Regional economic performance, rurality and distance between parents and their employed children

A multilevel analysis

Keywords: proximity; intergenerational relationships; family; regional economic development; rural versus urban; Germany; polarization thesis; Sassen

ABSTRACT

In this study we assess the associations between regional economic performance, rurality and the geographic distance between parents in Germany and their employed children. Previous studies on parent-child distance have typically included regional rurality in their analyses under the assumption that, *vis-à-vis* urban regions, rural regions have a poor economic performance. Drawing on the work of Sassen, we problematize this assumption and carry out a direct test of the association between regional economic performance and the distance between parents and employed children. Analyses based on micro data from the German Ageing Survey enriched with INKAR district level indicators ($N = 5.577$) indicate that economic performance of a parent's living district is negatively associated with parent-employed child distance. The negative association between economic performance of a parent's living district and parent-child distance does not vary by the skill level of the child's job, unlike what the polarization thesis and the professionalization thesis led us to expect. Possible implications of the findings for intergenerational solidarity, most notably the availability of informal care for dependent older parents, are discussed.

INTRODUCTION

Geographic distance between parents and their adult children is consistently found to be negatively associated with intergenerational contact and the intergenerational exchange of social support and informal care (Brandt *et al.*, 2009; Deindl and Brandt, 2011; Hank, 2007; Klein Ikkink *et al.*, 1999; Knijn and Liefbroer, 2006; Litwak and Longino, 1987; Longino *et al.*, 1991; Matthews and Rosner, 1988; Mulder and Van der Meer, 2009; Stuifbergen *et al.*, 2008). Therefore, it is not surprising that many studies have been conducted on the determinants of the distance between parents and their adult children (for instance Hank, 2007; Lee and Cassidy, 1985; Lee *et al.*, 1990; Lin and Rogerson, 1995; Malmberg and Petterson, 2007; Michielin and Mulder, 2007; Mulder and Kalmijn, 2006; Rogerson *et al.*, 1993; Shapiro, 2003; Silverstein, 1995). Most of these studies have focused on socio-demographic determinants at the level of the child, the parent and/or the family. Studies that take structural determinants at the level of the living environment into account typically relate differences in parent-child distances to living in urban areas versus living in rural areas (Hank, 2007; Lee and Cassidy, 1985; Lee *et al.*, 1990; Lin and Rogerson, 1995; Malmberg and Petterson, 2007; Michielin and Mulder, 2007; Mulder and Kalmijn, 2006; Rogerson *et al.*, 1993).

A number scholars refer to a lack of educational possibilities (Malmberg and Petterson, 2007; Michielin and Mulder, 2007; Mulder and Kalmijn, 2006) and potential partners (Malmberg and Petterson, 2007) in rural or non-metropolitan regions as reasons to include levels of urbanization in their analyses. The most common consideration to include levels of urbanization is the assumed weak economic performance of rural areas (Hank, 2007; Lee and Cassidy, 1985; Lee *et al.*, 1990; Lin and Rogerson, 1995; Malmberg and Petterson, 2007; Michielin and Mulder, 2007; Mulder and Kalmijn,

2006). Younger generations presumably move from the countryside to the city because the latter is where economic performance is better and job opportunities are more widely available.

Research has shown that insufficient job opportunities within acceptable commuting time from the residence form an important incentive for residential relocation (Thissen *et al.*, 2010; Van Ham, 2005), and especially younger adults are prone to job-related pressures to migrate (Booth *et al.*, 1999). Sassen's work (1991, 2006) suggests, however, that equating urban with economically strong is becoming increasingly problematic. Sassen's work is specifically about urban areas, but the trend of economic divergence that she signaled also applies to rural areas, as has been noted by Terluin (2003).

We seek to extend earlier research on parent-child proximity by choosing a perspective that is based on the work of Sassen. Sassen has provided a widely debated theoretical framework on the impact of globalization and de-industrialization on regional economic development, but she has not considered links with family change, nor have here critics (Burgers and Musterd, 2002; Fainstein, 2001; Hamnett, 1994; Hamnett, 1996a; Hamnett, 1996b; Van der Waal, 2010). Scholars studying family relations have largely ignored Sassen's work and that of her critics. This study can be seen as a first attempt to connect these separate bodies of literature. We believe that the work of Sassen and her critics is potentially valuable for the field of family studies, as its key element, the spatial division of labor, is closely related to the spatial dispersion of family members.

Our objective is to assess the association between regional economic performance and parent-employed child distance. We focus on children with a paid job, because

especially for them the geographic distance towards their parents can be expected to be negatively associated with the economic performance of the region in which their parents live. After determining whether this general pattern holds, we assess whether the association between regional economic performance and geographic distance varies depending on the child's type of employment, as the work of both proponents of the polarization thesis, such as Sassen, and proponents of the professionalization thesis would lead us to expect.

THEORETICAL BACKGROUND AND HYPOTHESES

Sassen (1991, 2006) argues that differences in the economic performance of urban areas are growing. Due to the globalization of capital flows, production has increasingly become outsourced to various regions across the globe, and, as a result, supply chains have become increasingly complex. Management of these complex, transnational supply chains requires highly specialized business services in fields such as finance, accounting and law. The sectors in which these services are produced offer possibilities for profit making that are vastly superior to those of more traditional sectors. These growth sectors are also increasingly important providers of employment. Another important characteristic of the advanced services sectors is that they tend towards high levels of agglomeration, because companies in these sectors prefer locations where the resources and talent pools can be found that they need to be able to provide their services. The agglomeration of arguably the most economically significant sectors implies growing cross-regional economic inequalities. Some authors argue that Sassen overestimates the impact of globalization on regional economic development (Fainstein, 2001; Van der Waal, 2010) and that she does not sufficiently take into account that place-specific characteristics, other than the presence of companies in the advanced

services sectors, also partly determine regional economic development (Burgers and Musterd, 2002; Fainstein, 2001; Hamnett, 1996a). Sassen's notion of growing economic inequality among cities is not contested, however.

