substitutes for each other. Social capital helps to attain income at any given level of education of the person concerned and the education level makes no difference at the highest levels of social capital (Boxman et al., 1991). Recently Barros (2006) replicated these findings on a sample of Portuguese cooperative managers.

The second question addressed is whether weak ties have a stronger effect on income than strong ties *(Question 2)*. In his seminal paper, Granovetter (1973) argues that weak ties are more likely than strong ties to have been source of information on job openings. The strength of a tie in his approach depends on the amount of time, emotional intensity, intimacy and reciprocal services which characterise the tie. Accordingly, acquaintances are usually labelled as weak ties, while relatives and close friends are strong ties. The "strength of weak ties" hypothesis is based on the assumption that a person's close friends tend to know each other and have similar social networks. Accordingly, the information on jobs from close friends is often redundant. On the other hand, a person's more distant acquaintances are less likely to know each other and tend to have less similar social networks and so are more likely to have access to different information.

Prior research has demonstrated that weak ties are a common source of finding jobs and, therefore, play an important role in matching workers and jobs (Granovetter, 1973). Examining managerial, professional and technical workers, Granovetter (1974) also found that weak ties lead to better jobs in terms of income than strong ties. Motivated by Granovetter's findings much empirical work has been undertaken to try to validate the effects of weak ties on income. The results, however, generally do not support the hypothesis. While Bridges and Villemez (1986), and Marsden and Hurlbert (1988) found that individuals who obtained their jobs through weak ties have higher wages on average, the relationship becomes insignificant once control variables are introduced. On the other hand, Wegener (1991) found that weak ties tend to lead to higher status jobs only in case of people who had such jobs before.

It is important to note that what the above studies estimate is the effect of the method of finding a job (formal methods versus informal, such as weak ties or strong ties) on income. They, therefore, test the hypothesis that weak ties provide superior job information that leads to better jobs (Tassier, 2006). They also focus on ties that were actually used in the process of finding a person's (current) job, without paying much attention to the total volume of social capital (Boxman et al., 1991). As a result, this approach tends to under-estimate the effect of weak ties on income (Tassier, 2006). In addition to the job-finding process, therefore, there are many other ways in which social connections can generate higher income (Boxman et al. 1991). For example, social connections may also have helped a person obtain their previous job which was then the start of a successful career path. (Buerkle and Guseva, 2002). Boxman et al. (1991) consequently take a step further to measure the *total volume of social capital* (i.e. not only mobilised social capital) when assessing its influence on income. In their empirical study, they find that social capital, measured by the number of memberships in elite clubs and contacts with people in other organisations, has a substantial direct influence on income.

A number of authors have recently proposed, and tested, new hypotheses on the income effects of social ties. Growiec and Growiec (2007) have hypothesised that the relationship between the amount of time invested in the building of bridging social capital (i.e. weak ties) and earnings is an inverse U-shape, while the effect of bonding social capital (i.e. strong ties)

on earnings is assumed to be negative. Analysing Polish data, they find that bridging social capital (i.e. weak ties), proxied by the number of friends with whom the person concerned has frequent contact, has a positive and significant effect on earnings. However, they find no significant correlation between the number of frequently contacted acquaintances and earnings. According to their results, bonding social capital (i.e. strong ties), proxied by the number of family members with whom the person concerned has frequent contact has a negative effect on income.

The third question addressed is whether networks in general matter more in the post-socialist countries than in countries with no state socialist past (*Question 3*). The earnings effect of social networks can be expected to be most pronounced in post-socialist societies since (as a study by Sik (1995) shows) networks are more widespread under communism than capitalism for two major reasons. This is, first, because of the cultural heritage as well as historical and political developments and, secondly, because Communist countries are characterised by continuous socio-economic pressures (e.g. the permanent shortages of goods and the over- and under-regulation of the redistributive system), which provide an environment favourable to the maintenance i and further development of networks. In the shortage economies of state socialism, social connections are a key element of individual and household strategies for survival (see e.g. Kolankiewicz, 1996). Sik (1995) goes further and argues that networking has become at least as widespread in post-communist societies as it was before due to the inertia surrounding networks, on the one hand, and the growing uncertainty associated with the transition process on the other[1].

III. The level of social capital in the European countries

Measures of social capital

Ideally, any measurement of social capital should take account of both its potential capacity (accessed social capital) and its actual use (mobilised social capital) (Lin, 2008). Here the analysis is restricted to measuring the potential capacity of social capital only. To make strong and weak ties operational would require multiple indicators, which is rarely met in a multi-country survey.

Three types of social capital measures are employed in the analysis. The first is the *intensity of contacts with*. This seems to be an appropriate proxy for the potential capital from strong ties that an individual has access to. Unfortunately no data are available on the number of relatives with whom respondents have contact or on the other characteristics of the relationship[2].

Another measure of social capital is the *intensity of contacts with friends*. Since no additional information on friends is available from the survey, it is not possible to draw a distinction between close friends and more distant ones (i.e. the former should be treated as strong ties, the latter as weak ties). This variable therefore measures strong and weak ties at the same time.

A more appropriate proxy for weak ties is the *number of memberships of voluntary organisations*. An empirical study on voluntary organisations (Bekkers et al., 2004) provides

[1] See also King (2000).

[2] It is noted that individuals were questioned in he survey whether they could ask someone for help. Unfortunately, this was a simple yes-or-no question, and relatives, friends and neighbors were all listed in the same question. Since an overwhelming majority of respondents answered ‘yes’, the replies do not help much in this regard.

evidence that the social networks of those who are members of voluntary organisations are richer than the social networks of non-members. The analysis of weak ties, therefore, is proxied by the number of memberships in different types of voluntary organizations.

