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Analyzing the Impact of Social Ties on
Regional Migration**

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Abstract

Individuals' preferences in transition regions are still shaped by the former communist system. We test this 'Communism legacy' hypothesis by examining the impact of acculturation in a communist regime on social network participation and, as a consequence, on preferences for spatial mobility. We focus on the paradigmatic case of East Germany where mobility intentions seem to be substantially weaker than in the western part. Applying an IV ordered probit approach we firstly find that East German people acculturated in a Communist system are more invested in locally bounded informal social capital than West Germans. Secondly, we confirm that membership in such locally bounded social networks reduces the intention to move away. Thirdly, after controlling for the social network effect the mobility gap between East and West substantially reduces. Low spatial mobility of the eastern population, we conclude, is to an important part attributable to a social capital endowment characteristic to post-communist economies.

Keywords: regional mobility, social capital, East Germany

JEL classification: J61, R23, C35

Warum sind Ostdeutsche nicht mobiler?

Zum Einfluss von sozialer Bindung auf regionale Migration

Zusammenfassung

Die Präferenzen von Individuen in Transformationsregionen sind immer noch durch Prägungen des früheren sozialistischen Systems bestimmt. Diese These der sozialistischen Prägung wird im Beitrag getestet, indem untersucht wird, ob sich ein Einfluss der Sozialisation in einem solchen System auf die Akkumulation von Sozialkapital und, als Konsequenz, auf die Präferenzen für räumliche Mobilität nachweisen lässt. Gegenstand der Analyse ist der paradigmatische Fall Ostdeutschlands, wo die Mobilitätsneigung deutlich geringer zu sein scheint als im westlichen Teil. Auf Grundlage einer *IV-ordered-probit*-Schätzung wird erstens belegt, dass Ostdeutsche, sofern sie im Sozialismus aufgewachsen sind, stärker in lokal gebundenes informelles Sozialkapital investiert sind. Zweitens bestätigt sich die These, dass eine Partizipation in derartigen Netzwerken die Mobilitätspräferenz verringert. Drittens zeigt sich, dass sich nach Kontrolle dieses Netzwerkeffektes der Mobilitätsrückstand der Ostdeutschen substanziell verringert. Die eher geringe räumliche Mobilität der ostdeutschen Bevölkerung erscheint daher zu einem erheblichen Teil den typischen Sozialkapitalmustern post-sozialistischer Gesellschaften geschuldet zu sein.

Schlagwörter: regionale Mobilität, Sozialkapital, Ostdeutschland

JEL-Klassifikation: J61, R23, C35

1 Introduction

The intuition of the present analysis is that behavioural patterns of individuals in transition regions are still shaped by dispositions having their seeds in the former Communist system. We test this hypothesis by examining the impact of acculturation in a Communist regime on the preferences for spatial mobility. We presume that people in transition regions – due to the accumulation of a system specific social capital pattern during Communism – are characterized by strong ties to locally bounded social networks preventing them from leaving – even intending to leave – the region to an extent economic theory would expect.

In examining this presumption we combine two unconnected strands of labour market and transition research. On the one hand a growing labour market related literature deals with the influence of specific types of social capital on labour mobility. Following articles of Kan (2007), Garip (2008) and David et al. (2008a) we suppose that membership in locally bounded social networks might reduce the willingness to leave the home region. By leaving such a bounded community – e.g. neighbourhoods or friendships – a person terminates the option of reaping returns from interactions with other members of the same network. Thus, investments in these local networks should reduce mobility. On the other hand transition literature recently verified different social capital patterns of people in Post-Communist countries in comparison to their Western counterparts (Kaasa and Paarts 2008, Fidrmuc and Gerxani 2008, Rainer and Siedler 2009a). Whereas participation in institutionalized social capital, i.e. membership and/or engagement in formal organisations, is underdeveloped in the East, an abundance of informal strong tie relationships to neighbours, relatives or friends can be noticed. In combining these two unrelated strands of research one is tempted to conclude that mobility preferences of the Eastern population are weakened by its specific social capital endowment.

In empirically assessing our hypothesis we focus on labour mobility of East Germans. The reason to concentrate on East Germany is twofold. Firstly, by looking on East Germany one is confronted with a disturbing puzzle. On the one hand, large and persistent disparities between East and West German labour markets exist either in terms of unemployment or wage rates (Aumann and Scheufele 2010). On the other hand, obstacles for migrating from East to West are small; linguistic, institutional and spatial distance between the two parts of Germany is negligible. Yet, regional out-migration rates in East Germany are on the same level than in the Western part (Mai 2006). Additionally, Niebuhr et al. (2009) show that migration between Western regions is a more effective channel in equalizing regional unemployment rates than in the Eastern part of Germany.

