Essays on residential trajectories and social ties in the stage of early adulthood

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Resum

Aquesta tesi doctoral es composa de tres linies de recerca en que s'analitza de forma dinàmica l'associació entre mobilitat residencial / migracions i les relacions social que es troben en el lloc de residència. Les tres recerques s'enmarquen dins del marc teòric del Curs de Vida i es fa us de tècniques d'anàlisi *Event-History* per analitzar biografies residencials d'*adults joves*. En la primera recerca s'analitzen l'efecte de l'estructura de la familia extesa (aquella més enllà de la parella i els fills) en la probabilitat de fer un canvi residencial de llarga distancia (més de 50 km) a l'alemanya occidental. En la segona recerca s'analitzen entrades i sortides de la llar parental al Regne Unit. En la tercera recerca s'estudien multiples facetes de la proximitat de les xarxes socials en la propensió d'emigrar en diferents estadis del procés de pressa de decissió.

Abstract

This PhD thesis tackles from an empirical and quantitative perspective the influence of social ties on geographical mobility behavior and decision-making. The dissertation is composed of three lines of research all framed in Life Course theory and taking advantage of Event-History techniques to analyze individual residential biographies of young adults. The first essay deals about the influence of the extended family structure on the probability of long distance mobility (i.e. further than 50 km) in West Germany. The second essay analyses leaves and returns to the parental home in the UK. The third essay sheds light on the multifaceted effect of ties' proximity on migration propensity in the different stages of decision-making and behaviour.

Extended Abstract

This PhD thesis tackles from an empirical and quantitative perspective one of the oldest questions relevant to migration and residential choice research, namely the influence of social ties on geographical mobility behavior and decision-making. However, this research is innovative in many ways. It overcomes traditional shortcomings in empirical migration research, which range from narrow definition and/or measurement of social ties and their characteristics, to lack of proper assessment of migration as a process which do not tackle dynamic selective effects inherent in the process. The main advance that this dissertation contributes is, at the same time, the meeting point between the three essays in this research compendium. This advance relates, first, to the theoretical framework based on the synergies of the strands of research on the *geography of the family*, *sociology of migration* and *life course theory*, which helped to the development of hypotheses. Second, to the common methodological framework, based on biographic analyses of individual residential trajectories, aiming to shed light on the underpinnings of the dynamic association between places of residence (and interaction) with the embedded relationships to ties.

The author makes use of different sources of national longitudinal data with full records of residential histories throughout young adulthood. The thesis focuses on this stage of the life-cycle as the underlying hypothesis is that current decisions on residential change have a path dependence on previous residential stages and life

course events which triggered mobility. Thus, the research concentrates on residential trajectories since the individual was 16, the age taken as when the individual may first face decisions on independent living. Such a strategy responds not only to correct the initial selection that lead to frequent residential relocation, but also to allow for some exogeneity in an association which is mutually reinforcing (i.e. the direction of causality is conditioned to the ties configuration since the very beginning of the residential trajectory). In fact, choices in the residential trajectory predict and/or are predicted by the amount of investment in ties in one location, in economic language; or the strategy indicates clearly commitment with the community of residence mediated by feelings, norms and value-orientations of solidarity. To tackle selective processes, ranging from the commented reverse causation to the dynamic selection of life course events, as well as contextual effects; is a paramount objective of this research, as one of its main aims is to prove that the dimensions of social ties determine cumulative residential changes from very young ages.

The common analytical framework for the three lines of research is Life Course theory, based on the analyses of interdependent individual biographies. Related Event-History techniques assess residential trajectories in a dynamic framework, where residential change is analyzed in parallel to changes in other life domains that are main determinants of geographical mobility. Thus, interdependencies of residential trajectories with employment, education and family formation histories are assessed. This leads to

explanation of to what extent the association between migration and the configuration of ties is mediated by the dynamic selective processes (i.e. life-course events). The latter impose conditionings about the need and usage of family and other ties' support (emotional and material), some of it is contingent on geographical proximity.

Regarding the literature of the *geography of the family*, the research articulates a broader concept of family and other 'strong' social ties (i.e. close friends) in order to find influences further than the one exerted by the household. The "family context" (i.e. non-coresident kin type ties) and non-kin strong ties are included in analyses, focusing on configuration of ties within and without one's 'life space'. The latter is a socio-spatial concept that, among others, delimits the geographical area of regular social interaction. Long distance relocation is found to be disruptive to social interaction and other ties' non-transferable resources between locations. In this research, a threshold of 50 kilometers diameter encompasses the 'life space'. The analysis of the size of ties within this area (i.e. ties' proximity) or outside; the proximity of some specific type of ties and the analysis of the closeness of the relationship (i.e. kin or non-kin and co-resident or ties within the household) are posed as key to understanding the association between 'place of residence' and 'relationships' embedded in it.

Then, the research raises diverse questions and better responses to the generic research question: *under what conditions do social ties*

influence the residential trajectories of young adults? From this it derives responses about the effect of different characteristics of social ties structure, which individuals are more likely to be affected by them, the contextual variation of the effect, individual dynamic and constant selective processes or at which part of the decision-making process.

The first essay focuses on the effect of the extended family structure on the first long-distance residence relocation (i.e. migration). Using longitudinal data representative of young West Germans and by means of hazard regression, it finds significant negative association of the geographical proximity of the extended family and migration outcomes. The analyses of time to events (i.e. hazard regression) allow to controlling for dynamic selective effects (i.e. life course events) as well as for the inherent endogeneity between geographical mobility and geographical configuration of ties. We assessed the residential trajectory since age 16. The results are significant for the effects of the size of the network, parental educational background and other mediating personal factors. When controlling for the proximity of parents and siblings and the unobserved heterogeneity at the family level, the effect of proximity of the extended family is relaxed. In fact, the closest ties are the ones who exert higher pressure on keeping geographical proximity. Last, a random intercept model (i.e. multilevel analysis of hierarchical nested data) to control for regional heterogeneity proved that the association under study is not independent of differences at the contextual level.

The second essay aims to disentangle the selective processes behind early experiences of residential mobility / parental home leaving. The main findings prove that further stages of residence as an outcome of long- or short-distance relocation are the result of selective processes, such as the completion of life course transitions that launch individuals towards adulthood. Then, the remaining significant effect of residential stability might be attributed to location-specific assets (economic or social, such as friends), as the investment on them grows over time. The effect of the type of initial parental household structure (i.e. age 16) is found to have no significant effect once selection processes are allowed for.

The third essay offers answers to a wide spectrum of competing mechanisms to explain the association of geographical proximity of ties to family and friends with migration behavior. The mechanisms go further than the traditional analysis of economic assets of the significant others, also emphasizing the commitment component (i.e. strong social bonds and value-orientations of family solidarity) that affects individual decisions as a result of influences of ties to family and friends. Theoretical models on the decision-making process of migration and social ties' influence are for the first time empirically assessed. The reasoning was that commitment may indirectly affect migration behavior, as it is an input into the formation of migration intentions. The result was that it was possible to disentangle different effects of the proximity of ties on

migration behavior, which previous research, in not accounting for the intentional stage of the decision-making process, failed to find.

To sum up, this research represents a modest but significant advance in the understanding of the relationship between geographical mobility and social ties, where we find that social ties' characteristics impact on the residential trajectory. This leads to the view that structural changes in ties' composition at early ages are going to be a clear predictor of future changes in geographical mobility patterns. Despite, the association between the residential trajectory and the social ties' configuration is partially a product of early residential choices affected by early ties' configurations. Proof was also shown on that dynamic selection effects (i.e. life course events) and contextual heterogeneity (differences among regions and families) partly mediate on this association. However, advances in research methodology and collection of quality data are needed in order to further disentangle such effects with the aim to understand this social phenomenon better.

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1. INTRODUTION

This PhD thesis tackles from an empirical and quantitative perspective one of the oldest questions relevant to migration and residential choice research, namely the influence of social ties on geographical mobility behavior and decision-making. Family, friends, colleagues and acquaintances, what will be called 'social ties' from now on, have diverse meanings to individuals. One may obtain from them material assets, emotional support and affiliation: generally speaking, they give meaning to our lives[1]. They can be assessed either positively or negatively, as different views and perceptions on life-styles and values orienting behavior may enhance cooperative or conflictive relationships, leading to disruptive consequences or commitment over time. It might seem coherent to think that long-term exposure to geographically close ties enhance cooperation and trust in relationships, as well as facilitating access to the resources that ties possess. In fact, many researches prove that residential stability (Sampson, 1988; Richmond, 2003) and geographical proximity to ties (De Jong Gierveld & Fokkema, 1998; Grundy & Shelton, 2001) are still

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[1] Mulder (2007) mentions at least three reasons why relationships and resources embedded in them are still paramount: the greater amount of assets transmitted between generations, due to smaller families; the increase in non-intact families and single-parenthood, which increases the need for ties' assistance; and the higher share of immigrant population in Western countries, who make use of resources embedded in ties from the community of origin at destination.

important factors explaining investment in social ties, but also community commitment[2].

In this sense, relationships and resources embedded in ties and community feelings have a common spatial component, which is regarded as the 'place' of interaction. A lot of research refers to the *space de vie* (i.e. 'life space') or the space of regular daily activity (Courgeau, 1988; 2006), which defines the area of interaction as the main basics of life, such as job, leisure, family and residence. 'Life spaces' are also the areas where the individual may develop feelings of attachment and, as the research predicts, individuals may live their whole life in the same 'life space' or come back to previous 'life spaces' sooner or later (Bonvalet *et al.*, 1999; 2007; Kesztenbaum, 2008).

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[2] Contrasting with what we already said, early studies on 20th-century community change show how the enlargement and growing density of urban areas and improvement in communication systems involved a declining importance of community in individual decisions of residential relocation (Kasarda and Janowitz, 1974; Goodwin, 1975). Their argument was that the effect of type of community is not significant, while occupational and family formation reasons may be the main reason for mobility. All in all, it seemed as if societal and economic changes may loosen the association of social ties and place of residence, understood as the traditional community or neighborhood. The search for better economic standards encountered in the market, the lower role of the family in giving welfare to members, and the widening of the role of friends and 'weak ties' as the main sources of social capital, all weaken ties' relationships and allow for greater distances, even for traditional dense kin structures with higher normative obligations (Wellman, 1990). Although we understand that changing dynamics in communities, social ties and residential change took place, in this dissertation we aim to show how the speed of change in the association between ties' structure, community and place of residence depends on individual and contextual factors, thus leading to diverging outcomes.

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Moreover, as long as people move and break and create different contexts of relationships embedded in the space, the temporal component may also shape the interaction between 'place' of interaction and 'relationships', such that one cannot ignore the dynamic and cumulative process of residential change in the form of 'trajectories'. The latter, understood as cumulative stages or 'statuses' of residence, points to how each event of residential change is part of a path which links individuals' current place of residence to previous residence 'places' and 'relationships' embedded in them.

It is especially the meeting point between 'social ties', 'places' of interaction (or 'life space') and residential 'trajectory' that gives a common meaning to this dissertation, which encompasses three different lines of research. Although the three pose different research questions, they share common elements in the understanding of the association of the three items mentioned and respond, within an empirical and quantitative perspective, to the following general research question:

Under what conditions do social ties influence young adults' individual residential trajectories?

One of the main hypotheses behind this research question is that part of the effect of ties on current residential outcomes is the result of selective choices in the past. Little research paid attention to initial and dynamic selective processes which mediate the

association between social network structure and migration. First, dynamic selective processes are the result of life course events. These events points to what extent the resources or the affection of the network is going to be needed. For instance, when getting into divorce or widowhood it is expected that the individual will lean more on family or friend ties as the support of the life-time partner is truncated. Second, selective processes also refer to the initial decision of migration in one's individual life, affected by the configuration of ties at that time. Not accounting for that it may lead to an endogenous association between current residential outcomes and a socio-spatial configuration of ties (i.e. the impact of ties living within or outside the personal 'life space'). In fact, it is expected that current long-distance residential behavior, which breaks with 'life space', is predicted by previous residential choices, which were affected by the life course events and the socio-spatial configuration of ties to relatives and close friends. Therefore, we expect that, on monitoring dynamic selective processes (i.e. life course events, residential transitions and initial and changing configurations of social networks), the real association between social ties' structure and residential outcomes will be seen. It is needed a biographical perspective in order to disentangle the mediating effects of triggering life events and initial residential transitions (with a given configuration of the social network structure).

Substantive hypotheses relate to the sign of the association between ties' geographical proximity and migration behavior. Other factors concerning ties, regarding quantity (e.g. size and proportion of ties

close by) and quality (i.e. closeness of relationship, type of relative, coresidence) factors of the 'extended family', household structure, parental background (i.e. educational and residential), siblings' composition (i.e. age-sex composition) or conditional effects of ties' characteristics with personal and contextual factors are also researched and posed in form of hypotheses, as will be detailed later on in each essay.

In fact, the response to the research question involves three differing strategies, the result of the complexity of the processes in the analyses. However, the three of them follow a similar logic, explained throughout this introductory chapter. They also share a common definition of migration and residential change and a common socio-spatial concept of social ties. Furthermore, the residential trajectory as an accumulation of residential statuses and events follows the logic of the Life-course theory. As it enables dynamic processes to be studied, it will be possible to posit hypotheses about the dynamic effects of residential trajectories and initial ties' structure on residential outcomes.

The 'life space' concept was developed to frame the event of interest in an analytical context suitable for the analyses of ties embedded in locations. This concept frames the area or space where 'place' of residence and 'relationships' collude. It is a socio-spatial concept that analyzes the effect of ties to significant others, embedded in the places of daily interaction, on residential outcomes. Within the 'life space' and focusing on the activities of

meeting and interacting with significant others, one may find the most influential relationships in one's *entourage* or 'social contact circle' (Bonvalet and Lelièvre, 1995; Lelièvre *et al.*, 1997). A 'social contact circle' refers to all ties with whom one may be able to interact. As distance may hinder interaction, we point that if not all the 'social contact circle' is within the 'life space', at least the most influential or needed might be within the 'life space' or in a competing 'life space' (or place that it is a clear destination for further migration). As already said, because distance may hinder social interaction, we consider the socio-spatial context of the life space as a daily commuting distance, like other authors suggest (e.g. Sassen, 1996).

The concept of the 'life space' helps define and divide the concepts of *migration*, when the residential change breaks with his/her regular daily activities, including the *entourage* (or the 'social contact circle'), from other types of residential moves, none of which disrupt the 'life space', including some of those valued resources and intrinsic value embedded in ties. One may find a double configuration of attributes from ties, those which are 'location-specific' and those which are transferable between locations. The benefit from the former is disrupted once individuals break with their 'life space' due to long-distance residential change. As will be discussed later, the effect of ties on retaining or being expelled from the 'life space' may be based on a great configuration of attributes ranging from their material resources, the emotional support and the transmission of values.

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The above is a persuasive argument for going further than traditional units of study of ties' interaction such as the household and even the neighborhood in analyses of the influence of social ties on residential behavior. In fact, much new research strives towards the analyses of extended families and non-kin ties, which may be found within daily commuting distances (see Bonvalet *et al*., 2007; Mulder, 2007). This makes it possible to analyze to what extent physical proximity and location-specific attributes from ties affect residential outcomes, mainly distinguishing long distance (i.e. breaking with the 'life space') from short distance. In all three lines of research, a 50-kilometer diameter is considered the threshold of the spatial context where the 'social contact circle' is set. Moves beyond this limit are considered migrations and disruptive of social interactions embedded in the 'life space'.

One of the limits of the research is that a 'network analysis strategy' has not been developed. Although some information about the effect of some social network's dimensions is tested, it was not possible to account for the complete network of ties that an individual may hold. In any case, proxy information on the size and the placement of ties was available. More detailed information was available for the closest ties and co-resident ties, but no information was available for 'weak ties'. Therefore, the impact of 'weak ties' was not assessed. 'Weak ties' are work-contacts, class-mates and so on, according to the terminology of Granovetter (1973). Though weak ties were not assessed, they were indirectly monitored with

measurements such as the length of their employment and educational trajectories and the number of different statuses in each trajectory. In fact, the employment trajectory, like that of classmates at different educational stages, is more likely to point to the amount of investment in or connection to weak ties, which might be bridges to other networks and future work opportunities (Granovetter, 1983; Burt, 1992). However, unlike the role of 'strong ties', 'weak ties' have a less (or un-) important effect on the supply of material assets, emotional support or commitment (Granovetter, 1983). As we mainly focused on the first stages of the residential trajectory (i.e. during the transition to adulthood), the lack of proper assessment of weak ties leads to only a low level of bias, when compared with the analysis of the whole residential trajectory. At the stage of the early adulthood, most of the influential ties' effects on migration are relative to family resources, being weak ties still scarce. Both relate to the fact that employment trajectories are short, meaning lack of personal economic resources as well as an extended network of weak ties. Nevertheless, the strategy in this research work also includes monitoring of the indirect indicators of investment in weak ties. The latter may reduce to some extent the aforementioned bias.

With these limits of the dissertation set, the following part of the chapter introduces briefly the research into social ties and residential change/trajectory and migration. Then the common traits of the three lines of research of which this dissertation is composed

are detailed. Finally, the main implications of the three lines of research and of the dissertation as a whole are described.

1.1 Social Ties and Geographic Mobility in the Literature

Social ties' influence on residential and migration behavior is an old topic of quantitative research, already tackled in studies of the family and migration behavior by Rossi (1955), Litwak (1960) or Tilly and Brown (1967), among other well-known researchers. They investigated the existence of the couple and children and/or the individual life-cycle stage effect, interacting with other individual characteristics and contextual opportunities, on the probability of moving. In fact, the couple's labor market participation and their children's schooling needs made the household the focus of research in much of the literature, enhancing the family or household as the right level of decision-making. As a result, many micro-economic models of family migration were worked out (Long, 1972 and 1974; Sandell, 1977; Mincer, 1978). They followed the investment-oriented strategy of human capital theory, first applied to migration by Sjaastad (1961). In the sociological literature, as a critique of the gender-neutral models of family migration, research emerged that focused on characteristics of wives and children, such as the work of Duncan and Perruci (1976), Bielby and Bielby (1992) and more recently Bailey and Cooke (1998), Boyle *et al.* (2003), Cooke (2005) and Juergues (2006).

This literature has significantly improved the knowledge of intra-household dynamics and the effect of the role in the labor market of household members on the decision to make a family move. However, its limitation in household dynamics and the blind foundation of life stability (i.e. divorce is rarely considered) mean we need another research framework that extends to non-household family and non-kin ties, and many other variables mediating family decisions[3]. In this sense, the micro-economic literature that focuses on characteristics of the place of residence might be useful to review. This literature bases on the concept of 'place utility' (Brown and Moore, 1970; Wolpert, 1965), or the value that individuals pose to places regarding different characteristics. Among them, social ties are regarded as part of the value given to the place they reside or to alternative ones.

The development of such a framework in the 1980's, coined as *location-specific capital* by Da Vanzo (1981) or Da Vanzo and Morrison (1981), was then further developed (Clark *et al.*, 1996; Fischer and Mallberg, 1997, 2001; Huffman *et al.*, 2007) and goes hand in hand with the concept of *push-pull* factors (Greenwood, 1985, 1997). These are those contextual amenities or lack of amenities that, normally assessed at an aggregate level, either attract people to a place of residence, such as higher wages and job opportunities, good environmental conditions and so on, or expel

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[3] We only found the micro-economic model of Altonji and Hayashi (1993) as an example of the strand of research into the 'human capital' investment for assessing the 'household' or the 'extended family' as units of utility maximization. They found a significant effect of the resources of the extended family for maximizing household consumption.

them from it, like unemployment, violent environment, etc. The location-specific capital literature, then, conceptualizes the *push-pull* factors as *place utilities* to the individual. However, the empirical literature has not given proof or enough evidence of the effect of ties embedded in locations. The research mainly assesses aggregated economic and contextual determinants, but few of these relate to social ties. Dummy variables flagging contexts, residential stability measures or the residual coefficients are used to account for the effect of ties embedded in locations. And, though the theoretical concept of location-specific capital may apply to the economic or resource effect of ties little has been done to analyze the non-economic effects of ties' proximity.

From a sociological perspective, authors such as Massey, Portes and others, focused on non-co-resident relatives and extended the analyses to non-kin ties embedded in the neighborhood or the community of residence and to ties embedded in alternative communities and possible future places of residence (e.g. Boyd, 1989; Massey, 1987; Massey *et al.*, 1987; Massey, 1990; Stark, 1991; Portes and Sensebrener, 1993, 1996; Lindstrom and Lauster, 2001; Aguilera and Massey, 2003; Kan, 2007). They made wide use of the concept of *social capital*, mainly regarded as material resources and normative influences embedded in relationships (Bourdieu, 1986; Coleman, 1988; Lin, 2001). They also drew on the concept of social networks, extending the analyses to the meso-level of kin and non-kin networks, linking the social structure to the individual as a unit of decision-making (Faist, 1997; Haug, 2000),

following the embeddedness approach in economic sociology (Granovetter, 1973, 1985). Therefore, this literature allowed for a theoretical separation between those location-specific resources that are social and other contextual *pull and push* factors. It also accounted for alternative hypotheses to ties' resource effect, which focused on family strategies of migration and normative effects among others.

The results of these studies enlighten the association between social ties and geographical mobility behavior, by which many processes, such as chain migration, cumulative causation and so on, are revealed. The interaction with ties in the origin and destination community have a clear effect on individual migration, conditional on life-cycle stage, household structure, socio-economic individual and contextual characteristics and even local or national regulations on the issue of geographical mobility. However, the lack of a dynamic assessment of individual experiences and previous ties' configuration raises a question mark over some of the causal associations posed or implied. Only a few of the studies tackle straightforwardly and dynamically the topic of reverse causation, trying to control and test the endogeneity of the association and related selectivity of migrants on their residential trajectories (e.g. Palloni *et al.*, 2001).

On seeking a literature that places emphasis on the dynamic assessment of mobility and family or household changes, one should end up finding the life-course framework (Mulder, 1993;

Dykstra and Van Wissen, 1999; Courgeau and Lelièvre, 2003; Willekens, 2004). This framework emphasizes a methodological assessment of residential behavior as a result of previous experiences, in the form of 'trajectories' or 'biographies'. Moreover, it complements the assessment of parallel and triggering trajectories from other life domains, such as education, employment, partnership and parenthood (Wagner, 1989; Mulder, 1993). As explained below, this relaxes the identification of causal relationships for demographic behavior such as residential change. This is because triggering factors might take place either before or synchronized (in case of anticipatory residential change, see Mulder and Wagner, 1993) with the residential outcome. The framework allows too for the parallel study of ties' configuration and residential transitions (i.e. residential relocation).

Within this framework, many studies on the effect of changing family structure touched on fields such as entering or splitting a partnership (Mulder and Wagner, 1993; Mulder and Hooimeijer, 1999; Boyle *et al*., 2008), fertility career and children at school age (Long, 1972; White *et al*., 1995; Kulu and Billari, 2004; Kulu, 2007) and the related need of housing and neighborhood qualities for adjusting to new family requirements (Mulder and Clark, 2000; Clark and Huang, 2003; Rabe and Taylor, 2008). As mentioned above, the main strand of empirical literature in this framework associated dynamically residential moves with family composition change, mainly understood as the household members (Bailey and Cooke, 1998; Cooke, 2008). The focus is on residential and family

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transitions throughout individuals' life-course trajectories. The event relevant to the analysis is the residential transition, which delimits different residential statuses, whose sequence through an individual's life-course shapes a residential trajectory. The level of analysis is mostly micro or based on individual action. In fact, individual action is the basis for understanding the cumulative construction of the residential biography (i.e. residential trajectory throughout the individual's life).

While the focus of the life-course framework has been mainly on household family members, special emphasis on the social ties outside the household or non-co-residents is given by the strand of *geography of the family*. This literature suggests including contextual inputs relating to social ties' characteristics in the current and past places of residence throughout the individual's residential trajectory. An individual's residential biography may depend on different perceptions of the places where individuals lived, which are linked to the social ties embedded in such places. The emphasis is placed on long-distance residential changes, i.e. *migration*, which implies a break with social ties' resources. In this sense, the definition of migration and residential change in this research takes the analogy of the 'space de vie' (i.e. life space) of Courgeau (1988). This is analytically suitable for assessing the effect of social ties embedded in places of residence. The concept of 'social contact circle' or *entourage* arises in order to encompass all social interaction within the spaces of regular daily activity (Bonvalet and Lelièvre, 1995; Lelièvre *et al.*, 1997; Bonvalet *et al.*, 1999, 2007;

Bonvalet, 2003). As commented above, migration is a residential change that disrupts this socio-spatial context.

Among other developments, this literature brings a conceptualization of different life-spaces, such as 'residence place' as current place of residence, 'reference place' as the place the individual feels attached to or regards as his/her operational centre even when not living there; or 'cult places' linked to childhood experiences with parents, friends and other relatives, and which the individual could also consider for eventual relocation (Bonvalet and Maison, 2007). Seeking to merge this framework with the life-course, Mulder (2007) sets a research agenda where the influence of networks on residential trajectories might be assessed in parallel with life-course transitions, as the usage or need of different kinds of ties is related to different life-course statuses.

Among the empirical findings, De Miguel (2008) suggests that no movement is made ignoring ties. Residential change may result in relatively no change in the social context, in creation of a new family and new ties (i.e. family migration or chain migration) or in breaking with the previous 'social contact circle' (because of conflict). Furthermore, there is close correlation between characteristics of ties, such as size and geographical dispersion, and the closeness of the relationship with residential trajectory, as residential stability is a clear sign of higher investment in ties and higher commitment (Richmond, 2003). Moreover, Bonvalet *et al*. (1999, 2007) find that, in general and contrary to common sense,

the size of friendship ties and their geographical proximity is significantly linearly associated with the size and closeness of family ties, also associated with residential stability[4]. What is clearly shown by all these authors is that the previous generation's migration predicts the amount of ties in the place of residence and the probability of migration for a given individual. Where it is found that individuals whose parents are migrants tend to have a lower proportion of relatives in the place of residence and birth, they have higher probabilities of out-migration[5].

To sum up, socio-spatial inputs interact with individual characteristics in order to obtain an exhaustive description and to find an explanation for individual geographical mobility, linked to the conditioning effect of the context on building the residential trajectory. Good examples might be found in large research projects such as De Miguel (2008) for the Spanish case; Bonvalet and Lelièvre (1995), Lelièvre *et al.* (1997), Bonvalet *et al.* (1999; 2007) and Kesztenbaum (2008) for the French case; or Mulder and Kalmijn (2006), Mulder (2007), Michielin and Mulder (2008) for the Dutch case. This dissertation follows the suggestion that locations and social ties are strongly linked to each other and that path dependencies of previous residential stages follow a congruent

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[4] These authors, as Rainer and Siedler (2008) also state, explain that friends are not usually substitutes for relatives, but close friendship is an asset embedded in strong family links.

[5] However, according to later studies in this literature, such as Kesztenbaum (2008), it is not straightforward to say whether the effect of family size on the region of residence (i.e. family proximity), and possibly extended to friends, is the effect of location-specific capital or inherited habits of migration. In fact, it may not be easy to separate the two effects, as they are both part of a feed-back process.

causally dynamic path. And the interrelationship between individuals, places of residence and social ties is also related to the life-cycle stage, where different transitions in other life-domains are incentives to prompting a re-configuration of the interaction between 'place' and 'social ties'. However, as already mentioned, the way this association is causally linked may depend on various mechanisms, which are briefly described below.

1.2. Mechanisms: the role of ties in shaping residential trajectories

As can be seen in Table 1, ties affect individual or household residential mobility in many different ways. The different hypotheses mainly focus on the role of social ties as a unit of support: relationships in the family and other ties are of mutual support. Many authors describe the different roles that ties play in the mobility of individuals in different stages of the residential trajectory (e.g. Hugo, 1981; Harbison, 1981; Palloni *et al.*, 2001; Lindstrom and Lauster, 2001; Massey *et al.*, 2001; Haug, 2008). In general, these can be divided into four types: (a) emotional support, (b) economic resource or support, (c) socialization and normative support and (d) spurious association.

The first mechanism (i.e. affective) refers to the value of ties in itself, meaning every kind of emotional support received from and given to ties. Generally speaking, the higher *intrinsic value of ties*

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may increase the cost of separating from ties, but ease mobility when all ties move or are already dispersed. This effect has been mainly modeled by cost-benefit models, such as the costs derived from separation from significant others minus the benefit from creating a new family, approaching other relatives or friends and so on (Greenwood, 1985). This is generally added on to other costs and benefits from migration, inspired by the *altruism model* of Becker (1981). They are modeled and empirically assessed as part of the residual effect, as it is difficult to collect objective data that measure such a cost/benefit calculation. In fact, the intrinsic value of ties is not straightforwardly measurable and the effect is, of course, conditional on the differing importance that individuals place on the value of different types of ties. Then, it may be related and mixed with the hypotheses regarding values and socialization. In other words, higher values of family solidarity may make more the psychological cost of breaking proximity with an affective relationship more costly.

Belot and Ermisch (2009) also find that unobserved individual characteristics such as *social abilities* may condition the effect of the intrinsic value of ties. Individuals with lower social abilities may have fewer propensities to move, as it may be more difficult for them to create new ties elsewhere. In general, the interaction of both characteristics (i.e. intrinsic value of ties and social abilities) may explain situations, but, as we will see later, it is likely that non-random processes are behind the assignment of such personal

characteristics, which may depend as much on dynamic of one's social ties' structure as on the residential trajectory.

Table 1. Mechanisms and hypotheses on the influence of social ties on migration and residential mobility.

Mechanism	Hypothesis	Triggering Factor	Ties' incentive
Affective	(1) Affinity	Social ties (intrinsic value)	Love, emotional linkage
Instrumental-economic	(2) Nurturance (3) Networking	Socio-economic situation	Information and economic resources
Socialization-normative	(4) Solidarity, (5) Social acceptability, (6) Conflict	Values, norms and life-styles	Normative opportunities and constraints
Endogenous	(7) Selection	Unmeasured factors with common variation with ties structure	Spurious effect of ties

Source: Drawn up by author, based on the work of Hugo (1981), Harbison (1981), Palloni *et al.* (2001) and Haug (2008).

Though the second mechanism, the economic resource effect, has been the most widely researched, little is yet known about it, as the

mediating effect of other mechanisms has been considered little by those who were interested in the economic effect or who just thought they are indivisible. Harbison (1981), referring to family ties, separates this effect into the nurturance effect and the networking effect. The first is related to economic properties, family business and help with money or credit etc.. These are basically physical belongings of the social ties. As they can be inherited, donated or lent, individuals can make calculations for their own utility. In contrast, ties as a networking unit refer to connections of ones' ties to their ties or non-material assets of ties such as information or access to contact's ties (i.e. ties as *structural holes*: Burt, 1992). Obtaining information or 'contacts' might be key to reaching better position in labor markets, business outcomes etc.

At this point one may trace the distinction between those resources that are non-transferable between places of residence and those that can be transferred. No research though has placed difference among both types of resources. In fact they both may vary in a similar fashion, meaning that they are reinforcing. The latter refers basically to financial help and any other type of resources that help to settle in other regions independently on the place where the supportive tie resides. Generally speaking, analyses have studied the effect of household income and intergenerational gifts that help to set one outside. In the case of non-transferable resources, the literature on ties as assets embedded in locations is the key to developing research questions and analyses related to the

mechanism. Using several different terms, location-specific capital (Da Vanzo, 1981; Huffman *et al*., 2007), spatial capital (Levy, 2003) or location-specific insider advantage (Fischer and Mallberg, 1997, 2001), these authors state that more ties at the place of origin discourage migration because these ties are perceived as economic opportunities. Likewise, after a intitial move, the location specific attributes of the intitial place of residence may prompt return migration (Da Vanzo and Morrison, 1981). The study of social capital by Massey *et al.* also extends this to ties to family and community in diverse destinations, such as temporary housing facilities or networking units.

