Human capital migration from a life course perspective

The role of geography and gender

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Human capital migration from a life course perspective
The role of geography and gender

ACADEMISCH PROEFSCHRIFT

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Niels Kooiman
Weesp / Amsterdam, 1 November 2024

1.

Synthesis

1.1 Introduction

Since birth and death rates have converged between regions in western countries, the principal source of contemporary population redistribution within countries is migration (Rees et al., 2017), predominantly internal migration (Skeldon, 2008). Internal migration refers to long-distance moves within national boundaries which cross the boundaries of regional labour market areas[1]. Furthermore, internal migration flows have become more selective in terms of educational attainments. It is nearly a universal regularity in post-industrial economies that highly educated individuals are more migratory than others (Bernard & Bell, 2018; Faggian, Corcoran, & Partridge, 2015). A recent study conducted in 12 European countries found that individuals with tertiary education are nearly three times more likely to migrate internally compared to those with less than secondary education (González-Leonardo, Bernard, García-Román, & López-Gay, 2022). Furthermore, there are indications that this mobility gap has recently expanded. Against the general trend of declining interregional migration rates in many countries around the world (Alvarez, Bernard, & Lieske, 2021; Bell, Charles-Edwards, Bernard, & Ueffing, 2018; Cooke, 2011a), at least in European countries the sub-population of highly educated young adults has become more mobile (Bernard & Kolk, 2019; Lundholm, 2007; Smith & Sage, 2014). Together with the rapid expansion of higher education this has caused an increased proportion of the highly educated among interregional migrants (González-Leonardo, López-Gay, & Esteve, 2022). As a result, interregional migration flows do not only drive the population redistribution in a quantitative way, but also increasingly in terms of qualified human capital.

Migration behaviour and patterns of the highly educated have received wide attention both from policy makers and academic scholars because of the potential effects for nations as a whole, for specific regions and for the individuals involved. On the national scale and from a neoclassical perspective, internal migration is assumed to improve the operation of the housing market and, predominantly, the labour market (Granato, Haas, Hamann, & Niebuhr, 2015). Regional mismatches between supply and demand of labour, expressed in unemployment and underemployment, can be reduced if workers are spatially flexible (Van Ham, Mulder, & Hooimeijer, 2001) and move from regions with a labour supply surplus to regions where suitable vacancies are located. This is particularly true for highly educated individuals because the specialized jobs they search for are typically more sparsely distributed across space (Moretti, 2012).

[1] Scholars typically distinguish internal migration from residential mobility, that is short-distance moves which take place within labour market areas (Mulder & Hooimeijer, 1999).

At the regional scale within countries, internal migration drives the redistribution of human capital. This is critical for regional wealth as a high-skilled workforce is a prerequisite for competitiveness and economic growth in the post-Fordist knowledge-intensive economy (Barro & Sala-i-Martin, 1995; Lucas, 1988; Sleutjes, 2016). Regional disparities in human capital endowments are closely linked to variations in economic growth across regions (Gennaioli, La Porta, Lopez-de-Silanes, & Shleifer, 2013; Groot, De Groot, & Smit, 2014; Raspe & Van Oort, 2006; Storper & Scott, 2009). Hence, at the regional level the influx of highly educated individuals typically contributes to economic prosperity whereas regions with net out-migration of the highly educated risk to lag behind.

Since highly educated individuals tend to migrate to regions with relatively highly educated populations (Waldorf, 2009; Whisler, Waldorf, Mulligan, & Plane, 2008), internal migration patterns potentially lead to the spatial concentration of the highly educated (Ritsilä & Haapanen, 2003) and, consequently, to diverging regional economies and socio-spatial inequalities. Since internal migration has become more skill-selective, it is no longer an equalising force (Storper, 2022). In a globalised capitalist economy many countries face an economic polarisation between growing core regions or global cities based on knowledge-intensive and innovative economies – also referred to as 'super star city-regions' (Kemeny & Storper, 2023) – and peripheral regions with economies based on traditional industries with low technological routine jobs (Florida, Mellander, Stolarick, & Ross, 2012). In Spain peripherally located regions were confronted with a growing loss of human capital resulting from internal migration patterns (González-Leonardo, López-Gay, et al., 2022). Therefore urban policies are more and more targeted to enhance their human capital base, also referred to as the 'knowledge turn' (Van Winden, 2010). In addition, as highly educated migrants tend to be young, internal migration can significantly alleviate or exacerbate regional population ageing (Kooiman, 2016; R. Lee, 2011). As population ageing heightens the strain on social support, pension, and healthcare systems, and exacerbates labour market shortages, comprehending the geographic redistribution of these high human capital individuals becomes increasingly critical. This understanding is essential for addressing the potential socioeconomic challenges posed by demographic shifts and for formulating effective policies to sustain regional economic vitality.

For individuals and households, moving is not an end in itself but a means to pursue other goals in life. Scholars typically assume that internal migration is predominantly driven by economic motives and should render improved labour market outcomes (Blau & Duncan, 1967; Böheim & Taylor, 2007; Cebula, 2005; Faggian, Corcoran, & Franklin, 2017; Greenwood & Hunt, 1989; Hicks, 1932; Venhorst, Van Dijk, & Van Wissen, 2011; Yankow, 2003). However, the importance

of career opportunities underpinning internal migration shifts during the life course and varies between men and women. While economic motives stand out among the young and the highly educated, non-economic motives become more important as people get older (Chen & Rosenthal, 2008; Niedomysl, 2011; Thomas, 2019; Whisler et al., 2008). Additionally, once coupled, women are typically less likely than men to migrate for the sake of their own careers and more likely to be involved in tied migration (Cooke, 2008). After family formation couples are less likely to move long distances for employment reasons. Instead, childbirth typically triggers moves motivated by altered needs for housing and the living environment (Mulder, 2013). These moves may involve short-distance relocations within the same labour market region ('residential mobility') or moves from urban to rural areas (Kulu, 2008; Kulu & Milewski, 2007). However, recent research has suggested that the traditional connection between family formation and suburbanisation has become less pronounced with more families opting to remain in the city even after having children (Booi & Boterman, 2020; Boterman, 2012; Boterman & Karsten, 2015; Y. Lee, Lee, & Shubho, 2019; Lilius, 2014).

In this dissertation I will study recent patterns of human capital migration and residential mobility in The Netherlands from a life course perspective. The overarching research question is: *How can spatial mobility patterns of the highly educated during the early adult life course be understood in the labour market context and what are the roles of gender, partner ties and family formation?*

The focus is on the "demographically dense" phase in the life course (Rindfuss, 1991), which generally encompasses the ages between 17 and 35. During this period, individuals typically undergo numerous significant transitions in their lives. Demographic transitions include milestones such as leaving the parental home, forming unions (like marriage or cohabitation), and having children. Concurrently, socio-economic transitions occur, such as starting and completing higher education, entering the labour market, and changing jobs. Each of these transitions acts as a potential catalyst for mobility. Consequently, this age range is marked by a peak in internal migration propensities (Bernard, Bell, & Charles-Edwards, 2014).

1.2 Theoretical background: internal migration and the life course

1.2.1 Residential relocations

Residential relocations are predominantly understood as adjustment processes whereby households and individuals resolve the mismatch between their current and their preferred housing situations or residential locations (Mulder & Hooimeijer, 1999). These mismatches are often generated or reinforced by life course transitions (Mulder & Wagner, 1993) and may concern both the characteristics of the house and the residential environment (*site*), but also the geographical position of a location vis-à-vis other places such as the workplace, the social network, educational facilities and all kinds of amenities (*situation*). Whereas mismatches regarding the site typically provoke short-distance moves (often referred to as *residential mobility*), mismatches regarding the situation tend to be resolved by moves over longer distances (*internal migration*).

The distance threshold of internal migration is not clear-cut. Theoretically, internal migration involves a change in a person's "daily activity space", that is the geographical area in which daily travels take place, such as travels to work, to school, to family members and friends, and to leisure activities (Dieleman & Mulder, 2002; Hägerstrand, 1970). Internal migration thus necessarily involves the disruption of local ties (Mulder & Malmberg, 2014). Since the decision to sever local ties is not made lightly, there must be a strong motivation for households to move over long distances (Mulder & Hooimeijer, 1999). The nature of these motivations to migrate has been the subject of debate for a long time.

1.2.2 Why do people move over long distances?

The dominant scientific view is that internal migration is mainly driven by economic motives. The micro-economic human capital theory (Becker, 1962) has been of paramount importance to the understanding of internal migration (Sjaastad, 1962). It considers internal migration as an investment in the human agent: individuals are expected to migrate if the anticipated future returns exceed the expected costs. Although theoretically also non-monetary psychological costs and returns are accounted for in Sjaastad's equation, the emphasis is clearly on financial gains, either in the short or in the long run. In this respect, both employment and education can be considered as an economic motive for migration. While a job change might render immediate monetary returns or long term labour market

progress by means of on-the-job training facilities, education is an investment in human capital that typically yields improved career opportunities and hence financial returns in the long run.

In line with the predictions of human capital theory, empirical evidence consistently shows that the likelihood of internal migration is highest among young adults and declines steadily with age (Bernard et al., 2014). This age pattern in internal migration can be explained by life course transitions that are often associated with mobility. Many significant demographic and socio-economic changes occur early in life, which influences migration behaviour. Additionally, from an investment perspective, the benefits of migrating are more likely to outweigh the costs for younger individuals. This is because young workers have a longer time ahead in the labour market to benefit from increased wages. Moreover, at the beginning of their careers, workers' human capital is primarily accumulated through general education. In contrast, older workers have accumulated more job-specific human capital, which might be lost if they migrate and change jobs (Faggian et al., 2015).

Also consistent with human capital theory, another widespread empirical trend globally is the positive correlation between internal migration and educational attainment (Bernard & Bell, 2018; Faggian et al., 2015). Individuals who have completed university degrees, and to a lesser extent higher vocational education, have made substantial investments in their human capital and typically anticipate returns on these investments. Consequently, they are more inclined to migrate, seeking regions that offer promising employment prospects, especially since the specialized jobs they seek are less evenly distributed geographically.

1.2.3 Location choice of highly educated migrants

There is an enduring debate about what is most important in attracting and retaining talented workers: jobs or amenities. Several spatial economists from the United States have suggested that location-specific quality-of-life factors are a more important driver of internal migration than wage differentials (Glaeser & Gottlieb, 2006; Graves, 1983; Partridge, 2010). However, the increasing concentration of workers with a college degree in American 'superstar' metropolises in recent decades was mainly driven by firms' demand for highly specialised knowledge workers (Kemeny & Storper, 2020). The influx of high-skilled workers in its turn generated the increase of attractive consumption amenities and made these cities more desirable to live (Diamond, 2016). Also in Europe, empirical studies indicate that interregional migration is primarily driven

by employment opportunities and access to educational facilities, rather than amenities. High-skilled workers tend to relocate to specific regions primarily because they can find suitable job opportunities there. This conclusion is drawn from analyses of actual mobility patterns (Biagi, Faggian, & McCann, 2011; Boyle, Halfacree, & Robinson, 1998; Faggian & McCann, 2009a; Fielding, 2012; Marlet & Van Woerkens, 2005; Venhorst et al., 2011), and supported by surveys where migrants themselves identify their reasons for moving. These studies consistently show that employment is the most cited motivation for migrations covering distances greater than 30 km across many European countries (Lennartz, Troost, & Schilder, 2023; Niedomysl, 2011; Thomas, 2019; Thomas, Gillespie, & Lomax, 2019). This trend is particularly pronounced among highly educated individuals and those residing in peripheral regions with limited job opportunities (Lennartz et al., 2023). A survey of creative class workers in various European countries further underscores that employment prospects are the primary factor influencing their relocation decisions (Martin-Brelot, Grossetti, Eckert, Gritsai, & Kovács, 2010).

Natural and socio-cultural amenities seem to play a secondary role in migration patterns of the highly educated. These factors gain significance when essential location factors like employment and affordable housing are comparable across different potential destinations (Musterd, Bontje, & Rouwendal, 2016; Sleutjes, 2016). Such "soft" location factors are also important in the decision to remain in a particular area once a move has been made (Mellander, Florida, & Stolarick, 2011; Nelson & Ehrenfeucht, 2020). In Italy it was found that people migrated between regions mainly for employment reasons and tended to select a location *within* the region based on quality-of-life factors (Biagi et al., 2011). In the words of Niedomysl and Hansen "amenities should be considered as preferences, not needs or demands" (Niedomysl & Hansen, 2010, p. 1646).

A significant 'soft' location factor, which alongside employment opportunities has become increasingly recognized as crucial in household migration decisions, is the social environment (Clark & Maas, 2015). Traditional views of migration as an individual decision are being re-evaluated, now understood more as a relational practice (Coulter, Van Ham, & Findlay, 2016). Decision-making has extended beyond individuals to include households and even interconnected lives outside the household, particularly family members (Cooke, 2008; Michielin, Mulder, & Zorlu, 2008; Mulder, 2018; Van der Wiel, Kooiman, & Mulder, 2021). Social connections to the local community are a critical reason for people to remain in their hometown (Nelson & Ehrenfeucht, 2020; P. Taylor, Morin, Cohn, & Wang, 2008). Disrupting local ties with family and friends generally heightens the perceived drawbacks of migration, also among the highly educated (Thomassen, 2021; Thomassen, Palomares-Linares, Venhorst, & Mulder, 2023). Furthermore, surveys in several

Western countries have shown that about a quarter of migrants cite social motives as a reason for their move, even over long distances (Clark & Maas, 2015; Gillespie, Mulder, & Thomas, 2020; Morrison & Clark, 2011; Niedomysl, 2011; Thomas et al., 2019). Many of these migrants relocate to be nearer to non-resident family members or friends (Thomas, 2019). In The Netherlands the relative importance of living close to family as a motive for migration is highest around family formation, which shows the importance of short distances to grandparents once children are born (Lennartz, Troost et al. 2023). For the highly educated, 'regional familiarity' – being raised or having studied in a particular region – also significantly influences residential location choices (Gottlieb & Joseph, 2006; Venhorst, 2013). However, even when job opportunities are not cited as the primary reason for migration, the continuity of employment in the destination region is a necessary condition for most working-age migrants (Morrison & Clark, 2011). When working-age households move more than 30 km, a job change is almost always involved (Clark & Maas, 2015). In The Netherlands people who cite work as a motive for migration also mention living close to family members relatively often (Lennartz et al., 2023). In summary, while amenities and ties to family members play a substantial role in interregional migration and location choice in European countries, economic factors remain the main drivers.

As a result, workers can be expected to be drawn to areas with dense and diverse labour markets and a rich human capital base, as these environments offer ample opportunities for upward social mobility. Metropolitan areas are often considered ideal settings for this, as they facilitate the exchange of ideas and knowledge through frequent face-to-face interactions (Storper & Venables, 2004). These agglomeration effects are typically expressed in an urban wage premium (Papageorgiou, 2022). For example, in Sweden migrants moving from rural to urban locations experienced nearly double the nominal income increase compared to those moving in the opposite direction (Korpi, Clark, & Malmberg, 2011). Similarly, positive agglomeration effects on individual wages have been observed in the Netherlands (Groot et al., 2014), with entry into a large job market enhancing occupational mobility in the long term (Van Ham, 2002).

1.2.4 A life course perspective

Fielding (1992) introduced the metaphor of an escalator to describe the link between social and geographical mobility over an individual's life course. His theory of an "escalator region" delineates a phenomenon where young adults embark on a journey akin to an escalator. Initially, they settle in a metropolitan area to pursue higher education and, predominantly, to advance in the early stages

of their labour careers. Subsequently, as they have progressed in their professional careers and have attained upward social mobility, and often have established families, they disembark from the escalator and cash in on their enhanced economic standing by buying a house in lower-density regions with more affordable real estate prices, frequently situated farther from the city. Empirical evidence for Fielding's theory has been found in several countries. In the US, young highly educated singles and couples tend to migrate to areas offering superior business environments, whereas couples approaching retirement and irrespective of their educational profiles typically move away from these areas to regions that offer abundant consumer amenities (Chen & Rosenthal, 2008). For instance, preferences for outdoor activities and recreational facilities tend to increase with age (Niedomysl & Hansen, 2010). In the UK, many young adults migrate to the main escalator region, South East England, including Greater London, seeking rapid upward occupational mobility. These flows appeared to have structural causes and were hardly affected by fluctuations on the region's job market or housing sector (Fielding, 2012). Within 15 years of arrival, nearly half of the migrants in South East England had moved on or returned to other British regions (Champion, 2012). These out-migration flows from economic core regions were shown to be stronger related to the business cycle dynamics and to decrease during financial crises (Fielding, 2012; Hansen & Aner, 2017).

In Spain workers living in bigger cities were found to more rapidly accumulate human capital by on-the-job training, which persisted after leaving the city. This effect was stronger among the highly educated (De la Roca & Puga, 2017). In Sweden, households that migrated from rural to urban regions experienced a larger increase in nominal wages compared to those migrating in the opposite direction. However, after accounting for changes in housing costs associated with the move, households that migrated from urban to rural regions (effectively stepping off the metropolitan escalator) saw the greatest increases in disposable income (Korpi et al., 2011).

The implicit assumption of Fielding's concept of escalator regions is that the motives for internal migration shift over the life course. As in many other fields within the social sciences, the life course approach has become increasingly popular among demographers and, more specifically, in research on internal migration (Bailey, 2009; Kulu & Milewski, 2007; Mulder, 1993). In his study on residential mobility in Philadelphia, Peter Rossi was the first to demonstrate how moving behaviour was driven by changes in household composition, which he related to stages in what he termed the "family life cycle" (Rossi, 1955). This concept of the life cycle as an age-driven, orderly progression of life events and statuses was normative during the post-war years. However, as the timing and

sequence of life events diversified among younger generations (Billari & Liefbroer, 2010) – a phenomenon known as the de-standardization of the life course (Elzinga & Liefbroer, 2007) – a more dynamic approach became necessary. This new approach emphasizes the variability and complexity of individual life course trajectories (Kulu & Milewski, 2007; Mulder, 1993) as well as the influence of "linked lives" on individual life courses (Elder, 1994) and migration (Coulter et al., 2016). The life course approach directly relates geographical mobility to the timing and sequencing of life events that occur in other domains of an individual's life, such as socio-demographic or socio-economic trajectories. Research has shown that life events, which mark transitions across various domains of life, serve as the primary catalysts for mobility behaviour (Clark, 2013). Events such as starting and completing tertiary education, entering the labour force, forming and dissolving unions, and childbearing are all well-established triggers for residential relocations (Bernard et al., 2014; Mikolai, Kulu, & Mulder, 2020).

1.2.4.1 Education and the labour force

Higher educated individuals tend to exhibit increased mobility compared to those with lower education levels, beginning early in life through study migration (Niedomysl & Amcoff, 2011; Thomas, 2019). Attending institutions of higher education is a strong trigger to leave the parental home (Van den Berg & Verbakel, 2022) and at the same time to move over long distances (Faggian & McCann, 2009b). This is especially true for university students because vocational colleges are more equally distributed over space than universities. Over the past few decades student migration has become more notable compared to the migration of couples: as dual-career couples have become more commonplace, interregional migration among families has decreased, whereas student migration has seen an increase (Lundholm, 2007). However, while migration patterns and location choice of recent university graduates have been documented relatively often (Aronica, Faggian, Insolda, & Piacentino, 2023; Carree & Kronenberg, 2014; Faggian, Corcoran, & Franklin, 2017; Faggian & McCann, 2009a; Faggian, McCann, & Sheppard, 2007a, 2007b; Haapanen & Tervo, 2012; Ritsilä & Haapanen, 2003; Venhorst, Van Dijk, & Van Wissen, 2010; Venhorst et al., 2011), the spatial patterns of migration towards universities have remained largely overlooked (Smith & Jöns, 2015). A notable exception comes from the UK, where Duke-Williams (2009) documented how regions from which many students left to attend universities did not receive equal amounts of qualified people in return. Especially in Welsh districts, far fewer graduates moved back compared to the number of students that left Wales to study elsewhere (Duke-Williams, 2009).

The transition from education to work has received wide scholarly attention because for regional economies the attraction of young talented workers is critical and spatial mobility tends to peak during this phase in the life course (Faggian, Corcoran, & Rowe, 2017). For recent graduates themselves the transition from education to work constitutes a critical phase in the development of their human capital (Rowe, Corcoran, & Bell, 2017). When they enter the labour market internal migration serves to expand the job-search area and hence to reduce education-job mismatch, especially for those who studied in peripheral regions (Hensen, De Vries, & Cörvers, 2009; Venhorst & Cörvers, 2018). Jobs requiring higher, specialised skills are to be found in only a limited amount of locations, often in specific urban regions (Faggian, Corcoran, & McCann, 2013; Kemeny & Storper, 2023). So, in order to secure a job that matches their skills the highly educated often need to migrate (Van Ham, Mulder, et al., 2001). As such, for university graduates internal migration typically yields positive labour market outcomes in terms of wages and job satisfaction, also in the long run (Faggian, Corcoran, & Franklin, 2017; Perales, 2017; Rowe et al., 2017; Venhorst & Cörvers, 2018). Also during their labour careers, higher educated workers are more migratory than others (Fielding, 2012). Individuals with higher levels of education might not only experience more benefits from internal migration but also encounter fewer restrictions because they are less likely to rely on a local network of family and friends. They more often experienced a migration before, most notably to access higher education, and hence already left their home region (Faggian et al., 2007a; Haapanen & Tervo, 2012). As a result, the higher educated tend to be less heavily restricted by local ties, also referred to as location-specific capital (DaVanzo & Morrison, 1981).

1.2.4.2 Linked lives: union formation and partner ties

In graduate migration research it is often implicitly assumed that recent graduates are single and that their decisions on whether or not to migrate are unrestricted, that is individually taken. Research on post-graduation migration continues to be largely viewed through a micro-economic lens, concentrating on individual human capital indicators and regional labour market characteristics. However, a large minority of students live with a partner at the time of graduation and this proportion rapidly increases in the years thereafter (Glijn, Kooiman, & Van Gaalen, 2023). After union formation the decision to migrate becomes significantly more intricate, as the location preferences of one partner may clash with those of the other partner, also referred to as the "two-body problem" (Benson, 2014) or the "locational conflict" (Cooke, Mulder, & Thomas, 2016). In most couples, at least one partner must accept a suboptimal location. Human capital theory frames family migration as a collaborative decision-making process, wherein migration takes place if the collective anticipated benefits for all family members outweigh the

collective expected costs (Mincer, 1978; Sandell, 1977). This approach generates the roles of "tied stayers" and "tied migrants" (Cooke, 2008, 2013a). A tied migrant typically refers to an individual who relocated because their family migrated, but they would not have chosen to move if they were single. Conversely, a tied stayer is someone who remained in their original location because their family did not migrate, even though they would have preferred to move if they were single. As a result, couple migration and staying tend to advance the career prospects of one partner while potentially hindering those of the other (Cooke, 2008). If both partners have established professional careers, couples are often more anchored to their current location. Studies have shown that dual-career couples are more inclined to stay in place than those with a single breadwinner (Cooke, 2013a; Vidal, Perales, Lersch, & Brandén, 2017). Consequently, the prevalence of dual-career couples is posited to contribute to the decline in migration rates (Cooke, 2013b; Kalemba, Bernard, Charles-Edwards, & Corcoran, 2020).

Typically, internal migration propensities of households decrease with the size of the household as all household members may have established local ties which increase the costs of migration (Mincer, 1978). As such, couples are less migratory than singles and families with children migrate less often than those without children. Especially when the children are school-going parents are reluctant to cut these local ties to schools by migration (Cooke, 2013a). As argued before, recent research suggests that internal migration is not solely constrained by other members of the household but also by interconnected lives beyond the household (Coulter et al., 2016; Vidal & Huinink, 2019), particularly familial connections (Mulder & Malmberg, 2014; Thomas, 2019; Thomas et al., 2019).

1.2.4.3 Gender disparities in couple migration

Partner ties, however, tend to affect internal migration and its outcomes differently for men and women. Empirical studies, largely drawing on data from the latter decades of the 20th century, have illustrated how couple migration tends to be a gendered process: men are more likely than women to initiate migration (Boyle, Feng, & Gayle, 2009; Compton & Pollak, 2007; McKinnish, 2008; Nivalainen, 2004; Smits, Mulder, & Hooimeijer, 2004) and after migration men's incomes typically increase whereas women's employment rates and earnings tend to decrease (Blackburn, 2010a, 2010b; Nilsson, 2000).

These findings appear to conflict with the fundamentally rational human capital perspective, which suggests that the potential benefits for both men and women are equally considered in decisions about family migration. Human capital theory provides a structural explanation for the observation that couple migration is often

dominated by men by pointing to gender-based differences in potential wage growth resulting from labor market segregation and inequality (Mincer, 1978). Even when comparing individuals with similar education levels, women are more likely than men to work in occupations, such as education and healthcare, where migration offers fewer benefits: these fields typically involve lower wages, reduced prestige, limited career advancement opportunities, greater geographical distribution, and narrower wage disparities across regions (Brandén, 2013; Perales & Vidal, 2013; Shauman & Noonan, 2007). Consequently, it is argued that the potential career gains for women from distant job opportunities are less likely to outweigh the losses experienced by their male partners, and the income women forgo may not compensate for the potential wage advantages their male partners might find elsewhere. Additionally, the fact that jobs in sectors predominantly occupied by women tend to be widespread available across regions makes it easier for women to find suitable work after relocating (Shauman, 2010).

Conversely, sociological theories on gender roles contend that men's career ambitions are given priority due to long-standing norms about family roles. These expectations often dictate that men should serve as the main breadwinners, while women are expected to handle domestic chores and childcare (Bielby & Bielby, 1992; Jürges, 2006). Research from the UK indicates that women's job outcomes following a couple's move are influenced by their partners' views on gender roles: women with partners who hold traditional views are more likely to leave their jobs after relocating compared to those with partners who have more gender-egalitarian beliefs (Lersch, 2016).

Dual-career couples with two partners holding a degree in tertiary education are also referred to as 'power couples'. Costa and Kahn (2000) suggested that for those couples who have to combine two specialised careers the two-body problem is most pronounced. They hypothesised that this problem could be most effectively solved in large metropolitan areas due to the ubiquity of knowledge jobs within a reasonable commuting distance there. Their analysis of cross-sectional data suggested that the increased clustering of power couples in metropolitan areas during the second half of the 20th century was caused by their distinct spatial migration patterns. However, analyses from a longitudinal perspective provided limited support for their hypothesis in the United States and only among the youngest highly educated couples (Chen & Rosenthal, 2008). Compton and Pollak (2007) showed that rather than the combined educational background of the couple it was only the male partner's human capital that triggered couples to move to large cities. They found that assortative mating among highly educated individuals, rather than migration patterns, was the primary driver behind power couples' increased concentration in metropolitan areas. For women in particular,

the city serves as a favourable relationship market, offering a relative abundance of men with socio-economic resources (Das, Boterman, Karsten, & Latten, 2023). In Sweden, Tano et al. (2018) demonstrated that while both male and female partners influence the decision to move to large cities, the impact of female partners is slightly smaller. However, empirical studies that use recent data to test Costa and Kahn's hypothesis and examine the relative importance of both partners' human capital in couples' migration decisions are scarce, especially in Europe.

1.2.4.4 Linked lives: family formation

The transition to parenthood is also very strongly associated with moving, but typically driven by housing motives. Family formation is considered as a turning point in people's lives that provokes changes in major life responsibilities (Stone, Berrington, & Falkingham, 2014). As a result, new parents often experience a shift in their housing preferences, leading them to seek out long-term residences in neighbourhoods that are conducive to raising children and offer a supporting environment for family-life (Mulder, 2013). Compared to singles and childless couples, parents are more likely to prioritise the characteristics of their living environment – such as the quality of the dwelling and its immediate surroundings – based on the needs and well-being of their children. This often means that parents choose a location that is less ideal for their own personal or professional needs, such as proximity to the workplace or cultural amenities, in favour of providing a better environment for their children (Mulder & Hooimeijer, 1999). Traditionally, the transition to parenthood is associated with suburbanisation: short-distance moves from the central city towards lower-density suburbs within the same labour market area (Kulu & Milewski, 2007; Stockdale & Catney, 2014). This spatial pattern is embedded in strong social norms that prescribe that children are best brought up in a detached or semi-detached house with a private garden, situated in a green, family-friendly neighbourhood with visibility of the street for safety and social interaction (Dieleman & Mulder, 2002; Lauster, 2010).

However, recent discussions among researchers challenge the traditional notion that family formation inevitably leads to suburbanization. Contrary to past trends, many European cities have witnessed a rise in the number of families with children since the early 2000s (Booi & Boterman, 2020; Buzar et al., 2007; Lilius, 2014). This increasing trend is suggested to be driven by a growing preference among families and millennials for urban living within city centres (Boterman, 2012; Boterman & Karsten, 2015; Karsten, 2007, 2014a; Y. Lee et al., 2019; Lilius, 2014). Several factors have been argued to contribute to this shift towards urban environments. First, there is a notable increase in the number of women who are actively participating in the workforce, which has led to a growth in dual-career

households. Second, the traditional distinction between inner cities and suburbs is becoming less pronounced due to the increased intermixing of urban and suburban characteristics – a phenomenon referred to as inner-city suburbanisation (Frank, 2016). Third, young parents have increasingly established an urban 'habitus' (Boterman, 2012) as a result of prolonged experiences of living in the city. However, recent empirical evaluations of the likelihood of leaving high-density and lower density neighbourhoods within cities is scarce. Recent evidence from the Netherlands suggests that among young families preferences for living in inner cities have remained stable over time and that the increased outflow can be attributed to a changing composition: nowadays a larger share of young families have high incomes and residential biographies outside the city, which are both positively associated with out-migration (Booi, Boterman, & Musterd, 2021). However, in this study young families' out-migration from big cities is not compared to the moving behaviour of comparable families in smaller settlements. In addition, it focuses specifically on suburbanisation within metropolitan regions, not on longer distance moves.

1.3 Contributions to the literature

The overall contribution of this dissertation is to provide an integral picture of the mobility trajectories of the highly educated from leaving the parental home to enrol in higher education to the transition from education to work, union formation and family formation from a geographical perspective. It contributes to the existing knowledge on human capital migration by taking a life-course perspective, by using a multi-layered geographical approach and by focusing on gendered patterns.

Typically, empirical studies on the geographical sorting of human capital take a macro-level cross-sectional perspective. These have demonstrated how during the latest decades the highly skilled have increasingly concentrated in some economically thriving metropolitan regions, both in the US (Kemeny & Storper, 2020) and in Europe (GaWC, 2020), while reaping the rewards in terms of increased wages and accumulation of human capital (De la Roca & Puga, 2017). Theoretically, this process is related to the life course: mainly highly educated young adults move to these agglomerations as escalators for upward social mobility, while later in their working life they move to lower-density suburban or rural environments to benefit from lower housing costs and enjoy more spacious living environments (Fielding, 1992).

However, empirical studies on how these individual, life-course structured migration patterns relate to spatial outcomes in terms of trends in regional human capital stocks are lacking. In the Netherlands, the metropolitan core region, known as the Randstad, is often considered an "escalator region" due to its role in attracting talent. Research by Venhorst and colleagues (Venhorst et al., 2010, 2011) delves into the mobility patterns of graduates from universities and vocational higher education institutions (hbo in Dutch). Their studies reveal that employment opportunities are the primary factor driving interregional migration post-graduation, with the Randstad region emerging as a key destination for graduates from university cities across other regions. Their analysis, however, only captures the graduates' movements within the first 18 months after completing their education, leaving longer-term migration trends unexplored. Hence, it remains unclear for how long these recent graduates stayed in the metropolitan core region after graduation. In addition, although student migration has gained importance compared to interregional migration of couples (Lundholm, 2007), the impact of patterns of student migration on the geographical dispersion of human capital remains uncertain. This shows the importance of taking into account not only migration flows after graduation, but also before graduation when estimating regional brain drains/gains. Following Coulter and Van Ham (2013) who advocate the movement beyond the snapshot approach in migration studies and analyse mobility in the long term, in the first empirical chapter (chapter 2) I employed a novel method to examine the spatial consequences of human capital migration from a longitudinal perspective. In this chapter the geographical sorting of a birth cohort is followed from the parental home (age 16) until the age at which mobility propensities have become very low (age 35), comparing those who would eventually graduate from university with those with less education. In this analysis age is used as a proxy for life course events (Tyrrell & Kraftl, 2015). It examines the theoretical concept of the urban escalator region empirically and examines the relative intensity of moving patterns of young adults towards the urban core regions compared to migration towards more peripheral locations later on in the life course. It provides a multi-layered geographical approach incorporating long-distance moves between labour market areas (economic motives) and suburbanisation flows within metropolitan areas (motivated by housing needs). This first chapter gives a fine-grained geographical overview of the spatial sorting of talent during the high-mobility phase in the life course. The remaining three empirical chapters focus on major transitions and subsequent stages in the life course of young adults: the transition from university to work (chapter 3), the situation of young childless couples (chapter 4) and the transition to parenthood (chapter 5).

Chapter 3 highlights the transition from university to work. As higher education systems expand globally, understanding the patterns and drivers of graduate

migration has become increasingly important for policymakers and researchers alike. While micro-economic theories have traditionally framed this decision as an individual's response to labour market opportunities, there is a growing recognition that this perspective may be too narrow. Recent graduates do not make migration decisions in isolation; rather, these decisions are embedded within broader social contexts, specifically partnership dynamics and family considerations. Partnerships can either constrain or facilitate migration, depending on the compatibility of partners' career aspirations and their willingness to relocate. This gap in the literature is unfortunate because the transition from education to the labour market often coincides with key life events, such as forming long-term relationships, which can profoundly affect migration behaviour and outcomes. Additionally, gender inequalities in graduate migration are a critical but underexplored area of research. While studies on family migration have extensively documented the gendered nature of migration decisions, there is a paucity of research specifically addressing how these dynamics play out among recent graduates. In some contexts, female graduates have been observed to be more migratory than their male counterparts, which is suggested to be a strategy to counteract gender biases in local labour markets (Faggian et al., 2007b). However, empirical analyses to test this assumption are lacking. An alternative hypothesis could be that gender disparities in graduate migration are shaped by a gendered effect of partnership ties, as women are engaged in romantic partnerships at earlier ages than men and women are more likely than men to move in with their partner. In The Netherlands union formation was shown to be a more important motive for migration among women than among men (Lennartz, Troost et al. 2023).

The main aim of chapter 3 is to address these gaps by examining the interplay between partnership dynamics, internal migration, and early career labour market trajectories of recent male and female graduates. By integrating insights from both the graduate migration and couple migration literature, this study seeks to provide a more comprehensive understanding of the factors shaping graduate migration decisions. This approach not only contributes to the academic discourse on migration and labour markets but also offers valuable insights for policymakers aiming to attract and retain highly educated talent in various regions.

Chapter 4 examines the impact of educational attainments of men and women on the long-distance migration of young, childless couples. This study makes two significant contributions to the literature. First, it provides contemporary empirical evidence from the Netherlands, a European country that is not part of Scandinavia. The Netherlands holds an intermediate position in Europe regarding gender equality. While women have surpassed men in tertiary education among younger

generations, the country lags behind Scandinavian nations in terms of labour force participation and the distribution of care and domestic work (EIGE, 2022). Among recent generations of young adults the socio-economic positions of men and women might have changed. Women have not only enhanced their socio-economic status by entering the labor market with higher educational attainments, but it is also argued that the increased prevalence of extended periods of singlehood after leaving the parental home can further boost their economic independence. This trend, particularly among young women, may increase resilience and help prevent them from being trapped in a subordinate position relative to their partner after marriage (Van den Berg & Verbakel, 2022). Second, the study adopts a geographical perspective on family migration, distinguishing between three potential destinations based on labour market density: the core area (Randstad, the main metropolitan area), peripheral regions (mainly rural areas), and semi-peripheral regions (the intermediate zone).

Two decades ago, Costa and Kahn (2000) suggested that the "two-body problem" (Benson, 2014) is most challenging for couples in which both partners are highly educated due to their specialized careers. These "power couples" are thus more likely to migrate to metropolitan areas with large, dense labour markets. However, evidence supporting Costa and Kahn's colocation hypothesis in the US has been limited (Chen & Rosenthal, 2008; Compton & Pollak, 2007; Cooke, 2011b). In Europe, geographical perspectives on couple migration are rare (Tano et al., 2018). Understanding internal migration patterns of dual-earner couples with equal educational attainments is crucial for urban and regional housing market policies and planning. Moreover, the distinct migration patterns of power couples may exacerbate socio-economic disparities between regions and between urban and rural areas, potentially leading to increased social polarization. Therefore, this study aims not only to analyse the effect of educational attainments of men and women on couple migration in general but also to explore whether there are distinct patterns in periphery-to-core and core-to-periphery migration.

Chapter 5 focuses on how couples' relocation behaviour changes around the birth of their first child. The study was motivated by a significant rise in urban family numbers, suggesting a shift in the traditional link between family formation and suburban living. Recent studies have explored why families today may prefer urban settings despite earlier assumptions favouring suburban living (Booi & Boterman, 2020; Karsten, 2014a, 2014b). However, quantitative evidence on residential mobility patterns during family formation remains limited, despite abundant qualitative studies. This chapter aims to bridge this gap by examining family residential mobility in the Netherlands, using both intended and actual mobility data. The first part conducts a longitudinal analysis of couples' actual residential

moves before and after having children, utilizing detailed geographic categories that move beyond simplistic urban-rural distinctions. This approach acknowledges the blurred boundaries between city centres and suburbs. The second part investigates families' intentions to move and the likelihood of these intentions being realized. This aspect contributes by viewing residential mobility as a dynamic process over time (Kley, 2011), highlighting how micro-level constraints and macro-level factors can affect families' ability to move according to their preferences (Mulder & Hooimeijer, 1999). It also explores how factors like housing constraints and dwelling characteristics influence families' decisions to relocate, thereby shaping spatial patterns in residential intentions. Overall, this chapter enriches the literature by providing a comprehensive analysis of how and why urban families in the Netherlands navigate residential mobility during the transition to parenthood.

1.4 Research approach

1.4.1 Data

In my research I adopted a life course framework and aimed to analyse residential careers of individuals in relation to their family careers, educational careers, labour market careers and, to a lesser extent, the residential locations of family members. Critical for the empirical analyses was a longitudinal structure of the data and a large number of observations which enables targeting individuals who, during the observation period, experienced specific events in the life course such as graduating from university and first childbirth. Furthermore, geo-coded address information was needed to compute distances covered by residential moves and, in the case of chapter 4, between adult children and their parents. With some Scandinavian countries, The Netherlands is one of the few countries with high-quality and longitudinal register information on individual spatial locations and hence on internal migration histories. The Dutch administrative data meet the above-mentioned standards and therefore, in all four empirical chapters I made use of this unique data source. Additionally, the combination of numerous observations and geocoded address information allowed me to adopt a fine-grained geographical lens, which was necessary in chapters 2 and 5. In chapters 4 and 5 I needed information on occupations (chapter 4) and stated preferences with regard to housing and moving (chapter 5), which are not available in the Dutch registers. For that reason, the administrative data were linked to survey data: the Dutch Labour Force Survey (chapter 4) and the Dutch Housing Survey (chapter 5).

1.4.1.1 Data from administrative government registers

The administrative data were drawn from the System of Social Statistical Datasets (SDD), a system of micro-integrated administrative registers developed by Statistics Netherlands (Bakker, Van Rooijen, & Van Toor, 2014). This data source covers the complete (registered) population of the Netherlands, roughly from 1995 onwards, and allows for a micro-level, longitudinal perspective. In the SSD data from numerous administrative sources – such as the Personal Records Database (BRP), the tax register, educational registers, police registers and insurance registers – are linked at the level of individuals based on a pseudonymised personal identification number. The BRP provides the basis for demographic and households careers in individual life courses. It contains continuous address information and exact dates of (socio-)demographic events such as birth, death, marriage, divorce, residential relocations, immigration and emigration. In addition, it contains linkages between members of the same household, marriage partners, partners in a registered partnership, and parent-child-relationships. Hence, it allows for the analysis of individual life course trajectories embedded in the context of trajectories of linked lives (Elder, Johnson, & Crosnoe, 2003). The SSD contains information on educational and labour market careers based on annual or monthly reference dates. Information on income are available from 2003 onwards.

While union formation increasingly begins with unmarried cohabitation instead of marriage (Sobotka & Toulemon, 2008), an important drawback of administrative data for social science purposes is the difficulty of identifying unmarried cohabitation. Unlike marriages and registered partnerships, unmarried romantic partners cannot be deterministically distinguished from roommates or friends sharing a house based on administrative data only. In chapter 3, I made use of a new method developed by Statistics Netherlands which uses prospective information to identify partners in an unmarried cohabitation. Two persons are identified as cohabiting partners if they are not connected by a family relationship, live in the same house and meet at least one of the following criteria: 1) being married or in a registered partnership, 2) being fiscal partners, 3) having a common child or 4) having moved jointly to another address. Importantly: as soon as a cohabiting partnership is identified, the start of the cohabitation is imputed at the historical date on which both partners started living at the same address. Hence, prospective information on events that take place later in time is used to infer cohabitation in earlier years. This method reliably identifies cohabiting couples. It is however conservative: not all cohabiting couples are identified, especially short relationships and couples who formed recently are underrepresented.

The longitudinal and micro-integrated character of the SSD enabled me to identify individual trajectories in all domains of the life course and to relate these trajectories to each other. The large number of observations allows for targeting relatively small subpopulations who recently experienced specific events in the life course, such as first childbirth and graduation from university. Combined with exact locational data, the large number of observations facilitate the adoption of a fine-grained geographical lens. In chapter 4, the parent-child linkages were used to model the effect of the distances to parents on couple migration propensities.

1.4.1.2 Survey data

In chapter 4 I studied internal migration of opposite-sex couples between age 18 and 45 and examined the relative impact of both partners' human capital. Many workers already gained labour market experience and accumulated human capital by on-the-job training. Hence, and in contrast with chapter 3 on recent graduates, information on formal educational careers was no longer sufficient to rely on when assessing these workers' human capital. Therefore I based this chapter on the random sample of the Dutch Labour Force Survey (LFS, Enquête BeroepsBevolking in Dutch), which is a rotating household panel with 5 waves per household over a period of 15 months, i.e. five quarters in a row. The LFS contains detailed (retrospective) information on labour market careers and occupations (ISCO) of both partners. By pooling all first waves during the period 2006-2015 I could collect a research population of more than 90,000 couples. By means of the pseudonymised personal identification number I matched this research population to the SSD and tracked both partners until three years after the LFS interview.

In the second part of chapter 5 I studied the self-reported preferences of young families regarding their housing situation and their moving desires and examined to what extent these stated preferences had been realised during the two years following the interview. For this purpose I selected all partnered respondents with resident minor children from the Netherlands' Housing Survey (WoonOnderzoek Nederland or WoON in Dutch), again matched with register information from the SSD. The Netherlands' Housing Survey is commissioned by the Dutch Ministry of Internal Affairs with the main aim to estimate housing demand. It is a cross-sectional survey repeated every three years and based on a large, representative sample from the Dutch non-institutionalised adult population (aged >= 18). It regularly counts around 70,000 observations and contains rich information on residential histories, the actual housing and household situation, the degree of satisfaction with numerous aspects of the housing situation, and intentions to move in the next two years, including motivations. To gain sufficient observations for the subpopulation of young families I pooled three rounds of the WoON: 2009,

2012 and 2015. Using the pseudonymised personal identification number the respondents were micro-linked to the SSD. Up until two years after the interview date the SSD provided information on demographic life events and residential trajectories.

1.4.2 Research context

Patterns of internal migration throughout the life course, and the influence of gender and geography on these patterns, are shaped by the institutional and structural context (Coulter et al., 2016). The empirical analyses in this dissertation are all situated within the context of The Netherlands. Below I briefly outline the Dutch urban structure, institutional context, and gender norms and practices with regard to education and labour participation.

1.4.2.1 Urban system

Like many other countries, The Netherlands has experienced rapid population growth in recent decades. Since 1960, the population has increased by more than 50% (Statline, 2024). During this period, population growth in The Netherlands was almost twice as high as the average in the EU (Eurostat, 2024). From the 1990s onwards population growth in the Netherlands was accompanied by a process of urbanisation. Most growth occurred in the urban core region, known as the Randstad, while less densely populated and peripheral regions experienced slower growth or even population decline (CBS, 2024). This trend was accompanied by an increase in population ageing in peripheral regions (Kooiman, 2016).