With respect to labour mobility, thus, East Germany offers a quite interesting case to test the hypothesis of Communist legacy.¹

Secondly, Germany is a unique case for analysing the impact of Communism since the differences between East and West are for the most part attributable to the recent history of political separation after 1945 while differences between Eastern and Western Europe countries might be rooted in a large variety of historical developments in terms of culture, politics and economics before the ‘Communist experiment’. If the Pre-Communist period affects even the Post-Communist era (Winiecki 2004) then it is indistinct if behavioural patterns after transition are actually attributable to Communism in these countries. By contrast, focussing on Germany offers a methodologically quite interesting option to identify the effect of Communism, as it is emphasized by the seminal work of Alesina and Fuchs-Schündeln (2007), p. 1507: “Since the political and economic system has been the same in the eastern and western part of Germany since reunification in 1990, and was the same before 1945, West Germans constitute a meaningful control group for East Germans.” Therefore the German case can be seen as natural experiment to identify “the effects of living 45 years under a Communist regime on attitudes, beliefs, and political preferences”.²

Methodologically, our approach is mostly related to the labour market literature isolating the impact of local social ties on spatial mobility. The technical challenge of this kind of analysis is the potential endogeneity of social network participation with respect to mobility. The number of studies explicitly dealing with this problem is limited (Belot and Ermisch 2006, Kan 2007, David et al. 2008b). In following these studies we estimate a two equation model of mobility preference and social network participation taking potential endogeneity of social capital into account. Yet, in terms of content, we extend previous analyses for at least two reasons. First, by concentrating on the case of Germany and distinguishing between ‘native’ Eastern and Western Germans we are able to identify the effect of different institutional settings (‘Communism’ vs. ‘Liberal democracy’) on the establishment of social relationships and, thus, on mobility preferences. Second, the German Socio-Economic Panel enables us to measure mobility as willingness to migrate, i.e. mobility intentions. Since our hypothesis supposes an enduring impact of Communism, the adequate level of analysis is the ontologically subjective category of preferences and not actual behaviour. Because intentions are necessary conditions for actual behaviour our study is, obviously, also relevant for explaining observ-

¹ Even if we focus on Germany the mobility topic has a similar relevance for a number of Post-Communist countries. *Fidrmuc* (2004), *Gács and Huber* (2005) as well as *Bornhorst and Commander* (2006) point to the low level of regional adjustments to labour market disparities and shocks via the channel of worker relocation in these countries. *Paci et al.* (2007) confirm the very strong attachment of individuals in the new EU member states to their local community.

² See also *Rainer and Siedler* who reflect the literature on the natural experiment character of the recent German history and use „the German separation and reunification as an exogenous event to estimate the causal effect of communism“ (*Rainer and Siedler* 2009b, p. 255).

able mobility patterns and not solely preferences. All in all our paper, empirically, contributes to the literature underlining the enduring impact of the Communist past on transition – an aspect which “in many areas of research on transition [...] tends to be underappreciated” (Winiecki 2008, p. 377).

Our paper opens with a theoretical chapter explicating the concept of social capital, its relationship to spatial mobility and the impact of Communism on social capital patterns. Next, the econometric model, the applied social capital and mobility measures as well as the identification strategy are described. Then, estimation results are displayed and discussed. A final section draws some conclusions.

2 Social Networks and Spatial Mobility in a Post-Communist Context

2.1 The Spatial Dimension of Social Networks

By analyzing the impact of social networks on economic outcomes it is usually referred to the notion of social capital that was established in social sciences during the late 1980s and early 1990s years (Bourdieu 1986, Coleman 1988, Putnam 1993, 1995).³ Because of the young history of the concept, there is an ongoing debate on what social capital is about. Definitions vary in being functional vs. intrinsic, normative vs. positive, individualistic vs. collectivistic. Generally, two broad understandings of social capital can be distinguished.⁴ One strand – the Bourdieu and Coleman line – refers to social capital as the investments in social networks by individuals which provide them with resources “that they can use to achieve their interests” (Coleman 1988, p. 101). The second strand relies on the notion of generalized trust preventing a society from social dilemmas and promoting collective actions (Putnam 1993, Fukuyama 1995).

Our focus on the role of social networks is closely related to the first strand of the literature defining social capital as a community’s characteristic which enables its members to reap individual returns from interactions with other members of the same community (Glaeser et al. 2002). The distinguishing attribute of investments in social networks or social capital is its relational structure:

³ For the economic approaches to social capital see the review articles of *Paldam* (2000), *Sobel* (2002), *Durlauf and Fafchamps* (2005) and *Dasgupta* (2005).

⁴ *Paldam* (2000) distinguishes three conceptual families: trust, cooperation and networks. Nevertheless, as Paldam himself admits, the cooperation and the trust concept are very similar; thus, they might be unified to one category.