The socialization-normative mechanism is the result of values, norms and life-styles that are transmitted from ties between and within cohorts. As it has to do with socialization processes, then factors associated with ties are likely to affect it. According to Blau and Duncan (1967), it is likely that parental preferences, values, orientations and norms of behavior are transmitted to children. Then previous parental geographical mobility might not only affect the distribution of ties to relatives in the territory, but also involve the transmission of knowledge of geographical mobility or of attitudes towards migration and/or residential change and less normative pressure to stay close by. In general, parents may allow children geographical mobility, transmitting positive views and acceptability of migration behavior (Bonvalet *et al*., 1999, 2007; Billari and Liefbroer, 2007). However, it might also be the case that they transmit values of solidarity among family members (Bengtson and

Roberts, 1991; Mulder, 2007), in order to ensure family support and, in consequence, exert pressure to ensure geographical proximity. In many cases, parents and other close relatives develop strategies to mold the residential trajectory of their children through gifts or loans to persuade them to establish their residence close by (Bonvalet *et al.*, 2007).

However, views of children that conflict with parental norms (or pressure) and values or, in general, with the main life-styles in the community increase the probability of migration far from the place of birth or childhood and may trigger early home leaving (Hugo, 1981; Uhlenberg and Cooney, 1990; Musick and Bumpass, 1999). Furthermore, processes diffusing demographic behavior are also given within cohorts by peers (Bernardi *et al.*, 2008; Nazio and Blossfeld, 2003). Fashionable patterns and peer-acceptability may also associate the geographical mobility of siblings, friends or acquaintances with their own mobility. Higher mobility of peers may also encourage one's own geographical mobility, as this behavior is considered socially acceptable. Research into the social acceptability effect is found in the selective migration of individuals from different communities in Mexico by Massey (*op. cit.*), or in Indonesia by De Jong (2000). In other cases, it is found at the household level as a survival strategy or, as Massey *et al.* (1987), Stark (1991) or Palloni *et al.* (2001) conceptualize, as risk diversification of household outcomes through encouraging some household members to migrate, as these authors found in Mexico-

U.S. migration or as Fleischer (2007) revealed through in-depth interviews in Cameroon.

A final mechanism implies that the association between residential trajectories and social ties may be affected by selection processes, which make such association spurious. This selection is embedded in dynamic selective effects and in a great range of difficult-to-observe characteristics such as propensities to move or the above-mentioned social abilities (Belot and Ermisch, 2009). On the one hand, this makes the two groups, movers and non-movers, not directly comparable, as in the former group we may not find any concealed characteristics prompting mobility (Courgeau and Baccaïni, 1989; Borjas, 1989; Baccaini and Courgeau, 1996). On the other hand, these characteristics are found to commonly affect residential mobility behavior and the configuration of ties[6] (Palloni *et al.*, 2001; Aguilera and Massey, 2003; Belot and Ermisch, 2009). Similar ties' structures or individuals of the same family/community may have lower migration probabilities. Furthermore, the current configuration of ties is not independent from individuals' initial steps of the residential trajectory, also including ties' geographical mobility (e.g. parents' previous mobility), leading to the problem of reverse causality or endogeneity.

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[6] In general, selection might be more likely among individuals who have strong preferences for a job career and less attachment to kin relationship or who might easily replace these by new contacts (Belot and Ermisch, 2009).

In this dissertation we emphasize the testing of the last hypothesis, where it is stressed that the effect of ties on residential mobility is still significant, even after allowing for intervening factors that make the association spurious. Among other goals, the research aims to prove that the association between ties' configuration and current mobility outcomes is partly affected by earlier association between the two factors as well as life course events. However, it might still be significant once allowing for the spurious effect due to dynamic selective processes. For this, life-course and the related methodology have proved a powerful framework, as discussed later.

1.3. Life Course framework

Mulder (1993), Van Wissen and Dykstra (1999), Willekens (2004) and Courgeau and Lelièvre (2003) describe within the research area of geographical mobility an inspiring analytical framework for the study of dynamic processes that affect human action. They understand life as a cumulative process of decisions and events that enable an individual biography to be built. Known as a life-course framework, it enables events and processes to be understood dynamically. A biographical study of residence assesses an individual trajectory or the chronological and cumulative history of status and events (i.e. transitions between statuses), evaluating parallel transitions in other life domains that may trigger the outcome of interest in a dynamic way.

This analytical framework is an individual action-based approach to causality, in which the structural and individual factors and the cumulative effect of previous events influence current behavior (Hedstrom, 2005). The main strength of such an approach is that, while it tests structural effects in the macro-micro-micro-macro approach of Coleman (1986), it overcomes reverse causation or feed-back effects (also known as endogeneity). This means we can test the effect of the structure of social ties and changes in them on individual residential changes, whilst allowing for the fact that previous residential change affected social ties' structure.

The study of geographical mobility as a residential trajectory not only reduces this bias, but also the bias from unmeasured effects that had an impact on previous residential change (Courgeau, 2006; Kesztenbaum, 2008). To overcome all this, it is necessary to follow the entire residential trajectory of the individuals and, to some extent, the trajectory of social ties. In this dissertation, residential changes of individuals interviewed from the age of 16 are assessed, including evaluation of their residential trajectories, which they may have decided independently. To some extent, information on individual residential trajectories before the age of 16 and some of the parents' and siblings' trajectory is also assessed.

Closely related to the life-course framework, the statistical assessment of biographical data or time-to-event data, known as Event-history analyses (Blossfeld and Rohwer, 2003), enables analysis of the duration of demographic outcomes (i.e. residential

transitions). It analyses the timing of the event also regarding those for who we do not observe the event (i.e. censored observation). Cross-sectional analyses do not account for the later, which is a fundamental group to be treated in analyses in order to obtain unbiased effects of dynamic processes. Furthermore, it allows for the analyses of dynamic selective effects. Among them interdependent life course transitions that take place parallely in the same time-line to the to the outcome event of the study. And also the effect of reverse causality is reduced as we are able to control for the initial configuaration of the association under study. Let's say all conditions at time 0 for the trajectory of interest in our study. Event-history analysis has already proved useful in the assessment of individual residential trajectories, as it is a powerful statistical tool to match residential transitions to the triggering effects of parallel life-course domains and to assess dynamically the effect of other individual characteristics (Courgeau, 1985; Courgeau & Lelièvre, 2006a), such as non proportional hazards (i.e. interaction effects) and multilevel strategies to model contextual heterogeneity (Barber *et al*., 2000; Kulu and Billari, 2003; Courgeau, 2006; Courgeau & Lelièvre, 2006b; Kulu, 2007). In many analyses in this dissertation, this statistical assessment will help calculate dynamically the average effects of residential stability and ties' characteristics on mobility outcomes that break with the 'life space'. We set 50 kilometers from the location of residence as a distance-to-migration threshold spatially limiting 'life space'.

As the dissertation responds to three different questions that involve different measurements, the same dataset or a comparable context for the three analyses done could not be used. For this reason, in this dissertation three different sources of data have been used: the German Socio-Economic Panel (GSOEP), the British Household Panel Study (BHPS) and the Migration in Lebensverlauf Panel. The description of the three sources of data is given in each of the Essays.

1.4. The three essays

Whilst bearing in mind the literature of social ties and geographical mobility, the mechanisms arising, the associations between 'place', relationships and trajectory and the life-course framework, now we need to look at what the three essays contain. First, they are summarized.

1.4.1. Essay I

The first essay sheds light on the association between the structure of the 'extended family' (Bonvalet, 2003), emphasizing its spatial configuration (i.e. geographical proximity), and the first event of a long-distance residential move (i.e. within country or internal migration) for young West Germans. The underlying mechanisms behind an expected negative association between the commented

factors relate to the literature of ties as 'location-specific capital'. A higher share of extended family within a socio-spatial area of regular interaction constraint mobility, as the benefits from the relationship are to be broken with migration. This association, however, may be conditioned to transfearable resources of the family, as well as characteristics that commonly determine higher proximity of ties and migration propensity. The former is relaxed by including characteristics of the household structure such as the household structure, the share of coresident extended family or the impact of the closest ties within the extended family (i.e. parents and siblings). The selective effects refer to dynamic selective effects like life course events, which condition the studied association overtime. But also refer to difficult to measure characteristics such as values and norms or internal inputs of the migration decision-making and which affect dynamics of ties'interaction.

To test this, individual residential trajectories of young West Germans from the German Socio-Economic Panel (GSOEP) were analyzed. The analysis of residential biographies with discrete-time hazard regression, not only allow for controlling dynamic slective effects (i.e. life course events), but also allow for exogeneity in studying the commented association. A sample of young adults observed from the age of 16 was made, as this is considered the age at which the individual may be able to start an independent residential career. We then are able to observe the effect of extended family structure on migration, regarding the initial configuration of the extended family. As a sensitivity analyses on

the commented endogeneity we are able to control for parental previous migration as well as the family orientation of individuals.

The results show how the higher the share of non-co-resident ties outside the 'life space' (here one hour of travel time by car), the greater the hazard of migration. This result implies that ties to relatives really do work as location-specific attributes. However, as other researches proved, a higher share of geographically close ties may well be associated with greater community attachment (e.g. Fernandez and Dillman, 1979; Sampsons, 1988; Richmond, 2003). It was not possible to directly test for this. Nevertheless, the size of the 'extended family' was monitored and turned out to have a negative effect on migration. Larger 'extended families' are related to higher values of family solidarity, which may discourage young adults from an eventual long-distance move. A higher share of co-resident ties over the total 'extended family' was also significantly negative. This reduced the effect of 'extended family' outside the 'life space', though it remained significant, as it separated the effect of the closest ties (who tend to live under the same roof).

Parental social background turns out to have important positive effects on migration. It is more likely that individuals who seek an educational career rely more on parental financial resources or that more highly educated parents exert less normative pressure to stay close by. In fact, some types of relatives seem to be important for explaining migration, such as parents and siblings, whose proximity

is important in deterring migration. However, when including the type of relative, the other covariates only change slightly.

As we found no measurements to control for contextual-specific or family-specific effects, such as the socio-economic characteristics of the context or the commitment effect discussed in the literature, we used a multi-level strategy to model these effects as random disturbances (see Barber *et al.*, 1990). The results show a significant effect from unobserved family and contextual factors. When controlling for family-specific unobserved heterogeneity (analyzing the variance in observations of members of the same family: i.e. siblings), the effect of ties outside the 'life space' decreased slightly. The interpretation of this result is that individuals of the same family are exposed to common factors such as normative pressure, similar values or acquisition of migration knowledge by other family members who moved before. This higher/lower propensity embedded at the family level relaxes the effect of social resources embedded in other locations, as those family environments more prone to migration may also have more dispersed ties.

However, the unobserved effect of living in the same context raises the strong positive effect of ties outside the 'life space' on migration propensities. As no objective measurements of many contextual characteristics were available, the interpretation of a mixed effect of commitment and socio-economic conditioning is speculative. It may be that those contexts with higher values of family solidarity also

hold higher levels of family proximity (i.e. most family members lie within the 'life space' and extended families are bigger). This context might also include areas with lower socio-economic opportunities, such as higher unemployment or less qualified jobs. These factors taken together may prompt a stronger effect of the coefficient of the share of ties outside the 'life space' on out-migration probabilities, as individuals with higher out-migration propensities due to lack of contextual socio-economic propensities are to be found with a higher share of ties within the 'life space'.

To sum up, ties to relatives affect migration propensities in an important way and are not the result of spurious effects. The effect of ties to relatives might be relaxed by individual, family and contextual (i.e. regional) conditioning. However, the effect of ties close by (i.e. within the 'life space') always remains significant, meaning that future trends in family relationships and in configurations of ties are likely to change migration patterns.

1.4.2. Essay II

The aim of this second line of research is to understand better the interdependencies of the residential trajectories of young adults. More concretely, the effect of early parental home leaves and previous mobility outcomes on further residential outcomes is analyzed. The main hypothesis is that the age of the first independent experience of residence shows which individuals are

selected towards higher geographical mobility propensities and more dynamic residential trajectories. To check this, the research focused on transitions in and out of the parental home and residential moves once the individual is outside the parental household. This enabled greater depth of representation of the patterns of *leave-return-leave* that have been emerging, as a result of the increased instability of youth's life-courses, in occupational career and family formation.

Different hypotheses test the association of higher probabilities of residential outcomes as a function of age at parental home-leaving and previous mobility. Among these, low investment in location-specific assets is tested (1). Then, uncompleted transitions to adulthood (2) and, lastly, the selectivity of young leavers and multiple moves (3) were tested. Not only the effect of previous moves and age at parental home leaving was stressed, but also the parental household structure, which has been proven by the literature to affect individuals' life courses (Mclanahan and Sandefur, 1994; Cox, 1999) and, consequently, their residential trajectory (Musick and Bumpass, 1999).

Individual residential biographies of young Britons from BHPS, in which there were several residential transitions since age 16, were analyzed. Moreover, this research was an opportunity to make use of a method to tackle selection of early movers into multiple further moves. By means of simultaneous equations, hazards of residence change departing from and ending in one of the two mentioned

states (i.e. inside the parental household or outside the parental household) are calculated, assessing short and long distances.

In the results, life-course transitions are found to be important in explaining further moves of early leavers. Selectivity also matters, as the effects of multiple spells of residence and age at leaving parental home are less or non-significant in explaining further or return mobility outcomes, once unobserved heterogeneity is allowed for. However, even when allowing for common unobserved effects and life-course transitions, previous residences still impact on current choices. As the 'location-specific capital' literature claims, this might be explained by the relative lack of investment in location-specific amenities such as job tenure, housing facilities or social networking of individuals with multiple spells of residence. Lastly, there is no strong evidence supporting the view that individuals departing from non-traditional family structures (mainly non-intact families) are more likely to have more *fragile* residential trajectories, once selection into early mobility and early home leaving is allowed for. Only individuals departing from parental household structures where there is a step-parent in the nest are more likely to increase the hazard of return, but not of further mobility to other destinations outside the parental nest.

1.4.3. Essay III

The last essay in the dissertation is aimed at unfolding the multifaceted association between the geographical proximity of relatives and friends (i.e. strong ties) and migration behavior. The empirical literature mainly associates proximity of ties with a resource effect that raises the cost of breaking with the 'life space', since ties work as 'location-specific' resources. The aim is to empirically separate the effect of proximity of ties on migration behavior as a resource (or their instrumental effect) from higher commitment also embedded in less dispersed ties. In fact, as Sampson (1988), Stinner and Van Lon (1992) and Richmond (2003) show, a higher concentration of ties near the place of residence is associated with higher levels of family solidarity and community attachment.

To test this, an innovative strategy of separating migration into the natural sequence of stages of decision-making is used, namely the intentional and behavioral stages. This idea is based on theoretical models of migration decision-making, with the point that commitment features are inputs only for the intentional stage of the migration decision-making process (De Jong and Fawcett, 1981; Fawcett, 1985; Stinner *et al*., 1992).

The comparative analysis of individual life course trajectories of young adults in two German cities, with different socio-political path-dependencies relating to the old East-West divide, and thus, a different socio-economic situation, allowed hypotheses about the commitment and resource effect of ties in different contexts to be

posited. By running a dynamic simultaneous equation model for migration behavior and migration intentions, the effects associated with the proximity of social ties could be separated.

Results show how the effect of individual values on community life, as a proxy of the commitment effect and measured through answers to questions about individual perceptions, only affects the intentional stage of the decision-making process. Then, once allowing for intentions in the behavior equation, the coefficient of ties' proximity becomes less relevant. This means that part of their effect was explained by personal traits and normative aspects of behavior at the intentional stage. The remaining effect of geographical proximity of ties on behavior might then be assigned to ties' resources, which are not as large as research till now has indicated. Furthermore, it has been shown that the contextual socio-economic conditions imply differences between the effects of the geographical proximity of family and that of friends.

1.5. Concluding remarks

To conclude this introduction, some remarks and implications of the dissertation are briefly mentioned. To understand these different levels of interaction, I would like to remind readers that the research on the *geography of the family*, *sociology of migration* and *life course theory* have been inspiration. The synergies among them

were important in setting the framework of analysis of the diverging outcomes derived from 'places', 'relationships' and 'trajectories'.

The research hypothesized that the effect of the configuration of ties on the territory might have a significant impact on the migration propensities as they hold resources and affective or moral outcomes resulting from social interaction incentive or constrain geographic mobility and the distance of such mobility. We contrasted this with alternative hypotheses on selective processes embedded in previous decisions and previous stages of the residential trajectory. The latter arise from life course theory, where the residential trajectory is told to be predicted by life course events which require of residential environment readjustment and/or divergent need or usage of family resources and non-economic benefits of interaction.

We analysed these different hypotheses. We identified such selective processes, which affected somewhat the association of different social tie's configuration and propensity to move geographically. Once the selection effects are identified, it is clear, as much current theoretical and empirical literature propose, that social ties are important in defining individual residential decision-making, behavior and trajectories. In general, the greater the geographical proximity of ties, above all the proximity of close ties (i.e. parents), the lower the out-migration. Furthermore, these outcomes are divergent in personal and contextual factors (i.e. micro-, meso- and macro-level interactions). However, the conclusions discussed here need to be assessed with caution, as they

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may also depend on the context that each Essay focused on (i.e. Essay I: West-Germany; Essay II: United Kingdom; and Essay III: two case-studies in East and West Germany).

Among other main findings, Essay I contributes evidence for how a higher concentration of family ties within the 'life space' is likely to reduce migration probabilities, whilst allowing for different competing incentives to migration and competing resources that may offset the effect of the 'extended family'. Generally speaking, greater concentration of ties might affect, above all, migration probabilities of individuals with lower market opportunities, as the lack of market opportunities or fewer skills makes them more dependent on social ties at their place of residence. We also observed gender differences, where women are more likely to be affected by family proximity. This result goes in hand with the results in other researches that show how women are more likely to have higher share of kin in their network (e.g. Belot and Ermish, 2009; Belot, 2009)

The ties' constraint also applies when contextual conditions are analyzed. In fact, Essay I found that locations shape differently the association of family network and migration. In particular, the results for West Germany implied that higher out-migration probabilities tend to have a greater concentration of family ties. This suggests that places with lower socio-economic opportunities, where individuals are pushed out, may also have stronger values of 'family solidarity' or higher commitment, such as some rural or less

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densely populated areas. In Essay III, examining commitment features such as individual family orientations, it was found that individuals with a greater share of kin close by were less mobile when contextual socio-economic opportunities were poor. Then, individuals with fewer ties, in the context of lower opportunities (here, East Germany), are more vulnerable to further residential mobility or more family support when things go badly.

This effect of dependency on ties, when the socio-economic contextual opportunities are poorer, holds for family ties but not for friends, according to the results in Essay III. However, it might be noted that the network structure in East Germany contains more kin than in West Germany. Similarly, it was suggested in Essay I that the closest ties (i.e. co-resident or household members) are more likely to have both a stronger resource and commitment effect on individual decisions of geographical mobility. In fact, Essay I observes that parents' and siblings' geographical proximity is key to constrain geographical mobility, allowing for other characteristics of the family structure. However, Essay I refer to West-Germany, where the family is an important institution to ensure welfare. Comparing with a different institutional setting, Britain, where the family is not so central in the distribution of welfare: Essay II found how individuals not living in the parental home are likely to return to the nest or approach it when the transition to adulthood has not been completed, meaning that they are to be found at some stage of semi-autonomy to parental resources. The semi-autonomy state mainly applies to those individuals who left the parental home

earlier, as it is likely that they are not completely integrated into the labor market.

Among other advances, Essay III is innovative in separating resources from the commitment effect that ties' proximity exerts on negative probabilities of migration. In effect, value-orientations of family solidarity or community attachment that lowers migration probabilities are embedded in non-dispersed families. The resource effect of proximity of ties that other research found is reduced, though still highly significant. It is also found that this effect might be mediated through intentions to move, as the socio-psychological models of decision-making suggest.

Though some of these results may not differ from what other research has found, the progress in this research is the testing and monitoring of dynamic selection effects inherent in the study of the association between residential mobility and social ties' configurations. This might be in form of life course interdependencies and also as a result of reverse causation (initial ties' configuration and migrations may shape the current association). Cross-sectional studies are not able to assess such selective processes. In fact, the aim of Essay II was to study the selective process of early home leaving on further residential trajectories. It was found that, once allowed for different sources of selectivity (i.e. dynamic selection effects and unobserved heterogeneity), parental home return or approach of the parental *entourage* might still be the result of uncompleted transitions to

adulthood (e.g. ending higher education and looking for first job) and lower investment in location-specific capital in alternative locations.

Equally, the three Essays found that, once factors that mediate on the network structure and the residential status (i.e. residential stability, parents' previous residential behavior, the intrinsic value assigned to ties and unobserved individual conditionings) are accounted for, social ties' location-specific attributes (i.e. resources and non-economic benefits such affection and the like) still affect individual propensities to geographical mobility, such that geographical proximity to ties is an outcome. However, as commented, there are nuances of the strength of this effect, both in terms of the closeness of the relationship and in some mentioned personal and contextual conditions. Further research may go deeper into this nuances.

Lastly, I would like to remind readers that the understanding of the interrelationship of demographic processes and the effect of social networks is complex. The data and methodology required must be capable of disentangling the complexity embedded in relationships of individuals. This dissertation, as already mentioned at the beginning, did not aim to study the patterns and influences embedded in network measurements. However, in this concluding section we encourage the collection of data on networks and the development of methods for their assessment. I would like to mention the efforts made till now, which can be seen in diverse

research projects, such as the French Survey on Relatives and Next of Kin by Bonvalet *et al.* in the INED; the Mexican Migration Project by Massey; the Netherlands' Panel of Kinship Dynamics by the research team of Dykstra in the NIDI; the PAIRFAM project for the analyses of intimate relationships in Germany, led by Huinink at Bremen University; or other small-scale projects such as the project on fertility and networks by Bernardi in the Max Planck Institute, in which she mixes quantitative and qualitative methodologies to analyze network effects on fertility behavior.

To sum up, this research is a modest but significant advance in our understanding of the association between geographical mobility and social ties. As observed, the interrelationship needs of a complex analytical framework mix individual, social and spatial components, where all levels of interaction should be investigated. The main conclusion is that the effect of social ties on geographical mobility is not spurious. Therefore, structural changes in ties' compositions are a clear predictor of future changes in patterns of geographical mobility. However, this effect needs to be assessed in a dynamic way, in a form of trajectory since early adulthood, as life course events, previous stages of residence and the initial ties' configuration trace the path to current outcomes.

2. DOES THE EXTENDED FAMILY CAUSE MIGRATION? INTERNAL MIGRATION AMONG WEST-GERMAN YOUTH[7]

2.1. Introduction

The purpose of this article is to examine the relationship between geographic placement of the extended family and long distance moves among West German youth. Long distance moves are defined for purposes of this research as a move between locations,

covering a distance of at least 50 km. Such migration results in the disruption of the "life space" (Courgeau, 1988; Bonvalet and Lelièvre, 1995) or the socio-spatial context of regular daily activity (work, leisure, etc.), including regular interaction with social ties. We consider in this research that more than an hour travel-time by car to visit social ties hinders the regular interaction. Long distance moves also hinder use of and benefit from "between locations" non-transferable family resources such as property and social networks.

During young adulthood the family plays an important role in forging pathways toward adulthood and impacts on first transitions of the residential trajectory (Baizan, 2002). Youth may rely on family resources since those derived from the market are still insufficient to launch into an independent life with one's own family (partner and children). Long it has been researched on how the formation of the own family impact on residential change and migration. Attention has also been paid on the income support of parents in parental nest leaving. However, empirical research has not tackled to what extent the extended family network structure, also source of support, conditions the first steps of the residential trajectory. In this article this topic is researched, focusing on some structural characteristics of those relatives that are not the partner or the children (i.e. the extended family). In particular we will make a distinction among those who are coresident, those who live within the 'life space' and those who live further. The share of relatives in each of these categories is hypothesized to affect migration

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propensities according to their intrinsic value, family norms and orientations, and the resources they hold.

The main hypothesis, discussed later in more detail, is that sharing ties within a "life space" is a determinant of the probability of leaving the "life space". Relational ties are part of the set of regional assets which work, to constrain migration based on geographic proximity (Da Vanzo, 1981; Greenwood, 1997; Fischer and Mallberg, 2001). However, this effect is mitigated by qualitative differences in family networks, contextual differences in family configurations or to selection effects embedded in the course of the residential trajectory.

First, there are qualitative differences among family members, which have larger intrinsic value and are more likely to transmit "transferable resources". The latter refer mainly to financial support as well as other resources that one can benefit disregarding the place of residence. Intrinsic value is related to affective relationships. Distance may hinder such interaction based on affection. The psychological cost of breaking with regular interaction may also depend on the values that place the family as something central in one's life. It is also regarded, then, that families and communities may be heterogeneous on the importance that individuals place to the family. Therefore, contextual heterogeneity conditions the migration propensity in line with the emphasis placed on resource and emotional support structures.

Some of the selection effects to be treated in this research refer to dynamic character of the migration process. These are life events that point the amount of relative ties that one hold and the use that one make of them. Selection effects also refer to difficult to measure characteristics that individuals have like migration preferences, importance assigned to family and the 'knowledge of migration'. They impact on migration probabilities but, at the same time, may be associated to some family and community structures. In particular we consider that the initial steps of the residential trajectory and all the configuration of conditioning variables at the beginning of such trajectory are predictors of current residential outcomes. One may have to tackle this issue in order to avoid the problem of reverse causality typical in cross-sectional research.

This article is, in fact, the first to treat geographic proximity of the family network as a dynamic process. The dynamic analysis of residential change allows for the assessment of life course events, which are main catalysts for migration (Wagner, 1989; Mulder, 1993) and mediate on the association under study. More importantly, the dynamic study of migration events aims to avoid endogeneity (i.e. bias due to reverse causation) inherent in the effect of relational ties on residential outcomes. In other words, previous network configurations and location may not be independent from current configurations. This research will also assess the selection effects embedded in the contextual level (i.e. communities and families) by means of analyses of variances.

The hypotheses are explored using the German Socio-Economic Panel, a large panel dataset representative of the German population over time (see GSOEP, 2006). The sample is limited to West-Germans, and consists of more than 2,200 individuals and nearly 200 first-order long distance relocation events for an observation window of 15 years, between 1992 and 2006. The data are transformed into discrete time units, resulting in 18,000 person-year observations for running hazard regressions. Residence duration is analyzed starting at age 16. It has been demonstrated that until age 16 the individual residential trajectory depends on that of the parents, due to cohabitation (e.g. Goldsheider, 1996).

Results indicate that, as expected, the higher the proportion of family living within a one hour of travel-radius (i.e. here considered within the "life space") the lower the probability of migration. However, this effect seem to be also conditioned to qualitative differences in the family structure, personal characteristics that indicate the use and need of family network as well as contextual differences that shape migration propensities and family configurations. In the subsequent sections of the paper I will discuss the aforementioned findings in detail.

2.2. Hypotheses

Empirical studies have traditionally examined the influence of family ties on migration behaviour mainly focusing on partner and children (e.g. Rossi, 1955). Other members of the family[8] have been traditionally regarded as influencing actors in cost-benefit models of migration, but only in theory (e.g. Da Vanzo, 1981). Straightforward empirical test of the effect of family other than couple and children (heretofore the "extended family"), and more concretely, on structural characteristics of the extended family came later and mainly focusing on international migration (e.g. Massey, 1990; Lindstrom et al, 2001; Palloni et al, 2001; Massey et al, 2003;). However, mechanisms seem to be good to fit within country mobility too. Generally speaking, relational ties function to either support or constrain migration or serve as a motivation for migration.

Hugo (1981) and Harbison (1981) give a complete overview of how ties to relatives mediate migration behavior, discussing up to three different mechanisms: instrumental, normative and affective (see introduction chapter of the dissertation). Together they explain different aspects of family interaction such as economic transactions, commitment and conflict. However, some of these different effects have been rarely disentangled as they are likely to collude in similar family structures. In other words, highly cohesive

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[8] Family here is assumed to include only the extended family, which contains all relatives except the partner and children. The latter is normally considered to be part of the unit of residential decision-making, as they live under the same roof and therefore generally constitute a "household" (Mincer, 1978; Bielby and Bielby, 1992; Juergues, 2006). The extended family may also reside within the household (e.g. three generations household)

families are more likely to give more economic support, but also to exert higher commitment to their members. However, it is likely that assessing the different aspects of the family structure, these different mechanisms will be easier to disentangle. Therefore, we proceed discussing the possible effects of the extended family structure in easing or constraining migration. In particular, we are interested in the role of placement and geographic proximity of ties as a factor that directly impacts on migration probabilities. We then, will explain how other network characteristics and other conditioning variables relax such an association.

Following this line, the influential micro economic literature on internal migration as the result of a cost-benefit calculus assumes that relational ties are part of the set of regional assets which work, to constrain migration based on geographic proximity (Da Vanzo, 1981; Greenwood, 1997; Fischer and Mallberg, 2001). This negative effect should grow over-time (i.e. residence stability) because the relative value of assets in alternate regions is likely to depreciate (Da Vanzo, 1981). However, this impact of the location of the extended family structure on migration outcomes may be also aligned with values placed on family solidarity (Rossi and Rossi, 1990) or community attachment (Sampsons, 1989; Stinner et al, 1992), and the normative constrains that the family imposes on individual residential decision-making (Harbison, 1981; Billari & Liefbroer, 2007). Thus, all strands of research predict a negative linear association between ties' proximity and migration behaviour.

As we will se later, this association might be in fact nuanced by some characteristics of the family network which may deal with stronger emotional linkages and higher than average transfer of resources. To analyze that, first of all it is useful the distinction made by the "micro-investment" theory within social capital literature (Coleman, 1990; Lin, 1999), that point to differences in the type of benefits from family. We will set the difference focusing on resources. When resource utilization requires physical proximity the resource is referred to as *location-specific*, while when resource utilization is not contingent upon physical proximity the need is referred to as *transferable*. This distinction is useful in order to assess how diverse family configurations influence mobility decisions.

Transferable resources from relatives are those for which geographic location does not constrain usage. Here, we are generally referring to financial support. The main difference among the two types of resources is that the location-specific resources attach or attract individuals, analogous to push-pull factors. Nevertheless, transferable resources do not necessarily have a socio-spatial effect, or do not necessarily attract or repel from a region where ties reside. For example, financial resources transferred by the family may be used to settle down in the same location of residence or represent a possibility to relocate[9].

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[9] Despite, Bonvalet et al (1999, 2007) found in France that transferable resources are also a parental strategy to keep shorter distances with children, by easing the purchase of a house nearby

Therefore, transferable resources may also condition the residential outcomes although the direction of the relationship remains unclear.

In contrast, location-specific resources are family resources which are embedded in the location of residence. Individuals mainly benefit from these embedded resources residing in the location where ties live and this explains part of the association under study. Ties possess properties that might be used or lent. Their usage requires non-mobility, a possible future acquisition by inheritance or donation may either encourage or force individuals to remain in the place where the assets are established[10]. Furthermore, family ties can also connect individuals to services which they may otherwise have to access on the market, such as childcare or other favors which require a physical presence (e.g. assistance with household maintenance). As a networking unit, family networks connect individuals to other community members who may lead to employment or other opportunities. Accessing these resources is contingent upon proximity - the greater the distance from one's relational network the less able one is to maintain such relationships and to benefit from the resources based there from on a regular basis.

However, the picture may be not completed if we believe that ties are more than economic resources, and that this is the only retaining or attracting effect. In fact, ties also exert commitment and

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[10] However, in case of adquisition there is also the possibility that the asset becomes a 'transfearable resource' because it can be sold.

affiliation, which are the result of long term exposure to social interaction (Rusbult *et al*, 1999). In general a stronger emotional connection with relatives will demand closer geographical proximity. This has been proven to be like that even for the more individualistic cultures (see for instance Georgas et al, 2003). Therefore, part of the location-specific effect described by the literature is also related to a non-resource or non-instrumental effect. Commitment and affiliation tie individuals to other individuals generating identification with social groups and related values (Burke and Reitzes, 1991). In general, one can derive that these concepts have value-related and affective connotations. They influence behaviour posing meaning to actions. For instance the value of living close to kin is emphasized when kin have an intrinsic value superior to other material resources. In such case, kin are the incentive to behave through feelings and obligations towards significant others (Rusbult and Buunk, 1993; Rusbult *et al*, 1999), and not particularly their resources.