The "frequency of contact" variables were coded into six categories in the survey. Three of these are collapsed into one for purposes of analysis: contact once a month or less frequently. More detailed estimates revealed that there is hardly any statistically significant difference between the impact of contact "once a month" and "several times a year". At the same time only very few respondents answered that they never had contact with friends and relatives. Although these respondents tend to have lower wages in several countries, they can be considered as exceptional cases, whose (unobserved) characteristics might differ substantially from others in the survey (e.g. a lack of basic social skills or a recent move from one place to another). Treating them as a separate group with an exceptionally low level of social capital might, therefore, result in misleading conclusions about the effect of social capital. Four categories are, consequently, included in the model estimated: contact daily, weekly, several times a month and once a month or less frequently.

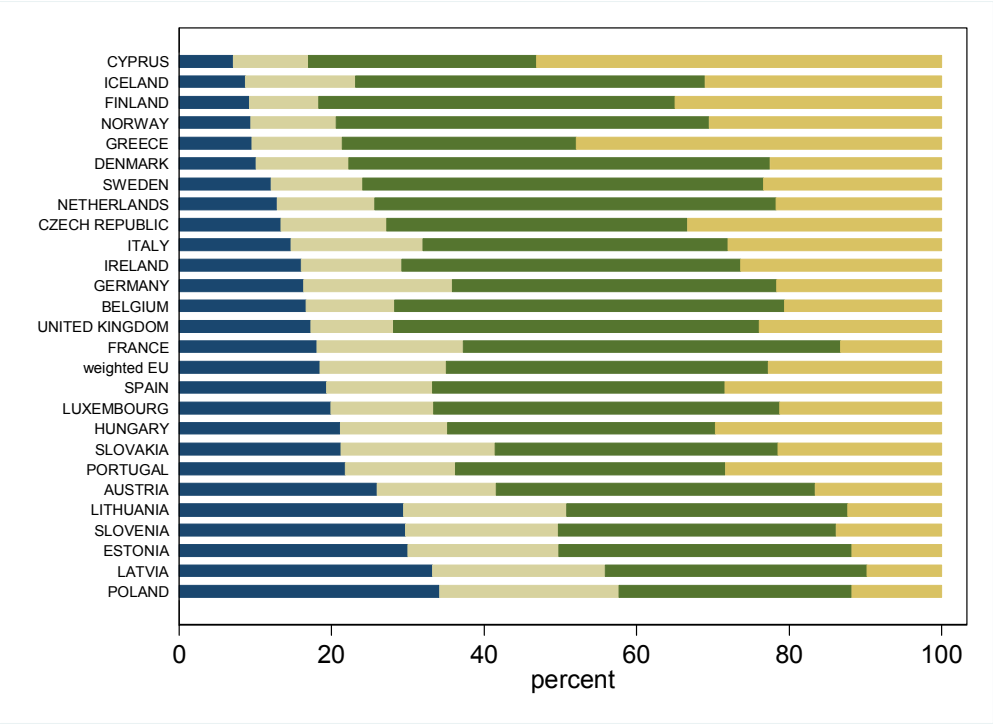
In the survey, respondents were asked about memberships in five types of organisations political parties or trade unions, professional associations, churches and other religious organisations, recreational groups or organisations, and other groups or organisations. Since the sample is unevenly distributed with respect to the number of organisations in which respondents are affiliated, three categories are used in the analysis: no membership, membership in one type of organisation and membership in two or more types of organization.[3]

Descriptive statistics

Figures 1 and 2 show the distribution of population according to the intensity of contact with relatives and with friends for each countries examined and for the EU as a whole (the EU-25 without Malta). The distribution of population according to the number of organisation memberships is depicted in Figure 3.

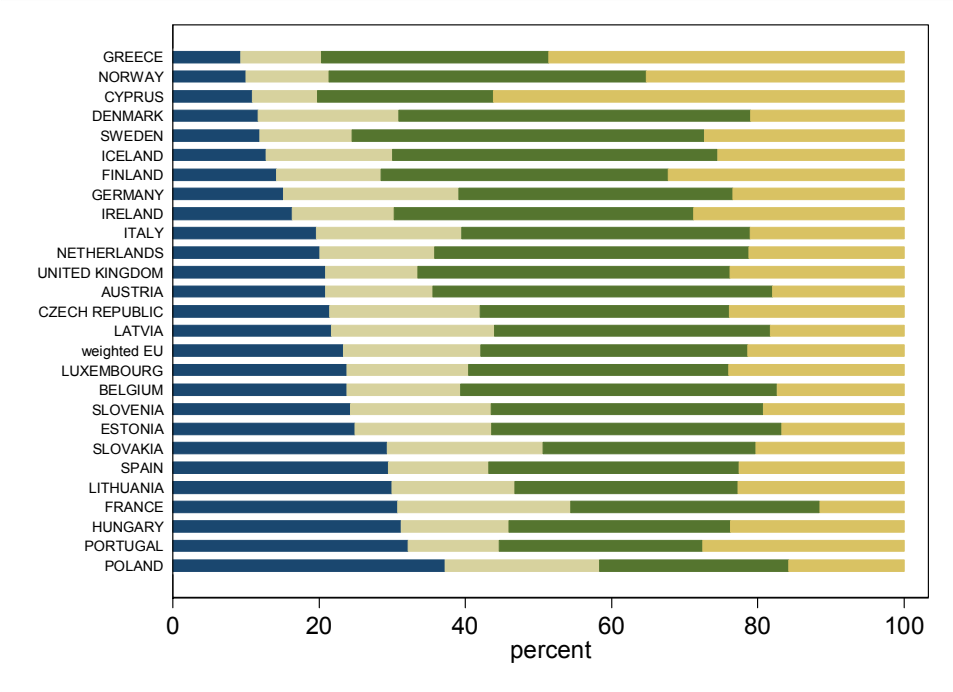
[3] Beyond the above set of social capital proxies, the EU-SILC survey contains data on the "frequency of getting together with relatives" and "frequency of getting together with friends". The use of these variables, however, seems problematic. Getting together with someone is generally more time consuming (and also demands more effort) than having contact with someone. Therefore, "getting together" tends to take more time for those living in big cities than for those living in small towns. Since it is not possible to control for the size of town or city a person lives in, these variables can be expected to perform less well than those measuring the frequency of contact.