“Whereas economic capital is in people’s bank accounts and human capital is inside their heads, social capital inheres in the structure of their relationships. To possess social capital, a person must be related to others, and it is these others, not himself, who are the actual source of his or her advantage” (Portes 1998, p. 7).

Stressing the relational dimension of social capital is essential since it illustrates its different nature in comparison to human capital. Leaving the network terminates the individual’s ability to gain benefits from it. Instead, the returns to human capital are less dependent on the membership in a particular network. In our context, this aspect is crucial since it helps to explicate the spatial dimension of social capital.

The main characteristic of participation in social networks – investments in social capital – making it relevant for labour mobility is its dependence on a particular community. Communities typically exhibit a geographical extension. In that sense, David et al. (2008a) stress the localness of social networks and its implication for regional mobility. They distinguish two types of social networks; the first one depends on spatial proximity while the second one is geographically unbounded. Due to this distinction the impact of participating in social networks on migration propensity is not trivial. In case of migration a membership in a spatially bounded community runs out and the migrant’s social capital has to be depreciated. On the other hand, spatially unbounded communities might even encourage mobility since potential migrants acquire information about remote locations and easily get contact at the destination via their network connections. Thus, only a very specific type of social capital lowers mobility.

For conceptualizing the distinction between locally bounded and unbounded networks the theory of interpersonal ties introduced in the social network theory by Granovetter (1973) is of great benefit. Granovetter establishes the notion of the strength of interpersonal ties:

“Most intuitive notions of the ‘strength’ of an interpersonal tie should be satisfied by the following definition: The strength of a tie is a (probably linear) combination of the amount of time, the emotional intensity, the intimacy (mutual confiding), and the reciprocal services which characterize the tie” (Granovetter 1973, p. 1361).

Our hypothesis relating the strength of ties to spatial mobility states that locally bounded networks operate on the basis of strong ties, i.e. regularly and intense personal contacts between specific individuals. At least to some extent, these contacts require spatial proximity between particular individuals. One might consider a few special cases where regularly contact via spatial proximity can be partly substituted by media. Nevertheless, the basic kind of establishing a strong tie network and building up reputation between participants is due to face-to-face interactions. Therefore, the geographic extension of such networks is limited. Furthermore, strong tie networks can be characterized as closed communities. Information generated within the network circulates very fast but

the capability to acquire credible information from outside the network is very limited. Therefore, the recognition of outside opportunities encouraging mobility is reduced.

On contrary, networks operating on the basis of weak ties, i.e. less frequent and intense personal contacts, are able to transcend spatial boundaries. Networks of this type exhibit a rather open character; hence, information on opportunities in distant regions can be acquired via weak ties. Granovetter states, that “whatever is to be diffused can reach a larger number of people, and traverse greater social distance [...], when passed through weak ties rather than strong” (Granovetter 1973, p. 1366) Furthermore, in case of migration, the accumulated social capital keeps its economic value since weak ties to members in the host region can be turned into strong ties after migration. Therefore, participation in such networks is less tied to a certain location and, as a consequence, does not reduce mobility or actually foster it. Belonging to a close knit exclusionary network of strong ties, on the other hand, should prevent participant from moving to other regions. Otherwise their accumulated network capital, for the most part, would be useless and has to be depreciated.

Another aspect has to be taken into consideration. If participation in social networks characterized by strong ties affects mobility, then, individuals seriously considering moving away should adjust their investment behaviour. Individuals with strong mobility preferences should invest less in locally bounded network activities while immobile people might prefer these strong relationships to a locally concentrated community. In other words, membership in social networks exerts influence on mobility but vice versa mobility intentions should influence the network activities. In the empirical analysis, this interdependent relationship between social interaction and mobility has to be taken into account otherwise a simultaneity bias arises.

2.2 Social Networks under the Totalitarian Rule

Our analysis crucially rests upon the hypothesis that East and West Germans differ in their social network patterns. East Germans, we suppose, are more connected to locally bounded networks and, thus, show a rather limited spatial mobility. The reason behind the hypothesis of the East Germans’ localness is the acculturation in a totalitarian political system and the following abrupt institutional transformation. A multifaceted literature deals with the impact of totalitarian – particularly the Communist – systems and the following transformation period on social capital investments (Mihailova 2005). One motive for the extensive debate on this issue is, according to Paldam and Svendsen (2002), the conjecture that social capital acts as missing link in explaining the slow ad-

justment of economic and social domains in Eastern countries to standards of developed western countries.⁵