Summing up the resources and the interaction theses we may find that

H$_1$: *The higher the proportion of family within close geographical proximity the lower the migration probabilities due to higher opportunity cost of breaking with family interaction and resources*.

Vice versa, the lower the geographical proximity of the family, the higher the migration probabilities. The geographical proximity of

ties is measured as the share of relatives whose location of residence facilitates regular interaction within the same space. The idea of geographical proximity is analogous to the concept of "life space", which encompasses all spaces of daily interaction. This proximity eases the use of location-specific resources. If a higher proportion of relatives live close by, they would exert a negative effect on migration, as fewer location-specific assets would be available elsewhere. A higher share of networks in the location of residence may produce *inertia* (Clark and Huff, 1977) or a higher opportunity cost represented by abandoning family ties and their resources. In principle, a greater disbursement of family should decrease the attractiveness of alternate regions where family is located.

The before mentioned linear association may be partially source of spurious correlation. This bias on the association is due to non casual associations between different aspects of the family structure. We want to pose alternative hypotheses in such direction. For instance, empirical research has demonstrated that larger families are more likely to be geographically dispersed (De Jong, 1990; De Miguel, 2008). Therefore network size is a necessary control because larger networks may provide access to more family members from which to obtain resources. This, again, may be location-specific, when regarding information on opportunities or properties. Transferable resources like financial support may be also larger in large extended families. In this case, we may point that a large extended family may also imply competition for these

resources. This may happen above all, because there are more people with whom to share the resources that are transmitted intergenrationally. Then, access to larger transfearable resources may not be granted in large families. In contrast larger benefits from location-specific resources may be larger upon the assumption than larger extended families are geographically dispersed.

Regarding the social interaction effect of the family, a larger extended family is likely to be associated with traditional values, as a result of a traditional demographic behavior among high fertility groups (Goldsheider and Goldsheider, 1988). Values such as 'family solidarity' may be transmitted through socialization processes, and may increase the cost associated with breaking up daily family interaction (Rossi and Rossi, 1990). If it is assumed that these traditional values are higher among larger extended families, then the effect of family network size should have a negative impact on the probability of young adult migration. This holds true as long as young adults start a residential trajectory in the parental home. In families valuing solidarity, parents will pressure or encourage children to stay close, and children will associate more importance with geographic proximity to family.

Influential research on family dynamics pose that the effects of quantitative aspects of the family structure are strongly mediated by qualitative aspects, in other words by the quality of the relationships. In fact, the closeness of the relationship should be important to explain the difference between some stable structures

of kin support, meaning of regular support such as parent-children, from other less stable (Georgas et al, 2003). In that sense the size of the family network may only impact its geographic dispersion, but not necessarily migration outcomes as a result of transferable resource provision[11]. Likewise, the geographic placement of the closest ties is the one that impact the most on the decision to move, as they are more likely to give emotional and material support. Summing up:

H2: *Accounting for characteristics of the closest ties (i.e. relative amount of coresident ties and parents-siblings structure) the effect of location of the extended family is offset.*

Differences may also exist among those families in which siblings or multiple generations are co-residing. Higher shares of co-resident relatives may hinder the intimacy of individuals and/or the lower the share of within-household location-specific resources such that increased co-residence may lead to higher out-mobility probabilities (Uhlenberg and Cooney, 1990). However, the latter may not necessarily cancel out the former, in that intimacy issues need not be resolved by long distance relocation, as the aim would be a simple household re-adjustment. In fact, it is likely that the higher the share of extended family within the household, the higher the traditional values of the family. Thus, prompting that mobility is also likely to be short distance.

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[11] This may hold true since it may depend on conditioning values of the ties proximity-dispersion (for location-specific resources) and of the closeness of the relationship (for transferable resources).

According to previous research, the type of support of close ties is contingent upon the relationship. Studies of material resource transmission in Western countries demonstrate that resource transmission tends to take place between close family members and in response to intergenerational solidarity (Attias-Donfut et al., 2005), due to either emotional ties or normative pressures[12]. While financial and material resources tend to be intragenerational, like parents to children (Deggene et al, 2004), siblings may supply higher friendships networks (Bonvalet, 2007).

Differences may also be found regarding parents' social background, which is an important factor in launching children into independence (Baizan, 2002, Goldsheider and Da Vanzo, 1989) and can help to fund migration. Such material support is important at young ages due to the scarcity of personal income. Additionally, wealthier or more educated parents also exert less normative expectations of proximity (Rainer and Siedler, 2008), partly due to the parental human capital associated with migration investment and transmission of "migration knowledge" (Palloni et al, 2001). The literature also finds greater opportunities for young adults in intact families or living with long-term co-residing parents, since

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[12] Generally speaking, it is more likely that parents pay for the education of children, which is the most important trigger for the first independent migration at a very young age. Probably grandparents cannot do it because they have to share the money to the whole set of grandchildren, but also because channels of intra-family support are mainly set between the most directly tied relatives: parents and siblings (Uhlenberg and Cooney, 1990).

both are correlated with increased parental resources (McLanahan and Sandefur, 1994; Musick and Bumpass, 1999).

Number of siblings may condition parental resources. A higher number of siblings within the household may correspond to limited resources shared among multiple children and may be associated with families with lower socio-economic status. Previous studies have found that families are also strategic in that they tend to invest financially in one member (Stark, 1991) - or from the individualistic perspective, one member of the household takes advantage of the family resources first. The latter tends to be the eldest sibling, who is faced first with the opportunity to migrate. Konrad et al (2002) found that in Germany and Holmlund et al.(2007) in Sweden, that the number of siblings and birth order are important predictors of migration. They find higher migration rates among older siblings and those in smaller families. A plausible explanation for the latter is that they are a proxy for quality of community life. A large number of siblings is associated with both a higher frequency of social contacts, and a higher valuing of family (Uhlenberg and Cooney, 1990).

Unlike previous research, Rainer and Siedler (2008) find no evidence for the effect of birth order in Germany, but surprisingly, the study finds that having no siblings increases the probability of staying close to the parents. They propose that the sibship size has a hump-shape effect on the probability of migration. They argue that only children feel pressured to take care of parents. According to

the same authors, female sibs are also more likely to remain close by the parental home when there are brothers, even if female sibs are older. They argue that because of gender bias, female siblings have to face parental care activities, and therefore may feel pressured remain closer to home. Other close relatives living nearby could relax the normative expectation that children remain close to parents to provide care or run a family business. However, this effect is not expected to be as important as number of siblings or birth order, as higher obligations of support take place between parents and children (Rossi and Rossi, 1990).

2.3. Conditioning variables

2.3.1. Community influences

Research on community and spatial factors prove that economic differences among locations may create patterns of migration from poorer towards wealthier areas, where employment opportunities are more readily available or individuals can expect higher wages (Greenwood, 1985; Flecher et al, 1997; Borjas, 1999). Conversely, family in the location of residence decreases the importance of interregional economic differences, since family may provide access to economic resources and contacts, generally embedded in the location of residence.

However, extended family structure, concentration and placement are a function of family values, which are likely to represent community activities and norms (Goldsheider and Goldsheider, 1988; Georgas, 2003). Sampsons (1988) finds that contextual indicators such as population density, unemployment levels, crime rate or social activities have an impact on the probability of migration, controlling for residential stability (for similar results see Fernandez and Dillman, 1979; or Richmond, 2003). Sampsons (op cit) also finds that local friendship ties and extended family structure varies across communities. It can therefore be expected that contextual level factors are mediating the effect of proximity of ties on migration behavior. However, as the context exerts socio-economic and normative effects, the contextual effect might be uncertain. On the one hand, traditional family values and commitment are likely to be concentrated in rural communities or less densely populated areas which make individuals to be more reluctant of leaving their family away (Stinner *et al*, 1992). On the other hand, these areas also hold less economic opportunities for education, employment, high wage occupations and urban life-styles, which may make pull young adults from the context young adults (Hugo, 1981). Thus, we may broadly set that

H3*: The effects of the extended family network are embedded in, thus conditioned by, contextual level dynamics based on dominant values and socio-economic conditions.*

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2.3.2. Life Course and the Transition to Adulthood

According to life course theory, young adulthood is the most likely stage to encompass a migration, because long distance moves allow for the pursuit and attainment of various other transitions necessary to reach full adulthood – and so migration is most likely to be found during this stage of development [13] (Willekens, 1991; Billari et al., 2001). Current dynamics in Western countries show that migration at the early adulthood is largely explained by the pursuit of higher education, job seeking, and to a lesser extent by early family formation (Mulder, 1993; Baizan, 2002; Willekens, 1991; 2004).

This literature regards the family network as support for the main transition that the individual seeks when migrating. As stated before, the probability of migration at young ages should be highly influenced by the parental financial resources, since a full integration into the labor market is unlikely, and young people may not possess enough personal resources to finance such life-projects. In general, a family may support the child's development through financial transfers aimed at helping the young couple to establish a new household or finance a child's education while outside the

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[13] Actually, once the individual has done most of the transitions to adulthood, his or her probability to migrate decrease sharply. This is argued by the life-course literature as there are no important triggers left to migration, except at older ages, also known as retirement migration (Puga, 2004) but never reaching high intensities as in the young adulthood. In fact the distribution function that follows both, the density function and the hazard function, of internal migration is log-logistic (i.e. hump-shaped), which it is not casually related to the distribution function of the transitions to adulthood.

parental home. Parental financial support may also go in line with parental views and values on which transitions are desirable and what is the right age to do so (Liefbroer and Billari, 2008), which may shape the extent to which material support is given to children in order to attain the transition.

Life course transitions are also likely to affect the need and usage of ties' location-specific attributes, regarding interaction and resources. Literature on life course theory examines the role of location-specific attributes, focusing mainly on measures of proximity and distance between family members (e.g. Mulder and Kaljmin, 2006; Mulder, 2007; Michielin and Mulder, 2008). For instance, when entering into a marriage or having children, the ties to relatives in a particular region will be an important factor in where to establish a new household. Relatives may support by helping with the childcare, housework, etc. It is probable in some cases that simultaneous events of migration and transition to marriage are related to couple's different residence of origin (Mulder, 2007). In some other cases migration relates to the anticipation of needs associated with childbirth or work-career changes of one of the partners[14] (Mulder, 1993). Thus:

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[14] In that sense, long has been argued by the literature of the family bargaining process on why some individuals would migrate when they marry or they are already in marriage and which are the consequences (e.g. Mincer, 1978; Bielby and Bielby, 1992; Jürges, 2006). Generally speaking, women are more likely to be the 'tied-migrant' when forming union or already in it, meaning that husband's occupational career offsets the wife's one in the decision of migration.

H4:   *Dynamic selective effects (i.e. life course events) offset the effects of the extended family network.*

2.3.3. Endogeneity

In his analysis of economic factors driving migration, Borjas (1989) found that *movers* and *non-movers* are not comparable groups. If migrants demonstrate some characteristics which make them more prone to move when given the opportunity, then the proportion of individuals with a propensity toward migration should decrease overtime in the location of origin. This decreased concentration of would be migrants put some constrains on the feasibility of the estimation of the impact of the dimensions of extended family structure - mainly location - on the propensity to move. A higher propensity to move can be the result of difficult to measure characteristics such as lower intrinsic value of the family or towards social ties, in general. It may also reflect more fine tuned social abilities or greater adaptability that ease the cost of creating new contacts elsewhere (Belot and Ermisch, 2009).

First, given that there is selection among migrants; the effect of network proximity on migration probabilities would be biased since those individuals with a higher propensity to move are more likely to have more geographically dispersed family ties, for the simple fact that mobility is likely to change the spatial configuration of networks. Second, the selection of migrants is likely to affect

dynamic processes that are also difficult to measure, such as growing commitment due to residential stability. The latter may also be associated to current network structure and the probability of residential relocation. The first process is also known as endogeneity due to 'reverse causation', where the current values of the extended family structure and residential outcomes are predicted by initial conditions, at the beginning of the residential trajectory. The second process may emulate the dynamic selective effects comented before. In that sense, they might go in hand with the life course events. Therefore, the more problematic of both sources of selection is the first, here regarded as endogeneity.

In order to tackle these selective processes, the research strategy here is to follow the residential trajectory from age 16, from which point it is possible to condition family structure configurations to their initial values, at the beginning of the residential career. On the one hand, this is helpful to assess the interdependencies of the life course events. On the other hand, geographical mobility before age 16 tends not to be an individual decision as most individuals still live with parents. Age 16 may be an exogenous starting point for migration outcomes, and the proximity of ties, as well as the friendship, may be given and not chosen (Belot and Ermisch, 2009).

However, though the strategy of studying the trajectory since the beginning of the residential trajectory may be an optimal solution to the potential biases here exposed; we will try to formally test some corollaries of these selective processes.

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H5: *Parental migration previous to the individual reached age 16 offset the effect of proximity of the extended family.*

While migration before age 16 may be considered 'tied-migration' (according to the terminology of Mincer, 1978), it is likely that previous migration experiences, such as those of parents may make individuals more prone to migrate. First individuals may be more likely to migrate because attitudes towards migration are reported to become more positive once the individual has migrated, as they hold higher "knowledge of migration" (Da Vanzo, 1981; Palloni et al, 2001). Second, individuals may be more likely to migrate because previous geographical mobility has already changed the spatial configuration of ties. Then, if parental previous migration offsets the effect of proximity of the extended family, we may conclude that the main association in this study is endogenous.

H6: *Larger proportion of kin in the social network offset the effect of proximity of the extended family.*

As previously noted, changes in family commitment may increase with residential stability, and this is likely to be a function of ties' proximity. In order to test the relationship between family commitment and network member proximity, a possible source of selectivity data is available on whether the three people outside the household who the individual trusts most and with whom they prefer to spend time, are relatives or whether they are non-kin .

2.4. Methodology

Event history techniques allow for the estimation of the duration that an individual is at risk of event occurrence - in this research, migration. Observation of the entire risk period is an optimal strategy to control for endogeneity as commented in the previous passage. Estimations are made using discrete time proportional hazards, in which durations are measured as discrete units, and the log-hazard follows a logit distribution (a). According to Allison (1982) discrete time proportional hazards is useful when only one observation per year is available with no specific record of the date of the event, as is the case with residential change measures in the data utilized. As the record of the time to the event is so unspecific, the discrete time models relax this unspecificity fixing constant hazards for each interval of time (Steele et al, 2005).

$$(a)\ln h_i(t) = \frac{\ln h_0(t)}{1 - \ln h_0(t)}$$

Hazard models are specified in order to estimate the first long distance residential relocation, as a function of residence duration (i.e. time to relocation) since age 16, network characteristics and other control variables. Results are shown for different model

specifications, which include the factors commented before: (1) a baseline hazard of the time to relocation in years since age 16; (2) network dimensions, (3) characteristics of competing hypotheses such as parental background measured as educational attainment, parental relationship stability, life-course events (i.e. partnership, employment, education and childbirth), whether the individual grew up in a rural area; birth order, and sibling sex-composition[15]; (4) multilevel model random intercepts to control for contextual unmeasured characteristics of the region and the family and (5) other variables that captures selection towards migration such as parents' previous migration experiences and importance of the family. Further specification also includes non proportional hazards by means of interaction of the proximity of the extended families with personal characteristics.

$$(1) \ln h_i(t) = \ln h_0(t)$$

$$(2) \ln h_i(t) = \ln h_0(t) + \sum_j \beta_j x_{ij}$$

$$(3) \ln h_i(t) = \ln h_0(t) + \sum_j \beta_j x_{ij} + \sum_j \beta_j w_{ij}$$

$$(4) \ln h_i(t) = \ln h_0(t) + \sum_j \beta_j x_{ij} + \sum_j \beta_j w_{ij} + u_k$$

$$(5) \ln h_i(t) = \ln h_0(t) + \sum_j \beta_j x_{ij} + \sum_j \beta_j w_{ij} + \sum_j \beta_j z_{ij} + u_k$$

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[15] Sex, nationality and educational attainment are also considered. Because there was around 30% of income data was missing, we decided to disregard these variables in order to ensure a larger sample size. While personal income resulted to be highly correlated with employment situation, household income resulted to be highly correlated with parental stability and parental education.

Ln $h_0(t)$ is defined as the discrete time baseline hazard, or the duration of residence (in years since age 16), which also captures age effects. X_{ij}, W_{ij} and Z_{ij} are vectors of time-varying and time-invariant covariates. β's are the coefficients. The u_k term is a variance component for all observations from the same contextual unit (i.e. random intercept). As objective information on community and other family characteristics was not available, we analyzed the variance of multiple observations clustered in the same family (i.e. siblings) and regions. This strategy is commonly used within multilevel analysis in order to uncover variance due to higher order or contextual level effects [16](see Barber et al, 2000). A random intercept is assessed separately by region and by family since families are not necessarily nested within regions (as shown later, regions are small administrative units: NUTS 3). The random intercept at the family level may include unobserved characteristics commonly affecting siblings such as dominant family values, attitudes towards migration or transmission of knowledge; which are not captured by objective measures in the analyses. Regional random intercept may account for common unobserved factors affecting the network structure and the probability of migration given socio-economic conditions or dominant values within the community for which data was not available.

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[16] Though several observation might be also embedded in the same individuals, it was not necessary to control for a variance component at the individual level as the discrete time residence duration function already identifies observations clustered in the same individual

The lack of data at the regional level is due to confidentiality of individual records of residence. It was not possible to access any economic or socio-cultural information at the regional level beyond those supplied by the GSOEP. Further, in many cases residential information was only partial and therefore disregarded. In order to use the information on distance of the relocation, the analysis was run using the GSOEP-remote system[17], which allows for the online analysis of data and prevents direct observation of individual residential coordinates. Then, it was possible to cluster individuals from the same region. Statistical analyses were done with the software STATA 9.2, compatible with the usage of G-SOEP remote. Model results can be found in tables presented in the *results* section.

2.5. Data[18]

Fifteen waves of the German Socioeconomic Panel Survey (GSOEP, for more information see SOEP, 2007) are used to test the hypotheses presented above. This survey is especially suitable for the research because it contains yearly data on geo-codes, allowing researchers to generate the distance of residential relocation. The survey also allows researchers to measure residential stability for a

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[17] SOEP-remote system for on-line analysis of GSOEP data is provided by DIW-Berlin. For more information please check the following website (retrieved on the 31st of July of 2008): http://www.diw.de/documents/dokumentenarchiv/17/44069/soepremote2005.pdf
[18] An extended description of the data-set and its preparation for analysis may be found in Vidal (2007).

representative sample of West-German young adults[19]. Residential information is reported as of 1991 and long distance residential relocation can be measured as of 1992. The last year of observation is 2006, the last wave with information available when the analyses were done. All individuals who did not migrate by this date are censored. The GSOEP also has information on migration out of Germany, using information and proxies from the *attrition study* (Kroh and Spiess, 2008). German out-migration is coded using a dummy variable, however, there were few cases that were unlikely to distort any of the results.

In order to take part of the sample, individuals had to be 16 years of age at the beginning of the observation window or had to reach age 16 at some time during the observation period. However, those reaching age 16 after the year 2000 are disregarded because the time frame of study for such individuals is too short for event occurrence[20]. One would not expect them to migrate until the average age of migration in Germany: between ages 18 to 26

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[19] East-Germany has been excluded from the analyses because measures of residence, regarding the administrative units, were modified and the SOEP team was not able to match the old units with the new ones. (see Spiess and Dunkelberg, 2006). As only the SOEP team has access to the level of disaggregation of the administrative units where the individuals reside, for confidentiality reasons, it was not possible to manually match old to new units, and was not possible to calculate distances of residential relocation. For that reason, records of East Germans moving to West Germany are also not regarded.

[20] The available waves do not allow us to follow all individuals until age 30 (see Vidal, 2007 for more information on the sample), when some individuals are still living in the parental home, which is a main deterrent of migration. The problem is more acute for the youngest cohorts in the analysis, who have shorter residence histories.

(Hullen, 2001). Therefore, the sample contains individuals from cohorts 1976 to 1984.

Table 1. Descriptive Statistics

Variable	N	Mean / Prop.	Std. Dev.	Min	Max
Event	17904	0,01	0,10	0	1
Log-Size Ties to relatives (time var)	17904	2,11	0,66	0,47	4,71
Co-resident ties (share) (time var)	17904	0,59	0,27	0	0,983
Non-coresident ties (far away - share - tv)	17904	0,19	0,34	0	1
in Parental Home (time var)	17904	0,79	0,40	0	1
Parents close by (time var)	17904	0,07	0,25	0	1
Parents live together (time var)	17904	0,82	0,39	0	1
Mother educ (medium)	17904	0,53	0,50	0	1
Mother educ (high)	17904	0,07	0,25	0	1
Father more educ mother	17904	0,24	0,43	0	1
1 Sib (time var)	17904	0,17	0,37	0	1
2 Sibs (time var)	17904	0,22	0,41	0	1
3+ Sibs (time var)	17904	0,46	0,43	0	1
Sibs far away (time var)	17904	0,03	0,30	0	8
Older sibling	17904	0,48	0,50	0	1
Female with siblings	17904	0,21	0,40	0	1
Grew up rural area	17904	0,21	0,41	0	1
In Employment (time var)	17904	0,56	0,50	0	1
In education (time var)	17904	0,39	0,49	0	1
In union (time var)	17904	0,10	0,30	0	1
Children (time var)	17904	0,05	0,22	0	1
Sex (1=male)	17904	0,50	0,50	0	1
Nationality (1= non German)	17904	0,10	0,30	0	1
Intermediate education (time var)	17904	0,33	0,47	0	1
High education (time var)	17904	0,27	0,44	0	1

Source: GSOEP data.

The residential event is measure as change of residence between counties (i.e. *LandKreise*), which is the lowest geographic level provided by GSOEP. Using a technique from Juergues (2006), the event of interest a move between *LandKreise*. This geographical

unit is a good approximation of a "life space" since it encompasses relatively important fluxes of daily work-residence mobility. However, corrections were made to account for short distance migrations between contiguous small *LandKreise*. Corrections were made by setting a minimum distance of 50km between *LandKreise* in order to account for inter-county migration. The final sample contains a total of 187 first-order long distance residential events, for 2260 residential and almost 18.000 person-year units[21].

The GSOEP provides information about the size, location and closeness of ties to relatives, though detailed data is limited. The size of the household is provided yearly, but only four waves include information on non co-resident extended family (1991, 1996, 2001 and 2006). To remedy the problem of missing data imputations are made using the following technique: if the individual enters the sample in a wave with no data on ties, then information from the nearest wave with data is imputed[22]. All censored individuals or individuals who move before reaching a panel wave with family context information are discarded from the

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[21] Almost 8% of the individuals in the sample migrated within the observation window. 412 short distance moves (i.e. 10-50km) were observed. They mainly corresponded to parental home leaving (already regarded and controlled for in the dummy variable: parental home). Almost 50% of the movers also moved a second time, either short or long distances, within the three years following the first move. This suggests that repeated residential relocation takes place in a short interval of time and that a migration events increase the probability of subsequent events, though it may be to return to the home town.

[22] The main drawback of this strategy is the lack of accuracy for the waves with missing data where imputations were done. We were not able to assess moves of relatives living outside the household, though it may be observed in the following waves with information on relatives proximity.

analysis. These individuals accounted for less than 2% of the original sample.

Table 1 presents descriptive statistics of the variables used in the analyses where observations are in person-years units. Measurement of the size of the extended family has been transformed to the logarithmic scale. There was no case with any relatives. The geographic location of ties was calculated as the proportion of co-residing relatives and non co-resident relatives living far away. Non co-resident ties living close by were used as a reference category. Relatives here are defined as all members of the extended family. Table 1 also includes other covariates which have used elsewhere in the analyses.

2.6. West German Dynamics[23]

Kupiszewsky et al. (1998) displays an exhaustive description of West-German migration patterns and found patterns similar to other Western nations, with a somewhat lower rate of internal migration. This pattern has been associated with low economic differences among West-German regions (Jaeger et al., 2007), or with

[23] The topic of East-West migration is not tackled, as the data is not available. Studies on internal migration after the fall of the Berlin Wall find important differences in the determinants of the behavior for East and West Germany. In general, East Germans had a higher propensity to move to the West (e.g., Burda, 1993; Hunt, 2006). Some authors claim that the mediation of social ties on migration should be stronger in East Germany (Kley and Mulder, 2008), however, such ties have declined overtime, as East German family networks have weakened too (Nauck, 2001)

comparatively low social mobility as a consequence of a highly stratified educational system and a rigid school-to-work transition (Breen & Luijkx, 2007; Grunow and Mayer, 2007). In fact, most of the internal migration observed in GSOEP data is short-distance moves to large urban areas, representing additional educational and employment opportunities. However, studies show that even for the highly educated the risk of migration is low. For instance, Busch (2007) finds that university graduates generally do not relocate and if they do, it is usually in the year of graduation. Using GSOEP data, he finds that only 30% of German university graduates move in the 10 years post-graduation[24].

Regarding geographic distances to relatives, Kohli *et al.* (2005) finds that 80% of Germans live within 25km from parents. The study also finds that more than 50% of children maintained contact with parents several times per week, indicating an importance of family life and intergenerational relationships with relation to other countries (see Kohli *et al*, 2005). Shorter distances from relatives could be explained by both low economic differences between regions and by the availability of relatives' location specific

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[24] A recent institutional change in the educational system of Germany could affect migration in pursuit of educational in Germany. Since 2005, some regions (*Lander*) allowed universities to charge fees to students. This took place mainly in highly populated regions (Busch, 2007) and has created higher demand for seats in the universities of small regions, which do not charge fees. As far as this research is concerned, this feature has little or no relevance for migration since, in 2005, the youngest individuals of the sample were 21 years old; probably most of them had already begun their university education. However, as stated above, it is possible to find many individuals who claim to be members of the household, but already are absent due to attending school in alternative regions, or commuting on some temporal basis.

resources. For example, Attias-Donfut, et al. (2005) demonstrates that informal support such as elder or childcare is an important predictor of migration in Germany.

Studies find that the amount of intra-family resource transfer is quite high in West-Germany in comparison to other European countries. Approximately 35% of Germans over age 50 regularly provide financial assistance to relatives each year. Of such transfers 80% go to children or grandchildren, particularly those enrolled in school or unemployed (Attias-Donfut et al., 2005b). Since financial resources from family are important predictors of young migration, researchers expect that high intergenerational transfers should decrease the effect of location-specific resources

Kley and Mulder (2008) argue that the economic situation of the source region constitutes the greatest impact on migration behavior. Individuals from regions with poor economic opportunities are at a higher risk for out-migration. Conversely, these regions also retain more individuals who have access to networks of support. Kley and Mulder also note that lack of personal resources can hinder migration when the individual is already outside the parental home, but not when s/he is still there. Therefore leaving the parental home must be an important predictor of migration behavior, since migration is facilitated when both events take place simultaneously (Da Vanzo and Morrison, 1983).

Rusconi (2004) finds that leaving the parents' home and forming an independent household during or after education while not necessarily forming a family, has become more widespread among young Germans[25]. However, union formation is as important a catalyst to migration as pursuit of educational and employment opportunities (Kley and Mulder, 2008). Rusconi (2004) also finds that around 60% of German families live in rented dwellings and only spend an average of 10% of family income on rent. This implies that the housing market does not represent a mobility constraint, with the possible exception of several urban areas mainly in the south where housing is comparatively more expensive. The timing of parental home leaving is slightly different in urban and rural areas, where the former move out with twice the speed (Rusconi, 2004).

Finally, individuals are expected to remain in the parental home while in mandatory education. Most West Germans do not finish mandatory education until age 18 or 19, depending on their educational track. This determines the age of entry into the labor market. The most important tracks are *Abitur*, which is the minimum educational credential in order to have access to a university and *Berufsausbildung*, which leads to vocational training and access to qualified jobs. When pursuing education, individuals can ask for a *Bafog*, which is a credit-education program that allows them to make decisions independently. However, it is possible to

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[25] She finds that the patterns of parental home leaving according to timing and reasons have followed the general Western pattern of destandardisation and pluralisation for recent generations (Corijn, 2001; Mayer and Hillmert, 2003).

discontinue education after age 16, which generally leads to limited opportunities in the labor market and, as a result, lower opportunities for migration. Hence, age 16 can be considered the moment when individuals begin to make decisions related to work and education, and by extension geographic mobility.

2.7. Results

2.7.1. Extended Family Size and Location

In this section the main results of the hazard models are detailed. The baseline log-hazard in all model-specifications is estimated as a logarithmic transformation of time since age 16 plus the square-transformation. This specification of the baseline log-hazard aims to ensure parsimony in the model, since descriptives show that duration of residence during young adulthood has a bell-shaped curve[26]. The first two columns of Table 2 display models (2), where only baseline log-hazard covariates are considered. These include network size, geographic location and living within the parental home. Geographic location co-varies with relation to the proportion of relatives living in the same household (only in specification -2b- in second column in Table 2), those living close by (reference category) and those living far away. As expected, living in parental

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[26] Results shown in Vidal (2007). In fact, the duration of residence at that age follows the timing of the main events of this life cycle or the transition to adulthood, not only of West-Germany, but all western countries (see for instance Willekens, 1999).

home deters migration and therefore constitutes a necessary control. In fact, most migration events at young ages take place simultaneously to leaving parental home, as migration with parents is unusual.

According to specification -2a- young individuals with a higher proportion of relatives outside the "life space" are significantly more likely to migrate. This result was expected according to the location-specific resources hypothesis (i.e. Da Vanzo, 1981). It may also be expected given earlier findings on community attachment, which suggest that more relatives living close by should be negatively correlated to values of family solidarity which deter migration (Fernandez and Dillman, 1979; Sampsons, 1988 or Richmond, 2003). We were not able to separate these effects as we had no data on these location-specific attributes for the whole extended family. As previous research find that larger extended families are predicting the geographic dispersion of them, we controlled for the size of the extended family. The coefficient turned to be negative. Meaning that the larger the size of the extended family the lower the hazard of migration. Let us recall from the theoretical section that size of ties may imply location-specific resources in the form of opportunities embedded in locations and also higher values of family solidarity. However, they not necessarily imply more transferable resources. In this case, a negative effect controlling for the placement of ties, may indicate that larger size of the extended family is more likely to imply family values that deter migration.

Table 2. The impact of size of the 'extended family' and its geographic location on internal migration behavior. Hazard models for the risk of migration since age 16 in West Germany, 1992-2006.