Urbanization in the Netherlands is marked by significant growth in the urban core region known as the Randstad, rather than a concentration of population in a single city. Unlike France, with Paris, and the UK, with London, the Dutch urban system is not dominated by one primary metropolis but is instead a polycentric urban region (Kloosterman & Musterd, 2001). The Randstad includes the political capital, the financial capital, a major seaport, and one of the busiest airports in Europe, each located in different cities. Additionally, this polycentric region offers a variety of living environments, from high-density urban neighbourhoods in the four major cities (Amsterdam, Rotterdam, The Hague, and Utrecht) to lower-density, green, and spacious areas between these cities.

Job accessibility is closely linked to workers' commuting tolerance. For lower-skilled workers with less tolerance for commuting, job access is highest in metropolitan centres. In contrast, high-skilled workers with greater commuting

tolerance can access most jobs from suburban areas and smaller villages between the major cities in the Randstad (Van Ham, Hooimeijer, & Mulder, 2001). Outside the Randstad, the southern region of Eindhoven also has a knowledge-based economy, known as Brainport Eindhoven. Housing prices are generally lower outside the core region.

Because of this polycentric urban structure of The Netherlands, the empirical analyses in this dissertation employ a layered geographical lens. The first spatial scale, which is used in all four empirical chapters, takes a labour market perspective and follows operationalisations used in earlier studies (De Groot, Manting, & Mulder, 2011; De Groot, Mulder, Das, & Manting, 2011). It divides The Netherlands in three macro zones based on the number of jobs that can be accessed within a radius of 50 km: a core region (Randstad), an intermediary zone or semi-periphery, and a national periphery characterised by most restricted job access. The second spatial scale is a regional scale that differentiated between urban and rural settings within these macro-zones. The third spatial scale, used in chapter 5, differentiates between high-density (metropolitan) and lower-density (suburban) neighbourhoods within the four largest cities and suburban locations outside the cities. This lowest spatial scale refers predominantly to housing preferences.

Although lower than in the US, compared to other European countries internal migration rates are above-average and in line with those of other Northwest-European countries (Bell & Charles-Edwards, 2014). Since The Netherlands is a small country in terms of space, a long-distance move typically crosses the borders of the province and in some cases involves a move between macro-zones. The commuting tolerance is relatively low. On average, Dutch workers commute 18 kilometres one way, but there are significant differences among social groups. Highly educated workers, full-time employees, and men tend to commute relatively long distances (Burger, Meijers, & Van Oort, 2014; Ritsema Van Eck & Hilbers, 2018). Whereas most daily commutes occur within the boundaries of urban regions, workers with tertiary education increasingly travel between urban areas, primarily commuting between neighbouring cities (Tordoir, Poorthuis, & Renooy, 2015). In The Netherlands those who moved primarily for work-related motives reduced their commuting distance by 25 kilometres on average (Lennartz, Troost et al. 2023). As the commute between the workplace and the place of residence extends beyond the immediate urban area or neighbouring regions, workers are more likely to either change their workplace or relocate. Consequently, for moves of at least 40 kilometres, the most common reason cited for moving was work-related (Lennartz et al., 2023).

1.4.2.2 Welfare system, socio-economic inequalities, and gender practices

In terms of Esping-Andersen's (2000) typology of capitalist welfare states, The Netherlands has long been considered as a hybrid regime with a combination of social-democratic and corporatist characteristics. Whereas the generous, universalist and de-commodifying system of income redistribution and social benefits can be characterized as social-democratic, corporatist or conservative familialist elements can be found in the importance of social insurance contributions and collective employment agreements between employers and employees within industries (Van Berkel & De Graaf, 2011; Wildeboer Schut, Vrooman, & De Beer, 2000).

Regarding the spatial economy, Dutch policies since World War II were characterized by significant government interventions aimed at reducing segregation and regional inequalities. However, since the 2000s, neo-liberal policies have become dominant in The Netherlands, leading to increased spatial inequalities in socio-economic development across various geographical scales (Musterd & Ostendorf, 2023). While the Dutch housing system was long known for its substantial social housing sector, recent neo-liberal housing policies have led to a decline in public expenditures on public housing and the commodification of the housing market. This has resulted in a decreasing share of social housing and an expansion of owner-occupied housing, which has increased the spatial concentration of disadvantaged population groups (Van Gent & Hochstenbach, 2020). Similar shifts in housing policies have also occurred in other European countries, such as Sweden (Wimark, Andersson, & Malmberg, 2020).

In terms of human capital, The Netherlands has experienced a significant expansion of higher education, leading to a rapid increase in educational attainment among the labour force. Currently, 9% of the population aged 65-75 holds a university degree, while this figure is approximately twice as high among those aged 25-35 (CBS, 2022a). Furthermore, the share with a university degree increased more among women than among men. As a result, from the 1990s onwards, young women surpassed young men in education level. Regarding educational equality, the Netherlands is ranked second within the European Union (EIGE, 2022).

In spite of this, a gender employment gap persists. Social policies and norms strongly encourage reduced working hours, particularly for women (Beham, Drobnič, Präg, Baierl, & Eckner, 2018). Although the labour force participation of women is high and has increased, the majority of women in The Netherlands still work part-time (CBS, 2022b). Upon completing their education and entering the labour market, women start working full-time significantly less often than men

(Glijn et al., 2023). Additionally, after the birth of their first child, women are relatively likely to reduce their working hours. The associated fall in income – also referred to as the "child penalty" – is estimated at 46%, which is relatively high compared to other OECD countries (Rabaté & Rellstab, 2021). Consequently, many parents adopt a work arrangement where typically the man remains in full-time employment, while usually the woman opts for part-time work. The Netherlands ranks 19th on the Gender Equality Index for workforce engagement, placing it slightly above the EU average but behind the leading Scandinavian nations (EIGE, 2022). This ranking highlights the continuation of more traditional gender roles in The Netherlands, especially when compared to more progressive practices found in Scandinavia, where there is a greater emphasis on equal workforce participation between men and women.

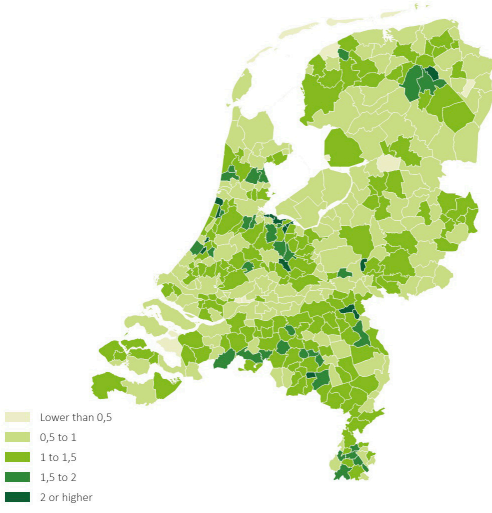
1.5 Summary of the main findings

1.5.1 Human capital migration flows from a longitudinal perspective

I started my research by studying the role of internal migration in shaping the spatial distribution of human capital. By tracking all individuals of birth cohort 1979 from the residential location of their parental home at age 16 until their location at age 35, chapter 2 addressed the following research question: *how do spatial trajectories of university graduates(-to-be) compare to those of their lower educated peers and what is the impact of these patterns on regional disparities in terms of human capital stocks?* The additional question was: *does the Dutch core region (Randstad) function as an escalator region in terms of early career wage progression?*

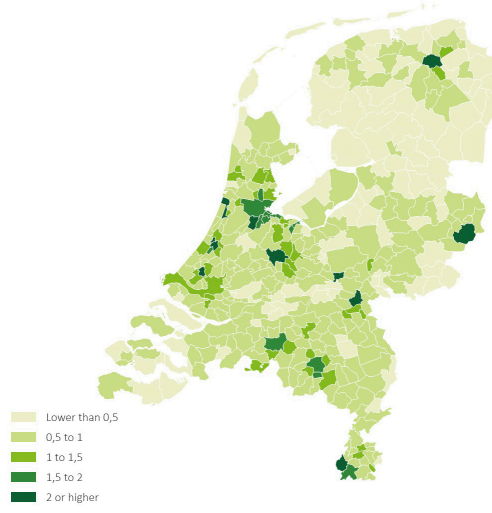
It was found that during the first two decades of the independent housing career, the internal migration patterns of university graduates(-to-be) differ from those of their lower educated peers in three respects. First, university graduates(-to-be) are considerably more likely to move over long distances during this entire phase in the life course. Second, the age pattern of long-distance moves varies by educational attainments. Whereas internal migration of the lower educated is characterised by a small peak during the early 20's, probably related to leaving the parental home, internal migration of university graduates(-to-be) peaks twice: before age 20 and during their mid-20s. Third, the geographical patterns are different between educational groups. Compared to their lower educated peers, university graduates-to-be tend to flow to university towns throughout the country when leaving the parental home and typically migrate towards the metropolitan

1.1 Spatial sorting of university graduates (to-be) at age 16 (1995)



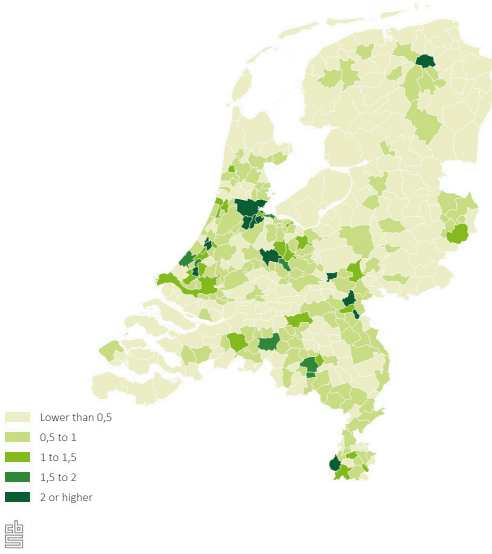
Birth cohort 1979, location quotients.

1.2 Spatial sorting of university graduates (to-be) at age 20 (1999)



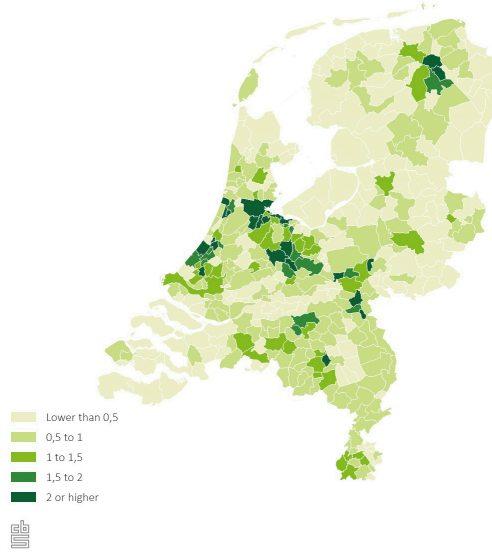
Birth cohort 1979, location quotients.

1.3 Spatial sorting of university graduates (to-be) at age 27 (2006)



Birth cohort 1979, location quotients.

1.4 Spatial sorting of university graduates (to-be) at age 35 (2014)



Birth cohort 1979, location quotients.

Source: Statistics Netherlands (SSD, own calculations).

areas in the core region after graduation. This dominant flow of recent university graduates towards the employment centre of The Netherlands concurs with earlier studies on this specific transition (Venhorst et al., 2011). When people arrive in their late 20's patterns of suburbanisation start to dominate. However, many university graduates move from the metropolitan centres towards nearby suburbs. In sum, these selective patterns of internal migration shaped a severe redistribution of human capital during the high-mobility phase in the life course, in which urbanisation was accompanied by the spatial concentration of human capital. Whereas cognitive talent was quite evenly spread over the country when teenagers lived in the parental home, at age 35 the proportion of university graduates had doubled in urban centres of the core region while being halved in large parts of the national periphery. These individual spatial trajectories contributed to an increased concentration of human capital in the core region among the total population (cross-sectional).

The dominant migration flows of young graduates towards the core region (Randstad) can be understood in terms of opportunities to realise upward social mobility. The large and diverse labour market was demonstrated to promote labour market progression, as young workers in the Randstad experienced more wage growth than their peers in other parts of the country. However, this escalator function of the Randstad was not exclusively found for university graduates, but also for the lower educated.

1.5.2 The role of gender and partner ties in graduate migration

The next study focused on a specific transition in the life course of highly educated young adults: from university to labour market. This transition in strongly related to internal migration, because by expanding the job search area recent graduates can reduce the education-job-mismatch and increase the likelihood of finding a suitable job. Following young men and women during their first year after graduation from university, in chapter 3 this research question was addressed: *How do partnership ties shape migration behaviour of recent male and female graduates and, as a potential consequence, their early career labour market outcomes?*

The results demonstrated that a large minority of recent graduates lived with a partner at the moment of graduation from university and that these partner ties strongly impede internal migration following graduation. Furthermore, partner ties restricted mobility more strongly (severely) among women than among men. First, women more frequently than men lived with a partner at the time of graduation.

Second, the hindering effect of co-residence on internal migration was stronger for women than for men, because women were more likely to have an older partner who already established strong local ties in terms of full-time employment and a relatively high income. These local ties to work typically decrease the likelihood of (couple) migration.

Internal migration following graduation from university was indeed found to be associated with increased earnings growth. However, this increased earnings growth was limited among those who migrated with a partner, which suggests that partnered graduates who migrate tend to accept suboptimal locations with regard to their individual labour market prospects. Income trajectories after graduation from university are clearly gendered, as men's earnings increase faster than women's earnings. In addition, the effect of migration on earnings growth is stronger for men than for women, which corresponds with earlier evidence from The Netherlands (Venhorst & Cörvers, 2018). However, no extra negative gender effect for women was found for migration with a partner. In conclusion, while early career migration patterns and outcomes for recent graduates are influenced by gender, traditional beliefs about gender roles do not appear to reinforce these differences once a union is formed.

1.5.3 The role of gender in couple migration towards core and peripheral regions

In chapter 4 the aim was to test Costa and Kahn's (2000) colocation hypothesis in a contemporary Western-European context where women have surpassed men in terms of educational attainments among younger generations. The colocation hypothesis posits that the concentration of power couples (both partners with a university degree) in large metropolitan areas is driven by selective migration processes: power couples are more likely than other couples to migrate to a region with a diverse and dense labour market because of its opportunities to accommodate two specialised labour careers from one residential location. In this chapter internal migration patterns of couples was examined, roughly in the first half of their labour careers in which migration propensities are relatively high (age 18-44). The research question addressed was: *What is the role of men's and women's human capital in long-distance couple migration and are power couples most likely to migrate from peripheral regions to the urban core region?*

A first important finding was that, possibly apart from a short period following the completion of higher education, couples in The Netherlands are highly unlikely to move over long distances. In a three year observation period only 1% of all couples

moved over more than 40 km. Power couples were much more mobile (4.3%) than couples of which neither partner has a university degree (0.7%), but this difference could largely be attributed to the fact that higher educated couples more often lived further away from their parents as a result of migrations earlier in the life course and nearby parents typically function as an anchor and restrict internal migration (Mulder & Gillespie, 2023; Mulder & Kooiman, 2023). After controlling for the distance to parents, the effect of education on couple migration was only modest.

The role of the educational attainments of male and female partners in couple migration was found to be not significantly different, which indicates that couples assign equal weight to both partners' labour market interests when they decide on whether or not to migrate. However, we found some other indications that couples in The Netherlands still tend to favour the male partner's careers: couple migration responds more strongly to his occupation than to her occupation, while periphery-to-core migration is related to the human capital of the male partner, but not to that of the female partner.

Only partial evidence was found for the colocation hypothesis. On the one hand, and corresponding with earlier findings from the US (Compton & Pollak, 2007), power couples were not significantly more likely than other couples to migrate from more peripheral regions to the Randstad. On the other hand, when already located in the Randstad, power couples were less likely to leave the core region and more likely to move over longer distances within this area. These findings indicate that the concentration of power couples in the core region of the Netherlands stems from 1) selective migration of single university graduates towards the Randstad and 2), after a process of assortative mating and the formation of power couples, the increased tendency among power couples to stay in this core region.

1.5.4 Residential mobility of couples around family formation

The last empirical chapter, chapter 5, puts the transition to parenthood centre-stage. Unlike the other empirical chapters that analysed long-distance moves, in this chapter all residential moves are studied irrespective of the distance involved. It focuses not only on revealed preferences (actual moving behaviour), but also on stated preferences and the realisation of those preferences. While the number of urban families is increasing and several studies suggest that more families appreciate an urban environment to raise their children, the research question addressed is: *Is family formation still a turning point in the life course that triggers couples to leave the city?*

The findings in this chapter provide a nuanced picture of the contemporary relationship between family formation and suburbanisation. On the one hand, suburbanisation is still the dominant trend among young families. Whereas for couples living in the four largest cities the event of first childbirth strongly triggers out-migration to smaller municipalities while it hardly promotes local moves, for couples in smaller settlements first childbirth is associated with local moves. On the other hand, however, two findings question the assertion that young families still have a strong preference for non-urban living environments. First, the process of inner-city suburbanisation (Frank, 2016) seems to contribute to the retention rate of young families in the city as young families in lower density neighbourhoods in the four largest cities are less prone to leave the city than their counterparts in high-density neighbourhoods. Second, the assumption that patterns of actual moving behaviour can simply be interpreted as revealed preferences was challenged by the analysis of stated preferences and subsequent mobility. Urban families more frequently report a willingness to move to other settlements but as much to move within their cities. However, it appears that despite the fact that preferences are inherently tied to assumptions about what is achievable (De Groot, Manting, & Mulder, 2013), families in the largest cities, and especially in Amsterdam, face more constraints in realising their intentions to make a local move. This indicates that expensive local housing markets impede many urban families to make their preferred move within the city (Clark & Huang, 2003; Kulu & Steele, 2013). Third, more than the density of the direct living environment, the size of the dwelling itself plays a crucial role in shaping intentions to leave the city (Booi et al., 2021).

1.6 Discussion of the results

In many industrialised countries internal migration rates have decreased, except among the highly educated (Alvarez et al., 2021; Bernard & Kolk, 2019; Lundholm, 2007; Smith & Sage, 2014). Hence, internal migration flows have become increasingly selective with regard to educational attainments (González-Leonardo, López-Gay, et al., 2022) and increasingly shape the geographical redistribution of human capital within countries. The first aim of this dissertation was to examine spatial mobility of human capital from a life course perspective. I have demonstrated that human capital is a critical predictor of internal migration, particularly during the early phases of adult life. Furthermore, internal migration processes in The Netherlands have contributed to increased spatial concentration of human capital in the core region, the Randstad, a polycentric urban region that is characterised by a dense and diversified labour market. At higher geographical

scales (macro-zones within countries) the spatial redistribution of human capital is primarily driven by moving patterns of those in the high-mobility phase of the life course: young adults up until around age 35, predominantly singles, first migrate to university towns all over the country. Later on, after graduation, they migrate in large numbers to the core region. Once coupled and already before family formation, even highly educated workers hardly move between these macro-zones. This trends towards the increasing significance of student migration over migration among couples aligns with previous findings patterns observed in Sweden (Lundholm, 2007) and the rising sense of place attachment among those who are settled and which contributes to the decline in internal migration rates (Cooke, 2011a; Kalemba, Bernard, Corcoran, & Charles-Edwards, 2022). Therefore the presence of skilled couples rather than singles is critical for regional economic growth, because skilled workers tend to become less mobile once they are in a committed relationship (Cooke, 2014).

Power couples – that is couples with two partners holding a university degree – are more likely than other couples to migrate within the core region, but not to move towards the (semi-)periphery. This pattern has resulted in the increased concentration of human capital in the core region and to a lesser extent the region around Eindhoven, whereas peripheral regions tend to lag behind. In other words, these processes have contributed to increasing spatial inequalities in terms of human capital. Recently, roughly from 2015 onwards, the Netherlands has witnessed an increasing flow of couples and families from the core region to more peripherally located regions. However, these are still minor flows compared to those of young adults. Furthermore, those who leave the core region typically settle in (the more accessible parts of) the semi-periphery, not in the most peripheral parts of The Netherlands in terms of job access (CBS, 2022c; Klopper & Kooiman, 2021).

The trends of agglomeration, spatial concentration of human capital and rising spatial inequalities in The Netherlands (Musterd & Ostendorf, 2023) fit in a time period associated with disruptive technology shifts that fundamentally changed the geography of labour demand: the rapid development of digital communication technologies and knowledge-intensive industries. Since The Netherlands is characterised by a hybrid type of welfare regime (Van Berkel & De Graaf, 2011) moving towards more liberal housing policies (Musterd & Ostendorf, 2023), a comparison with a prototype of a liberal regime, the US, is worthwhile. In the US the highly educated responded to this changed geography of jobs (Moretti, 2012) by moving to a few high-performing 'superstar city-regions' like New York, San Francisco and Boston (Kemeny & Storper, 2020). The spatial concentration of the highly educated in these city-regions was accompanied by rising geographical

income disparities during the latest decades (Manduca, 2019), especially among workers with a college degree. This trend of regional divergence contradicted with experiences from the post-war years up until the 1980's, when internal migration patterns were less skill-selective and contributed to regional convergence in terms of economic well-being (Barro & Sala-i-Martin, 1992; Kemeny & Storper, 2020). Kemeny and Storper (2023) argue that periods of regional income convergence follow as soon as formerly new technologies become routinized and spread around the spatial economy. Elaborating on the Dutch case I did not study patterns of regional convergence and divergence in terms of incomes or wages, but we may have witnessed the onset of a trend of convergence with regard to spatial patterns of internal migration as flows towards more peripherally located regions have recently expanded. The rising core-to-(semi-)periphery flows are likely fuelled by diverging regional house prices: living in more peripherally located regions had become relatively inexpensive compared to the core region (Klopper & Kooiman, 2021). Another potential factor is the increased incidence of working from home, especially after the outbreak of the Covid-19 epidemic and the related policies on order to diminish social contact. The possibility of working from home at least a few days a week reduces the number of home-to-work commutes and enables workers to accept longer distances to the workplace.

From a policy point of view there are pros and cons related to these trends of concentration of human capital and increasing spatial inequalities. On the one hand, agglomeration forces may stimulate efficiency and economic growth by agglomeration and learning effects, improving The Netherlands' (or Europe's) global competitiveness compared to e.g. the US and China. On the other hand, rising spatial inequalities may harm political stability, trust and cooperation within a country (Storper 2022). Electoral geographies demonstrate that support for anti-establishment, populist parties for "outsiders" is increasingly overrepresented in peripheral regions (De Voogd & Cuperus, 2021). Policies are needed that highlight both the advantages and disadvantages of human capital concentration, aiming to ensure balanced regional development and reduce the negative effects of regional inequalities.

A second important aim of this dissertation was to study gender differences in human capital migration and its labour market consequences, also from a life course perspective. Just as in many other western countries (Esteve et al., 2016; Van Bavel, Schwartz, & Esteve, 2018), women in The Netherlands have reversed the gender education gap and surpassed men in terms of educational attainments among younger generations. However, from the moment university graduates enter the labour market women still start working part-time more frequently than men, which underlines the persisting cultural influence of gender practices in the

labour market, expressed in the "one-and-a-half earner" model in which with one partner (usually men) works full-time and the other (usually women) part-time (Statistics Netherlands/SCP 2018).

To some extent internal migration behaviour reinforces gender inequalities in labour market trajectories during the life course. Among recent university graduates, men are more likely to migrate for labour market reasons than women and hence, to kick start their labour careers. I did not find support for suggestions that women would be more likely than men to migrate after graduation to compensate for potential gender discrimination in the labour market (Faggian et al., 2007b). In contrast, union formation is a relatively important motive for internal migration among women. Among recent graduates who enter the labour market internal migration is strongly reduced by partner ties, both for men and women, but the socio-demographic context in which women decide on where to live after graduation from university is more restrictive: women start living together at younger ages than men and are more likely to move in with their partner and hence, they more often have to consider his interests during this education-to-work transition. In addition, women's (male) partners tend to be older and have established stronger local ties.

On the other hand, if controlled for relevant characteristics of both partners, living with a partner was not found to exacerbate gender disparities in terms of internal migration. First, among recent graduates gender differences in internal migration behaviour were equal for singles and partnered graduates. Second, among existing opposite-sex couples without children we found only moderate indications that men's careers were being prioritised. More importantly, these couples were very reluctant to migrate at all.

Although gender inequalities with regard to internal migration and its effects on labour market trajectories are relatively small during the first years on the labour market, later in the life course the small initial wage gaps between male and female partners within couples may be magnified when they decide on which partner will reduce working hours after family formation. Family formation is still the critical life course transition that drives the diverging labour market trajectories between men and women, as women pertain to be much more likely than men to reduce working hours after first childbirth, also coined the 'child penalty' (Kleven, Landais, Posch, Steinhauer, & Zweimüller, 2019).

After family formation, and especially when the children reach school-age, couples become even less likely to move over long distances. This transition in the life course is still strongly related to suburbanisation, mainly from inner cities towards

neighbouring villages within the same metropolitan region. First childbirth still strongly triggers out-migration from high-density inner cities and to a lesser extent from lower-density neighbourhoods within cities. This challenges earlier suggestions that preferences regarding the living environment would have shifted towards more urban and that the city would have become a more popular environment to raise children. However, when it comes to housing related moves patterns of actual relocations cannot simply be considered as revealed preferences, as families may accept suboptimal location choices if they face (financial) constraints to realise their desired moves. Especially in the most tight housing markets in the Randstad young urban families often left the city despite their initial preference to stay. This is in line with recent findings that even though young families more often have a preference to stay in the city, they hardly compromise on size of housing. This leads to an outflow of young urban families to the surrounding settlements in the metropolitan area, which occurs especially in Amsterdam due to its relatively small dwelling sizes (Booi, 2024). Those families often stay in the larger metropolitan area and hence keep their ties to the city in terms of work and amenities.

1.7 Methodological reflections and avenues for future research

This dissertation has provided in-depth information about the migration behaviour of highly educated individuals during the early stages of their adult life courses up to and including family formation, while simultaneously raising questions that offer starting points for future research.

Empirical analyses were centred on actual moving behaviour interpreted as revealed preferences, based on administrative data and at some points complemented with large-scale survey data. These administrative data have enormous benefits, as specified in the data section. First, in contrast to surveys or more qualitative data sources, administrative data do not suffer from selective non-response. Second, the structure of the SSD (Bakker et al., 2014) allows for following people over the life course, for spotting relatively rare life course events, for studying linked lives in connection to each other, and for the adoption of a fine-grained geographical perspective.

However, usage of administrative data also brings disadvantages. The most obvious drawback is the absence of information on individuals' preferences, intentions and

motives to move or to stay. In chapter 5 on moving behaviour of couples around first childbirth I therefore employed additional survey information on stated preferences. These analyses revealed that during this phase in the life course when couples primarily move for housing related motives, actual moving patterns cannot just be interpreted as revealed preferences because macro-level constraints and micro-level restrictions (Mulder & Hooimeijer, 1999) may hinder couples to realise their initial moving desires. This was particularly true for couples who had their first child in the most expensive (urban) housing markets.

In the empirical chapters 3 and 4 I studied actual moving behaviour based on administrative data and did not employ information on preferences, intentions and motives. These chapters focused on long-distance moves in the early phases of the life course, that is before family formation, and put gender disparities centre-stage. Important gender differences in actual moving behaviour were identified, but because of the absence of more qualitative information these chapters did not unravel the factors that trigger or restrict young men and women to migrate. In chapter 3 I studied actual internal migration of young men and women after graduation from university. Referring to the literature on how motives for migration are related to age and moving distance, it was assumed that long-distance moves during this phase of the life course were predominantly driven by labour market concerns (De Groot, Manting, & Boschman, 2008; Thomas et al., 2019). This assumption was supported by the empirical finding that recent graduates who migrated after graduation experienced an increased earnings growth thereafter. The analyses yielded several indications that during the transition from education to work men are more willing than women to migrate for the sake of their labour careers. In this early phase of theory-building surveys or in-depth interviews could be valuable to elucidate what triggers or restricts young men and women to migrate and how these motivations are shaped by cultural norms and expectations on labour careers and family life. A recent qualitative study by Thomassen (2021) was insightful in this respect and shed more light on considerations regarding decisions to move or to stay among recent graduates in The Netherlands and demonstrated that family and friends are important, but this study was not able to distinguish between men and women. A Spain-based study among a much wider population (aged 18-55) indicated that ties to family and friends are more important in migrations intentions among women than among men (Thomassen et al., 2023). To better understand the gendered nature of migration following graduation from completing education it would be insightful if existing surveys targeted at recent graduates would include some questions on motives for moving and staying that also focus on the role of gender and partner ties.

Information on preferences, intentions and motivations for migration are even more valuable among couples. In chapter 4 I analysed how actual couple migration was related to his and her human capital, but this does not necessarily mean that these couples favoured his or her career in the decision making process. Large-scale survey data could be helpful in this respect to investigate the motives behind couple migration. However, in many surveys the items and response categories are insufficiently clear to really get a grip on what is going on among couples. In the Netherlands Housing Survey for instance, one of the set response categories on the question on motives for moving is "work". This answer could be valuable information for singles, but for couples it remains unclear whether it is the labour career of the respondent or that of their partner that motivated the move or motivates the intention to move. A rephrasing of the response categories might help in this respect. To get even more insight in the decision making progress semi-structured interviews targeted at couples in specific phases of the life course would be another angle from which couple migration could be approached.

Another limitation of the empirical analyses concerns the geographical scope. First, findings are situated in the specific societal context of The Netherlands (see section on research context), where women have surpassed men in terms of educational attainment. However, gender practices regarding labour force participation, domestic work, and childcare remain more traditional compared to several other European countries, particularly those in Scandinavia (EIGE, 2022). Comparative studies in different national contexts with varying societal gender norms would further enhance our understanding of the role of gender in early career migration behaviour and its labour market outcomes both among singles and partnered individuals. Second, students and workers, particularly those with higher education, are increasingly crossing national borders, expanding beyond internal migration patterns to encompass broader mobility trends. Within the European Union, initiatives like ERASMUS encourage student exchange, and workers benefit from freedom of movement. Examining human capital migration longitudinally poses challenges due to data accuracy, yet case studies within national contexts can effectively incorporate international migration into their models. For example, exploring how tendencies for human capital emigration relate to life course dynamics and the influence of gender would be pertinent. A good starting point would be the recent study of individual mobility trajectories over the life course in 20 European countries, which demonstrated how internal and international migration often precede and follow one another (Bernard & Vidal, 2023).

Although this thesis focused on patterns of human capital migration during the high-mobility phase in the life course (roughly individuals aged 18-35), the impact of mobility patterns during lower-mobility phases later in the life course should not

be neglected. It has been shown that the process of counter-urbanisation – a process where people migrate from urban to rural areas driven by the desire for improved quality-of-life – is predominantly fuelled by couples aged 30 and older, but the magnitude in terms of the redistribution of human capital is still unknown. An obvious idea for future research could be to expand on the first paper by tracking the geographical trajectories of university graduates ten years longer, until their mid-forties, and compare these patterns to those of their less-educated peers. This analysis will enhance our understanding of the spatial distribution of talent over the life course, particularly addressing the question of whether highly educated individuals eventually leave metropolitan areas for more peripheral regions when they have arrived in their mid-career phases. The motives for highly educated individuals to relocate to peripheral regions have been demonstrated to be diverse and include job opportunities, housing preferences, and local natural and social amenities (Hansen & Aner, 2017). Potentially contributing to counter-urbanisation, the prevalence of working-from-home has steadily risen, particularly since the onset of the Covid-19 pandemic. Recent evidence from Italy and Estonia provides support for this link. In Italy, particularly among people under 40 residing in the metropolitan areas in the economically booming North, those anticipating increased opportunities for working-from-home in the long run were more inclined to have already relocated or expressed a keen interest in doing so soon, especially if they were not raised where they lived (Jansen, Ascani, Faggian, & Palma, 2024). In Estonia since the pandemic higher income families increasingly migrate from the urban core to non-metropolitan rural areas (Tammaru, Kliimask, Kalm, & Zalite, 2023). Therefore, it is crucial to explore how working from home reshapes attitudes towards commuting and, consequently, influences patterns of internal human capital migration. Furthermore, comparing different birth cohorts will allow us to examine how internal migration patterns have evolved over time. It would also be insightful to explore the extent to which patterns of internal migration are similar or different in other national contexts. Given that administrative data are required for conducting such a longitudinal study with a detailed geographical focus, this analysis could also be expanded to Scandinavian countries such as Sweden, Norway, Finland, and Denmark.

Although the empirical analyses of this thesis focused on university graduates, the spatial mobility patterns of practically educated workers increasingly warrant attention. While the role of highly educated workers in driving economic growth has been well-established (Moretti, 2012), it is also crucial to recognize the indispensable contribution of practically educated middle-class workers to regional economies. Professions such as teachers, medical staff, and police officers are vital examples. However, in so-called superstar metropolises, housing costs have the potential to become unaffordable (Kemeny & Storper, 2020). Also in The

Netherlands, those households who want to move to or within the core region face more competition on the housing market and are less likely to realise their moving intentions (De Groot et al., 2008). This raises the question: to what extent have core regions become less accessible for middle-income groups and critical professions?

In addition, future research should situate (gendered) human capital migration within a broader social context that considers spatial distances to one's social network, particularly parents. Much of what has traditionally been considered individual migration should be more accurately be seen as family migration: the decision-making unit now extends beyond the individual to include the household and even family members outside the household (Cooke 2008, Michielin, Mulder et al. 2008). Scholars have increasingly argued that migration and immobility should be understood as relational practices intertwined with interconnected lives outside the household (Coulter et al., 2016), which primarily act as constraints on migration (Thomassen et al., 2023). While this approach was employed in Chapter 4, it would also be beneficial to apply it to spatial mobility during other life course transitions, such as university graduation and the birth of a first child. When examining the role of partner ties in migration following university graduation, progress could be achieved by including LAT (Living Apart Together) relationships, not just co-residential partners. LAT relationships are quite common during this life stage. To gain insight into the influence of partner ties outside the household, research utilizing survey data that includes information on LAT relationships is needed.

Furthermore, we found that already from the moment of graduation from university women are less likely to migrate and experience less earnings progression than men. It was suggested that the relatively small gender differences that emerged during this transition could have important repercussions when couples decide on which partner will reduce working hours after first childbirth and hence to incur the child penalty. Future research could exploit the life course approach and move beyond the snapshot taken in chapter 3 (1 year after graduation) and investigate long term effects of migration decisions following graduation from university.

2.

Human capital migration: a longitudinal perspective

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Abstract

Based on micro-level administrative data this paper aims to identify the role of internal migration in shaping regional and inter-urban contrasts in human capital stocks in the Netherlands. We follow birth cohort 1979 from age 16 until age 35 and compare spatial trajectories between university graduates(-to-be) and their lower educated peers. We conclude that, in a context of dominating rural-to-urban migration flows, the highest educated(-to-be) are more than others attracted to metropolitan core areas and the Randstad. Second, we aim to test whether this urban preference may be prompted by spatial variation in socio-economic progression by comparing changes in the relative wage position of employees in different spatial settings. Metropolitan settings and the Randstad in general are found to function more than other regions as socio-economic escalators during the first phase of the labour career. However, these effects appear to be equal among educational groups.

Key words: internal migration, human capital, urbanisation, escalator regions.

2.1 Introduction

Since the second half of the 1980s academics highlight the impact of human capital on growth trajectories of national and regional post-industrial economies based on knowledge-intensive jobs. Regional differences in human capital stocks largely reflect disparities in regional incomes (Gennaioli et al., 2013) and employment growth (Raspe & Van Oort, 2006). In the Netherlands, regional wage disparities also persist mainly due to regional differences in human capital (Groot et al., 2014). Regional variation in human capital stocks may originate from in situ training of resident populations but is also highly affected by spatial flows, that is migration of the highly educated (Faggian & McCann, 2009a). Since highly educated individuals are found to exhibit highest levels of internal migration (Faggian et al., 2015), the geographical patterns play a crucial role in shaping the redistribution of human capital within countries. This redistribution can have significant implications for regional economies, as the concentration or dispersion of skilled individuals influences economic growth, innovation, and regional competitiveness.

In the UK, internal migration was found to be the major component of regional population change in the 2000s in the UK (Fielding, 2012). In most European countries a mosaic of growing and shrinking regions can be discovered within relatively short distance (Eurostat, 2016). Population growth and shrinkage as a result of internal migration must be regarded as two sides of the same coin and therefore should not be considered in isolation. Recently, patterns of population growth and decline are often linked with debates about 'urban resurgence' (Turok & Mykhnenko, 2008) or presented as a 'triumph of the city' (Glaeser, 2011). Cities and city-regions have been identified as the main engines of national and international economic development, the main nodes in global networks of capital, people, knowledge and information, and the prime locations of the emerging 'creative knowledge economy'. Whether the focus is on advanced producer services (P. J. Taylor & Derudder, 2016), or on the cognitive-cultural economy (Storper & Scott, 2009), or on the 'creative class' (Florida, 2002), the preferred location of the economic sectors and categories of workers highlighted in this research invariably seems to be a large city-region. In the 2000s there are indications of a concentration of population growth increasingly in the central cities of these city-regions (Kabisch & Haase, 2011). This process seems to be fuelled by an expanding group of skilled workers who reveal a preference for large urban areas both in Europe and the US. Several studies have shown how regional contrasts in human capital have deepened over time (Berry & Glaeser, 2005) and even suggest a process of cumulative causation, whereby regions with higher initial levels of

human capital attract the best educated newcomers (Ritsilä & Haapanen, 2003; Waldorf, 2009; Whisler et al., 2008).

Many scholars studying internal migration of human capital take on board the entire labour force, whereas it is widely acknowledged that moving behaviour highly depends on the stage in the life course. Others instead focus on very specific groups like young, recent graduates (Venhorst et al., 2011). An important exception is the analysis of out-migration propensities of the college-educated in the US by Whisler et al. (2008), who differentiate between several demographic groups. They show how young graduates indeed reveal a preference for large urban areas, whereas families with children prefer locations with lower densities. This is in line with Fielding's (1992) notion that young adults in Britain use the primate city-region of Greater London to realise rapid upward social mobility and step off the 'escalator' in later life to enjoy a more quiet, spacious living environment.

This paper aims to contribute to a better understanding of the impact of internal migration upon the spatial distribution of human capital by taking a longitudinal perspective which accounts for several stages in the life course. What is the role of internal migration in the redistribution of human capital from the moment people leave the parental home until they are settled halfway their labour careers? Many studies on the spatial redistribution of human capital by internal migration ignore the fact that a significant part of spatial mobility of intellectual talent takes place before completion of the educational career. Those flows remain unobserved by cross-sectional research designs. Elaborating on the Dutch case we adopt a cohort approach in which we determine educational attainments in hindsight and compare spatial trajectories of university graduates with their lower educated contemporaries. Thus we are able to isolate the effect of skill-specific internal migration from the effect of in situ training on regional disparities in education attainments among the population. The spatial redistribution of human capital is mapped during different phases in the life course: leaving the parental home, college-to-work migration and migration around the age of 30 which is often associated with suburbanisation and counter-urbanisation.

Like many other industrialised countries, the Netherlands experienced a rapid expansion of tertiary education during the last decades, while population growth predominantly took place in urban areas at the expense of peripherally located rural areas and smaller cities. However, the urban system in the Netherlands deviates from that in many other industrialised countries. Whereas for instance France and the UK are dominated by a primate city, the Netherlands is characterised by a polycentric core region (Kloosterman & Musterd, 2001). The political capital, the financial capital, the world port and the world airport are all located in the

so-called Randstad region, but in different cities within this region. Besides, the Randstad megalopolis comprises a diverse set of living environments including spacious, green and small villages in between the four bigger cities: Amsterdam, Rotterdam, The Hague and Utrecht. The Randstad offers the densest labour market in the Netherlands but the geography of job access within the Randstad strongly depends on commuting tolerance (Van Ham, Hooimeijer, et al., 2001).

Given the polycentric structure of the urban system in the Netherlands this paper aims first to identify the spatial redistribution of human capital during the life course at two spatial scales. The first scale is national and differentiates between three macro regions based on job access (Randstad, semi-periphery and periphery). The second scale is regional and differentiates within these macro regions between varying degrees of urbanisation. A second aim is to assess how these spatial settings function as socio-economic escalators for its residents with various amounts of human capital.

2.2 Background

2.2.1 Spatial mobility of human capital

In the human capital theory, migration is considered as an investment in the human agent which involves costs and returns (Sjaastad, 1962). Individuals or families (Mincer, 1978) decide to migrate only if the expected future returns exceed the expected costs of migration. According to this theory human capital is the dominant personal driver of migration. Through migration people can get access to opportunities beyond their current activity space. These opportunities may be jobs that directly render higher financial returns, but also educational facilities or jobs through which people can augment their human capital which may render higher returns in the long run.

Empirically the relation between educational attainments and migration is widely confirmed: the more education the higher the probability of interregional migration (Faggian et al., 2015). These higher migration probabilities can be expected not only after, but also prior to graduation. In many countries higher education facilities, especially universities, are concentrated in just a few locations. This implies that many students are inclined to leave the parental home and their home region when they enrol in university. Faggian et al. (2015) provide a clear overview of explanations for the greater spatial mobility of the highly educated after graduation. Compared to the lower educated they are argued to less strongly

rely on family and friends, to adapt easier to new places and to obtain and process information about opportunities in unknown, distant regions more efficiently. An important structural explanation seems to be that suitable jobs for university graduates are relatively unevenly distributed across space and hence the job search area may be expanded. Partly people may compensate for this by commuting long distances. van Ham et al. (2001) argue that commuting tolerance is lower among low-skilled workers because the costs of commuting are higher relative to their wages than for high-skilled workers. Based on this argument they showed that in the Netherlands, although the Randstad offers best job access for both high-skilled and low-skilled workers, within the Randstad the ideal location is different for both groups. Whereas the central city still offers best job access for low-skilled workers, high-skilled workers who accept commutes up to 45 minutes can settle in smaller villages in between the four big cities (Van Ham, Hooimeijer, et al., 2001).

In contrast to 'hard' location factors such as employment, wages and education, site-specific 'soft' quality-of-life factors may also drive migration and location choice. These 'soft' factors might comprise natural amenities (Graves, 1983), urban consumption amenities (Glaeser, Kolko, & Saiz, 2001) or cultural aspects such as tolerance, openness and diversity (Florida, 2002). However, in Europe employment opportunities appear to be the dominant factor among high-skilled workers. Quality-of-life factors do play a significant role, but only if the necessary condition of employment is fulfilled (Martin-Brelot et al., 2010; Niedomysl & Hansen, 2010; Sleutjes, 2016). Once a job has been found in a specific region quality-of-life factors, of which the valuation is found to change during the life course (Whisler et al., 2008), can be crucial in the location choice between different living environments within that region (Biagi et al., 2011).

2.2.2 Metropolitan areas as socio-economic escalators

For a longer or shorter period workers may be attracted to areas with dense, diversified labour markets with a rich human capital base because of the ample opportunities to realise upward social mobility. These settings are supposed to be urban areas in which the transmission of ideas and knowledge is boosted by multiple face-to-face contacts (Storper & Venables, 2004). In Sweden nominal income increase of migrants moving up in the urban hierarchy was found to almost double that of comparable migrants who moved in the opposite direction (Korpi et al., 2011). Also in the Netherlands positive agglomeration effects have been demonstrated (Groot et al., 2014) while labour market entry in a large job market was found to enhance occupational mobility in the long run (Van Ham, 2002).

The British geographer Fielding linked social and geographical mobility during an individual's life course and expressed this in the concept of 'escalator regions' (Fielding, 1992). In the UK a vast amount of people in their early twenties still migrate to the main escalator region South East England including Greater London in search for rapid upward occupational mobility (Fielding, 2012). The escalator concept suggests that people step off the escalator by moving to a region with lower living costs and a higher quality of life once they have realised upward social mobility. Within 15 years after arrival almost half of the in-migrants in South East England were found to have moved on or returned to other British regions (Champion, 2012). In Sweden, households that stepped off the metropolitan escalator and migrated from urban to rural regions realised the largest gains when taking into account regional housing cost disparities (Korpi et al., 2011). Venhorst et al. (2010, 2011) thoroughly analysed migration patterns of higher education graduates during the first 18 months after graduation in the Netherlands. The results confirmed that employment is the main driver of interregional migration with the Randstad attracting graduates from university cities in other regions. However, it remained unclear for how long these recently graduated persons stay in the regions to which they moved after graduation. Suburbanisation is still a common move for young families in several European countries, but raising children in the city has also become a popular choice again among middle-class couples (Boterman, Karsten, & Musterd, 2010).