Figure 1: Frequency of contacts with relatives across Europe



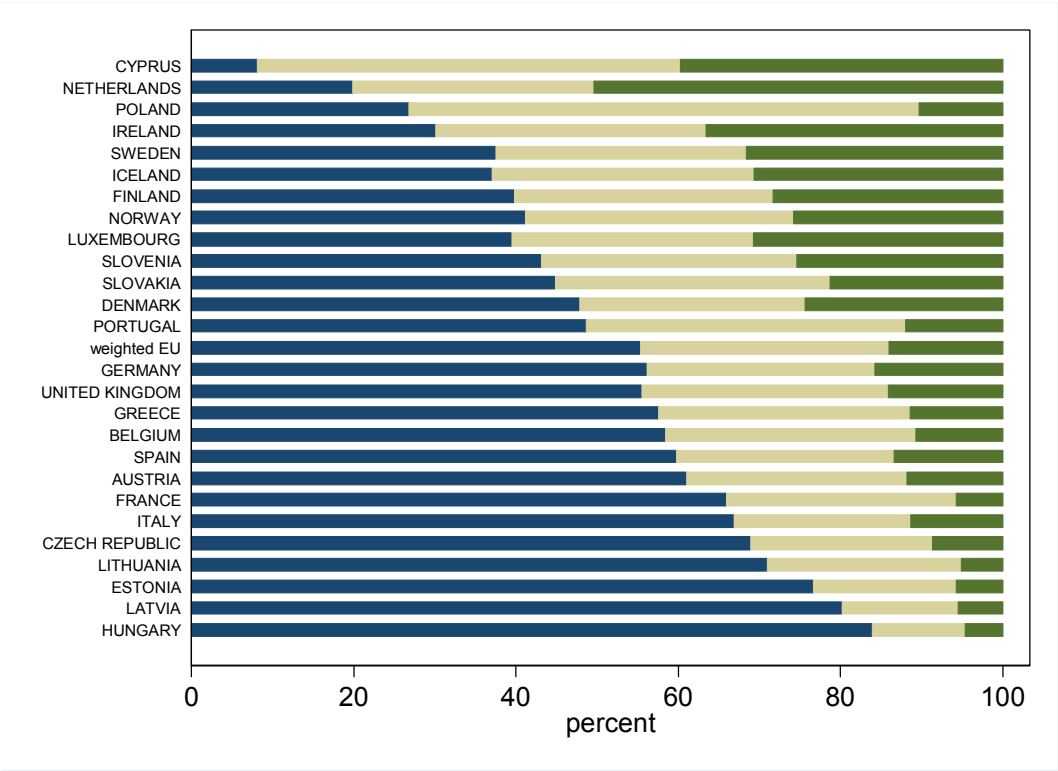
Percentages of those having contacts at most once a month, several times a month, weekly, and daily
Source: own calculations based on EU-SILC 2006 data (full sample)

Figure 2: Frequency of contacts with friends across Europe



Percentages of those having contacts at most once a month, several times a month, weekly, and daily
Source: own calculations based on EU-SILC 2006 data (full sample)

Figure 3: Membership in different types of organizations across Europe



Percentages of non-members, members in one organization, and members in 2 or more types of organisations
Source: own calculations based on EU-SILC 2006 data (full sample)

In general, the highest level of social capital, measured by the *intensity of contact with relatives,* is found in Cyprus, Greece, the four Nordic countries and the Netherlands[4] (see Figure 1). These are the countries with the smallest share of those having contact with relatives infrequently (once a month at most). Further, as shown in Figure 1, it is typical for Cypriots and Greeks to contact their relatives on a daily basis. At the other extreme are the post-socialist countries of Poland, the Baltic States, Slovenia, and Hungary as well as Austria and Portugal which have the largest proportions of those having infrequent contact with relatives.

The picture is quite similar when social capital is measured by the *intensity of contact with friends.* Again, in Cyprus and Greece the share of those having daily contact with friends is much higher than elsewhere (see Figure 2). The Nordic countries are again among those with the highest intensity of contact with friends, this time along with Germany. By contrast, the number having infrequent contact with friends is highest in the post-socialist countries of Poland, Hungary, Lithuania, Slovakia and Estonia, together with Portugal, France and Spain.

There are large differences between countries in the level of social capital measured by the *number of organisation memberships*. Cyprus, the Netherlands, Poland and Ireland seem to be the countries with the highest level of social participation, mainly because of the large number of people affiliated to religious organisations (Figure 3). The share of those holding

[4] At this point it is important to clarify what we mean by the social capital of a country. Social capital in this research note is conceived as an individual (rather than as a collective) resource. Therefore, a country's social capital is the aggregate of social capital of individuals. We note that the term social capital here does not necessarily reflect the level of trust and strength of norms of reciprocity – often considered as dimensions of social capital – characterizing the country.

more than one membership gives a more realistic picture of the scale of social participation across the EU, On this basis, the highest level of social capital is in the Netherlands, Cyprus, Ireland, the Nordic countries and Luxembourg. In these countries – except in Cyprus and Ireland as already noted – the most common form of social participation is involvement in recreational organisations. Again, along with France, Italy and Austria,, the post-socialist countries (Hungary, the Baltic States, and the Czech Republic) have the lowest level of social participation. These results are largely in line with the findings of other surveys.