Sassen's work strongly focuses on urban areas. Terluin (2003) is specifically interested in rural economic development. Her extensive literature review suggests that the capacity to respond effectively to global forces differs between rural regions and depends on the capacities and the internal and external networks of local actors, such as policy makers, entrepreneurs and workers. Terluin notes that economically lagging rural regions, unlike economically leading rural regions, tend to experience an outflow of youngsters and economically active people. This implies economic divergence between rural regions, because in rural regions that are already economically weak, networks and capacities of local actors, which are crucial for economic development, increasingly erode.

As stated in the introduction, the level of urbanization is often included in analyses of parent-child geographic distance under the assumption that, *vis-à-vis* urban regions, rural regions have a poor economic performance. However, the work Sassen and Terluin suggests that both the urban and the rural are increasingly heterogenic when it comes to economic performance, which makes it increasingly problematic to sustain the notion that urban is *de-facto* synonymous to economically strong, while rural is *de-facto* synonymous to economically weak. This implies that the rationale for including rurality in analyses of parent-child distance is becoming increasingly problematic. Concomitantly, it is increasingly unclear how findings should be interpreted. In this study we carry out a direct test of the association between regional economic performance and parent-child proximity.

If a parent lives in a region with a poor economic performance, employment-related pressure for children to renounce living close is relatively great. It can therefore be expected that in economically weaker regions adult children are subjected to greater pressure to accept work at a long distance from the parental residence, even if they prefer to live nearby. Thus, we argue that cross-regional economic inequality implies cross-regional differences in distances between parents and their children, and more specifically between parents and their *employed* children. The previous considerations lead to the following hypothesis:

H1. A weaker economic performance of an older parent's living region implies a greater parent-employed child distance.

The applicability of this hypothesis might vary by kinds of employment in which children are engaged. Building on the world city hypothesis (Friedmann, 1986; Friedmann and Wolff, 1982), Sassen (1991) developed the polarization thesis. This thesis holds that the clustering in economically strong regions of companies that are active in arguably the most economically significant sectors leads to a polarization of the occupational hierarchy in these regions. Clustering of such companies implies concentration in economically strong regions of employment opportunities for highly qualified professionals. Sassen further argues that regions with a clustering of advanced services companies also offer large numbers of low-wage, unskilled jobs. One reason is that lower-qualified staff is demanded by the advanced services companies for supportive tasks, such as cleaning and security. A second reason is that the consumption pattern of the professionals serves as a driver for lowly-skilled employment in housekeeping, restaurants etcetera. Thus the concentration of employment opportunities in economically strong regions is especially marked in the top and the bottom segments

of the labor market. This polarization of the occupational hierarchy implies that employment-related pressure to renounce living close to their parents is especially strong for (1) highly-qualified people with top segment jobs whose parents live in economically weak regions and (2) people in lowly-skilled employment whose parents live in economically weak regions. This leads to our second hypothesis:

H2. The negative association between the economic performance of a parent's living region and parent-employed child distance is stronger for children in high-skilled employment and children in unskilled or low-skilled employment than for children in intermediately skilled employment.

Unlike her notion of growing cross-regional economic heterogeneity, Sassen's polarization thesis is highly contested. Critics claim that her ideas are strongly biased towards the American context (Hamnett, 1994; Hamnett, 1996b). Sassen's idea of a booming low-skilled service sector in economically strong regions is said to be based on multiple premises that are not applicable to most other developed economies, especially not those in continental Europe. It presumes a weak welfare state and marginal protection of workers. The latter dictates to what extent low-skilled service sector jobs can be downgraded (Esping-Andersen, 1993; Fainstein, 2001; Hamnett, 1996a; Hamnett 1996b; Lash and Urry, 1994), while the former determines the extent to which social benefits can be considered a viable alternative for such jobs (Esping-Andersen, 1993; Hamnett, 1996a; Hamnett, 1996b; Lash and Urry, 1994; Wills *et al.*, 2010). Hamnett (1996b) holds that in contexts where Sassen's presumptions do not apply, regional labor market development would better be categorized as professionalization, rather than as polarization: the concentration of employment opportunities in economically strong regions is especially marked in the top segment of the labor market, but not in the

bottom segment. Drawing on the professionalization thesis, rather than on the polarization thesis would lead to an alternative hypothesis:

H3. The negative association between the economic performance of a parent's living region and parent-employed child distance is stronger for children in high-skilled employment than for children in intermediately skilled employment and children in unskilled or low-skilled employment.

THE GERMAN CONTEXT

Our study focuses on Germany. Sassen's theory on the agglomeration of business services sector companies and employment in economically strong regions specifically applies to advanced economies such as Germany. Esping-Andersen (1990) regards Germany as the archetypical corporatist-statist welfare state. The objective of the German welfare state has always been to protect the family through the assumption of a family-wage paid to male workers, plus generous transfer payments to the jobless (Lash and Urry, 1994). Therefore, proponents of the professionalization thesis would find occupational polarization in economically strong regions in Germany highly unlikely (cf. Hamnett, 1996a).

Germany also meets the criteria required for testing the hypotheses, namely a high level of variation in the variables of interest. Germany's regional levels of rurality vary strongly, with regions ranging from very sparsely populated areas in Mecklenburg-Western Pomerania and Saxony-Anhalt to very large cities such as Berlin, Hamburg and Munich (Schäfers, 1998). German regions show substantial differences in economic performance which can to a large extent be related to Germany's divided past (Schäfers, 1998). Before the reunification on 3 October 1990, Germany had been divided for over

40 years, with the German Democratic Republic (GDR) based on socialist principles in the east and the Federal Republic of Germany (FRG) based on democratic principles in the west. At the time of the reunification, GDR productivity lagged immensely behind FRG productivity (Schäfers, 1998). The reunification had considerable demographic impact, with stark, economically motivated migration flows from east to west (Mai, 2008). The high level of within country migration in combination with the fact that Germany is a geographically large country, makes us feel comfortable that the level of variation in parent-child distances meets ideally required levels.