A substantial growth of human capital in the area appeared to be the only robust preference of the college-educated in the US across different stages in the life course (Whisler et al., 2008), which suggests that the presence of human capital is an amenity in itself. Waldorf (2009) showed that the educational status of a state's resident population is the most powerful predictor of the educational status of newcomers, especially in urban settings. Some counterevidence comes from Germany, where labour market regions actually converged in skills structure due to migration (Südekum, 2008). The author suggests that this trend of regional skill convergence in Germany may be driven by the relatively immobile older generations and that, given the increased labour mobility in Germany, 'among young workers it appears more plausible to expect a divergence trend of local skill compositions than among all workers' (Südekum, 2008, p. 158). In our analysis we focus on a younger generation and selected birth cohort 1979 of which the highly educated entered the labour market during the onset of the twenty-first century.

2.3 Data and method

We use the System of Social statistical Datasets (SSD) of Statistics Netherlands (Bakker et al., 2014) which covers the complete registered population of the Netherlands. This enables us to trace individuals longitudinally and spatially from 1995 until 2014, enriched with demographic and socio-economic information. A cohort analysis allows us to compare trajectories of the highly educated with their lower educated peers. Within the available data time span birth cohort 1979 best suits our research aims since they nearly exclusively live in the parental home in 1995 (at age 16) and by that time are about to start their independent housing career. In the Netherlands at age 16 more than 99% still lives in the parental home, while from age 17 leaving the parental home takes off (Stoeldraijer, 2014).

Human capital is operationalised as a person's highest completed level of education. We choose the threshold of university degrees because university graduates turn out to be much more mobile than graduates from Dutch vocational colleges of higher education (Venhorst et al., 2010), partly because vocational colleges are distributed more evenly across space.

Birth cohort 1979 can be followed until 2014 at age 35, when spatial mobility probabilities have dropped sharply. By identifying educational attainment in hindsight we can take on board the pre-graduation mobility patterns. We identified the educational attainments in 2014. At that time almost the complete birth cohort finished their educational career. For all years between 1995 and 2014 we measured the residential, demographic and socio-economic information in September. This means that we ignore individuals who lived abroad in 2014 or had passed away in the meantime. This concerned approximately 6 percent of all persons aged 16 who lived in the Netherlands in 1995[2)]. Those who lived abroad temporarily but returned to the Netherlands before 2014 have been taken on board for all years they could be observed. Our research population consists of 179,733 individuals who were registered in the Netherlands both in 1995 and in 2014.

Slightly more than 14 per cent of the birth cohort 1979 (25,320 individuals) had graduated from university. We can isolate the effect of migration on spatial disparities in human capital from the effect of regional variance in in situ training by comparing the relative presence of graduates-to-be at age 16 with the relative

[2)] We checked whether the probability of emigration/death by 2014 was related to education by measuring educational attainments at earlier points in time. As expected, it turned out that the highly educated were slightly overrepresented among the absentees.

presence of the same group of individuals until age 35, way after graduation. For every combination of age and spatial area we determined the relative presence of graduates(-to-be) by calculating location quotients (Fielding, 2012). Location quotients (LQs) are usually calculated to determine the regional importance of a specific economic activity compared to the national share, but can also be used to determine overrepresentation or underrepresentation of human capital. Values below 1 indicate a relatively low share of graduates(-to-be) of a specific age in a specific region compared to the national mean (14%), while values above 1 indicate an overrepresentation. Changes in the location quotients during this stage in the life course reflect the difference between net migration rates of university graduates(to-be) and net migration rates of the lower educated from the same birth cohort. We have defined a move as a transition of residence over one year intervals. Migration is operationalized as a move between municipalities with a distance of more than 30 kilometres as the crow flies. We selected a threshold of 30km for two related reasons. First, it was found that in the Netherlands employment is the main driver among moves over more than 30km (Feijten & Visser, 2005). Second, differences in moving probabilities between educational groups emerge above this distance.

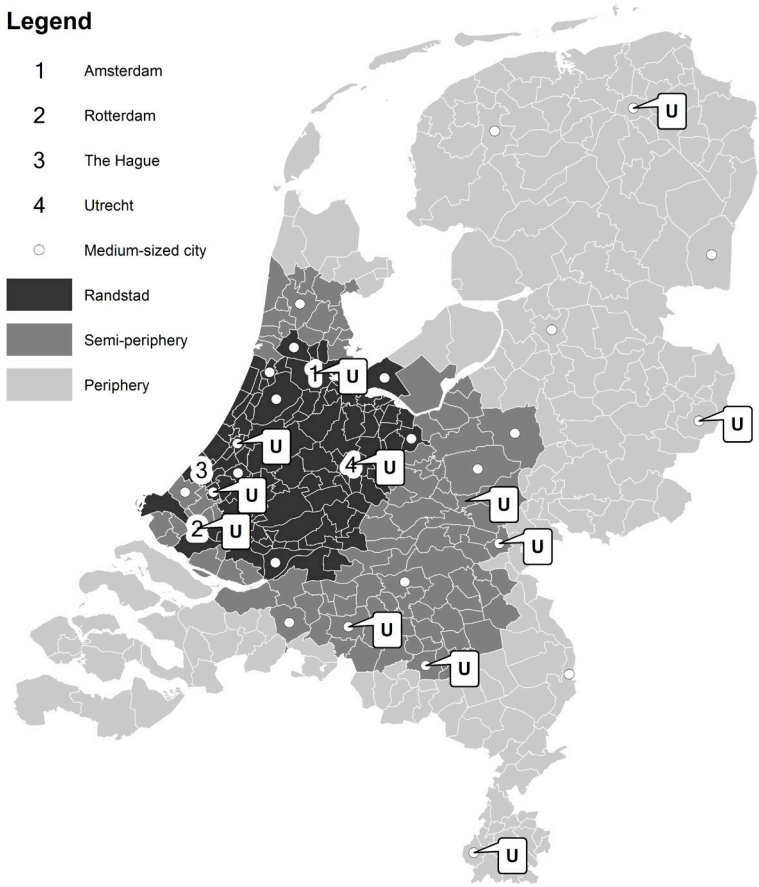
Geographically we created a typology of municipalities[3] based on three dimensions. The first and most basic dimension comprises three large geographical zones based on the number of jobs that can be accessed within 50 kilometres by road[4] from the geometric centre of that specific municipality. Thus we distinguished a core region that very much resembles the way scholars have defined the Randstad, a semi-periphery and a national periphery. Second, we took into account the degree of urbanisation and distinguished the four big cities (Amsterdam, Rotterdam, The Hague and Utrecht, all of which are located in the Randstad), medium-sized cities (>100,000 residents) and small municipalities. Third, we distinguished between municipalities with and without a university[5].

3) Municipal borders of 2015 have been used for the entire study period.

4) Randstad: more than 1,700,000 jobs; Semi-periphery: more than 1,000,000 and less than 1,700,000 jobs; Periphery: less than 1,000,000 jobs.

5) Excluding the theological universities and the so-called open universities.

2.3.1 Geographical typology of Dutch municipalities based on job access, population size and distribution of universities



Source: Statistics Netherlands (SSD, own calculations).

Thus, we categorised 393 municipalities in 10 types (table 2.3.2), mapped in figure 2.3.1. A cross-section for 1999 and 2014 among the population aged 35–39 shows that university graduates are not evenly distributed across space in the Netherlands. In 2014 in the Randstad 21 per cent had a university degree, while this was 12 per cent in the semi-periphery and 9 per cent in the national periphery. Besides, urban municipalities in general have higher shares of university graduates than smaller municipalities. All four big cities exhibit above-average shares of university graduates but there is much inter-urban variation. Especially Amsterdam and Utrecht stand out. From 1999 onwards the share of university graduates among this age group has increased all over the Netherlands. However, the proportion of university graduates residing in the Randstad (predominantly in the metropolitan areas and university cities) increased since between 1999 and 2014.

2.3.2 Spatial distribution of university graduates aged 35-39

Municipalities	Proportion aged 35–39 with university degree		Spatial distribution of university graduates	
	1999 (N = 1,310,051)	2014 (N = 1,014,693)	1999 (N = 1,310,051)	2014 (N = 1,014,693)
	N	%	%	%	%
Randstad	92	11	21	52	56
of which					
Amsterdam	1	16	31	11	13
Rotterdam	1	9	16	4	5
The Hague	1	14	22	5	5
Utrecht	1	24	36	5	7
non-metropolitan university city	2	21	35	4	3
medium-sized city	8	7	14	7	7
small municipality	78	9	17	16	16
Semi-periphery	103	7	12	24	22
of which					
university city	4	14	21	6	6
medium-sized city	7	8	14	6	6
small municipality	92	5	10	11	10
Periphery	198	5	9	23	21
of which					
university city	3	11	18	4	3
medium-sized city	4	5	9	2	2
small municipality	191	4	8	18	16
Total	393	8	14	100	100

Source: Statistics Netherlands (SSD, own calculations).

2.4 Results

2.4.1 Spatial mobility of university graduates(-to-be)

What is the role of internal migration in this spatial concentration of human capital? Table 2.4.1.1 confirms the association between spatial mobility and education. Almost two thirds of university graduates migrated at least once over more than 30 kilometres between the ages of 16 and 35. Among those with a degree in vocational college and lower levels of education this was less than 40% and slightly more than 20% respectively. Repeat migration, be it onward or return migration, is quite common among university graduates. Of those who migrated at

least once, more than 60% migrated more than once. This supports earlier studies stressing the relative importance of repeat migration in internal migration (Newbold, 2001). These differences in spatial mobility are reflected in the distance between a person's residence at age 35 and his or her parental home at age 16. Half of the university graduates lived 30km or more from their original parental home against a quarter of those with a degree in vocational college and about a sixth of those with lower levels of education.

In figure 2.4.1.2 year-by-year migration probabilities are depicted for birth cohort 1979, split by age and education level[6]. First, it shows that the higher spatial mobility of university graduates holds during the entire observed phase in the life course. Second, the relation between spatial mobility and age varies between education groups. Age-specific migration propensities of individuals with lower than vocational college education exhibit a rather flat curve with one relatively low peak around the age of 21. Instead, also contrary to the age-specific migration propensities of those who would eventually obtain a vocational college degree, spatial mobility of university graduates shows two peaks between age 16 and 35. The first arises around age 18 when students leave the parental home and move to university cities. Then spatial mobility drops until the age of 22. A second top in interregional migration propensities occurs around the mid-twenties when most university students have graduated and probably move on to take the first steps in their professional careers.

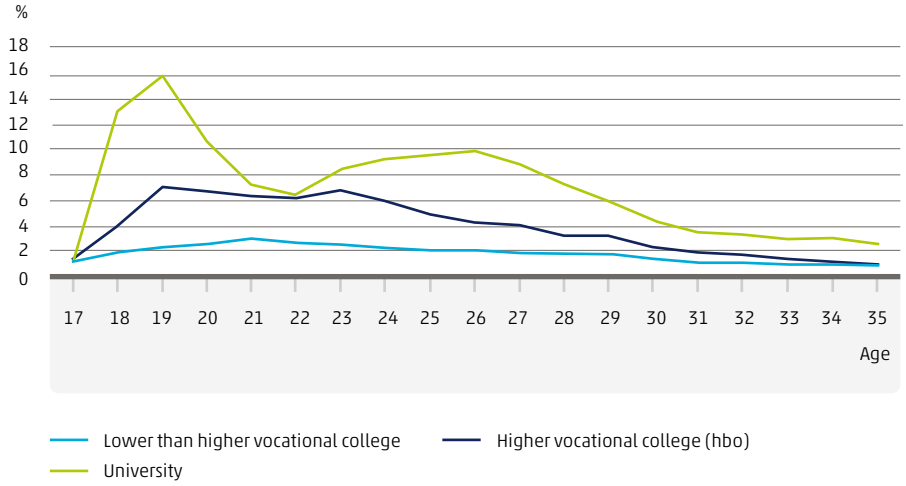
2.4.1.1 Number of long-distance moves (> 30 km) between age 16 and age 35 by educational attainments, birth cohort 1979

	0 (did not migrate)	1	2	3	≥ 4
	%				
Lower than vocational college	79.7	10.4	7.0	1.9	1.0
Vocational college	60.9	16.1	15.3	4.9	2.7
University	34.7	24.7	23.2	10.8	6.7

Source: Statistics Netherlands (SSD, own calculations).

[6] We repeated this analysis for birth cohorts 1977 until 1985. Results were very similar.

2.4.1.2 Year-by-year internal migration rates per education group, birth cohort 1979, age 1-35



Age is measured at the end of the calender year. The level of education is measured as the highest qualification obtained by the age of 35.

2.4.2 Accumulation of human capital in metropolitan areas

Irrespective of educational attainments, the geographical redistribution of the 1979 birth cohort during the first two decades of the independent housing career can be characterised as a process of urbanisation, followed by the onset of suburbanisation (table 2.4.2.1). In this stage of the life course in which spatial mobility peaks, the proportion residing in one of the four big cities in the Randstad increased from 9 per cent at age 16 to 17 per cent at age 28. This increase results from positive net migration rates in metropolitan areas during this phase of the life course, mainly realised at the expense of smaller municipalities throughout the country. As expected, university cities experience a strong increase until the age of 22. The proportion of the 1979 birth cohort residing in medium-sized cities increased slightly from age 16 until age 35, but the location of these cities matters. In general, medium-sized cities in the Randstad succeed better in attracting or retaining people in their twenties than peripherally located medium-sized cities. Around the age of 30 the proportion residing in one of the big cities starts to decrease slowly, while smaller municipalities begin to attract newcomers.

2.4.2.1 Spatial distribution of birth cohort 1979 from age 16 (1995) to age 35 (2014)

	Total birth cohort							Relative presence of university graduates (to-be)							Total presence of university graduates (to-be)						
	Age																				
	16	19	22	25	28	31	35	16	19	22	25	28	31	35	16	19	22	25	28	31	35
	%							Location quotient							Index (Age 16 = 100)						
Randstad	30.8	32.4	34.4	36.1	37.6	37.6	37.2	1.0	1.1	1.2	1.3	1.4	1.5	1.5	100	120	138	159	176	179	178
of which																					
metropolitan	9.3	11.1	13.8	15.7	16.9	16.6	15.4	0.7	1.2	1.6	1.9	2.1	2.1	1.9	100	192	313	423	506	496	447
non-metropolitan university city	0.9	1.5	2.0	1.9	1.5	1.3	1.2	1.3	3.0	3.4	3.1	2.5	2.3	2.2	100	382	554	482	311	252	215
medium-sized city	5.7	5.8	5.9	6.4	6.8	6.9	7.1	0.9	0.8	0.6	0.6	0.7	0.8	0.9	100	87	69	78	97	110	119
small municipality	14.8	13.9	12.7	12.2	12.3	12.8	13.5	1.1	1.0	0.8	0.7	0.8	0.9	1.0	100	82	58	52	55	66	82
Semi-periphery	26.9	26.8	26.5	26.3	25.9	25.9	26.0	1.1	1.0	1.0	1.0	0.9	0.9	0.9	100	96	91	89	83	81	81
of which																					
university city	3.2	4.4	5.3	5.3	4.8	4.5	4.1	1.1	2.0	2.4	2.3	2.0	1.7	1.5	100	255	360	349	268	222	178
medium-sized city	5.5	5.6	5.8	6.2	6.4	6.3	6.2	1.0	0.8	0.7	0.8	1.0	1.0	1.0	100	82	73	85	110	112	111
small municipality	18.3	16.8	15.4	14.8	14.7	15.1	15.7	1.1	0.8	0.6	0.6	0.6	0.6	0.7	100	72	48	43	41	46	55
Periphery	42.3	40.7	39.1	37.5	36.5	36.5	36.9	1.0	0.9	0.8	0.7	0.6	0.6	0.6	100	88	77	62	51	52	56
of which																					
university city	2.1	4.3	5.5	4.6	3.5	3.1	2.9	1.1	2.9	3.0	2.4	1.8	1.6	1.4	100	535	722	481	277	220	183
medium-sized city	2.6	3.0	3.2	3.1	3.1	3.0	2.9	1.0	0.6	0.5	0.5	0.6	0.6	0.6	100	75	61	59	72	73	74
small municipality	37.6	33.5	30.4	29.8	29.9	30.4	31.1	1.0	0.7	0.5	0.5	0.4	0.5	0.6	100	61	38	37	36	40	47
Total (The Netherlands)	100	100	100	100	100	100	100	1.0	1.0	1.0	1.0	1.0	1.0	1.0	100	100	100	100	100	100	100

Source: Statistics Netherlands (SSD, own calculations).

On top of this process of urbanisation, those with higher educational attainments more than others flow towards metropolitan municipalities during this phase in the life course. At age 16 location quotients of human capital (graduates(-to-be)) are strikingly close to 1 in all municipality types which indicates little regional variation in the share of youth (age 16) who eventually obtained a university degree. In other words, graduates(-to-be) born in 1979 appeared to be quite evenly spread over space in the Netherlands at age 16, when they live with their parents. Big cities in the Randstad constitute the only exception. Of those who lived there at age 16 a relatively low percentage eventually graduated from university. Geographical disparities developing as the birth cohort grew older stem from distinct net older stem from distinct net migration patterns between graduates(-to-be) and the lower educated. Between the ages of 16 and 35 university graduates exhibit spatial trajectories which differ from those of the lower educated. This process occurs in two steps. Not surprisingly, up to the age of 22 graduates-to-be are most prone to move towards university cities. In these regions among persons aged 22 the proportion of graduates(-to-be) is two or three times higher than the national mean. Amsterdam, Rotterdam and Utrecht have universities as well and also gain human capital in this phase. However, contrary to smaller university cities, these big cities and The Hague continue to be recipients of human capital during the second peak in spatial mobility, which is associated with job search of recent graduates in their mid-twenties, whereas smaller university cities start losing human capital. There is substantial inter-metropolitan variation though: around age 30 Rotterdam and The Hague have human capital location quotients of about 1.5, while Amsterdam and Utrecht exhibit LQs of about 2.5. Out-migration of skilled workers from the metropolitan municipalities between age 28 and 35 predominantly concerns suburbanisation. Those who leave the metropolitan areas are mainly young families settling in adjacent lower density areas within the Randstad. Of all 30 to 35 year old university graduates who moved out of Amsterdam, Rotterdam, the Hague or Utrecht more than two third stayed within the Randstad, 20 per cent moved to the semi-periphery and about 10 per cent towards the national periphery.

This brain gain in the Randstad comes at the expense of small municipalities and medium-sized cities outside the Randstad. The national periphery loses most human capital. From age 26 onwards the share of university graduates in peripheral municipalities is on average 40 per cent lower than the national share, as reflected in an LQ of 0.6. Human capital losses in the national periphery are most severe in small municipalities, but medium-sized cities are hardly better endowed. From age 30 onwards small municipalities in the national periphery start to regain some human capital. The main source is university cities in the area. Of all graduates leaving university cities in the national periphery 60 per cent settles in

a peripherally located small municipality. Small municipalities in the Randstad experience less brain drain and regain human capital from age 25 onwards from suburbanisation. At age 35 these municipalities on average equal the national share of human capital.

To account for (housing) market conditions which could impact upon spatial mobility of this specific birth cohort in certain age periods, we repeated this analysis for birth cohorts 1978 to 1985. We found quite similar results, pointing to the consistent nature of geographical mobility patterns in the early twenty-first century.

2.4.3 Big cities as socio-economic escalators

After having quantified patterns of urbanisation and accumulation of human capital in the Randstad region from age 16 to 35 we attempt to understand both trends by identifying the degree to which these different types of municipalities function as socio-economic escalators and whether this function varies between educational groups. We defined socio-economic mobility as the change in relative wages compared to peers of the same birth cohort (1979) and the same attained level of education. We observed socio-economic mobility between 2006 and 2010, corresponding with the ages 27–31.

In this phase of the life course almost everyone had started their labour career and socio-economic mobility is relatively high. Separately for workers with lower than vocational college education and workers with a university degree, for both 2006 and 2010 we ranked the wages and divided this wage distribution in percentiles. A change in the relative wage was calculated by subtracting the initial wage percentile in 2006 from the wage percentile in 2010. On average, individual change in relative wages between two points in time is equal to zero since progression of one individual comes at the expense of its peers. We had to exclude the self-employed because the information about those incomes is less reliable and incomplete. Since we are mainly interested in the effect of geography we excluded employees who moved between municipalities in this period (19% of all employees). To take into account the possible effect of migration before the age of 27 we modelled a variable measuring the distance between a person's residence in 2006 and his or her parental home in 1995.

2.4.3.1 Descriptives of the variables used in the OLS regression analyses

		Lower than higher vocational college (N = 26,355)	University (N = 8,721)
	Range	Mean	
Gender			
Male	**0–1**	0.56	0.43
Female	**0–1**	0.44	0.57
Household position			
Single	**0–1**	0.23	0.27
Partner in couple without children	**0–1**	0.33	0.54
Partner in couple with children	**0–1**	0.38	0.17
Single parent	**0–1**	0.05	0.01
Other positions	**0–1**	0.01	0.01
Labour market experience in years (2006)	**0–16**	6.54	3.49
Wage percentile (2006)	**0–100**	53.32	52.32
Wage percentile change (2006–2010)	**–100–100**	0.00	-0.17
Change in hours worked (2006–2010)	**–40–40**	-0.01	-0.01
More than 30 km from parental home (2006)	**0–1**	0.11	0.47
Place of residence (2006)			
Amsterdam	**0–1**	0.05	0.17
Rotterdam	**0–1**	0.04	0.06
The Hague	**0–1**	0.03	0.05
Utrecht	**0–1**	0.02	0.11
Non-metropolitan university city in core region	**0–1**	0.01	0.03
Medium-sized city in core region	**0–1**	0.08	0.05
Small municipality in core region	**0–1**	0.11	0.07
University city in semi-periphery	**0–1**	0.04	0.10
Medium-sized city in semi-periphery	**0–1**	0.07	0.06
Small municipality in semi-periphery	**0–1**	0.15	0.08
University city in periphery	**0–1**	0.03	0.06
Medium-sized city in periphery	**0–1**	0.04	0.02
Small municipality in periphery	**0–1**	0.34	0.13

Source: Statistics Netherlands (SSD, own calculations).

We conducted separate OLS regression analyses for persons with lower than vocational college education and university graduates[7]. Apart from the distance from the parental home as control variables we included the change in hours worked, the initial wage percentile, labour market experience, sex, household structure and 21 economic sectors. The means of the variables used in the models are given in table 2.4.3.1. These confirm that university graduates in this phase of the life course on average have less experience on the labour market, are overrepresented in large cities and university towns and live further away from the municipality in which they were raised. At this age family formation is more common among the lower educated, while university graduates are more often partnered without children. University graduates are overrepresented in financial services, ICT, specialist business services and public services.

Models 1 and 2 (table 2.4.3.2) concern the lower educated, models 3 and 4 university graduates. In models 1 and 3 we only included the geographical categories as dummy variables using Amsterdam as the reference to identify descriptively the wage progression of the lower educated and university graduates in different spatial settings. Although the explained variance is limited it becomes clear that there is serious spatial variation in wage progression. Furthermore, the spatial pattern is rather similar among both groups. Both the lower educated and university graduates residing in one of the four metropolitan areas enjoyed more wage progression between 2006 and 2010 than their peers in other cities and regions.

In models 2 and 4 we included the control variables of which the change in hours worked and the initial wage percentile in 2006 appeared to be the most important. A considerable part of shifts in the wage rank distribution can be attributed to changes in the hours worked by employees, indicating that shifts in the rank distribution of hourly wages are smaller. Besides, employees who had relatively low wages in 2006 and who had less experience on average experienced most progression until 2010. Previous migration is only positively associated with wage progression among the lower educated. Other control variables mainly reveal the expected signs. Both among lower and higher educated workers women enjoy less wage progression than men. In addition, a family context augments the difference in wage progression between women and men. This finding is in line with the literature on the gender pay gap (Cooke, Boyle, Couch, & Feijten, 2009). In comparison with those who are employed in health care employees in ICT, financial services, specialist business services and public services, but also in manufacturing industries or construction enjoyed on average more wage progression, whereas for instance those who work in education experienced less gains.

7) We do not show the results for graduates from vocational colleges because these are rather similar. They can be obtained from the authors on request.

Taking these factors into account much inter-urban variation in wage progression vanishes. For the lower educated the spatial scale that matters appears to be the regional scale. Lower educated employees in the Randstad experience more wage progression than their peers in the national periphery and to a lesser extent the semi-periphery, but within the Randstad there are no significant differences between locations. Outside the Randstad differences between university cities, medium-sized cities and smaller municipalities disappeared as well if control variables are accounted for. Among university graduates spatial differences in wage progression unfold at both geographical scales. First, significant variation in wage progression exists within the macro-region of the Randstad. Most rapid wage progression was experienced by those who live in metropolitan areas. University graduates living in Amsterdam, Rotterdam, The Hague and, to a lesser extent, Utrecht experienced more upward mobility than their peers in smaller (university) cities and villages in the Randstad. Second, significant variation appears between the macro-regions. Those who live in medium-sized cities or smaller municipalities in the national periphery enjoyed less wage progression than their peers living in medium-sized cities or smaller municipalities in the Randstad. Non-metropolitan university cities form the exception: no significant differences exist between non-metropolitan university cities throughout the country.

2.4.3.2 OLS regression analysis of change in the relative wage position (percentiles) compared to peers with the same level of education, 2006-2010, employees born in 1979[1)]

	Lower than higher vocational college				**University**			
	Model 1		Model 2		Model 3		Model 4	
	b	**se**	**b**	**se**	**b**	**se**	**b**	**se**
Constant	8.43**	0.66	32.52**	0.72	7.20**	0.65	24.75**	1.10
Place of residence (2006) (ref = Amsterdam)								
Rotterdam	-4.53**	0.96	0.08	0.69	-2.35	1.25	-0.27	0.93
The Hague	-5.31**	1.01	-1.23	0.77	-2.13	1.39	0.62	1.03
Utrecht	-3.04*	1.21	-0.80	0.86	-4.52**	1.05	-2.74**	0.77
Non-metropolitan university city in core region	-1.56	1.52	-0.39	1.07	-8.33**	1.63	-5.31**	1.21
Medium-sized city in core region	-8.68**	0.83	-1.17*	0.60	-10.45**	1.40	-3.54**	1.05
Small municipality in core region	-9.77**	0.78	-0.86	0.57	-12.06**	1.19	-4.28**	0.92
University city in semi-periphery	-7.66**	0.96	-2.84**	0.69	-7.88**	1.09	-5.45**	0.82
Medium-sized city in semi-periphery	-9.12**	0.86	-3.22**	0.62	-10.34**	1.26	-4.94**	0.95
Small municipality in semi-periphery	-11.72**	0.75	-2.69**	0.55	-13.34**	1.17	-6.32**	0.92
University city in periphery	-4.95**	1.02	-5.03**	0.73	-6.73**	1.29	-4.59**	0.97
Medium-sized city in periphery	-9.63**	0.98	-5.68**	0.70	-13.67**	2.09	-7.95**	1.54
Small municipality in periphery	-11.38**	0.70	-4.78**	0.52	-15.85**	0.99	-7.28**	0.80

2.4.3.2 OLS regression analysis of change in the relative wage position (percentiles) compared to peers with the same level of education, 2006-2010, employees born in 1979[1)] (continued)

	Lower than higher vocational college				University			
	Model 1		Model 2		Model 3		Model 4	
	b	se	b	se	b	se	b	se
Labour market experience in years (2006)			-1.18**	0.06			-0.58**	0.16
Wage percentile (2006)			-0.35**	0.00			-0.39**	0.01
Change in hours worked (2006-2010)			54.88**	0.65			48.05**	1.45
More than 30 km from parental home (2006) (ref = no)			1.56**	0.46			-0.01	0.66
Gender (ref = male)								
Female			-2.60**	0.46			-4.04**	0.90
Household position (ref = single)								
Partner in couple without children			2.36**	0.35			2.51**	0.71
Partner in couple with children			0.59	0.35			-0.60	0.99
Single parent			-3.16**	0.79			7.14	3.74
Other positions			-3.76**	1.14			5.77*	2.66
Household position x gender								
Partner in couple without children x female			-5.19**	0.56			-4.64**	0.95
Partner in couple with children x female			-9.50**	0.56			-9.94**	1.29
Single parent x female			-2.86*	1.06			-13.448**	4.98
Other positions x female			3.78*	1.81			-2.23	3.52
More than 30 km from parental home (2006) x female			-0.57	0.64			1.04	0.82
Adjusted R^2	.02		.52		.04		.54	

Source: Statistics Netherlands (SSD, own calculations).
** p < 0.01, * p < 0.05
1) Control variables not shown: 21 employment sectors.

In a combined model we checked whether the effect of geography on relative wage progression varied between education groups, but none of the interaction terms turned out to be significant. This indicates that the wage premium of the Randstad in general and the big cities in particular is equal for both university graduates and the lower educated.

2.5 Conclusion and discussion

Based on a cohort analysis we have shown that patterns of internal migration play a decisive role is the spatial distribution of human capital within the Netherlands. During approximately the first two decades of their independent housing career, university graduates more than the lower educated moved towards the employment centre of the Netherlands, the Randstad. In the mid-1990s the spatial distribution of 16-year-olds who later on achieved a university degree was rather egalitarian across the country. However, once having reached the age of 35 human capital has accumulated in the Randstad. Until their late twenties university graduates are overrepresented in the larger cities and university cities. From then on suburbanisation of human capital starts off but human capital remains mainly concentrated within the Randstad. The literature shows that, via intergenerational transfer of intellectual, economic and social capital, the offspring of highly educated parents enjoys the best odds for successful educational achievement themselves. The actual spatial distribution of pupils aged 16 in pre-university education seems indeed to be more uneven than that of university graduates-to-be in 1995, but more profound analysis is needed to verify this statement.

By analysing wage growth among 27–31 year old employees, separately for the lower educated and university graduates, we have shown that the urbanisation trend can be understood in terms of socio-economic upward mobility. The major part of the spatial variation in relative wage progression stems from differences in hours worked and the composition of economic sectors. In other words, employees in the largest cities make more wage progression than their peers in smaller cities and villages because they increased the number of hours worked and because they work in industries in which employees in general make above-average wage progression. However, on top of that some spatial variation remains. Employees who live in the Randstad enjoyed more wage progression in this early phase in their labour careers than their peers in more peripherally located regions. These results are in line with findings in other European countries.

These variations across the three macro zones was found for both the lower educated and university graduates. This raises the question why lower educated workers do not migrate towards the Randstad to the same degree as university graduates do. Also in the US, Moretti (Moretti, 2012) signalled that lower educated workers benefit from the inflow of highly educated workers as well, but nevertheless tend to stay put in regions with relatively scant opportunities. In the literature on interregional migration, this relative immobility of the lower educated is argued to be based on several reasons ranging from a lower ability to obtain and analyse efficiently information on opportunities elsewhere to a stronger reliance

on family and friends (Faggian et al., 2015). It might also be that for the lower educated these spatial bounded benefits are predominantly financial in nature – higher wages for the same job – whereas for university graduates metropolitan areas and the Randstad offer more substantive, functional career steps. Furthermore, in the Netherlands interregional migration just for financial reasons might be discouraged by a relatively generous welfare system and considerable regional variation in house prices, which may reduce net benefits after migration.

The 'triumph of the city' is only one side of the coin. Since we described rather broad types of municipalities some particular regions lag more behind than the averages we showed. On the other hand, these peripheral regions might attract skilled workers when they arrive in the second half of their labour careers. We only analysed a single birth cohort which we followed until age 35. It is conceivable that, when workers grow older employment considerations might lose some weight in migration decisions and net flows of human capital could be more directed towards more spacious and less expensive areas in the national periphery. However, as we have shown, these possible effects are expected to be limited since interregional migration probabilities drop sharply after the age of 30.

Outcomes in the long run depend heavily on long-term economic restructuring and the resulting migration patterns (Fielding, 2012). Robotisation has just started, digitisation and globalisation will continue. These are signals for structural economic change. Moreover, a new generation of young people in their twenties possess more knowledge capital than ever before. Jobs matching this knowledge capital of these new generations are concentrating in urban regions. From this perspective living in urban regions is the optimal prerequisite to survive in the modern economy. Although new communication technologies will facilitate the disconnection of workplace and residence the need to live near high concentrations of jobs can be expected to persist due to increasing amounts of temporary jobs. Therefore research focussing on the relationship between types of labour agreements and migration would be invaluable.

3.

Graduate migration and labour market trajectories: the effect of partnership ties for men and women

Abstract

Literature on graduate migration extensively documented the role of individual human capital and regional labour market characteristics, but largely ignored the partnership context. This is unfortunate because partnership dynamics often coincide with the transition from education to the labour market and likely affect migration decisions and its outcomes. Furthermore, the role of partnership ties may well be gendered. We examined the interplay of partnership dynamics, internal migration, and labour market outcomes for men and women during the first year after graduation from university using register data on complete graduation cohorts from universities in the Netherlands between 2007-2016 (N = 221,148). We find that living with a partner more than halves the likelihood of long-distance moves following graduation. Women's mobility is more strongly restricted by partner ties than men's because women are more often in a co-residential relationship when they graduate, and their partners are more likely to have established local ties. However, women and men do not behave differently in similar partnership circumstances. Men's earnings increased more after migration than women's but we found no evidence that partnership ties increased this gender difference. In conclusion, although early career migration patterns and outcomes of recent graduates are gendered, traditional beliefs on gender roles do not seem to reinforce gender differences after union formation.

Key words: graduate migration, gender, local ties, union formation, partnership ties, internal migration.

3.1 Introduction

Migration patterns of recent university graduates have drawn abundant attention from both scholars and policy makers because they relatively often move between regions (Faggian, Corcoran, & Rowe, 2017) and their human capital is a key determinant of regional economic development (Gennaioli et al., 2013). For recent graduates themselves the transition from education to work constitutes a critical phase in the development of their human capital (Rowe et al., 2017). When they enter the labour market internal migration serves to expand the job-search area and hence to reduce education-job mismatch, especially for those who studied in peripheral regions (Hensen et al., 2009; Venhorst & Cörvers, 2018). As such, for university graduates internal migration typically yields positive labour market outcomes in terms of wages and job satisfaction, also in the long run (Faggian, Corcoran, & Franklin, 2017; Perales, 2017; Rowe et al., 2017; Venhorst & Cörvers, 2018).

Although the micro-economic perspective contributed significantly to the understanding of graduate migration, so far it conceptualised migration following graduation as an individual decision and largely ignored the social context in which recent graduates decide to stay or to move (Haapanen & Tervo, 2012). This is unfortunate because partnership dynamics often coincide with the transition from education to the labour market (Bjerke & Mellander, 2017) and potentially affect migration decisions and its outcomes in multiple ways. Ties to a partner might either impede graduates' aspirations to migrate if their partners prefer to stay (tied staying) or foster migration if their partners prefer to move for their own sake (tied migration) (Cooke, 2008; Kley & Mulder, 2010; Mincer, 1978). In addition, recent graduates who move in with a distant partner might accept suboptimal locations regarding their own labour market careers (Brandén & Haandrikman, 2018; Van der Wiel, Gillespie, & Tølbøll, 2022).

Moreover, partnership ties might affect migration decisions and outcomes especially among female graduates. First, highly educated young women more often live with a partner than their male counterparts (Florida, Mellander, & King, 2022). Second, women tend to be younger than their partners and hence are more likely to have a partner who has already developed local ties to work. Third, research among working-age couples has documented that men's careers tend to be prioritized over women's careers in migration decisions (Cooke, 2008) and that women cite family reasons more often as a motive for migration than men (Clark & Maas, 2015). Fourth, when couples move into a co-residence women typically bridge the larger share of the distance, which suggests that they more often subordinate their own labour market interests (Brandén & Haandrikman, 2018; Van

der Wiel et al., 2022). These studies, however, are not specifically targeted at the transition phase between education and labour market. Hence, it remains unclear whether the gendered nature of employment-related couple migration is already prominent during the crucial first steps into the labour market.

Although numerous studies have established the gendered nature of family migration (Cooke, 2008), research on the role of gender in graduate migration is scarce. In some European countries female graduates have been found to be more migratory than men (Coniglio & Prota, 2008; Faggian et al., 2007b; Venhorst et al., 2010). Corresponding with the dominant micro-economic rationale in graduate migration research it was suggested that after completing tertiary education women use migration as a "partial compensation mechanism for gender bias in the labour market" (Faggian et al., 2007b, p. 517). However, this assumption has not been tested so far against the alternative hypothesis that migration behaviour of female graduates is more strongly affected by partnership ties.

We aim to fill this gap by integrating the strands of literature on graduate migration and couple migration. Whereas the social context is often neglected in graduate migration research, studies on couple migration are typically targeted at the entire working-age population (Cooke, 2008). Therefore, this paper investigates the interplay between partner dynamics, internal migration and early career labour market trajectories of recent male and female graduates. The research question is: *How do partnership ties shape migration behaviour of recent male and female graduates and, as a potential consequence, their early career labour market outcomes?*

We track all students who graduated from university in 2007-2016 in the Netherlands during the first year after graduation (N = 221,148). Data are drawn from integrated registers covering the complete population of the Netherlands and containing longitudinal information on migration histories, labour market trajectories and household careers (Bakker et al., 2014).

3.2 Background

3.2.1 Graduate migration research from a micro-economic perspective

Recently, scholars have extended the human capital model of migration and conceptualised it progressively as a relational practice embedded in the linked lives of resident and non-resident family members and, to a lesser extent, friends

(Coulter et al., 2016; Mulder, 2018). In contrast, research on migration following graduation is still predominantly approached from a micro-economic perspective: it focusses on the role of individual human capital indicators and regional labour market characteristics. Consistent with human capital theory (Sjaastad, 1962) graduate migration research has documented that university graduates are most likely to migrate, in particular from peripherally located regions to urban regions with thick labour markets (Ahlin, Andersson, & Thulin, 2014; Faggian, Corcoran, & Franklin, 2017; Faggian & McCann, 2009b; Faggian et al., 2007a, 2007b; Haapanen & Tervo, 2012; Kooiman, Latten, & Bontje, 2018; Venhorst et al., 2011). For the highly educated these migrations tend to yield positive short-term and long-term labour market returns: reduced over-education and increased wages and job satisfaction (Aronica et al., 2023; Faggian, Corcoran, & Franklin, 2017; Perales, 2017; Rowe et al., 2017).

This economic perspective in graduate migration research is justifiable because for recent graduates, compared to other phases in the life course, migration is predominantly driven by labour market factors (Venhorst et al., 2011), especially among the higher educated (Thomas, 2019). Macro-level opportunities and micro-level resources are abundant, whereas restrictions are relatively limited (Mulder & Hooimeijer, 1999). University graduates are ready to reap the rewards of their educational attainments by finding a job that matches their accumulated human capital and paves the way for future development. Since these specialised jobs are more sparsely distributed across space, migration enables graduates to expand the geographical search area and to compete for employment opportunities outside their region of residence (Van Ham, Mulder, et al., 2001). Additionally, recent graduates typically face little restrictions: they are rarely restricted by home ownership (Helderman, Van Ham, & Mulder, 2006) or responsibilities for (school-aged) children.

However, the 'hypermobility' of recent university graduates needs to be nuanced. Whereas individual labour market considerations would predict a large majority to migrate, most university graduates still live in their region of study several years after graduation. In the UK, Finland and the Netherlands more than half of the university graduates still lived in the same NUTS-1-region 2 to 5 years after graduation. Retention rates of large metropolitan regions were even higher (Faggian & McCann, 2009b; Haapanen & Tervo, 2012; Venhorst et al., 2011).

3.2.2 Gender disparities in graduate migration

Due to the gender neutral nature of the human capital theory, the role of gender in graduate migration has remained highly under-studied (Rowe et al., 2017). Only a few Europe-based studies have addressed gender disparities in the likelihood of internal migration after graduation from university. In most of those studies women were found to be more migratory than men (Netherlands: (Venhorst et al., 2011); UK: (Faggian et al., 2007b); Finland: (Haapanen & Tervo, 2012); Italy: (Coniglio & Prota, 2008) but see (Aronica et al., 2023); no gender difference in Germany (Busch & Weigert, 2010)).

Within the human capital framework the higher migration propensities among female graduates are typically interpreted in economic terms. Faggian et al. (2007b) suggested that women in the UK use migration as a means to get access to better career opportunities to partially compensate for potential labour market disadvantages. This suggestion implies that the positive effect of migration on labour market outcomes is stronger for female graduates than for males. However, little is known about gender disparities in the outcomes of migration following graduation. To the best of our knowledge only Venhorst and Cörvers (2018) analysed the relationship between migration and labour market outcomes separately for male and female graduates. They found a positive wage effect for men but not for women. This result was contrary to the authors' expectations based on the assumption that recently graduated women migrate to overcome adverse circumstances in local labour markets.

An alternative hypothesis is that, compared to males, migration behaviour of female recent graduates is more often induced or hindered by a partner. Faggian et al. (2007b) rejected the potential role of partnership ties because the age range of their study population (21-25) was well below the mean age of marriage. However, this statistic in insufficient to rely on when it comes to partnership commitments. Most couples have experienced a period of unmarried cohabitation before they, if at all, enter a marriage (Sobotka & Toulemon, 2008). Although unmarried cohabitation is typically considered as a trial stage before marriage with relatively low levels of economic integration and commitments (Hiekel, Liefbroer, & Poortman, 2014), it can either encourage or discourage migration plans. In Germany moving intentions of the partner strongly triggered considering and planning migration among young adults (Kley & Mulder, 2010) whereas recent graduates in the Euregio Meuse-Rhine who lived together with a partner reported less intentions to leave the region than singles (Hooijen, Meng, Reinold, & Siegel, 2017). Hence, theoretical progress could be achieved by conceptualising post-graduation migration as a household decision. That does not only apply to

graduates in existing partnerships but also to those who migrate to start co-residential unions with a distant partner. Those migrations can be considered as the first move in a couple's joint migration career (Brandén & Haandrikman, 2018).

3.2.3 Graduate migration as a household decision

Human capital theory conceptualises family migration as a joint decision making process. Families decide to migrate if the total expected benefits of individual household members exceed the total expected costs (Mincer, 1978). This implies that couples are assumed to migrate only if one partner's benefits in a potential location outweigh the other partner's costs, which turns the other partner in a 'tied' mover. Conversely, couples stay put in case the costs of migrating to a potential location for one partner outweigh the benefits of the other partner, leaving the other partner as a 'tied' stayer (Cooke, 2013a). Typically, tied staying occurs more often than tied migration as the likelihood of migration decreases with the size of the household (Mincer, 1978). Other household members, like a partner, have usually accumulated location-specific capital (DaVanzo, 1981) that cannot easily be transferred to another location, which increases the costs of migration. This may involve ties to work, education, or a local network of family and friends. A partner's ties to work for instance cause dual-earners to be more stationary than single-breadwinner couples (Cooke, 2013a). Compared to singles, those who live with a partner also feel more strongly tied to their residential environment in general and mention this as a constraint to migration (Thomassen et al., 2023).

Family migration research has extensively documented that men are more likely to initiate migration for the sake of their own labour career and, consequently, that women are more likely to end up as tied migrants. As a result, couple migration is associated with increased earnings for men and reduced employment and earnings for women (Cooke, 2008). The gendered outcomes of family migration have theoretically been attributed either to gender differences in the potential benefits from migration or to societal norms on family roles. Human capital theory is essentially gender-neutral and assumes that families make migration decisions based on rational calculations of the future costs and benefits of the family as a unit (Mincer, 1978). It explains the empirical evidence of male-centred family migration by arguing that potential benefits from migration are not adequately measured by actual earnings and educational attainments due to occupational segregation in the labour market (Foged, 2016). A focus on recent graduates brings the advantage of comparing men and women with identical educational

backgrounds who hardly accumulated human capital by means of on-the-job-training, which improves the assessment of individual potential earnings.

Gender-role theorists, by contrast, argue that male-centred patterns of family migration are driven by traditional societal norms on family roles prescribing women to take responsibility for household chores and childcare and men to be the main breadwinner (Bielby & Bielby, 1992; Lersch, 2016). Research in Germany has shown that women with partners are less likely than their male counterparts to relocate for equally appealing hypothetical job offers, yet they are more inclined to move in support of their partner's career development. In contrast, single men and women exhibit similar tendencies to migrate for career advancement (Abraham, Bähr, & Trappmann, 2019). Gender role practices within couples in terms of the division of paid labour and household tasks typically turn more traditional after first childbirth (Begall & Grunow, 2015). The gendered nature of long-distance migration has also been demonstrated to be more severe when couples have children (Brandén, 2014; Sorenson & Dahl, 2016).