Social participation varies to some extent according to the socio-demographic characteristics of the people concerned – sex, age, educational attainment and income level. There are no marked differences between men and women in the intensity of friendship relationships either in the EU as a whole or in individual countries. There are also no large differences In the EU as a whole between men and women in the extent of participation in voluntary organisations, though in some countries – Belgium, France, Austria and the Czech Republic – the participation rate is higher for men than for women.

When social capital is proxied by the intensity of relationships with relatives, there are marked differences between men and women. On the whole, women tend to have a higher frequency of contact.

As it might be expected, educational attainment levels are positively related to social capital. In general, the higher the education level, the more the social capital of people. The same is the case for the intensity of relationships with friends and relatives, as well as for participation in voluntary organisations. Poland is different, however, in that education levels do not seem to affect membership of such organisations.

Age seems to be an important factor influencing the level of social capital. As measured by the intensity of contact with relatives, social capital is much the same for the 25-64 and 65 and over age groups but lower for the 16-24 age group. The intensity of contact with friends shows a different pattern, being higher for the 16-24 age group than for the other two.

Across the EU as a whole, there are no significant differences between age groups as regards the level of social participation. However, in some countries people tend to join more organisations as they grow older (the UK, Spain, France, and Lithuania), while in other countries, the reverse is the case as regards those aged 65 and over (e.g. the Nordic countries, the Netherlands, Austria, Ireland, and Greece) and in a third group for both those aged 65 and over and those aged 25-64 (Hungary, Poland, and Italy).

Income levels (equivalised for household size[5]) show a positive relationship to social capital. Those with lower income tend to contact their friends less often than those with higher income, which is also the case, if less so, as regards contact with relatives, the Netherlands, where daily contacts are most common among the lowest income group, being an exception.

Social participation is equally positively related to income, the proportion of those being a member of more than one voluntary organisation increasing as income rises. Poland and Portugal, however, are exceptions, in that there are no differences across income groups in this proportion, as is Slovakia, where the proportion of people who are not members of any organisation is almost as high among higher income groups and among lower income ones.

[5] For the descriptive statistics, households are divided into five income groups on the basis of the equivalent household income calculated in percentage of the country's median household income.

IV. Methods

To estimate the effect of social capital on earnings, the EU-SILC data from 26 European countries for employees are used (see Methodological Annex for further details) which cover 155,873 cases. The dependent variable of the model is yearly gross earnings in the year prior to the survey[6]. According to human capital theory, the most important determinants of earnings are education and work experience. Additional variables are also included in the model (these are listed in the Annex. The model is estimated using two different specifications, the two differing only in terms of the control variables included. Separate regression equations are estimated for each country as well as for all countries taken together (see Methodological Annex for the specifications). Pooled estimates are calculated with two variants, one with country weights proportional to country size and one with equal country weights.

V. Regression results

Table 1 presents the results of estimations on the basis of the pooled sample (using both proportional and equal country weights). Results of the estimations on the 26 national samples are reported in Table C6 in the Annex. All the control variables have the expected signs and are significant in both the pooled and the separate estimations. Estimated coefficients of education variables confirm the strong positive effect of educational attainment on earnings. The wage equations also confirm the positive effect of experience on earnings. The negative sign of the experience squared variable indicates that earnings grow up to a certain point in time and then decline. The experience variable, it should be noted, may not only be a proxy for the skills acquired on the job but also for work-related ties in that the longer people have been in work the more contacts they tend to make (see Bridges and Willemez, 1986).

As shown in Table 1 (Columns 3 and 4), social capital variables are significant and have the expected signs in the pooled estimation if either equal country or proportional weights are used. This indicates that membership in voluntary organisations, and the cultivation of relationships with both friends and relatives are associated with higher income. The effect of membership in one voluntary organisation (relative to non-membership), therefore, results in a 0.8% increase in earnings. Multiple membership (relative to non-membership), however, leads to an increase of 4.3% (f Column 2 of Table 1).

[6] Since monthly gross income data are not available for all countries we have to use yearly gross income (for further details see the Methodological Appendix).

Table 1: Estimated effects of social capital variables on yearly income, pooled sample

	Country weights proportional to country size		Equal country weights	
	Basic model	**Extended model**	**Basic model**	**Extended model**
ORGANIZATION MEMBERSHIP: 1 type of org.	0.0201***	0.00770*	0.0308***	0.0192***
	(0.005)	(0.005)	(0.004)	(0.004)
ORG. MEMBERSHIP: 2 or more type of org.	0.0767***	0.0426***	0.0827***	0.0494***
	(0.006)	(0.006)	(0.006)	(0.006)
contact with FRIENDS: daily	0.0445***	0.0235***	0.0539***	0.0363***
	(0.008)	(0.008)	(0.007)	(0.007)
contact with FRIENDS: weekly	0.0699***	0.0508***	0.0728***	0.0567***
	(0.007)	(0.006)	(0.006)	(0.005)
contact with FRIENDS: several times a month	0.0646***	0.0484***	0.0558***	0.0410***
	(0.007)	(0.007)	(0.006)	(0.006)
contact with RELATIVES: daily	0.0497***	0.0391***	0.0672***	0.0502***
	(0.008)	(0.007)	(0.007)	(0.007)
contact with RELATIVES: weekly	0.0489***	0.0370***	0.0548***	0.0413***
	(0.007)	(0.006)	(0.006)	(0.006)
contact with RELATIVES: several times a month	0.0258***	0.0198***	0.0342***	0.0240***
	(0.008)	(0.007)	(0.007)	(0.006)
N (observations)	155533	155533	155533	155533
N (households)	112396	112396	112396	112396
Adjusted R-squared	0.667	0.697	0.745	0.765

Note: Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.
Dependent variable: logarithm of yearly gross income.