	(2a)		(2b)		(3)		(4a)		(4b)	
	exp(b)	st. err	exp(b)	st. err	exp(b)	st. err	exp(b)	st. err	exp(b)	st. err
Dimensions of Ties to Relatives (time varying)										
Size of Ties to family (log)	0,26 ***	0,14	0,30 ***	0,127	0,28 ***	0,178	0,22 ***	0,24	0,22 ***	0,163
Location of Ties (share)										
Co-resident	1		0,33 ***	0,299	0,33 **	0,376	0,27 ***	0,426	0,27 ***	0,442
Non co-resident (close by)	1		1		1		1		1	
Non co-resident (far away)	1,92 ***	0,275	1,73 **	0,277	1,68 *	0,337	2,24 **	0,392	1,65	0,354
Living in the parental home	0,08 ***	0,231	0,13 ***	0,267	0,13 ***	0,525	0,11 ***	0,679	0,10 ***	0,37
Competing factors										
Social Background										
Education of Mother										
Low					1		1		1	
Intermediate					1,46 **	0,286	1,60 **	0,332	1,57 **	0,249
High					2,75 ***	0,422	3,42 ***	0,49	4,22 ***	0,367
Father more educated than mother					1,58 **	0,205	1,63 **	0,244	1,82 **	0,274
Parents living together (time varying)					1,03	0,269	0,93	0,31	0,94	0,241
Grew up in rural area (before age 15)					1,48 **	0,193	1,55 *	0,255	1,44	0,267
Life course stage (time varying)										
In education					1,11	0,316	1,18	0,358	1,00	0,244
In employment					0,38 ***	0,249	0,35 ***	0,405	0,35 ***	0,252
In Union					1,09	0,368	1,28	0,54	1,23	0,334
Children					0,90	0,51	0,87	0,286	0,90	0,455
Heterogeneity										
Regional level							2,62 ***	0,314		
Family level									1,56 ***	0,118
Baseline Hazard	(Log-Hazard)		(Log-Hazard)		(Log-Hazard)		(Log-Hazard)		(Log-Hazard)	
age (log)	1,339 ***	0,3	1,263 ***	0,299	0,984 ***	0,286	0,97 ***	1,019	1,1 ***	0,384
age (sq)	-0,21 ***	0,004	-0,020 ***	0,008	-0,018 ***	0,006	-0,016 **	0,007	-0,018 ***	0,004
N	17889		17889		17889		17763		17889	
Log-likelihood	-727,63		-722,99		-685,45		-649,13		-671,31	
Chi-2 (df)	414,21 (5)		473,15 (6)		512,54 (18)		361,18(18)		386,35 (18)	

Source: GSOEP. Other covariates not sown in models 3 and 4 are sex, nationality and educational attainment. 'Size of ties to family (log)' measures the log-effect of size of the 'extended family'. 'Location of ties' refer to the share or proportion of individuals within each category, where the reference is 'non coresident ties close by' (i.e. within an hour of travel time by car')
* p-value under 0.1, ** 0.05, *** 0.01

Specification -2b- include the proportion of co-resident relatives in the model specification. A higher proportion of co-resident relatives are expected to imply less household resources available to financially assist children in migration experiences. Conversely, more co-resident relatives should also serve commit individuals to communities of origin given higher values of family solidarity associated with. The coefficient of the proportion of co-resident relatives has a negative impact on migration and reduces the impact of the proportion of non co-resident relatives residing far away. This may be due to the "strength" of ties, since co-residing ties tend to be stronger than non co-residing ties living far away.

The third column of Table 2 is model specification 3, which includes additional competing factors. The social background variables show that parental education is a key determinant of migration at young ages. The more educated the mother, the more likely children will migrate. When the father is more educated than the mother, children are also more likely to migrate[27]. Similarly, growing up in rural regions increases the probability of migration, this is likely because educational and work opportunities are generally found in more urban areas. Of time-varying life course variables only employment was significant. This low significance is mainly the result of censoring before entry into union, childbirth or leaving education, as observed in the descriptives. The direction of

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[27] To model father's education relative to the mother is only a strategy to avoid collinearity with mother's education, since descriptives showed that fathers tend to have a level of education at or above that of hte mother, but almost never below.

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the association is unsurprising, though. Being fully employed in a career or an apprenticeship is a deterrent of migration. Security of employment in the current location is more valuable than uncertain opportunities elsewhere. The inclusion of the social background and life-course variables remained family structure coefficients virtually unchanged. Although the negative effect of network far away decreased, the proximity of ties retains significant the constraining effect mentioned before.

The next step was to control for unobserved heterogeneity at the regional (i.e. *Landkreise*) and at the family (i.e. siblings) level. These models are represented in specifications 4a and 4b in Table 2. Variance for region of residence shows a significant effect, indicating that individuals from the same region demonstrate common characteristics which impact migration. This also controls for the effect of unmeasured regional resources not objectively measured. The main change one observes is that a higher proportion of ties outside the "life space" raise the risk for a long distance move. This increased risk indicates that geographical proximity of the family network may be found in settlements with higher migration propensity. In fact, rural or less densely populated areas may offer less educational or employment opportunities. At the same time, such regions may place more of a value on community, thus explaining the lower dispersion of ties. The hypothesis that the regional variance in the multilevel model controls for *regions of origin* might be verified by the fact that the effect parents' education increases. Educational levels tend to be lower, because of a higher share of jobs with low educational requirements.

Controlling for selection into regions with higher of out-migration, the dimensions of the extended family structure remain significant. However, the interpretation here given may be corroborated in further studies.

In the case of the family-level variance, it is hypothesized that behavior among siblings is not independent. The residual term was shown to be significant at the .05 level, meaning that individuals from the same family are more likely to face similar favorable or unfavorable migration conditions. It is possible that within family variance is also capturing aspects of upbringing such as previous parental migration which are likely to affect all siblings equally, but were not included in this model. The main variation in the model is accounted for by distance to ties, where the proportion of ties far away exerts no more significant effect on migration, however, it keeps the direction unchanged. A possible explanation is that the knowledge of migration or more positive attitudes toward migrations may be more common in extended families which demonstrate greater mobility resulting in a higher proportion of ties located far away. The explanation falls in line with the result suggesting that parental background increases positive affect towards migration, since households with greater migration propensity tend to be headed by highly educated individuals.

2.7.2. Type of relatives

Proximity to parents or siblings is also tested. It is assumed that such relationships are more likely to influence individual migration behavior given that these represent closer ties on average. Conversely, it is expected that other dimensions of the extended family structure will reduce the impact of proximity of strong relationships. In Table 3 two different groups of models can be observed which analyze proximity to parents and siblings. Two different models for each group models regional (4c and 4e) and family heterogeneity (4d and 4f).

The addition of relationship specifics shows some improvement but almost does not reduce the significance of other dimensions of the extended family structure. First, the proximity of parents (co-resident or not) is an important determinant in constraining the migration of children. The main exception is that the impact of non co-resident ties located far away becomes less significant. Siblings' proximity also remains unchanged in the presence of other dimensions of the family network. Only children are also more likely to migrate than those individuals with siblings living close by.

Table 3. The impact of the type of relatives on internal migration behavior. Hazard models for the risk of migration since age 15 in West Germany, 1992-2006.

	Regional heterogeneity (4c)		Family heterogeneity (4d)	
	exp(b)	st. err	exp(b)	st. err
Results for parents				
Size of Ties to family (log)	0,24 ***	0,157	0,24 ***	0,165
Location of Ties (share)				
Co-resident	0,26 ***	0,415	0,25 ***	0,441
Non co-resident (close by)	1		1	
Non co-resident (far away)	2,05 **	0,335	1,46	0,379
Location of Parents				
Parents co-resident	0,10 ***	0,355	0,09 ***	0,37
Parents non co-resident (close by)	0,46 **	0,381	0,45 **	0,406
Parents non co-resident (far away)	1		1	
Parents living together	0,97	0,232	0,95	0,371
	(4e)		**(4f)**	
	exp(b)	st. err	exp(b)	st. err
Results for siblings				
Size of Ties to family (log)	0,27 ***	0,16	0,28 ***	0,168
Location of Ties (share)				
Co-resident	0,23 ***	0,42	0,23 ***	0,445
Non co-resident (close by)	1		1	
Non co-resident (far away)	1,73 *	0,338	1,21	0,365
Sibship size				
0 sibs	1		1	
1 sib	0,41 **	0,327	0,37 ***	0,353
2 sibs	0,58 **	0,256	0,53 **	0,273
3+ sibs	0,66 *	0,234	0,65 *	0,239
Sibs non co-resident (far away)	1,86 **	0,224	1,76 **	0,255

Source: GSOEP. All models include variables for specifications 3 and 4 of Table 2. Other covariates not sown in models are a dummy which captures the oldest sibling and a variable which captures females with sibs. Models for parents (3c, 4c and 4d) also include dummy variables which indicate if father or mother is dead. Model 4c and 4e control for regional heterogeneity and model 4d and 4f control for family heterogeneity. 'Size of ties to family (log)' measures the log-effect of the 'extended family'. 'Location of ties' refer to the share or proportion of individuals within each category, where the reference is 'non co-resident ties close by' (i.e. within an hour of travel time by car')
* p-value under 0.1, ** 0.05, *** 0.01

Sib-ship size is inversely correlated with the propensity to migrate, while number of siblings located far away increases the likelihood of a migration. A possible interpretation is that siblings work as location-specific assets. However, this effect diminishes with sib-ship size within the household, probably because the amount of resources or attention from parents is diminished as it is shared among more children. On the other hand, when sibs live far away, they could also motivate migration because the individual learns from the sibling's behavior, resulting in increased perceptions of self-ability and increased information about the migration investment.

2.7.3. Other sensitivity tests

As commented previously, distance to ties can be explained by unobserved characteristics related to attitudes towards family or migration experiences prior to age 16. In Table 4 we use previous parental behavior and the importance of ties to relatives as proxies to internal inputs which may enhance intentions or propensity to migrate. Previous parental migration is associated to the transmission of the 'knowledge of migration' as well as higher dispersion of the extended family. Relative importance of ties is captured by a survey item which asks if the three most important ties are relatives. Higher importance attributed to kin may capture higher traditional family values that commit individuals to live close by their family. The results show that children of parents who

never moved are less likely to migrate. This does not change the result for the other dimensions of the extended family structure. A similar result has the coefficient of importance of the family, because it does not change any of the previous results.

Table 4. Controls for selectivity. Hazard models for the risk of migration since age 15 in West Germany, 1992-2006.

	Regional heterog. (5a)		Family heterog. (5b)		Regional heterog. (5c)		Family heterog. (5d)	
	exp(b)	st. err	exp(b)	st. err	exp(b)	st. err	exp(b)	st. err
Size of Ties to family (log)	0,23 ***	0,159	0,23 ***	0,164	0,22 ***	0,157	0,22 ***	0,166
Location of Ties (share)								
Co-resident	0,29 ***	0,414	0,28 ***	0,439	0,29 ***	0,418	0,28 ***	0,444
Non co-resident (close by)	1		1		1		1	
Non co-resident (far away)	2,10 **	0,342	1,53	0,364	2,19 **	0,332	1,59	0,355
Living in the parental home	0,10 ***	0,354	0,10 ***	0,369	0,10 ***	0,356	0,10 ***	0,372
Parents never migrated	0,73 *	0,233	0,64 *	0,261				
Relatives as important ties					1,24	0,141	1,14	0,149

Source: GSOEP. All models include variables for specification 4 of Table 2. Model 5a and 5c control for regional heterogeneity and model 5b and 5d control for family heterogeneity. 'Size of ties to family (log)' measures the log-effect of size of ties to family. 'Location of ties' refer to the share or proportion of individuals within each category, where the reference is 'non coresident ties close by' (i.e. within an hour of travel time by car')
* p-value under 0.1, ** 0.05, *** 0.01

2.7.4. Non proportional hazards

Last, non proportional hazards of the proximity of ties are presented. In Table 1 statistically significant odds-ratio of interactions between the share of co-resident ties / non co-resident ties living far away and selected variables (via separated regression

analysis) are shown. The reference category is the share of non co-resident extended family living close by.

While the signs of the coefficients are unsurprising, not all of them result to be significantly different from the reference category. First, women seem to be significantly affected by the geographical location of the extended family, while men are not. This result partially responds to the higher obligation of women to settle close by the family, in particular the parents. This results also are in line with those studies that point that women have a higher proportion of kin in the social network and, therefore, they are likely to be influenced by them to a larger extent. Second, highly educated individuals and employed ones are more likely to be affected by the share of ties elsewhere far away while lower educated and unemployed individuals are more likely to be affected by geographically closer ties. In principle this may respond to different theses. First, individuals with lower labor market opportunities (i.e. low education and unemployed) are more likely to be constrained by the location-specific assets of the family than for individuals who are able to obtain opportunities elsewhere. Let us say that the extended family close by may work as a safety net, above all for those individuals with higher needs. Individuals with better career prospective (in employment and highly educated) are more likely to be associated to geographical mobility, and the presence of family elsewhere may work as an opportunity or location specific capital elsewhere. In general, the aim of higher occupational achievement

and investment may be aligned to a better use of network' resources elsewhere.

Figure 1. Non proportional hazards of the geographical proximity of the extended family.
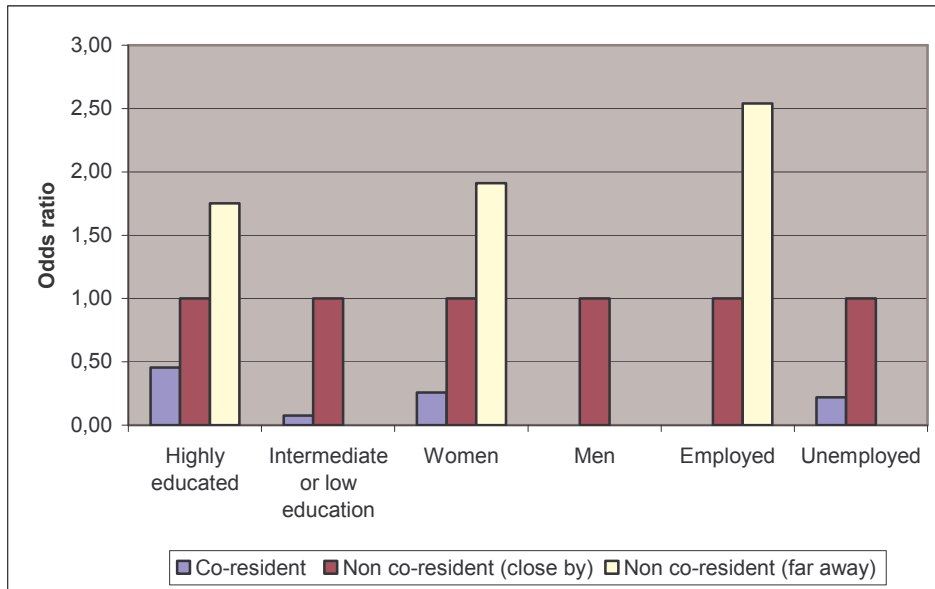
Source: GSOEP. The estimation of the coefficients (transformed to odds-ratio) is done by separated regression analyses for a sample of individuals which have the attribute or find themselves in the situation regarded. Model specification contains dimensions of the extended family variables and social background variables. No variance component to control for selectivity is allowed. Results only presented when significantly different from the reference category. The reference category is the share of the non co-resident extended family living close by.

2.8. Concluding remarks

In this article we aimed to describe the association between the extended family structure and the first long distance residential change from a dynamic perspective. Emphasis was placed on the

effect of the geographic proximity of the extended family, which is predicted to have a negative effect on migration. In fact, migration disrupts the "life space", or the socio-spatial area where interaction with ties is likely to occur, and access to non-transferable resources is granted. Other hypotheses sought to offset the statistical significance of the commented association by means of mediating effects of the closest ties (i.e. coresident and parents-siblings structure), contextual and family specific characteristics and selective dynamic effects (i.e. life course effects). All this variables are conditions of the need and use of the extended family network as economic resources, emotional support based on regular interaction and values that reinforce the centrality of the family in one's life.

Hazard regression and extensions to multilevel models were performed for West-German records of residential histories since age 16. This strategy allowed researchers to match current mobility patterns and network configuration to other life-course transitions. It was therefore possible to check the effect of ties to relatives while accounting for dynamic selection effects. It was also possible to set an exogenous departing point to the residential trajectory, as initial ties' configuration may impact on the association under study.

The results show how the higher the share of non co-resident relatives located outside of the "life space" (defined as the space accessible in one hour by car), the higher the hazard of migration. This result implies that ties to relatives do function as location-

specific attributes. Attributes that may range from information and properties from relatives (Fischer and Mallberg, 2004), which gives advantages to residents; to higher community affiliation (e.g. Fernandez and Dillman, 1979; Sampsons, 1988 or Richmond, 2003), as a result of affective relationships or values of solidarity. To reveal which effect is dominant (resources versus others) could not be straightforwardly tested, and was not the main aim from this research. Instead, we seek to prove whether the effect of the placement of the extended family was relaxed when controlling for other network structure variables that lead to the use and need of family attributes.

The size of the extended family was tested and turned out to have a negative effect on migration. Larger extended families related to higher family solidarity, which may discourage young adults from an eventual long-distance move. A higher share of co-resident ties with relation to the total extended family also significantly discouraged migration. This ratio reduced the effect of the extended family outside of the "life space", though the coefficient remained significant. In fact, the most influential ties tend to live under the same roof. Controlling by characteristics of the closest ties, referring to parents and siblings, such as geographical proximity, parental educational background, parental stability and siblings' sex-age composition, we observe a decline in the coefficients of the extended family structure, but not to the extent to become insignificant. However, the placement of parents and siblings seems to be importantly impacting on migration propensities

independently of the placement of the whole extended family network.

Due to confidentiality considerations we were not able to observe the region of residence though it was possible to cluster individuals from the same region. In some models, heterogeneity at the regional level was allowed for by using random intercepts that measure deviance to the mean intercept from individuals belonging to the same region. Therefore, unmeasured effects of regional context were controlled for. The result was that the effect of the proportion of the extended family located far away was increased. A possible interpretation is that more concentrated ties to relatives may be found in settlements with less economic opportunities and therefore with higher migration propensity. At the same time, these areas may demonstrate stronger family ties ensuring close proximity of the family network. Similarly, siblings were clustered in order to analyze family level deviances to the mean intercept. In this case a higher proportion of extended family family far away was not predicting migration any more. In fact, unobserved family characteristics like knowledge of migration or positive views on migrations might be found in mobile extended families, and for that reason one may find a higher share of ties elsewhere. Let us note that the interpretations of the contextual effects do need of further research in order to be validated with more appropriated data.

The parental social background turns out to have important positive effects on migration. It is more likely that individuals who migrate

in search of educational and career opportunities will rely more on parental financial resources. Findings also demonstrate that more educated parents exert less normative pressure on children to stay close. In fact, some types of relationships – like parents and siblings - appear to be particularly important in explaining migration. In this case proximity of such relationships is an important deterrent to migration. However, when including the type of relative, other covariates change only slightly, suggesting that there may be some selection of individuals with larger network in closer proximity. In order to account for selection effects we tried different strategies: (1) controlling for life course events (i.e. dynamic selction effects), (2) using parents' previous migration experience; and (3) using importance assigned to the family or family commitment. However, neither of them offset the associations under study.

Last, some individual attributes or characteristics were interacted with the proximity of the extended family. Women are more likely to be affected than men, responding the theses on traditional gender role on the care of the family. Individuals with lower labor market opportunities may use location specific capital from family as a safety net, which constrains out-migration. In contrast, individuals with better career prospective may benefit from location specific capital elsewhere.

All in all, internal migration of West German youth is significantly mediated by the social capital exerted by the extended family. The robustness of most of the effects of the extended family structure,

interpreted as resources, emotional support or transmission of values reveal the importance of individual social capital in predicting migration, although there are differences according to contextual factors. This means that future trends on family dynamics are likely going to affect migration patterns. It is important to consider comparative analyses contrasting these results in different contexts. To use measures of resources such as financial transfers, regular meetings, business contacts or help in household duties. Do further dynamic research on the effect of family structure and changes in the residential trajectory, and how it affects the decision-making process may also give a better overview of the effect of social ties on enhancing intentions to move.

3. INTERDEPENDENCIES IN RESIDENTIAL TRAJECTORIES.

EARLY HOME LEAVING, PARENTAL HOUSEHOLD STRUCTURE AND RESIDENTIAL MOBILITY OF YOUNG ADULTS[28]

3.1. Introduction

Previous studies find that the different events of a residential trajectory are not independent, but instead should be understood as a sequence of interdependent events (Clark et al, 2003; Stovel and Bolan, 2004). In fact, studies find that early mobility (i.e. residential

change over the childhood and adolescence) and/or early parental home-leaving (i.e. before the mean age of initial home-leaving) is associated with a higher likelihood for further mobility, *and* a higher likelihood to return to the parental home (Da Vanzo and Goldsheider, 1990; Goldsheider and Goldsheider, 1998; Mitchell, 2006). In related research, the increasing *residential fragility*, or higher rates of residential change, among young adults has been related to the changing family of origin composition towards less stable structures, and to new patterns of moves in and out of co-residence with parents (Mitchell and Gee, 1996; Da Vanzo and Morrison, 1981). Generally speaking, young people whose families were *nonintact* (i.e. disrupted parental partnership) during childhood move out of parental homes earlier, while *lone parent* (i.e. single parent) family structures affects this negatively (White and Booth, 1985; Kiernan, 1992; White, 1994; Goldsheider and Goldsheider, 1998 and 1999). Moreover, the increase of years in education and the difficulties of initial entering the labor market favor the *leave-return-leave* parental home pattern, also called the *kid-Boomerang* effect, which tends to affect individuals who leave the parental nest at an early age more (Mitchell and Gee, 1996; Mitchell, 2006).

From all these findings, the following questions arise: under what conditions are residential histories affected by early home-leaving, and how does the composition of the parental household affect mobility outcomes? This research addresses these issues by focusing on residential outcomes as a function of different statuses

or stages of the residential trajectory of young adults, the age at initial parental home-leaving, parental co-residence status and parental household composition.

In order to do carry out this analysis, repeated residence spells or episodes (i.e. residential stages) of individuals since age 16 are analyzed by running simultaneous hazard equations which account for competing risks (i.e. short and long-distance moves) and multiple states of (co)residence (with and without parents). We use such a strategy in order to test which mechanism better explains the interdependencies commented previously. Of methodological interest is the tackling of possible selection effects which take place in the initial sequences of the residential trajectory and may thus affect outcomes in further spells. In other words, the first decision of residential relocation is not random but may be dependent on difficult-to-measure characteristics such as attitudes towards migration, values on family solidarity, the 'knowledge of migration', etc. (Borjas, 1987; Palloni et al, 2001).

Using data from the British Household Panel Study, a sample of individuals observed since age 16 was drawn. Residential transitions observed include: the initial and subsequent moves from the parental household to own household (i.e. leaving parental home); returns to the parental household; and moves between residences outside the parental household. Two equations for residential outcomes are simultaneously estimated: one when the individual is inside the parental household and another when the individual is outside (from now on referred to as 'other residential

status'). Simultaneous equations are helpful to identify whether the sequence of further moves and returns to parental home are the result of different hypotheses associated to early moves, such as: (1) low investment in location-specific assets that deter mobility from the place of residence, as a result of diversified investment (i.e. residence in different locations) and short duration of residence in each location by early movers; (2) uncompleted transitions to adulthood which are trigger of residential change, as a result of early initial home-leaving not associated or synchronized to the main transitions to adulthood; or (3) unobserved characteristics that early movers share and are also related to their higher mobility, such as higher residential change attitudes or less commitment from early leavers. The impact of the composition of the parental household at age 16 is analyzed. This age is regarded in this research as the moment when the individual may begin to make their *own choices* in their residential trajectory.

In this chapter, we find that dynamic selection effects (i.e. life-course transitions) are important to explain further residential mobility of early home leavers, understanding the latter as individuals who left before the cohort-specific aevarge age of home leaving. In fact, an early move, usually for schooling, may imply further mobility in order to undertake other transitions to adulthood such as entering the labour market or forming a family. Nevertheless, once the individual has established their own family, moves are less usual. Selection on unobserved characteristics also matters. Once we model and control for unobserved heterogeneity and thus selection, the effects of multiple residence states and the

early home-leaving decrease or become statistically insignificant. Nevertheless, even when controlling for life course transitions and selection on unobservables, previous residences still impact current choices. This might be explained by the relatively lack of investment in location-specific capital, or intransferable regional attributes whose benefit is associated to time-investment through residential stability, such as social contacts, knowledge of the location, value of properties and businesses, etc. Finally, we find no evidence supporting the hypothesis that individuals departing from non-intact parental household structures (i.e. where the parental relationship ended before leaving the nest) are more likely to have *fragile* residential trajectories.

3.2. Research Framework

By residential trajectory we mean here the sequence of where and when an individual has resided throughout his life. A residential spell or episode measures the duration of residence from when the individual moves to a given location until the individual moves to another. When a spell ends due to mobility to a new location of residence (i.e. transition between residential states), then, a new episode begins. A spell may also end when we no longer observe him due to death or unknown reasons; in such a case, he is censored. As we analyze a trajectory, or a sequence of a residential trajectory, the duration of censored episodes is also important to account. They would tell us about duration patterns when events do

not take place, then leading us to consistent estimates of the determinants of residential change.

The study of interdependent trajectories or biographies, known as the life course approach, is behind the many publications that study "demographic trajectories [, sequences] and transitions of individuals as a series of parallel trajectories which can be embedded in other trajectories" (van Wissen and Dykstra, 1999). The advantages of this perspective are that interdependencies are analyzed not only between different life domains (e.g. the impact of the educational trajectory on woman fertility), but also between different states within a single trajectory. One example is Steele *et al*'s findings (2006 and 2006b) that previous type of partnership status (i.e. cohabitational or marital) determines current decisions on partnership formation. Her strategy is going to be useful for the research here presented.

The migration process can be analyzed as a residential trajectory subordinated and triggered by parallel trajectories of substantive meaning (Mulder, 1993). We mean that migration may not be a lifetime goal *per se*. However, migration may help to accomplish life-time goals embedded in transitions of meaningful trajectories such as: fertility (Kulu, 2007), partnership (Mulder and Wagner, 1993; Mulder and Hooimeijer, 1999; Boyle et al, 2008); job and educational career (Wagner, 1990; Kulu and Billari, 2006). These course of this trajectories may be associated to accomplishment of family-related and career-related goals. Likewise, parental home-

leaving is regarded as the first move after parental co-residence, and interdependencies with family formation, education and labor career have been analyzed (Billari, 2001; Mitchell, 2006; Mulder et al, 2002 & 2006; Baizan et al, 2003). In that sense, parental co-residence might be considered as a specific status within the residential trajectory, like cohabitation is a specific status within the partnership trajectory.

Figure 1. An example of a residential trajectory: states of co-residence with parents and other residential categories*
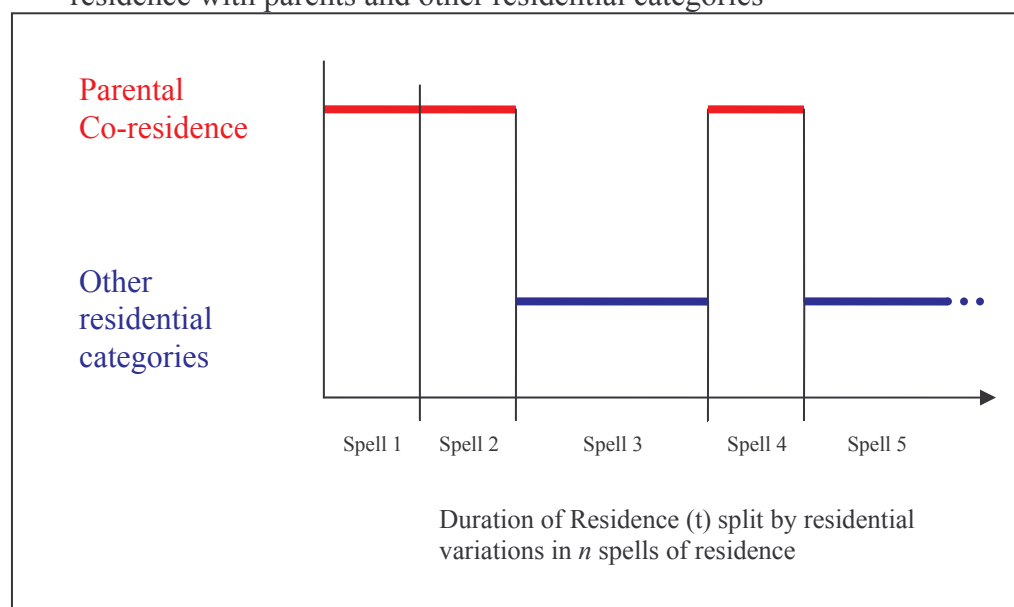
* The residential trajectory starts with an individual's first living arrangement. The first spell of residence ends when a residential change occurs (crossing lines in x-axis), which starts the subsequent residential spell. When the individual never moved the spell is censored. Event occurrence may also mean a change of status, for example a transition to parental co-residence or to other residential categories. Residence spells with no change of status (i.e. parental co-residence or other residential status) are also together considered either a spell of parental co-residence or other residential status (e.g. Spell 1 and Spell 2 of residence are also one spell of parental co-residence).

It might be emphasized that, like residential moves, leaving home is not a one-time event. It is becoming a general pattern that young people may spend time living away from home (e.g. as students in educational centers) and then return to live with their parents, and thus not being completely emancipated (Mitchell, 2006; Baizan, 2002). Research on residential mobility generally put little emphasis on the differences between parental home-leaving and other migration/residential change. However, since the determinants of the residential change differ depending on whether the individual departs from the parental household or from another living arrangement (White, 1994), here is argued that it is optimal to separate the residential trajectory into two states: moves from the parental household and moves from other living arrangements. It is clear that one could also divide the residential trajectory in statuses of living with partner, or alone or any other situation. However, we made the distinction of in-and-out the parental nest for suitability to this research that focus on timing of parental home leaving and the event of returning. As detailed later, we will also model different household / family situations regarding partner and children but as a independent variable in our model.

Figure 1 shows an example of a residential trajectory of an individual who has lived with his parents, (i.e. parental co-residence), and alone or with other people (i.e. residence outside the parental household). Individuals may leave the parental home or move with parents (the second case explains the transition between spell 1 and spell 2). Likewise, once outside the parental home, the

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individual may move elsewhere or return. By definition, the number of spells of residence increases as a linear function of residential changes. As commented, we focus on analyzing two different states of the residential trajectory (i.e. parental co-residence and other residential status) in order to understand their interdependencies. These interdependencies are displayed in Figure 2. As mentioned before, there are two possible states of departure and four possible residential transitions. Where ξ_n is a residential event with no change in the status of parental co-residence (it may also include to go to live with the other parent if parents separated). η_n is an event of residential change and parental home leaving. ψ_n is a residential change that implies return to the nest (then, it is conditioned to previous stage of non co-residence with any parent). Last, φ_n is a residential transition where origin and destination lays outside parental home. We will use y_n to point any residential transition independently of the status of parental co-residence. Let us note that the individual may leave the parental nest up to 'n' times in her residential trajectory. Then, the framework allows for analysing leave-return-leave patterns. Moreover, we differentiate between co-residence with parents of different family structures (τ). The family structures of parental co-residence are commented later on.

The picture of the cumulative process of the residential trajectory in Figure 2 allows setting the transitions of interest as outcomes and predictors. The first association of interest is found in equation (1).