Given our focus on regional determinants it is important that a sufficient number of regions can be distinguished. Germany currently consists of 412 districts (German: *Kreise*). Districts are so-called NUTS level 3 regions. NUTS stands for "Nomenclature of Statistical Territorial Units" and is a system developed by the European Union for dividing up the EU's territory in order to produce regional statistics for the European Community (EUROSTAT, 2007). Within this system, NUTS level 3 units are the smallest regional entities. We choose to use the district as our regional unit of analysis for two reasons. First, the high number of districts offers an analytical advantage. Our second and third hypotheses involve interactions between economic performance at the level of the parent's living region and the type of employment at the level of the child. Looking for such cross-level interactions requires having more than 20 districts in the sample (Kreft and De Leeuw, 1998). Second, using relatively small regional units implies more within unit homogeneity. Regional data from higher level regions, such as states (German: *Bundesländer*) or government regions (German: *Regierungsbezirke*) would be coarser and therefore not capture the characteristics of the parent's living environment as adequately as district level data.

DATA AND MEASURES

Parent level and child level data for our analyses are taken from the scientific release of the German Ageing Survey (DEAS), provided by the Research Data Centre (FDZ-DEAS) of the German Centre of Gerontology (DZA). DEAS is a nationwide representative cross-sectional and longitudinal survey of the German population aged over 40 conducted by the German Centre of Gerontology (DZA), based on a population register sample that is disproportionably stratified according to age, gender and geographic location.

DEAS does not provide more specific information on the residence of the respondents than the *Bundesland* (state) in which they live. However, at our request FDZ-DEAS provided a custom made additional dataset that attached district level indicators on rurality and economic performance to respondents. The district name remained unknown. The district level indicators come from the 2010 edition of INKAR (Indicators, Maps and Graphics for Spatial and Urban Development) dataset from the Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR). These additional indicators were only made available for third wave DEAS respondents who were not interviewed in any of the prior waves (N = 6,205). The third wave data were collected between April and September 2008. The respondents were nested in 211 districts. As we are only interested in parents, we excluded all respondents without children. After this selection, 5,363 respondents nested in 211 districts remained.

In the DEAS survey, respondents were asked several questions about their up to eight firstborn children. Most extensive data are available for the up to four oldest children,

including data on parent-child distance, which is why we limited the analyses to the up to four firstborn. We changed the data structure to make it suitable for a hierarchical linear model, with 11,462 children nested in 5,363 parents, who were themselves nested in 211 districts. 265 children were excluded because they had passed away. Since this study is specifically about the distance between parents and their employed children, we excluded children who had no paid job at the time of the interview (N = 4,308).

Our dependent variable is parent-child distance. Silverstein (1995) warns not to regard parent-child co-residence simply as the minimum value of parent-child distance, since "one can argue that intergenerational co-residence is qualitatively distinct from all types of independent living resources, even those in which the parties live near one another" (Silverstein, 1995:32). Aspects in which co-residential and non-co-residential living arrangements differ include privacy, costs of living, frequency of contact and intergenerational strain. Given these qualitative differences, we excluded all children from the sample who lived with their parents (N = 796). Finally we excluded those children for whom relevant parent level or child level data were missing (N = 240) and those who had a job classification too general to be recoded into a skill level (N = 276), leaving a final sample for the analyses to draw on of 5,577 children, nested in 3,356 parents who were themselves nested in 209 districts. Of these districts, 61 were located in the former GDR and 148 were located in the former FRG. Every state was represented in the sample.

Dependent variable

Intergenerational proximity may be studied either from the perspective of parents, with a focus upon where their children live, or from the perspective of the child, with a focus

upon where the parents live (cf. Rogerson *et al.*, 1997). In this study we adopted the former perspective. This implies that per child only one parent-child dyad was taken into account, regardless whether both parents lived together or separately.

Continuous data on the distance between parents and children were not available. As a measure for parent-child distance we therefore used the 5-step ordinal scale in which respondents were asked to categorize the location of their independently living children relative to their own place of residence. The five answering categories were (1) in the same neighborhood, (2) in the same town, (3) in another town, but it can be reached within two hours, (4) farther away, in Germany and (5) farther away, abroad . In this study, we regarded this ordinal parent-child distance variable as a quasi-interval variable. As mentioned above, all children who lived with their parents were excluded from the sample, due to the qualitative distinctiveness of co-residential living arrangements. The step from a co-residential living arrangement to the lowest ordinal category in our parent-child distance variable would not be comparable to subsequent steps between categories.

District level independent variables

The district's average wage was used as a measure for its economic performance (cf. Porter, 2003). Alternative measures, such as employment growth, regional GDP per employee or regional export level per employee (Gugler and Keller, 2009; Porter, 2003; Porter *et al.*, 2004) were not available. The district's level of rurality was measured by its population density. Even though population density is a commonly used measure of rurality or urbanization, it should be considered that it is greatly affected by the size of its denominator, the land area (Hall *et al.*, 2006). We chose the district as our regional

unit of analysis because we believe it most adequately captures the characteristics of the parent's living environment. District average wage scores were from 2007, while district population density levels were from 2008.

Many districts had relatively low population density levels, while a few parents had extremely high populations density levels. To correct for this skewed distribution, we performed a logarithmic transformation. As the intercept of estimated regression models is always based on values of zero on predictor variables, zero-values should be meaningful (Hofmann and Gavin, 1998). A value of zero for a district's average wage or logged population density is clearly not meaningful. We therefore centered the district's average wage and logged population density scores by the grand mean, so that zero-values corresponded with the logged population density score and district average wage score of the average district in our sample. To avoid extremely small coefficients and standard errors in estimated models, we divided the centered average wage scores by 1,000.

Parent level independent variables

To avoid falsely attributing composition effects to district level characteristics, we controlled for several socio-demographic characteristics of both parents and children in the sample. At the level of the parent, the following variables were taken into account: gender, number of children, frailty, being widowed and being divorced. These control variables are known in the literature to affect parent-child distance (Hank, 2007; Mulder and Kalmijn, 2006; Litwak and Longino, 1987; Longino *et al.*, 1991; Rogerson *et al.*, 1993; Shapiro, 2003).