Moreover, in 19 of the 26 countries examined, at least one of the three social capital proxies is significantly related to wage income (see Table 2). Membership in voluntary organisations has a positive and significant effect on earnings in 15 countries, friendship relationships in 13, and relationships with relative in 10. These results provide strong evidence for social connections affecting income *(Question 1).*

Table 2: Effects of social capital on income: significance of the social capital variables

	Organization membership	Contact with friends	Contact with relatives
AUSTRIA	+	+	
BELGIUM			+
CYPRUS	+	+	
CZECH REPUBLIC	+	+	
DENMARK			
ESTONIA	+	+	+
FINLAND			
FRANCE	+	+	+
GERMANY		+	
GREECE			
HUNGARY	+	+	+
ICELAND			
IRELAND	+		
ITALY	+		
LATVIA	+		
LITHUANIA		+	+
LUXEMBOURG		+	+
NETHERLANDS			
NORWAY			
POLAND	+	+	+
PORTUGAL	+		+
SLOVAKIA	+		+
SLOVENIA	+	+	
SPAIN	+	+	+
SWEDEN			
UNITED KINGDOM	+	+	
POOLED weights proportional to country size	+	+	+
POOLED equal country weights	+	+	+

Note:

+ : robust positive effect (at least one category is positive significant at 5% level compared to the reference category in both specifications)

- : robust negative effect (at least one of the categories "weekly" and "several a month" is negative significant at 5% level compared to the reference category in both specifications)

"Membership in 2 or more organizations" is significant only compared to "membership in 1 organization" but not compared to the reference category in Cyprus and Slovakia. These effects are considered significant.

Where "daily" is negative significant compared to the reference category is not indicated in the table.

In 6 countries, however, none of the social capital proxies are significant. These are the four Nordic countries plus the Netherlands, together with Greece. It is interesting that these countries are those with the highest aggregate level of social capital for each of the measures used (see Figures 1, 2, and 3). It is possible only to speculate about the reasons for this. A possible explanation is that the labour markets of these countries puts great

emphases on educational qualifications and meritocratic recruitment, so leaving little room for social connections. Another intuitive explanation is that an individual's social capital may be more valuable (in terms of producing higher income) in an environment in which fewer others are rich in social capital (that is where the aggregate level of social capital is not too high). It is also possible, however, that the social capital proxies do not perform well for some countries (as, for example, in Greece as regards the intensity of contact variables, since a relatively large proportion of people have contacts with friends and relatives on a daily basis.)

Examining the cross-country differences in the strength of the earnings effect of social capital, one clear tendency is that the higher the aggregate level of social capital (measured by the proportion of those with organisation memberships) in a country, the smaller the effect of social capital on earnings. The largest effect is in Estonia, Latvia and Hungary (see also Figure 4). These are the countries where social participation is the lowest in the EU.

The *frequency of contact with friends,* a variable somewhat closer to being a proxy for weak ties than for strong ties, has a significant effect on earnings in 13 countries (Austria, Cyprus, the Czech Republic, Estonia, France, Germany, Hungary, Lithuania, Luxembourg, Poland, Slovenia, Spain, and the UK). On average, people having frequent contact with friends earn more than those having infrequent contact, the strongest effect being in Germany, Austria, Lithuania and Cyprus (see Figure 5).

The results provide some support for the "strength of weak ties" hypothesis *(Question 2).* Strong ties*,* measured by the intensity of contact with relatives, have a positive and significant influence on earnings in fewer countries than weak ties. The cultivation of ties with relatives leads to higher earnings in 10 countries: Belgium, Estonia, France, Hungary, Lithuania, Luxembourg, Poland, Portugal, Slovakia, and Spain. As shown in Figure 1, these countries are with the lowest intensity of relationships with relatives in the EU. The biggest effect on earnings of strong ties is in Lithuania, Hungary, France and Estonia (Figure 6).

As indicated at the outset, the expectation is that the effect of social capital on earnings is more pronounced in the post-socialist countries than in the other EU countries *(Question 3).* This hypothesis was tested on the pooled sample. The most unambiguous result is obtained for the "contacts with friends" proxy for social capital. This confirms that the earnings effect of ties with friends is higher in post-socialist countries.

On the whole, the estimation results are also supported by the "organisation membership" proxy for social capital, the effect on earnings of this being unequivocally higher in the post-socialist country group when equal country weights are used, though not if proportional ones are used, which is probably due to Poland, which dominates in terms of population size, since here having membership of one organisation (relative to non-membership) has a negative effect on earnings, probably because of the predominance of membership of religious groups which may have a different effect than other types of membership.