The underlying argument is based on the recognition of a social capital gap between eastern and western economies recently confirmed by the analysis of Fidrmuc and Gërxi (2008). However, most authors agree that the lack of social capital considers only the institutionalized type of social capital which is built up within the legal framework (Mihailova 2005) as well as the dimension of generalized social trust measuring the trust to people not belonging to the own close-knit community (Rainer and Siedler 2009b). On the contrary, networks of families, friends or kinship based on strong ties seem to play a more important role than in the western countries.⁶ Rose (1999) classifies this type of social capital as ‘negative’ or ‘anti-modern’ since it acts as obstacle to institutional transformation, i.e. the actual enforcement of the rule of law. The reason for a different social capital pattern in transition countries is twofold. Firstly, according to the so called dictatorship theory the former totalitarian system destroyed civic participation and trust in formal institutions and caused a retreat into closed informal networks:

“All Communist countries had experienced a phase of stark, totalitarian rule; and even after severe repression ended with the Stalinist era, participation in public affairs remained forced and ritualistic. People therefore tended to retreat from the public sphere into privacy; into the realm of relatives and immediate friends; or into innocuous groups promoting non-controversial cultural and leisure activities. Public institutions were perceived as [...] imposed by a foreign power” (Raiser 2001, p. 4).

Hence, “under the communist system an autonomous ‘social tissue’ was destroyed” (Mickiewicz 2009, p. 404). Secondly, after the breakdown of the totalitarian rule an institutional vacuum occurred and the informal networks became even more necessary to cope with the risks of the transition period. Keeping this line of reasoning in mind one would suggest that spatial mobility is rather limited in transition economies. If individuals believe that they only can “profit from informal social capital returns” (Raiser 2001, p. 4) they will not jeopardize these relationships by leaving the community. However, regarding the special case of East Germany a somewhat different development was observed. According to Rainer and Siedler (2009b) trust in institutions rapidly regenerated during the transition period. Due to the immediate takeover of political and legal institutions from West Germany an institutional vacuum was prevented and, as a consequence of the performance of the imported system, institutional trust was renewed.

⁵ A related discussion deals with the effects of social capital in developing countries (*Dasgupta* 2005). However, as *Winięcki* (2004) noted, the observed lack of ‘civilisational fundamentals’ of liberty, law and order, and trust might reach back to the Pre-Communist era.

⁶ *Ledeneva* (1998) shows the abundant social capital in terms of informal networks and so called blat relationships for Russia.

All in all, the social capital pattern of East Germans is supposed to be dominated by strong tie relationships of informal networks in contradiction to weak tie oriented open networks; yet, trust in impersonal institutions seems to be established quite well. Characterized by this social capital pattern East Germans are more locally bounded and show rather limited willingness of leaving their home region. Turning to the empirical part of the analysis we derive the following three hypotheses:

- 1) *Participation in social networks characterized by strong ties discourages mobility (Mobility hypothesis).*
- 2) *Native East Germans are more related to strong tie social networks than West Germans (East hypothesis).*
- 3) *Controlling the social network effect substantially reduces the mobility gap between East and West Germans (Gap hypothesis).*

3 Empirical Analysis

3.1 Econometric Model

As outlined in the previous section there might be a simultaneous dependency between the individual social network pattern and the individual mobility proneness. We estimate this interdependent relationship using the Amemiya Generalized Least Square Estimator (Amemiya 1979) and find no evidence for the impact of mobility propensity on the social network structure.⁷ Hence, in line with the work of Kan (2007) and Belot and Ermisch (2006) the following recursive two equation model turns out to be appropriate:

$$(1) \quad M_i^* = \gamma C_i^* + x_i' \beta_1 + \varepsilon_{1i}$$

$$(2) \quad C_i^* = x_i' \beta_2 + z_i' \pi + \varepsilon_{2i}$$

⁷ In order to test the simultaneous structure we extend equation 2 given above with the endogenous regressor M_i^* and the corresponding parameter ϕ : $C_i^* = \phi M_i^* + x_i' \beta_1 + z_i' \pi + \varepsilon_{1i}$. Afterwards, on the first stage, we simultaneously estimate the reduced form of this modified two equation ordered probit model via Maximum Likelihood. On the second stage, the structural parameters are estimated by Generalized Least Square method on the basis of the coefficients of the first stage. The corrected covariance matrix is calculated according to Amemiya (1979). This two stage procedure gives consistent, but still inefficient parameter estimates. Since we cannot reject the hypothesis $\phi = 0$ we conduct the efficient Full Information Maximum Likelihood procedure described.

where α and β are vectors of parameters, X_i is a vector of socioeconomic variables and ε_i and η_i are normally distributed errors (allowed to be correlated) with a zero mean. In order to ensure identification the second equation of the model contains a set of instrumental variables discussed below. Furthermore we perform a likelihood ratio test to avoid biased estimation results due to weak instruments.