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Figure 2. Flow chart of statuses (boxes) and transitions (arrows) of a residential trajectory.
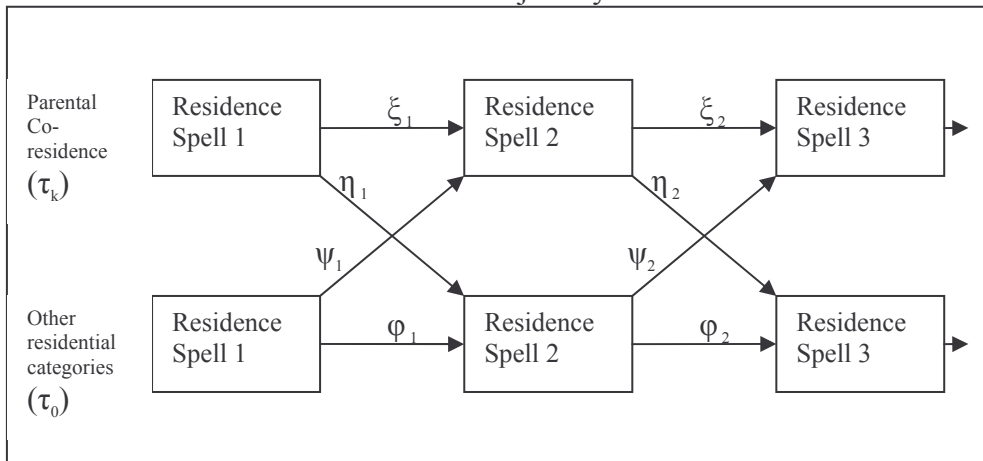
Source: own elaboration

This equation is meant to associate the sequences of the residential trajectory to previous events and early home leaving. The aim was to prove that different stages of the residential trajectory are interdependent. In particular, early movers and multiple events of mobility in the early adulthood may be positively associated to the propensity to further move. To prove that, first, in the equation, early parental home-leaving (i.e. before the average age) , as captured by age at initial parental home leaving (η_1), and previous residential transitions (by order of transition) (y_{n-1})[29] predict mobility outcomes. However, as we do not focus in straightforward sequential analyses, which would be not yet able to assess our hypotheses based in dynamic process, we limit the first equation to predict residential outcomes that depart outside the parental

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[29] The data shows that the probability to move with parents once the individual reached age 16 is residual (less than 5% of the observations).

household[30]. They may be further moves (φ_n) or returns to the parental home (ψ_n).

$$(1) \quad (\varphi_n, \psi_n) = age(\eta_1) + y_{n-1} (\varphi_{n-1}, \psi_{n-1}, \eta_{n-1}, \xi_{n-1})$$

Therefore, we set Equation (2) in order to predict the effects of multiple residential states on parental home-leaving (which may be initial or repeated). Then, we have the whole picture of possible events and we are able to analyse the chronological order of previous residential states (i.e. residence episode order) on current transitions. In other words, we are able to analyse interdependencies within the residential trajectory. Furthermore, modeling two interdependent equations allows for simultaneous outcome estimation. The advantage of the simultaneous estimation is to tackle the unobserved heterogeneity of interrelated events, as will be further explained in the method section.

$$(2) \quad \eta_n = y_{n-1} (\varphi_{n-1}, \psi_{n-1}, \eta_{n-1}, \xi_{n-1})$$

A other interest of this study is to analyze differences in family structures (τ_n). Our aim is to assess whether variance in the family structure of origin (when leaving the nest) affects the likelihood of

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[30] Among others, we would not be able to predict the initial parental home leaving by the age at parental home leaving.

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the residential transitions and emphasize those outcomes related to the parental household, such as leaving or returning. By family structure of origin, we refer to an individual's parental household structure at age 16. We have defined four different parental household structures: (a) biological parents living together, (b) one biological parent, which captures mainly the effect of divorced and separated since there are few lone parents (although differences above these two groups are assessed), and (c) one biological parent plus step-parent or other combinations of step-parents.

$$(3) \quad y_n \left(\eta_n, \psi_n, \eta_n, \xi_n \right) = \tau_k$$

A final issue, fundamental in residential mobility research, is the distance of the move. Both are related characteristics of mobility which may work for or against further moves. First, the literature discusses on the distance of mobility diferentating between migrations and residential variations (Courgeau, 1988). A long-distance move or migration is that which breaks up the space of daily activity or *life space*, where the social contact circle of regular interaction is embedded (Bonvalet & Lelievre, 1995; Bonvalet, 2003). A short distance move does not disrupt the space of social interaction and tends to take place within commuting distance of previous regular activity spaces (Courgeau, 1988). As migrations tend to disrupt everyday life, they are less common and are usually undertaken for job and educational career motives and/or by individuals less attached to family life. On the contrary, short moves

or residential changes are more likely to be family-related (Mulder, 1993), and is primarily the result of sub-optimal housing consumption due to household-family size changes[31].

The distance of the move depends on to what degree the local labour and housing markets satisfy the demands of potential movers. For example, rural residence might push career-seekers to move longer distances for educational and occupational opportunities not provided in rural areas, while more family-oriented individuals may choose to remain or, if living in urban areas, return. Education, job or family formation as a reason to initially leave the parental home result in different age to initial leaving and return probability (Da Vanzo and Goldsheider, 1990). Generally, leaving before average age is related to education or getting a job, the former may be associated to parental home returns. In contrast, family formation reasons to leave the nest tend to be associated to delayed home-leaving and tend to deter returns.

The last part of the Research Framework section is divided into three sub-sections, which introduce the main mechanisms behind the interdependence of residential trajectories. The first, the location-specific capital hypothesis, departs from utility functions associated with the consumption of amenities which are not transferable between locations. The second, the life-course

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[31] Cook (2001), Boyle et al (2003) and Clark and Whithers (2007) find for the U.S. that the association between short-distance moves as family-related and long-distance moves as career-related (Goodman, 1982), still stands nowadays but is more diffused than in the past.

transitions hypothesis, refers to the timing and sequencing of parallel life trajectories and key events which impact residential outcomes. The third tackles the topic of unobserved heterogeneity that impacts on the first stages of the residential trajectory.

3.2.1. Mobility and location-specific capital

The first hypothesis is based on microeconomic analysis of the utility of location-specific assets (Da Vanzo, 1981; Greenwood, 1985; Fischer and Mallberg, 2001), where the set of intransferable economic and social assets (e.g. properties and businesses, social ties, knowledge of the place of residence, leisure, etc.) that a location holds work as an opportunity cost to mobility. This argument plausibly explains that individuals who live for a long time in a certain location may have higher investments in location-specific assets. *Ceteris paribus*, short residence durations imply lower investment in location-specific capital and, thus, a relatively higher likelihood of migration. A derivative of this theory poses that those individuals who have migrated once are more likely to migrate again since, by definition, they have shorter relative durations of residence. As the location-specific capital of alternative locations may depreciate over time, length of residence in the new location imposes an opportunity cost for further residential moves.

Location-specific assets can also be extended to explain patterns of return migration and parental home return (Da Vanzo and Morrison,

1981; Da Vanzo and Goldsheider, 1989). Since individuals have more location-specific social or economic resources in places where they have resided, this may lead individuals to resettlement in locations of previous residence. In fact, return migration or return home in case of economic instability due to job loss or lower income derived from household splitting would be expected as a result of location-specific capital theory.

Thus, according to the theses of location-specific capital, one should observe that:

H₁: *Early parental home-leaving (i.e. before the cohort specific mean age) and multiple residential events of young adults increase the likelihood to further moves, since investment in location-specific capital in a given location is relatively low.*

In this case, a shorter duration of residence and/or higher order spells of residence (i.e. further residence states) are proxies of investment in location-specific capital (Da Vanzo, 1981). While shorter residence durations disrupt benefits from long-term investments, as higher order residence spells increase, location-specific capital is diversified among different locations. This effect is more likely to affect long-distance residential outcomes than short distance, as the probability to disrupt the benefit from location-specific capital is lower with short distance moves (Mulder, 2007). The latter responds to the fact that the longer the distance of the residential change the lower the probability that the

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individual may have regular benefit from the location-specific assets of the previous place of residence.

3.2.2. Life course Transitions and Mobility

There is broad agreement in the literature that the life cycle stage determines residential mobility, where younger households move more often than older households do (Green et al, 1997). Young adulthood is particularly crowded with the life-course transitions, namely family or occupational/educational, that tend to trigger residential moves (Willekens, 1991). Some family transitions require changes in housing consumption and are most associated with short distance residential mobility. For instance, transitions to partnership tend to be synchronized with residential mobility (Mulder and Wagner, 1993). Housing readjustment can result from a search for intimacy for life with a partner, when living with parents, or a need of larger living arrangement when anticipating parenthood (Mulder, 1993). However, once children reach school age, residential change is less likely, above all for long-distance moves. Last, partnership splitting may motivate a residential move, for at least one of the former partners.

Career-related transitions also trigger residential mobility and explain much of the variance of long-distance moves. Among other reasons, job and educational opportunities, even when derived from career-related social contacts, tend to be geographically dispersed

(Wagner, 1990). In fact, the expansion of education has impacted early parental home-leaving and long-distance mobility[32] (Billari et al, 2001).

The transitions signaling a move towards adulthood include: establishing one's own family; completing education; and holding a stable job. The transition to adulthood makes the individual financially and emotionally independent from parents. Afterwards, the probability of returning to the parental nest is low (Haug, 2001; Contant & Massey, 2002). Nevertheless, a general finding is that the semi-autonomy stage between adolescence and adulthood is being extended meaning that many transitions are delayed. Moreover, what once was an ordered sequence of transitions to adulthood is becoming a less clear path towards complex life-course trajectories, leading to processes of *destandarization* (Mayer and Hillmert, 2003).

The *destandarisation* of the life-course of young people is largely discussed in Blossfeld *et al* (2007) or Mayer (2008). This thesis tackles the effects of globalization in economic youth instability, and to the increase of diverse family types as a result of the secularization of society (van de Kaa, 2003). The result is a plurality of paths an individual can follow in terms of types of transitions to adulthood and their sequence. Among others, school-

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[32] It has been proven that wealthier and highly educated parents leads, to a greater extent, to such kind of opportunities, as their wealth is substitute of the low personal income of the young people (Da Vanzo and Goldsheider, 1990; Baizan, 2002), and they are more likely to transmit attitudes towards mobility as an investment through socialization processes (Billari & Liefbroer, 2007).

to-work transitions are not straightforward, since individuals may return to school at some point for further education, and first jobs are relatively unstable. Economic instability may delay or difficult residential mobility, and may also delay the formation of one's own family (Goldsheider and Goldsheider, 1990, 1999). Also, it is less usual than before to synchronize partnership formation and parental home-leaving. Leaving the parental home for non-family living arrangements is too (Corijn and Klijzing, 2001). Furthermore, partnerships are less stable - individuals are changing between partnership and separated/divorcee states more often.

The extension of the stage between adolescence and adulthood implies that individuals may be at a higher risk of moving. Individuals who move before the completion of the main transitions to adulthood are more likely to move again, as they undertake new transitions, or repeat. According to this argument, it follows that:

H2: *Early parental home-leaving and multiple residential events of young adults increases the likelihood to move because individuals are exposed to incomplete or repeated transitions from parallel and triggering life-course transitions*.

Furthermore, the stage of semi-independency as a result of uncompleted transition to adulthood allows individuals returning regularly to the parental home, which they may us as 'normal base of operations during the period of early adult life' (Da Vanzo & Goldsheider, 1990; Aquilino, 1999, Mitchell, 2006). Explanations

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on material resources and value orientations may explain that process. Favourable value orientations of return apply when the individual has not yet forged a family (Billari and Liefbroer, 2007). In fact, the return is the lowest for married individuals and family formation may be associated to more mature roles, higher income (including partner's income) and higher requirement of privacy. Lack of personal economic resources may be the other main reasoning behind the return, which may be associated to the end of education, in case of parents' financial help during the educational stage, or the end of a relationship or the loss of a job or holding a precarious one. In many cases, early movers may be more likely to return because they might be highly exposed to unfortunate situation or they want to correct what may be reported as a premature leaving.

3.2.3. Unobserved heterogeneity

A third mechanism implies that the estimated effects of interdependencies between residential trajectories and the impact of family structure on residential outcomes may be affected by unobserved heterogeneity. The latter affects the very first decision and may have effects for the whole residential trajectory, where early movers might be selected on unobserved characteristics towards more complex residential trajectories. The standard explanation for selection of early movers is that those with higher migration propensities (i.e. attitudes towards mobility) will move as

soon as an opportunity comes up (Borjas, 1987). Furthermore, the experience of mobility is already selective towards further mobility as the 'knowledge of migration' (i.e. dealing with calculation of costs and benefits of migration) is adquired (Palloni et al, 2001). This may bias comparisons of mobility determinants across different lengths of duration of residence and across different spells' order of residence, where

H3: *Person-specific characteristics make individuals to be inherently more mobile, making them having higher than average relative risk of residential change and selecting them towards early and repeated mobility.*

Selection might be more likely among individuals who have strong preferences for job career and lower commitment to kin relationship or who might easily substitute them for new contacts (Belot and Ermisch, 2009). Those with higher inclination towards living with the family might be more likely to move less frequently, to leave later, to do not go further away and to return home. Unlike, individuals inclined towards job-career are more likely to undertake further moves and longer distances. In fact, search for individualistic orientations and mobility attitudes may be embedded in early moves and rural-to-urban moves, where higher discrepancies between parental and children's value orientations may ease early mobility in case of conflict (Hugo, 1981). However, research have shown that parental view on the right time to leave home may affect children's age of departure (Billari and Liefbroer,

2007) and parents may prevent children to move further when leaving the parental home with strategies of financial help to set out close to the parental home (Bonvalet et al, 2007). But, in general, highly educated parents tend to be less reluctant to children mobility, since they cheer them and finance mobility for educational reasons (Baizan, 2002).

3.2.4. Parental household structure

The parental household structure of departure (i.e. at age 16) explain a great deal of early, further and return mobility according to previous research (e.g. Goldsheider and Goldsheider, 1998, 1999; Da Vanzo and Goldsheider, 1990; Mitchell, 1989). This research has focused on the effect of non-intact families on early parental home leaves. In case of step-families, the lower cohesion of such families is stated as to be the main reasoning for early leaving (White and Booth, 1985; White, 1994), where family conflict (Kiernan, 1992) or expectation of early leaving (Goldsheider and Goldsheider, 1987 and 1999) is regarded as the main trigger when leaving. On the contrary, individuals departing from lone parents' structures (i.e. never married) are not significantly more likely to leave earlier than children from intact families (Aquilino, 1991), but Kiernan (1992) show a slightly positive effect for young women. In contrast, divorced parents, above all fathers, are less likely to have co-resident children (Aquilino, 1991, Ward et al, 1992).

Previous research found that non-intact families may be an important deterrent of parental co-residence, with more emphasis on younger than older age (Aquilino, 1991; Mclanahan and Sandefur, 1991; Musick & Bumpass, 1999). However, patterns of return are especially important towards one-parent household (to parental co-residence or at least to a closest location), with special emphasis of return for females and only children, and mainly reporting emotional reasons (White, 1994), and in many cases are parents who approach children when they become alone (Mulder and Kaljmin, 2006; Michielin and Mulder, 2007). But, Goldsheider and Goldsheider (1998) report lower likelihood to return for individuals returning to non-intact families. However, it is not clear whether the step-parent was there when the young adult left or returned the nest. It is likely that a change in parental partnership status is triggering return mobility. According to all that, we suspect that those individuals departing from *non-intact families* may have different paths of further and return mobility, which may be mediated by the higher likelihood of falling out from parental home earlier.

In fact *departing early from non-intact parental households might be more highly exposed to selection effects* because they are apparently highly associated to higher preferences of early mobility and lower value orientations of family solidarity, but they might dispose of lower parental resources to undertake mobility (Aquilino, 1991; McLanahan and Sandefur, 1994). In fact, it is necessary to remind that at such young ages, parental resources plays a key role in facilitating early migration and home-leaving (Da Vanzo and

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Goldsheider, 1989; Baizan, 2002). However, as soon as step parents and stepsiblings are present in the household, early leaving might be also a matter of lower benefit from parental household specific assets.

Research on sibship effects on mobility show that higher sibship size might be a trigger for moving out from the parental home, since the attention of parents to children ideally should be equally divided among sibs, and then, they do not benefit as much from benefits of staying within the parental home as only children (Goldsheider and Da Vanzo, 1990). Contrarily, more siblings lower the amount of transfearable resources, such as financial capital, that the parents may transfer to children for long-distance settling out (Konrad et al, 2001; Kunemund et al, 2007; Thomas and Siedler, 2008). Moreover, Ulenhberg *et al* (1990) find out that females tend to benefit less from parental home resources, and due to cultural regularity, they are already pressured to provide such services to younger and male sibs. Then, as females have less to win from parental home, they should be more likely to leave it sooner than later. Unlike, some research finds that women indeed move less and less further (Thomas and Siedler, 2008). These researches points that this case might be plausible, above all when there is mainly brothers, because females are expected to take care of parents.

3.3. Data

British longitudinal data is used for analyzes: the British Household Panel Study (BHPS from now onwards). The British context is suitable for the analyses because it accounts for higher rates of residential transitions than other European countries (Rees et al, 1996). Moreover, the probability of return to the parental home is higher because the British leave earlier, in average, the parental home. Partly due to the dynamic market of housing rental, and, differently to the Scandinavian, which also leave earlier, the institutional setting does not provide of a generous public insurance against the failure of the markets (Aassve et al, 2002; Assve et al, 2007; Iacovou and Parisi, 2009).

The BHPS is a longitudinal survey initialized in 1991 and account for more than 10,000 households and it is representative of the British population in a dynamic perspective, which allows us to study durations of residence in a discrete-time basis. Many articles have studied residential mobility and home-leaving outcomes using the BHPS (e.g. Clark *et al*, 2003; Rabe & Taylor, 2008; Taylor *et al*, 2009). We make use of all panel waves available until the date the analyzes were run (i.e. wave P, corresponding to 2007). As commented above, durations of residence since from age 16 onwards are analyzed, in order to set the first time when the individual might be able to decide on housing outcome on its own. A sample individuals who reached age 16 between between 1992 and 1999 is used for ensuring a minimum length of observation of the residential trajectory.

The main shortcoming of the panel wave design, where we only observe information at one moment of the year, is that we are not able to account for within-waves moves. However, as Table 1 shows, the BHPS capture a great deal of residential moves and it offers abundant information on individual and household characteristics. Furthermore, it is possible to link the individual records with aggregated information at the authority district level, and allow for calculating distances of migration, as well.

The final sample is 1439 individuals, which are equally distibuted by sex, around a 10% of other than anglo-white ethnic origin, and we obtain a median age of parental home-leaving of 23, which is similar to the one reported in other studies for the British case (Assve et al, 2007; Iacovou and Parisi, 2009). Table 1 show the percentage and absolute figures of residential transitions. More than 3,000 residential events took place, which means that each individual moves in average about two times. Although almost all sampled individuals move once, not all of them move repeatedly, and some of them move up to 11 times within 16 panel waves. Repeated parental home leaves were available and, to certain extent, repeated parental home returns. Almost 45% of the moves are also transitions between states of parental co-residence and other residential statuses, which make evident the importance of patterns of *leave-return-leave*. Parental home-leaving is more likely to be short distance (i.e. less than 50km to previous location), while parental home return have equal proportion of short and long-distance moves. These figures can be interpreted as that long-distance leavers are more likely to return. Moves within residential

status are more likely to take place once the individual is outside the parental home. Moreover, long-distance moves tend to be the result of changing residential status rather than moves within them.

Table 1. Percentage and absolute figures of residential events according to type of transition (a) parental home leave (b) return and (c) move within state (parental co-residence and non parental co-residence).

Type of Move	State of Departure of each Spell of Residence		Total
	Parental Coresidence	Non Parental Coresidence	
Leaves (N)	**74.9% (1077)**	**-**	**35.2% (1077)**
Short Distance Leave (N)	55.8% (601)	-	
Long Distance Leave (N)	28.6% (308)		
No distance reported (N)	15.6% (168)	-	
Returns (N)	**-**	**21.4% (347)**	**11.3% (347)**
Short Distance Return (N)	-	39.8% (138)	
Long Distance Return (N)	-	38.3% (133)	
No distance reported (N)		21.9% (76)	
Moves within state (N)	**25.1% (361)**	**78.6% (1274)**	**53.5% (1635)**
Short distance (N)	81.2% (293)	77.5% (987)	
Long distance (N)	7.8% (28)	12.1% (154)	
No distance reported (N)	11% (40)	10.5% (133)	
Total Moves (N)	**100% (1438)**	**100% (1621)**	**100% (3059)**
Short distance (N)	62.2% (894)	68.6% (1058)	
Long distance (N)	23.4% (336)	17.9% (287)	
No distance reported (N)	14.4% (208)	13.5% (209)	
N (person-year obs)	**9123**	**3878**	**13001**

Source: BHPS, 1992-2007. Sample selection: Individuals who reached age 16 between 1992 and 1999.

The parental household structure of departure (at age 16), when the individual was aged 16, is not unevenly distributed. Where 1% of the sample was already outside the parental home by age 16[33], and

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[33] Those who start outside the nest, where finally excluded from analyzes because the size of the group was not large enough to obtain significant results.

65% were residing with the two biological parents, what we so-call *traditional family*. Other types of family structure account for the remaining 33% of the sample, were about a 12% were one parent plus step parent (and occasionally only foster parents) and 22% were living arrangements with only one parent. From the last category, most of them are separated and divorced parents (mainly mothers), while never-married or widow parents account for a small fraction (i.e. below 10% out of *only parent* living arrangements).

3.3.1. Life Table estimates

In this subsection we show several estimates of the transition to first and second order move, including leaving and returning home. Life table estimates show survival probabilities, namely the proportion of individuals who did not a transition (i.e. stayers) the current year out of those that were at risk (and still observe). Graphs 1(a) and 1(b) show estimates of the survival function of first and second episode of residence departing from three different combinations of family structures at age 16: (1) traditional family (i.e. biological parents living together); (2) one parent (i.e. separated living with no partner; 'lone parents' were disregarded); (3) step parents present (i.e. only step-parents or biological plus step-parents). The combination of different structures where there are step-parents present and/or one biological parent makes the first mobility process apparently faster (in Graph 1a). It is noted that earlier experiences of mobility might have an impact on individual's

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further residential trajectories by family structure of origin, since there are no observable differences in quantum and tempo of second order moves (in Graph 1b). Looking at quantum, almost all movers move again. Furthermore, second order moves are faster, where half of the movers move again within a year after the first move.

Graphs 1(a) and 1(b). Life table estimates of first and second order moves by family structure of departure.
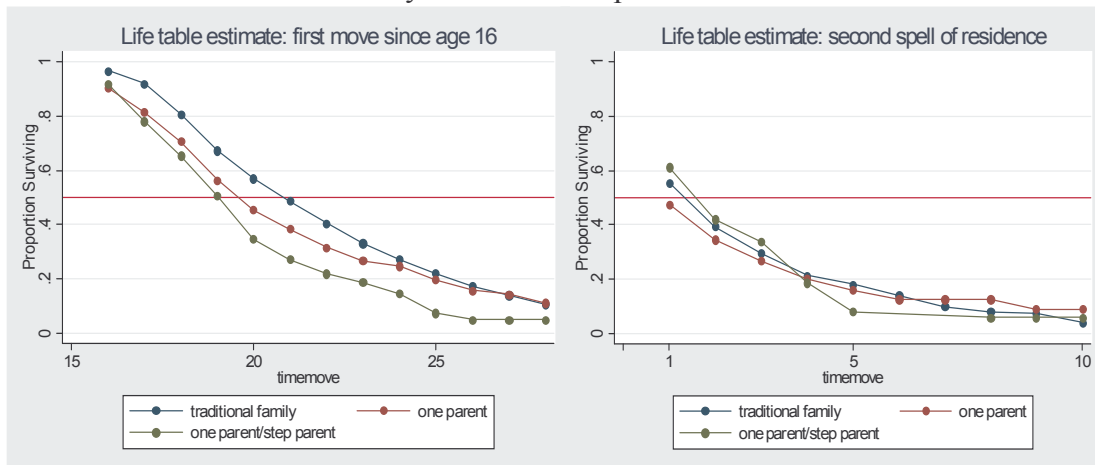
Source: BHPS. Sampling selection: individuals observed (a) since age 16 (b) (b) since first move within parental co-residence, departing from parental co-residence.

It is a general pattern that almost all individuals do ever change residence, but not all of them do a long-distance move, which might be disrupting with the *life space*. Graphs 2(a) and 2(b) display first order moves differences according to the distance to the previous living arrangement (where short distance is all move of less than 50km distance and long-distance equals to move of 50km distance and further). Departing from non intact parental household

structures seems to be associated to early short distance moves (results significantly different to traditional household structures – in Graph 2a). Unlike, people departing from traditional parental households or one parent households of departure are more likely to be faster in the first long-distance move (in Graph 2b)[34].

Graphs 2(a) and 2(b). Life table estimates of first short distance and first long-distance order moves by family structure of departure.
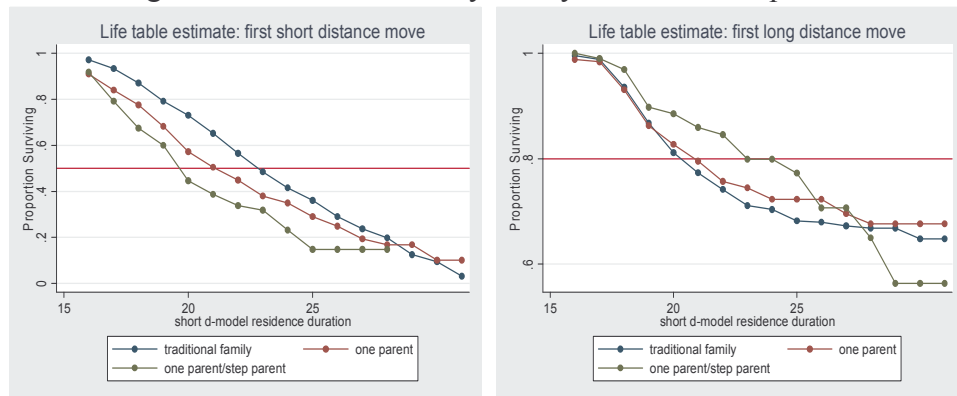
Source: BHPS. Sampling selection: individuals observed since age 16 departing from parental co-residence.

Graphs 3(a) and 3(b) display the first parental home leave since age 16 and the first parental home leave in years after a previous move (within the parental co-residence state). One observes that

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[34] Although no graphs are shown on second order moves by distance of move some interesting facts are commented. First, half of first order short distance movers undertake the subsequent move within two years, and three years in the case of long-distance moves. Second, almost all short distance movers and 60% of long-distance movers undertake before age 30 the second move. The last result may imply that movers are selected individuals from the population, or that the experience of moving may affect equally all first movers when undertaking again the decision of moving. Differences are not find on family structure of departure for second or further order moves.

significant differences among intact and non intact parental household structures of departure hold constant, but differences are less than the ones of first move in Graph 1(a), meaning that individuals in non non intact parental household do experience mobility with parents prior to the parental home leave. A possible explanation might be a change in parental partnership status. The pattern of home-leaving after previous move show no differences among family structures of departure, which may confirm that young individuals in non intact parental household structure may be more likely to experience previous migration, and that differences in further tracks of the residential trajectory have more to do with previous mobility than with family structure of origin. Not shown here, second order home-leavings are not different according to family structure of departure, but they are quicker and almost all individuals who returned home leave a second time.

Graphs 3(a) and 3(b). Life table estimates of first parental home leave and first parental home leave after a previous move by family structure of departure.
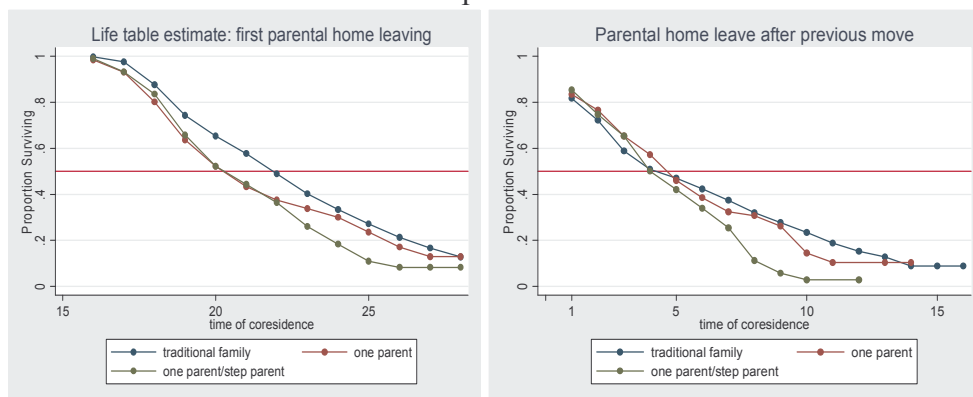
Source: BHPS. Sampling selection: individuals observed (a) since age 16 (b) since first move within parental co-residence, departing from parental co-residence.

Graphs 4(a) and 4(b) show life table estimates for first order parental home return by family structure of departure and by age at first parental home-leaving. Differences between family structures of departure turned to be insignificant, partly due to fewer individuals returning to the parental nest. Unlike, age at leaving home makes the difference, where individuals leaving at age 20 and before are faster returning home, which may be related to the fact that they are in a semi-dependency situation, above all those who left for education pursuing.

Graphs 4(a) and 4(b). Life table estimates of first parental home return by (a) family structure of departure and by (b) age at first parental home-leaving.
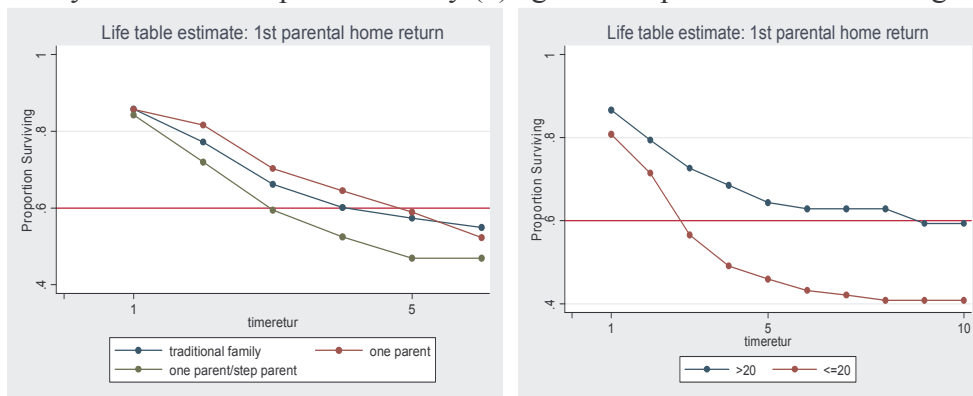
Source: BHPS. Sampling selection: individuals who left once parental home departing from parental co-residence.

3.4. Methodology

In this section the focus is put on the methodology for assessing interdependent trajectories. It is already agreed that interdependence

of biographical trajectories is best studied by means of analysis of time to events (Blossfeld and Rowher, 2007). The analysis of repeated events per individual is a recurrent technique to disentangle the association between status and transitions of interdependent dynamic processes as well as within single processes (Lillard, 1993; Upchurch et al, 2003). These analyses have been applied to the study of union formation or dissolution, childbearing and childbirth or migration, among others. One of the main advantages of this technique is that allow setting the 'clock' or beginning of the duration, when the individual is for first time exposed to the risk of transition. In this research we set the start of the clock at age 16, as individuals in Western societies reach the *formal* age to decide about its own residential trajectory. Moreover, the technique allows assessing sequences of parallel and triggering life-courses and, consequently, the synchronization of events.

Discrete-time hazard models (Allison, 1982) are applied as BHPS only report the individual status at the interview time. A discrete hazard (a) is the probability of occurrence of the event of interest at a discrete time 'j' conditional on no previous occurrence. It is possible to observe the effect of time-constant and time fixed covariates as linear effects (i.e. proportional hazards) and also assess non-linearities by means of interaction of covariates with the baseline hazard. In this research, hazards are estimated as a logit function (b) of the baseline hazard or duration of residence D_{Jij} and proportional and non proportional hazards of time-varying

covariates and time-constant covariates W_{ij}. Alphas and betas are respective coefficients for the parameter estimates.

$$\text{(a) } h_{ij} = \Pr\left[T_i = j \mid T_i \geq j, \, z_{Pij}\right]$$

$$\text{(b) } \log_e\left(\frac{h_{ij}}{1 - h_{ij}}\right) = \alpha_j D_{Jij} + \beta' x_{ij}(t) + \beta' w_{ij} + \varepsilon_i^{HL}$$

The equation (b) also includes a person-specific residual term epsilon which is meant to identify selectivity. In fact, methods for tackling selection bias and endogenous processes for interdependent biographies in many publications rely on the usage of person-specific residuals and their correlation in a simultaneous equation estimation framework, as first developed by Lillard (1993). The distribution of the unobserved heterogeneity in each equation is identified by the person-specific residual through multiple replications of outcomes per each individual[35] (Upchurch et al, 2003).