Interviewers registered the gender of every respondent and asked how many children the respondent had, excluding those children who had died at birth (Motel-Klingebiel *et al.*, 2010). If parents indicated that they had more than eight children, the number of children was coded as 8. This means that for the nine parents in the final sample who were coded as having eight children, the actual number of children could be underestimated. At the level of the parent, zero is obviously a meaningless value for number of children. We therefore centered the parent's number of children around the grand mean, so that a value of zero corresponded with the number of children of the average parent in our sample.

Respondents were also asked to what extent they experienced health-related limitations in thirteen activities of daily living, such as walking stairs or carrying groceries. For every item, respondents indicated whether they felt not limited at all, limited a little or limited a lot. The items were recoded so that a higher value indicated a greater level of physical frailty and combined in a summed scale (Cronbach's $\alpha = 0.922$, $N = 3{,}356$). Furthermore, the values were divided by the highest possible value of the scale, resulting in a frailty scale ranging from zero (no physical limitations) to one (severe physical limitations on all items). Dummy variables for being widowed and being divorced were derived from the question on the respondent's civil status, with the answering categories being (1) married, living together with spouse, (2) married, living separated from spouse, (3) divorced, (4) widowed, (5) single and (6) civil union.

Child level independent variables

At the level of the child, the following socio-demographic variables served as controls: age, gender, parenthood and being married. These control variables are known in the

literature to affect parent-child distance (Hank, 2007; Mulder and Kalmijn, 2006; Rogerson *et al.*, 1993). Dummy variables for unskilled / low-skilled employment and high-skilled employment were included both to control for composition effects and to enable the assessment of hypotheses 2 and 3.

For each of the up to four oldest children, respondents were asked to indicate gender and the year of birth. Based on this year we estimated the child´s age in years at the time of the interview. With regard to employed children, an age of zero is clearly not meaningful. We therefore centered the child's age around the grand mean, so that a value of zero corresponded with the age of the average child in our sample. Interviewers also asked respondents how many living children their children had themselves. By dichotomizing answers to this question, we created a measure for parenthood, coding it 1 for those children who were parents themselves and 0 for those children who were not. A dummy variable for being married was derived from the question what the respondent's child´s civil status was, with the answering categories being (1) single, (2) married, (3) separated, (4) divorced, (5) widowed and (6) civil union.

Dummy variables for unskilled / low-skilled employment and high-skilled employment were computed by recoding the children's job categorizations registered in DEAS. The categorization used in DEAS closely resembled the job categorization standard of the Microcensus supplementary survey of 1971 on occupational and social stratification of the population (MZU1971), which has become part of the German Demographic Standards of the Federal Statistical Office of Germany. Hoffmeyer-Zlotnik's (1993) method of recoding MZU1971 job categories to task autonomy scores in a 5-step ordinal scale was applied. Based on these task autonomy scores, we created two dummy variables as proxies for unskilled / low-skilled employment and high-skilled

employment. The dummy variable for unskilled / low-skilled employment was coded 1 for children with low levels of task autonomy in their jobs (i.e. Hoffmeyer-Zlotnik task autonomy scores of 1 or 2) and 0 for those with intermediate or high levels of task autonomy in their jobs (i.e. Hoffmeyer-Zlotnik task autonomy scores of 3 or higher). The dummy variable for high-skilled employment was coded 1 for children with high levels of task autonomy in their jobs (i.e. Hoffmeyer-Zlotnik task autonomy scores of 4 or 5) and 0 for those with intermediate or low levels of task autonomy in their jobs (i.e. Hoffmeyer-Zlotnik task autonomy scores of 3 or lower).

METHOD

Because the models we estimated included variables measured at the level of the employed child, the parent, and the parent's living district, hierarchical linear modeling (HLM) was used. Unlike ordinary least squares regression, HLM accounts for the dependencies between individual observations due to their nesting within different levels.

We estimated a series of models of increasing complexity. In an empty model we first determined whether parent-employed child distance varied not only between children and parents, but also between parents' living districts. We then added child level and parent level control variables to determine the extent to which district level variance was attributable to population composition. In the next models we added rurality and economic performance at the level of the parent's living district. This enabled us to estimate the extent to which district level variability was attributable to these district characteristics.

Hypotheses 2 and 3 posit cross-level interactions between economic performance at the level of the parent's living district and being in unskilled / low-skilled employed or high-skilled employment. These hypotheses were therefore tested by estimating random slope models. Allowing the slopes to vary enabled us to determine whether the child level effects of being in unskilled / low-skilled employment and of being in high-skilled employment varied across districts. If this were to be the case, a model with cross-level interactions would allow us to investigate whether such variability would be attributable to differences in economic performance among districts.

RESULTS

The parent-child distances of the dyads in our sample resembled a normal distribution. 584 children were living in the same neighborhood as the parent in the sample, 1.333 were living in the same town, 2.310 were living in a town that could be reached within two hours, 1.123 were living in town within Germany that could not be reached within two hours, and 227 were living in a foreign town that could not be reached within two hours. This resulted in a mean score on our 5-step ordinal parent-child distance variable of 2.86, with a standard deviation of 1.00. An overview of descriptive statistics of child level, parent level and district level independent variables is presented in table 1.

<table 1 about here>

Table 2 shows the results of our analyses. The first model is an empty one that shows the extent of variation in parent-child distance at the level of the child, the parent and the parent's living district. Child level variance was 0.722, parent level variance was 0.240 and district level variance was 0.032. We calculated intra class correlations to determine the relative variance per level. District level intra class correlation was 0.032

/ (0.722 + 0.240 + 0.032) = 0.032 indicating that parent-employed child distance varied not only between children and parents, but also, albeit to a limited extent, between parents' living districts.

<table 2 about here>

In the second model parent-child distance was regressed on all child level and parent level characteristics. With the inclusion in the model of both child level and parent level characteristics the fit improved significantly ($LR\ \chi^2(11) = 175.2$, $p < 0.01$). Child level and parent level variance decreased, while district level variance increased somewhat. Apparently some district level variance emerged only after taking the population composition of parents' living districts into account.