Instead of the latent tendencies M_i^* and C_i^* we observe the ordinal variables M_i and C_i such that:

$$(3) \quad M_i = \begin{cases} 0 & \text{if } M_i^* \leq \mu_{11} \\ 1 & \text{if } \mu_{11} < M_i^* \leq \mu_{12} \\ 2 & \text{if } \mu_{12} < M_i^* \end{cases} \quad C_i = \begin{cases} 0 & \text{if } C_i^* \leq \mu_{21} \\ 1 & \text{if } \mu_{21} < C_i^* \leq \mu_{22} \\ 2 & \text{if } \mu_{22} < C_i^* \leq \mu_{23} \\ 3 & \text{if } \mu_{23} < C_i^* \end{cases}$$

The unknown cutoffs and parameters are efficiently estimates by Full Information Maximum Likelihood (FIML).

3.2 Data and measurement

In our inquiry, we use the German Socio-Economic Panel (GSOEP), a representative survey of German households. The data set enables us to measure the social relationships and provides information on the mobility intentions. Since only some waves contain the relevant records on social networks activities and mobility intentions we have to focus on the wave of 1999. Due to the dependency of mobility decisions within households we only use information on individuals that are classified as household heads. Furthermore we restrict our analysis to people relevant for the labour market aged between 16 and 65 years. Because of these restrictions and some missing value problems the sample size of our analysis reduces to almost 3,600 individuals.

The crucial question for the analysis considers the measurement of the endogenous variables of an individual at a certain point in time. We quantify the individual social network activities via the frequency of helping friends, relatives or neighbours (HELPFRIENDS). Given the reciprocity of strong ties mentioned by Granovetter (1973) this variable approximates the amount of locally bounded social networks a person has access to. The variable stems from the following question:

HELPFRIENDS:

“Please indicate how often you take part in each activity: every week, every month, rarely or never?”

“Lend help to friends, relatives or neighbours when something has to be done” (GSOEP variable code PP0305)

The variable is ordinarily coded; the higher the value the more social capital in terms of potential assistance in the future from friends, relatives or neighbours is acquired.

To assess an individual's mobility preference at the date when social network activities are measured we rely on the GSOEP question whether the person considers moving away. The question is expressed in a way that should exclude nearby moves within a region. Thus, the question precisely measures that type of mobility relevant for locally bounded social network activities.

MOVE_INTENT:

“Would you consider moving away, e.g. because of family or job?”

“Yes; possibly, can't exclude the possibility; no” (GSOEP variable code PP114)

There are several aspects to note about the mobility measure applied in this inquiry. In contrast to the usually applied proxies based on actual moves, stated mobility preferences or intentions have three advantages. Firstly, individual behaviour is guided by this ontologically subjective category. People should reduce their local ties if they intend to move away even if they actually do not move. Secondly, in the German formulation the question is expressed in a way which is directly related to social networks. Moving away exactly means cutting local ties. If, conversely, actual moves are used one has to determine the spatial dimension of social networks by herself. By applying the stated preference variable this decision is left to the interviewee. Finally, because of panel attrition employing actual moves is likely to induce a selectivity bias which is difficult to account for in the context of endogenous regressors. All previous studies ignore this problem. Table 1 describes the endogenous variables and the way they are operationalized.

Table 1
Description of endogenous variables

Variable	Description	Measurement
<i>MOVE_INTENT</i>	Mobility intention	Expressed mobility intention within next two years (0 = no intention; 1 = maybe; 2 = yes)
<i>HELPFRIENDS</i>	Social Network	Frequency of helping friends (0 = never ... 3 = weekly)

For testing the east hypothesis (H2) a variable is required representing the institutional regime in which a person is grown up. We include a variable called EASTORIGIN that is based on the following question:

EASTORIGIN:

“Where did you live before German reunification, i.e. before 1989?”

“GDR (including East Berlin), Federal Republic (including West Berlin), Abroad”
(GSOEP variable code TP121)

So, persons that moved from East Germany to the Western part after the fall of the Wall are identified as acculturated in a Communist institutional setting. Hence, the potential selectivity bias due to east-west migration is reduced to the negligible amount of moves before 1989. Moreover, to assure the validity of the natural experiment of the German separation we exclude all foreigners and Germans who lived abroad before 1989. Because of the almost exogenous character of the *EASTORIGIN* variable determined in this way we implement it as independent regressor in both equations of the model.