Apparently, repeated transitions do provide us with information on unobserved heterogeneity (i.e. selection effects), whose

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[35] The assumption of heterogeneity identification has been tested through Monte Carlo simulations, which have proven that single spells per individual does not allow for accuracy in identifying separately the parameter estimates from the heterogeneity in the model, but repeated-spells allows for a better setting for heterogeneity identification (Aasve et al, 2003; Lillard and Cottet, 1998). In the case of multiple spells per individual, even when not all sample of individuals do repeat event, but some individuals overlap across processes, allow to identify not only heterogeneity in each process but also correlation among them (Upchurch et al, 2003).

identification may help to test whether further transitions may not be independent of the first one. In other words, the hypothesis to be tested is that mobility prone individuals might have in average more records on spells of residence throughout their young adulthood. In case it exist selective processes, significant covariation of residuals will allow capturing common unobserved heterogeneity between the different processes involved, let us say, all no specified covariates that commonly affect the different outcomes. Thus, it is expected person-specific residuals be significantly and positively correlated, meaning that there is unobserved heterogeneity which makes individuals move (early) from parental home and which make them move more times once outside the parental household. This is hten fundamental in order to verify the third hypothesis.

Simultaneous equations of mobility outcomes departing from the parental household and outside the parental household are modelled using *aML* software (Lillard and Panis, 2000). The first equation is modeled as the logit-hazard to leave the parental nest (c). Those individuals who end the spell of co-residence with no home-leaving are censored[36]. The equation that models residential outcomes when the individual is outside the parental household is a competing risk specification, for the hazard of (1) further move or (2) return to the parental home, as odds of no event occurrence (d)[37].

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[36] Censored observation, however, are also accounted in analyses. They provide information on duration of residence since censoring.

[37] In the co-residence state residential mobility with parents is not an outcome of interest, for that reason we did not model as competing risks, but we do assess its effect as covariate in the model.

$$(c) \qquad \log_e\left(\frac{\eta_{ij}}{1-\eta_{ij}}\right) = \alpha_j D_{Jij} + \beta' w_{ij} + \varepsilon_i^{\eta}$$

$$(d) \qquad \log_e\left(\frac{(\varphi,\psi)_{ij}^y}{(\varphi,\psi)_{ij}^0}\right) = \alpha_j D_{Jij} + \beta' w_{ij} + \delta_i^y$$

The person-specific residuals for each model are drawn from a joint-bivariate normal distribution (e), with mean 0 and the (estimated) variance-covariance matrix contains the variance of the residual for each state of co-residence in the diagonal and the covariance in the extremes. the following strategy is applied: first, running specifications of the model with no person-specific residual, while subsequent specifications will include them in order to assess for changing coefficients once controlling for common unobserved effects. As commented before it is expected the covariance to be positive as individuals with a higher (lower) propensity to move outside the parental nest have a higher (lower) propensity to undertake moves when they are outside the parental nest.

$$(e) \quad \begin{pmatrix} \varepsilon \\ \delta \end{pmatrix} \sim N\left(\begin{pmatrix} 0 \\ 0 \end{pmatrix}, \begin{pmatrix} \sigma_\varepsilon^2 & \rho_{\varepsilon\delta} \\ \rho_{\varepsilon\delta} & \sigma_\delta^2 \end{pmatrix} \right)$$

As distance of mobility is not exogenous in the decision to move, above all regarding the type of triggering life course transition and the location-specific capital hypothesis, the outcomes are also divided into different distances of the move (f). Long-distance

moves stand for 50km or longer distances, and short moves stand for distances below that threshold. Parental home return is regarded as a different category within those residential outcomes when being outside the parental household. In that case no separation was applied between short and long-distance returns because the nature of the return might not differ according to distance. The few cases of long-distance mobility (N=33), where the individual do not return to the parental home but to the same location of residence where parents live (i.e. *local authority district*) were regarded as returns to the parental nest. We argue that they have a meaning closer to parental home returns than to further moves (elsewhere), in the sense that they come back to a known context and approach the parental nest.

$$(f) \begin{cases} \log_e\left(\dfrac{\eta_{ij}^{LD}}{\eta_{ij}^0}\right) = \alpha_j D_{Jij}^{LD} + \beta' w_{ij}^{LD} + \varepsilon_i^{\eta} \\[2em] \log_e\left(\dfrac{\eta_{ij}^{SD}}{\eta_{ij}^0}\right) = \alpha_j D_{Jij}^{SD} + \beta' w_{ij}^{SD} + \varepsilon_i^{\eta} \\[2em] \log_e\left(\dfrac{(\varphi,\psi)_{ij}^{\varphi LD}}{(\varphi,\psi)_{ij}^0}\right) = \alpha_j D_{Jij}^{\varphi LD} + \beta' w_{ij}^{\varphi LD} + \delta_i^{y} \\[2em] \log_e\left(\dfrac{(\varphi,\psi)_{ij}^{\varphi SD}}{(\varphi,\psi)_{ij}^0}\right) = \alpha_j D_{Jij}^{\varphi SD} + \beta' w_{ij}^{\varphi SD} + \delta_i^{y} \\[2em] \log_e\left(\dfrac{(\varphi,\psi)_{ij}^{\psi}}{(\varphi,\psi)_{ij}^0}\right) = \alpha_j D_{Jij}^{\psi} + \beta' w_{ij}^{\psi} + \delta_i^{y} \end{cases}$$

The competing risks approach is suitable to tackle non irrelevant alternative choices (Hill *et al*, 1993). That is to say, one would

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consider irrelevant the decision of short distance move when estimating the risk of long-distance residential change as the odds of no change in a binary model[38]. According to that it is assumed that the determination of outcomes might differ for each equation of the same process, including the nature of selection by unobserved characteristics (Lillard & Panis, 2002; Kulu, 2005). Thus, we should include different person-specific residuals in each equation. However, as we do have few repeated events for parental home returns and long-distance moves, and it may not allow to identify the variance of the person-specific residuals, one person-specific residual for each state is specified: parental co-residence and other residential status. It is claimed that preferences for mobility might be identified among those who move out from parental home, emphasizing that earlier moves select individuals and may affect all decisions of mobility once outside the parental home. Unlike, those who move later will be less likely to do any kind of move. In other words, they make sure that the move is going to be almost definitive[39].

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[38] If there is something unobserved (not in X's) that made long-distance residential variation unfeasible, we assume those who would have done a long-distance move distribute themselves between short distance move and not moving in the same proportions as those who originally chose not to move long-distance.

[39] We also conducted an analysis (results not shown) setting constant to the same value a heterogeneity component for each equation. We allowed then for correlation in order to observe common unobserved effects assuming no independency of irrelevant choices and we obtained positive and significant associations for the following covariaces: long-distance leave-short distance leave; short distance leave- long-distance further move (out of the parental home); and long-distance leave- long-distance further move (out of the parental home). All other association were positive but non-significant. Coefficients in models, following this strategy, kept unchanged.

3.4.1. Variables

The effect of previous mobility is measured by means of dummy variables. They flag residence episodes according to their chronological order. Regarding the hypotheses before set, the chronological order of residential episodes might be a proxy for the amount of location-specific capital held in different locations of residence and/or short investments in a given location. Higher chronological order episodes (in contrast to the first episode of residence: the reference category) are expected to have a positive effect as the people who move more frequently are likely to move again because of the low (high) opportunity cost of location-specific capital that they may keep in the current (previous) location of residence. The 'first' (reference) and 'second or higher order' episode of co-residence with parents in the equation of parental home-leaving are used[40]. To be in a higher order episodes of parental co-residence means that the individual returned at least once to the parental home. In the equations of parental home-leaving an interaction term captures the effect of residential change before leaving the nest. In fact, the life-table estimates showed that residential mobility before leaving the nest is likely to impact on the timing of initial home leaving.

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[40] 1161 individuals in the sample have only 1 spell of parental co-residence; 246 have 2 spells and 17 have 3 spells.

In the equation of residential outcomes outside the parental household it is used 'first' (reference) and 'second' order episode of residence outside the parental household[41]. Let us note that an episode outside the parental household is a period of absence from the parental home, and may contain different residence episode until the individual returned the parental household (see example in Figure 1). Therefore, we also used variables indicating each residential episode contained in the first or second times that the individual remained outside the parental home. We also included a variable that indicates whether parental home leaving is the result of a long distance move. According to the theses we proposed before, long-distance movers (since the beginning) are more likely to move again.

Similarly, duration of residence may be an indicator of the effect of location-specific capital on residential mobility. Shorter durations of residence imply lower opportunity cost to leave the location of residence, since the time for investment in location-specific amenities was shorter. The duration has been modeled as linear splines, which capture a slope effect of duration between intervals of residence duration previously defined. A spline is a piecewise-linear transformation of some variable, in other words, it transforms variables of continuous metric like durations into a set of variables with a piecewise linear form, increasing and decreasing the log-hazard as time ticks on, depending on the signs of the slope

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[41] 637 individuals in the sample have no spell of residence out of the parental home; 617 have 1 spell; 171 have 2 spells and 14 have 3 spells.

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coefficients (Lillard and Panis, 2002). In the case of the equation of co-residence status the spline has been codified in 2 nodes (bend points), and then 2+1 segments or intervals of duration, departing from the intercept coefficient for the first spell of co-residence. This allows estimating slopes of the log-hazard for three intervals of co-residence duration: 0-4 years; 4-7 years and 7 or more years. We may consider that the probability of initial home-leaving increases between ages 16 to average age of first parental home-leaving and then it decreases. We also may consider that initial and repeated parental home-leaving may respond to different dynamics of residence duration. We separated then the duration for initial and repeated home leavings setting a different set of splines for each category.

Duration intervals are shorter for spells outside the parental household as the probability of moving the first or second year after home-leaving is high. Duration of residence outside the parental household is defined as the duration in years since the individual settled in a living arrangement outside the parental household[42]. The slopes measure the following duration intervals: 0-4 years; and 4 years or more. Interactions with different spell order were also assessed; however, they were discarded from final models as there were not enough cases for assess them statistically.

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[42] One could have used duration since the individual left the parental home; however, it was not done for two reasons: first, it is more likely that the duration since latest mobility is going to affect current behaviour according to location-specific capital hypothesis. Second, duration outside the parental household is modeled in a competing risk framework, where competing events may take place before the transition of coming back to parental co-residence status.

Early home-leaving is measured through a dummy variable which turns into one when the individual was outside the parental nest before age 21, which is below the average age of parental home-leaving in the UK (i.e. average age is 23) and 0 otherwise. It is expected that those individuals that move earlier are more likely to return or move further. This is partly due to the fact that they hold less location-specific capital, but it may also be explained by the alternative hypotheses to be tested as life course transitions or selection among early movers as a result of unobserved heterogeneity. In case unobserved heterogeneity is mediating through an early age at parental home-leaving, then, one should observe than the addition of a person-specific residual makes the dummy variable to turn insignificant.

Life courses take the form of time-varying covariates measured as dummy variables. There are three time-varying covariates for own family status: single with children, couple without children and couple with children (reference: single without children); and two for career status: full-time job and full-time student (reference: other combinations). Individuals in partnership and with children are expected to be, in general, less mobile for all combinations of residential mobility, and in particular, less prone to move longer distances and return. The inclusion of life course effect is expected to diminish the effects of early leaving and previous mobility regarding the hypotheses posed above about the transitions to adulthood.

The effect of the initial family structure, at age 16, is captured by dummy variables which indicate whether the individual was living within a traditional family (i.e. the two biological parents) as a reference category; with only one parent (which are mainly divorced and separated, as there are few lone parenthoods) or one parent plus step-parent / only stepparents. As commented before we do use the family structure of origin because it is determinant of the likelihood of current moves, independently of other covariates that trigger residential mobility. We also considered including in the analyses a time varying covariate for measuring the marital status of each parent (coresident and not coresident), where parents could be either married/cohabiting (reference), separated/divorced, widow or never married. The estimation in the equation outside the parental household had many missing information, showed no significant effect of the yearly reported parental civil status and high bivariate correlation with the family structure of origin. Therefore, this information was dropped from models.

As further covariates both equations contain the following co-covariates: sex (1-female; 0-male), ethnicity (1 others; 0- anglo white), the household income weighted by the members of the household (1- being in the top third of the income distribution; 0-otherwise) and a variable which flags when the individual has missing information for covariates due to proxy-interview (i.e. other members of the household gave the basic information of the individual who might be absent of the household or not). The

parental co-residence equation also included personal income (1-being in the top third of the income distribution; 0-otherwise), the highest educational level of parents (1- higher education; 0-otherwise) coresident sibship size (2 dummies: 1- one coresident sib; 1- two or more coresident sibs; 0-otherwise) and the interaction between being a female and having coresident male sibs.

3.5. Results

Numerical results are presented in Tables 2, 3 and 4 in the annex, with results of three specification for the two competing risks models (i.e. parental home leave and outside the parental home) and, in total five equations simultaneously estimated (i.e. long-distance parental home leave, short distance parental home leave, long-distance move outside the parental household, long-distance move outside the parental household, return to the parental household). Although equations are presented in different tables, all of them were estimated simultaneously. The three specifications stands for (a) a model with only covariates associated to residence duration, spells of residence and parental household structure, (b) 'a' plus parallel life courses, the amount of resources available in the parental nest and other covariates, (c) 'b' plus heterogeneity (and correlation of residuals). Model 'a' allows checking whether associations of different tracks of the residential trajectory are significant and the hypothesis of the location-specific capital is, a priori, met. The second model is expected to reduce the effects of

the coefficients in model 'a' as covariates to test the life-course hypothesis are included. Third, the inclusion of heterogeneity may correct for effects explained by unobserved factors, and thus, it may affect the coefficients of the residential trajectory, showing the real extent to which residential trajectories and patterns of home-leaving and return are affected by location-specific amenities.

In Graph 5 log hazard of parental home-leaving for first and higher order episodes of parental co-residence and the effect of duration of parental co-residence are shown. The hazard of initial nest leaving increases since the individual is aged 16[43] and it keeps constant or increases slightly for short distance moves and decreases for long-distance moves through the twenties. This means that the initial home-leaving may follow the timing of main transitions to adulthood, where long-distance moves are more related to educational reasons and might be done earlier (see log-hazard increase before age 20 and slight decrease afterwards in Graph 5) than short distance moves, more related to family reasons or once education is over. Unlike, the hazard of second home-leaving, though higher than first order spell at the beginning, it decreases from the very moment they return, meaning that, as expected, individuals co-reside few time with parents when they return, and then leave again. As commented, multiple episodes of residence is likely to enhance more mobility and this applies as those who move

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[43] Less than 10 individuals of the sample start the first parental co-residence spell later than age 16.

before the first nest leave increase the hazard of leaving (see coefficients in Table 2 specification A).

Graph 5. Log hazard of parental home-leaving*.
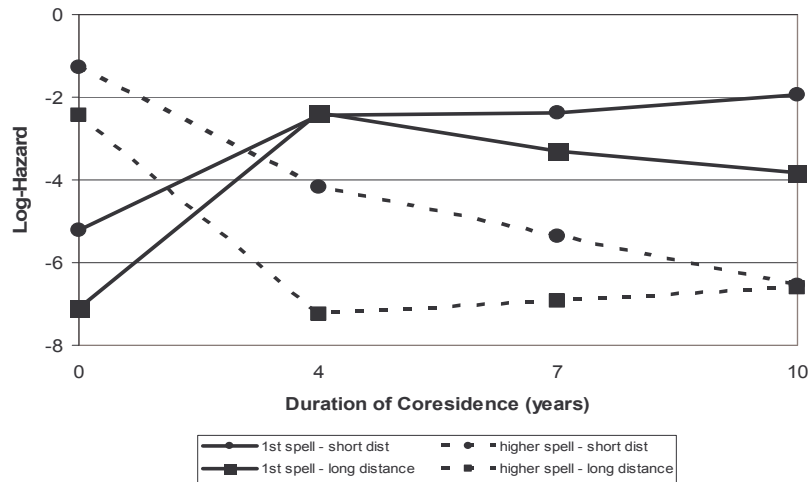
The hazards of residential mobility once the individual is outside the parental nest go hand in hand with the expectations that multiple residential episodes of a residential trajectory are interdependent. First, in Graph 6, one observes that the effect of duration of residence is decreasing, though to a lesser extent for short distance moves, which are relatively less affected by losses of location-specific capital and tend to respond to readjustments of inefficient housing consumption. Second, in Table 4 multiple residence episodes after leaving initially the parental home impact positively short distance mobility. In case of long-distance mobility, multiple

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episodes do not lead to higher mobility, probably because migration is more likely to take place previously, when leaving home. In fact, after a long-distance move it is likely that short distance moves occur in order to search for suboptimal housing consumption, due to lack of knowledge on arrival to destination. However, we disposed of limited cases of long-distance move, and the coefficients still have positive sign, and for that reason no more emphasis is made on interpreting its lack of significance.

Graph 6. Log hazard of residential outcomes departing from non-parental
living arrangements.
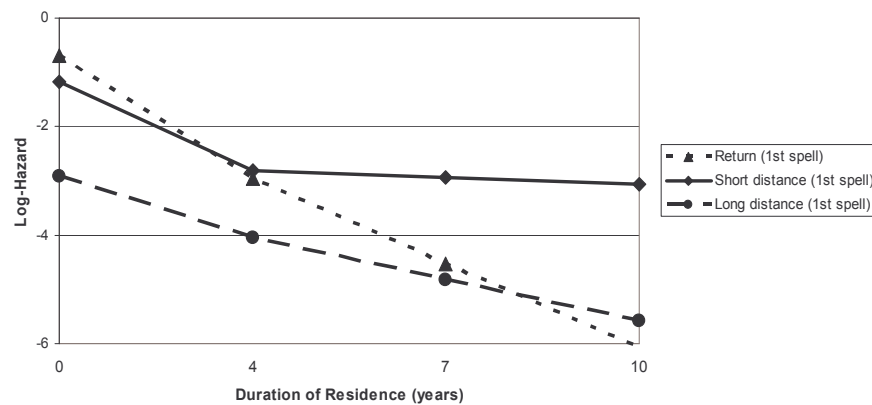
Source: BHPS, 1992-2007. Sample selection: Individuals who reached age 16 between 1992 and 1999. 'Return' refers to return to the parental nest. The other categories refer to moves between living arrangements where no parent is coresident.

Returns are less likely as time goes by since the individual left parental home. And the more residential change the less likely the return; meaning that the longer the individual lives outside the parental home, the more likely s/he has been able to set their own

household and become autonomous from parents. The picture might be different for second order spells outside the parental household, which are only possible for those who returned once to the parental nest and left again. The effect is positive and strong for all three outcomes and points that those who fall in a 'leave-return-leave' pattern are individuals with higher mobility propensity. Interesting enough, to leave before the average age of home-leaving positively impacts on all hazards of mobility. Now is turn to interpret further specifications which test the commented hypotheses.

The addition of coefficients that measure the transitions to adulthood and the distribution of resources within the parental household are displayed in the specification 'b' of Tables 2 and 4. Time-varying covariates for partnership and children status display, as expected, positive effect for short distance parental home-leaving. They also affect positively short distance moves once outside the parental household. For other cases the effect is insignificant, except for the negative effect of individuals in couples to return parental home. Similarly, individuals who are still in full education are less likely to do a short distance leave, but they are more likely to leave moving long-distances (mainly for higher education pursuing), and once they are outside the parental nest are more likely to do any other transition. Unlike, individuals who hold a full time occupation are less likely to leave the parental home as a long-distance move, but they are more likely to move out short distance. Likewise, the higher the personal and the parental income the more likely the individual will set outside the parental nest. An

exception is for personal income of long-distance home leavers, who probably rely on family transfers while looking for a first job or being still in education. Similarly, once outside the parental nest, higher household incomes constrain parental home returns, being the nest's return more likely in case of lack of income. Lastly, the presence of sibs in the household does lower the probability to move, in the parental co-residence equations. This result may be mediated by the fact that older siblings are expected to leave before and that sibs may be an asset in the parental nest, because it lowers intra-household obligations, which are shared among sibs.

The main change one observes once life course transitions and parental household resources are regarded is the changing effect of early age at parental home-leaving. It lowers the hazard of short distance move and return and it turns insignificant the hazard of long-distance move. This means that part of early leavers' effect might be related to the non completion of events and transitions (towards full adulthood) that trigger residential mobility and the effect of parental resources which launch young adults outside the nest. The effect that previous moves (i.e. interactions with different spells of residence) exert on the likelihood of moving is much diminished for almost all transitions analyzed once outside the nest. Second long-distance home leaves seems to be less affected. Unlike initial home leavers, repeating home leavers are more likely to be less influenced by an standard sequence or order of life-course transitions, as they returned home, probably after finishing studies but with other uncompleted transitions to adulthood.

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In specification 'b' time-varying covariates of the marital status of parents were also added. In the parental-co-residence equation it is observed that when parents separated/divorced or got widow/er, the likelihood of moving out the parental nest increases, as well as for the presence of step parents. The category 'only parent' in specification 'b' captures the effect of lone parents, and it is negative, meaning that individuals with coresident lone parent are less likely to leave compared to *traditional families* (category of reference). On the other hand, the departure from a household structure with step-parents does raise the probability of eventual home return. However, the effect of family structure of departure on mobility once outside the parental household is still weak.

Specification 'c' includes a person-specific residual for each state (i.e. parental co-residence equations and 'other residential status' equations). Table 3 displays that heterogeneity is identified and the covariance among both residuals is significantly positive. This means that there is common unobserved heterogeneity affecting residential outcomes in both equations. Controlling for unobserved heterogeneity, one observes variation in coefficients as a result of selection effects by unobservables in choices on the residential trajectory. Selection is mainly identified in early moves, where all coefficients of early home-leaving for residential moves departing from non-parental home residential status (i.e. 'left before age 21' in Table 4) turned to be less significant (with less positive effect) for

short distance moves and non significant for returns to parental home.

Some of the effect of residence duration and multiple residential episodes diminishes but in general most of them do not change in statistical significance. Though unobserved heterogeneity that selects towards further mobility is founded and do affect the probability of further migration, some of the interdependencies of the residential trajectory are found to be not spurious and probably to be explained by the opportunity cost that location-specific capital exert. It is noted that it has not been possible to properly capture the latter as we did not analyze the type of location-specific capital that affect people's residential mobility behavior.

Some parental household structure coefficients did a slight increase in all types of parental home leaves. This probably means that, individuals departing from non-intact family structures may be pressured to leave earlier. On the other hand, parental household structure does show little and no significant improvement in their effects on further moves once outside the parental household and return to the nest. This means that, for most of the cases, once selection processes are controlled for (i.e. selection of early leaving in non-intact families), there is no significant effect, at least from the family structure of departure, at age 16.

3.6. Conclusions

The aim of this article was to understand better the interdependencies of residential trajectories of young adults. In particular, testing the causal effect of early parental home-leaving and residential events on further residential outcomes was a main aim. The focus of the analyses was put on residential outcomes of leaving the parental home and those once the individual is outside the parental household (incluiding further mobility or returning to the nest). The emphasis on the latter responds to emerging patterns of *leave-return-leave* as a result of the increased instability of youth's life-courses, in occupational career and family formation grounds.

Three different hypotheses about early home-leaving and dynamic residential trajectories were explored. The first, location-specific capital, predicts that multiple spells of residence and, consequently, shorter residence durations are associated to a lower opportunity cost to break with location-specific assets. The latter are physical assets such as properties or business, social networking and other resources difficult to transfer to other locations. Investment in location-specific capital is a positive function of time. Therefore, residential stability and few previous locations of residence might work as a proxy of largest amounts of such capital, which is deterrent of long-distance moves, above all. Second, the transitions of the life-course that lead towards adulthood are main triggers of migration and, then, early moves may be followed of further moves

which are synchronized with transitions not yet done. Third, selection effects are to be found in residential trajectories, where people who move early is selected towards further moves. Furthermore, the parental composition of the family structure was also analyzed, as the literature proved that non intact families have higher rates of early home leaving.

Biographical data from the BHPS was analyzed. The sample of young Britons was followed since they were aged 16, which was considered the beginning of the *individual own* residential trajectory. Life table estimates were used to describe interdependencies within the residential trajectory, where departing from some types of non intact families was proven to be related to early parental home-leaving. The association of the early parental home-leaving to higher survival probabilities of further moves and returns to the parental nest was also empirically proved.

As far as the methodological scope of the study was concerned, the research was an opportunity to make use of a method to tackle selection of early movers and multiple events of residential mobility into further moves. Simultaneous equation for the hazard of residence change departing from and ending in one of the two mentioned states was applied. Short and long-distance residential change was accounted for. In the results it is observed that the effect of early mobility on residential outcomes decreases once the life-course transitions are controlled for. In fact individuals who leave parental home earlier tend to do not synchronize the events typical

from the transition to adulthood. They might do trials of independent living, get further education in other location and, in general, they are still exposed to many life course transitions that are main triggers of migration. In contrast, late leavers might synchronize home-leaving with events that launch into adulthood. A similar effect has controlling for the life course transitions on the coefficients of previous mobility, measured through different order spells of residence.

After controlling for unobserved heterogeneity, it is observed that the effect of early mobility in residential outcome outside the parental household (i.e. further mobility and parental home return) disappeared completely. Positive and significant correlation of the equations' residuals pointed that common unobserved effects prompt mobility for individuals in both states. In other words, those who have higher propensity to move are also more likely to move in and out the parental household. Despite selection effects were controlled for, the effect of durations of residence and some coefficients that flag the effect of previous mobility are, to some extent, still significantly affecting the hazard of residential relocation in the direction that the thesis of the location-specific capital defends. It was not possible to prove the latter as there were no location-specific assets in the analyzes and residence duration works only as a proxy.

The effect of the parental household structure seems to be only significant to explain parental home leaves, but not moves outside

the nest. Unfortunately, we were able only to analyze the effect of the parental household structure at age 16 once the individual is outside the parental household. Then, we did not explore whether changes of parental partnership status affect the likelihood to return, which it may be the effect captured by other researches.

Future research should focus on differences among locations, focusing on the type of location-specific attributes that a location holds or the value that individual poses in location-specific amenities that were not explored in our analyzes. The use of multilevel models for treating the regional effect of some individual level variables is key for the understanding the effect of some location-specific attributes and its effects in each track of the residential career. For that it is also interesting to study the urban-rural dimension of the region or location and all the attributes in the form of material resources and social norms that the region provide and may impact on individual residential choices.

4. THE GEOGRAPHIC PROXIMITY OF SOCIAL TIES IN THE PROCESS OF MIGRATION DECISION-MAKING AND BEHAVIOUR[44]

4.1. Introduction

The aim of this article is to separate resource effects from commitment effects mediating the negative influence of ties' geographical proximity on long distance moves or migration. Though theoretical models distinguish among them, previous

empirical research made no emphasis on separating such effects. Generally speaking, the effect of ties as a resource of the location is ambiguously defined and, depending on the author, it mixes economic, emotional and normative features of ties' proximity (e.g. Da Vanzo, 1981; Greenwood, 1997; Fischer et al, 1997; Fischer and Mallberg, 2001). In many cases, the empirical analyses only include ties within the household, and leave unexplored the extended family and friends which are also source of affiliation and support. Last, few studies on migration research tackled selection effects and feed-back processes (i.e. endogeneity) which might be involved in the association under study (e.g. Massey et al, 1990 or Palloni *et al*, 2001). In fact, seeing both the ties' structure and the investment on ties as exogeneous from contextual aspects (i.e. community/location of residence) and residential stability is not realistic (Sampsons, 1988; Stiner et al, 1992).

In the present study, we try to give a more satisfactory answer to the debated problematic using a new research and methodological strategy. This is to compare and contrast the effects of geographical proximity of ties on the different stages of the process of decision-making and behaviour. We seek to separate what we define as a resource effect from ties' proximity - namely networks and material resources, by which the individual make instrumental usage of the social ties - from a commitment effect or the result of acting consistently with one's affiliation and identity with the social ties. Commitment is a function of feelings and obligations towards significant others (i.e. relationships with affective and moral

meaning), and may enhance values of family solidarity and community attachment.

For carrying the analyses out, we use detailed residential histories from young Germans of a three-year panel survey taylor-made for the analysis of the migration process. The dataset includes information on previous decisional stages for migration behaviour. Since the data was gathered in an East-German (Magdeburg) and a West-German (Freiburg) town, two different socio-economic contexts can be analyzed. We refer to migration as a long-distance move of at least 50 kilometers. The sample is restricted to young adults aged 18 to 29 years because the dependency on ties' resources might be relatively high among young adults and because the selectivity of this group in regard to migration might be relatively low due to short residential careers.

We expect that the negative effect of geographic proximity of ties on migration rates is partly mediated by the resource and the commitment effect. Namely, individuals who remain close may not only use more ties' resources because they are easily available. They also are more committed with the family and other members of the community, such as close friends, for whom they develop feelings over time. Furthermore, having family and friends geographically close may be the result of stronger values of solidarity. In other words, committed people may pose higher value to live close to their social ties and at the same time their decisions

are more likely to be influenced by views and opinions of the network. With data on the value individuals pose to social ties on their life priorities - which we regard as community orientations as a proxy of commitment - we test whether the effect of the proximity of ties on migration is reduced.

As literature in decision-making regard, individual preferences, value orientations and social norms are incentives only on the intentional stage of the decision-making process (see Ajzen and Fishbein, 1980; Fishbein, 1985). Empirical analyses of migration decision-making show how these subjective or internal inputs are unlikely to affect the behavioural stage (Stinner et al, 1992; Kley and Mulder, 2010). In fact, once the individual forged positive views and intentions of migrating, only changes in the external opportunity structure may deter him or her from migration in the short run (De Jong and Gardner, 1981). We test whether intentions to move predicted by commitment is mediating the association between proximity of ties and migration behaviour. For that, we model behaviour as event-histories of residence and estimate logit-hazards of migration simultaneously with an equation of the probability to have intentions to move. Not only we will be able to analyze both, behaviour and intentions as a function of commitment, but also to control for unobserved individual features that enhance migration propensities. Last, different socio-economic dynamics of the regional context may affect the degree to which individuals make use of ties as a resource. For that reason we will analyze interaction effects of ties' geographical closeness with the

context, by means of the two different regional contexts for which we have data.

In the following section we introduce the literature on the location-specific resource-effect of family on migration and describe its strengths and inadequacies. Next, we briefly describe the literature on the migration decision-making process from which we derived our hypotheses. This is followed from data and methodology description and the assessment of results and conclusions.

4.2. Theoretical framework

The research on the influence of geographical proximity of social contacts and family ties on migration has focused on the micro-economic and sociological concept of location specific capital (Da Vanzo, 1981; Fischer et al, 1997; Fischer and Mallberg, 2001; Huffman et al, 2007) and/or (location specific) social capital (Portes and Sensenbrener, 1996; Aguilera and Massey, 2003; Haug, 2008; Belot and Ermisch, 2009). They focused on the explanation that the social network hold resources embedded in the location of residence as well as it is source of affiliation. It is argued that the higher the degree of ties geographic proximity, the lower the probability of migration due to high costs of breaking with ties in the place of residence and lack of them elsewhere. In fact, this thesis has worked quite well in order to explain immobility (Fischer et al, 1997;

Fischer and Mallberg, 2001), mobility towards destinations with community or family linkages (Lindstrom and Lauster, 2001; Aguilera and Massey, 2003), and *return migration* to the place of origin (Da Vanzo and Morrison, 1983; Da Vanzo and Goldsheider, 1990).

Though all this research has a quite clear explanation of the association between ties' geographic proximity and migration behaviour, there are still some theoretical and empirical gaps. Most research (1) had an empirical limited within-the-household perspective, (2) hardly accounted for the difference of *instrumental* (i.e. resource effect) from *non instrumental* (i.e. commitment effect) influences of the social network , (3) did not pay attention to the fact that the latter is probably an indirect effect through the formation of mobility intentions, (4) did hardly distinguish different socio-economic contexts, and (5) had problems accounting for the selectivity inherent to the migrant population.