3.2.4 Graduate migration and partnership ties: empirical evidence

Empirically, the partnership context has been overlooked in graduate migration research so far. In most cases the exploited data sources do not contain partnership histories. To the best of our knowledge only Haapanen and Tervo (2012) used longitudinal register data to analyse residential spells of university graduates in Finland. They controlled for being in a marriage or a cohabitation and for the partner's education, employment and income. They found that onward migration was hindered by a partner's employment, especially by a partner with a high income. The likelihood of onward migration was increased by a highly educated partner. However, this study did not examine whether the effect of partnership ties varied by gender.

3.2.5 The Dutch case and hypotheses

We elaborate on the interplay between partnership dynamics, internal migration and labour market outcomes for male and female recent graduates from universities in the Netherlands. In terms of gender equality, the Netherlands has an intermediate position in Europe. Although women have surpassed men in tertiary education among younger generations, gender equality in terms of labour force participation and the allocation of time spent doing care and domestic work is

lower than in Scandinavian countries (EIGE, 2022). Labour force participation is high both among men and women, but women more often work part-time than in any other European country. Traditional gender role beliefs and practices are especially prominent among and with respect to families with children (CBS, 2022b).

Based on the strands of literature on graduate migration and family migration we hypothesize that:

Hypothesis 1: Recent graduates who are single are more likely to migrate after graduation than their counterparts who live with a partner.

Hypothesis 2: Recent graduates with a partner who is more strongly attached to the local labour market (e.g. are employed, have a higher income) are less likely to migrate than those with a partner who is less strongly attached to the local labour market.

Based on the premises of human capital theory and gender-role theory we formulate two opposing hypotheses regarding the interplay between gender, partnership ties and internal migration of recent graduates:

Hypothesis 3a: Partnership ties discourage internal migration equally among female and male recent graduates (human capital theory).

Hypothesis 3b: Partnership ties discourage internal migration more strongly among female than among male recent graduates (gender role theory).

Based on the strands of literature on graduate migration and family migration we hypothesize that:

Hypothesis 4: Positive labour market returns to internal migration are higher for graduates who migrate being single than for those who migrate with their partner.

Based on the premises of human capital theory and gender-role theory we formulate two opposing hypotheses regarding the interplay between gender, partnership ties and labour market outcomes of migration:

Hypothesis 5a: Internal migration with a partner is associated with equal labour market progression among female and male recent graduates (human capital theory).

Hypothesis 5b: Internal migration with a partner is associated with less labour market progression among female than among male recent graduates (gender role theory).

3.3 Data and analytical strategy

3.3.1 Research population

Data were drawn from the System of Social Statistical Datasets (SSD), a system of micro-linked register data provided by Statistics Netherlands and covering the complete (registered) population of the Netherlands (Bakker et al., 2014). This data source contains information on residential, educational, labour market and household careers and allows for a longitudinal perspective. We selected all students who graduated from university in 2007-2016 with a master/doctoral degree or a PhD degree (N = 239,973). To increase the homogeneity of our sample we excluded students aged 31 and over at the time of graduation (5.8%, remaining N = 226,049). We restricted the observation window to the first year after graduation because the likelihood of out-migration steadily decreased thereafter, which aligns with earlier studies on graduate migration and underlines the fact that the transition from university to labour market strongly triggers migration (Busch & Weigert, 2010; Haapanen & Tervo, 2012). Migration rates during the first five years after graduation can be found in the appendix (table A3.1). We made use of annual data points on the 1st of October. We refer to graduation in 2015 when a student graduated from university between 1-1-2014 and 1-1-2015. We considered the first data point after graduation as *t0*, so for those who graduated in 2015 *t0* corresponds with 1-10-2015 (just after graduation) and *t1* with 1-10-2016 (one year later). Next, we excluded graduates who at *t1* had returned to the educational system (1.0%), were no longer registered in the Netherlands because of emigration or death (4.7%), lived in an institutional household (0.2%)), had a child (2.6%) or earned a negative or unknown annual income (1.1%). These exclusions resulted in a research population of 113,629 female graduates and 91,649 male graduates. Female graduates outnumbering male graduates is in line with the higher educational attainments among women compared to men among younger generations in the Netherlands (Statistics Netherlands, 2022).

3.3.2 Analytical strategy and dependent variables

We conducted two blocks of analyses. First, we tested hypotheses 1, 2, and 3 by analysing the likelihood of migration after graduation. We estimated binary logistic regression models in which the dependent variable migration was defined as a change of address between *t0* and *t1* spanning at least 40 km within the Netherlands as the crow flies. The threshold of 40 km is conventional in internal migration research because moving over more than 40 km typically involves a

change in people's daily activity space and workplace and hence a loss of location-specific capital. This measurement is based on annual data points and potentially underestimates the actual mobility as multiple migrations during a year are not observed. In our research population 10.3% moved over more than 40 km during the first year after graduation.

Second, we tested hypotheses 4 and 5 by estimating the effect of single and couple migration on changes in annual earnings using OLS regression models and controlling for the earnings at *t0*. Earnings were derived from tax registers and measured as the personal primary gross incomes in euros, i.e. wages and profits from self-employed work and owned companies. During the year of graduation (*t0*) women on average earned 18,900 euros, whilst men earned 21,000 euros. On average the annual earnings more or less doubled during the first year after graduation. In the first year after graduation (*t1*) the average earnings of women had risen to 36,900 euros, while earnings of men increased to 40,600 euros.

3.3.3 Independent variables

The independent variable of primary interest is, besides gender, partnership ties. We defined partnership ties as cohabiting with a partner, either married or unmarried. Two persons are identified as cohabiting partners if they are not connected by a family relationship, live in the same house and meet at least one of the following criteria: 1) being married or in a registered partnership, 2) being fiscal partners, 3) having a common child or 4) having moved jointly to another address. This method exploits longitudinal information: as soon as a cohabiting partnership is identified, the start of the cohabitation is imputed at the historical date on which both partners started living at the same address. We used information until 31-12-2022 to identify historical co-residencies. Just after graduation (*t0*) 34% of the female graduates and 27% of the male graduates lived with a partner. One year later (*t1*) these proportions had increased to 43% among female graduates and 37% among male graduates, which indicates the high incidence of union formation after graduation. The fact that women more often than men lived with a partner is consistent with the fact that women start cohabitations and marriages at younger ages than men (Bloome & Ang, 2020) and that men more often than women experience a period of singlehood after leaving the parental home (Van den Berg & Verbakel, 2022). Based on the household information at *t0* and *t1* we created a categorical variable which measures partnership dynamics. We distinguished 5 categories: 1) single (including separated individuals), 2) stable partnered, 3) moved in with partner, 4) started cohabitation by moving to a new house and 5) returned to the parental home. We separately

distinguished graduates who returned to the parental home because completing higher education has been identified as a key determinant of returning to the parental home (Stone et al., 2014) and we assume that these migrations are mostly driven by motives other than the labour market, for instance by the benefits of location-specific resources and family support (Niedomysl & Amcoff, 2011).

We controlled for variables that have typically been associated with graduate migration. We measured the human capital of recent graduates by the attained degree (master/doctorate or PhD), the field of study (9 dummy variables) and the labour market position (not employed, part-time employed, full-time employed or self-employed). We measured the density of the labour market of one's region of residence by creating three geographical macro-zones based on the number of jobs that can be accessed within a radius of 50 km, referred to as the core region, the semi-periphery and the national periphery (Kooiman et al., 2018). We also controlled for the age at graduation because internal migration typically decreases with age (Fielding, 2012). On average, students were 25 years old at the time of graduation, women half a year younger than men. For those graduates who lived with a partner we controlled for the relative contribution to the household income because being the secondary earner might involve a subordinate bargaining position in a couple's decision-making (Lundberg & Pollak, 2003). On average female graduates contributed less to the household income than male graduates. We controlled for the partner's educational attainments as a measure of his or her human capital because having a highly educated partner is associated with more migration (Haapanen & Tervo, 2012). Corresponding with the educational advantage among younger generations male graduates more often than female graduates had a partner with a university degree. We also controlled for the age difference because being the oldest partner might yield a psychological advantage in major household decisions (Smits et al., 2004). Female graduates were mostly younger than their partners, whereas male graduates were often older than their partners. We also controlled for the socio-economic position of the partner (employed, in education or inactive/welfare benefits) as an indication of the partner's socio-economic ties to the area. Female graduates more often than male graduates had an employed partner whereas male graduates more often had a partner in education. All independent variables were measured at *t0*, so before a potential move. Descriptive statistics of the variables used in the analyses can be found in the appendix (table A3.2).

3.4 Results

3.4.1 Internal migration and partnership ties: descriptive findings

Migration rates and the household dynamics of the migrant population are depicted in table 3.4.1.1. During the first year following graduation from university men (11.2%) migrated more frequently than women (9.6%). Of those who migrated, 57% were single both before and after the move. The proportion of singles was higher among migrating men than among migrating women. Women more often migrated with a partner or moved in with a partner, which corresponds with earlier research on migration for co-residence (Brandén & Haandrikman, 2018; Van der Wiel et al., 2022). 13% of the migrants returned to the parental home, women slightly more frequently than men.

3.4.1.1 Migration rates (> 40 km) of female and male graduates during the first year following graduation from university, and the coincidence with partnership dynamics[1)]

		Household dynamics of migrants				
	Migration rate	Single	With partner	Moved in with partner	Started cohabitation in new house	Returned to the parental home
	% (column)	% (row)				
Women	9.6	53.5	12.3	11.5	9.4	13.3
Men	11.2	59.7	10.6	7.7	9.3	12.7

Source: Statistics Netherlands (SSD, own calculations).

1) Graduated from Dutch universities in 2007-2016 with a master/doctoral degree or a PhD degree, aged < 31, living in private households in the Netherlands, no children, did not return to university.

3.4.2 Internal migration and partnership ties: model findings

We tested the first hypothesis (H1) that living with a partner restricts internal migration after graduation by estimating a logistic regression model on the likelihood of moving over more than 40 km during the first year after graduation (table 3.4.2.2). We found strong support for the restrictive effect of living with a partner. Single graduates were 2.2 times more likely to migrate than their counterparts who lived with a partner (figure 3.4.2.1). The negative effect of partnership ties on migration was significantly stronger for female graduates than for male graduates, although male graduates were also heavily restricted by living with a partner. Whereas single women and men were equally prone to migrate, partnered female graduates were 15% less likely to migrate than partnered male

graduates (predicted probability for partnered female graduates: 0.038 (95% CI 0.036-0.040); for partnered male graduates: 0.045 (0.042-0.047)). Graduates who during the first year after graduation either dissolved their union or started cohabitation were significantly more likely to migrate than singles. This is not surprising since union formation or dissolution by definition involves a move by one or both partners. Moving in with a partner increased the likelihood of migration more strongly for women than for men, which is in line with earlier research on migration and union formation (Brandén & Haandrikman, 2018; Van der Wiel et al., 2022).

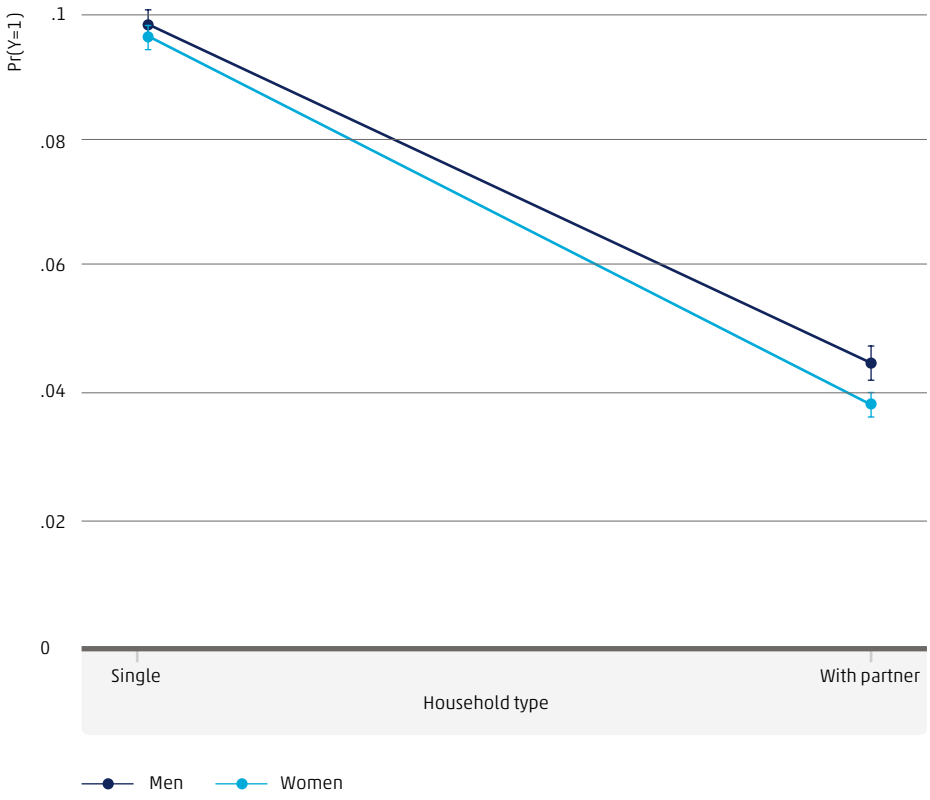
The effects of most control variables corresponded with our expectations. Students who acquired most human capital, that is postgraduates, migrated more often than graduates with a master's degree. The role of geography is also prominent: compared to graduates who lived in the core region, those who lived in the semi-periphery were twice as likely to migrate after graduation, whereas those who lived in the national periphery were three times as likely to migrate. This corroborates earlier findings that dominant migration flows of recent university graduates in the Netherlands are directed from peripherally located regions towards the core region with a more dense and diversified labour market (Kooiman et al., 2018; Venhorst et al., 2011). In addition, graduates who lived in their home region were less prone to migrate than those who had already left their home region. Graduates with lower initial earnings and graduates with a background in the fields of economics, engineering or agriculture and natural environment were the most migratory. Contrary to what we expected based on human capital theory, we did not find a significant negative effect of age on the likelihood of migration. Migration rates dropped in the aftermath of the financial crisis in 2008 and rose again from 2014 onwards.

To test H2 and H3 we restricted the analyses to female and male graduates with a stable union between *t0* and *t1* and added the partner's characteristics (table 3.4.2.4, figure 3.4.2.3). We found support for H2 that having a partner who is more strongly attached to the local labour market restricts recent graduates' mobility. Compared to graduates with an employed partner, those with a partner who was neither employed nor in education were 63% more likely to migrate. Graduates with a partner in education were also more likely to migrate than those with an employed partner, but this effect was weaker. Having a partner with a higher income was associated with less migration. A partner with a higher income can both be considered as an indication of stronger ties to the local labour market and as a more dominant voice in couple decisions on migration. In line with human capital theory, recent graduates who lived with a partner who also possessed a university degree are 56% more likely to migrate than those with a lower educated

partner. Contrary to what we expected, we did not find a direct effect of the age difference.

Furthermore, after the inclusion of the partner's characteristics the significant gender effect disappeared (b = -0.081, p = 0.12). This indicates that partnered female graduates migrate less often than males because they are more likely to have a partner who is less prone to migrate. Compared to the partners of male graduates, female graduates more often have a partner with stronger local ties: employed and with a higher income. In addition, female graduates less frequently have a partner with a university degree, who are relatively prone to migrate. The absence of a significant gender effect after inclusion of the partner's characteristics signifies that partnered women are equally likely to migrate after graduation from university compared to partnered men with identical individual and partner characteristics, which supports the gender-neutral H3A. We reject H3B that partnered female graduates are less likely to migrate than partnered male graduates.

3.4.2.1 Internal migration (> 40 km) during the first year after graduation from university, predicted probabilities with 95% CI

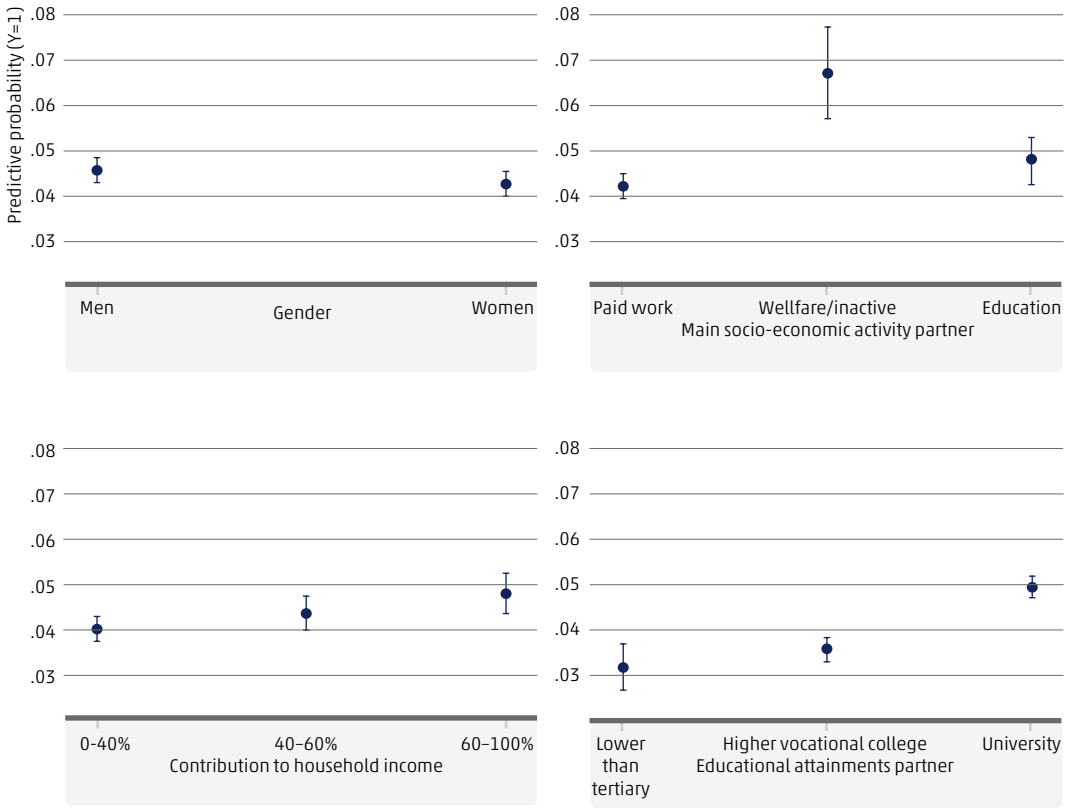


3.4.2.2 Logistic regression of long-distance moves (> 40 km) during the first year after graduation from university (0 = no, 1 = yes)[1)2)]

	b	se
Constant	-1.748**	0.129
Age at graduation	-0.002	0.005
Level of university degree (ref = master)		
Postgraduate	0.411**	0.040
Region of residence (ref = core region)		
Semi-periphery	1.069**	0.020
Periphery	1.475**	0.020
Lives in home region	-0.813**	0.017
Is employed	-0.279**	0.022
Personal income (percentiles)	-0.014**	0.001
Gender (ref = male)		
Female	-0.020	0.021
Partnership dynamics (ref = single)		
Stable with partner	-0.833**	0.036
Moved in with partner	1.108**	0.046
Started cohabitation in new house	1.057	0.042
Returned to the parental home	2.198**	0.046
Partnership dynamics * gender		
Stable with partner * female	-0.153**	0.047
Moved in with partner * female	0.160**	0.059
Started cohabitation in new house * female	0.000	0.058
Returned to the parental home * female	0.124*	0.063
N	201,838	
Pseudo R^2 (Nagelkerke)	.16	

Source: Statistics Netherlands (SSD, own calculations).
** p < 0.01, * p < 0.05
1) Graduated from Dutch universities in 2007–2016 with a master/doctoral degree or a PhD degree, aged < 31, living in private households in the Netherlands, no children, did not return to university.
2) To save space the coefficients for graduation cohorts (10) and fields of study (9) are not shown.

3.4.2.3 Internal migration (> 40 km) of partnered individuals during the first year after graduation from university, predicted probabilities with 95% CI



Source: Statistics Netherlands (SSD, own calculations).

3.4.2.2 Logistic regression of long-distance moves (> 40 km) during the first year after graduation from university (0 = no, 1 = yes)[1)2)]

	b	se
Constant	−2.831**	0.364
Age at graduation	−0.001	0.013
Level of university degree (ref = master)		
Postgraduate	0.333**	0.100
Region of residence (ref = core region)		
Semi-periphery	0.834**	0.051
Periphery	1.197**	0.052
Lives in home region	−1.062**	0.055
Is employed	−0.311**	0.067
Personal income (percentiles)	−0.013**	0.002
Gender (ref = male)		
Female	−0.081	0.122
Age difference with partner (ref = younger)		
Same age	0.093	0.058
Older	0.073	0.061
Socio-economic position partner (ref = paid work)		
Not employed, not in education	0.530**	0.092
In education	0.154*	0.072
Education partner (ref = less than tertiary)		
Higher vocational college	0.118	0.090
University	0.465**	0.087
Contribution to household income (ref ≤ 40%)		
40–60%	0.087	0.061
>60%	0.186*	0.076
N	61,333	
Pseudo R^2 (Nagelkerke)	.07	

Source: Statistics Netherlands (SSD, own calculations).
** $p < 0.01$, * $p < 0.05$

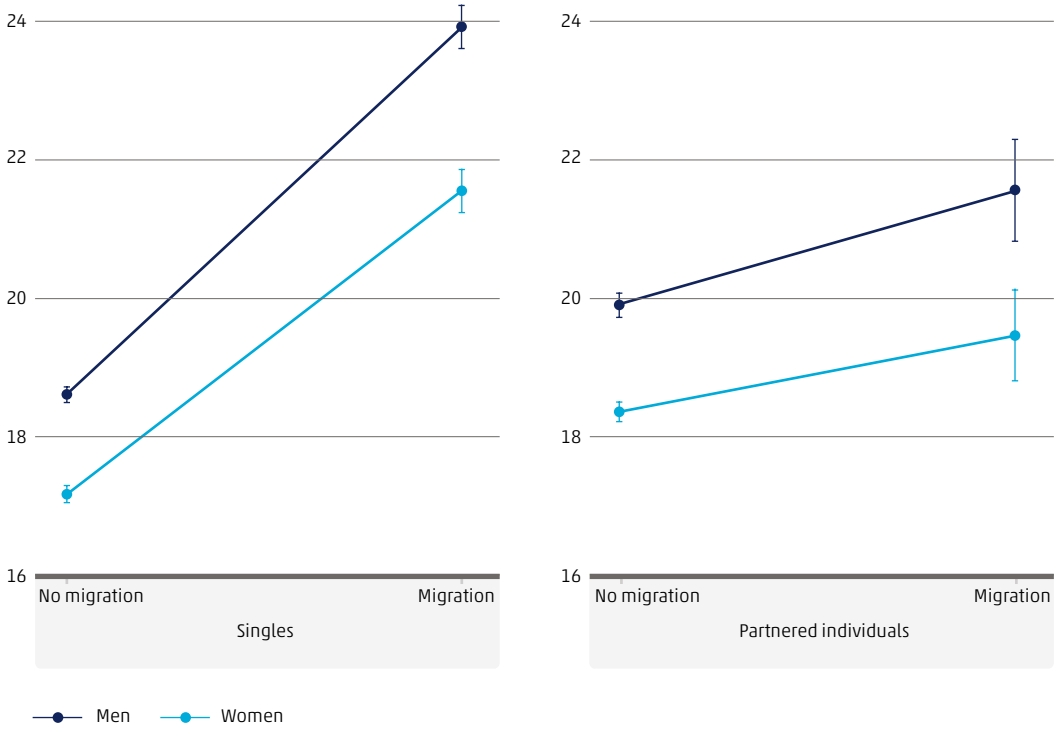
1) Graduated from Dutch universities in 2007-2016 with a master/doctoral degree or a PhD degree, aged < 31, living in private households in the Netherlands, no children, did not return to university.
2) To save space the coefficients for graduation cohorts (10) and fields of study (9) are not shown.

3.4.3 Change in earnings after migration

We tested hypotheses 4 and 5 by estimating separate OLS regression models for men and women with change in earnings during the first year after graduation from university as the dependent variable and controlling for the initial earnings (table 3.4.3.1). The estimated earnings growth was higher for men (19,500 euros) than for women (17,900 euros). As expected, internal migration after graduation is associated with a significantly increased growth in earnings. The positive effect of migration was stronger for men than for women. Compared to women who did not migrate, migrant women experienced 4,400 euros higher earnings growth (95% CI: 4.071 – 4.732). The positive returns to migration for male graduates were 5,700 euros (5.316 – 6.048). We found support for H4 that migration is more positively associated with earnings growth for single graduates than for partnered graduates. Both among men and women the positive returns to internal migration in terms of earnings were significantly lower if they migrated with a partner (for women: 1,200 (0.560 – 1.753), for men: 1,800 (1.096 – 2.537)). This suggests that for partnered graduates migration is less strongly motivated by their own labour market interests. The same holds for migrations to start cohabitation. If recent graduates migrated and moved in with a partner they experienced no (women) or only slightly (men) increased earnings growth compared to their counterparts who did not move over more than 40 km.

The negative effect of migration with a partner compared to single migration was not significantly different for women and men ($p = 0.487$). This indicates that, compared to their single counterparts, the extent to which graduates with a partner make concessions in terms of location choice after migration is equal for women and men. Therefore we found support for the gender neutral H5A based on human capital theory and reject H5B which based on gender role theory stated that the migration with a partner would be less beneficial for women than for men. However, these findings do not imply that partnered female and male graduates experienced equal earnings growth after migration. The earnings growth after migration was stronger for partnered men than for partnered women, but the gender difference in earnings growth was equally large between migrant male and female singles (figure 3.4.3.1).

3.4.3.1 Increase in personal earnings from labour during the first year after graduation from university, euros (x 1000)



Source: Statistics Netherlands (SSD, own calculations).

The effects of the control variables were in the expected direction. Graduates who earned lower incomes just after graduation experienced higher earnings growth. Besides, earnings increased stronger among those who initially did not work fulltime, who lived in the core region, who lived outside their home region and among postgraduates. Those with a degree in economics and engineering experienced the highest earnings growth.

3.4.3.2 OLS regression of the change in earnings during the first year after graduation from university

	Women		Men		Gender difference (p)
	b	se	b	se	p
Constant	43.402**	0.546	46.795**	0.655	
Earnings, *t-1*	-0.524**	0.003	-0.456**	0.003	
Paid work, *t-1* (ref = full-time employed)					
Not employed	-7.005**	0.127	-6.579**	0.148	
Part-time employed	-4.443**	0.088	-5.106**	0.116	
Self-employed	-2.803**	0.164	-3.913**	0.174	
Age at graduation	-0.382**	0.021	-0.511**	0.025	
Level of university degree (ref = master)					
Postgraduate	9.703**	0.162	10.565**	0.269	
Region of residence, *t-1* (ref = core region)					
Semi-periphery	-0.761**	0.086	-1.456**	0.105	
Periphery	-1.453**	0.097	-2.308**	0.188	
Lives in home region, *t-1*	-1.475**	0.073	-1.767**	0.090	
Partnership dynamics (ref = single)					
Stable with partner	1.273**	0.080	1.104**	0.107	0.325
Moved in with partner	1.607**	0.192	2.206**	0.269	0.051
Started cohabitation in new house	2.690**	0.197	2.677**	0.239	0.884
Returned to the parental home	-5.201**	0.307	-4.764**	0.379	0.763
Migrated (> 40 km)	4.206**	0.161	5.495**	0.177	0.000
Partnership dynamics * Migration					
Stable with partner * migrated	-3.187**	0.360	-3.690**	0.436	0.460
Moved in with partner * migrated	-4.409**	0.407	-3.615**	0.555	0.238
Started cohabitation in new house * migrated	-3.696**	0.438	-3.444**	0.505	0.709
Returned to the parental home * migrated	-7.220**	0.458	-6.850**	0.546	0.288
N	111,548		90,290		
R^2	.29		.25		

Source: Statistics Netherlands (SSD, own calculations).
** p < 0.01, * p < 0.05

1) Graduated from Dutch universities in 2007-2016 with a master/doctoral degree or a PhD degree, aged < 31, living in private households in the Netherlands, no children, did not return to university.
2) To save space the coefficients for graduation cohorts (10) and fields of study (9) are not shown.
3) Significance (p-values) of the gender difference in the coefficients regarding partnership dynamics and migration were derived from a third model containing both men and women and including a three-way interaction term: partnership dynamics * migration * gender.

3.5 Conclusions and discussion

Based on complete cohorts of university graduates in the Netherlands (2007-2016), we investigated internal migration of graduates during the first year after graduation from university in the context of partnership dynamics. We compared women and men with similar educational backgrounds. Since migration serves to reduce education-to-job mismatch when university graduates enter the labour market, migration rates peak and labour market motivations prevail during this critical transition in the life course. Therefore it is understandable that so far research on graduate migration was conducted primarily from a micro-economic perspective focussing on individual human capital and regional labour market characteristics and tended to overlook the social context in which recent graduates make their migration decisions. Our research however demonstrated that partnership ties exert a strong impact on graduate migration and its labour market outcomes. Furthermore, those ties tend to play a more prominent role for female graduates than for male graduates and hence contribute to gendered outcomes.

Corresponding with the strand of literature on couple migration, we found clear evidence that co-residence with a partner strongly impedes graduate migration. Singles were more than twice as likely to move over long distances during the first year after graduation than graduates in a co-residential relationship. Ties to a partner restricted migration more strongly among women than among men for two reasons. First, female graduates were more involved in partnerships than male graduates. Women more frequently lived with a partner at the time of graduation and were also more likely to start cohabiting in the next year, especially to move in with a partner. Second, women were more likely than men to live with a partner who already had established stronger ties to the local labour market: their partners were more frequently employed full time and already earned higher incomes. These local economic ties of partners were shown to impede the recent graduate's likelihood of migration. However, even though partners restricted migration more for women than for men, our findings do not support the gender-role theory. Not gender itself but characteristics of the partner, specifically socio-economic position, education level and relative contribution to the household income, were responsible for the gender difference in migration among partnered graduates. Partnered women and partnered men were equally likely to migrate following graduation if the partner's characteristics were accounted for. This finding supports the gender-neutral human capital theory on migration.

We also examined the role of partnership ties on the outcomes of graduate migration in terms of earnings growth. We found clear support for the hypothesis that graduates who migrate being single experience more labour market progress

than those who migrate accompanied by a partner. This suggests that graduates who migrate with their partner tend to accept economically suboptimal destinations as a result of conflicting interests within couples. We found no significant gender effect in the extent to which the returns to migration were reduced by partnership ties. This again provided support for the human capital theory on couple migration. Nevertheless, during the first year after graduation from university earnings trajectories and the returns to migration are clearly gendered: compared to women with similar educational backgrounds men experienced faster income growth and, in line with an earlier study based in the Netherlands (Venhorst & Cörvers, 2018), the positive effect of migration was stronger for men. These gendered patterns were similar for graduates in co-residential partnerships and single graduates. This might point to a gender bias in the labour market (Faggian et al., 2007b), but might also suggest that women are more likely to migrate for other motives than their labour careers alone, also among 'unrestricted' singles who enter the labour market after graduation from university. This would correspond with earlier studies demonstrating that women in general more often than men cite family reasons as a motive for migration (Clark & Maas, 2015). Traditional societal norms on family roles, prescribing men to be the main breadwinner and women to take responsibility for household chores and childcare, possibly induce recent female graduates to be less oriented to their labour market careers also (long) before union formation.

These findings underline the general value of the gender-role theory in labour market research. Less favourable early career earnings trajectories among young, childless female graduates combined with their reduced spatial mobility due to partnership ties might lay the first foundations for the persisting gender wage gap over the life course (OECD, 2023). Early career (migration) decisions of male and female graduates, typically made in a phase in the life course before family formation, may shape future inequalities in their income trajectories. These decisions will affect their bargaining position later on during family formation (Lundberg & Pollak, 2003). When couples decide which partner will take the main responsibility for child care, the income loss from lost working hours is usually an important factor. So a small wage difference in early years after graduation can have a large cumulative effect later on in life, exacerbated after childbirth. The child penalty is still mainly borne by women (Kleven et al., 2019).

In this study we approached migration following graduation from university as a household decision by putting it in the context of partnerships dynamics. However, scholars have increasingly argued that migration and immobility must be conceptualized as a relational practice bound up with linked lives outside the household (Coulter et al., 2016), which mainly function as a constraint to migration

(Thomassen et al., 2023). In this study we only identified partnership ties if recent graduates shared a household with their partner and ignored romantic partners in living-apart-together (LAT) relationships. These types of relationships are quite common during this phase in the life course. Research using survey data with information on LAT-relationships is needed for insight in the influence of ties to a partners outside their household.

Our study is situated in the context of the Netherlands, a country in which women have surpassed men in terms of educational attainments but where gender practices regarding labour force participation, domestic work and childcare are still more traditional than in several other European countries, especially in Scandinavia (EIGE, 2022). Comparative studies in other national context with varying societal gender norms would further advance our knowledge on the role of gender in early career migration behaviour and its labour market outcomes. In addition, future research on graduate migration might incorporate both internal and international migration, especially in EU countries characterised by free movement of workers. Although internal migration remains more prominent than international migration, for university graduates the choice set of promising destinations transcends national borders.

Appendix

A3.1 Migration rates (> 40 km) during the first five years after graduation from university[1)]

	Women	Men
First year after graduation	9.6	11.2
2nd	6.1	6.5
3rd	4.8	5.0
4th	4.2	4.3
5th	3.8	4.1

Source: Statistics Netherlands (SSD, own calculations).

1) Graduated from Dutch universities in 2007–2016 with a master/doctoral degree or a PhD degree, aged < 31, living in private households in the Netherlands, no children, did not return to university.

A3.2 Descriptive statistics of the variables used in the analyses, October 1st after graduation[1)]

		Mean	
	Range	Women	Men
Variable			
Cohort: 2006–2007	0–1	0.09	0.10
Cohort: 2006–2008	0–1	0.09	0.09
Cohort: 2006–2009	0–1	0.09	0.09
Cohort: 2006–2010	0–1	0.09	0.09
Cohort: 2006–2011	0–1	0.10	0.10
Cohort: 2006–2012	0–1	0.11	0.11
Cohort: 2006–2013	0–1	0.10	0.10
Cohort: 2006–2014	0–1	0.11	0.11
Cohort: 2006–2015	0–1	0.11	0.11
Cohort: 2006–2016	0–1	0.11	0.11
Degree: master/doctoral	0–1	0.84	0.91
Degree: PhD	0–1	0.16	0.09
Age at graduation	20–30	24.9	25.5
Field of study: education	0–1	0.02	0.01
Field of study: agriculture	0–1	0.03	0.03
Field of study: science	0–1	0.05	0.09
Field of study: engineering	0–1	0.04	0.20
Field of study: health care	0–1	0.19	0.10
Field of study: economics	0–1	0.11	0.28
Field of study: law	0–1	0.13	0.10
Field of study: behavioural sciences	0–1	0.32	0.14
Field of study: humanities	0–1	0.12	0.07
Personal annual gross income in euros (x 1000)	0–150	19,112	21,234
Labour market participation: No paid work	0–1	0.13	0.15
Labour market participation: Employed, part-time	0–1	0.35	0.24
Labour market participation: Employed, full-time	0–1	0.47	0.54
Labour market participation: Self-employed	0–1	0.05	0.07
Lives in home region: yes	0–1	0.45	0.48
Lives in home region: no	0–1	0.55	0.52
Region of residence: core region	0–1	0.59	0.57
Region of residence: semi-periphery	0–1	0.24	0.25
Region of residence: periphery	0–1	0.17	0.18
Partnership ties: single	0–1	0.66	0.73
Partnership ties: lives with partner	0–1	0.34	0.27
For those living with a partner			
Age difference with partner: older	0–1	0.10	0.53
Age difference with partner: same age	0–1	0.15	0.23
Age difference with partner: younger	0–1	0.75	0.24
Contribution to household income (%)	0–100	40.14	53.48
Socio-economic position partner: Paid work	0–1	0.83	0.70
Socio-economic position partner: Welfare / Inactive	0–1	0.04	0.06
Socio-economic position partner: Education	0–1	0.13	0.24

Source: Statistics Netherlands (SSD, own calculations).

1) Graduated from Dutch universities in 2007–2016 with a master/doctoral degree or a PhD degree, aged < 31, living in private households in the Netherlands, no children, did not return to university.

4.

Understanding Couple Migration towards Core and Peripheral Regions: The Role of Men's and Women's Education

Kooiman, N., & Das, M. (2022). Understanding couple migration towards core and peripheral regions: The role of men's and women's education. Comparative Population Studies, 47. https://doi.org/10.12765/CPoS-2022-12.

Abstract

Numerous studies have demonstrated that men's educational profiles dominate couple migration decisions. However, most of these investigated the US context or were conducted in the previous century. This study examines the role of both partners' educational attainments in couple migration in recent years in a new context: the Netherlands. The Netherlands is one of the countries in which women surpass men in educational attainment. We take a geographical perspective and test Costa and Kahn's (2000) hypothesis that power couples – two partners with university degrees – are more likely than other couples to migrate to metropolitan areas with dense labour markets in order to solve their "colocation problem." Data are derived from the Dutch Labour Force Survey between 2006 and 2015. The research population consists of all opposite-sex married and unmarried couples aged 1845 (N = 90,314 couples). By linking the respondents to integral register data, we tracked all couples until three years after the interview date. The results show that both men's and women's human capital increases migration propensities, although effect sizes are relatively small. Social factors such as the geographical distance to birthplace and parents appear to play a significant role in couple migration. We found only partial support for Costa and Kahn's (2000) colocation hypothesis. Power couples who live in the core region are less likely than other couples to migrate to more peripherally located regions. However, periphery-to-core migration is only affected by the male partner's human capital, not by hers. Hence, the concentration of power couples in Dutch metropolitan areas probably stems from highly educated, single, young, urban adults who migrated there individually and who tend to stay there after union formation.

Keywords: Internal migration, family migration, human capital, core and peripheral regions, gender (in)equality.

4.1 Introduction

In many countries, younger generations of women have strengthened their relative socio-economic position vis-à-vis their male partners during recent decades. This is best illustrated by women's closure – and in some countries even reversal – of the gender gap in education. As a result, the number of couples of which both partners have a degree in tertiary education is on the rise and women increasingly have an educational advantage over their partners in newly formed unions, especially in Europe (Esteve et al., 2016). Women's labour market participation has increased accordingly (Cipollone, Patacchini, & Vallanti, 2014), which caused the gender gap in fulltime equivalent (FTE) employment rates to narrow in most European countries between 2005 and 2017 (EIGE, 2022). As a result, dual-career couples have become increasingly common.

These trends might have important implications for family migration patterns. For dual-career couples a work-motivated migration for the sake of one partner's career likely involves sacrificing the other's, which is referred to as the "two-body problem" (Benson, 2014). Earlier, as many women were lesser educated than their partners and were either secondary earners or not active on the labour market at all, women were more likely to end up as tied movers following their husbands' careers (Cooke, 2008). From a human-capital perspective on couple migration, women's increased educational position compared with their partners can be expected to strengthen women's voices in family migration decision-making (Mincer, 1978). In addition, when women are more highly educated than their male partners, they are more likely to be the household's main breadwinner (Esteve et al., 2016), which may increase their bargaining position (Lundberg & Pollak, 2003) in couple migration decision-making processes.

Still, it remains unclear whether these trends have altered patterns of couple migration. Numerous studies based on twentieth century data drawn predominantly from the United States underline the dominance of men's income and education on family migration (Bielby & Bielby, 1992; Boyle, Cooke, Halfacree, & Smith, 2003; Boyle et al., 2009; Compton & Pollak, 2007; Cooke et al., 2009; McKinnish, 2008; Shauman, 2010; Shauman & Noonan, 2007; Shihadeh, 1991). In contrast, more recent Scandinavian-based studies indicate that highly educated women increasingly influence family migration decisions in the twenty-first century (Brandén, 2013; Foged, 2016; Tano et al., 2018).

Examining interregional migration of dual-earner couples in the Netherlands between 2006 and 2018, the aim of this paper is to analyse the role of men's and women's educational attainments in couple migration. The study contributes to the

literature in two respects. First, this study adds contemporary empirical evidence from another European, non-Scandinavian country. In terms of gender equality, the Netherlands has an intermediate position in Europe. Although women have surpassed men in tertiary education among younger generations, gender equality in terms of labour force participation and the allocation of time spent doing care and domestic work is lower than in Scandinavian countries (EIGE, 2022).

Second, this study takes a geographical perspective on family migration and distinguishes between three potential destinations based on labour market density: the core area (Randstad, the main metropolitan area), peripheral regions (mainly rural areas) and semi-peripheral regions (the intermediate zone). Two decades ago, Costa and Kahn (2000) argued that the two-body problem is most severe for couples in which both partners are highly educated because of their specialised careers. Therefore, these "power couples" were argued to be most likely to migrate to metropolitan areas that offer large, dense labour markets. To date, only limited evidence for Costa and Kahn's colocation hypothesis was found in the US (Chen & Rosenthal, 2008; Compton & Pollak, 2007; Cooke, 2011b). In Europe, studies that approach couple migration from a geographical perspective are scarce (Tano et al., 2018).

For urban and regional housing market policies and planning it is important to gain better insights into internal migration patterns of couples and families, which consist more and more of dual earners with equal educational attainments. Furthermore, distinctive migration patterns of power couples might exacerbate socio-economic disparities between regions and between urban and rural areas and even enhance social polarisation. This study therefore aims not only to analyse the effect of women's and men's education on couple migration in general, but also to explore whether distinctive patterns take place for periphery-to-core and core-to-periphery migration.

4.2 Background

4.2.1 Internal migration and education

Internal migration can be defined as a long-distance move in which people change the area in which their daily activities take place (Dieleman & Mulder, 2002) and which likely entails the severance of local social ties (Kan, 2007) and location-specific capital (DaVanzo, 1981). From a micro-economic perspective, internal migration is conceptualised as an investment in the human agent with the

intention to generate future returns in the form of accumulated human capital, increased wages or labour career progression (Becker, 1962; Böheim & Taylor, 2007; Fielding, 1992; Sjaastad, 1962). Long-distance moves are therefore predominantly driven by economic motives (Niedomysl, 2011). Employment and education are the most cited motives for moves over distances longer than 40 kilometres, although family motives are also often mentioned (Thomas et al., 2019). Among couples near retirement, consumer amenities become more important (Chen & Rosenthal, 2008). Migrating towards family can also be beneficial from an economic perspective as proximity to family members may protect people – women in particular – from precarious labour market positions (Mulder, Palomares-Linares, & Vidal, 2022) and increase their labour force attachment (Compton & Pollak, 2014).

A consistent finding among industrialised countries is that highly educated individuals are more likely to migrate than their lesser educated counterparts (Bernard & Bell, 2018). Several mechanisms underlying the positive relationship between educational attainments and internal migration have been proposed (Faggian et al., 2015). The most important factor concerns the occupations for which highly educated workers are qualified. It is argued that highly educated individuals are more prone to migrate because they hold occupations for which job change and migration is beneficial: they can expect higher returns. Furthermore, the more prestigious and specialised jobs they compete for tend to be more sparsely distributed across space (Halfacree, 1995; Moretti, 2012). Hence, in order to find suitable employment and to enable career progression, highly educated individuals often need to expand their geographical search area (Van Ham, Mulder, et al., 2001). Empirical studies have indeed demonstrated that internal migration of the highly educated is most often motivated by employment (Niedomysl, 2011; Thomas, 2019) and that they experience the strongest rise in income after migration (Morrison & Clark, 2011).

Other mechanisms that are suggested to fuel the positive relationship between education and migration include a stronger reliance on local networks of family and friends among the lesser educated, which increases their psychological costs of migration (DaVanzo, 1983). An important reason that more highly educated individuals tend to have weaker local ties is that they often already left their home region and migrated towards university towns to enrol in higher education (Faggian & McCann, 2009a; Kooiman et al., 2018).

4.2.2 Couple migration, education and gender role theory

Migration propensities peak during young adulthood – a phase in which only a minority is restricted by life commitments such as home-ownership, a partner or children – and remain relatively high when people are in their early thirties (Dennett & Stillwell, 2010b). This is especially true among the more highly educated (Kooiman et al., 2018).