At the level of the employed child, age, gender and being married had no effect on parent-employed child distance. Having children implied a smaller parent-employed child distance ($b = -0.183$, $p < 0.001$). Being in unskilled or low-skilled employment was negatively associated with parent-employed child distance ($b = -0.129$, $p < 0.001$), while being in high-skilled employment was positively associated with parent-employed child distance ($b = 0.234$, $p < 0.001$). At the level of the parent, having a greater number of children implied living at a greater average distance from a random employed child ($b = 0.044$, $p < 0.001$). None of the other parent level predictors were significant.

Level of rurality of the parent's living district was added in model 3, leading to a significant improvement of the model fit ($LR\ \chi^2(1) = 26.8$, $p < 0.01$). The parent level and child level effects did not change substantially between models 2 and 3. Consistent with previous studies, parent-employed child distance was negatively associated with the logged population density of the parent's living district ($b = -0.090$, $p < 0.001$).

Average wage of the parent's living district was added in model 4, again leading to a significant improvement of the model fit ($LR\ \chi^2(1) = 4.9$, $p < 0.05$). The parent level and child level effects from previous models did not change substantially. As expected, parent-employed child distance was negatively associated with the average wage of the parents' living district ($b = -0.143$, $p < 0.05$). For a parent, living in an economically weak region thus implies greater distance to employed children, providing support for hypothesis 1. With the introduction of district average wage in the model, district population density continued to have a negative effect on parent-employed child distance, albeit somewhat weaker ($b = -0.062$, $p < 0.01$).

As described in the measures section, parent-child distance was measured with a five-step ordinal scale. To illustrate the magnitude of the effect of a parent's living district's regional economic performance and its level of rurality, we used INKAR-data on all German districts to generate a map in which the expected distance between a typical parent and a typical employed child[1] were presented for every parent's living district (see figure 1). Our results indicate that, due to district differences in economic performance and level of rurality, the expected distance between a typical parent and a typical employed child is 38% of a step greater for a parent living in the district of Parchim than for a parent living in Ludwigshafen am Rhein.

<figure 1 about here>

We allowed the slopes of the child level dummy variables for being in unskilled / low-skilled employment and for being in high-skilled employment to vary across districts. This modification did not significantly improve the model fit ($LR\ \chi^2(4) = 3.2$, *n.s.*, not shown in table 2). The sole addition of random slopes for high-skilled employment (*LR*

$\chi^2(2) = 0.6$, *n.s.*, not shown in table 2) did not yield a significant improvement to the model fit either. The absence of significant variability in slopes implies that the child level effects on parent-employed child distance of being in unskilled / low-skilled employment or of being in high-skilled employment did not vary across districts. There was thus no need to test whether cross-district variability was related to regional differences in economic performance. Findings did not support our second and third hypotheses.

DISCUSSION

Previous studies on parent-child distance have typically included regional rurality in their analyses under the assumption that, *vis-à-vis* urban regions, rural regions have a poor economic performance. Earlier studies (Van der Waal, 2010) indicated that the association between rurality and regional economic performance is not particularly strong and moreover declining. This is coherent with claims of Sassen (1991, 2006) and Terluin (2003). Where previous studies have merely assumed that economic performance of parent's living district is negatively associated with parent-employed child distance, we have empirically assessed this link. However, it should be noted that district level variability in parent-employed child distance is limited. Moreover, we were unable to fully account for the effects of the parent's living region's level of rurality on parent-employed child distance. Further research should clarify how the differences by level of rurality can be more fully explained. Some scholars (Malmberg and Petterson, 2007; Michielin and Mulder, 2007; Mulder and Kalmijn, 2006) assume that rural regions' low levels of educational possibilities imply greater distances to adult children for rural older parents. Following Malmberg and Petterson's (2007) rationale

for the inclusion of rurality in their analyses on parent-child distance, a lack of potential partners for younger people in rural areas may play a role too.

Sassen (1991, 2006) has suggested that labor markets in economically strong regions are becoming polarized with employment growth. We had therefore hypothesized that particularly children in either unskilled / low-skilled employment or high-skilled employment would live farther away when parents lived in economically weaker districts. This hypothesis was not supported. Proponents of the professionalization thesis, such as Hamnett (1994, 1996a, 1996b), would argue that professionalization, rather than polarization, would be the best way to describe the labor market in economically strong regions in countries such as Germany. The professionalization thesis would suggest that particularly children in high-skilled employment, and not those in unskilled / low-skilled employment, would live farther away when parents lived in economically weaker districts. We did, however, not find empirical support for this hypothesis either.

Proponents of the polarization thesis and proponents of the professionalization thesis both emphasize the importance of the business services sector as a generator of employment, rather than manufacturing or the public sector. Lash and Urry (1994) argue that Germany's institutional circumstances hampered the decline of the traditional working class. In Germany, changes in the relative significance of sectors as employment generators therefore may not or not yet have met the levels that Sassen and her critics would lead us to expect.

We did not control for whether a district was located in the former GDR or the former FRG. Obviously, variance in parent-employed child distance may to a significant extent

be caused by the stark migration flows from east to west that followed upon Germany's reunification in 1990. However, these migration flows were typically economically driven (Mai, 2008). Controlling for an "FRG versus GDR" effect on parent-employed child distance would therefore render underestimation of the effect size of regional economic performance highly likely (cf. Meehl, 1971).

We included several socio-demographic variables at the level of the parent and the child to avoid falsely ascribing composition effects to district level characteristics. Even though these parent level and child level variables were only included in the analyses for controlling purposes, a number of findings are worth noting.

First, the findings show a grandparenthood effect: parenthood at the level of the employed child implies a smaller parent-child distance, possibly because parents are providers of instrumental support to their children, for instance in the form of childcare (Hank and Kreyenfeld, 2003). Therefore both barriers to move farther away from parents and incentives to move closer towards parents may be especially strong for employed children who have children themselves.

Second, having a greater number of siblings implies a greater distance to the parent, which is consistent with the argument of Konrad *et al.* (2002) that siblings choose their residential locations in a farsighted and strategic manner. As long as a (generally younger) sibling remains living close to the parents, a sibling will often relocate to a destination relatively far away from the parent. The sibling who lives nearest will be under the greatest social pressure to provide care and support to the parent and barriers to move farther away from the parent are greatest for this sibling. Having fewer siblings increases the likelihood of being in that situation. In her research synthesis, Lye (1996)

concludes that with each additional child within a family the investment in terms of contact and support of a random child with his or her parents and vice-versa decreases. Arguably this could result in lower barriers for children to move far away from their parents.