First, it is quite clear that the resources of social ties embedded in a location broaden the perspective of the social networks compared to the traditional study of the family's influence within the household (e.g. Rossi, 1955; Mincer, 1978). The *family context*, referring to the non co-resident extended family (Mulder, 2007; Michielin and Mulder, 2008), and close friends which are part of the *social contact circle*, namely the social network of regular interaction (Bonvalet et al, 2007), can be nevertheless of economical and social importance for the individual. The enlargement of perspective has

lot to do with the introduction of the concept of social capital in the migration literature (Portes and Sensenbrener, 1996; Aguilera and Massey, 2003). Enlargement might also apply to non-kin types of *weak ties* (in the notation of Granovetter: 1973) such as acquaintances or work-related contacts. Community level research on members of the same origin, not necessarily family or close friends, in migration destinations reveal that weak ties have significant effect on individual geographic mobility, but in a different way to the one of relatives (Lindstrom and Lauster, 2001; Garip, 2008), as they are more likely to give access to opportunities embedded in networks (Stark, 1991), but not to financial and emotional support (Granovetter, 1983). Therefore, there might be no effect of commitment on migration in the case of weak ties.

However, due to a lack of data or limited perspective of analyses, only few researchers focused in social ties beyond the household in order to test the location-specific hypotheses. They prove that though household structure impact on the resource effect of social ties, size and geographic location of ties are still important to explain geographic mobility. For instance, Belot and Ermisch (2009) use information on the location of residence of friends for analyzing the effect of friend's geographic proximity on migration probabilities in the UK. They found the number of ties in the location of residence to influence the out-migration probabilities negatively. Rainer and Siedler (2008) studied the effect of sibship size and sex-age composition on the distance to parents in Germany. They found that older siblings are more likely to migrate,

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and the number of children had a hump-shaped curve effect on the probability of moving. Last, females are less likely to move further away from where parents live. Similar findings were found for Sweden by Holmund et al (2007) and, again, for Germany, by Konrad et al (2001). Palloni et al (2001) also used information on siblings' mobility in order to predict Mexico to U.S. mobility. They found a positive effect of sibling's mobility on migration. Bonvalet et al (2007) made qualitative interviews about mobility and the social contact circle in France. They found that mobility is mediated by the spatial distribution of the extended family. Above all, parents' and closest ties' location impact the most on mobility outcomes. Similar outcomes where found in quantitative research by Michielin and Mulder (2008) in the Netherlands, De Miguel (2008) in Spain, or Vidal (2009) in Germany.

The second shortcoming we find, on which the later research has not yet focused, is related to the multiple causalities of social tie's influence on geographical mobility[45]. According to the enlightening notes of Harbison (1981) there are two different sources for the family's incentive or constraining effect on migration (see also Boyd, 1989): (1)   Family acts as a resource (or what Harbison divide in a 'social networking unit' – connecting individuals to their

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[45] Earlier psychological studies (e.g. Christenson et al, 1983) found that once controlling for job career related motivations, there still remain effects from other values (towards 'helping others' or the like) that explain mobility. In a longitudinal study of patterns of temporary and permanent migration in rural Thai areas, De Jong (2000) suggests that perceived family norms affect the intentions of migration. He used the encouragement of mobility by close relatives (i.e. parents, partner or children) in the preceding two years as a proxy of family norms as perceived norms concerning migration.

ties' social capital – and a 'nurturance unit' – providing properties and other material resources) and (2) as a 'unit of socialization'. Generally speaking, from the resource effect it can be inferred an instrumental use of the social network. In contrast, the role of the social network as a 'unit of socialization' refer to the influences through norms, orientations and values that guide action, which the individual develops in the process of socialization and in long term exposure to social interaction. This process is likely to induce individual's commitment to the persons with whom regular interaction is held. Commitment is in social-psychology defined as a tie between the individual's identity and individual roles and social groups (Burke and Reitzes, 1991). Regarding social ties, commitment has both moral and affective connotations. Regarding behaviour, it gives meaning to action as a result of these identification processes. Relationships based in affection and values, such as those with the family and close friendship, are more likely to generate commitment through feelings and obligations towards significant others (Rusbult and Buunk, 1993; Rusbult *et al*, 1999) than other networks. In general, commitment is likely to pressure individuals to stay close to the significant others.

The above mentioned literature on location specific capital is ambiguous in defining the effect of spatially close ties. For instance, Da Vanzo (1981) and Da Vanzo and Morrison (1981) suggest that ties in the nearby exert both types of influence - as they hold resources difficult to transfer and they provide affective links which could only be broken with psychological costs – but they do not aim

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to separate both effects. Other research only focuses on the resources that ties hold as an *insider advantage* of living in the residence place (Fischer et al, 1997; Fischer and Mallberg, 2001; Kan, 2007). Only few works focus on studying the commitment aspects of distance to social ties in migration research such as Stiner et al. (1992) or De Jong (2000) in a quantitative research or Fleischer (2007) in a qualitative research. They find that family expectations and values, or commitment to relatives affect migration decision-making. All in all, the literature proves that both effects exist.

In our research, we argue that the different qualities of social ties, among them geographical proximity or dispersion, are not randomly assigned to *resource* and *commitment* effects of ties. We expect that higher proximity of ties is not only related to a stronger resource effect, but also to a stronger commitment effect, as higher proximity might be the result of stronger values of family solidarity or community attachment. As we will state in form of hypothesis later (page 6: hypotheses section), we expect to observe a less strong effect of the proximity of ties once we control for those aspects related to commitment. However, as Fawcett (1985) claims the effect of values, norms and other internal incentives or constrains on migration should be studied through the whole migration process, which includes decision-making and behaviour. He states that these internal inputs (i.e. norms and values) have an indirect effect on the moving behaviour via moving intentions. In other words, values and norms that enhance commitment may not be

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translated into behaviour if further external conditions are not given (e.g. job opportunities). In fact, many studies claim that a better understanding of the interrelation between geographic mobility and social networks might be assessed via studies of the whole migration process (Fawcett, 1985; Faist, 1997; De Jong, 2000; Haug, 2008).

In the literature, there has been emphasis on sequential models of the migration process in that a preceding intentional stage can be distinguished from the behavioural stage of moving[46] (see Kley, 2009, for an extended discussion on different migration decision-making models). According to one of them, the well-known *value-expectancy model* (De Jong and Fawcett, 1981; drawing on Ajzen and Fishbein's, 1980: theory of reasoned action; or Stinner et al, 1992), individual expectations are measured for the present residence and alternative locations. This 'place utility' is assessed in the intentional or pre-decisional stage of the process by a formulation that takes into account the person's goals or values as well as the perceived likelihood of attaining the goals or values in

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[46] The distortion between intentions and behaviour to move, which has been seldom studied in the past (exceptions: Gardner et al, 1986), though emphasis on such studies are gaining some importance (e.g. De Groot et al, 2007; Lu, 1999), show that unexpected life-course changes make people re-think their residential situation. However, many studies also omitted the effects of other types of mediating factors which change migration propensities through intentions. This is due to the fact that most of them use intentions as a crude indicator variable within a single behaviour equation with additive effects of other control variables (an exception may be found in Kley, 2009; Kley and Mulder, 2010). The inability of most of the survey tools to record sudden intentional changes which are prompted by behaviour in a short time sequence; induce measurement error problems in the analysis.

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alternative places. According to that, the commitment effect embodied in preferences and value orientations, or enduring beliefs which make some options of behaviour preferable among others (Lestaeghe and Moors, 2002), may influence only the formation of moving intentions (Stinner et al, 1992: see Figure 1). The intentions to move may covariate with the commitment effect of the proximity of ties, and this has at least two implications for our research according to the *value-expectancy model*. First, a low commitment plus other internal inputs of the migration process may lead to migration intentions. And second, the effect of proximity of ties on migration behaviour that is not mediated by commitment through intentions to move, may be the real resource effect, as part of the external inputs.

Another shortcoming related to the previous empirical literature is that research has not given enough emphasis to the interactive effect of ties with contextual conditions. We claim that contextual factors may condition the effect of the proximity of ties. For instance, Vidal (2009) finds that regional unobserved heterogeneity affects the strength of the association between proximity of ties and migration in West-Germany. In other words, as research on social embeddedness of individual behaviour found, the context hold socio-economic conditions and a cultural background that influences the degree by which micro-level associations occur (see e.g. Gurak and Kritz, 2000, Windzio, 2008). Different economic opportunities or social norms may influence the desirability of some types of behaviour (Liefbroer and Billari, 2007; Bernardi et al,

2008), so that the association between proximity of ties and migration outcomes may not be randomly distributed over areas. In fact, a poorer socio-economic contextual situation or a relative tradition of out-migration might increase the risk of migration, as individuals have more incentives for migration. In those situations the negative effect of the ties' proximity on migration will be stronger, as they may have a stronger effect of 'safety net'. Let us say, when regional specific market conditions are bad, a lack of close ties may inhibit any opportunity in the region and *vice versa*. The interacting influence of social ties and context on the individual decision of migration will be posed in form of hypothesis in the next section.

Figure 1. Flow chart of causal mechanisms of ties' geographical proximity in the migration process.
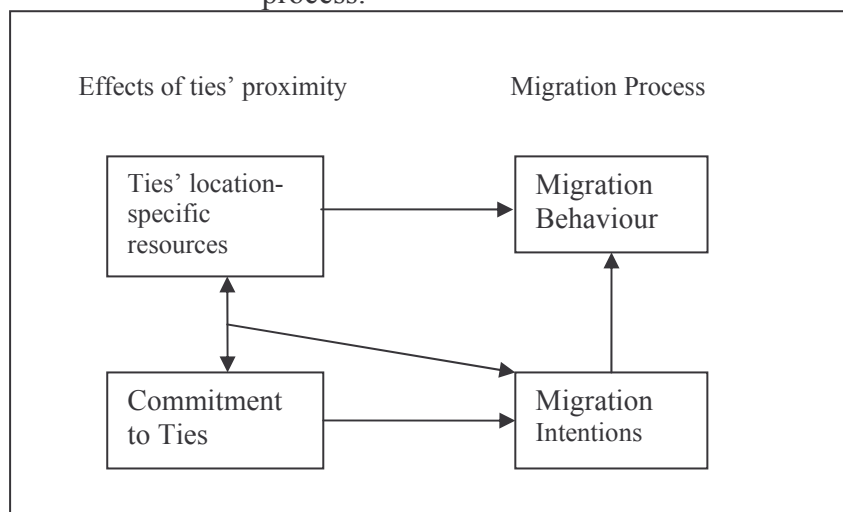
Source: own elaboration inspired in De Jong/Fawcett (1981) & Stinner et al (1992)

Last, one of the main problems of the study of migration behaviour lies on the selection of individuals who already experienced migration (Borjas, 1987, Baccaïni and Courgeau, 1996) or who know persons who succeeded in the realization of migration. As the selection bias lies on common variation in the dependent variable (i.e. out-migration) and the independent variable (i.e. location of social ties), any study which do not assess the residential trajectory of the individual will fail to assess the true causal association between ties' location and migration behaviour. In other words, the fact that geographical mobility may imply a new geographic configuration of ties for the individual, or the fact that previous behaviour may also change individual perceptions and value-orientations in regard to ties, make all results vulnerable due to more than probable 'feedback association' between variables in the analysis (i.e. endogeneity due to simultaneous causation). In the methodology section (see since page 12) we explain how we control for the selection effects and feed-back associations. Among others, we aim to control for difficult-to-measure elements such as migration preferences, social abilities or knowledge of migration, as factors that mediate the association under study (see e.g. Palloni et al 2001; Aguilera and Massey, 2003).

4.3. Two contexts: East and West Germany

For setting the hypothesis about the contextual effect we refer to different regional contexts related to East and West Germany. Our aim is to study the socio-economic role of the regional context; however, we are aware that different dynamics of social support may take place regarding the structure of the network which may also be a function of norms and values more important in one region and not the other. For the case of Germany, the literature that analyses the composition and role of social networks, finds that social ties had and have a higher impact on individual's life in the Eastern part (Diewald, 1995; Brähler et al, 1996; Bernardi et al, 2008). East Germans have a more positive view of ties, and there is higher social support in emotional and economic grounds as well as a higher value and attitude cohesion than in West Germany (Brähler et al, 1996). This is partly related to the ties' composition in East Germany, where there are in average less extended ties (i.e. lower size), but more strong type and with kin relationships (Völker and Flap, 2001; Schmelzer, 2005). Ties are quite more context-heterogeneous in East Germany, in the sense that they are to be found in different contexts regarding employment and leisure time activities. It is likely that many of the friends' ties in West Germany are concentrated in the work-place, or that many relatives work in the same employment sector. This is not the case for East-Germany, meaning that ties give access to a wider range of social support (Bernardi et al, 2007).

After the unification of East and West Germany took place in 1990, there has been diagnosed an erosion of the influence of social networks in East-Germany. That implied, for instance, that one-head households suffered a loss in social support. This meant an increase in social inequality between household types, related to the use of social capital. In general, East Germans have also seen diminished the instrumental value of their social networks. However, comparing similar trends with West-Germany, Nauck and Schwenk (2001) find that Eastern social ties erosion has been not significantly different to the erosion in West-Germany within the same time-period. Therefore, East Germany might still be a more traditional community-oriented society with poorer socio-economic conditions contrasting with the more dynamic West-German market society. We think that the effect of ties proximity might be stronger in East-Germany, as in many cases the social ties become the most important resource in the place of residence, due to lack of market opportunities. As it is possible that the network structure, including the geographical proximity of ties, is affected by traditional community orientations, controlling for these orientations overcomes the cultural component of comparing East and West Germany, in order to find the resource effect according to socio-economic conditions of the contexts. Let us note that the effect of family support relative to resources may be also higher in East-Germany due to the above-commented relative higher context heterogeneity of family ties.

4.4. Hypotheses

According to the theoretical insights described above we expect that

H1: the association between the geographic proximity of family and friends ties and migration behaviour is negative as a result of the resources non transferable between locations and the commitment embedded in close and spatially near relationships.

From the above hypothesis we expect that the effect of ties' proximity is indistinctly explained by resources non transferable between locations and by feelings towards significant others and values of solidarity (hereafter: community orientations) which lead to higher commitment. With the aim to go further in the distinction of the resource and the commitment effect, and taking advantage of the socio-psychological models of decision-making, we expect that commitment inhibits the intention to move, but that it is not directly affecting behaviour. Instead, the effect is channeled by the intentions to move. Then we hypothesize that

H2: the effect of geographical proximity of ties on migration behaviour is diminished as we control for commitment and other internal inputs of migration on the intentional stage of the migration process.

Last, despite the expectation that individuals who depart from geographical contexts with lower socio-economic opportunities are

more likely to move, the proximity of social ties should be more important in such a kind of context in that market opportunities are scarce. Therefore, we expect that, ceteris paribus,

H3: in Magdeburg, a city embedded in a regional context with few economic opportunities, the concentration of social ties has a greater effect on keeping the individuals in that regional context than in Freiburg, a regional context with many opportunities.

4.5. Data

We analyze longitudinal data on individual residential histories belonging to the Project 'Migration decisions in the life course' (Huinink and Kley, 2008). The project is aimed at studying the migration process, and gathered information of a representative sample of individuals aged 18-50 living in 2006 in the cities of Magdeburg (Saxony-Anhalt; East Germany) and Freiburg (Baden-Württemberg; West Germany). Both cities are similar in regard to their size - they both have about 200,000 inhabitants – and in regard to their geographical situation, since they are not located close to another important city or within a conurbation. Furthermore, both have universities, which are probably attractors for young adults. One of the main differences between the cities is the fact that in Magdeburg the out-migration rates regularly exceeded the in-migration rates in the last years, while in Freiburg it was the other way around.

The data allows studying the decision-making and behavioural stages of the migration process in a dynamic fashion. Starting the first wave of the panel-survey in April 2006, it gathers information on intentions to leave town. Subsequent follow-up surveys in August and November 2006 collected information on a change in intentions or moving behaviour. The second wave of the panel study was completed in April 2007, where again information about personal characteristics, social ties, values and attitudes, perceived contextual characteristics and statuses in life domains as work, education or family was gathered, besides the information about moving intentions and behaviour. The third wave of the panel study took place about 14 months later, and contained a retrospective record of the timing of various life-course events between the beginning of 2006 and the end of the study in 2008. This retrospective information facilitates the matching of the information on values, attitudes, and perceived contextual characteristics gathered "in time" to the different stages of the decision-making process.

In total, 1075 individuals aged 18-29 have been interviewed in the two cities. However, not all these cases were valid for the analyses. Those individuals who at the beginning of the survey (April 2006) declared that their primary residence was not set in Magdeburg or Freiburg were deleted[47]. In any case, those who stated that their

[47] 90% of the persons who declared to have two places of residence had one of the residences in the parental home (mainly declared as a second residence).

primary residence lay within a 50km diameter to the cities were not deleted. Therefore, mobility is meant to be from the analysed 'life spaces', which also include the surrounding area of Freiburg and Magdeburg[48]. However, in the analysis we will flag such cases in order to assess how these observations distort results. After subtracting these observations we obtain a sample of 771 individuals.

Migration behaviour accounts for a change of residence further than 50km from town (Magdeburg/Freiburg). Exploratory analyses support that this distance threshold as a clear cut point regarding perceived distances to relatives and friends or changes in life-course statuses in the work and education domain, meaning change of contact circle or daily activity space (Bonvalet et al., 2007). As intentions formation is a previous natural step towards behaviour realization, the data for analysing the process of migration decision making must be gathered at different moments of time[49]. Hence, migration behaviour is regarded as moment t and migration intentions as t-1 in the analyses. Migration intentions were measured via 'consideration of leaving town to live somewhere else'. In a cross-tabulation of intentions to move with distances of

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[48] This assumption relates to the reduced travel time between the city and the primary residence location. If the individual declares that one of the two cities is the main place of residence, we still can find the problem that the individual consider Magdeburg or Freiburg as a place of reference, which is not necessarily the place where he or she is living most of the time (Bonvalet et al, 2008).

[49] In fact, the intentions should be surveyed before the behaviour takes place in order to avoid ex post facto responses on what drove to behaviour (De Jong, 1981; Bernardi et al, 2008).

residential change we observed a significant linear association of intentions to leave town with long distance moves or migration.

In the dataset information on ties' characteristics is limited to the type of ties living in the household or in the second residence (all of them recorded in each panel wave) and proxy variables for the location of family and friends in general (recorded only in the first wave). We make use of the latter variable to construct the measure of ties proximity, while the others will be used as control variables for the probably strong effects of relatives and friends living in the household as well as the effects of couple and children living in the main or the second residence. The proximity of ties' variable is an ordinal measure of ties proximity from all ties living nearby until no ties living nearby. There is one measure for family ties and one for friendship ties. As this information is only recorded in the first wave, discrete changes on ties' residential location are not directly observed. However, ties' proximity changes can be indirectly taken into account as we have overtime changing perceptions on the desirability of the place of residence in regard to a satisfactory social life.

As the dataset contains information on lifetime goals of individuals, we used this information to construct the variable of community orientations. Several scale variables [from 1- 'not good at all' until 7- 'very good'] on individual subjective responses about how important several dimensions of life are for them personally were

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used in a factorial analysis[50]. We used the first of the three factors as a proxy variable to community orientations, as they were highly correlated with the following goals: 'to live with friends and people who you know' and 'to develop personal and private interests in the place of residence' (and to a lower extent to 'raise children'). These characteristics have much in common with the conceptual description of community attachment by Stinner et al. (1992) or Sampson (1988). We discarded another factor about 'family formation' as it was related to find the right partner and to have children, but it was not correlated to the importance of social ties or to have a social life beyond the core family. Additionally, information on whether ties recently left town can be used. We expect that friends or relatives leaving town decrease the extent to which an individual evaluates the location of residence as a place for successful social life, or raises the social acceptability of leaving town (through what is known as a diffusion process).

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[50] It yielded three significant factors which we labelled as follows: (a) community attachment, (b) work career and (c) family formation. The results of factorial analysis are available under request.

Table 1. Variables' descriptive statistics and correlations

	Descriptives				Correlations	
					Total	
	Mean / Proportion	St.Dev	Min.	Max.	Intentions	Behaviour
Migration Behaviour (Leave Town)	.005	.07	0	1		1
Intentions to move	.46	.49	0	1	1	0.06*
Friends Location (close to far)	2.42	1.03	1	3	0.11*	0.03*
Family Location (close to far)	2.12	.8	1	5	0.08*	0.01*
Community value-orientations	0	.65	-2,9	.82	-0.09*	-0.01
Ties leaving town (perception)	.71	.45	0	1	0.05*	-0.01
Residence duration (in months since age 16)	86.76	41.2	24	205	-0.05*	-0.02*
Age (in years - time varying)	25.06	3.46	18	32	-0.05*	-0.02*
Period (in months since april 2006)	13.13	8.4	1	28	0.07*	-0.04*
Partner	.22	.41	0	1	-0.03	0.02*
Partner fully employed	.03	.16	0	1	0.04*	0.01
Number of children	.25	.66	0	4	-0.04*	-0.02*
In education	.53	.49	0	1	0.01	0.01
Full employment	.24	.43	0	1	-0.06*	-0.01
Educational level	1.71	.85	0	3	-0.05*	0.01
Live with parents	.24	.42	0	1	0.06*	0.01
Live with other relatives/friends	.19	.39	0	1	-0.02	0.03*
Accomplishment of life-time goals in location	1.69	1.39	0	5.7	0.13*	0.01
Sex	.52	.49	0	1	0.09*	0.01
Freiburg	.53	.5	0	1	-0.05*	-0.01
Magdeburg	.47	.5	0	1	0.05*	0.01
Freiburg* Friends Location (close to far)					0.07*	0.02*
Freiburg* Family Location (close to far)					0.07*	0.01
Magdeburg* Friends Location (close to far)					0.16*	0.04*
Magdeburg* Family Location (close to far)					0.11*	0.03*

Source: 'Migration in the Life Course' Project.
Weighted data. N=14701 individual-month observations for all variables except for family and friends proximity (N=14631). For calculating correlations with intentions we only accounted for observations recorded at the same time when the individuals were asked for them (N=2810).

Other variables that will be considered in the analyses stand for the life course trajectories, as some literature has proven that the proximity of ties might be mediated by the life course status in family and employment domains (Michielin and Mulder, 2007; Mulder and Kaljmin, 2006). We inserted in the analyses time-varying covariates for the following status: in employment, in a formal track of education (on-the-job training is not regarded), in

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partnership and parenthood. Educational levels are also important to control, as the benefit from 'strong ties', according to the literature of Grannovetter (1973) and referred to as family and close friends, is less effective for highly educated people. The latter obtain relatively higher amount of resources from market-centred 'weak ties' than lower educated people does. Four categories of educational attainment are regarded: lower secondary without qualification, lower secondary with qualification, higher vocational qualification and university qualification. The type of social ties in the household is also important, as we expect differences in mobility depending on whether the individual lives alone, with the own family, with parents, or with other relatives or friends. The last is a necessary control as the effect of proximity of ties on migration is mediated by the household structure, where the social support is higher. As we have information about life-time goals and information about the accomplishment of life-time goals at the place of residence on a similar ordinal scale, we construct an indicator by building the difference among both scales. The indicator depicts the 'community satisfaction' (Stinner and Van Loon, 1992). The higher the indicator, the more the location does *not* satisfy individual life-time goals. For control reasons, we will analyse the mediating effect of this variable on intentions and behaviour, though according to the decision-making model it should only affect the formation of intentions (Stinner et al., 1992).

Graph 1. Average residence duration in town (in months) since age 16 by educational track (when in education) or attainment (when out of education) by town.
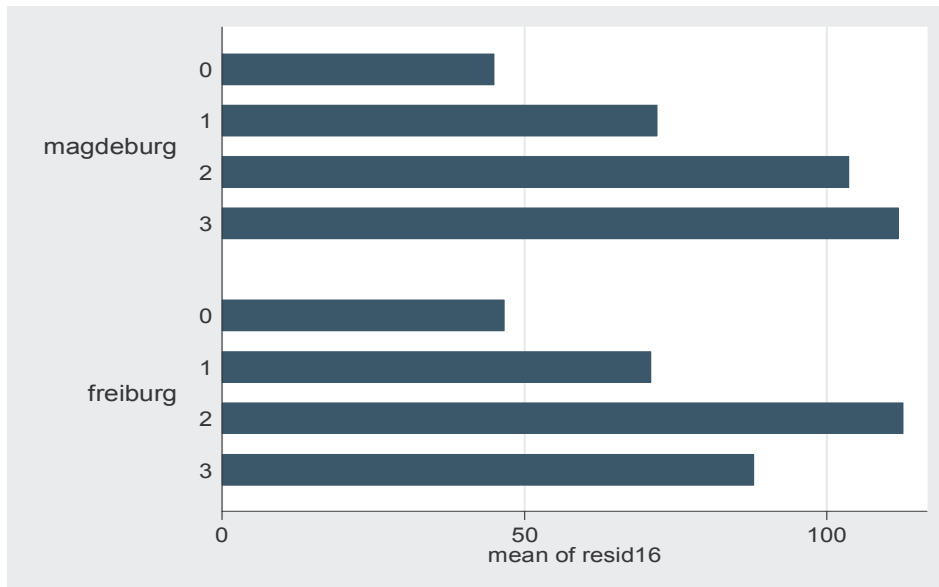
Source: Own calculations form 'Migration in the Life Course' data. Duration of residence is calculated in months since age 16. The educational attainment regards for (0) lower secondary without qualification, (1) lower secondary with qualification, (2) higher vocational qualification and (3) university qualification.

Table 1 shows descriptive statistics of the variables that we will use in the analyses in individual-month units. Correlations of these variables with intentions to move and migration behaviour are also shown in Table 1. In general, most directions of association do not differ from our expectations. The few variables that have unexpected directions tend to have a coefficient close to 0, which is not statistically significant. However, an unexpected result in Table 1 is that the correlation of migration behaviour with the interaction between family proximity and residence in Freiburg is not significant. A crosstab of family proximity and city of residence

confirms no linear effect between living in Freiburg and family proximity, but it also shows that in Freiburg there is a larger number of individuals with no relatives living there. As out-migration levels in Magdeburg and Freiburg are similar - though they show differences in the effect of social ties' proximity - we suspect that the 'unexpected' effect of social ties in Freiburg might be mediated by lower mean residence durations as a result of higher attraction of university students. In Graph 1 we observe that higher education mediates differences in average residence duration in both towns. However, it is also important to account for previous-to-survey higher out-migration rates in Magdeburg. The latter may imply that those who stayed have stronger linkages to the community. The selectivity of the young adults' in both towns will be tackled in the subsequent sections.

4.6. Method and Model specification

Intentions and behaviour of leaving town have been modelled as dynamic simultaneous equations in order to test the above-mentioned hypotheses, which all base on the presumption of non-independence of the outcomes in each equation. The theoretical insights commented before imply a sequential dependence of each stage in the process of migration decision-making, where the intentional stage takes place before the behavioural one. However, as we aimed to model selectivity issues and feed-back associations, we decided to model the equations simultaneously. This allowed us

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tackling the effect of unobserved personal traits such as personal abilities, or migration experiences of relatives and other aspects that make people more likely to move and to have intentions to do so. We call the latter unobserved heterogeneity. These difficult-to-measure characteristics that lead towards moving or staying may influence the association between the geographic proximity of ties and intentions to move or migration behaviour. For example, those individuals with lower social abilities may be less likely to intend to leave town when most of the social network is to be found in town. Not controlling for such individual-specific characteristics may lead to biased results of the association under study (i.e. a stronger retention effect of the proximity of ties). Furthermore, due to commented differences regarding previous mobility dynamics in the context-specific young adults' samples, potential selection issues are also assessed by means of the analysis of the unobserved heterogeneity. As detailed below, the simultaneous equations' approach should lead to a necessary correction of the estimates. Regarding the dependent variables, data on intentions to move is only recorded four times (i.e. months), while we know the exact month of migration. This means that we do not observe some changes in intentions that may prompt sudden change of residence and *vice versa*. Therefore the difference of results between a sequential and a simultaneous model should not be important.

Our analytical strategy is to test different nested model-specifications in a step-wise fashion with a proper test of fit. First, we estimate the two models separately (model specification 1) in

order to observe the effect of geographic proximity of ties and other covariates on intentions and behaviour. A variable of community orientations is inserted in the behaviour equation in order to analyse a possible direct effect of commitment on geographic mobility. Second, we add a coefficient of intentions on the behaviour equation (model specification 2). We expect other coefficients to decrease in significance, due to the theoretical assumption that intentions are a primary determinant of behaviour, and they may control for the commitment effect. Third, we allow for correlation among residuals of each equation (model specification 3). The coefficients are expected to change as we allow for prediction of community values on the intentions equations as well as unobserved heterogeneity is included in the equations. Last, we test non-linear effects of the proximity of ties with the regional context (model specification 4), and we will detail more about it later on. Likelihood ratio tests will allow us to observe significant improvements on the goodness of fit of each model-specification with regard to the previous one.

The intentions equation is modelled as a binary outcome panel model, regarding the four records of declared intentions per individual at different points in time. For the behaviour equation we are able to apply a hazard model, as we have time-to-event data on a monthly basis. The model estimates the hazard of out-migration, in other words, the probability of leaving the city of Magdeburg or Freiburg at time t, conditional to the fact that there has been no previous migration since the beginning of the observation period

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(*t>T*). As we have short-panel information we decided to apply a discrete-time hazard model (Allison, 1982; Yamaguchi, 1991). Among further reasons for such decision, we do not have information on the exact day when migration took place (Steele et al, 2006) and, in some cases, we do not know exactly the month. The latter is the case for those respondents who did not participate in wave 3 in which the retrospective event histories were gathered. In those cases the months of migration were approximated according to the three follow-up questionnaires in August 2006, November 2006 or April 2007.

The estimation of the parameters is done by full-information maximum likelihood with the statistical package aML (Lillard and Panis, 2002), which allow for flexibility in estimating simultaneous equations. Logit functions are applied to both the intentions equation and the hazard of migration behaviour (1). Thus, the equation for migration behaviour estimates logit-hazards. Linear effects of time-varying covariates and time-constant covariates W_{ij} are included in the model. In the case of the hazard model, these covariates are proportional hazards to a baseline function. In fact, the behaviour equation contains a baseline hazard function $D(t)$ which controls the effect of duration on a monthly basis since the beginning of the observation period. As we do only have data until the first event for the majority of the cases, we deleted second-order long distance moves (i.e. 9 observations). Therefore, the baseline hazard function clusters observations into individuals in analyses.

Alphas and betas in both equations are respective coefficients for the parameter estimates.

$$(1) \begin{cases} \log_e\left(\dfrac{h^m(t)}{1-h^m(t)}\right) = \alpha\, D(t) + \beta'w + \varepsilon^m \\[2em] \log_e\left(\dfrac{I(t)}{1-I(t)}\right) = \alpha + \beta'w + \delta^I \end{cases}$$

In order to test whether individual unobserved heterogeneity is biasing our results, we add an individual-specific residual in each equation (2). The residuals are drawn from a joint-bivariate normal distribution with mean 0. As we only have one event per individual, we may not be able to identify the variance of the individual-specific residual, and for that reason, we set it equal to 1 (see a similar strategy in Billari and Philipov, 2004; Baizán et al, 2004; or Lapuerta et al, 2008). In the analysis we tried other values for the variances of the individual-specific residual, but the sign of the estimated coefficients kept unchanged. The covariance represents the correlation of the individual unobserved characteristics in both equations, meaning that if we identify a significant covariance, we will control for those individual unobserved factors which may distort some of the estimated effects in the equations.