For couples, the decision on whether or not to migrate is more complex than for singles, as the interests and desires of one partner may well conflict with those of the other partner. Couple migration typically benefits the career of one partner to the detriment of the other (Cooke, 2008). If both partners have a professional career, both are more tied to their current location. Indeed, dual earners are found to be more likely to stay put than single-breadwinner couples (Cooke, 2013a; Vidal et al., 2017). Therefore, the rise of dual-earner couples is argued to be one of the causes of declining migration rates (Cooke, 2013b; Kalemba et al., 2020). More recently, scholars have argued that internal migration is not only restricted by other household members, but also by linked lives outside the household (Coulter et al., 2016; Vidal & Huinink, 2019), especially family ties (Mulder & Malmberg, 2014; Thomas, 2019; Thomas et al., 2019).

Empirical studies that are mainly based on data from the last decades of the twentieth century demonstrated how family migration was predominantly a function of men's education whereas highly educated women had less or no influence (Boyle et al., 2009; Compton & Pollak, 2007; McKinnish, 2008; Nivalainen, 2004; Shihadeh, 1991; Smits et al., 2004). This gendered effect of educational attainments on migration is introduced after couple formation: Single men and women exhibit identical migration patterns and are equally responsive to better job opportunities elsewhere (Abraham et al., 2019; Geist & McManus, 2012; Jürges, 2006) and female university graduates are even more mobile than their male counterparts in the UK and Italy (Coniglio & Prota, 2008; Faggian et al., 2007b).

Human capital theory conceptualises family migration as a joint decision-making process in which migration occurs if the total expected benefits of all family members exceed the total expected costs (Mincer, 1978; Sandell, 1977). This approach is essentially rational and assumes that potential benefits for men and women are equally weighted in family migration decision-making. In contrast, sociological gender role theorists argue that men's careers are prioritised and emphasise the importance of traditional societal norms on family roles, which prescribe men to be the main breadwinner and women to take responsibility for

domestic work and childcare (Jürges, 2006; Lersch, 2016). These gender-role beliefs are still present in attitudes of partnered men and women on employment-driven migration. Recent European survey studies have demonstrated that partnered women are less willing than partnered men to migrate for equally attractive hypothetical job offers and that they are more willing to migrate for the sake of their partner's career progression. This gendered effect enters the scene after union formation – single men and women are equally prone to migrate for hypothetical job offers (Abraham et al., 2019). Instead, human capital theory provides a structural explanation for the empirical evidence of male-dominated patterns of couple migration by indicating gender differences in potential wage growth due to segregation and inequality in the labour force (Mincer, 1978). Even among equally highly educated men and women, women are more likely than men to work in occupations for which migration is less beneficial: lower wages, lower prestige, less opportunities for career advancement, greater geographic ubiquity and smaller wage differentials across regions (Brandén, 2013; Perales & Vidal, 2013; Shauman & Noonan, 2007). Hence, it is argued to be less likely that women's potential gains from remote career opportunities outweigh their male partners' losses and less likely that women's lost earnings outweigh their male partners' potential wage benefits elsewhere. In addition, spatial ubiquity of female-dominated occupations facilitates the search for comparable employment among female-tied migrants (Shauman, 2010).

Some empirical studies on family migration consider more sound measures of both partners' earnings potentials, which do justice to the possibility that men and women segregate into spatially constrained and flexible occupations. Results regarding the weights attributed to men's and women's career opportunities are mixed. In the US, men's careers tend to be prioritised (McKinnish, 2008; Shauman, 2010), although Benson (2014) found gender neutrality, supporting the human capital approach. Recent research based on two Scandinavian countries – Denmark and Sweden – is also consistent with gender-neutral family migration (Brandén, 2013; Foged, 2016). These are leading countries in terms of gender equality (EIGE, 2022).

In this study, we measure both partners' earnings potential by their educational attainments and the migration rates associated with their occupations observed among "unconstrained" singles. Derived from human capital theory and gender role theory and based on recent empirical evidence from Scandinavian countries and the somewhat more traditional gender practices in the Netherlands (see below), it is hypothesised that: H1: Both partners' earnings potential will positively affect interregional mobility of couples (H1a) and the effect of men's will be stronger than the effect of women's (H1b).

4.2.3 The geographical dimension of the colocation problem

As dual-career couples migrate primarily for the sake of the career of one partner, labour market characteristics of the destination region shape the opportunities for the secondary migrant to find adequate employment within an acceptable commuting distance. Costa and Kahn (2000) postulated that the necessity for dual-earner couples to facilitate two careers from one residential location – the colocation puzzle – was most severe among couples made up of two highly educated partners because of their specialised careers and that this puzzle would be best solved in large metropolitan areas. Based on cross-sectional data they argued that a distinct migration pattern of these so-called "power couples" is the primary explanation for their increased concentration in metropolitan areas between 1940 and 1990. Analyses of longitudinal data, however, found only limited support for Costa and Kahn's colocation hypothesis in the US. Compton and Pollak (2007) demonstrated that not the joint educational profile of the couple but only the husband's education affected the likelihood of couples to migrate to large metropolitan areas. Not migration patterns but assortative mating among highly educated singles was found to be the primary explanation for the clustering of power couples in large metropolitan areas. Chen and Rosenthal (2008) did find partial support for Costa and Kahn's colocation hypothesis, but only among young, highly educated couples. In Europe, empirical studies testing Costa and Kahn's colocation hypothesis are scarce. In Sweden, Tano et al. (2018)(2018) recently showed that female partners exert a substantial positive impact on the propensity to move towards large cities, although it is smaller than that of males.

Based on Costa and Kahn's (2000) colocation hypothesis and the fact that the Dutch core region functions as a hub of highly specialised knowledge work (see below), it is hypothesised that:

H2: Couples with highly educated (male or female) partners selectively migrate to the core region (H2a) and this effect is stronger if both partners are highly educated (H2b).

4.2.4 The Dutch case

This study examines internal migration patterns of married and unmarried couples in the Netherlands between 2006 and 2018. From the 1990s onwards, women reversed the gender gap in education among younger generations and narrowed the gender employment gap. In terms of educational equality, the Netherlands is

ranked second within the European Union (EIGE, 2022). Labour force participation of women is high and has increased in the Netherlands, but still most women work part-time (CBS, 2022b). As a result, among parents in particular, the "one-and-a-half earner" model prevails with one partner (usually men) working full-time and the other (usually women) part-time. In terms of the full-time equivalent employment rate, the Netherlands is ranked 19th on the work participation domain of the Gender Equality Index, which is only slightly above the average of all EU member states and below the scores of Scandinavian countries (EIGE, 2022), indicating gender practices that are more traditional than those of Scandinavian countries.

Geographically, the Netherlands is a relatively small and densely populated country. Most economic activities are concentrated in the polycentric core region in the western part of the country, called the Randstad (Kloosterman & Musterd, 2001). This region experienced the strongest population growth in recent decades and comprises the four largest cities (Amsterdam, Rotterdam, The Hague and Utrecht) and several medium-sized cities. The Randstad includes the political capital, the financial capital, a world port and a world airport. It offers the densest labour market (Van Ham, Hooimeijer, et al., 2001) and access to specialised jobs and knowledge-based industries (CBS, 2024; Tordoir et al., 2015). Beyond the Randstad, the region of Eindhoven in the southern part of the country also comprises a knowledge-based economy (Brainport Eindhoven). Housing prices are generally lower outside the core region.

Although – or maybe because – the country is quite small, the tolerance for daily travel within the country is low. On average, a one-way commute of Dutch workers is 18 kilometres (Ritsema Van Eck & Hilbers, 2018), but large differences exist between social groups. Highly educated workers, full-time employees and men commute over longer distances than lesser educated workers, part-time employees and women (Burger et al., 2014; Ritsema Van Eck & Hilbers, 2018). Highly educated full-time workers commute 28 kilometres on average (Ritsema Van Eck & Hilbers, 2018). Daily commutes predominantly take place within urban regions, but for highly educated workers interurban networks have gained importance, although most of them commute between neighbouring cities. Commuting flows between the four largest cities in the Randstad and between neighbouring cities in the southern province of North-Brabant have intensified among highly educated workers, while commutes at a higher spatial scale remain relatively rare (Tordoir et al., 2015). Workers tend either to change their workplace or to migrate as distances between home and workplace extend their urban region or neighbouring urban regions. Hence, among moves over at least 40 kilometres, the most cited motive for moving was work-related (Feijten & Visser, 2005). The social costs of migration in terms of family relations are also significant. Proximity to family is an important

determinant for support exchange and relatively short distances can already form a barrier for practical support. For instance, parents helping their adult children with childcare is significantly less common when they live at a distance of more than 20 kilometres (Knijn & Liefbroer, 2006).

We identified regions within which the vast majority of workers is assumed to both work and live and distinguished three macro-zones based on the number of jobs accessible within a 50-kilometre distance: a core region (which corresponds largely to the Randstad), a semi-periphery and a national periphery.

4.3 Data and methods

4.3.1 Data

Data were drawn from two sources: the Dutch Labour Force Survey (EBB) and the System of Social Statistical Datasets (SSD) (Bakker et al., 2014). The Labour Force Survey provides detailed information for both partners on educational attainments and labour market characteristics, including occupations (ISCO). It is a rotating household panel with 5 samples per household over 15 months (i.e., one every quarter). The SSD is a set of integral and longitudinal administrative government registers that cover the entire population of the Netherlands. The SSD adds longitudinal information on place of residence, residential mobility, household characteristics, primary income and distances from family members. We pooled all Labour Force Surveys between 2006 and 2015 (first quarter samples) and linked the respondents to the SSD based on person unique identifiers. We used the moment of the LFS interview as the start of the observation window (t0). Subsequently, we took information from the SSD on the sampling moments exactly one (t1), two (t2) and three (t3) years after the interview date.

Units of analysis are couples. We selected all couples of which both partners were between 18 and 45 years old (N = 113,956). We excluded same-sex couples, couples who separated between t0 and t3 and couples of which one or both partners were enrolled in education between t0 and t3[8)]. We conducted separate

8) Excluding couples who separate after a joint migration might bias our results if couples who separate are more or less likely to have migrated in the recent past and especially if this relationship is associated with educational profiles. We found no significant effect of internal migration on the likelihood of separation after internal migration. Among internal migrants (4.1 percent) the separation rate between t1 and t3 was even slightly lower than among stayers (4.6 percent). As a robustness check, we included couples who eventually

analyses on dual-earner couples because the colocation puzzle only applies to couples in which both partners belong to the labour force and because we also want to include information on occupational characteristics that are not available for respondents who are not (self-) employed. Dual earners were defined in a broad sense since small jobs of only a few hours per month are enough to meet this criterion. Couples with jobs in the armed services were excluded because mobility of military personnel is often externally imposed[9]. This resulted in a research population of 90,314 couples of which 73,044 (81 percent) were dual earners at t0.

4.3.2 Analytical strategy

To study determinants of long-distance couple migration in general we performed a binary logistic regression analysis. In these models, the dependent variable is internal migration: whether couples have moved long distance (40 kilometres or more) between t0 and t3, yes (1) or no (0). The threshold of 40 kilometres was selected because among moves over at least 40 kilometres the most cited motive for moving was work-related (Feijten & Visser, 2005)[10]. Euclidean distances were measured between the centroids of the municipalities in which a couple lived at t0 and t3. Of 90,314 couples, 3,612 (4.0 percent) moved to another municipality at a short distance (< 40 km) and 1,050 (1.2 percent) migrated (> 40 km) during the first three years following the interview. The 3-year time span was chosen based on a trade-off between collecting a substantial number of migrations and the gradual devaluation of information gathered at t0. Multiple migrations within three years (onward and return) were neglected, but this only concerns a very small number of cases (n = 41).

Subsequently, we modelled couple migration as a choice set of three destinations and performed a multinomial logistic regression analysis to get insights into the

broke up in our models to examine whether this would alter our results. The overall model fi t and the parameter estimates remained highly identical, also those of our main interest (education and occupation).
Hence, we conclude that no selectivity problems arose by dropping the separated couples.

9) We excluded 943 couples because one or both partners were employed in armed forces occupations. We dropped these couples since military personnel are much more likely than other employees to have no "free" location choice; they often migrate as a result of a transfer of armed services. Our study focuses on deliberate couple migration decisions. We tested whether our models are sensitive to including couples with armed forces occupations. Including this group yielded identical results.

10) As a robustness check we estimated the same models with a distance threshold of 30 and 50 km. These models yielded highly comparable results.

determinants of couple migration towards specific destinations. The dependent variable in this analysis is destination region: whether couples have moved long distance to the national periphery (1), the intermediate zone (2) or the core region (3) between t0 and t3. These macro zones were created based on the number of jobs accessible within a radius of 50 kilometres and are depicted in figure 4.3.1. We ran separate analyses for couples living in the national periphery, the intermediate zone and the core region at t0. The reference category consists of couples that did not move or moved within 40 kilometres.

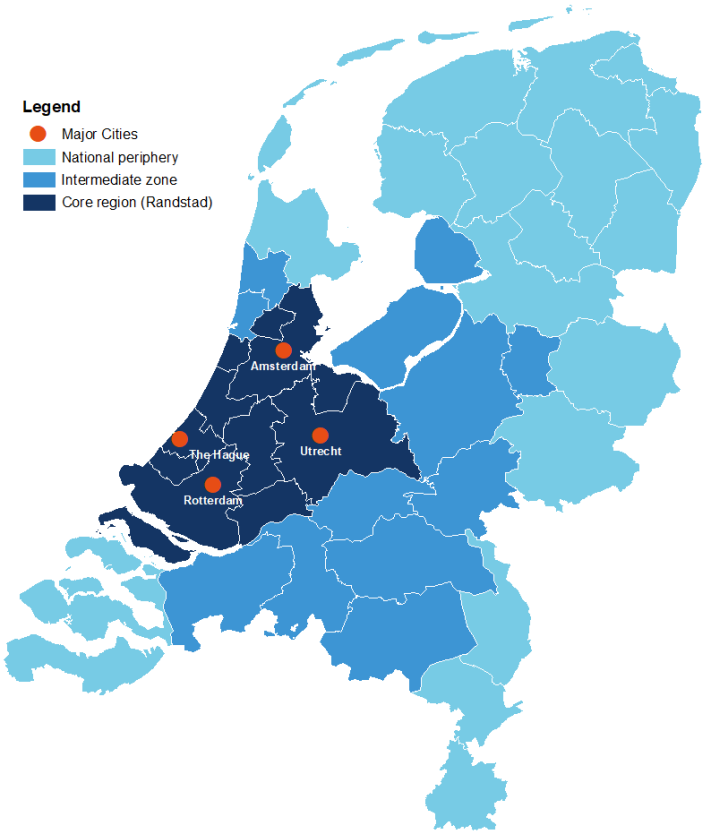
4.3.3 Independent variables

The independent variable of main interest is the couple's human capital profile, expressed in the educational attainments of both partners. We aligned with the compound measure also used in earlier studies, for instance by Compton and Pollak (2007), which distinguishes four categories based on partners holding a university degree (ISCED 7-8, referring to master's, doctoral or equivalent level) (UNESCO, 2011): couples with no university graduates (low-power couples, 79 percent of our sample), couples with only a female university graduate (female-power couples, 7 percent), couples with only a male university graduate (male-power couples, 7 percent) and couples with two university graduates (power couples, 7 percent). About 14 percent of men and women in our research population hold a university degree. Men are more often the highest educated partner among the older couples in our sample (aged > 35), whereas female-power couples outnumber male-power couples among younger couples (< 35). This is in line with the reversed gender gap in education among younger generations in the Netherlands (Statistics Netherlands/ SCP 2018). We decided to set the threshold value on university degrees because university graduates stand out with regard to internal migration propensities in the Netherlands (Venhorst et al. 2010; Kooiman et al. 2018).

To examine to what extent the differential effects of men's and women's human capital can be explained by the occupations they hold, we included the migration propensities related to specific occupations (ISCO, 1 digit at t0) based on migration behaviours of single workers. These were derived from an analysis of migration behaviours of single (self-)employed LFS-respondents over the 2006-2015 period. These single workers are considered "unconstrained optimisers" (Jürges, 2006) and hence the migration propensities of singles with specific occupations can be argued to be an expression of the potential benefits of migration for workers with these occupations. Almost 4 percent of the singles migrated, which underlines their greater mobility compared to couples. Among high-mobility occupations are health professionals, business and administration professionals and ICT professionals.

Among low-mobility occupations are crafts and related trade workers and elementary occupations. Table A4.1 in the appendix provides information on singles' migration rates disaggregated by occupation in more detail.

4.3.1 Geographical macro-zones based on job density (2017)



Source: Statistics Netherlands (SSD, own calculations).

We controlled for several factors, which have been demonstrated to be related to (couple) migration (Faggian et al., 2015). The mean age of the couple was controlled for because, in line with the human capital perspective, migration propensities tend to decrease with age (Dennett & Stillwell, 2010b). In the Netherlands spatial mobility starts to drop when people reach their mid-twenties (Kooiman et al., 2018). Since migration is costly, a lack of economic resources might prevent couples from migrating (Mulder & Hooimeijer, 1999). Therefore, we included economic resources measured by the standardised disposable household income in percentiles. As a measure of the bargaining power of both partners and to distinguish equal dual earners from one-and-a-half earners and single earners,

we included a measure of the income equality within couples. We also added a dummy indicating whether or not the female partner is the main breadwinner (yes (1) or no (0)). Marital status at t0 and marriages between t0 and t3 are controlled for since unmarried cohabiters are more likely than married persons to have egalitarian gender role attitudes (Liefbroer, 1991). We controlled for the presence of children in the household (including the age of the oldest child) because children tend to strengthen the ties to a location, especially when they have reached school age (Clark & Davies Withers, 2007). In addition, we included a dummy variable that indicates whether or not a child was born between t0 and t3 since the event of childbirth is related to increased residential mobility (Kulu & Milewski, 2007), especially towards rural destinations (Kulu, 2008). As a proxy for local economic ties, we included the current job duration in months and the housing tenure. The year of interview is controlled for because internal migration rates are associated with economic business cycles. Because migration rates first decreased and then increased during the observation period, a squared term of the time variable was added. To control for local social ties outside the household, we included the geographical distance to both partners' place of birth and their parents. We measured Euclidean distances based on geographical coordinates of the municipalities of residence. With regard to the location of parents, we measured the distance to the nearest parent. We created a distinct category for those partners who had no parents living in the Netherlands. Except for the binary variables measuring childbirth and marriages, all independent variables were measured at t0. Descriptive statistics of the variables included in the models and migration rates across the categories of the independent variables are provided in the appendix (table A4.2).

The binary logistic regression analysis aims to test the first hypothesis. It consists of five models. The first and second model include all couples regardless of the labour market position of both partners. In the first model, we included all control variables except for the geographical distance to both partners' birthplace and parents. In the second model, we added these geographical controls to be able to assess how they influence the effect of education on couple migration. As the highly educated tend to live farther away from their birthplace and parents, inclusion of these variables might decrease the effect of education (Mulder & Malmberg, 2014). The third, fourth and fifth model are estimated for the sub-population of dual earners for whom we can include occupational information. Model 3 includes control variables only, in model 4 the geographical controls were added and in model 5 the occupational migration propensities were added. The multinomial logistic regression analysis tests the second hypothesis and reflects the full binary model.

4.4 Results

4.4.1 Descriptive findings

Power couples are highly overrepresented in the Dutch core region and underrepresented in peripheral regions (table 4.4.1.1). Whereas couples of which neither partner holds a university degree are distributed equally across the three macro zones, more than 60 percent of the power couples live in the core region and only 14 percent live in peripheral regions. The spatial distribution of couples with one university graduate is between that of low-power couples and power couples, regardless of which partner holds a university degree.

4.4.1.1 Spatial distribution of couples with different educational profiles, t0 (column percentages)

	University degree				
	Neither partner	Only female partner	Only male partner	Both partners	Total
Region of residence, *t0*					
National periphery	33.4	24.0	23.0	14.2	30.7
Intermediate zone	33.3	29.2	31.0	25.4	32.3
Core region	33.3	46.9	46.0	60.4	37.0
Total	100.0	100.0	100.0	100.0	100.0
N	71,445	5,854	6,813	6,202	90,314

Source: Statistics Netherlands (SSD, own calculations).

4.4.1.2 Moves of couples with different educational profiles, t0..3 (column percentages)

	University degree				
	Neither partner	Woman only	Man only	Both partners	Total
Migration, *t0...3*					
Did not move between municipalities	95.9	90.8	92.5	88.5	94.8
Moved < 40 km	3.4	6.9	5.3	7.2	4.0
Moved ≥ 40 km	0.7	2.4	2.2	4.3	1.2
Total	100.0	100.0	100.0	100.0	100.0
N	71,445	5,854	6,813	6,202	90,314

Source: Statistics Netherlands (SSD, own calculations).

Moves, especially those over longer distances, are strongly associated with the educational profile of couples (table 4.4.1.2). Regardless of gender, a couple's migration rate increases with any university graduate partner. Couples with two university graduates are more mobile than couples with one university graduate

and those are more mobile than couples with no university graduate partner. These low-power couples migrated more than six times less often than power couples. Short-distance moves are less related to a couple's educational profile.

4.4.2 Binary logistic regression on migration

Average marginal effects of the binary logistic regression analyses are given in table 4.4.2.2. Model 1 includes all couples and contains control variables except from the geographical controls. It demonstrates that couples are more likely to migrate if partners are highly educated and that couples' migration propensities increase with any university graduate partner, regardless of whether the female or the male partner. The baseline migration propensity of low-power couples is 0.7 percent. The estimated migration propensity of power couples is 3.5 percent, which is five times as large. Estimated migration propensities for female-power couples (2.0 percent) and male-power couples (2.2 percent) are between those of low-power and power couples and are not statistically different from each other.

The inclusion of geographical controls in model 2 strongly reduced the effect size of a couple's educational profile. Controlled for distance to birthplace and parents, power couples are 40 percent more likely to migrate than low-power couples. Couples with one university graduate partner – whether the female or the male partner – are equally likely to migrate as power couples. The strong reduction of the effect size of education after including geographical controls indicates that greater migration propensities among highly educated couples are largely attributed to the fact that these couples are less constrained by family ties or other local ties. The highly educated more often live further away from their parents and their place of birth and proximity to parents and birthplace strongly constrain migration. Additionally, living closer to family and friends may be a motive for migration.

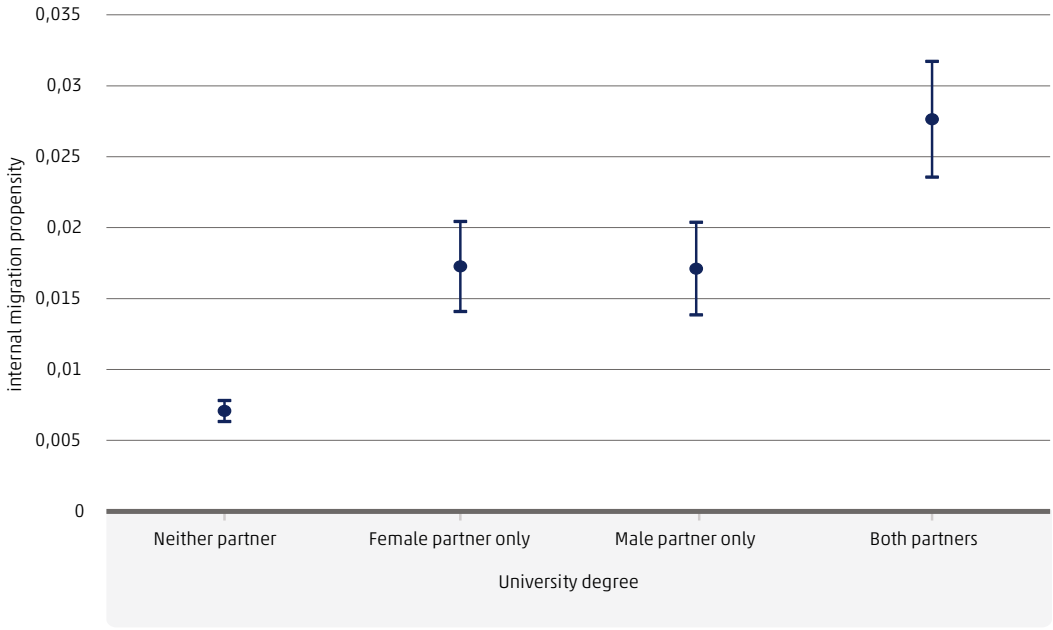
Furthermore, model 2 indicates that a couple's educational profile is not among the most important predictors for couple migration. Not only distance to parents and place of birth, but also age, family status and housing tenure appear more important. As expected, young couples, couples without children or with only preschool-aged children and couples in rental dwellings are more likely to migrate than older couples, couples with school-aged children and couples who own their dwelling. In addition, dual earners migrate less often than single-breadwinner couples and unemployed couples. Married couples migrate more often than unmarried couples, especially the recently married. Couples of which both partners have an international migration background are less likely to migrate. Household

income is not related to couple migration, which indicates that a low income does not constrain couples from migrating.

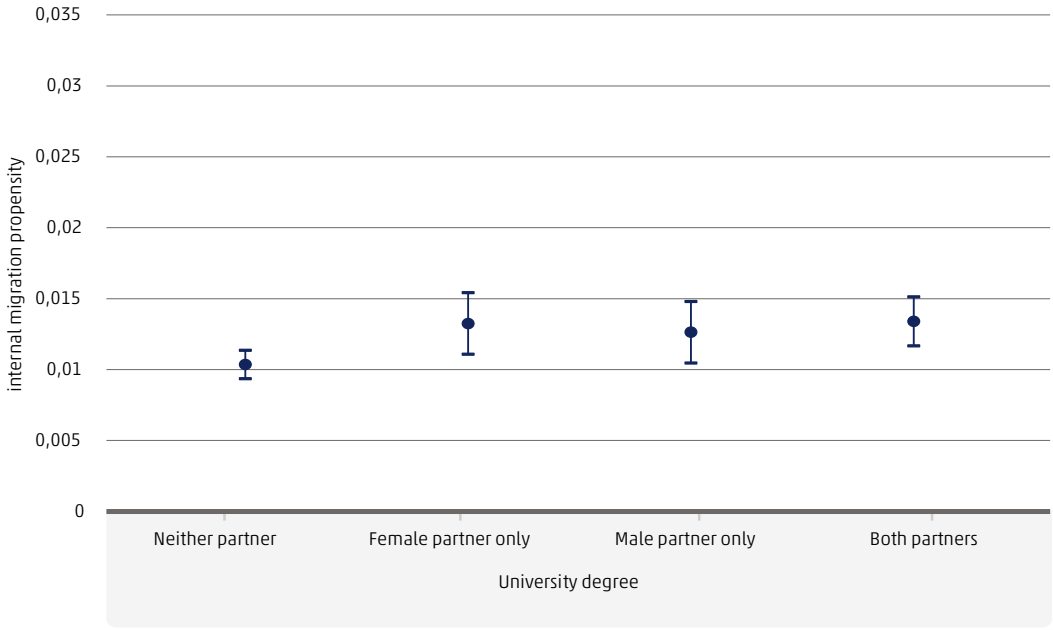
Models 3, 4 and 5 include dual earners only, which allows for the introduction of work-related variables. Predicted probabilities disaggregated by educational profiles are derived from these models and depicted in figure 4.4.2.1 (a-c). Also, among dual earners the inclusion of geographical controls (Model 4) strongly reduces the effects of both partners' education on couple migration compared to the model with control variables only. If geographical controls are not taken into account (Model 3), power couples are almost four times more likely to migrate than low-power couples, whereas both female-power and male-power couples are more than twice as likely to migrate than low-power couples. After the inclusion of distance to birthplace and distance to parents, the estimated migration propensity of dual-earner couples with one or two university graduates is 30 percent higher than that of dual earners without university degrees. There is no statistically significant difference between dual earners with one and two university graduates. Effects of control variables largely resemble those in the models among all couples. The effect of job duration matches expectations: As male or female partners hold the same job for a longer period of time the likelihood of couple migration is significantly reduced. Dual-earner couples with an unbalanced income ratio are slightly more likely to migrate than couples with more equal incomes, regardless of which partner earns a higher income.

The inclusion of occupational migration propensities in model 5 hardly improves the model fit, but does further reduce the effects of both partners' education. If both male and female partners hold a high-mobility occupation, couples are more likely to migrate. The estimated effect of the male partner's occupation is slightly stronger but not significantly different from the estimated effect of the female partner's occupation. After including occupational migration propensities, the educational attainments of both women and men are no longer significantly related to couple migration. This indicates that the small positive effect of education that was left after adjusting for the geographical distance to birthplace and parents can be explained by the different occupations held by university graduates and their lesser educated counterparts.

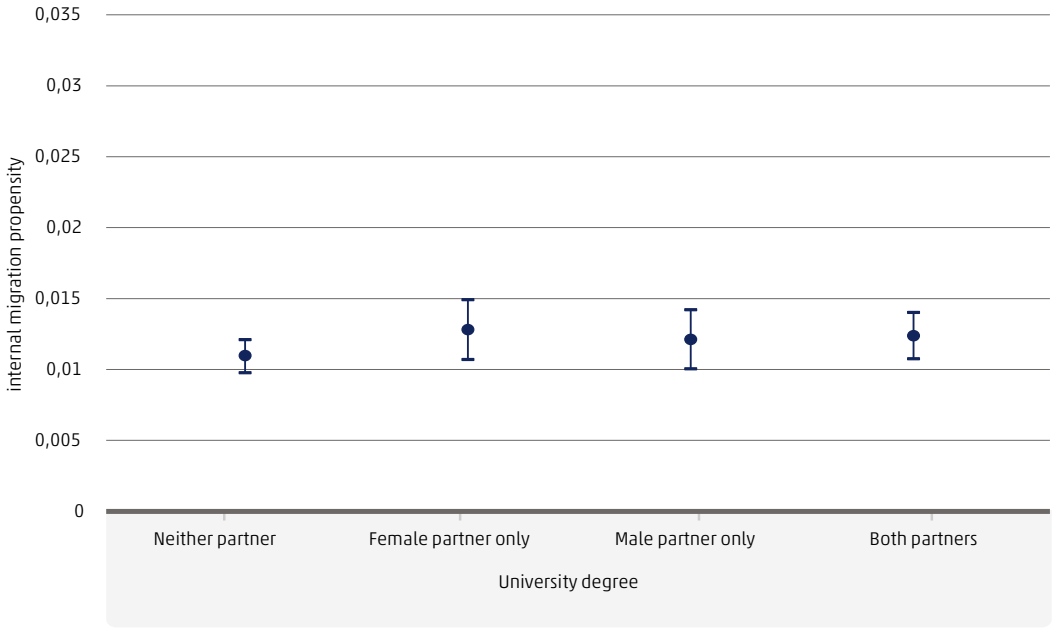
4.4.2.1a Predicted probabilities (and 95 percent confidence interval) of dual-earner couple migration disaggregated by a couple's educational profile (controlled for control variables only (model 3))



4.4.2.1b Predicted probabilities (and 95 percent confidence interval) of dual-earner couple migration disaggregated by a couple's educational profile (controlled for control variables and geographical controls (model 4))



4.4.2.1c Predicted probabilities (and 95 percent confidence interval) of dual-earner couple migration disaggregated by a couple's educational profile (controlled for control variables, geographical controls, and occupational migration propensities (model 5))



In sum, the results of the binary logistic regression analysis support hypothesis 1A as both men's and women's human capital are positively related to family migration. This is true for both the total population and for the subgroup of dual earners, but only if not adjusted for their occupations. Furthermore, effect sizes of both partners' education are relatively small. We need to reject hypothesis 1B, because we found no significant differences between couples with a male university graduate and couples with a female university graduate. We also found gender equality with regard to the effect of contribution to the household income and occupation.

4.4.2.2 Binary logistic regression results on migration (> 40 km), average marginal effects. Reference category is no move or a move within 40 km

	All couples		Dual earners		
	Model 1	Model 2	Model 3	Model 4	Model 5
T (survey year)	-0.003**	-0.003**	-0.003**	-0.003**	-0.003**
T^2	0.000**	0.000**	0.000**	0.000**	0.000**
Partners with university degree, t=0					
Neither partner	Ref.	Ref.	Ref.	Ref.	Ref.
Only female partner	0.013**	0.003**	0.010**	0.003*	0.002
Only male partner	0.015**	0.004**	0.010**	0.002*	0.001
Both partners	0.028**	0.004**	0.021**	0.003**	0.002
Mean age partners, t=0	-0.000**	-0.001**	0.000	-0.000**	-0.000**
Married, t=0	0.001	0.002**	0.002*	0.003**	0.003**
Wedding, t=0…3	0.002*	0.003*	0.003*	0.003*	0.003*
Age oldest child, t=0					
No children	Ref.	Ref.	Ref.	Ref.	Ref.
< 4 years old	-0.001	0.000	0.001	0.001	0.001
4–11 years old	-0.007**	-0.005**	-0.006**	-0.005**	-0.005**
12–18 years old	-0.009**	-0.006**	-0.009**	-0.007**	-0.006**
Childbirth, t=0…3	0.002*	0.001	0.002	0.002	0.001
International migration background					
Neither partner	Ref.	Ref.	Ref.	Ref.	Ref.
Only female partner	0.001	0.002	0.002	0.002	0.002
Only male partner	0.001	-0.001	0.001	0.000	-0.000
Both partners	-0.003*	-0.004**	-0.003*	-0.004*	-0.003
Housing tenure					
Rental	Ref.	Ref.	Ref.	Ref.	Ref.
Owner-occupied	-0.009**	-0.007**	-0.008**	-0.006**	-0.006**
(Self-)employed					
Both partners	Ref.	Ref.			
Neither partner	0.021**	0.013*			
Only female partner	0.004	0.003			
Only male partner	0.005**	0.003*			
Household income (percentiles)	0.000	0.000	0.000**	0.000	0.000
Income difference between partners (deciles)			0.001**	0.000*	0.000*
Female partner higher income			0.001	0.000	0.000
Years in current job, female partner			-0.001**	-0.000**	-0.000**
Years in current job, male partner			-0.001**	-0.000**	-0.000**
Woman's relative contribution to household income					
0–30%			Ref.	Ref.	Ref.
30–40%			-0.002	-0.002	-0.001
40–50%			-0.003*	-0.003	-0.002
50–100%			-0.001	-0.002	-0.001

4.4.2.2 Binary logistic regression results on migration (> 40 km), average marginal effects. Reference category is no move or a move within 40 km (continued)

	All couples		Dual earners		
	Model 1	Model 2	Model 3	Model 4	Model 5
Distance to woman's parent(s)					
< 2 km	Ref.		Ref.	Ref.	
2–5 km	−0.000		−0.001	−0.001	
5–10 km	0.002*		0.001	0.001	
10–25 km	0.003**		0.003*	0.003*	
25–50 km	0.011**		0.009**	0.009**	
≥ 50 km	0.018**		0.016**	0.016**	
No parents in the Netherlands	0.007**		0.006**	0.006**	
Distance to man's parent(s)					
< 2 km	Ref.		Ref.	Ref.	
2–5 km	0.003**		0.004**	0.004**	
5–10 km	0.003**		0.003**	0.003**	
10–25 km	0.005**		0.005**	0.004**	
25–50 km	0.010**		0.010**	0.010**	
≥ 50 km	0.017**		0.016**	0.015**	
No parents in the Netherlands	0.009**		0.008**	0.008**	
Distance to woman's place of birth					
Lives in same municipality	Ref.		Ref.	Ref.	
Other municipality, < 10 km	0.003		0.003	0.003	
Other municipality, 10–25 km	0.001		0.001	0.001	
Other municipality, 25–50 km	0.005**		0.006**	0.006**	
Other municipality, ≥ 50 km	0.006**		0.006**	0.006**	
Place of birth unknown	0.004*		0.004*	0.005*	
Distance to man's place of birth					
Lives in same municipality	Ref.		Ref.	Ref.	
Other municipality, < 10 km	−0.001		−0.002	−0.002	
Other municipality, 10–25 km	−0.000		−0.000	−0.000	
Other municipality, 25–50 km	0.001		0.001	0.001	
Other municipality, ≥ 50 km	0.003		0.002	0.002	
Place of birth unknown	0.003		0.003	0.002	
Migration rate woman's occupation					0.001*
Migration rate man's occupation					0.001**
Obs.	90,314	90,314	73,044	73,044	73,004
Pseudo R-squared	.09	.20	.11	.21	.21
BIC	10,437.78	9,652.194	8,290.882	7,635.576	7,653.195

Source: Statistics Netherlands (SSD, own calculations).
** p<0.01, * p<0.05

Next, we investigated the destination of migrating couples and their determinants in a multinomial logistic regression using the same independent variables as in the binary logistic regression. We estimated separate models for couples who lived in the core region, the intermediate zone and the national periphery at t0. Among couples who already lived in the core region, power couples are less likely than low-power couples to migrate to the national periphery (table 4.4.2.3). This effect was found both among all couples and among the subgroup of dual earners. Couples with one university graduate were equally likely as low-power couples to migrate from the core region to the national periphery, regardless of the gender of the university graduate. In addition, power couples were also more likely to move over long distances within the core region than low-power couples. To a lesser extent, this also holds true for female-power and male-power couples, but these effects were statistically insignificant among dual earners. These results indicate a stronger tendency among power couples to stay in the core region if they already live there and, if they migrate, to choose other destinations within the core region.

4.4.2.3 Multinomial regression analysis on destination region (origin = core region), average marginal effects. Reference category is no move or move within 40 km

	All couples (N = 33,400)			Dual earners (N = 26,841)		
	Periphery	Semi-periphery	Core region	Periphery	Semi-periphery	Core region
University degree, t=0						
Neither partner	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Only female partner	−0.000	0.001	0.003*	−0.002	−0.000	0.002
Only male partner	−0.001	−0.001	0.004**	−0.002	−0.001	0.002
Both partners	−0.003**	−0.001	0.005**	−0.003**	−0.001	0.004**
Migration rate woman's occupation				−0.000	0.000	0.000
Migration rate man's occupation				0.000	0.000	0.000
Pseudo R2			.17			.18

Source: Statistics Netherlands (SSD, own calculations).
** p<0.01, * p<0.05

Among couples who lived in the semi-periphery, power couples were more likely than low-power couples to migrate to the core region (table 4.4.2.4). Educational attainments of the male partner are more important than those of the female partner: Whereas couples with only a male university graduate migrated more often to the core region than low-power couples, there was no difference between couples with only a female university graduate and low-power couples. We found this effect both among all couples and among the subgroup of dual earners. Among couples who lived in the national periphery those with only a male university graduate were more likely than low-power, female-power and power

couples to migrate to the core region (table 4.4.2.5). Among dual earners living in the national periphery, those with a man holding a high-mobility occupation more often migrated towards the core region, whereas her occupation had no effect. These results indicate that the likelihood for couples to migrate to the core region depends mainly on his earnings potential, not on hers. Hence, our results provide only partial support for our hypothesis that power couples tend to migrate to the core region. If power couples already live in the core region, they are more likely than other couples to stay there or to migrate within the core region. However, among couples who live in semi-peripheral or peripheral regions, predominantly his educational attainments and occupation influence the likelihood of migration towards the core region.

The effect estimates of control variables are all comparable to those in the binary model. We limit the description to one marked difference with respect to destination regions. Notably, couples with an international migration background appear to be oriented more towards the core region. They are equally likely to migrate to or within the core region but less likely to leave the core region than their counterparts with a Dutch background.

4.4.2.4 Multinomial regression analysis on destination region (origin = semi-periphery). Reference category is no move or move within 40 km

	All couples (N = 29,180)			Dual earners (N = 23,712)		
	Periphery	Semi-periphery	Core region	Periphery	Semi-periphery	Core region
University degree, t=0						
Neither partner	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Only female partner	0.001	0.001	0.000	0.001	−0.001	0.001
Only male partner	−0.000	0.000	0.003*	−0.000	−0.001	0.003*
Both partners	0.001	0.001	0.004**	0.001	−0.000	0.004**
Migration rate woman's occupation				0.000	0.001*	−0.000
Migration rate man's occupation				0.000	0.000	0.000
Pseudo R2			.23			.25

Source: Statistics Netherlands (SSD, own calculations).
** p<0.01, * p<0.05

4.4.2.5 Multinomial regression analysis on destination region (origin = national periphery). Reference category is no move or move within 40 km

	All couples (N = 27,734)			Dual earners (N = 22,419)		
	Periphery	Semi-periphery	Core region	Periphery	Semi-periphery	Core region
University degree, t=0						
Neither partner	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Only female partner	0.002	−0.000	0.001	0.002	0.000	0.001
Only male partner	0.001	0.001	0.006**	0.000	0.001	0.002
Both partners	0.000	0.002	0.002	−0.001	0.001	0.001
Migration rate woman's occupation				0.000	0.000	−0.000
Migration rate man's occupation				−0.000	0.000	0.001**
Pseudo R2			.23			.27

Source: Statistics Netherlands (SSD, own calculations).
** p<0.01, * p<0.05

4.5 Conclusion and discussion

The aim of this study was to analyse the role of men's and women's educational attainments in couple migration in the contemporary Dutch context, where younger generations of women have reversed the gender gap in education to their advantage. By analysing couple migration between 2006 and 2015, we found that both men's and women's human capital increases migration propensities in the Netherlands, although effect sizes are relatively small. Among dual earners, the small effect of educational profiles became non-significant if adjusted for their occupations.

We found no gender differences in the effect of education on couple migration in general. This absence of gender asymmetry contradicts a wide array of empirical studies indicating the dominance of men's human capital while women are in the position of the "trailing wife" (Cooke, 2008). These studies, however, were based on twentieth century data and mainly on the US context. In the meantime, women have increased their labour market participation and closed or even reversed the gender gap in education in many countries. These trends seem to have strengthened the position of women in couple migration decision-making. Our results are more in line with recent empirical evidence from Sweden demonstrating only very minor gender differences in the effect of education on couple migration (Brandén, 2013; Tano et al., 2018). However, we did find some signs that men's

careers are still attributed more weight in couple migration decision-making than women's. First, migration propensities of dual earners are slightly stronger related to men's occupation than to women's. Second, migration towards the core region increases with his education, but does not respond to hers.

A second aim of this study was to take a geographical perspective on couple migration and to test Costa and Kahn's (2000) colocation hypothesis, which postulates that power couples – couples with two highly educated partners – are more likely to migrate to large metropolitan areas because of their dense labour markets that allow them to accommodate two specialised careers from one place of residence. We demonstrated that power couples are indeed overrepresented in the Dutch core region. However, we found only partial support for the hypothesis that power couples migrate disproportionally towards the core region. On the one hand, power couples are more likely than other couples to stay in the core region or to migrate within the core region if they already live there. On the other hand, however, among couples who live in semi-peripheral or peripheral regions, power couples are not more likely to migrate to the core region. Propensities of periphery-to-core migration are only related to the male partner's human capital. These results align with earlier findings from the US (Compton & Pollak, 2007). Given these findings and the low migration rate among partnered individuals in general it is likely that the concentration of power couples in the Dutch core region stems from highly educated single young adults who migrate to the core region individually in order to achieve upward mobility (Fielding, 1992; Kooiman et al., 2018) and later on find a partner who is also highly educated (Gautier, Svarer, & Teulings, 2010). Power couples formed in the core region thereafter tend to stay in their region.

Our study puts the influence of educational attainments on couple migration in perspective and supports the notion that migration is a social practice and strongly related to linked lives outside the household (Coulter et al., 2016; Vidal & Huinink, 2019). In line with evidence from Sweden (Mulder & Malmberg, 2014), we showed that couple migration is highly constrained if parents of both the male and the female partner live nearby. Furthermore, the effect of human capital was strongly reduced after adjusting for the distance to parents. This indicates that the more highly educated are more likely to migrate partly because they tend to live farther away from their parents. Importantly, from this study we cannot say whether the family ties are a pull factor – do people tend to move back to their family? – or merely that there are less constraints for a long distance move in any direction if the family lives far away. In a future study we aim to find answers for these questions by studying the destinations in more detail.

Increasing regional urban-rural contrasts are a concern for policymakers around the world. Young people with high potentials migrate to cities and generally do not return to their place of origin later in life, leading to a potential brain drain in rural areas (Duke-Williams, 2009; Kooiman et al., 2018). Kooiman et al. (2018) showed that long-distance migration of young individuals for purposes of education and career progression plays a large role in the "geographical sorting" of human capital within the Netherlands. This study shows that couple migration for labour market reasons may play only a minor role in this respect given the limited effects of human capital and the low migration propensities among couples in general. The low migration rates among couples and the tendency for power couples to stay in the core region tends to maintain the geographical segregation of human capital that is driven by the selective migration of highly educated young adults to the core region.