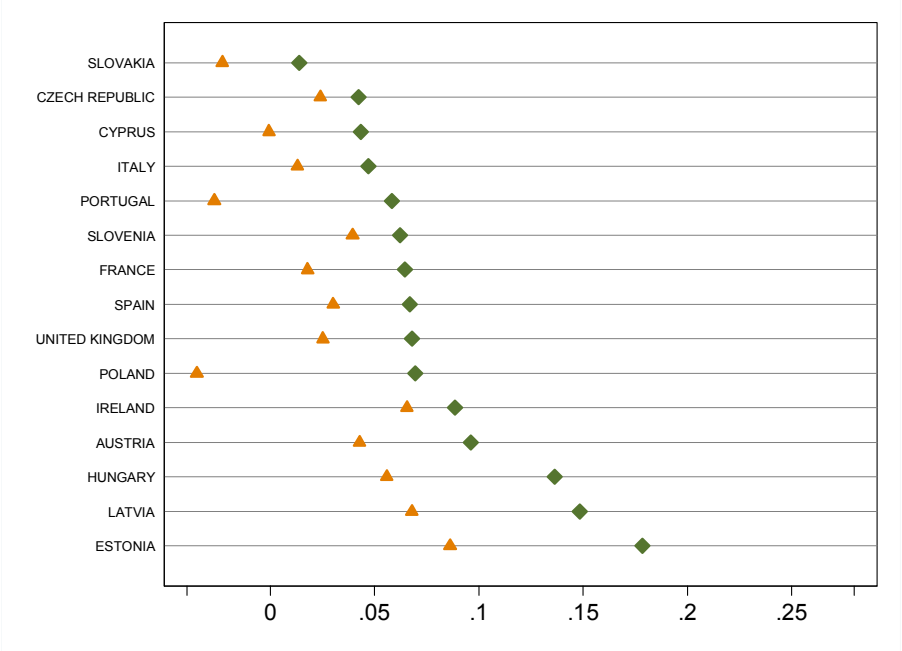
There is no difference is the effect on earnings of ties with relatives between the two groups of countries.

Question 3 can be considered further on the basis of the results of the estimations on national samples (see Table 2). For all the post-socialist countries at least one social capital proxy proves to be significant and of positive sign. Furthermore, for three of them (Estonia, Hungary and Poland) all social capital proxies are significant. By contrast, of the remaining 18 European countries, there are only 11 for which at least one of the proxies is significant (though for France and Spain all social capital measures are significantly associated with

earnings). These findings provide further support for the hypothesis that earnings effects are more pronounced in post-socialist societies.[7]

Figure 4: The effects of organization membership on wage income

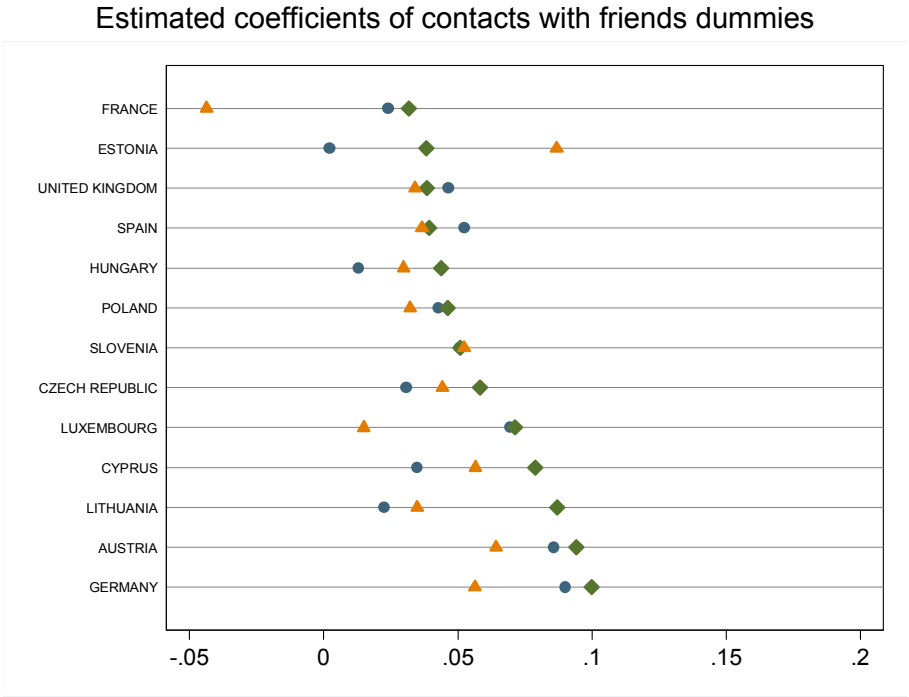
Estimated coefficients of organization membership dummies



▲ : membership in 1 type of organisations, ♦: membership in 2 or more types of organisations
Extended specification, countries with robust effect only.

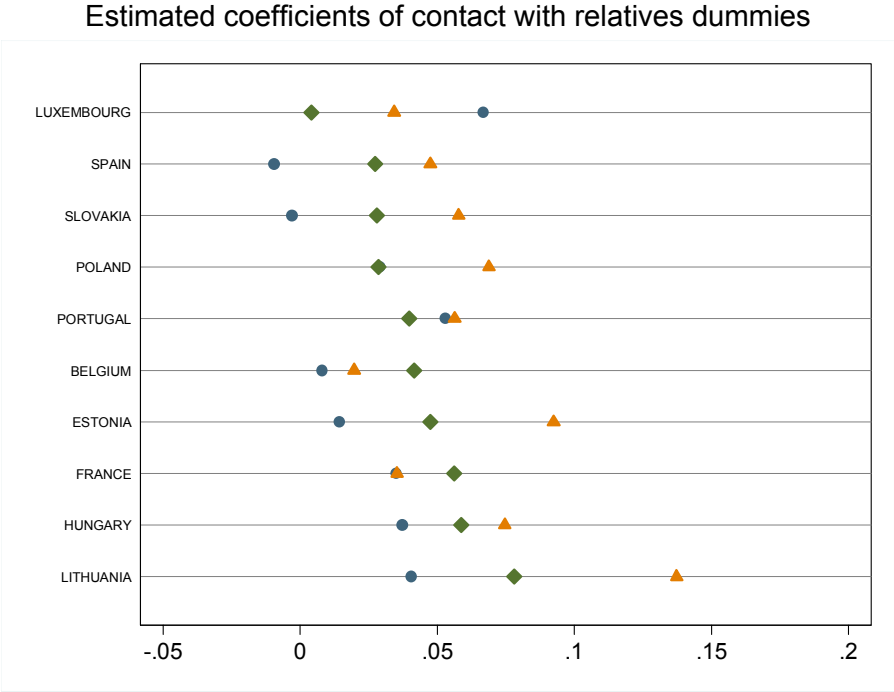
[7] The empirical analysis was repeated using "frequency of getting together with friends and relatives" as proxies for social capital. The research findings remain the same. For a summary of the estimation results, see Table C8 in the Appendix.