Third, children in high-skilled employment live at greater distance from their parents than children in employment that requires an intermediate skill level, while children in unskilled or low-skilled employment live at a smaller distance from their parents than children in employment that requires an intermediate skill level. This is consistent with findings of previous studies (Kalmijn, 2006; Mulder and Kalmijn, 2006) and may be attributed to the greater dispersal of specialized jobs or a greater willingness to relocate for the sake of their professional career of those children with jobs that require high skill levels.

In this study we have attempted to connect two separate bodies of literature by approaching a prominent theme in the sociology of the family from a regional economic development perspective. By choosing this uncommon perspective, we extended existing literature on parent-child proximity. However, the present study is cross-sectional and we believe that integrating the work of Sassen in longitudinal research on parent-child distances and related family matters could provide even more valuable insights. If economic performance of a parent's living region is a determinant of parent-child distance, then gradually growing cross-regional economic disparities can be expected to imply growing cross-regional differences in parent-employed child distance. Future longitudinal research is required to properly assess this hypothesis.

We started this paper by stating that the geographic distance between parents and their adult children is an important determinant of intergenerational contact and the intergenerational exchange of social support and informal care. Narrowing the focus to care, research has shown that (1), next to spouses, children are the most important providers of informal care (Cantor, 1979; Dykstra, 1990; Dykstra, 2007; Shanas, 1979) and that (2) great parent-child distances hamper the extent in which children provide support and informal care to their parents (Brandt *et al.*, 2009; Deindl and Brandt 2011; Klein Ikkink *et al.*, 1999; Knijn and Liefbroer, 2006; Matthews and Rosner, 1988; Mulder and Van der Meer, 2009; Stuifbergen *et al.*, 2008). Growing cross-regional differences in parent-child distances could therefore imply growing cross-regional inequality in the availability of informal care for dependent older parents.

Meanwhile, demand for informal care is likely to grow due to cutbacks in state welfare. Welfare state programs in advanced economies are being residualized under the influence of budget constraints related to population ageing and the need for (clusters of) nation states to be competitive in a globalized economy (Alcock and Craig, 2009; Kennet, 2001; Lloyd, 2011). Alcock and Craig (2009) note that state welfare is increasingly being framed as a last resort for those most in need. Saraceno (2010) notes a trend in policy arrangements to assume the presence of family carers as a given under the pressure of budget constraints.

We see the contours of a rather gloomy development: an increasing demand for informal care accompanied by growing cross-regional inequality in the availability of informal care for dependent older parents. To assess the validity of this harsh scenario and its implications, we make a plea for future longitudinal research in which theories

from family sociology, welfare state and regional economic development literature are brought together.

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NOTES

(1) A typical parent is considered here as a mother with 2 children and no physical limitations, who is widowed, nor divorced. A typical child is considered here as a 40 year old male, married with children, in intermediately skilled employment. Due to the small coefficients for most parent and child characteristics (see table 2), changing the focus to dyads with other socio-demographic characteristics would most often not drastically change the expected parent-employed child distance values reported in figure 1. Since no cross-level interactions were present in our best-fitting model, the absolute differences between districts in expected parent-employed child distance would remain unchanged regardless of the parent and child characteristics of the dyad of reference.

REFERENCES

Alcock P, Craig G. 2009. The international context. *In International social policy. Welfare regimes in the developed world* (Second Edition) , Alcock P, Craig G (eds.); Palgrave Macmillan: Houndmills, Basingstoke, Hampshire; 1-24.

Booth AL, Francesconi M, Garcia-Serrano C. 1999. Job tenure and job mobility in Britain. *Industrial and Labor Relations Review* **53**: 43-70. DOI:10.2307/2696161.

Brandt M, Haberkern K, Szydlik M. 2009. Intergenerational help and care in Europe. *European Sociological Review* **25**: 585-601. DOI:10.1093/esr/jcn076.

Burgers J, Musterd S. 2002. Understanding urban inequality: A model based on existing theories and an empirical illustration. *International Journal of Urban and Regional Research* **26**: 403-413. DOI: 10.1111/1468-2427.00387.

Cantor MH. 1979. Neighbors and friends: An overlooked resource in the informal system. *Research on Aging* **1**: 434-463. DOI:10.1177/016402757914002.

Deindl C, Brandt M. 2011. Financial support and practical help between older parents and their middle-aged children in Europe. *Ageing & Society* **31**: 645-662. DOI:10.1017/S0144686X10001212.

Dykstra PA. 1990. *Next of (non)kin. The importance of primary relationships for older adults' well-being* . Swets & Zeitlinger: Amsterdam / Lisse

Dykstra PA. 2007. Aging and social support. *In The Blackwell encyclopedia of sociology ,* Ritzer G (ed.); Blackwell: Oxford, 88-93.

Esping-Andersen G. 1990. *The three worlds of welfare capitalism* . Polity Press: Cambridge.

Esping-Andersen G. 1993. Post-industrial class structures: An analytical framework. *In Changing Classes. Stratification and mobility in post-industrial societies* , Esping-Andersen G (ed.); Sage: London.

EUROSTAT. 2007. *European regional and urban statistics. Reference guide.* (2007 Edition) . Office for Official Publications of the European Communities: Luxemburg

Fainstein SS. 2001. Inequality in global city-regions. *disP* **144**: 20-25.

Friedmann J. 1986. The world city hypothesis. *Development and Change* **17**: 69-83. DOI: 10.1111/j.1467-7660.1986.tb00231.x.

Friedmann J, Wolff G. 1982. World city formation: An agenda for research and action. *International Journal for Urban and Regional Research* **6**: 309-344. DOI:10.1111/j.1468-2427.1982.tb00384.x.