One limitation of this study is that register data do not include stated intentions to move. Although work is the most-cited motive for long-distance mobility in the Netherlands (Lennartz et al., 2023) and our analyses included robustness checks with different distances, we may well have missed some short-distance job-related moves. Furthermore, at this point we do not know whether couples' mobility truly benefited either partner's career. A future study aims to gain more insights by studying the development of both partners' careers after the migration.

The "take-home message" of this study, as well as the recent Swedish studies, is that a crucial change may be taking place in recent years with respect to women's human capital and labour market positions and their perceived importance within the household. Women have surpassed men in higher education, their labour participation is increasing and their weight in couples decision-making around migration appears to be increasing accordingly. For future research, it would be worthwhile to focus on comparative research on the role of men and women in couple migration in different countries, both in Europe and beyond. In addition, this study is based on pre-Covid 19 data. During the pandemic, working from home has become a widespread phenomenon. If this leads to a more permanent shift towards working from home after the pandemic, this may alter patterns of internal migration among workers for whom working from home is most realistic – that is highly educated, white collar workers. It might enhance the attractiveness of peripherally located regions and decrease the necessity for power couples to be located in expensive, large and diverse labour markets.

Appendix

A4.1 Migration rates of employed singles aged 18-45 in the three years following the interview date (2006-2015), disaggregated by occupation

	N	Moved > 40 km (%)
Managers	2,395	3.72
Clerical support workers	5,034	2.82
Service and sales workers	6,730	3.24
Skilled agricultural, forestry and fishery workers	632	1.27
Craft and related trades workers	3,293	1.64
Plant and machine operators and assemblers	1,629	2.46
Elementary occupations	2,565	2.11
Science and engineering professionals	1,387	5.91
Health professionals	1,405	7.05
Teaching professionals	2,167	5.03
Business and administration professionals	3,266	5.97
Information and communications technology professionals	2,180	5.60
Legal, social and cultural professionals	2,149	5.96
Science and engineering associate professionals	1,338	2.91
Health associate professionals	1,340	3.66
Business and administration associate professionals	3,597	4.53
Legal, social, cultural and related associate professionals	1,576	4.00
Information and communications technicians	251	5.18
Occupation unknown	573	4.71
Total	41,813	3.89

Source: Statistics Netherlands (SSD, own calculations).

A4.2 Descriptive statistics of the variables used in the analyses

	% in sample (N = 90,314)	% migrants (N = 1,050)
Total	100	1.2
Partners with paid work, *t0*		
Neither partner	0.9	2.4
Female partner only	2.6	1.4
Male partner only	15.6	1.2
Both partners	80.9	1.1
Year of interview		
2006	10.8	1.4
2007	10.3	1.3
2008	10.2	1.1
2009	8.1	1.1
2010	12.5	0.8
2011	8.5	0.8
2012	13.2	1.0
2013	9.5	1.3
2014	8.5	1.4
2015	8.4	1.6

A4.2 Descriptive statistics of the variables used in the analyses (continued)

	% in sample (N = 90,314)	% migrants (N = 1,050)
Marital status, *t0*		
Unmarried	30.9	1.6
Married	69.1	1.0
Marriage, *t0...3*		
No	93.1	1.1
Yes	6.9	2.2
Family status, *t0*		
No children	23.3	2.0
Age oldest child < 4	20.3	1.7
Age oldest child 4-11	37.3	0.7
Age oldest child ≥ 12	19.1	0.4
Childbirth, *t0...3*		
No	74.4	0.9
Yes	25.6	1.9
Migration background		
Neither partner	75.5	1.1
Female partner only	8.6	1.6
Male partner only	6.7	1.4
Both partners	9.2	1.1
Area of residence, *t0*		
National periphery	30.7	0.9
Intermediate zone	32.3	0.9
Core region	37.0	1.6
Distance to woman's municipality of birth, *t0*		
In municipality of birth	29.3	0.3
< 10 km	12.5	0.4
10–25 km	18.9	0.5
25–50 km	9.9	1.8
≥ 50 km	17.7	3.5
Birthplace unknown	11.8	1.4
Distance to man's municipality of birth, *t0*		
In municipality of birth	32.3	0.4
< 10 km	12.37	0.4
10–25 km	18.19	0.6
25–50 km	9.4	1.7
≥ 50 km	17.42	3.3
Birthplace unknown	10.32	1.3
Distance to woman's parent(s), *t0*		
< 2 km	28.0	0.2
2–5 km	15.11	0.2
5–10 km	11.93	0.4

5.

Residential mobility of couples around family formation in The Netherlands: stated and revealed preferences

Abstract

Despite ongoing debates on urban resurgence and suggestions that cities have become more popular as a location to raise children, empirical evidence on the extent to which families with children tend to stay in cities is scarce. The aim of this paper is to fill this gap by analysing intentions to move and the actual mobility behaviour of young families in the Netherlands. First, and based on administrative data from Statistics Netherlands (2008-2016), it provides a detailed geographical analysis of couples' actual moving behaviour around the life event of first childbirth in a wide array of settlement types. Results demonstrate that the transition to parenthood still triggers couples to move down the urban hierarchy: urban couples, especially those in high-density neighbourhoods, tend to leave the city, while couples in smaller municipalities outside the city tend to adjust their housing situation by local moves. However, lower-density neighbourhoods in inner cities are relatively successful in retaining couples around family formation. Second, and based on the Netherlands' Housing Survey linked to administrative data, this paper examines geographical variations in families' stated intentions to move and analyses the likelihood that these moving intentions are realised. Results suggest that patterns of family migration cannot merely be interpreted as revealed preferences for suburban or rural environments. Whereas urban families are more likely than non-urban families to have intentions to leave, they are also most likely to intend to move within their settlement. However, Amsterdam families in particular are unlikely to fulfil their intentions to make a local move, probably because of housing market constraints.

Keywords: residential mobility, family formation, moving intentions, urbanisation, suburbanisation, urban families

5.1 Introduction

Many European inner cities are seeing an increasing number of families with children (Boterman et al., 2010; Lilius, 2014), a stage in the life course that is traditionally associated with suburban residence (Mulder, 2013; Rossi, 1955). In Amsterdam, for instance, the number of two-parent families grew by 23% between 2003 and 2017 (Booi & Boterman, 2020). The growing presence of families in inner cities is taking place within a broader context of economically and demographically thriving metropolitan areas, predominantly those which are based on diverse cognitive-cultural economies (Storper & Scott, 2009; P. J. Taylor & Derudder, 2016). The above-average population growth in many large cities since the 1990s is often referred to as 'urban resurgence' (Turok & Mykhnenko, 2008) or, as far as it concerns inner cities, 'reurbanisation' (Kabisch & Haase, 2011). The major part of the reurbanisation trend stems from the increasing number of households which are traditionally more urban-oriented; that is, one-person households, couples without children and single parents (Buzar et al., 2007; Kabisch & Haase, 2011). This growth is related to general demographic trends which have been grouped under the umbrella of the 'second demographic transition' (Van der Kaa, 1987), characterised by, among others: smaller households sizes, the postponement of marriage and first birth, declining fertility rates and increasing divorce rates. In addition, cities with universities have welcomed growing numbers of students as a result of the expansion of higher education (Schofer & Meyer, 2005).

The growing presence of families in inner cities has fuelled suggestions that the traditional link between family formation and suburbanisation has weakened and that families with children increasingly prefer to stay in the city (Booi & Boterman, 2020; Boterman & Karsten, 2015; Boterman et al., 2010; Brun & Fagnani, 1994; Karsten, 2007, 2014a; Lilius, 2014). Based on a qualitative analysis of urban families in Germany, Frank and Weck (2018) state that 'young families today who might easily afford their own homes in the suburbs are deliberately choosing to return to or (far more often) stay in the city' (Frank & Weck, 2018, p. 21). Despite numerous qualitative and single-case studies focussing on young families' motivations to stay in the city, however, recent quantitative and comparative evidence on the geographical patterns of residential mobility around family formation is scarce. The growing presence of urban families might also stem from an increasing population of childless couples in inner cities that are 'at risk' of starting a family.

The aim of this paper is to fill this gap by analysing the residential mobility of families in the Netherlands. It is organised in two parts. The first part concerns a longitudinal analysis of the actual residential mobility of couples before and after

family formation. This is based on administrative data and contributes to the literature by adopting a fine-grained geographical categorisation which goes beyond the rather crude urban-rural dichotomy (Courgeau, 1989), in some cases extended with a third category for suburbs (Feijten, 2005) or small cities (Kulu, 2008). A less nuanced geographical divide is unfortunate since it may hide inter-urban variation and neglects the blurring boundaries between urban and suburban environments (De Jong, 2013). Whereas numerous suburbs are tending to become more urban in terms of density, form and population composition (Tzaninis & Boterman, 2018), newly built neighbourhoods within the administrative boundaries of cities are often more spacious than the existing housing stock, are targeted at families with children, and are reminiscent of earlier developments in suburbs in terms of function and design. This process has been labelled 'inner-city suburbanization' (Frank, 2016). Therefore, in this paper, a distinction is made between three different living environments within three metropolitan regions in the Netherlands (Amsterdam, Rotterdam / The Hague and Utrecht): 1) high-density neighbourhoods in the inner city, 2) lower-density 'suburban' neighbourhoods in inner cities and 3) smaller municipalities within the metropolitan regions of these cities (traditional suburbs).

The second part of the paper is based on data from the Netherlands' Housing Survey, which have been linked to administrative data. In different geographical settings, this paper examines the moving intentions of families with children and the likelihood that these intentions are realised. This part adds to the literature by considering residential mobility as a process over time (Kley, 2011). It nuances the extent to which the actual moving behaviour of families can be interpreted as their revealed preferences, as micro-level restrictions and macro-level constraints may hamper the realisation of specific moving desires (Mulder & Hooimeijer, 1999). Although these survey data only facilitate a rather crude geographical categorisation, it allows for a distinction between intentions to move within the place of residence and intentions to move to another place. In addition, it allows for the identification of the role of room stress and other characteristics of the dwelling itself in shaping spatial variation in families' intentions to move.

5.2 Background

5.2.1 The family life course and residential mobility

For decades, scholars have examined how residential mobility is shaped by the family life course. Already in the 1950s and based on cross-sectional data, Peter Rossi (1955) related residential mobility patterns in Philadelphia to age and household size as indications for different stages in the family life cycle. He argued that young, growing households exhibit the highest mobility rates because they are most likely to perceive a mismatch between their current housing and their housing needs. Still, residential relocations are mainly understood as adjustment processes whereby households and individuals resolve the mismatch between their current and preferred housing situation or residential location (Mulder & Hooimeijer, 1999). Through residential moves, households bring their housing and location into equilibrium with their perceived needs (Clark, 2013). Since moves around family formation are predominantly housing-related, they usually take place within labour market areas and span short distances (Dieleman & Mulder, 2002). Also more recent age-specific patterns of spatial mobility have shown a tendency to move down the urban hierarchy among people in their thirties and above (Dennett & Stillwell, 2010a; Fielding, 2012).

During the last few decades, however, the timing and sequencing of life events along individual life trajectories has increasingly started to vary, a process that is referred to as the de-standardisation of the life course (Elzinga & Liefbroer, 2007). As a consequence, the use of standard age-normative stages in the life cycle when studying residential relocations has become more problematic. In its focus on life events and change processes and fuelled by the increasing availability of longitudinal micro-data, the life course approach has contributed fundamentally to the understanding of residential relocations (Kulu & Milewski, 2007; Mulder, 1993; Vidal & Huinink, 2019). Life events, which are transitions between states in several domains of the life course, have been demonstrated to be the primary triggers of mobility behaviour, more than static situations (Clark, 2013).

One of the most important demographic triggers for residential mobility is the transition to parenthood (Kulu & Milewski, 2007; Rabe & Taylor, 2010). Family formation is more than just the addition of a household member and can be considered a turning point for most individuals. It is a crucially important moment likely to implicate a change in significant life roles and to have a fundamental impact on subsequent life course trajectories (Stone et al., 2014). This turning point often coincides with shifting housing preferences and the desire to move to a

long-stay family home in a child-friendly environment (Feijten, 2005; Kley & Drobnič, 2019). Whereas young singles and childless couples that do not anticipate parenthood tend to prioritise the location of their residence relative to jobs and cultural amenities, while compromising on the dwelling itself, parents are more likely to accept a relatively suboptimal location for themselves in order to optimise characteristics of the dwelling and its immediate environment in favour of their children (Mulder & Hooimeijer, 1999). Micro-level analyses of actual moving behaviour based on longitudinal data have demonstrated that residential relocations peak around first childbirth, are often associated with entry into first-time home-ownership (Mulder & Wagner, 2001), and typically lead couples towards larger detached or semi-detached dwellings with more rooms and a garden (Kley & Drobnič, 2019). In the Netherlands, and especially among post-war birth cohorts, couples were demonstrated to anticipate family formation by moving into a single-family dwelling and into home-ownership a short period before first childbirth (Feijten, 2005), mainly during pregnancy (Michielin & Mulder, 2008).

In addition, preferences concerning the optimal environment for families are embedded in strong social norms (Mulder, 2013). The dominant belief is that children should ideally be raised in a detached or semi-detached dwelling with a private garden, green space in the neighbourhood, and a direct view onto the street (Dieleman & Mulder, 2002; Lauster, 2010). These housing features are traditionally found in suburbs, not inner cities. Correspondingly, Mulder states that 'cities, and particularly inner cities, are therefore often not seen as ideal environments for raising children, whereas suburbs are' (2013, p. 362). During the post-war era in most industrialised countries, the suburbs experienced rapid demographic growth at the expense of the central cities to which they were functionally related, through the influx of mainly middle-class families and couples anticipating family formation (Hayden, 2003). Moves around family formation predominantly concern relocations within settlements or down the urban hierarchy (Kulu & Milewski, 2007; Stockdale & Catney, 2014). Courgeau (1989) studied the association between spatial mobility and family formation in France, and was the first to distinguish between moves from metropolitan to non-metropolitan areas and vice versa. This distinction was important, as he demonstrated how the propensity of rural-to-urban moves decreased after family formation and successive births, while the propensity of urban-to-rural moves increased. In Sweden and Austria, mobility towards rural destinations and small towns was also shown to increase after family formation (Kulu, 2008; Lindgren, 2003).

However, the traditional link between family formation and suburbanization seems to be fading. During the first decades of the 21st century, the number of families with children has once again been on the rise in many European cities (Booi &

Boterman, 2020; Buzar et al., 2007; Lilius, 2014). It is suggested that this trend is being fuelled by an increasing preference among families to live in inner cities (Boterman, 2012; Boterman & Karsten, 2015; Boterman et al., 2010; Brun & Fagnani, 1994; Karsten, 2007, 2014a; Lilius, 2014). Explanations for this new urban preference among families relate to developments in the labour market, the built environment and changing lifestyles. First, the rise of female labour market participation and the resulting proliferation of dual-earner families have been linked to increasing urban preferences. Feminist geographers have emphasised how local opportunity structures predominantly shape the labour market outcomes of partnered women (Hanson & Pratt, 1995). Since women still perform more household and childcare tasks than men (Jürges, 2006), they usually have more restricted time-space budgets (Hägerstrand, 1970) and hence less time for daily commutes. It has been demonstrated that mothers' labour market participation depends more strongly on local employment opportunities (Van Ham & Mulder, 2005). Kley and Drobnič (2019) have shown that in Germany, most residential moves around first childbirth are directed towards suburban areas and that these moves impede mothers' labour market participation, especially re-entry through part-time jobs. Correspondingly, very strongly urbanised areas offer the most job opportunities within a short distance and are therefore argued to provide the ideal environment for mothers to remain working full-time, and for dual-earner families to combine work, family, leisure and social commitments (De Meester, Mulder, & Droogleever Fortuijn, 2007).

Second, it is argued that the traditional dichotomy between suburbs and cities is fading (De Jong, 2013; Frank, 2016; Tzaninis & Boterman, 2018). Traditionally, the built environment of cities has been characterised by high-density (public) rental housing, multi-family apartment buildings and limited outdoor space. In contrast, archetypical suburbs offered low-density neighbourhoods with lots of green space and owner-occupied single-family dwellings with gardens. In more recent decades, however, changes in the built environment, as well as in demographic and social composition, have resulted in cities looking more like suburbs, and, vice versa, suburbs looking more like cities (De Jong, 2013). On the one hand, many high-density neighbourhoods with tall apartment buildings have arisen in suburbia next to detached or semi-detached family dwellings (Tzaninis & Boterman, 2018). On the other hand, in many European city centres the share of owner-occupancy has increased (Booi & Boterman, 2020; Boterman & Van Gent, 2014) and numerous lower-density neighbourhoods have been constructed, consisting of family dwellings which strongly resemble those built in post-war suburbia in terms of design and function, a process which has been referred to as 'inner-city suburbanization' (Frank, 2016). This process has also taken place in the four largest cities in the Netherlands (Boterman & Karsten, 2015). In inner cities, not only has

the housing stock become more targeted towards families, but the same holds for commercial and public consumption spaces (Karsten, 2014a). Both transformations may have facilitated the reinvention of cities as a suitable place for raising children. The blurring boundaries also concern the social and demographic composition of migration flows between central cities and suburbs. The composition of newcomers in suburbs consists of more migrants, lower-income groups and singles, while families do not only arrive but also leave, amongst others towards the city (Hochstenbach & Musterd, 2018; Tzaninis & Boterman, 2018).

Third, and related to the abovementioned developments, it is argued that couples that stay in the city after having children do so in order to continue their former childless urban lifestyles (Karsten, 2014a). Many urban dwellers arrived in the city as young single adults, attracted by educational facilities, employment opportunities and/or urban amenities such as diversity, population density, a tolerant atmosphere, high-quality public transport and, most importantly, nearby amenities like bars, restaurants, stores and public spaces. Due to the widespread postponement of family formation (Sobotka & Toulemon, 2008), the majority of these urban dwellers spent many years in the city before starting a family. It is argued that during these years, they accumulated urban experiences, established social networks and built an urban 'habitus' (Boterman et al., 2010). By staying in the city after family formation, these parents reduce the clear-cut distinction between their former childless lifestyles and their lifestyles as parents, and thus blend different stages in the life course together (Lilius, 2014).

To examine empirically to what extent couples are still prone to leave urban environments as soon as they start a family, the actual moving behaviour of couples around family formation is compared between a wide array of settlement types in the Netherlands. Based on previous empirical studies and given the fading boundaries between some parts of inner cities and suburbia, it is hypothesised that within metropolitan areas:

H1: The effect of family formation on the out-migration propensities of couples is strongest in high-density neighbourhoods in inner cities, more moderate in lower-density 'suburban' environments within inner cities, and weakest in traditional suburbia outside the inner city.

5.2.2 Stated versus revealed preferences

Most geographical analyses on actual residential mobility implicitly assume that the observed patterns reflect households' revealed preferences. Although these

analyses provide valuable insights into how family formation is related to residential relocations, this assumption is problematic. Even though it is probable that people, as they formulate their intentions to move to specific destinations, limit their choice set to what they perceive as realistic, there still exists a substantial discrepancy between intentions to move and actual mobility (Coulter, Van Ham, & Feijten, 2011). This discrepancy stems not only from people changing their intentions because of unanticipated life events (De Groot, Mulder, et al., 2011), but also because micro-level restrictions and macro-level constraints may hinder the realisation of moving intentions (Mulder & Hooimeijer, 1999). Households may for instance be unable to find suitable housing at a reasonable cost because of a lack of financial resources or opportunities in the local housing market. In the Netherlands, households with more limited financial resources and those that intended to move within the most tight and expensive housing markets were the least likely to realise their moving intentions (De Groot, Manting, et al., 2011).

This might also hold for young families. It might be that urban families, as they search for a more spacious dwelling, intend to move within the city and yet fail to realise these intentions because they cannot find affordable and suitable housing there. These families might either discard their intentions to move and stay in their current dwelling or feel forced to stretch their search area and, against their initial preference, decide to move to the suburbs where affordable housing is available that fulfils their housing needs. Several studies suggest this to be the case, based on circumstantial evidence from analyses of actual moving behaviour. In the UK, Clark and Huang (2003) demonstrated that the event of childbirth was associated with more local moves, except for in the London area. The authors argued that couples' desires to move after family formation, in order to achieve better housing, might have been more difficult to realise in London's tight, expensive housing market. In Finland, couples in small towns and rural areas were more likely to move before the birth of an additional child, whereas couples in large cities more often moved during pregnancy or after birth (Kulu & Steele, 2013). The authors suggested that couples in large cities struggled more to afford a move to an appropriate dwelling and faced 'a constant need to optimise housing size to changes in the family size' (Kulu & Steele, 2013, p. 1711). In Austria, the triggering effect of childbirth on residential moves within settlements was stronger in rural settings and small towns than in large cities, which might indicate that urban families struggle to fulfil their desires for adequate housing through local moves (Kulu, 2008).

So far, however, empirical studies on the moving behaviour of young families have hardly combined information on intentions to move and actual residential mobility.

An exception is the study of Kley and Mulder (2010), who analysed factors affecting the probabilities of considering, planning and realising moves out of two German cities among young adults aged 18-29 years. They found that neither the presence of children nor the event of childbirth triggered young adults to consider or realise out-migration. However, in this study, the mobility decision-making processes of young families was not compared to those of families in smaller towns and rural settings.

In the second part of this paper, the focus is on intentions to move and the role of the characteristics of the dwelling itself and the broader living environment. Based on the assumption that families with children do not only move for more housing space but also to enjoy a more quiet and spacious living environment, it is expected that:

H2: Young families in large cities are more likely than young families in smaller municipalities to have intentions to leave the city, whereas young families in smaller municipalities are more likely to intend to move within their settlement.

The third part of the analyses examines the realisation of moving intentions. Based on suggestions that families in tight, expensive housing markets face more constraints in fulfilling their moving desires, it is hypothesised that:

H3: Among young families with intentions to move within their place of residence, those in large cities (and especially Amsterdam) are less likely than those in smaller settlements to realise these intentions.

5.3 Data and method

5.3.1 Actual moving behaviour

The first hypothesis is tested by examining the effect of first childbirth on the actual moving behaviour of couples in different settlements, and is based on the System of Social Statistical Datasets (SSD): individually-linked administrative data from Statistics Netherlands covering the complete Dutch population (Bakker et al., 2014). This data source allows for a longitudinal perspective and for a detailed geographical categorisation that goes beyond a crude urban-rural distinction. The research population consists of all opposite-sex married and unmarried couples without children of which the female partner was aged 25-34 on 31 December 2008, and where neither partner was still enrolled in education. These couples

were followed until 31 December 2016. The data is structured in a couple-year format. Units of analysis are 1,564,036 couple-years, clustered in 231,521 couples. Couples were followed over time until a) their union dissolved by separation, divorce or death, b) they emigrated, or c) they otherwise reached the end of the observation period (after t=8).

To analyse the actual mobility behaviour of couples, multinomial logistic regression analyses on couple-years were conducted. To account for observations (couple-years) that are clustered within units (couples) standard errors are adjusted via Stata's *vce cluster* command. The dependent variable was a residential move, measured as a change of address during an episode (a year)[11]. Households can adjust their housing situation by local moves or by moves across municipalities, thereby possibly changing the degree of urbanisation of their living environment. The dependent variable was coded 0 if a couple did not change address during the episode, 1 if a couple changed address and remained in the same municipality (local moves), and 2 if a couple changed address and moved to another municipality (out-migration). The annual rate of residential relocations was 7.2%. Couples were more likely to move within their municipality (4.5%) than across municipalities (2.7%).

Separate models have been estimated for couples living in the metropolitan areas of 1) Amsterdam (34,564 couples; 214,619 couple-years), 2) Rotterdam / The Hague (31,860 couples; 201,202 couple-years) and 3) Utrecht (20,461 couples; 140,315 couple-years)[12]. These metropolitan areas comprise the four largest cities and are located in the core area of the Netherlands, the Randstad[13]. All three metropolitan areas offer a wide array of settlement types and function more or less as housing market regions. This is confirmed by our data: about 85% of couples' relocations took place within the same metropolitan area. With regard to settlement type, in each metropolitan area a distinction was made between the

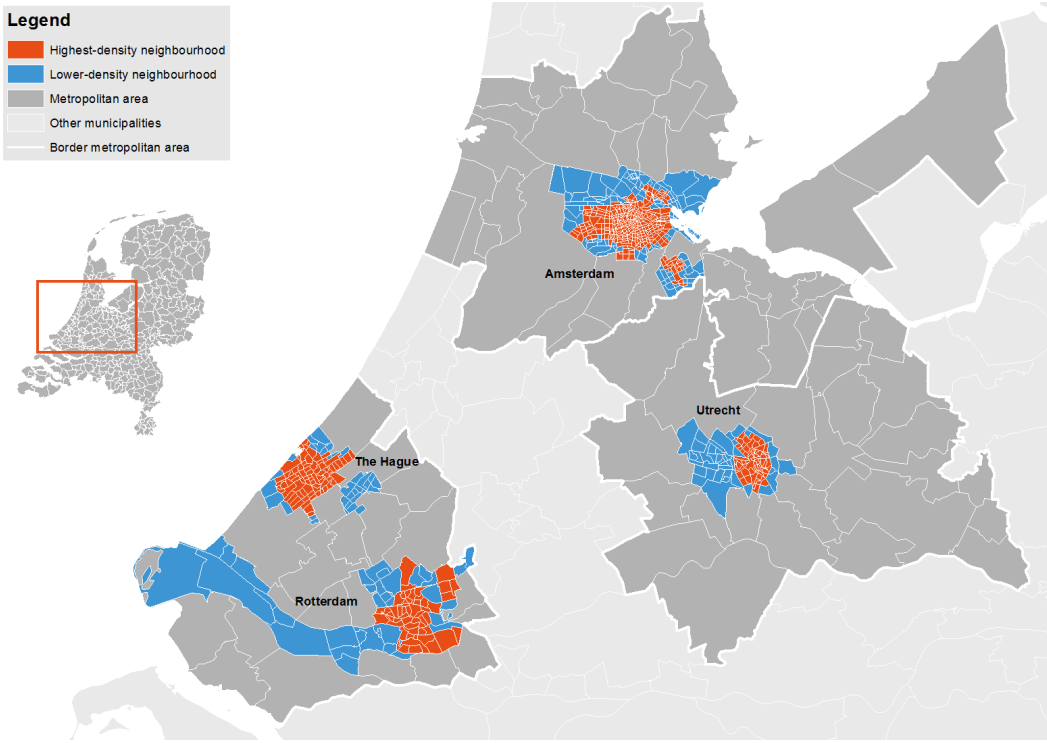
11) Because the address at the end of the episode was compared with the address at the beginning of the episode, only one residential move could be observed during a year.

12) An identical analysis was conducted among couples who lived in medium-sized cities (high-density and lower density neighbourhoods) and smaller municipalities outside the three metropolitan areas. Results can be obtained from the author on request.

13) The metropolitan areas of Amsterdam and Rotterdam/The Hague are both official governmental partnerships between adjacent municipalities. The metropolitan area of Rotterdam/The Hague encompasses both closely connected core cities and 21 smaller municipalities and has a population of approximately 2.7 million. The metropolitan area of Amsterdam has a population of approximately 2.5 million and consists of the city of Amsterdam and 31 smaller municipalities. The fourth largest city, Utrecht, does not officially participate in a partnership with adjacent municipalities, but the province of Utrecht might be considered as its metropolitan area.

central city (cities) and the surrounding smaller municipalities. To account for the presence of suburban living environments within urban municipalities, high-density neighbourhoods (>2,500 addresses per km2) were distinguished from neighbourhoods with lower densities (figure 5.3.1.1).

5.3.1.1 Locations of metropolitan areas and the highest and lower-density neighbourhoods in inner cities, 2017



Source: Statistics Netherlands (SSD, own calculations).

All independent variables were measured at the beginning of the episode and hence before a potential residential move. In combination with specific settlement types, the independent variable of main interest was time relative to the first birth. More than two-thirds of the couples (68%) made the transition to parenthood during the observation period. For each episode, a time-lag was calculated relative to the episode in which the first child was born. The variable time relative to first birth was coded 0 if couples did not have a child in the next two years[14]. This variable was

[14] It was decided to limit the period of potential anticipatory behaviour to 2 years before the first birth: the sum of 9 months of pregnancy and an arbitrary period of 1 year up to conception.

coded 1 for episodes two years before the first birth, 2 for episodes 1 year before the first birth, 3 for episodes during which the first birth took place, 4 for episodes 1 year after the first birth, and so on until 4 years or more after first childbirth (coded as 7). Couples that remained childless during the observation period were also included in the analyses, because the aim was to compare the residential mobility patterns of couples that started a family with those of childless couples. The exclusion of couples that did not have a child would risk the introduction of a serious selection bias (Hoem & Kreyenfeld, 2006; Kulu & Steele, 2013).

Several control variables known to be related to spatial mobility were included. The first was calendar time. Due to the financial crisis, which impacted the housing market, residential mobility decreased from 2009 until 2013, after which it started to rise again. Duration of stay in the municipality was accounted for as an indicator of local ties, which decrease the likelihood of migration (Mulder & Malmberg, 2014). The age of both partners at the start of the observation period was accounted for, because spatial mobility tends to decrease with age (Dennett & Stillwell, 2010b). The presence of subsequent children in the household was included, since each additional child might alter housing needs and hence trigger residential mobility (Mulder & Hooimeijer, 1999). Housing tenure was accounted for, because owner-occupancy tends to restrict spatial mobility (Helderman et al., 2006) and because the transition from renting to home-ownership is related to family formation (Mulder & Wagner, 2001). Household income was included as an indicator for financial resources, which facilitate moving behaviour (Mulder & Hooimeijer, 1999). The female partner's contribution to the household income was included, because dual-earner couples tend to be less mobile than male-breadwinner couples (Vidal et al., 2017) and because more gender-egalitarian or female-dominated working arrangements have been shown to be overrepresented in (central) cities (De Meester et al., 2007). The educational attainments of both partners were accounted for, because the higher-educated are consistently found to be more spatially mobile (Faggian et al., 2015). The migration background of both partners was accounted for, since ethnic minorities in the Netherlands are less likely to realise their desired relocations (De Groot et al., 2008). Additionally, ethnic minorities (especially those with a Turkish or Moroccan background) are more likely to stay in large cities in the Netherlands, predominantly due to stronger family ties (Zorlu, 2009). Summary statistics of the variables included in the analyses are given in the appendix (table A5.1).

5.3.2 Stated preferences

The data to test the second hypothesis were drawn from the Netherlands' Housing Survey (WoON), a joint cooperation between the Ministry of the Interior and Kingdom Relations (BZK) and Statistics Netherlands. The WoON is a large cross-sectional survey representative of the Netherlands' population aged 18 and over living in private households. Unlike the administrative data, this survey contains information on moving intentions, the type of dwelling and the number of rooms. To obtain sufficient observations on families in different settlement types, three rounds of the WoON were pooled, corresponding to the observation period of the analysis on actual moving behaviour: 2009, 2012 and 2015. All 36,560 respondents who shared a household with a partner and one or more minor children were selected. We excluded respondents who expected an involuntary move, those who had already found a new home at the time of interview, and those who wanted to move abroad.

Three multinomial logistic regression models were estimated to examine how intentions to move locally and intentions to move to other places differed between settlement types. The dependent variable was the intention to move. Following De Groot et al. (2011), moving intentions were derived from the respondents' answers to the question: 'Do you want to move within the next two years?' Unlike De Groot et al. (2011), who coded any positive answer ('Possibly yes, maybe', 'I would like to, but cannot find anything', and 'Definitely yes') as intentions to move, we applied a more strict criterion and only coded those who answered 'Definitely yes' as having intentions to move, for two reasons. First, it was assumed that those who answered 'Possibly yes, maybe' or 'I would like to, but cannot find anything' had less urgent moving intentions, which may be more accurately interpreted as moving considerations (Coulter et al., 2011). This argument is supported by the empirical finding that those who answered 'Possibly yes, maybe' were significantly less likely to realise their moving desire than those who answered 'Definitely yes'. Second, only those who answered 'Definitely yes' received the question 'Where do you want to move?', which for this study was a critical question. Based on these two questions, the dependent variable was coded 0 for those who reported no intentions to move (93%), 1 for those who intended to move and preferred to stay in their current place of residence (including those without a location preference) (5%), and 2 for those who intended to move and preferred another place of residence (2%).

The independent variables of main concern were settlement type, room stress and dwelling type. Regarding settlement types, the number of observations in this data source allowed for a distinction between small municipalities, medium-sized cities

and the four largest cities separately, but not for a differentiation between high-density and lower-density neighbourhoods. Control variables resembled those used in the analysis of actual moving behaviour to a large extent. In the second model, objective characteristics of the dwelling were added to the equation. Room stress was measured by relating the number of rooms (living rooms, bedrooms and studies) to the number of household members. With regard to dwelling type, a distinction was made between single-family houses and apartments. Summary statistics on the variables included in the models are presented by settlement type in the appendix (table A5.2). Respondents living in (large) cities differed from those in smaller municipalities in terms of the main variables of interest: they more often reported intentions to move, they more often lived in rental housing and apartments, and more often experienced room stress. Room stress predominantly applied to families in Amsterdam, where small apartments prevail: for 30% of the families in Amsterdam, the number of household members exceeded the number of rooms, while for 40% the number of rooms was equal to the number of household members. Families in other cities experienced less room stress than those in Amsterdam, but still a lot more than families in non-urban municipalities, of which only 6% had fewer rooms than household members.

For the third hypothesis, the research sample of partnered respondents with minor children in the household was restricted to those with intentions to move in the next two years and a preference to move within the place of residence (N=1517). Survey information was enriched with register information from the SSD on residential moves and demographic life events up to two years after the interview. Respondents for which the partnership union dissolved, a partner died, or who emigrated in the two-year period after the interview were excluded from the research sample. Again, a multinomial logistic regression analysis was conducted in which actual moving behaviour was the dependent variable. This variable was coded 0 if a family did not move, 1 if a family moved within the municipality, and 2 if a family moved to another municipality. In this analysis, the independent variable of main interest was settlement type. It was controlled for the same factors as in the analysis on moving intentions, except for those variables likely to trigger these intentions: room stress and dwelling type. It was assumed that especially financial resources would facilitate the realisation of moving intentions, whereas home-ownership might restrict it (Mulder & Hooimeijer, 1999).

5.4 Results

5.4.1 Actual moving behaviour

Model 1 comprises the total research population, regardless of the residential location of the couples within the Netherlands (table 5.4.1.1). It demonstrates that the event of first childbirth triggered residential relocation both within and between municipalities. The baseline annual probability for childless couples (who did not experience first childbirth within two years) to move within the municipality was 5%; for moving to another municipality, it was less than 3%. The probabilities to move were about 50% higher in the two years before the first birth, then dropped during the year in which the first child was born, before peaking again two years after the first birth. This pattern applied to both local moves and moves across municipal boundaries. This indicates that couples adjusted their housing needs both in anticipation of and in reaction to the event of family formation, through local moves as much as through moves towards other settlements. Relatively low mobility rates during the year of first childbirth indicate that couples preferred not to combine these two stressful events within a short period of time. As the first child reached school age (>=4), local residential mobility remained high, while out-migration dropped. This is in line with earlier findings and indicates that school-aged children strengthen local ties. Most of the effects of the control variables pointed in the expected direction[15)]. Residential mobility was lowest between 2011 and 2013. Couples' moving probabilities decreased with age. Couples with more financial resources were more likely to move, while dual-earners were less mobile than male-breadwinner couples. Those with higher education were more likely to move towards other municipalities. Home-ownership restricted mobility. The longer couples resided in their municipality, the less likely they were to leave and the more likely they were to move within their municipality. Couples that owned their dwelling were considerably less mobile than renters, while migrants were less likely to move between municipalities than the native Dutch.

Models 2a, 3a and 4a replicate the national model for the subpopulations of the metropolitan areas of Amsterdam, Rotterdam / The Hague and Utrecht, respectively. Also among couples in these metropolitan areas, both local moves and moves between municipalities are triggered by first childbirth. This general pattern nevertheless hides significant variation between settlement types. In models 2b, 3b and 4b different settlement types within the metropolitan areas were added and interacted with the time relative to first birth. These extended models provide a

15) Ontbrekende voetnoot??????

better fit to the data and demonstrate clearly that the effect of first childbirth on out-migration propensities is strongest among couples in high-density neighbourhoods in inner cities. Derived from these models, the predicted probabilities of local moves and out-migration among couples around first childbirth are depicted for different settlement types in figure 5.4.1.2 (a-f). Couples in smaller municipalities, which are mainly traditional suburbs – tended to adjust their housing needs around family formation through local moves and were reluctant to leave their place of residence: whereas first childbirth increased the odds of moving within municipalities, out-migration probabilities remained relatively low prior to and after the first birth. When the oldest child reached school-age, couples in these suburbs became even more prone to stay put. In cities, first childbirth was a stronger trigger for out-migration than in suburbs, indicating a preference for young families to reside in smaller settings. Second, the event of childbirth triggered out-migration more moderately in lower-density neighbourhoods than in high-density ones. This applied to all cities. This confirms the expectation that young families are more likely to stay in the city if they live in a lower-density neighbourhood. In most of these suburban environments within cities, the association between childbirth and out-migration was hardly stronger than in smaller municipalities surrounding large cities. Third, there was substantial inter-urban variation in the magnitude and timing of the effect. Family formation triggered out-migration most strongly in Amsterdam and, to a slightly lesser extent, Utrecht. Whereas couples were relatively unlikely to leave Amsterdam as long as they were childless and also in the two years prior to first childbirth, their out-migration propensities rapidly increased after the transition to parenthood. Two and three years after the first birth, couples' odds to leave Amsterdam were 6 times higher than those of childless couples. A quite similar pattern was observed in Utrecht, where out-migration also peaked after childbirth. A difference between Amsterdam and Utrecht was that childless couples in Utrecht were more likely to leave than those in Amsterdam. In Rotterdam and The Hague, childbirth was also more strongly associated with out-migration than in suburbs, but the magnitude of the association was smaller and the timing different. In these cities, couples also exhibited increased out-migration prior to the birth of the first child.