Figure 5: The effects of contacts with friends on wage income



▲ : daily, ♦: weekly, ●: several a month.
Extended specification, countries with robust effect only.

Figure 6: The effects of contacts with relatives on wage income



▲ : daily, ♦: weekly, ●: several a month.
Extended specification, countries with robust effect only.

As already noted, there is very limited opportunity to compare the results above with findings of previous studies. A recent study, analysing Polish data, shows that the number of

frequently contacted friends (used as a measure for 'bridging' social capital) has a positive and significant effect on earnings (Growiec and Growiec, 2007). At the same time, the effect on earnings of the number of frequently contacted family members (used as a proxy for 'bonding' social capital) is negative (though negligible). These findings are only partly in line with the results here. For Poland, the intensity of ties with both friends and relatives is positively associated with earnings.[8]

6. Conclusions

The analysis here seems to be the first attempt to assess the effect on earnings of social capital in a multi-country context. The results indicate a significant and positive association between social capital and earnings on the pooled sample of 26 European countries and on the national samples of 19 countries. They also, however, indicate considerable differences across countries in the scale of the effect. It seems to be more pronounced in the post-socialist countries than in other EU Member States.

Cross-country differences are apparent not only between the post-socialist and the other European countries but also within the latter group. The Nordic countries together with the Netherlands seem to behave differently from the other countries, in that none of the three proxies of social capital is significantly associated with earnings. The reasons for this need further investigation. At the other extreme, in France and Spain, all social capital proxies are significantly and positively associated with earnings.

The findings provide some support for the hypothesis that weak ties – measured by membership of voluntary organisations – have more of an effect on earnings than strong ties (measured by the intensity of contact with relatives).

It should be emphasised, however, that the above findings say nothing bout the direction of the causal relationship between social capital and earnings, which can run both ways. Higher income, therefore, might lead to more of a tendency to live a more active social life – i.e. to join more organisations. A further point to bear in mind is that individuals may have certain unobserved characteristics (e.g. outstanding communication skills or the ability to think strategically), that lead both to more social connections and to higher earnings. Since this possibility cannot be excluded, the effect social capital might be overestimated (see Section 4 in the Methodological Annex).

[8] Part of the differences can be explained by the fact that in the lack of individual income per capita household income was used in the Polish study (see Growiec and Growiec, 2007).

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Methodological Annex

Econometric specification

Econometric specification is based on a modified version of the standard Mincerian wage equation. We deviate from the standard specification in using educational attainment dummies instead of years of schooling and in adding social capital and a broad set of control variables. In order to explore the impact of social capital on wage income, we estimate the following model for each countries:

$$(1) \qquad \log W_{ij} = \alpha + \beta_1 S_{ij} + \beta_2 E_{ij} + \beta_3 E_{ij}^{\ 2} + \gamma^o O_{ij} + \gamma^f F_{ij} + \gamma^r R_{ij} + \delta X_{ij} + \varepsilon_{ij} \qquad \text{for j=1,2…26}$$

where *W* denotes wage income for the previous year, *S* is educational attainment, *E* is potential work experience, *O*, *F* and *R* are measures of social capital; membership in organizations, and the intensity of the relationship with friends and relatives, respectively, and *X* is a vector of control variables. *α, β, γ* and *δ* are the estimated parameters and *ε* is the residual. Index *j* stands for countries, *i* denotes individuals.

Besides separate regressions for each country we also estimate a pooled model, including country fixed effects:

$$(2) \qquad \log W_{ij} = \alpha + \beta_1 S_{ij} + \beta_2 E_{ij} + \beta_3 E_{ij}^{\ 2} + \gamma^o O_{ij} + \gamma^f F_{ij} + \gamma^r R_{ij} + \delta X_{ij} + \sum_j \eta_j C_j + \varepsilon_{ij}$$

where C denotes country dummies and the *η*-s are their coefficients. Note that, as opposed to separate country regressions, in the pooled model all the parameters except country fixed effects are constrained to be the same for the whole sample of countries.

The parameters of main interest are γ^o, γ^f and γ^r. In the semi-log specification the value of these multiplied by one hundred can approximately be interpreted as a percentage change in income. Since social capital is measured by dummy variables (see below) this means that people with social capital of a given level on average earn approximately γx100 more than people in the reference category (i.e. people with the lowest level of social capital) ceteris paribus.