Gugler P, Keller M. 2009. *The economic performance of Swiss regions. Indicators of economic performance, composition of cantonal economies and clusters of traded industries* . Center for Competitiveness: Fribourg

Hall SA, Kaufman JS, Ricketts TC. 2006. Defining urban and rural areas in U.S. epidemiologic studies. *Journal of Urban Health* **82**: 162-175. DOI: 10.1007/s11524-005-9016-3.

Hamnett C. 1994. Social polarisation in global cities: Theory and evidence. *Urban Studies* **31**: 401-424. DOI:10.1080/00420989420080401.

Hamnett C. 1996a. Social polarisation, economic restructuring and welfare state regimes. *Urban Studies* **33**: 1407-1430. DOI:10.1080/0042098966727.

Hamnett C. 1996b. Why Sassen is wrong: A response to Burgers. *Urban Studies* **33**: 107-110. DOI:10.1080/00420989650012158.

Hank K. 2007. Proximity and contacts between older parents and their children: A European comparison. *Journal of Marriage and Family* **69**: 157-173. DOI:10.1111/j.1741-3737.2006.00351.x.

Hank K, Kreyenfeld M. 2003. A multilevel analysis of child care and women's fertility decisions in western Germany. *Journal of Marriage and Family* **65**: 584-596. DOI:10.1111/j.1741-3737.2003.00584.x.

Hoffmeyer-Zlotnik JHP. 1993. Operationalisierung von "Beruf" als zentrale Variabele zur Messung von sozio-ökonomischem Status [Operationalization of "job" as key variable for the measurement of socio-economic status] . *ZUMA-Nachrichten* **32**: 135-141.

Hofmann DA, Gavin MB. 1998. Centering decisions in hierarchical linear models: Implications for research in organizations. *Journal of Management* **24**: 623-641. DOI: 10.1016/S0149-2063(99)80077-4.

Kalmijn M. 2006. Educational inequality and family relationships: Influences on contact and proximity. *European Sociological Review* **22**: 1-16. DOI:10.1093/esr/jci036.

Kennet P. 2001. *Comparative social policy* . Open University Press: Buckingham

Klein Ikkink K, Van Tilburg T, Knipscheer KCPM. 1999. Perceived instrumental support exchanges in relationships between elderly parents and their adult children: Normative and structural explanations. *Journal of Marriage and the Family* **61**: 831-844. DOI:10.2307/354006.

Knijn TCM, Liefbroer AC. 2006. More kin than kind: instrumental support in families. *In Family solidarity in the Netherlands* , Dykstra PA, Kalmijn M, Knijn TCM, Komter AE, Liefbroer AD, Mulder CH (eds.); Dutch University Press: Amsterdam; 89-105.

Konrad KA, Künemund H, Lommerud KE, Robledo JR. 2002. Geography of the family. *The American Economic Review* **92**: 981-998. DOI:10.1257/00028280260344551.

Kreft IGG, De Leeuw J. 1998. *Introducing multilevel modeling* . Sage: London

Lee G, Cassidy ML. 1985. Family and kin relations of the rural elderly. *In The elderly in rural society: Every fourth elder* , Coward R, Lee G (eds.); Springer: New York; 151-169.

Lee GRW, Dwyer JW, Coward RT. 1990. Residential location and proximity to children among impaired elderly parents. *Rural Sociology* **55**: 579-589. DOI:10.1111/j.1549-0831.1990.tb00698.x.

Lin G, Rogerson PA. 1995. Elderly parents and the geographic availability of their adult children. *Research on Aging* **17**: 303-331. DOI:10.1177/0164027595173004.

Litwak E, Longino C. 1987. Migration patterns among the elderly: A developmental perspective. *The Gerontologist* **27**: 266-272. DOI:10.1093/geront/27.3.266.

Lloyd C. 2011. The history and future of social democratic welfare capitalism: From modernization to the spectres of ultramodernity. *In Beyond welfare state models. Transnational historical perspectives on social policy ,* Kettunen P, Petersen K (eds.); Cheltenham: Edward Elgar; 199-217.

Longino Jr CF, Jackson DJ, Zimmerman RS, Bradsher JE. 1991. The second move: Health and geographic mobility. *Journal of Gerontology* **46**: 218-224. DOI: 10.1093/geronj/46.4.S218 .

Lye DN. 1996. Adult child-parent relationships. *Annual Review of Sociology* **22**: 79-102. DOI:10.1146/annurev.soc.22.1.79.

Lash S, Urry J. 1994. *Economies of signs & space* . Sage: London

Malmberg G, Petterson A. 2007. Distance to elderly parents: Analyses of Swedish register data. *Demographic Research* **17**: 679-704. DOI:10.4054/DemRes.2007.17.23.

Mai R. 2008. Demographic change in Germany. *European View* **7**: 287-296. DOI:10.1007/s12290-008-0048-4.

Matthews SH, Rogers TT. 1988. Shared filial responsibility: The family as the primary caregiver. *Journal of Marriage and the Family* **50**: 185-195. DOI:10.2307/352438.

Meehl PE. 1971. High school yearbooks: A reply to Schwartz. *Journal of Abnormal Psychology* **77**: 143-148. DOI: 10.1037/h0030750.

Motel-Klingebiel A, Wurm S, Engstler H, Huxhold O, Jürgens O, Mahne K, Schöllgen I, Wiest M, Tesch-Römer C. 2010. *German ageing survey (DEAS): The second half of*

life. Research instruments of the third wave . DZA German Centre of Gerontology: Berlin

Michielin F, Mulder CH. 2007. Geographic distance between adult children and their parents in the Netherlands. *Demographic Research* **17**: 655-678. DOI:10.4054/DemRes.2007.17.22.

Mulder CH, Kalmijn M. 2006. Geographic distances between family members. *In Family solidarity in the Netherlands* , Dykstra PA, Kalmijn M, Knijn TCM, Komter AE, Liefbroer AD, Mulder CH (eds.); Dutch University Press: Amsterdam; 43-61.

Mulder CH, Van der Meer MJ. 2009. Geographical distances and support from family members. *Population, Space and Place* **15**: 381-399. DOI:10.1002/psp.557.