Table 2:
Description of exogenous variables

Variable	Description	Measurement
<i>EASTORIGIN</i>	Lived 1989 in East Germany	1=yes, 0=no
<i>AGE</i>	Age	Age in years
<i>FEMALE</i>	Female	1=yes, 0=no
<i>MARRIED</i>	Marital status: Married, living together	1=yes, 0=no
<i>SEPARATED</i>	Marital status: Married, living separated	1=yes, 0=no
<i>SINGLE</i>	Marital status: Single	1=yes, 0=no
<i>DIVORCED</i>	Marital status: Divorced	1=yes, 0=no
<i>WIDOWED</i>	Marital status: Widowed	1=yes, 0=no
<i>CHILD</i>	Number of children	Number of children under 17 years living in Household
<i>FAMILY_CHANGE</i>	Household composition change last year	1=yes, 0=no
<i>EDUCATION</i>	Education	Duration of education in years
<i>EMPLOYED</i>	Employment status	1=full-time employed, 0=other
<i>INCOME</i>	Household income	Monthly net household income in Euro (after taxes and transfers)
<i>PROB_UNEMPLOY</i>	Subjective unemployment risk	0% to 100 % risk estimation of losing current job within two years
<i>FLAT_OWNER</i>	Flat owner	Owner of the flat where household lives (1=yes, 0=no)
<i>CARE</i>	Person in household needing constant care	1=yes, 0=no
<i>FINISH_EDUC</i>	Completion of education last year	1=yes, 0=no

The exogenous variables used in the estimation are depicted in table 2. They include the main personal characteristics usually applied in the analysis of determinants of mobility and social capital, i.e. age, sex, family status, education, employment status, household income (Kan 2007, Belot and Ermisch 2006).

3.3 Identification

As discussed above the IV approach conducted in this paper requires a set of certain instrumental variables to ensure proper identification. Valid Instrumentation rests upon two major presuppositions. Firstly, instruments should be (highly) correlated with the endogenous, i.e. the HELPFRIENDS variable. Secondly, instruments have to be uncorrelated with – orthogonal to – the error term in the structural, i.e. the MOVE_INTENT equation. Whereas the first condition can be assessed via a weak instruments test the second criteria must be verified by theoretical considerations since the usual tests of overidentification restrictions are not feasible in case of ordered probit models. In our analysis we use four instruments displayed in Table 3.

Table 3:
Description of Instruments

Variable	Description	Measurement
<i>SIBLINGS</i>	Number of siblings	
<i>FATHER_TRAINING</i>	Father with high level of vocational training	1=yes, 0=no
<i>FLAT_DURATION</i>	Duration of living in flat	Duration in years
<i>FIRM_TENURE</i>	Firm Tenure	Tenure in years

Regarding the first premise we have to verify the relevance of the four variables for our social capital measure. From the social network analysis point of view (Granovetter 1973) the number of siblings (*SIBLINGS*) should increase contact potential since the social ties of siblings can be used to form own ties. Thus, the number of siblings increases an individual's contact pool. Additionally, we implement a variable reflecting the educational background of the father (*FATHER_TRAIN*) since this kind of variable is commonly used as indicator for the sociability of persons. Thirdly, we include the duration the person is living in her flat (*FLAT_DURATION*) since a high duration should be highly correlated to neighbourhood contacts and friendship help. Finally, we implement the *FIRM_TENURE* variable because a high tenure should increase the opportunity of building up strong informal ties (e.g. to colleagues). As one can see in the next section the performed weak instruments test rejects the null hypothesis of no relevance

of instruments for the HELPFRIENDS variable. Thus, it is justified to conclude that the first requirement for correct identification is met.

A more critical aspect concerns the second condition for valid instrumentation, i.e. uncorrelatedness or orthogonality of instruments with the error term in the MOVE_INTENT equation. Before discussing the itemized variables one should conceive that valid identification of course allows an instrument's influence on intentions to move via the endogenous variable HELPFRIENDS or due to its correlation to other included exogenous variables. If, for example, an individual's firm tenure increases its income and reduces, therefore, mobility no correlation between firm tenure and the error term of the mobility equation occurs and the orthogonality condition is satisfied.

Regarding SIBLINGS we do not find any provable impact on the intention to move away. One might argue that having siblings exerts influence on mobility preferences due to care considerations with respect to parents (Rainer and Siedler 2009c). Yet, we control for this aspect by implementing the CARE variable. With respect to FATHER_TRAINING a heritage effect seems to be likely, i.e. children of trained fathers are more mobile since they are also more trained. However, after taking the own educational level into account this effect does not lead to a correlation between the instrument and the error term. Likewise, we suppose that when FLAT_DURATION increases the intention to move clearly reduces. Nevertheless, the orthogonality condition seems to be met since it is the growing social network – measured by our endogenous variable – that weakens mobility and not duration of living in a flat as such. Considering FIRM_TENURE we would like to claim that the impact on mobility intentions works through i) social capital and ii) wages. Obviously, firm tenure reduces job and spatial mobility due to the beneficial embeddedness of a worker in the firm's social network. Furthermore, tenure and wages are positively correlated. After moving away wage components solely based on seniority – i.e. Lazear's (1981) deferred payment wage scheme – are lost. Therefore higher FIRM_TENURE should be associated with lower mobility preference. Yet, we control both effects by the HELPFRIENDS and INCOME variable. Hence we conclude, from a theoretical point of view, the orthogonality condition of appropriate instrumentation seems to be satisfied by our identification strategy.