In order to test Hypothesis 3 we re-estimate the pooled model supplemented with interaction terms between social capital variables and a post-socialist country dummy:

$$(3) \qquad \begin{aligned} \log W_{ij} &= \alpha + \beta_1 S_{ij} + \beta_2 E_{ij} + \beta_3 E_{ij}^{\ 2} + \gamma^o O_{ij} + \gamma^f F_{ij} + \gamma^r R_{ij} + \pi^o O_{ij} P_j + \\ &+ \pi^f F_{ij} P_j + \pi^r R_{ij} P_j + \delta X_{ij} + \sum_j \eta_j C_j + \varepsilon_{ij} \end{aligned}$$

where *P* denotes post-socialist countries and the *π*-s are the coefficients of the interaction terms.

The EU-SILC sampling procedures vary by country, though most countries employed stratified multi-stage sampling, with households as the final sampling unit. We used probability weights to ensure the sample represents the target population. In the regression estimates clustered standard errors were calculated to allow for correlation among the residual terms within households.

Pooled estimates were calculated in two variants; on the one hand with country weights proportional to country size and with equal country weights on the other. The former gives higher weights to big countries, representing the whole population of the countries

considered. Equal country weights implicitly assume a sample of countries, irrespective of their size, and are more suitable for testing comparative hypothesis like H3.

Control variables

According to human capital theory the most important determinants of earnings are schooling and work experience. Schooling is measured by a set of dummy variables, since using years of schooling often proves to be a restrictive assumption (see e.g. Björklund and Kjellström, 2002), and if social capital is related to educational attainment, this could result in omitted variable bias. Experience is not observed directly in our data. In the absence of this, potential experience is calculated as age minus the country median age of reaching the educational attainment of the respondent.

Additional control variables are also included in the model in order to control for individual heterogeneity possibly correlated with both wages and social capital[9]. In the *basic specification,* we control for labor market activity in the previous year and working hours (required as the dependent variable is yearly wage income). The basic specification further includes those demographic characteristics that are possibly related to both labor supply and social capital, such as sex, marital status, number of children, dummies for the country of birth and for citizenship, the size of the settlement in which the individual lives (with a population of less than or more than 50,000), and dummies indicating missing values of the right hand side variables.

The *extended specification* also contains dummies for economic sectors and occupation[10]. The effect of these variables on the estimated impact of social capital is somewhat ambiguous. If social capital provides access to jobs in occupations or economic sectors with higher than average wages, the impact of social capital is underestimated when these additional control variables are included in the estimates, providing conservative estimates. However, if there is a correlation between social capital and occupation and economic sector, besides any casual effect of social capital on the additional control variables, ignoring this can result in either upward or downward biased estimates of the impact of social capital on wages. Moreover, economic sector and occupation dummies can in part take on the unobserved effect of settlement size, due to the different economic characteristics of urban and rural areas. This is important, since the level of our observed social capital variables may well differ among metropolitan, medium-sized and small town and small village environments, but unfortunately we can not directly control for settlement characteristics beyond distinguishing settlements with below and above 50,000 inhabitants.

Taking into account the above arguments, the effect of any social capital proxy will be considered as robust only if it proves to be significant in both the basic and the extended models.

Problems in estimating the earnings effects of social capital

In this section we discuss some problems concerning the assessment of the earnings effect of social capital. These should be considered when interpreting the findings of this study. The first problem is that the causality between social capital and income could run both ways. That is, higher income may lead to higher inclination to live a more active life, e.g. to join organizations and become a more active member. If membership in voluntary organizations is endogeneous this way, then any estimate of organizational membership will be biased

[9] A similar set of control variables is applied e.g. by Flabbi et al. (2007) in an international comparative analysis of earnings regressions.

[10] The occupational dummies follow the classification of ISCO occupational categories into five groups suggested by O'Rourke and Sinnott (2001).

upwards[11]. If participation in voluntary organizations requires significant monetary contribution, this would leave only those in our membership category who "already has higher income". Beyond budget constrain, another problem is the time needed to join an organization. If participation in an organization is too time consuming, then this would leave only those in our membership category who spend less time working. (Although this remain a question, whether these persons are those with high or just with low hourly income.) Therefore, it is necessary to control for time spent in employment (weekly hours and the number of months spent in employment as well).

The *endogeneity problem* can be solved by the use of instrumental variables, provided that valid instruments are available. Unfortunately, no variables are at hand that meet the criteria for being a proper instrument (i.e. significant predictor of organizational membership but unrelated to earnings and endogenous). We note that it is a difficult task to devise proper instruments for one's membership in voluntary organizations either way. Gomez and Santor (2001) use three measures of attitudes toward social connections as instruments for organization membership. Based on the estimation results, they conclude that organization membership is exogenous.

Another concern that arises when interpreting the estimations results is that the effect of social capital may be due to *unobserved heterogeneity*. Individuals may have certain unobserved characteristics (e.g. outstanding communication skills, strategic thinking, etc.), that lead both to more social connections and to higher income. Since we cannot exclude the possibility of either the problem of endogeneity or unobserved heterogeneity, the coefficients of social capital variables may be biased upwards.

Finally, there is a third problem to be mentioned. According to the human capital theory, the market rewards productivity, the sources of which are education, experience, and ability. Social capital theorists, however, claim that the market compensates the individual's network resources. Similarly to human capital, social capital, as defined in this paper, can be conceived as investment (in social relations) made by the individual with expected returns (e.g. higher income) (Lin, 1999). Individuals then have to decide whether to invest more in education or to invest in building social connections. In the decision one considers both the expected benefits and costs associated with the investment. It seems rational for those who are highly talented but have poor social skills to invest more in education, and the reverse is true for those with outstanding social skills but with less talent. If this is the case, that is those individuals will invest in social capital that expect higher returns, then the coefficients of social capital variables may be biased upwards.

[11] For a more detailed discussion see Gomez and Santor (2001).