Porter ME. 2003. The economic performance of regions. *Regional Studies* **37**: 549-578. DOI:10.1080/0034340032000108688 .

Porter ME, Ketels C, Miller K, Bryden R. 2004. *Competitiveness in rural U.S. regions: Learning and research agenda* . Harvard Business School Press: Boston

Rogerson PA, Burr JA, Lin G. 1997. Changes in geographic proximity between parents and their adult children. *International Journal of Population Geography* **3**: 121-136. DOI: 10.1002/(SICI)1099-1220(199706)3:2<121::AID-IJPG60>3.3.CO;2-9.

Rogerson PA, Weng RH, Lin G. 1993. The spatial separation of parents and their adult children. *Annals of the Association of American Geographers* **83**: 656-671. DOI:10.1111/j.1467-8306.1993.tb01959.x.

Saraceno C. 2010. Social inequalities in facing old-age dependency: A bi-generational perspective. *Journal of European Social Policy* **20**: 32-44. DOI:10.1177/0958928709352540.

Sassen S. 1991. *The global city: New York, London, Tokyo* . Princeton University Press: Princeton

Sassen S. 2006. *Cities in a world economy* (Third Edition) . Pine Forge press: Thousand Oaks

Schäfers B. 1998. *The state of Germany atlas* . Routledge: London

Shanas E. 1979. The family as a social support system in old age. *The Gerontologist* **19**: 169-174. DOI:10.1093/geront/19.2.169.

Shapiro A. 2003. Later-life divorce and parent-adult child contact and proximity. A longitudinal analysis. *Journal of Family Issues* **24**: 264-285. DOI:10.1177/0192513X02250099.

Silverstein M. 1995. Stability and change in temporal distance between the elderly and their children. *Demography* **32**: 29-45. DOI:10.2307/2061895.

Stuifbergen MC, Van Delden JJM, Dykstra PA. 2008. The implications of today's family structures for support giving to older parents. *Ageing & Society* **28**: 413-434. DOI:10.1017/S0144686X07006666.

Terluin IJ. 2003. Differences in economic development in rural regions of advanced countries: An overview and critical analysis of theories. *Journal of Rural Studies* **19**: 327-344. DOI:10.1016/S0743-0167(02)00071-2.

Thissen F, Droogleever Fortuijn J, Strijker D, Haartsen T. 2010. Migration intentions of rural youth in the Westhoek, Flanders, Belgium and the Veenkoloniën, The Netherlands. *Journal of Rural Studies* **26**: 428-436. DOI:10.1016/j.jrurstud.2010.05.001.

Van der Waal J. 2010. *Unravelling the global city debate. Economic inequality and ethnocentrism in contemporary Dutch cities* (PhD thesis). Erasmus University Rotterdam: Rotterdam

Van Ham M. 2005. Job-related migration in the Netherlands. The role of geographic access to employment in a polynucleated urban region. *Journal of Housing and the Built Environment* **20**: 107-127. DOI:10.1007/s10901-005-9000-y.

Wills J, Datta K, Evans Y, Herbert J, May J, McIlwaine C. 2010. *Global cities at work. New migrant divisions of labour* . Pluto Press: New York

Table 1. Descriptive statistics of child level, parent level and district level characteristics

	Minimum	Maximum	Mean	SD
Child characteristics (level 1, N = 5,577)				
Age*	18	64	39.96	8.82
Gender (female = 1)	0	1	0.45	
Has children	0	1	0.62	
Married	0	1	0.57	
Unskilled / low-skilled employment	0	1	0.28	
High-skilled employment	0	1	0.34	
Parent characteristics (level 2, N = 3.356)				
Gender (female = 1)	0	1	0.50	
Number of children*	1	8	2.34	1.12
Frailty**	0	1	0.15	0.20
Widowed	0	1	0.15	
Divorced	0	1	0.08	
District characteristics (level 3, N = 209)				
Population density*	38	4,275	646	793
Average wage***	1,881	3,952	2,623	382

Source: German Ageing Survey (DEAS) 2008 enriched with data from INKAR 2010, N = 5,577
* scores based on values before centering
** scores based on values before log-transformation
*** scores based on values before division by € 1.000 and centering

Table 2. Parent-employed child distance regressed on child level, parent level and district level characteristics

	MODEL 1		MODEL 2		MODEL 3		MODEL 4	
	B	SE	b	SE	b	SE	b	SE
Constant	2.832***	0.020	2.911***	0.041	2.912***	0.041	2.914***	0.040
Child characteristics (level 1)								
Age			-0.001	0.002	-0.000	0.002	-0.000	0.002
Gender (female = 1)			0.016	0.026	0.014	0.026	0.013	0.026
Has children			-0.183***	0.032	-0.188***	0.032	-0.192***	0.032
Married			-0.043	0.031	-0.044	0.031	-0.042	0.031
Unskilled / low-skilled employment			-0.129***	0.034	-0.139***	0.034	-0.143***	0.034
High-skilled employment			0.234***	0.031	0.237***	0.031	0.237***	0.031
Parent characteristics (level 2)								
Gender (female = 1)			0.001	0.029	-0.003	0.029	-0.004	0.029
Frailty			-0.069	0.079	-0.067	0.079	-0.071	0.079
Number of children			0.044***	0.013	0.041**	0.013	0.041**	0.013
Widowed			-0.008	0.043	-0.010	0.043	-0.009	0.042
Divorced			0.082	0.056	0.097	0.056	0.095	0.056
District characteristics (level 3)								
Average wage							-0.143*	0.064
Population density (log)					-0.090***	0.017	-0.062**	0.021
Level 1 variance	0.722	0.021	0.711	0.020	0.711	0.020	0.711	0.020
Level 2 variance	0.240	0.021	0.211	0.020	0.211	0.020	0.211	0.020
Level 3 variance	0.032	0.007	0.039	0.008	0.029	0.007	0.027	0.007
Log likelihood	-7,768.3		-7,680.7		-7,667.3		-7,664.9	

* p <0.05, ** p <0.01, *** p <0.001

Source: German Ageing Survey (DEAS) 2008 enriched with data from INKAR 2010, N = 5,577