5.4.1.1 Multinomial regression analysis of couple's moves within municipalities (local move) and between municipalities (outmigration) (base outcome = no move), relative risk ratios (standard errors)

	The Netherlands		MR Amsterdam				MR R'dam / TH				MR Utrecht			
	Model 1		Model 2a		Model 2b		Model 3a		Model 3b		Model 4a		Model 4b	
	local	mig.	local	mig.	local	mig.	local	mig.	local	mig.	local	mig.	local	mig.
Constant	0.051*	0.016*	0.040*	0.012*	0.047*	0.032*	0.051*	0.046*	0.051*	0.056*	0.030*	0.014*	0.033*	0.023*
	(0.003)	(0.001)	(0.005)	(0.002)	(0.006)	(0.005)	(0.007)	(0.007)	(0.007)	(0.009)	(0.005)	(0.003)	(0.006)	(0.005)
Time period (ref = 2009–2010)														
2011–2013	0.649*	0.731*	0.682*	0.709*	0.678*	0.670*	0.652*	0.687*	0.647*	0.674*	0.722*	0.745*	0.713*	0.725*
	(0.007)	(0.010)	(0.020)	(0.024)	(0.020)	(0.022)	(0.020)	(0.023)	(0.020)	(0.022)	(0.027)	(0.031)	(0.027)	(0.031)
2014–2016	0.790*	0.951*	0.826*	1.079	0.816*	0.979	0.807*	0.802*	0.801*	0.779*	0.861*	1.093	0.848*	1.023
	(0.011)	(0.016)	(0.029)	(0.041)	(0.029)	(0.038)	(0.029)	(0.031)	(0.029)	(0.031)	(0.039)	(0.054)	(0.039)	(0.052)
Age woman (in years)	0.951*	0.974*	0.964*	0.987	0.962*	0.979*	0.950*	0.959*	0.949*	0.957*	0.947*	0.972*	0.944*	0.966*
	(0.002)	(0.002)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.006)	(0.005)	(0.006)	(0.006)	(0.007)	(0.006)	(0.007)
Age man (in years)	0.966*	0.972*	0.966*	0.970*	0.966*	0.967*	0.974*	0.971*	0.973*	0.970*	0.965*	0.970*	0.965*	0.970*
	(0.001)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.003)	(0.004)	(0.004)	(0.005)	(0.004)	(0.005)
Relationship status (ref = unmarried)														
Married	1.109*	1.209*	1.072*	1.304*	1.075*	1.349*	1.125*	1.223*	1.157*	1.262*	1.107*	1.164*	1.131*	1.219*
	(0.010)	(0.013)	(0.024)	(0.033)	(0.025)	(0.035)	(0.026)	(0.033)	(0.027)	(0.035)	(0.032)	(0.037)	(0.033)	(0.040)
More than one child (ref = no)														
Yes	1.146*	1.078*	1.058	1.190*	1.060	1.194*	1.171*	1.035	1.167*	1.023	1.119	1.195*	1.119	1.171*
	(0.018)	(0.022)	(0.045)	(0.050)	(0.045)	(0.052)	(0.050)	(0.052)	(0.050)	(0.052)	(0.063)	(0.067)	(0.063)	(0.068)
Migrant status woman (ref = native)														
Migrant	0.964*	0.885*	1.052	0.742*	1.046	0.688*	0.985	0.844*	0.927*	0.801*	0.962	0.866*	0.998	0.976*
	(0.011)	(0.013)	(0.026)	(0.022)	(0.026)	(0.022)	(0.026)	(0.026)	(0.025)	(0.025)	(0.036)	(0.037)	(0.006)	(0.007)
Migrant status man (ref = native)														
Migrant	0.900*	0.887*	0.995	0.821*	0.994	0.778*	0.985	0.817*	0.934	0.773*	0.864*	0.763*	0.981	0.960*
	(0.011)	(0.014)	(0.026)	(0.025)	(0.026)	(0.025)	(0.027)	(0.027)	(0.026)	(0.026)	(0.035)	(0.036)	(0.006)	(0.008)
Duration of stay in mun. (ref ≤2 years)														
2–6 years	1.309*	1.227*	1.178*	1.256*	1.158*	1.060	1.422*	1.320*	1.339*	1.228*	1.476*	1.399*	1.413*	1.235*
	(0.014)	(0.015)	(0.032)	(0.035)	(0.032)	(0.031)	(0.041)	(0.039)	(0.039)	(0.037)	(0.050)	(0.051)	(0.049)	(0.046)
6–10 years	1.360*	1.075*	1.259*	1.133*	1.226*	0.893*	1.504*	1.172*	1.352	1.036	1.382*	1.232*	1.236*	0.955
	(0.019)	(0.018)	(0.043)	(0.041)	(0.048)	(0.034)	(0.054)	(0.048)	(0.050)	(0.043)	(0.058)	(0.055)	(0.054)	(0.045)
>=10 years	1.501*	0.451*	1.373*	0.549*	1.349*	0.468*	1.586*	0.561*	1.489*	0.522*	1.626*	0.606*	1.552*	0.521*
	(0.016)	(0.007)	(0.038)	(0.020)	(0.038)	(0.018)	(0.045)	(0.022)	(0.043)	(0.020)	(0.059)	(0.030)	(0.057)	(0.026)

Housing tenure (ref = owner-occupied)														
Rental	8.132*	7.032*	6.483*	5.667*	6.398*	4.942*	6.441*	5.793*	6.169*	5.550*	9.364*	7.118*	9.014*	6.728*
	(0.079)	(0.085)	(0.156)	(0.151)	(0.165)	(0.139)	(0.166)	(0.166)	(0.161)	(0.162)	(0.308)	(0.256)	(0.299)	(0.248)
Education (ref = neither partner univ.)														
Only man university	1.106*	1.447*	1.147*	1.288*	1.132*	1.149*	1.134*	1.300*	1.080	1.223*	1.141*	1.376*	1.058	1.203*
	(0.017)	(0.025)	(0.041)	(0.048)	(0.042)	(0.045)	(0.043)	(0.053)	(0.041)	(0.051)	(0.051)	(0.067)	(0.048)	(0.061)
Only woman university	1.108*	1.312*	1.161*	1.241*	1.152*	1.150*	1.181*	1.223*	1.124*	1.164*	1.103	1.316*	1.021	1.165*
	(0.014)	(0.020)	(0.035)	(0.041)	(0.035)	(0.040)	(0.038)	(0.045)	(0.036)	(0.044)	(0.042)	(0.057)	(0.040)	(0.052)
Both partners university	0.968	1.503*	1.101*	1.264*	1.072*	1.051	1.187*	1.270*	1.062	1.128*	0.938	1.308*	0.821*	1.041
	(0.013)	(0.023)	(0.033)	(0.040)	(0.034)	(0.037)	(0.038)	(0.045)	(0.035)	(0.042)	(0.035)	(0.053)	(0.033)	(0.045)
Household income (percentiles)	1.023*	1.024*	1.020*	1.023*	1.020*	1.022*	1.018*	1.021*	1.019*	1.022*	1.030*	1.026*	1.015*	1.013*
	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)
Woman's contribution (ref ≤40%)														
40–60%	0.851*	0.832*	0.816*	0.820*	0.811*	0.791*	0.904*	0.839*	0.883*	0.814*	0.763*	0.808*	0.752*	0.771*
	(0.009)	(0.011)	(0.024)	(0.027)	(0.023)	(0.026)	(0.027)	(0.029)	(0.027)	(0.028)	(0.029)	(0.034)	(0.028)	(0.033)
60–100%	0.954*	1.105*	0.880*	0.980	0.877*	0.915	0.946	1.006	0.919	0.975	0.875	0.997	0.842	0.936
	(0.018)	(0.026)	(0.040)	(0.051)	(0.040)	(0.049)	(0.046)	(0.057)	(0.045)	(0.056)	(0.059)	(0.074)	(0.058)	(0.070)
Time to first birth (ref = no birth < 2 years)														
Two years before	1.508*	1.442*	1.458*	1.591*	1.622*	1.447*	1.421*	1.501*	1.513*	1.431*	1.657*	1.529*	1.502*	1.612*
	(0.027)	(0.033)	(0.069)	(0.090)	(0.105)	(0.111)	(0.072)	(0.079)	(0.115)	(0.112)	(0.096)	(0.103)	(0.128)	(0.150)
One year before	1.438*	1.428*	1.484*	1.721*	1.458*	1.333*	1.511*	1.475*	1.407*	1.296*	1.577*	1.592*	1.538*	1.498*
	(0.023)	(0.028)	(0.061)	(0.083)	(0.084)	(0.089)	(0.066)	(0.068)	(0.095)	(0.090)	(0.083)	(0.093)	(0.114)	(0.123)
Year of first birth	1.244*	1.152*	1.476*	1.645*	1.228*	0.979	1.398*	1.282*	1.220*	1.066	1.307*	1.325*	1.167	0.973
	(0.019)	(0.022)	(0.056)	(0.073)	(0.067)	(0.064)	(0.057)	(0.057)	(0.076)	(0.070)	(0.067)	(0.075)	(0.084)	(0.081)
One year after	1.356*	1.317*	1.475*	2.159*	1.342*	1.102	1.503*	1.362*	1.365*	0.958	1.479*	1.541*	1.284*	0.938
	(0.022)	(0.026)	(0.060)	(0.094)	(0.075)	(0.071)	(0.064)	(0.064)	(0.086)	(0.068)	(0.078)	(0.090)	(0.094)	(0.083)
Two years after	1.783*	1.754*	1.930*	3.024*	1.617*	1.346*	1.857*	1.678*	1.644*	1.125	1.987*	2.339*	1.885*	1.297*
	(0.030)	(0.036)	(0.084)	(0.137)	(0.093)	(0.086)	(0.085)	(0.083)	(0.108)	(0.083)	(0.111)	(0.137)	(0.136)	(0.110)
Three years after	1.543*	1.592*	1.704*	2.467*	1.525*	1.083	1.653*	1.561*	1.531*	1.109	1.587*	2.004*	1.425*	1.318*
	(0.030)	(0.037)	(0.085)	(0.125)	(0.093)	(0.075)	(0.085)	(0.087)	(0.106)	(0.087)	(0.105)	(0.132)	(0.118)	(0.113)
4–7 years after	1.523*	1.028	1.524*	1.469*	1.420*	0.728*	1.452*	1.017	1.355*	0.756*	1.610*	1.157	1.587*	0.702*
	(0.029)	(0.026)	(0.077)	(0.082)	(0.080)	(0.048)	(0.074)	(0.061)	(0.083)	(0.056)	(0.110)	(0.087)	(0.119)	(0.062)
Settlement type (ref = suburb)														
City, high-density neighbourhood					0.907*	0.590*			1.290*	1.017			1.207*	0.961
					(0.038)	(0.033)			(0.057)	(0.051)			(0.073)	(0.071)
City, lower-density neighbourhood					0.762	0.830			0.791*	0.930			0.972	0.962
					(0.105)	(0.125)			(0.068)	(0.079)			(0.086)	(0.093)

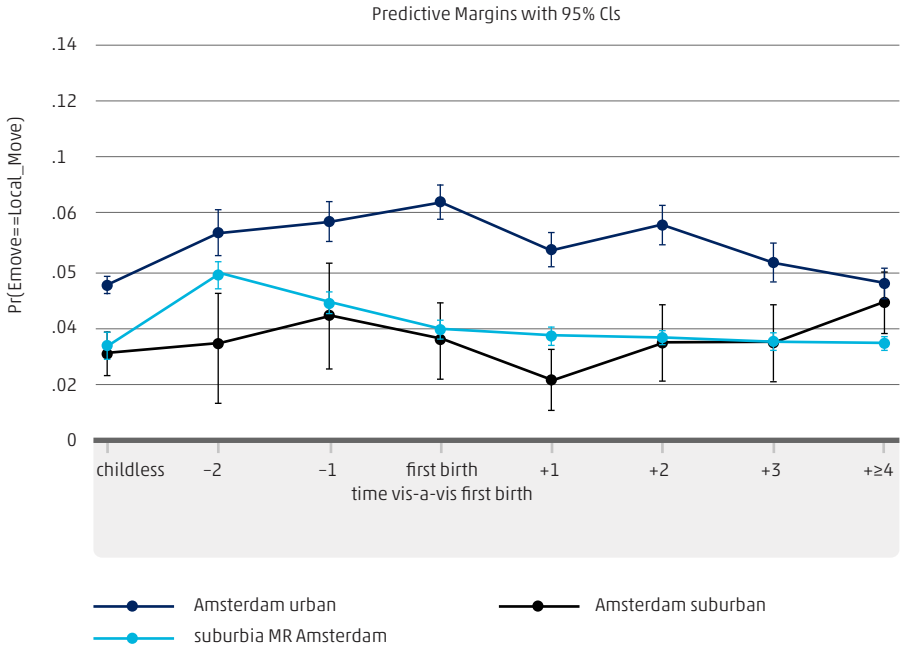
5.4.1.1 Multinomial regression analysis of couple's moves within municipalities (local move) and between municipalities (outmigration) (base outcome = no move), relative risk ratios (standard errors) (continued)

	The Netherlands		MR Amsterdam				MR R'dam / TH				MR Utrecht			
	Model 1		Model 2a		Model 2b		Model 3a		Model 3b		Model 4a		Model 4b	
	local	mig.	local	mig.	local	mig.	local	mig.	local	mig.	local	mig.	local	mig.
Settlement type (ref = suburb)														
City, high-density neighbourhood					0.907*	0.590*			1.290*	1.017			1.207*	0.961
					(0.038)	(0.033)			(0.057)	(0.051)			(0.073)	(0.071)
City, lower-density neighbourhood					0.762	0.830			0.791*	0.930			0.972	0.962
					(0.105)	(0.125)			(0.068)	(0.079)			(0.086)	(0.093)
Settlement type * time to first birth														
City, high-density * two years before					0.820	1.267			0.892	1.193			1.216	0.972
					(0.077)	(0.145)			(0.093)	(0.128)			(0.150)	(0.140)
City, high-density * one year before					1.043	1.791*			1.148	1.344*			1.127	1.274
					(0.086)	(0.174)			(0.103)	(0.128)			(0.150)	(0.160)
City, high-density * year of first birth					1.469*	2.895*			1.354*	1.568*			1.426*	2.117*
					(0.111)	(0.264)			(0.112)	(0.141)			(0.152)	(0.257)
City, high-density * one year after					1.278*	3.956*			1.274*	2.100*			1.382*	3.037*
					(0.103)	(0.353)			(0.110)	(0.200)			(0.155)	(0.374)
City, high-density * two years after					1.555*	5.491*			1.375*	2.373*			1.244	3.866*
					(0.127)	(0.478)			(0.121)	(0.230)			(0.139)	(0.450)
City, high-density * three years after					1.361*	6.032*			1.311*	2.139*			1.382*	3.152*
					(0.121)	(0.553)			(0.121)	(0.220)			(0.174)	(0.378)
City, high-density * 4–7 years after					1.173	5.697*			1.234*	1.932*			1.167	4.316*
					(0.083)	(0.451)			(0.086)	(0.169)			(0.113)	(0.456)
City, lower-density * two years before					0.591	1.674			0.910	0.540*			1.082	0.786
					(0.211)	(0.508)			(0.184)	(0.124)			(0.203)	(0.167)
City, lower-density * one year before					0.904	1.280			1.022	0.842			0.750	0.726
					(0.251)	(0.370)			(0.175)	(0.145)			(0.133)	(0.139)
City, lower-density * year of first birth					0.910	2.208*			0.858	0.715			0.743	0.967
					(0.231)	(0.526)			(0.141)	(0.120)			(0.128)	(0.175)
City, lower-density * one year after					0.584	1.664			0.920	1.079			1.181	1.258
					(0.176)	(0.421)			(0.149)	(0.177)			(0.184)	(0.226)
City, lower-density * two years after					0.956	1.648			0.925	1.131			0.902	1.410
					(0.241)	(0.405)			(0.149)	(0.182)			(0.143)	(0.234)
City, lower-density * three years after					1.031	2.381*			0.785	1.296			1.146	1.277

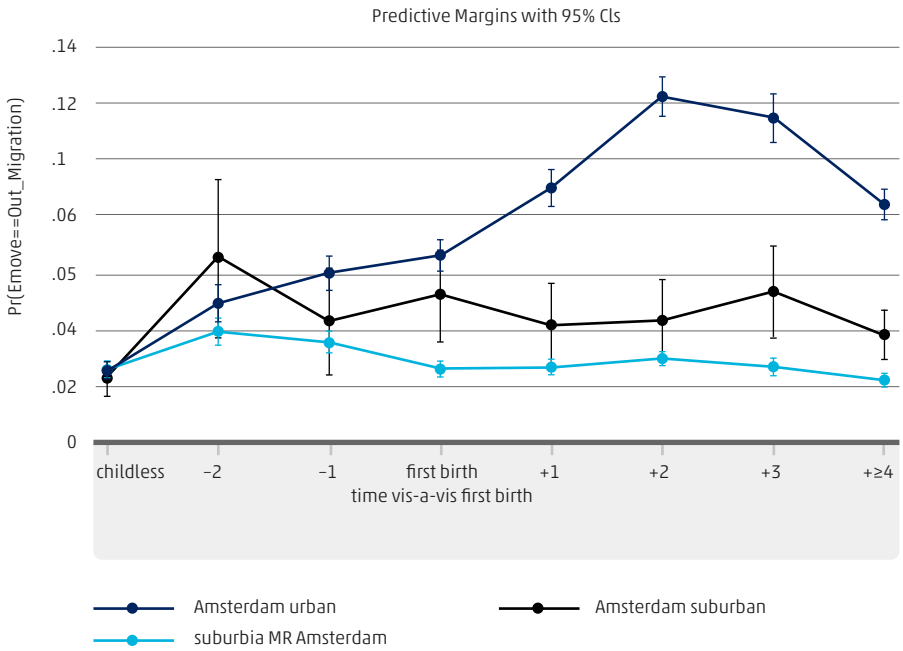
City, lower-density * 4–7 years after			1.527	2.259*	1.085	1.544*	0.895	1.603*
			(0.284)	(0.450)	(0.131)	(0.196)	(0.118)	(0.227)
Observations	1,564,036	214,619	214,619		201,202	201,202	140,315	140,315
Pseudo R2	.11	.10	.11		.09	.10	.10	.12
BIC	841,289.683	136,085.011	135,125.751		123,885.503	123,435.428	84,105.012	83,590.26

Source: Statistics Netherlands (SSD, own calculations).
*p<0.01

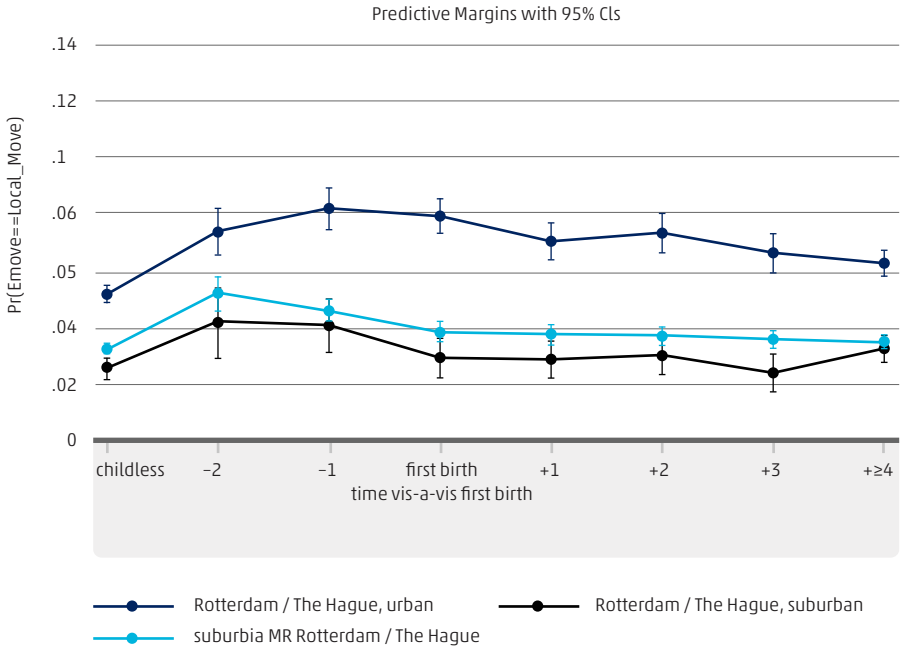
5.4.1.2a Predicted probabilities of local moves, couples around family formation, MR Amsterdam



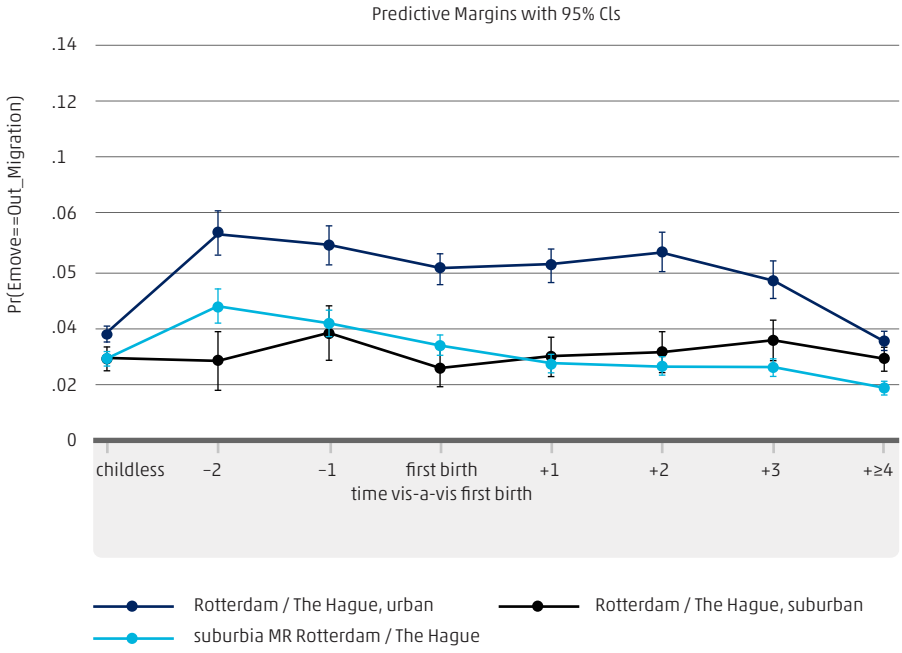
5.4.1.2b Predicted probabilities of out-migration, couples around family formation, MR Amsterdam



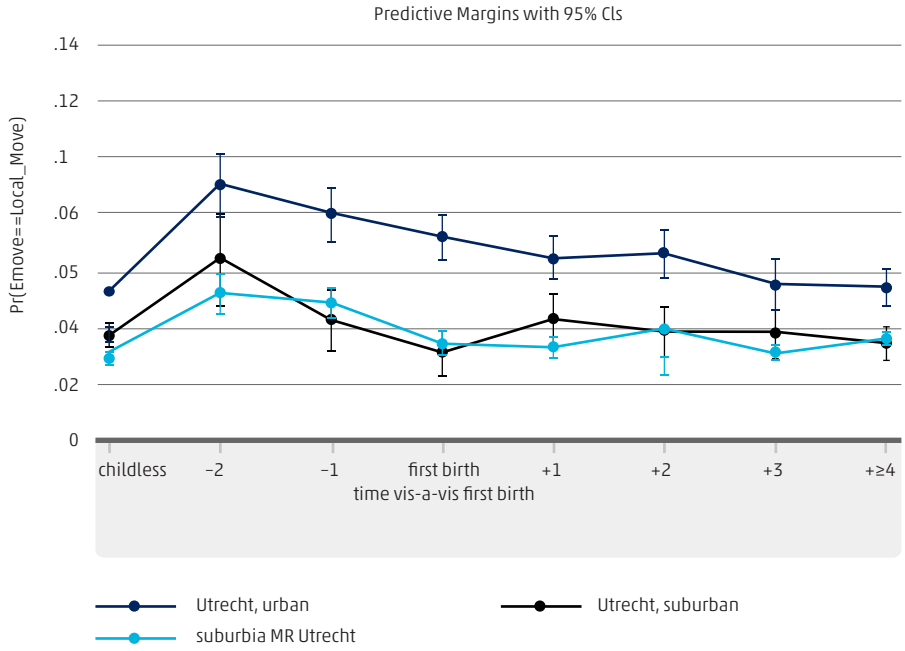
5.4.1.2c Predicted probabilities of local moves, couples around family formation, MR Rotterdam/The Hague



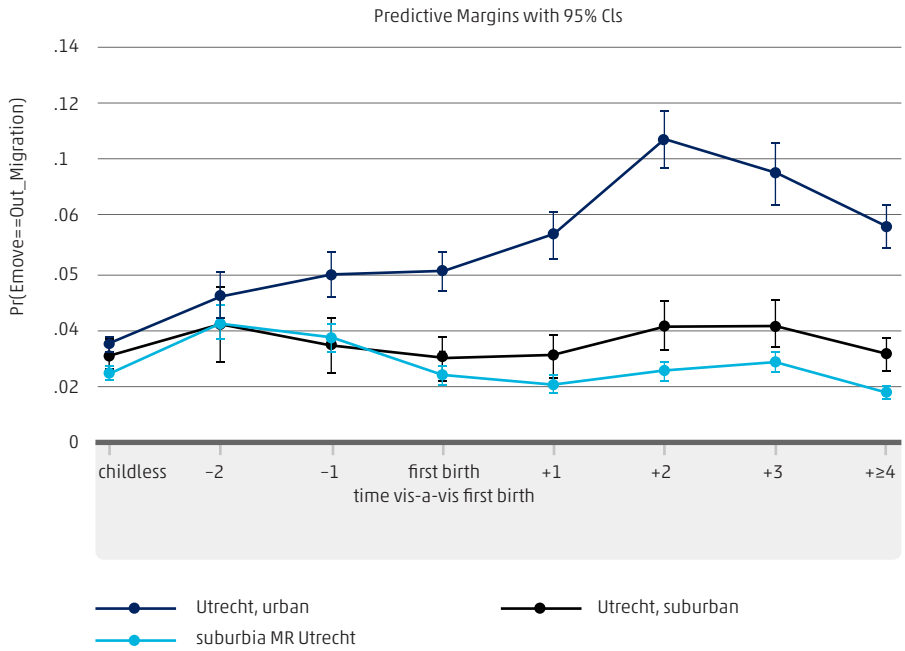
5.4.1.2d Predicted probabilities of out-migration, couples around family formation, MR Rotterdam/The Hague



5.4.1.2e Predicted probabilities of local moves, couples around family formation, MR Utrecht



5.4.1.2f Predicted probabilities of out-migration, couples around family formation, MR Utrecht



Source: Statistics Netherlands (SSD, own calculations).

5.4.2 Stated preferences

To infer that these patterns of actual mobility behaviour reflect families' preferences to reside in rural and, to a lesser extent, suburban living environments, it was necessary to analyse families' stated intentions to move, and subsequently, the extent to which they realised these intentions. If characteristics of the dwelling itself were not controlled for, families who resided in cities were indeed most likely to report intentions to move towards another place of residence (table 5.4.2.1, model 5). Compared to families in non-urban municipalities, those in the four largest cities were 1.9 (Utrecht) to 2.6 (Amsterdam) times more likely to intend to leave. Families in medium-sized cities were 1.4 times more likely to have intentions to leave than those in non-urban municipalities. However, urban families also most often intended to move within their place of residence. These associations were equally strong[16]. This indicates a strong need among urban families to adjust their housing situation without having a clear preference for staying in the city or leaving.

In model 6, characteristics of the dwelling itself were added, which strongly improved the explanatory power of the model. These dwelling characteristics were strongly associated with families' intentions to move. Room stress appeared to be an important motive for moving intentions. Families with more household members than rooms were 3 times more likely to express intentions to move locally, and 2 times more likely to intend to move to another place of residence. In addition to room stress, living in an apartment and living in a rental house were also strongly associated with intentions to move. Because room stress, apartments and rental housing are much more common among families in cities, the association between settlement type and intentions to move was weaker after the addition of these variables. Taking into account these dwellings characteristics, urban families intended to move to another place of residence hardly more often than non-urban families. Compared to non-urban families, only families living in The Hague and in medium-sized cities exhibited significantly more intentions to move to another place of residence, if characteristics of the dwelling itself were controlled for. The coefficients for families in Amsterdam, Rotterdam and Utrecht were also still positive but no longer significant. Surprisingly, families in Amsterdam were less likely to have intentions to move locally if objective characteristics of the dwelling were accounted for. This suggests that families living in Amsterdam in relatively good housing conditions expected to be unable to improve their housing situation through local moves.

[16] The average marginal effects of urban environments on the intention to move locally is even stronger than on the intention to leave because the baseline probability of intentions to move locally is more than twice as high as the baseline probability of intentions to leave.

5.4.2.1 Multinomial regression analyses of intentions to move (within 2 years) within the place of residence or to another place of residence (base outcome = no (serious) intention to move)

	Model 5				Model 6			
	Local move		Out-migration		Local move		Out-migration	
	RRR (se)	**ME (se)**	**RRR (se)**	**ME (se)**	**RRR (se)**	**ME (se)**	**RRR (se)**	**ME (se)**
Tenure (ref = owner-occupied)								
Private rent					3.049*** (0.320)	0.052*** (0.007)	2.787*** (0.398)	0.023*** (0.005)
Social rent					2.498*** (0.181)	0.041*** (0.004)	1.628*** (0.187)	0.008** (0.003)
Dwelling type (ref = single-family)								
Apartment					4.030*** (0.289)	0.053*** (0.003)	2.376*** (0.270)	0.013*** (0.002)
Room stress (ref = rooms>persons)								
Rooms=persons					1.568*** (0.105)	0.017*** (0.003)	1.174 (0.117)	0.002 (0.002)
Rooms<persons					3.164*** (0.297)	0.055*** (0.006)	2.011*** (0.300)	0.013** (0.004)
Place of residence (ref = small municipality)								
Medium-sized city	1.683*** (0.103)	0.022*** (0.003)	1.441*** (0.136)	0.006** (0.002)	1.497*** (0.097)	0.017*** (0.003)	1.335** (0.130)	0.005* (0.002)
Amsterdam	2.630*** (0.317)	0.048*** (0.008)	2.622*** (0.493)	0.021** (0.006)	0.697** (0.092)	-0.012** (0.004)	1.117 (0.231)	0.003 (0.004)
Rotterdam	2.394*** (0.295)	0.042*** (0.008)	2.109*** (0.435)	0.015* (0.006)	1.056 (0.140)	0.002 (0.005)	1.286 (0.276)	0.005 (0.004)
The Hague	2.415*** (0.234)	0.042*** (0.006)	2.557*** (0.379)	0.021*** (0.005)	1.126 (0.119)	0.004 (0.004)	1.580** (0.249)	0.009* (0.004)
Utrecht	1.880*** (0.260)	0.027*** (0.008)	1.868** (0.380)	0.012* (0.005)	1.107 (0.165)	0.003 (0.006)	1.483 (0.309)	0.008 (0.005)
Observations				36,560				36,560
Pseudo r-squared				.09				.15
BIC				19,979.922				18,141.863

Source: Statistics Netherlands (SSD, own calculations).
*** p<0.001, ** p<0.01, * p<0.05

In sum, these results indicate that urban families had intentions to move both locally and to other municipalities more often than non-urban families. Second, the stronger intentions to move among families in cities stemmed for the major part from the dwellings in which they lived. Most associations between the control variables and intentions to move were in line with patterns of actual mobility. The relationship between duration of stay and moving intentions was quadratic: moving intentions increased during the first three years in a dwelling and thereafter started to decrease. Moving intentions decreased with age and were highest when children were below school age. Families with two or more children

were less likely to intend to move. Migrants with a non-Western background more often intended to move within their place of residence, but only if characteristics of the dwelling were not controlled for. If these were controlled for, migrants intended to move to other municipalities less often.

5.4.3 Moving intentions and actual mobility

Among families with the intention to move within their place of residence in the next two years, 57% still lived at the same address two years after the interview. Hence, even when a strict operationalisation of intentions to move was applied, the majority of families with intentions to move locally stayed put. Slightly more than one-third (34%) realised their intention and actually moved within the municipality, whereas 9% moved to another municipality. In model 7, actual mobility propensities were estimated for families with the intention to move within their place of residence (table 5.4.3.1). Families living in Amsterdam appeared to face more constraints to realise these intentions. Despite the small number of observations, the relative risk ratio of 0.5 was statistically significant, indicating that families in Amsterdam were two times less likely to realise their intention to move locally than families in non-urban settings. The average marginal effects demonstrates that the probability to realise moving intentions was 13 percentage points lower among families in Amsterdam than among non-urban families. Estimates for families in the other large cities and in medium-sized cities also suggest that they experienced more constraints to realise their intentions to make a local move, but these were not statistically significant. In addition to fluctuations on the national housing market, the expected micro-factors – more financial resources, higher education, a native background and living in a rental property – increased the likelihood that families succeeded in realising their intention to move within their place of residence.

5.4.3.1 Multinomial regression analyses of residential moves within and between municipalities 2 years after interview date (base outcome = no residential move), families with children with intentions to move within their place of residence (model 7) and with no intentions to move (model 8)

	Model 7: families with intention to move locally				Model 8: families with no intention to move			
	Local move		Out-migration		Local move		Out-migration	
	RRR (se)	**ME (se)**	**RRR (se)**	**ME (se)**	**RRR (se)**	**ME (se)**	**RRR (se)**	**ME (se)**
Place of residence (ref = small municipality)								
Medium-sized city	0.862 (0.122)	−0.036 (0.029)	1.118 (0.265)	0.014 (0.017)	1.106 (0.087)	0.003 (0.003)	0.946 (0.123)	-0.001 (0.002)
Amsterdam	0.502* (0.147)	−0.134** (0.050)	0.926 (0.403)	0.015 (0.033)	0.824 (0.162)	-0.007 (0.005)	2.062** (0.456)	0.014* (0.005)
Rotterdam	0.746 (0.210)	−0.052 (0.057)	0.704 (0.404)	-0.014 (0.034)	1.192 (0.229)	0.005 (0.007)	1.937** (0.482)	0.011* (0.006)
The Hague	0.863 (0.193)	−0.033 (0.046)	1.016 (0.404)	0.006 (0.028)	1.184 (0.166)	0.006 (0.005)	0.952 (0.225)	-0.001 (0.003)
Utrecht	0.986 (0.312)	−0.010 (0.065)	1.213 (0.602)	0.015 (0.037)	1.173 (0.209)	0.006 (0.007)	0.716 (0.238)	-0.004 (0.003)
Observations				1,517				32,825
Pseudo r-squared				.08				.11
BIC				2,873.402				13,866.855

Source: Statistics Netherlands (SSD, own calculations).
*** p<0.001, ** p<0.01, * p<0.05

Families with no (definite) intentions to move within two years were very unlikely to move in the two years after the interview: 2.5% moved within the municipality and fewer than 1% moved to another municipality. However, families in Amsterdam and Rotterdam were almost twice as likely as families in non-urban settlements to move to other municipalities, in contradiction with their earlier stated intentions to stay put (model 8). This suggests that families in the two largest cities of the Netherlands relatively often proceeded quickly through the mobility decision-making process, and left the city only a short time after developing intentions to move. Families in other cities were not more likely than non-urban families to leave their municipality, despite earlier intentions to stay. Fluctuations on the housing market impacted the odds of moving. After 2015, as mobility rates continued to rise, more families made residential moves, although they had had no intentions to do so two years earlier. Especially families with young children (below school age) were likely to move in contradiction with earlier intentions to stay. This also applied to renters, young parents and the highly educated.

5.5 Discussion and conclusion

As a part of the urban resurgence (Turok & Mykhnenko, 2008) or reurbanisation trend (Kabisch & Haase, 2011) the number of families with children is on the rise again in several European cities (Booi & Boterman, 2020; Lilius, 2014). Although several studies have suggested that cities have become more popular environments in which to raise children, empirical data on actual residential mobility in the Netherlands indicate that the birth of a first child is still a turning point in the life course (Stone et al., 2014) that triggers couples to leave the city. The relationship between family formation and actual mobility behaviour still strongly depends on the spatial context in which couples live: moving down the urban hierarchy remains the dominant trend for young families. Among couples in inner cities, the event of first childbirth strongly increases the likelihood of leaving the municipality, while it alters the likelihood of local moves to a much lesser extent. Meanwhile, in non-urban municipalities within metropolitan areas, couples are less likely to leave their municipality in the years after first childbirth. In these suburban environments outside the city, couples tend to adjust their housing situation through local moves. In general, these patterns support the first hypothesis, although there is serious inter-urban variation in the strength and timing of the effect.

However, some findings nuance the inference that young families still strongly prefer suburban locations outside the city. First, during the latest decades the boundaries between inner cities and suburbs are blurring as many family-targeted neighbourhoods have been built within cities, a process referred to as 'inner-city suburbanization' (Frank, 2016). These lower-density neighbourhoods in the four largest cities in the Netherlands were shown to be relatively successful in retaining couples around family formation. Second, analyses of families' intentions to move challenge the assumption that patterns of actual mobility merely reflect revealed preferences for suburban or rural living environments. Urban families are not only more likely than non-urban families to have intentions to move to another place of residence, but, contrary to the second hypothesis, they are also more likely to have intentions to move within their place of residence. However, urban families appear to face more constraints to realising their intentions to make a local move, especially in Amsterdam. This finding supports the third hypothesis and earlier suggestions that tight, expensive housing markets prevent urban families from making local moves (Clark & Huang, 2003; Kulu & Steele, 2013). Since the absolute number of urban families with intentions to move was low in this study, however, this analysis suffered from a lack of statistical power. Further research should continue to examine the link between moving intentions and realisations in different spatial contexts. Third, the dwelling itself is a crucial factor in shaping urban families' intentions to move. If room stress and dwelling type are taken into

account, urban families are hardly more likely than non-urban families to intend to move towards another place of residence. This suggests that it is the lack of supply of more spacious single-family dwellings that triggers young families to leave the city, more than the desire for a non-urban living environment. These findings might encourage urban policy makers to continue planning family-targeted neighbourhoods in inner cities, especially in Amsterdam.

Since this study did not make a historical comparison, it remains unclear whether the effect of family formation on moving behaviour has changed over time. Future research should compare different cohorts to identify potential trends in the effect of family formation on location preferences in general, and on out-migration from cities in particular. The growing presence of families in cities probably stems from an increase in the number of childless couples that are 'at risk' of starting a family. Driven, among others, by the expansion of higher education, the transformation to a post-industrial knowledge-economy, and the delay of parenthood among younger generations, cities are experiencing an enhanced popularity among groups for whom they have always been attractive: young singles and childless couples. Furthermore, a significant part of the population inflow in large cities concerns immigration. The internationalisation of cities might also increase the number of urban families, because migrant families are less likely to leave the city. Another drawback of this study concerns the period under review, which was characterised by a serious reduction of residential mobility due to the financial crisis and a recovery and catch-up phase afterwards. An attempt was made to account for this specific situation by comparing mobility behaviour between locations and between household types, and by taking into account a wide array of households' background characteristics, including housing tenure, education, income and ethnic background. However, the crisis and its aftermath potentially had a different impact on different locations and different social groups. Therefore future empirical research should better account for business cycles by incorporating a broader research period.

Appendix

A5.1 Summary statistics of variables used in the analyses of actual mobility behavior (models 1-4)

	Model 1	Model 2	Model 3	Model 4
Model				
Geographical area	The Netherlands	MR Amsterdam	MR Rotterdam / The Hague	MR Utrecht
Couple-years	1,564,036	214,619	201,202	140,315
Couples	228,474	34,899	32,204	22,126
	%			
Residential mobility				
Move within municipality	4,5	4,8	4,7	4,4
Move between municipalities	2,7	3,9	3,6	3,6
Time relative to first birth				
No first birth within two years	30,4	30,9	32,5	28,0
2 years before first birth	4,6	4,8	4,7	5,0
1 year before first birth	6,9	7,2	7,0	7,4
Year of first birth	9,7	10,0	9,6	10,1
1 year after first birth	9,4	9,6	9,3	9,9
2 years after first birth	9,1	9,1	8,8	9,4
3 years after first birth	8,6	8,4	8,2	8,8
≥ 4 years after first birth	21,3	20,0	19,9	21,4
Settlement type				
City, high-density neighbourhood		31,9	34,9	24,5
City, lower-density neighbourhood		3,5	11,5	13,3
Smaller municipality (suburb)				
Period				
2009-2010	27,3	28,4	28,0	27,3
2011-2013	37,7	38,0	37,8	37,7
2014-2016	35,0	33,6	34,2	35,0
Tenure				
Owner-occupied	82,9	75,3	80,4	82,1
Rental	17,1	24,7	19,6	17,9
Married	54,4	51,1	56,3	54,3
More than one child in household	20,9	18,9	17,9	22,0
Partners with university degree				
Neither partner	73,3	63,0	68,3	58,2
Male partner only	6,7	8,9	8,4	9,3
Female partner only	11,3	13,7	11,5	14,9
Both partners	8,7	14,4	11,8	17,6
Female partner has migrant status	17,4	29,0	30,0	17,3
Male partner has migrant status	14,4	24,3	25,1	14,0
Woman's share of household income				
0-40%	32,7	28,0	30,3	27,5
40-60%	61,6	64,8	63,2	67,3
60-100%	5,7	7,2	6,5	5,2

A5.1 Summary statistics of variables used in the analyses of actual mobility behavior (models 1-4) (continued)

	Model 1	Model 2	Model 3	Model 4
Duration in municipality (woman, at start)				
< 2 years	30,6	31,9	31,9	35,0
2–5 years	24,6	28,8	27,0	26,6
6–9 years	11,3	12,6	11,8	14,0
≥10 years	33,5	26,7	29,3	24,4
	Mean (min; max)			
Age female partner in years (at start)	28,8 (25; 34)	29,1 (25; 34)	28,9 (25; 34)	28,9 (25; 34)
Age male partner in years (at start)	31,6 (25; 49)	32,0 (25; 49)	31,8 (25; 49)	31,6 (25; 49)
Household income (percentiles)	66,3 (0; 100)	69,3 (0; 100)	68,3 (0; 100)	70,9 (0; 100)

Source: Statistics Netherlands (SSD, own calculations).

A5.2 Summary statistics of variables used in the analyses of intentions to move (models 5-6)

	Small municipalities	Medium-sized cities	Amsterdam	Rotterdam	The Hague	Utrecht	Total
Observations (number)	25,457	7,151	819	801	1517	815	36,560
	%						
Year of interview							
2009	36,0	47,3	46,5	47,4	56,5	40,0	39,6
2012	35,6	29,9	29,5	27,9	29,5	24,2	33,6
2015	28,5	22,9	24,0	24,7	14,1	35,8	26,7
Age (mean)	39,6	38,8	38,6	38,4	38,2	38,1	39,3
Sex							
Male	44,6	45,2	45,5	44,3	46,0	49,8	44,9
Female	55,4	54,8	54,5	55,7	54,0	50,2	55,1
Number of children							
1	27,2	32,6	37,8	40,0	33,5	35,8	29,2
2	50,8	49,0	39,7	40,0	47,0	42,3	49,6
≥3	22,0	18,4	22,5	20,0	19,5	22,0	21,2
Age youngest child							
<4	18,2	21,6	27,8	24,6	22,2	30,1	19,6
4–11	39,3	40,5	39,3	32,8	41,4	41,2	39,5
≥12	42,5	38,0	32,9	42,7	36,4	28,7	40,9
Migrant status							
Native	86,6	73,3	41,5	43,3	48,5	64,1	80,0
Migrant, non-western	6,5	17,4	46,8	47,6	41,1	27,2	12,3
Migrant, western	6,9	9,2	11,8	9,1	10,4	8,7	7,7
Level of education							
Low	21,7	23,0	24,7	34,2	30,2	22,0	22,6
Medium	43,7	38,5	32,2	34,1	35,2	23,5	41,4
High	34,7	38,6	43,1	31,7	34,6	54,5	36,0

A5.2 Summary statistics of variables used in the analyses of intentions to move (models 5-6) (continued)

	Small municipalities	Medium-sized cities	Amsterdam	Rotterdam	The Hague	Utrecht	Total
Household income percentile (mean)	57,3	53,0	53,3	49,7	50,1	61,2	56,0
Duration of stay in years (mean)	9,9	8,8	7,7	8,3	7,0	7,4	9,4
Tenure							
Owner-occupied	85,6	76,9	45,3	55,8	62,5	70,3	81,1
Private rent	2,9	3,1	10,5	6,5	11,2	4,7	3,6
Social rent	11,5	20,0	44,2	37,7	26,3	25,0	15,3
Dwelling type							
Single-family	94,2	88,4	26,9	47,1	51,4	75,7	88,4
Apartment	5,9	11,6	73,1	52,9	48,6	24,3	11,6
Room stress							
Rooms>persons	69,6	64,6	30,3	45,3	51,2	59,1	66,3
Rooms=persons	24,2	26,4	39,5	32,4	30,0	26,2	25,5
Rooms<persons	6,1	9,0	30,2	22,3	18,9	14,7	8,3
Intention to move							
No	95,2	91,1	83,2	85,0	85,0	88,4	93,3
Yes, within place of residence	3,3	6,6	12,6	11,6	11,1	8,1	4,7
Yes, to another place	1,5	2,3	4,2	3,4	3,9	3,5	1,9

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Publication overview

This dissertation in based on four articles with the following references:

Kooiman, N., Latten, J. J., & Bontje, M. (2018). Human capital migration: a longitudinal perspective. *Tijdschrift voor Economische en Sociale Geografie*, 109(5), 644-660. https://doi.org/10.1111/tesg.12324.

Kooiman, N., Das, M., & Musterd, S. (2024). Graduate migration and labour market trajectories: the effect of partnership ties for men and women. *Article re-submitted for publication in an international peer-reviewed journal*.

Kooiman, N., & Das, M. (2022). Understanding couple migration towards core and peripheral regions: The role of men's and women's education. *Comparative Population Studies*, 47. https://doi.org/10.12765/CPoS-2022-12.

Kooiman, N. (2020). Residential mobility of couples around family formation in the Netherlands: stated and revealed preferences. *Population, Space and Place*, 26(8), 1-16. https://doi.org/10.1002/psp.2367.

The first author conducted the majority of the work, including the preparation, analysis, and visualization of the data across all four articles, as well as the bulk of the writing. The co-authors contributed to the research design and theoretical framework. Sako Musterd and Marjolijn Das provided overall guidance throughout the PhD process.

Summary

Human capital migration from a life course perspective: the role of geography and gender

Introduction

This thesis addresses the topic of spatial mobility patterns in the young adult life course with a special focus on internal migration, which refers to long-distance moves within national boundaries that cross regional labour market areas. In Western countries nowadays internal migration is the main driver of regional population redistribution. Internal migration affects the redistribution of population not only in quantity but also in terms of qualified human capital. Highly educated individuals tend to be more mobile than others, and recent evidence indicates that internal migration flows are becoming even more selective regarding educational attainments.

Migration of highly educated individuals has significant implications at both national and regional levels. Nationally, internal migration is seen as a way to improve labour market efficiency by addressing regional mismatches in labour supply and demand. Highly educated individuals are particularly mobile due to the specialized nature of their job searches, which are more sparsely distributed geographically. Regionally, internal migration contributes to the redistribution of human capital, crucial for economic growth in knowledge-intensive economies. Regions attracting highly educated individuals tend to prosper economically, while those experiencing out-migration of skilled workers risk economic lag. This migration pattern can lead to the spatial concentration of highly educated populations, exacerbating regional economic disparities and socio-spatial inequalities. In many countries, economic polarization between knowledge-intensive core regions and traditional industry-based peripheral regions is becoming more pronounced.

For individuals, migration is a means to achieve various life goals. The primary reasons for migration can change throughout a person's life and differ among various population groups. Particularly among the young and highly educated internal migration is driven by economic motives: opportunities for accumulating human capital and advancing careers. However, as people age, non-economic factors become more important. The decision to move over long distances is not taken lightly, as it often entails disrupting local ties. In addition, decisions on where to settle are influenced not only by individual preferences but also by ties to partners, children, and even the interconnected lives of relatives outside the household. Particularly for couples where both partners are highly educated and have specialized careers, reconciling both careers from a single location can be challenging. Metropolitan areas have been proposed as optimal locations to address this "colocation puzzle". Furthermore, in many social contexts gender has also been shown to play a role; women are typically less likely to migrate for

career reasons once partnered and are more involved in tied migration. Family formation further influences migration patterns, with couples less likely to move long distances for employment after having children, often opting for moves motivated by housing and living environment needs. Recent trends have suggested a weaker link between family formation and suburbanization, with more families staying in urban settings.

This dissertation explores the patterns of human capital migration in the Netherlands from a life course perspective, focusing on individuals aged 17 to 35, a period characterized by significant demographic and socio-economic transitions. These transitions include leaving the parental home, forming unions, having children, completing higher education, entering the labour market, and changing jobs, all of which are catalysts for mobility. This dissertation contributes to a comprehensive understanding of the life trajectories of highly educated individuals, examined through a geographical lens, and highlighting gender-specific patterns. The overarching research question is: *How can internal migration patterns of human capital during the early adult life course be understood in the labour market context and what are the roles of gender, partner ties and family formation?*

Data, methods and research context

The empirical analyses rely extensively on the System of Social Statistical Datasets (SDD), a system of micro-integrated administrative registers developed by Statistics Netherlands. This data source encompasses the entire registered population of the Netherlands, dating back approximately to 1995 and providing a detailed, longitudinal perspective at the micro-level. It enables the analysis of actual moving behaviour embedded in individual life courses including households careers, housing careers, and educational and labour market careers. In addition to administrative data, the analyses are supplemented with survey data from the Dutch Labour Force Survey and the Dutch Housing Survey, which provide information on occupations, housing preferences and moving desires. This combination of register and survey data allows for conceptualizing internal migration as a process over time and to examine how restrictions at the individual level and constraints at the macro level shape discrepancies between stated preferences and actual mobility. The research methods utilized are quantitative in nature, incorporating event history analysis, various regression techniques and detailed descriptive statistics.

Contextually, the dissertation situates its findings within the institutional, structural and socio-cultural context of the Netherlands. The Netherlands has seen significant population growth since 1960, outpacing the EU average. This growth has been

concentrated in the urban core region known as the Randstad, which includes the densest labour market and cities like Amsterdam, Rotterdam, The Hague, and Utrecht. Unlike other European countries with dominant single metropolises, the Dutch urban system is polycentric, featuring multiple centres of economic and cultural activity spread across the Randstad. Outside the Randstad, the region of Eindhoven thrives with a knowledge-based economy. Commuting distances are relatively short on average, but vary significantly based on education, employment status, and gender. In terms of welfare regimes, The Netherlands was characterized by a blend of social-democratic income redistribution with corporatist social insurance and employment agreements. Historically, government interventions aimed to reduce spatial inequalities, yet neoliberal policies since 2000 intensified socio-economic disparities, especially in housing. The shift from social to market-driven housing policies decreased social housing and increased owner-occupied housing, with less options for disadvantaged groups.