4 Results

For testing our hypotheses (1)-(3) we estimate the bivariate ordered probit mobility model with an endogenous regressor for social networks as explicated in chapter three. However, to test hypothesis (3) we also run a 'naive' ordered probit regression of the mobility model neglecting the effect of social networks. By comparing the adequate and the 'naive' model we are able to evaluate the social network effect of East Germans on their mobility intentions.

Table 4 displays the results for the adequate mobility model taken the endogenous nature of the social network variable into account. The left column contains the results for the mobility equation (1). The right column displays the instrumented estimation for the social network equation (2). The model seems to be well specified as, firstly, can be seen from the Wald-Test of overall significance and, secondly, from the joint significance of instruments used to identify the social network effect.⁸

Before discussing the variables of primary interest we briefly inspect the controls. In general, results are in line with previous empirical research. We find significant effects of gender, age, marital status, children, income, and home care obligations on mobility (table 4, left column). Surprisingly, educational level, (un-)employment aspects, and flat ownership do not seem to play a major role for mobility preference. With respect to the instrumental equation of participating in strong tie networks we confirm a significant impact of gender, age, marital status, children, income, and home care on the intensity of friendship relations (table 4, right column). In addition, flat duration has a verifiable effect on the social relationship variable and, via this channel, on mobility preference as well. Somewhat unexpected, the education and employment variables still seem to be of minor importance for explaining the strength of social relationships and/or mobility considerations. However, one should be cautious in drawing heavy conclusions from these results since multicollinearity problems regarding these variables could lead to low statistical inference.

Turning to our hypotheses, in the left column of table four we find clear evidence for the mobility hypothesis (H1). Our measure of joining a social network characterized by strong ties – i.e. the variable representing the frequency of helping friends – shows a significant negative parameter estimate. Thus, being member in a strong tie social network significantly reduces the willingness to move away. With respect to the hypothesis (H2) – the impact of acculturation in the Eastern part of Germany on the individual social network pattern – we find clear support for our conjecture. After controlling for individual characteristics native East Germans are more invested in strong tie relationships than West Germans. Taking together hypotheses (1) and (2) we are justified to conclude that the specific pattern of East Germans' relationships weakens the willingness of leaving home. In line with this implication the dummy variable representing the effect of being a native East German (Eastorigin) does not seem to have a verifiable impact on mobility preferences.

⁸ However, beside the performed weak instruments test it would be useful to have a test for the orthogonality condition i.e. the uncorrelatedness of the instruments and the error term of the structural equation. In the case of an ordered probit model the common tests of overidentifying restrictions are not feasible.

Table 4:
 Estimation results I (Full Information Maximum Likelihood Estimation)

	Mobility [MOVE_INTENT]		Social Capital [HELPFRIENDS]	
	coefficient	sd.	coefficient	sd.
Endogenous Variables				
<i>HELPFRIENDS</i>	-0.9373 ***	0.0500	-	-
Exogenous Variables				
<i>EASTORIGIN</i>	-0.0329	0.0587	0.0869 **	0.0410
<i>FEMALE</i>	-0.1687 ***	0.0418	-0.1452 **	0.0412
<i>AGE</i>	-0.0385 ***	0.0147	-0.0470 **	0.0140
<i>AGE2</i>	0.0002	0.0002	0.0003 **	0.0002
<i>MARRIED</i>	0.0986	0.0620	0.1222 **	0.0601
<i>SEPARATED</i>	0.0603	0.1214	-0.0048	0.1216
<i>DIVORCED</i>	-0.0044	0.0751	-0.0083	0.0737
<i>WIDOWED</i>	0.2397 **	0.1022	0.2651 **	0.0982
<i>CHILD</i>	-0.0858 ***	0.0268	-0.0634 **	0.0261
<i>FAMILY_CHANG</i>	0.0163	0.0531	-0.0012	0.0509
<i>EDUCATION</i>	0.0219	0.0136	-0.0088	0.0080
<i>INCOME</i>	-0.0000 *	0.0000	-0.0000 **	0.0000
<i>UNEMPLOYED</i>	0.0140	0.0560	-0.0361	0.0538
<i>PROB_UNEMPLO</i>	0.0012	0.0009	0.0002	0.0008
<i>FLAT_OWNER</i>	-0.1036	0.0771	0.0631	0.0436
<i>CARE</i>	-0.2172 **	0.1080	-0.2008 *	0.1035
<i>FINISH_EDUC</i>	0.0311	0.1315	-0.0668	0.1229
<i>FLAT_DURATION</i>	-	-	0.0056 **	0.0019
<i>FIRM_TENURE</i>	-	-	-0.0007	0.0010
<i>SIBLINGS</i>	-	-	0.0045	0.0049
<i>FATHER_TRAINI</i>	-	-	-0.0332	0.0215
	Wald statistics		p-value	
OVERALL SIGNIFICANCE	141.18 (21) ***		0.0000	
WEAK INSTRUMENTS	8.88 (4) *		0.0643	
NO. OBSERVATIONS	3627			