As we expect the socio-economic contexts to influence the causal association between the proximity of ties and the migration decision-making process differently, model specification 4 takes this into account. A dummy variable indicating in which of the two

cities (Magdeburg or Freiburg) a person lived in the first wave was inserted in each of the equations. It may capture the mean difference on intentions and behaviour between the two contexts. Afterwards we allow for non-linear effects of context with proximity of ties by introducing a multiplicative interaction term between ties' proximity and place of residence (Magdeburg or Freiburg). The non-linear effects capture deviances from the slope-effect of the main predictors which reflect different contextual dynamics.

$$(2) \quad \begin{pmatrix} \varepsilon \\ \delta \end{pmatrix} \sim N\left((0), \begin{pmatrix} 1 & \rho_{\delta\varepsilon} \\ \rho_{\varepsilon\delta} & 1 \end{pmatrix} \right)$$

Despite the contextual comparison is a powerful tool for achieving a clearer picture of the causal association under study, it may be problematic as we observe differences in the samples of Magdeburg and Freiburg in regard to the duration of residence. The mean duration of residence in town is significantly higher for inhabitants of Magdeburg. This might be the result of migration processes such as previous East-West migration or the highly attractive power of Freiburg as a university town. Individuals with higher education have in average lower residence duration in Freiburg (see Graph 1 in the data section). Though we may not be able to observe what would have happened if previous conditions and dynamics in both towns were different, the analysis of unobserved heterogeneity may correct for individual unobserved characteristics that make stay or leave Freiburg or Magdeburg. Furthermore, we use duration of

residence in town since age 16 as a baseline function in the behaviour equation, and as a time varying covariate in the intentions equation. The duration parameter is set to 0 at the month the individual starts to live in town or at the month the individual reaches the 16th anniversary if he or she was living there before that age. We consider age 16 as the point in time at which the individual can decide on an independent residential trajectory. Thus, as an observable measure of time-exposure to the context, which may capture location-specific investment and attachment processes, it may correct the differences between contexts with regard to selective processes.

In the sample under study a non-proportional oversampling was applied to persons who declared intentions to move, measured in terms of having considered leaving town recently. The oversampling of potential movers is taken into account by applying weighted likelihood maximization (Lillard and Panis, 2003) using design weights provided. Another possible methodological problem is an average panel attrition of 25 percent (Kley, 2009). The non response in subsequent waves is higher among those with declared intentions to leave town in the first wave. Therefore it is probable that migration is underestimated in a panel analysis regarding the three waves. The simultaneous estimation of intentions and behaviour may correct for such bias, as factors to do with non response have also to do with the unobserved heterogeneity controlled in the model. However, as a sensitivity test, we run a third equation simultaneously for the probability of taking part in

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wave three. In case the attrition affects our estimates, we would find correlation between the residuals of our main equations with the test-equation (cp. Aassve et al, 2002).

A last methodological problem may be related to the measurement of the intentions variable. Intentions to leave town are recorded in the first wave and the subsequent follow-up surveys. However, once the individual left town, no matter the distance, the intentions to move were not further requested. This means that we are not able to match migration behaviour and intentions to move when individuals did a short-distance move prior to a long-distance move. In order to correct for that, we do the following proceedings: First, we assume in the migration equation that intentions do not change until the individual declares different intentions or move. Second, in case individuals move over a short distance, we still assume that the individual has the same declared intentions as before the short distance move. In the analyses we flag these cases in a variable for 'short distance move'. This dummy variable is considered in both the intention and the behaviour equation.

4.7. Results

The main results of the estimations are explained throughout this section (see Table 2). We give emphasis to the results of the behaviour equation, as we want to study changes in the association between geographic proximity of ties and migration behaviour

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under a set of conditions: including migration intentions in the behaviour equation, adding unobserved individual heterogeneity through equations' residuals correlation, and modeling contextual effects by means of interactions.

First, we assess to what extent migration behavior is mediated by geographical proximity to social ties and by community orientations and perceptions about the social life in the place of residence. The models in Table 2 show coefficients of time-to-event estimations for migration behavior, whereas the intention-equation is not shown. Positive and significant coefficients mean a proportional increasing effect of the covariates on the outcome variable (i.e. out-migration or long-distance town leave) and *vice versa*. Model 1 in Table 2 is the baseline model and shows the commented estimates of ties' effects controlling for different covariates which mediate the amount of resources the individuals have and need from their social ties.

Table 2. Log-hazards of leaving town (further than 50km) from simultaneous-equation estimation (omitted 2nd equation: intentions to move)

	Model 1	Model 2	Model 3	Model 4
	Baseline model	add intentions	allow correlation in residuals	include interactions
Independent variables				
Most of the family	-0.2277	-0.2372	-0.1991	-0.8987 *
live in the nearby	(0.4168)	(0.4206)	(0.4228)	(0.5424)
Most of friends	-1.1914 ***	-1.0024 ***	-0.9583 ***	-0.9692 **
live in the nearby	(0.3076)	(0.3110)	(0.3111)	(0.4479)
Community	-0.1942	0.0214	0.0724	0.0944
value-orientations	(0.2472)	(0.2479)	(0.2453)	(0.2557)
Ties leaving town	-0.1627	-0.2823	-0.2950	-0.3182
(perception)	(0.2893)	(0.2990)	(0.2987)	(0.3071)
Intentions to move		2.5213 ***	2.9443 ***	3.0029 ***
(time-varying)		(0.5212)	(0.5295)	(0.5267)
Time variables				
Residence duration	-0.0016	-0.0013	-0.0009	-0.0016
since age 16 (time-varying)	(0.0074)	(0.0074)	(0.0075)	(0.0076)
Age	1.1289*	1.3717 *	1.2720*	1.2925*
(time-varying)	(0.7647)	(0.7781)	(0.7808)	(0.8121)
Age (squared)	-0.0259 *	-0.0306 *	-0.0286 *	-0.0291 *
(time-varying)	(0.0154)	(0.0157)	(0.0157)	(0.0164)
Participated in wave 3	-0.3511	-0.3715	-0.3822	-0.3029
(with retrospective data)	(0.3481)	(0.3665)	(0.3670)	(0.3779)
Household and Family				
Partner (time-varying)	0.4638	0.5756 *	0.5882 *	0.6564 *
	(0.3224)	(0.3305)	(0.3311)	(0.3361)
Partner fully-employed	0.0255	-0.0745	-0.0412	-0.1244
(time-varying)	(0.7740)	(0.7384)	(0.7445)	(0.7839)
Number of children	-0.9115	-0.9963	-0.9580	-0.9180
(time-varying)	(0.7085)	(0.7091)	(0.7099)	(0.7291)
Live with parents	0.5427	0.5373	0.4686	0.4117
(time-varying)	(0.3697)	(0.3712)	(0.3738)	(0.3778)
Live with other relatives/friends	1.1390 ***	1.2598 ***	1.2561 ***	1.2015 ***
(relatives/friends) (time-v)	(0.3403)	(0.3482)	(0.3475)	(0.3559)
Occupational/Educational Career				
In education	0.1402	0.2835	0.2616	0.5286
(time-varying)	(0.3649)	(0.3655)	(0.3658)	(0.3851)
In full employment	0.3631	0.5483	0.5524	0.3271
(time-varying)	(0.3777)	(0.3833)	(0.3853)	(0.3672)
Eduactional attainment (t-v)				
(ref. other inferior levels)				
Vocational education	0.2680	0.4271	0.4194	0.5313
(time-varying)	(0.4157)	(0.4240)	(0.4260)	(0.4438)
University education	1.1978 ***	1.1450 ***	1.1163 **	1.2296 ***
(time-varying)	(0.4412)	(0.4372)	(0.4379)	(0.4422)
Context				
City- Freiburg	0.0594	-0.2215	-0.2582	-1.0162 *
(ref. Magdeburg)	(0.3200)	(0.3361)	(0.3373)	(0.5478)
Freiburg* Family				1.3293 **
in the nearby				(0.5889)
Freiburg* Friends				0.1143
in the nearby				(0.6592)
Other controls				
Sex - Women	0.2344	0.1047	0.0933	0.0668
(ref. men)	(0.2674)	(0.2746)	(0.2760)	(0.2820)
Accomplishment of	0.1321	0.0204	-0.0013	0.0241
life time goals in town	(0.1117)	(0.1136)	(0.1138)	(0.1167)
Intercept	-6.1634 ***	-7.9954 ***	-8.0946 ***	-7.7729 ***
Include values and perceptions on ties in intentions equation	No	No	Yes ***	Yes ***
Allow for correlation between residuals	No	No	Yes **	Yes **
Goodness of fit				
Log-likelihood	-5367.11	-5338.74	-5329.45	-5326.15
Chi-sq Likelihood ratio test (to previous model)		34.27 ***	8.82 ***	3.31**

Asymptotic standard errors in brackets under coefficients.
* probability below 0.1, ** 0.05 and *** 0.01.

The proximity of friends' networks impact negatively on leaving the town, as expected (see Model 1 in Table 2). Family proximity has also a negative coefficient, but it is not statistically significant. We further observe that neither community orientations nor the fact that relatives or friends left town recently affect the hazard of migration significantly. One may suppose that the proximity of ties is not randomly distributed among different levels of individual community orientations. In other words, it is possible that the development of community orientations is not independent from the fact that persons live close to their relatives and friends. Therefore we also tried to condition the effect of the geographic proximity of ties to different values of individual community value-orientations. The inclusion of such interaction term had no significant effect on the prediction of leaving the town (not shown in the Table). This finding supports the idea that value orientations do not affect migration behavior directly, but indirectly via the intentional stage of the decision-making process. We will come to that point later in this section.

Further findings from Model 1 are in line with previous migration research. We observe a hump-shaped effect of age, which is in accordance to the life-course literature. Many events typically for the transition to adulthood take place in the age of about 20 to 25 years, therefore the probability to move in our sample of young adults aged 18 to 29 years first increases and afterwards decline. Residence duration in town since age 16 has a negative effect over

time, though it is not significant. However, the direction of the effect is in line with our expectations, as it reflects the accumulation of location-specific assets. Higher levels of education are also positively associated to out-migration, which can be explained with a higher incentive for well-educated persons to recover their educational investments, or with more broadly distributed labour market opportunities.

In model 2, then, we added a parameter which measures the effect of intentions to move. The results show that the parameter for moving intentions is one of the strongest predictors of moving behaviour, as one would expect according to theory. Furthermore, the predictive power of the model improves substantially, as the chi-squared coefficient of the likelihood ratio test has a significant value over 30. As we expected, the negative effect of having most friends nearby on migration decreases somewhat and the effect of community-value orientations decreases to nearly zero. This decrease supports the argumentation that commitment to ties might be incorporated in the earlier stage of moving intentions. Other coefficients keep unchanged except for having an unemployed (or not fully employed) partner, which significantly raise the hazard to move. In general, to be in union is a constrain to migration behaviour but less if the partner is unemployed. As higher intentions to move are found in singles, controlling for intentions rule out the constraining effect of having a partner in regard to moving behaviour. For persons with an unemployed partner this

partnership status is less constraining because the partner is more likely move with[51].

The next step is to allow for heterogeneity in both equations (Model 3 in Table 2). We aim at allowing a simultaneous system where commitment predicts intentions to move, and intentions predict behaviour. Moreover, we allow the disturbance term of both equations to be correlated in order to correct for selective processes such as preferences, the knowledge about how to migrate and other unobservable issues which may enhance the probability that people choose migration. This particularly will correct for the biasing effect of correlation between unobservable individual characteristics and geographical proximity of the family. Moreover, it may partially correct for sample selection of movers in the different contexts when identifying the personal characteristics that make them more likely to move. As one might see in the last column of Model 3 the inclusion of the correlation among disturbances improved significantly the fit of the model. The likelihood ratio test of model 2 being nested into model 3 result to have a chi-squared value higher than 8 with a probability lower than 0.01. The negative effect of ties proximity on migration behaviour is reduced meaning that the effect was possibly overestimated due to misspecification of the behaviour equation. In the intentions equation the community orientations were used as a predictor. As expected, they resulted to be positively significant, meaning that commitment may only affect

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[51] Another part of this effect may be also related to the fact that we are not considering whether the couple lives together or not.

behaviour through intentions. In any case, we should clarify that the most important change in all variables, including the reduction in the effect of proximity of (friendship-)ties, was implemented in the previous model when including intentions into the behavior model, as the goodness of fit was substantially improved (the chi-squared of the likelihood ratio test has a coefficient over 30). This means that the variable of intentions was already controlling for many of the unobservable characteristics, including commitment, that make people migrate, such as preferences, perceptions and social normative influences as the decision-making theory establishes.

The next step is to control whether we got such results casually. Because the survey suffers of attrition we decided to carry out sensitivity analysis in order to check whether this attrition is biasing our results. We run a third simultaneous equation for participation in wave 3, as panel attrition could be the result of selection by some characteristics of migrants. The results (not shown) generally deny the hypothesis that attrition is biasing our previous results. The residual of the equation of participation in wave 3 turned out to be not correlated with any residual of the other equations. Furthermore, none of the coefficients change significance or direction of the effect, though coefficients' size changed slightly.

Because participation in wave 3 is a variable that does not change overtime (i.e. individuals did participate or did not participate in wave 3), so that we cannot predict the outcome through time-varying covariates, we switched the dependent variable for the analysis of attrition effects to a variable of period of participation in

the survey. As all individuals who participated in wave 3 did so during the same time period, period of participation may be equally useful to study possible selection biases through attrition. The advantage of this point of view is that we are able to predict period of participation with time-varying covariates. Nevertheless, the effects kept unchanged for the other equations (not shown), indicating that random processes took place in the attrition of the survey[52].

4.8. Contextual conditionings

The picture can be differentiated by having a closer look on the contexts, the two cities Magdeburg and Freiburg. Model 4 in table 2 includes interaction terms of the context with geographical proximity of ties. In the previous models the intercept measures the average hazard of out-migration of inhabitants in Magdeburg. The coefficient of the dummy for town of residence measures the difference of the hazard between Magdeburg and Freiburg, which in the previous models is not statistically significant. Due to the insertion of multiplicative interactions of town of residence with ties' proximity, the intercept in model 4 measures the hazard for persons living in Magdeburg and having few relatives and friends living nearby. The dummy variable for the city of residence shows the difference between Freiburg and Magdeburg among those who

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[52] Kley and Mulder (2010) show identical sensitivity analysis with similar results using the same data, concluding that selection effects due to attrition are not affecting the estimates.

have few relatives close by. Similarly, the indicators of proximity of ties in model 4 now refer only to the net effect in Magdeburg of having many ties nearby. The interaction between the town of residence and the proximity of ties refers to the difference between persons in Freiburg and Magdeburg who have most of their close ties nearby. The result of the insertion of interaction terms is that there are significant differences of proximity of ties to relatives according to the type of context in which they are embedded.

The coefficient of the dummy variable for the city of residence is negative and significant. The result implies that the hazard of out-migration is significantly lower for inhabitants in Freiburg conditional to a low proximity of ties. The coefficients for the effects of family ties proximity also change. Having most of the relatives close by in Magdeburg has a decreasing hazard on the probability to leave town. This effect is significantly lower or even ruled out in the context of Freiburg, as the interaction of this city with the proximity of family is positive and significant. The effect for friendship-ties proximity keeps unchanged for the context of Magdeburg, and no significant differences are observed between both contexts.

These findings have several implications. Firstly: the expected effect of family network that we were not able to find was hidden in a context-effect. And, secondly, while the effect of family ties is conditional to the context this is not the case with friendship ties. Regarding the first implication, it seems necessary to involve the

context and its characteristics in the analyses in order to know more about the effects of family networks and their compositions. A lack of assessment would lead us to the false conclusion that family proximity has no effect on migration. Regarding the second implication, and with the scarce contextual information for analyzing contextual-level effects, we suggest the subsequent explanation: in poorer socio-economic conditions (in this research Magdeburg) strong family ties are a more important deterrent, because young adults are more dependent on social support through the family. In contrast, the effect of friendship ties on migration seems to be independent from the context.

As outlined before, Freiburg attracts relatively more university students than Magdeburg. This might result in weaker (stronger) local networks in our group of young adults and/or in a higher (lower) willingness to move[53]. However, the inducement of bias on the estimation of the contextual effect due to selective population in our sample was partly corrected in the analysis of the unobserved heterogeneity. We also controlled for a measure of context-exposure: duration of residence in town since age 16. Age 16 is considered as an exogenous starting point for the residential career. Both strategies were aimed to control for individual-specific characteristics shaped by differences (i.e. selective processes) among regional populations. In order to shed more light on contextual effects, these results have to be more deeply tested with

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[53] We were able to partly solve this problem by inserting a term for the duration of residence in town into the analyses.

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contextual data and information on the roles of community and culture in different contexts.

4.9. Conclusions

This article was aimed at disentangling the effects that mediate the association of geographical proximity of ties at the place of residence and the geographic mobility of young people. The migration literature refers to the geographic proximity of ties as a location specific asset or location-based social capital, which affects the propensity to move. Generally speaking, the theory asserts that a high proximity of the social networks decrease the out-migration probability due to high opportunity cost of breaking with ties and their resources and/or a lack of them elsewhere. Using individual data of young people of two different German contexts (i.e. East and West Germany) we were able to prove different hypotheses about this association.

First, we separated the effect of the proximity of social ties at the place of residence into two dimensions. A resource effect is a function of material resources as well as ties' networking resources. And a commitment effect as a result of feelings and obligations towards ties. Both of them are hypothesized to have a negative impact on migration behaviour: The higher the concentration of strong ties, the higher the benefits from ties' resources and the lower these benefits elsewhere. However, part of the resource effect

may be confounded with the commitment effect. The proximity of strong ties, which give access to resources, may also enhance affection, influence decisions through social norms and transmit value-orientations that attach individuals to the family and the community.

We used a new strategy in order to test the above mentioned hypotheses, regarding the limitations of the data in order to separate both effects of the proximity of family and friendship ties. Leaning on socio-psychological models of decision-making, we separated the migration process into the two stages of decision-making and behavior. The migration decision-making literature suggests that internal inputs such as emotions and value-orientations affect migration behaviour mainly through the intentional stage. The reason is that internal inputs are not incentives enough for action, but they are a precondition for behaviour. The transformation of these intentions into behavior may depend on upcoming or changing opportunities (such as sudden life-course events).

For the analyses we used residential histories for a sample of young adults in an East-German and a West-German town. The results of a dynamic simultaneous model supported the expectation that the proximity of friendship ties has a negative impact on migration. Unexpectedly, the effect was not significant for family ties though the sign was in the expected direction. Controlling for intentions in the equation for migration behaviour the ties' proximity coefficients decreased substantively. We interpreted this result as internal inputs

of the migration decision and commitment effect that mediates the association between proximity of ties and migration behaviour. In the next step, we controlled for migrant's selectivity and biasing effects of unobserved heterogeneity allowing the correlation of the disturbance terms for the migration behaviour equation and the migration intention equation. The coefficients varied only slightly. This result speaks for the robustness of our results. The next step was to prove that differences in the influence of ties on migration exist conditional to contextual factors. We found that in the poorer socio-economic context of Magdeburg in East Germany having relatives nearby is a greater deterrent from out-migration than in Freiburg in West Germany. As we controlled for individual measures of community orientations we argued that the explanation for this finding might be that in poorer contexts people may rely more on ties, because there are fewer opportunities to get from the market. This means that the effect of proximity of ties attaching people as a 'resource effect' might be higher when socio-economic conditions are poorer. As one might expect family ties are more important as resouce providers than friendship ties are. However, the higher supportive role of the family in East Germany may be nuanced by existing context-heterogeneity among network structures relative to the unequal distribution of relatives among employment sectors that we were not able to directly assess. A higher heterogeneity of ties among employment sectors may enhance employment opportunities to be offered by the social network.

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Lastly, we proposed strategies to overcome two typical problems of the empirical analyses of the ties' influence on migration: (1) Using measures of geographical proximity which approximate the whole (strong-type) network. This improves a narrow perspective which only accounts for household members. (2) Using a dynamic simultaneous equation strategy for analyzing the whole process of migration decision-making and behaviour over time. It sheds more light on the role of social ties in both the intentional and the behavioural part of the migration process.

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Annex

Table 2. Simultaneous estimation of residential transitions I: Log-hazard coefficients for residential outcomes departing from the parental home (a).

	Short distance			Long distance		
	A	B	C	A	B	C
	(basic)	(full)	(heterogeneity)	(basic)	(full)	(heterogeneity)
Spell of Coresidence / Duration of Coresidence						
1st spell (intercept)	-5.2062 ***	-3.8107 ***	-4.6646 ***	-7.1061 ***	-8.2307 ***	-9.2296 ***
	0.2719	0.3449	0.4419	0.5347	0.6147	0.6875
0-4 years	0.6937 ***	0.3771 ***	0.5160 ***	1.1832 ***	1.3011 ***	1.4873 ***
	0.0795	0.0902	0.1029	0.1476	0.1613	0.1745
4-7 years	0.0206	-0.0539	0.0628	-0.3080 ***	-0.1267	-0.0089
	0.0457	0.0531	0.0654	0.0729	0.0848	0.095
7 and more years	0.1401 ***	0.1300 ***	0.2521 ***	-0.1755 *	-0.1153	0.0025
	0.0307	0.035	0.0452	0.1008	0.1098	0.1172
2nd spell of coresidence	3.9194 ***	2.4710 ***	2.2976 ***	4.6759 ***	5.2628 ***	5.2818 ***
	0.3438	0.3888	0.4241	0.6638	0.7314	0.7601
2nd spell * 0-4 years	-0.7185 ***	-0.4364 ***	-0.4229 ***	-1.2040 ***	-1.1246 ***	-1.1565 ***
	0.1191	0.1367	0.1467	0.2098	0.2237	0.2327
2nd spell * 4 and more years	-0.4066 ***	-0.5612 ***	-0.5767 ***	0.1061	-0.3408 *	-0.3427
	0.1327	0.1777	0.1974	0.1742	0.1818	0.216
1st spell*previous move	0.2258 **	-0.0144	-0.0142	0.2788	0.0631	0.0292
	0.1073	0.1298	0.1637	0.1858	0.2165	0.2458
Family structure (time-varying)						
traditional (both biological parents)	ref	ref	ref	ref	ref	ref
only parent	0.4655 ***	-0.6265 ***	-0.7730 ***	-0.0851	-1.0540 ***	-1.2650 ***
	0.0909	0.1557	0.1903	0.1588	0.3367	0.3752
step-parent present	0.7137 ***	0.3105 **	0.3471 *	-0.0002	-0.2377	-0.2368
	0.1169	0.1327	0.178	0.2184	0.2453	0.2834
mother separated		3.6066 ***	4.4204 ***		3.6124 ***	4.4271 ***
		0.1539	0.3081		0.3119	0.4179
father separated		1.5259 ***	2.0607 ***		1.4091 ***	2.0269 ***
		0.1927	0.2601		0.2973	0.3561
parent widow/er		0.8369 ***	1.1613 ***		1.5948 ***	1.9454 ***
		0.1926	0.2439		0.3858	0.4651
Occupational career (time-varying)						
full time employment		-0.1262	-0.1466		-0.3837 *	-0.3874 *
		0.1104	0.1243		0.1988	0.209
full time student		-0.9962 ***	-1.0687 ***		0.8334 ***	0.7825 ***
		0.1452	0.1568		0.1744	0.1856
other combinations		ref	ref		ref	ref
Family formation (time-varying)						
single no children		ref	ref		ref	ref
children		0.8645 ***	1.1887 ***		-0.8757	-0.5766
		0.2282	0.2883		0.7979	0.8283
couple		0.5192 **	0.5727 **		-0.8405	-0.7957
		0.2167	0.2539		1.3012	1.3841
Parental education (highest among parents)						
other educational level		ref	ref		ref	ref
high parental education		-0.051	0.0667		0.3687 **	0.5224 ***
		0.1299	0.1797		0.1571	0.1991
Personal income (time-varying)						
other income level		ref	ref		ref	ref
high personal income		0.2376 *	0.2740 *		-0.7435 ***	-0.7294 ***
		0.1377	0.1513		0.1833	0.1956

	Short distance			Long distance		
	A	B	C	A	B	C
	(basic)	(full)	(heterogeneity)	(basic)	(full)	(heterogeneity)
Weighted household income (time-varying)						
other income level		ref	ref		ref	ref
high HH income		0.1269	0.1152		0.7767 ***	0.7605 ***
		0.1058	0.1211		0.1571	0.1712
Sib-ship size (time-varying)						
No sibs at home		ref	ref		ref	ref
1 coresident sib		-0.2339 **	-0.2966 **		-0.0466	-0.1141
		0.1053	0.1304		0.1579	0.1789
2 or more coresident sibs		-0.2860 **	-0.4147 ***		-0.3665 *	-0.5115 **
		0.1213	0.1546		0.19	0.2209
Sex						
Male		ref	ref		ref	ref
Female		0.3983 ***	0.6040 ***		0.3791 ***	0.5696 ***
		0.09	0.1287		0.1341	0.1636
Ethnicity						
Anglo-white		ref	ref		ref	ref
Others		-0.1368	-0.2851		-0.6551 **	-0.7947 **
		0.1763	0.2354		0.3316	0.3745
Wave with missing info						
		-0.1696	-0.1012		-0.5766 ***	-0.5374 ***
		0.1389	0.1551		0.185	0.1975
Ln-log	-7111.37	-6565.63	-6542.73	-7111.37	-6565.63	-6542.73

NOTE: Asymptotic standard errors below coefficients;
     Significance: '*'=10%; '**'=5%; '***'=1%.
 (a) Estimation has been jointly run with equations of non-parental coresidence which results are shown in Table 4. Reference category (intercept) is an individual in the first parental coresidence spell since age 16. Short and long-distance moves refer to parental home leaves and residential change of less than 50km (short distance) and 50km or further (long distance).

Table 3. Heterogeneity: Matrix of Variance-Covariance for person-specific residuals [a].

	Var (ε)	Var (δ)
Var (ε)	1.1050 *** 0.162	
Var (δ)	0.8019 *** 0.2915	0.4487 *** 0.1304

NOTE: Asymptotic standard errors below coefficients;

Significance: '*'=10%; '**'=5%; '***'=1%.

(a) epsilon is the person-specific residual in the parental coresidence equation and delta is the person-specific residual in the 'other residential status' equation

Table 4. Simultaneous estimation of residential transitions II: Log-hazard coefficients for residential outcomes departing from non-parental living arrangements [a].

- SEE TABLE NEXT PAGE -

(a) Estimation has been jointly run with equations of parental coresidence which results are shown in Table 2. Estimates for *short distance* (<50km) and *long distance* (>=50km) events occur within non-parental living arrangements. *Returns* (to the parental home) also include long distance return to *local authority district* where parents are living. Reference category (intercept) is an individual in the first 'other residential status' spell and the first spell of residence of its residential trajectory (since age 16).

	Short distance			Long distance			Return		
	A	B	C	A	B	C	A	B	C
	(basic)	(full)	(heterogeneity)	(basic)	(full)	(heterogeneity)	(basic)	(full)	(heterogeneity)
Spell of non Parental Coresidence / Duration of non Parental Coresidence									
1st spell (intercept)	-1.1818 ***	-0.8677 ***	-1.0271 ***	-2.9116 ***	-3.5278 ***	-3.6846 ***	-0.6989 ***	-0.7067 **	-0.8718 **
	0.2334	0.2846	0.2968	0.5236	0.8118	0.8207	0.2619	0.3602	0.3729
0-4 years	-0.4055 ***	-0.3342 ***	-0.2824 *	-0.2852 *	-0.1759	-0.1261	-0.5672 ***	-0.4283 ***	-0.3773 ***
	0.0594	0.0624	0.0697	0.1563	0.1725	0.1775	0.1035	0.1101	0.1157
4 and more years	-0.0421	-0.0265	-0.0001	-0.2561	-0.2171	-0.1944	-0.5195 **	-0.5033 **	-0.4764 *
	0.0555	0.0585	0.0603	0.2374	0.2504	0.2509	0.2291	0.2423	0.2448
Interaction of 1st spell out of the Parental home and:									
* previous migration	0.4924 **	0.5048 **	0.2545	-0.0823	0.1745	-0.0954	-1.0504 ***	-0.4779	-0.7230 **
	0.2294	0.2352	0.2651	0.5474	0.6416	0.6522	0.2664	0.2938	0.3055
* 2nd spell of residence	0.7085 ***	0.6481 ***	0.6118 ***	-0.0812	0.107	0.0629	-0.5823 **	-0.2007	-0.2289
	0.2187	0.2186	0.226	0.5233	0.6729	0.6763	0.2353	0.2668	0.2742
* 3rd spell of residence	0.4834 **	0.4308 *	0.3679	0.1513	0.3474	0.2796	-0.7095 ***	-0.2761	-0.3289
	0.2225	0.225	0.2363	0.5103	0.6355	0.6401	0.2423	0.278	0.2861
* >= 4th spell of residence	0.3886 *	0.4145 *	0.2444	0.3099	0.6465	0.4748	-1.2119 ***	-0.5796 **	-0.7297 **
	0.2247	0.23	0.2548	0.5008	0.6463	0.6638	0.249	0.2867	0.2991
2nd spell out of the PH	0.9529 ***	0.6091 ***	0.6709 ***	1.0770 ***	0.5806 **	0.6444 **	1.2405 ***	0.6323 ***	0.6881 ***
	0.0964	0.119	0.1351	0.242	0.274	0.2845	0.1405	0.1695	0.1774
Age at parental home leaving									
Otherwise	ref	ref	ref	ref	ref	ref	ref	ref	ref
Before Age 21	0.5432 ***	0.4697 ***	0.3593 ***	0.3772 **	0.248	0.1377	0.5032 ***	0.2378 *	0.1215
	0.0805	0.0912	0.1226	0.1755	0.1895	0.2088	0.1244	0.1403	0.1632
Family structure (fixed at age 16)									
traditional (both biological parents)	ref	ref	ref	ref	ref	ref	ref	ref	ref
only parent	0.0661	0.1324	0.2027 *	-0.3622	-0.2358	-0.171	-0.1121	-0.0021	0.0693
	0.0925	0.1019	0.1198	0.2596	0.2833	0.2898	0.1471	0.1636	0.174
step-parent present	-0.1013	-0.0677	-0.0055	0.1574	0.2554	0.3308	0.3593 *	0.4499 **	0.5122 **
	0.1677	0.177	0.1961	0.3812	0.4248	0.4311	0.2002	0.226	0.2373
Occupational career (time-varying)									
full time employment		0.3643 ***	0.4075 ***		0.6288 **	0.6753 **		0.2029	0.2459
		0.1056	0.1124		0.2866	0.2916		0.1714	0.174
full time student		0.9738 ***	0.9888 ***		1.6296 ***	1.6448 ***		1.2670 ***	1.2870 ***
		0.1574	0.168		0.3171	0.3247		0.1883	0.1931
other combinations		ref	ref		ref	ref		ref	ref
Family formation (time-varying)									
single no children		ref	ref		ref	ref		ref	ref
children		-0.4039 **	-0.3934 *		-159002.66	-241860.58		-0.7277	-0.7251
		0.1919	0.2088		0	0		0.4434	0.4451
couple		-0.2823 ***	-0.2674 **		-0.2962	-0.2798		-0.3939 **	-0.3805 **
		0.1055	0.11		0.2596	0.2644		0.1682	0.1724
Weighted household income (time-varying)									
other income level		ref	ref		ref	ref		ref	ref
high HH income		-0.5065 ***	-0.4999 ***		-0.1472	-0.1351		-0.6803 ***	-0.6717 ***
		0.1577	0.1642		0.3866	0.3922		0.2121	0.2183
Sex									
Male		ref	ref		ref	ref		ref	ref
Female		-0.0224	0.0188		0.1076	0.1497		-0.0439	-0.0061
		0.0902	0.1038		0.1993	0.205		0.1346	0.1432
Ethnicity									
Anglo-white		ref	ref		ref	ref		ref	ref
Others		-0.3157	-0.4116		-0.4445	-0.5432		-0.2916	-0.3751
		0.2227	0.2506		0.3808	0.3907		0.3789	0.4101
Wave with missing info									
		-1.1257 ***	-1.1500 ***		-0.4043	-0.4368		-0.3558	-0.3837
		0.2242	0.2338		0.5404	0.5528		0.2535	0.2608
Ln-log	-7111.37	-6565.63	-6542.73	-7111.37	-6565.63	-6542.73	-7111.37	-6565.63	-6542.73

NOTE: Asymptotic standard errors below coefficients;

Significance: '*'=10%; '**'=5%; '***'=1%.

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