Notes: Number of hypotheses tested is given in parentheses. Significance levels are 1% (***), 5% (**) and 10% (*). Cutoffs are not displayed. The constant is restricted to zero.

Source: GSOEP 1999.

Table 5:
 Estimation results II (Ordered Probit Estimation)

	Mobility [MOVE_INTENT] (Naive model structure)	
	coefficient	sd.
<i>Exogenous Variables</i>		
<i>EASTORIGIN</i>	-0.2830 ***	0.0423
<i>FEMALE</i>	-0.0783 *	0.0425
<i>AGE</i>	0.0118	0.0148
<i>AGE2</i>	-0.0004 **	0.0002
<i>MARRIED</i>	-0.0504	0.0624
<i>SEPARATED</i>	0.1897	0.1235
<i>DIVORCED</i>	0.0401	0.0795
<i>WIDOWED</i>	-0.0254	0.1236
<i>CHILD</i>	-0.0616 **	0.0255
<i>FAMILY_CHANGE</i>	0.0501	0.0519
<i>EDUCATION</i>	0.0805 ***	0.0082
<i>INCOME</i>	0.0000 ***	0.0000
<i>UNEMPLOYED</i>	0.1060 *	0.0573
<i>PROB_UNEMPLOY</i>	0.0025 ***	0.0009
<i>FLAT_OWNER</i>	-0.4467 ***	0.0439
<i>CARE</i>	-0.0887	0.1403
<i>FINISH_EDUC</i>	0.2317 *	0.1209
	Wald statistics	p-value
<i>OVERALL SIGNIFICANCE</i>	597.774(17) ***	0.0000
<i>NO. OBSERVATIONS</i>	3627	

Notes: Number of hypotheses tested is given in parentheses. Significance levels are 1% (***), 5% (**) and 10% (*). Cutoffs are not displayed. The constant is restricted to zero.

Source: GSOEP 1999.

To confirm our explanation of the potential mobility gap of East Germans we estimate a 'naive' model ignoring the impact of social networks. By estimating the 'naive' model we, furthermore, are able to test the sensitivity of the preferred structural mobility model. In table five the ordered probit regression of the mobility model neglecting the endogenous network regressor is shown. We estimate the same model as in table four

but omit the variable measuring the frequency of helping friends. Results are in accordance with our gap hypothesis (H3). If the effect of the special pattern of East Germans' social relationships is ignored in the mobility equation the East dummy becomes significant negative. So we find strong evidence for (H3) meaning that the mobility gap disappears after controlling the social network effect. To a substantial part, East Germans are less mobile than West Germans due to the effect of their specific ties to local networks. To put it more generally, our analysis confirms a significant negative effect of being acculturated in the East on mobility preference.

5 Conclusion

Despite considerable and persistent labour market differences between East and West spatial mobility (preference) of East Germans is rather limited. Our analysis focuses on a 'Communist legacy' explanation of moderate labour mobility. We hypothesize that acculturation in a totalitarian system led to a social capital pattern characterized by strong ties to locally bounded networks causing a lower willingness to leave the home region.

Our results are in favour of this conjecture. By using the German Socio Economic Panel and estimating a bivariate ordered probit model with an endogenous regressor we firstly find significant differences between networks East and West Germans are joining. East Germans are more invested in informal social networks characterized by local ties (East hypothesis). Second, we show that such informal and strong relationships significantly reduce spatial mobility (Mobility hypothesis). Furthermore, a comparison of our mobility model controlling for social network participation in an appropriate way and a 'naive' model neglecting the influence of networks reveals that the mobility gap between East and West Germans disappears if the social network effect is taken into account (Gap hypothesis).

Altogether, we conclude that acculturation in the Communist system contributes to explain different social network structures and, as a consequence, different behavioural patterns and mental dispositions in terms of mobility. During Communism East Germans built up strong ties to locations where labour market opportunities radically altered and often decreased after the political and economic breakdown. The price a lot of them had to pay was low labour market performance during transition – unless the unpleasant option of moving away and terminating strong social relationships was chosen.

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