Educational attainment shows high gender equality in the Netherlands, but in terms of employment, it lags behind several other European countries, particularly the Scandinavian ones. While young women in the Netherlands have achieved higher levels of education than men, there remains a gender gap in employment. Social norms and policies strongly promote reduced working hours, especially for women. Despite the high and increasing labour force participation rate among women, the majority of women in the Netherlands continue to work part-time.

Human capital migration: a longitudinal perspective

I began my research by examining how internal migration influences the geographic distribution of human capital, using a longitudinal perspective. We tracked individuals born in 1979 from their parents' residential location when they were 16 years old until their own location at age 35. The research aimed to answer the following questions: *How do the migration paths of university graduates compare to those of individuals with lower levels of education? And how do these migration patterns contribute to regional disparities in terms of human capital distribution?* Additionally, the study explored whether the Dutch core region (Randstad) acts as an escalator region for early career wage progression.

During the first two decades of their independent housing careers, university graduates-to-be exhibited distinct internal migration patterns compared to their less educated peers. Firstly, they were more likely to relocate over long distances throughout this phase. Secondly, while less educated individuals typically moved

locally in their early twenties, university-bound graduates showed peaks in migration before age 20 and again in their mid-20s. Thirdly, their migration paths showed geographic variations: initially evenly distributed across the country while still residing in their parental homes, they tended to move towards university towns during their academic years, and eventually concentrated predominantly in the metropolitan core region (Randstad) right after graduation. This trend supports earlier findings on graduate transitions in the Netherlands. As graduates approached their late twenties, suburbanization became prominent. Many who had settled in the central cities of metropolitan areas moved from to nearby suburbs. Overall, these selective migration patterns contributed significantly to the spatial redistribution of human capital, concentrating cognitive talent in the core region by age 35, while reducing it significantly in many peripheral regions.

The role of gender and partner ties in migration upon graduation from university

Chapter 3 concentrated on a pivotal phase in the life trajectory of highly educated young adults: the transition from university to the labour market. This transition is closely linked to internal migration, as recent graduates expand their job search radius to mitigate mismatches between education and job opportunities, thereby enhancing their chances of securing suitable employment. In addressing this, chapter 3 explored the following research question: *How do partnership ties shape migration behaviour of recent male and female graduates and, as a potential consequence, their early career labour market outcomes?*

The findings revealed that a significant minority of recent graduates were living with a partner at the time of their graduation, and these relationships significantly restricted internal migration. This restriction was more pronounced among women, for two reasons: women were more likely to live with a partner at graduation, and their partners often had established local ties due to full-time jobs and higher incomes. Internal migration post-graduation was linked to higher earnings growth, but this benefit was less for those migrating with a partner. This suggests partnered graduates may choose suboptimal locations for their individual careers. Men's earnings grew faster than women's, and migration had a greater impact on men's earnings growth. However, no additional negative effect on women's earnings was observed when migrating with a partner. Ultimately, while norms on gender roles play a significant role in early career migration and outcomes, the effects do not seem to exacerbate within partnerships.

The role of gender in couple migration towards core and peripheral regions

Chapter 4 centred on the internal migration patterns of couples during approximately the first half of their professional careers. It aimed to test the colocation hypothesis in a contemporary Western-European context, where women have surpassed men in educational attainment among younger generations. The hypothesis suggests that so called 'power couples' (both partners with university degrees) are drawn to large metropolitan areas due to diverse and dense labour markets accommodating dual specialized careers. The research question addressed was: *What is the role of men's and women's human capital in long-distance couple migration and are power couples most likely to migrate from peripheral regions to the urban core region?*

The study revealed that overall long-distance moves were rare, with only 1% of couples relocating over 40 km in a three-year period. However, power couples exhibited higher mobility (4.3%) compared to non-university educated couples (0.7%). This was partly due to prior migrations distancing them from parental anchors and/or old local ties, as education's influence on migration was modest once proximity to parents was controlled. The educational achievements of both male and female partners did not differ significantly in influencing couple migration decisions, suggesting that couples equally consider both partners' career interests. However, there were indications that in the Netherlands, couples still tend to prioritize the career of the male partner. Specifically, migration patterns were more closely tied to his occupation than to hers, and migration from peripheral to core regions correlated more with the human capital of the male partner rather than the female partner. Partial evidence supporting the colocation hypothesis was identified. While power couples did not show a significantly higher tendency than other couples to migrate from more peripheral regions to the Randstad, once established in the Randstad, power couples were less inclined to leave the central area and more likely to relocate over greater distances within it. These results suggest that the concentration of power couples in the core region of the Netherlands arises from three main factors: 1) the selective migration of single university graduates towards the Randstad, 2) assortative mating and the formation of power couples, and 3) their increased propensity to remain in this central region.

Residential mobility of couples around family formation

The final empirical chapter, Chapter 5, centres on the transition to parenthood. Unlike the other empirical chapters that focused on long-distance moves, this chapter examines all residential moves, regardless of distance. It considers both revealed preferences (actual moving behaviour) and stated preferences, as well as the realisation of those preferences. While the number of urban families is increasing and several studies suggest that more families appreciate an urban environment for raising children, this chapter addresses the research question: *Is family formation still a turning point in the life course that triggers couples to leave the city?*

The analyses provide a nuanced understanding of the relationship between family formation and suburbanization. While suburbanization remains the dominant trend for young families, especially when having their first child, there are significant variations. Couples in the largest cities often move to smaller municipalities after childbirth, whereas those in smaller settlements tend to move locally. However, two findings challenge the idea that young families prefer non-urban living. First, inner-city suburbanization retains young families in lower-density neighbourhoods within large cities. Second, despite expressing a willingness to move within the city, many urban families, particularly in Amsterdam, face obstacles due to expensive housing markets, hindering local relocations. Moreover, the size of the dwelling significantly influences families' intentions to leave the city, more than neighbourhood density. These findings suggest that families leave the central cities due to a shortage of suitable housing, rather than a preference for smaller communities.

Conclusion and discussion

Overall, the empirical findings of this thesis predominantly support the human capital theory of migration. Human capital and regional labour market characteristics are critical predictors of who will migrate and who will not, but primarily during the early stages of the adult life course. The spatial redistribution of human capital in The Netherlands is driven by the migration patterns of young adults, particularly singles under the age of 30. Initially, they move to university towns across the country and then, after graduation, migrate in large numbers to the Randstad. Highly educated couples, especially those where both partners hold university degrees, are more likely to migrate within the core region but not towards the periphery. This pattern has led to increased concentration of human

capital in the Randstad and around the region of Eindhoven, while peripheral regions lag behind. Although there has been a recent increase in couples and families moving from the core to more peripheral regions, these flows remain minor compared to those of young adults. After starting a family, couples tend to avoid long-distance moves, preferring suburbanization within the same metropolitan area, especially as children reach school age. Despite a preference for urban environments, practical constraints like housing size and affordability often lead young families to relocate to surrounding settlements. This trend is most prominent in Amsterdam and reflects broader challenges in urban planning and housing policy regarding family needs and urban development.

The trend of accumulation of human capital in the core region fits within a broader context of economic and technological shifts that have changed the geography of labour demand. The Netherlands, with its hybrid welfare regime moving towards more liberal housing policies, can be compared to the United States, which serves as a prototype of a liberal welfare system and where regional economic disparities are much greater than in The Netherlands. Since the 1990's in the US, the highly educated have increasingly migrated to 'superstar city-regions' like New York, San Francisco, and Boston. This migration in the U.S. has led to rising geographical income disparities, particularly among workers with college degrees, contrasting with the post-war years when internal migration patterns contributed to regional economic convergence.

From a policy perspective, the concentration of human capital in core regions can stimulate economic growth and global competitiveness through agglomeration and learning effects. However, rising spatial inequalities may harm political stability, trust, and cooperation within countries. Support for anti-establishment, populist parties is increasingly overrepresented in peripheral regions, highlighting the socio-political implications of these migration trends. The dissertation emphasizes the need for policies that address both the benefits and drawbacks of human capital concentration, ensuring balanced regional development and mitigating the negative effects of spatial inequalities.

However, from the point of completing education onward, the effects of social norms on gender roles become evident and add nuance to the human capital theory. The results suggest that internal migration behaviour in the Netherlands exhibits a moderate gendered pattern from the moment graduates complete their education, aligning with the lower likelihood of women starting to work full-time after graduation. Partner ties significantly reduce internal migration for both genders, but women face more restrictive socio-demographic contexts, as they tend to form partnerships and cohabit at younger ages. Additionally, women's

partners are often older and more locally established already. Among existing opposite-sex couples without children, there were only moderate indications that men's careers were prioritised, with such couples generally reluctant to migrate.

Although initial gender inequalities in internal migration and their impact on labour market trajectories are minor during the early career years, these disparities can widen later in life. The small initial wage gaps between male and female partners may grow when deciding which partner will reduce working hours after family formation. Family formation remains a crucial life course transition that drives diverging labour market trajectories between men and women, with women significantly more likely to reduce working hours after the birth of their first child, a phenomenon known as the 'child penalty'. Future research could leverage the life course approach to extend beyond the snapshot provided in chapter 3 (one year after graduation) and explore the long-term effects of migration decisions made following university graduation.

This thesis has provided new insights into gendered patterns of human capital migration, particularly during the early stages of the life course. However, it also raises new questions that warrant further investigation. The empirical analyses primarily utilized register data, except for the chapter focused on mobility around family formation. The approach implicitly treated actual mobility patterns as indicative of individuals' revealed preferences. However, macro-level constraints and micro-level restrictions can often prevent households from realizing their preferences fully. To gain a deeper understanding of the gendered aspects of graduate migration and couple migration, it would be beneficial to supplement register data with survey data that explores stated preferences (individuals' intentions, motivations, and preferences) and examines to what extent these intentions are realized (actual mobility).

Secondly, to generalize these findings specific to the case of The Netherlands, they should be compared with evidence from other countries that have different structural and institutional contexts, as well as varying gender norms and practices. Thirdly, while this thesis primarily analysed the mobility patterns of university graduates, there is an increasing need to consider the spatial mobility of practically educated workers. Highly educated professionals are widely acknowledged for their role in driving economic growth, but it is equally important to recognize the essential contribution of middle-income workers in practical fields such as teaching, healthcare, and law enforcement to regional economies. In major global cities housing costs are escalating to potentially unaffordable levels for these groups. Future research should address the question to what extent these core regions have become less accessible for middle-income groups and critical professions.

Samenvatting

Verhuizingen van hoogopgeleiden vanuit een levensloopperspectief: de rol van geografie en gender

Inleiding

Dit onderzoek gaat over de ruimtelijke mobiliteit in de jongvolwassen levensloop met een speciale focus op binnenlandse migratie: lange-afstandsverhuizingen die regionale arbeidsmarktgebieden overschrijden. In de meeste geïndustrialiseerde landen is de bevolkingsgroei door natuurlijke aanwas (geboorte minus sterfte) tegenwoordig beperkt of zelfs negatief en bovendien is de regionale variatie daarin sterk afgenomen. Daardoor is binnenlandse migratie de belangrijkste drijvende kracht geworden achter de ruimtelijke spreiding van de bevolking. Binnenlandse migratie beïnvloedt de herverdeling van de bevolking over regio's niet alleen in kwantitatieve zin, maar ook in termen van hooggekwalificeerd menselijk kapitaal. Hoogopgeleide individuen zijn doorgaans mobieler dan anderen, en recente ontwikkelingen wijzen erop dat binnenlandse migratie-stromen steeds selectiever worden wat betreft het opleidingsniveau.

De verhuisbewegingen van hoogopgeleide individuen hebben aanzienlijke implicaties op zowel nationaal als regionaal niveau. Nationaal wordt binnenlandse migratie gezien als een manier om de arbeidsmarktefficiëntie te verbeteren door regionale mismatches tussen vraag en aanbod op de arbeidsmarkt glad te strijken. Dit speelt relatief sterk voor hoogopgeleiden omdat het gespecialiseerde werk waarnaar zij op zoek zijn sterker geconcentreerd is in bepaalde regio's. Regionaal draagt binnenlandse migratie bij aan de herverdeling van menselijk kapitaal, wat cruciaal is voor economische groei in kennisintensieve economieën. Regio's die hoogopgeleide individuen aantrekken floreren doorgaans in economische zin, terwijl regio's die te maken hebben met grootschalig vertrek van geschoolde werknemers en talentvolle afgestudeerden het risico lopen economisch achter te blijven. Dit migratiepatroon kan leiden tot de ruimtelijke concentratie van hoogopgeleide bevolkingsgroepen, wat regionale economische ongelijkheden en sociaal-ruimtelijke ongelijkheden kan vergroten. In veel landen wordt de economische polarisatie tussen kennisintensieve kernregio's en perifere regio's gebaseerd op kennisextensieve bedrijvigheid steeds duidelijker.

Voor individuen is een verhuizing geen doel op zich, maar een middel om andere levensdoelen te bereiken. Een verhuizing wordt theoretisch gezien als een aanpassingsmechanisme, een manier om de mismatch die is ontstaan tussen de huidige woonsituatie en de gewenste woonsituatie te herstellen (of in ieder geval te verkleinen). Er wordt theoretisch doorgaans onderscheid gemaakt tussen verhuizingen over korte afstand (residentiële mobiliteit) en over lange afstand (binnenlandse migratie). De grens hiertussen is arbitrair en kan per persoon verschillen, maar een voorwaarde voor binnenlandse migratie is dat het gebied waarin mensen hun dagelijkse activiteiten ontplooien (bv. werk, winkels,

voorzieningen, recreatie en sociale netwerk) na de verhuizing verandert. Dit betekent dat binnenlandse migratie van mensen gepaard gaat met het doorbreken van het opgebouwde economische en sociale kapitaal dat niet (eenvoudig) naar een andere regio te verplaatsen is, zoals een klantenkring, een werklocatie of een sociaal netwerk.

De micro-economische human capital theorie beschouwt binnenlandse migratie als een investering in iemands menselijk kapitaal en veronderstelt dat mensen in hun migratiegedrag een rationele afweging maken tussen de verwachte kosten en baten ervan. De impliciete aanname is dat binnenlandse migratie gedreven wordt door economische motieven zoals betere carrièremogelijkheden. Een andere stroming benadrukt juist het belang van zachtere omgevingsfactoren zoals natuurlijke of culturele voorzieningen. Recent onderzoek liet zien dat de nabijheid van familie eveneens een belangrijk motief is om over lange afstand te verhuizen. Onderzoek vanuit het perspectief van de levensloop heeft erop gewezen dat binnenlandse migratie veelal wordt getriggerd door transities in andere domeinen van het leven. Ook lijken de belangrijkste redenen die eraan ten grondslag liggen gedurende de levensloop te veranderen en te verschillen tussen bevolkingsgroepen. Vooral onder jongeren en hoogopgeleiden wordt binnenlandse migratie gedreven door economische motieven: mogelijkheden voor het opbouwen van menselijk kapitaal en carrièreontwikkeling. Naarmate mensen ouder worden, worden niet-economische factoren zoals de leefomgeving en de nabijheid van familie en vrienden doorgaans belangrijker. Ook wordt de afweging complexer zodra mensen samenwonen met een partner. Vooral voor stellen waarvan beide partners hoogopgeleid zijn en gespecialiseerde carrières hebben, kan het ingewikkeld zijn om vanuit één locatie het belang van beide loopbanen te dienen. Aangenomen wordt dat grootstedelijke agglomeraties met diverse arbeidsmarkten optimale locaties zijn om deze ruimtelijke puzzel op te lossen. Als laatste is gezinsvorming een belangrijke trigger voor verhuizingen. Dit zijn vaak verhuizingen over korte afstand, binnen regio's. Gezinnen met kinderen hebben andere woonwensen dan stellen zonder kinderen, zoals een ruimere woning en een leefomgeving die zij geschikt achten voor kinderen. Traditioneel leidt dit tot suburbanisatieprocessen waarbij gezinnen met kinderen in rustigere, groenere voorsteden of dorpen gaan wonen. Recente trends hebben gesuggereerd dat de relatie tussen gezinsvorming en suburbanisatie zwakker wordt, met meer gezinnen die in stedelijke omgevingen blijven.

Uit sommige onderzoeken komt naar voren dat vrouwen minder dan mannen geneigd zijn om voor hun eigen loopbaan over lange afstand te verhuizen, vooral als zij samenwonen of getrouwd zijn. Anders dan singles moeten stellen de voorkeuren en belangen van beide partners in ogenschouw nemen als zij naar een

andere regio willen verhuizen. Hoewel de human capital theorie in essentie rationeel is en veronderstelt dat mannen en vrouwen met gelijke uitgangsposities en loopbaankenmerken dezelfde afweging zullen maken, suggereert eerder onderzoek dat man-vrouw-stellen vaak de loopbaan van de man centraal stellen en dat zijn carrière zich na de verhuizing gunstig ontwikkelt terwijl zij minder gaat werken of er in inkomen op achteruit gaat. Sociologische theorieën verklaren dit verschil tussen mannen en vrouwen door te wijzen op het belang van diep gewortelde culturele gendernormen die voorschrijven dat de belangrijkste rol van de man die van kostwinner is, terwijl de vrouw als eerste verantwoordelijk is voor het privédomein: het huishouden en de zorg voor en opvoeding van de kinderen. Dat zou betekenen dat effecten van gender afhankelijk zijn van de sociaal-culturele context en dus tussen periodes en tussen landen verschillen.

Onderzoek naar verhuisbewegingen van hoogopgeleiden vanuit een levensloopperspectief is schaars, met uitzondering van de transitie van onderwijs naar arbeidsmarkt. Voor Nederland blijkt daaruit dat pas afgestudeerden hoofdzakelijk vanwege baanmogelijkheden verhuizen en dat de dominante verhuisstromen lopen van de universiteitsregio's in de nationale periferie naar de Randstad. Onduidelijk blijft daarbij echter of en hoe lang zij in de Randstad blijven. Onderzoek naar pas afgestudeerden, de meest mobiele groep, heeft bovendien nauwelijks aandacht gehad voor verschillen tussen mannen en vrouwen. Studies naar binnenlandse migratie van stellen hebben de rol van gender wel ruimschoots geadresseerd, maar deze zijn voornamelijk gebaseerd op gegevens uit de laatste decennia van de 20e eeuw en voornamelijk op de context van de Verenigde Staten. In de tussentijd hebben jongere generaties vrouwen een deel van hun achterstand ten opzichte van mannen op de arbeidsmarkt ingelopen en zijn zij mannen voorbij gestreefd wat betreft het opleidingsniveau waarmee zij de arbeidsmarkt betreden. Recent onderzoek uit Scandinavische landen, waar gendernormen en -praktijken doorgaans meer egalitair zijn dan in Nederland, heeft uitgewezen dat stellen daar de belangen van mannen en vrouwen nagenoeg een gelijk gewicht toekennen als zij besluiten nemen over binnenlandse migratie. Onduidelijk is hoe sterk deze normen doorwerken in Nederland in verschillende fases van de levensloop.

Dit proefschrift onderzoekt daarom de verhuispatronen van universitair geschoolden in Nederland vanuit een levensloopperspectief, met een focus op de levensfase van 17 tot 35 jaar, een periode gekenmerkt door significante demografische en socio-economische transities. Deze levensfase omvat bij veel hoogopgeleiden het verlaten van het ouderlijk huis, het vormen van samenwoonrelaties, het krijgen van kinderen, het afronden van hoger onderwijs, het betreden van de arbeidsmarkt en het veranderen van banen, die allemaal katalysatoren voor mobiliteit zijn. Deze dissertatie draagt bij aan een uitgebreid

begrip van de levensloop van hoogopgeleide individuen, onderzocht door een geografische lens, en benadrukt gender-specifieke patronen. De overkoepelende onderzoeksvraag is: Hoe kunnen binnenlandse verhuispatronen van menselijk kapitaal tijdens de vroege volwassen levensloop worden begrepen in de context van de arbeidsmarkt en wat is de rol van geslacht, partnerrelaties en gezinsvorming?

Data, methoden en onderzoekscontext

De empirische analyses maken uitgebreid gebruik van het Systeem van Sociaal-Statistische Bestanden (SSB), een systeem van micro-geïntegreerde administratieve registers ontwikkeld door het CBS. Deze gegevensbron omvat de gehele geregistreerde bevolking van Nederland, teruggaand tot ongeveer 1995, en biedt een gedetailleerd, longitudinaal perspectief op microniveau. Het maakt de analyse mogelijk van feitelijk verhuisgedrag dat is ingebed in individuele levenslopen, waaronder huishoudenscarrières, woningcarrières en onderwijscarrières. Naast administratieve gegevens worden de analyses aangevuld met enquêtegegevens van de Enquête BeroepsBevolking (EBB) en het Woononderzoek Nederland (WoON) die informatie verschaffen over beroepen, woonvoorkeuren en verhuiswensen. Deze combinatie van register- en enquêtegegevens maakt het mogelijk om binnenlandse migratie te conceptualiseren als een proces in de tijd en te onderzoeken hoe beperkingen op individueel niveau en belemmeringen op macroniveau discrepanties tussen aangegeven voorkeuren en feitelijke mobiliteit vormgeven. De gebruikte onderzoeksmethoden zijn kwantitatief van aard en omvatten event history analysis, verschillende regressietechnieken en gedetailleerde beschrijvende statistieken.

Contextueel plaatst de dissertatie haar bevindingen binnen de institutionele, structurele en socio-culturele context van Nederland. Nederland heeft sinds 1960 een sterke bevolkingsgroei doorgemaakt, sterker dan het gemiddelde in de Europese Unie. Deze groei heeft zich geconcentreerd in de Randstad, de stedelijke kernregio met een diverse, grote arbeidsmarkt. In tegenstelling tot andere Europese landen met een enkele dominante metropool, is het Nederlandse stedelijke systeem polycentrisch, met meerdere centra van economische en culturele activiteit verspreid over de Randstad. Buiten de Randstad floreert de regio Eindhoven met een op kennis gebaseerde economie. De gemiddelde pendelafstand is relatief kort, maar varieert aanzienlijk op basis van opleiding, werkstatus en geslacht. In termen van welvaartsstaatregimes werd Nederland lange tijd gekenmerkt door een mengeling van enerzijds een sociaal-

democratische, door de overheid vormgegeven herverdeling van inkomens en anderzijds enkele corporatistische elementen: een sociale verzekering en sector-specifieke collectieve arbeidsovereenkomsten gesloten door werkgevers en werknemers. Historisch was het Nederlandse beleid vooral gericht op het verminderen van ruimtelijke ongelijkheden, maar neoliberale beleidsmaatregelen sinds 2000 hebben de sociaaleconomische ongelijkheden vergroot, vooral op het gebied van huisvesting. De verschuiving van een door de overheid gestuurd huisvestingsbeleid naar meer marktwerking verminderde sociale woningbouw en verhoogde eigenwoningbezit, met minder opties voor kwetsbare groepen.

Wat betreft het opleidingsniveau hebben jongere generaties vrouwen in Nederland hun mannelijke leeftijdsgenoten ingehaald, net als in veel andere geïndustrialiseerde landen. Op de arbeidsmarkt blijft de gendergelijkheid in Nederland echter achter bij die van verschillende andere Europese landen, vooral de Scandinavische. Terwijl jonge vrouwen in Nederland hogere opleidingsniveaus hebben bereikt dan mannen, blijft er een genderkloof in het arbeidsaanbod. Sociale normen en beleid bevorderen sterk de verkorte werkuren, vooral voor vrouwen. Ondanks de hoge en toenemende arbeidsparticipatiegraad onder vrouwen, blijft de meerderheid van de vrouwen in Nederland parttime werken. De kindboete is in Nederland relatief hoog: veel vrouwen gaan minder uren werken zodra het eerste kind geboren is. Dit genderverschil in gewerkte uren manifesteert zich echter al direct na afstuderen, ruim voordat de fase van gezinsvorming aanbreekt.

Migratie van hoogopgeleiden: een longitudinaal perspectief

Ik begon mijn onderzoek door te onderzoeken hoe binnenlandse migratie de geografische verdeling van menselijk kapitaal beïnvloedt, met behulp van een longitudinaal perspectief. We volgden individuen geboren in 1979 vanaf de woonplaats van hun ouders toen ze 16 jaar oud waren tot hun eigen woonlocatie op 35-jarige leeftijd. Het onderzoek beoogde de volgende vragen te beantwoorden: Hoe verhouden de migratiepaden van mensen die uiteindelijk een universitair diploma zouden behalen zich tot die van leeftijdsgenoten met lagere opleidingsniveaus? En hoe dragen deze migratiepatronen bij aan regionale ongelijkheden in termen van menselijk kapitaal? Daarnaast werd onderzocht of de Nederlandse kernregio (Randstad) functioneert als een roltrapregio in de zin dat verhuizingen ernaar toe gepaard gaan met bovengemiddelde inkomensgroei.

Tijdens de eerste twee decennia van hun zelfstandige wooncarrières vertoonden universitair afgestudeerden onderscheidende binnenlandse migratiepatronen in vergelijking met hun leeftijdsgenoten zonder universitair diploma. Ten eerste verhuisden zij vaker over lange afstand gedurende deze hele fase. Ten tweede waren er bij universitair geschoolden duidelijk twee pieken te herkennen in de binnenlandse migratie: een tussen 18 en 20 jaar en een rond de leeftijd van 25. Deze pieken hangen samen met de timing van de transitie naar hoger onderwijs en de transitie van onderwijs naar arbeidsmarkt. Bij leeftijdsgenoten zonder universitair diploma was het patroon minder uitgesproken en was er enkel een kleine piek zichtbaar rond de leeftijd van 21, als veel jongeren uit huis gaan. Ten derde vertoonden de migratiepaden van universitair geschoolden een ander geografisch patroon: in het ouderlijk huis waren zij nog gelijkmatig verdeeld over het land maar vervolgens concentreerden zij zich tijdens de studiejaren (18 tot grofweg 24 jaar) in regio's met een universiteit en vanaf leeftijd 25 namen de concentraties universitair geschoolden sterk toe in de grote steden in de Randstad. Deze bevinding ondersteunt eerdere bevindingen over het verhuisgedrag van pas afgestudeerden in Nederland. Naarmate universitair afgestudeerden de dertig naderden werd suburbanisatie prominenter. Velen die zich in de grote steden hadden gevestigd, verhuisden naar nabijgelegen voorsteden. Verhuizingen van hoogopgeleiden vanuit de Randstad terug naar de (semi-)periferie bleven tot het einde van de waarnemingsperiode (leeftijd 35) relatief schaars. Deze selectieve migratiepatronen droegen aanzienlijk bij aan de ruimtelijke herverdeling van menselijk kapitaal. Op leeftijd 35 was het aandeel universitair geschoolden in de grootstedelijke agglomeraties in de Randstad verdubbeld ten opzichte van leeftijd 16, terwijl veel perifeer gelegen regio's tijdens die levensfase ongeveer de helft van het cognitieve talent waren kwijt geraakt.

De rol van gender en partnerrelaties in binnenlandse migratie na afstuderen

Hoofdstuk 3 richtte zich op een cruciale fase in de levensloop van hoogopgeleide jongvolwassenen: de overgang van universiteit naar arbeidsmarkt. Deze overgang is nauw verbonden met binnenlandse migratie. Recentelijk afgestudeerden die bereid zijn om voor werk naar een andere regio te verhuizen kunnen hun zoekgebied uitbreiden en daardoor de kans op een mismatch tussen opleiding en werk verkleinen. In dit kader verkende hoofdstuk 3 de volgende onderzoeksvraag: Hoe beïnvloeden partnerrelaties het migratiegedrag van recent afgestudeerde mannen en vrouwen en, als een mogelijk gevolg, hun arbeidsmarktuitkomsten?

Hierbij werden mannen en vrouwen met dezelfde opleidingsachtergrond met elkaar vergeleken.

Ongeveer een derde van de universitaire studenten woonde op het moment van afstuderen samen met een partner, vrouwen wat vaker dan mannen. Uit de resultaten bleek dat de waarschijnlijkheid van binnenlandse migratie voor degenen die samenwoonden met een partner ruim de helft lager lag dan voor singles. Vrouwen werden door partnerrelaties sterker beperkt om over lange afstand te verhuizen dan mannen, niet alleen omdat zij vaker samenwoonden, maar ook omdat hun partner doorgaans wat ouder was en door een voltijdbaan en een hoger inkomen economisch gezien al sterker geworteld was in de regio waar zij woonden. Als rekening werd gehouden met de individuele kenmerken van de partner bleken partnerrelaties de migratiekans van mannen bijna net zo sterk te beperken als die van vrouwen.

Toch speelt gender wel degelijk een belangrijke rol direct al na het afstuderen. Verschillende uitkomsten wijzen erop dat mannen vergeleken met vrouwen met een vergelijkbaar opleidingsprofiel meteen na afstuderen al meer belang hechten aan een sterke loopbaanontwikkeling, uitgedrukt in het aantal uren werk, loonontwikkeling en de neiging om voor werk over lange afstand te verhuizen. Dit geldt ook voor pas afgestudeerde singles. Binnenlandse migratie versnelde de loongroei bij mannen sterker dan bij vrouwen. Vrouwen verhuisden juist vaker over lange afstand om met een partner te gaan samenwonen. De positieve samenhang tussen binnenlandse migratie en loonontwikkeling bleek voor singles sterker dan voor degenen die met een partner verhuisden, wat suggereert dat afgestudeerden met een partner mogelijk suboptimale locaties voor hun individuele carrière kiezen. Er werd echter geen extra negatief effect op de loonontwikkeling van vrouwen waargenomen bij migratie met een partner. Al met al wezen de resultaten erop dat vrouwen direct na afstuderen hun loopbaan-ontwikkeling minder vaak centraal stellen in hun verhuisgedrag, maar dat dit genderverschil bij singles vrijwel net zo groot was als bij degenen met een partner. Mogelijk spelen normen over genderrollen ook bij pas afgestudeerde singles al een rol en sorteren vrouwen ook als zij (nog) geen partner hebben bewust of onbewust al voor op latere fases in de levensloop, na gezinsvorming.

De rol van gender in migratie van stellen naar kern en periferie

Hoofdstuk 4 richtte zich op de binnenlandse migratiepatronen van stellen zonder kinderen gedurende ongeveer de eerste helft van hun professionele carrière. Het

doel was om de colocatiehypothese te testen in een hedendaagse West-Europese context, waar jongere generaties vrouwen hun mannelijke leeftijdsgenoten hebben ingehaald in opleidingsniveau. De hypothese suggereert dat zogenaamde 'power couples' (beide partners met universitaire diploma's) worden aangetrokken door grootstedelijke regio's vanwege de diverse en dichte arbeidsmarkten die het combineren van twee gespecialiseerde carrières vergemakkelijken. De onderzoeksvraag was: Wat is de rol van het opleidingsniveau van mannen en vrouwen in binnenlandse migratie van koppels en zijn power couples het meest geneigd om van perifere regio's naar de stedelijke kernregio (Randstad) te migreren?

De studie liet allereerst zien dat lange-afstandsverhuizingen bij stellen betrekkelijk zeldzaam waren: slechts 1% van de stellen verhuisde in een periode van drie jaar over meer dan 40 km. Power couples vertoonden echter een aanzienlijk hogere mobiliteit (4,3%) dan stellen zonder partner met een universitaire opleiding (0,7%). Dit verschil was voor een belangrijk deel terug te voeren op verhuizingen in de levensloop: universitair geschoolde partners woonden al vaak verder verwijderd van de regio waar zij opgroeiden en, meer specifiek, van hun ouders. Zodra voor de nabijheid van ouders werd gecontroleerd bleek de samenhang tussen het opleidingsniveau van stellen en de waarschijnlijkheid van een verhuizing over lange afstand beperkt. Wat betreft het belang van de loopbaan van de man en die van de vrouw kwam een genuanceerd beeld naar voren. In algemene zin was er geen significant verschil in het gewicht dat stellen bij migratiebeslissingen toekenden aan zijn en haar opleidingsniveau, maar toch waren er enkele aanwijzingen dat stellen in Nederland nog steeds de carrière van de mannelijke partner prioriteren: het beroep van de man was een belangrijkere voorspeller voor migratie dan het beroep van de vrouw en verhuizingen in de richting van de Randstad hingen sterker samen met zijn dan met haar opleidingsniveau.

Er werd gedeeltelijk bewijs gevonden ter ondersteuning van de colocatiehypothese. Hoewel power couples niet een significant sterkere neiging vertoonden dan andere stellen om van meer perifere regio's naar de Randstad te verhuizen, waren power couples, eenmaal gevestigd in de Randstad, minder geneigd om deze regio te verlaten en meer geneigd om over grotere afstanden binnen de Randstad te verhuizen. Deze resultaten suggereren dat de concentratie van power couples in de kernregio van Nederland voortkomt uit drie hoofdfactoren: 1) de selectieve migratie van alleenstaande universitaire afgestudeerden naar de Randstad, 2) de vorming van power couples als hoogopgeleide alleenstaanden met elkaar gaan samenwonen, en 3) de verhoogde neiging van power couples om in de Randstad te blijven.

Verhuismobiliteit van koppels rond gezinsvorming

Het laatste empirische hoofdstuk, hoofdstuk 5, richt zich op de relatie tussen gezinsvorming en het verhuisgedrag van stellen. In tegenstelling tot de andere empirische hoofdstukken die zich richtten op lange-afstandsverhuizingen, onderzoekt dit hoofdstuk alle verhuizingen, ongeacht de afstand. Niet alleen de daadwerkelijke verhuizingen worden onderzocht, maar ook de verhuiswensen en de realisatie van die wensen. Nu het aantal gezinnen met kinderen in de grote steden sterk is toegenomen en verschillende studies suggereren dat er bij gezinnen een groeiende voorkeur is om ook met kinderen in de grote stad te blijven wonen, behandelt dit hoofdstuk de onderzoeksvraag: Is gezinsvorming nog steeds een keerpunt in de levensloop dat stellen aanzet om de stad te verlaten?

De analyses bieden een genuanceerd begrip van de relatie tussen gezinsvorming en suburbanisatie. Enerzijds blijft suburbanisatie de dominante trend voor stellen rond de geboorte van hun eerste kind: stellen in de grote steden verhuizen vaak naar kleinere gemeenten na de geboorte van hun kind, terwijl degenen in kleinere steden en dorpen de neiging hebben lokaal te verhuizen. Twee bevindingen wijzen er echter op dat blijven wonen in de context van een grote stad voor een belangrijk deel van de jonge gezinnen de voorkeur geniet. Ten eerste slagen minder dichtbevolkte wijken binnen de grote steden (zoals VINEX) er relatief goed in om stellen na gezinsvorming vast te houden. Ten tweede rapporteerden veel stedelijke jonge gezinnen, vooral in Amsterdam, dat zij graag binnen de stad zouden willen verhuizen. Uiteindelijk bleken ook die stellen in de periode daarna vaak naar dorpen buiten de stad te zijn verhuisd. Dit wijst erop dat deze gezinnen er niet in zijn geslaagd om hun gewenste verhuizing binnen de stad te realiseren, waarschijnlijk gehinderd door de zeer krappe woningmarkt. Daarnaast bleek de grootte van de woning de intenties van jonge gezinnen om de stad te verlaten veel sterker te voorspellen dan de dichtheid van de wijk. Deze bevindingen suggereren dat gezinnen de centrale steden verlaten vanwege een tekort aan geschikte woningen, eerder dan een voorkeur voor rustigere woonomgevingen.

Conclusie en discussie

Over het algemeen ondersteunen de empirische bevindingen van dit proefschrift voornamelijk de human capital theorie over migratie. Menselijk kapitaal en regionale arbeidsmarktkenmerken zijn cruciale voorspellers voor wie over lange afstand zal verhuizen en wie niet, maar voornamelijk in de vroege stadia van de volwassen levensloop. De ruimtelijke herverdeling van menselijk kapitaal in

Nederland wordt voornamelijk aangedreven door de migratiepatronen van jongvolwassenen, met name alleenstaanden onder de 30 jaar. Aanvankelijk verhuizen ze naar universiteitssteden verspreid over het land en migreren vervolgens na hun afstuderen in groten getale naar de Randstad. Hoogopgeleide koppels, vooral die waarvan beide partners universitaire diploma's hebben, zijn meer geneigd om binnen de kernregio te migreren maar niet zo zeer naar regio's in de nationale periferie. Dit patroon heeft geleid tot een verhoogde concentratie van menselijk kapitaal in de Randstad en rond de regio Eindhoven, terwijl perifere regio's achterblijven. Hoewel er recent een toename is in stellen en gezinnen die van de Randstad naar meer perifere regio's verhuizen, blijven deze stromen gering in vergelijking met die van jonge volwassenen en zijn ze wat betreft opleidingsniveau niet zo selectief als de toestroom van jongvolwassenen naar de Randstad. Na het starten van een gezin vermijden stellen verhuizingen over lange afstand, waarbij ze de voorkeur geven aan suburbanisatie binnen dezelfde grootstedelijke regio, vooral als de kinderen eenmaal naar school gaan. Veel stellen in de grote steden willen na gezinsvorming verhuizen omdat zij hun woning te klein vinden. Hoewel een belangrijk deel van de stedelijke jonge gezinnen, voor in Amsterdam, aangeeft binnen de stad te willen verhuizen, gaan zij in de praktijk toch vaak naar omliggende kleinere kernen. Praktische beperkingen zoals woninggrootte en betaalbaarheid weerspiegelen bredere uitdagingen in stedelijke planning en huisvestingsbeleid met betrekking tot gezinsbehoeften en stedelijke ontwikkeling.

De trend van een toenemende concentratie van menselijk kapitaal in de Randstad past binnen een bredere context van economische en technologische verschuivingen die de geografie van de vraag naar arbeid hebben veranderd. In de Verenigde Staten is de migratie van hoogopgeleiden vanaf de jaren '90 van de vorige eeuw steeds meer gericht op enkele zeer sterk florerende grootstedelijke regio's zoals die van New York, San Francisco en Boston. Die concentratie van talent heeft enerzijds veel welvaart gebracht, maar heeft anderzijds geleid tot toenemende geografische inkomensongelijkheid, vooral onder werknemers met een universitair diploma. Deze groeiende ruimtelijke ongelijkheid staat in contrast met de naoorlogse decennia toen binnenlandse migratiepatronen in de VS juist bijdroegen aan economische convergentie tussen regio's. Hoewel Nederland een hybride welvaartsstaat kent met kenmerken van het sociaal-democratische, het corporatistische en het liberale regime, beweegt het huisvestingsbeleid zich in de liberale richting, naar meer marktwerking. Als prototype van een liberaal regime kunnen de Verenigde Staten daarom als uiterste voorbeeld dienen van een context waarin de markt nog veel meer richting geeft aan ruimtelijke ontwikkelingen.

Vanuit een beleidsmatig perspectief kan de concentratie van menselijk kapitaal in kernregio's de economische groei en de wereldwijde concurrentiekracht stimuleren

door agglomeratie- en leereffecten. Echter, toenemende ruimtelijke ongelijkheden kunnen politieke stabiliteit, vertrouwen en samenwerking binnen landen onder druk zetten. Steun voor populistische anti-establishment partijen is in de afgelopen decennia steeds meer oververtegenwoordigd in perifere regio's. Dat wijst op de sociaal-politieke implicaties van de zojuist beschreven migratietrends. Dit proefschrift benadrukt de noodzaak van beleid dat zowel de voordelen als de nadelen van concentratie van menselijk kapitaal adresseert, zodat er een evenwichtige regionale ontwikkeling kan worden gewaarborgd en de negatieve effecten van ruimtelijke ongelijkheden kunnen worden getemperd.

Het proefschrift heeft ook kanttekeningen geplaatst bij de rationele human capital theorie. De voorgestelde hypermobiliteit van hoogopgeleiden beperkt zich hooguit tot de eerste jaren na afstuderen en verdwijnt bij veel mensen zodra zij lokale banden aangaan, bijvoorbeeld door te gaan samenwonen met een partner. Bovendien worden de implicaties van sociale normen aangaande genderrollen duidelijk vanaf het moment van afstuderen van de universiteit. De resultaten suggereren dat binnenlands migratiegedrag in Nederland een gematigd genderpatroon vertoont vanaf het moment dat afgestudeerden hun opleiding afronden, in lijn met de lagere waarschijnlijkheid van vrouwen om fulltime te gaan werken na afstuderen. Partnerrelaties beperken de binnenlandse migratie aanzienlijk voor beide geslachten, maar vrouwen ondervinden meer beperkende sociaal-demografische contexten, omdat zij vaak op jongere leeftijd gaan samenwonen. Bovendien zijn de partners van vrouwen vaak al sterker lokaal geworteld en dus minder geneigd om de woonregio te verlaten. Onder man-vrouw-koppels zonder kinderen waren er slechts gematigde aanwijzingen dat de carrière van de mannelijke partner werd geprioriteerd, maar dergelijke koppels waren over het algemeen terughoudend om te migreren.

Hoewel initiële genderongelijkheden in binnenlandse migratie en hun impact op arbeidsmarktuitkomsten klein zijn in de beginjaren van de arbeidsloopbaan, kunnen deze ongelijkheden later in het leven in betekenis toenemen. De kleine initiële loonkloof tussen mannelijke en vrouwelijke partners kan groter worden zodra stellen kinderen krijgen en moeten besluiten welke partner eventueel minder gaat werken om zorgtaken op zich te kunnen nemen. Gezinsvorming blijft een cruciale overgang in de levensloop die leidt tot uiteenlopende arbeidsmarkt-uitkomsten tussen mannen en vrouwen, waarbij vrouwen aanzienlijk meer geneigd zijn om hun werkuren te verminderen na de geboorte van het eerste kind, een fenomeen dat bekend staat als de 'kindboete'. Toekomstig onderzoek zou de levensloopbenadering kunnen benutten om verder te kijken dan het snapshot dat in hoofdstuk 3 is gepresenteerd (één jaar na afstuderen) en de langetermijn-

effecten van migratiebeslissingen die na het verlaten van de universiteit zijn genomen, te onderzoeken.

Deze dissertatie heeft nieuwe inzichten opgeleverd in genderverschillen in verhuizingen over lange afstand, vooral tijdens de vroege stadia van de volwassen levensloop. Het roept echter ook nieuwe vragen op die nader onderzoek vereisen. Ten eerste maakten de empirische analyses voornamelijk gebruik van registerdata, behalve voor het hoofdstuk dat zich richtte op de mobiliteit rond gezinsvorming. De benadering beschouwde impliciet feitelijke mobiliteitspatronen als indicatief voor de onthulde voorkeuren van individuen. Echter, beperkingen op macro- en micro-niveau kunnen ervoor zorgen dat huishoudens hun voorkeuren niet (volledig) verwezenlijken en dat feitelijk verhuisgedrag niet zonder meer geïnterpreteerd kan worden als de uitdrukking van preferenties. Om een dieper inzicht te krijgen in de rol van gender bij migratiebeslissingen van recentelijk afgestudeerden en van stellen, is het van belang om registerdata aan te vullen met enquêtedata die de intenties van mensen (de bedoelingen, motivaties en voorkeuren) in beeld brengt en onderzoekt in hoeverre deze bedoelingen worden gerealiseerd (feitelijke mobiliteit).

Ten tweede moeten, om een beter begrip te krijgen van de rol van de institutionele en sociaal-culturele context, de bevindingen uit dit proefschrift die gelden voor de Nederlandse context worden vergeleken met bewijs uit andere landen. Ten derde is er een toenemende behoefte om de ruimtelijke mobiliteit van praktisch opgeleide werknemers te onderzoeken. Hoogopgeleide professionals worden algemeen erkend voor hun rol in het stimuleren van economische groei, maar het is belangrijk om de essentiële bijdrage van werkenden in praktische sectoren zoals het onderwijs, de gezondheidszorg en de rechtshandhaving aan regionale economieën te erkennen. In grote wereldsteden stijgen de woningkosten tot potentieel onbetaalbare niveaus voor deze groepen. Toekomstig onderzoek zou de vraag moeten behandelen in hoeverre deze kernregio's minder toegankelijk zijn geworden voor middeninkomensgroepen en werkenden in deze kritische beroepen.

Within countries, internal migration contributes to the redistribution of human capital, which is crucial for economic growth in knowledge-intensive economies. The overall contribution of this dissertation is to provide an integral picture of the life courses of highly educated individuals from leaving the parental home to enrol in higher education to the transition from education to work, union formation and family formation from a geographical perspective. How can internal migration patterns of human capital during the early adult life course be understood in the labour market context? And what are the roles of gender, partner ties and family formation?

The empirical analyses have demonstrated how internal migration processes in The Netherlands have contributed to increased spatial concentration of human capital in the core region, the Randstad, a polycentric urban region that is characterised by a dense and diversified labour market. This emphasizes the need for policies that address both the benefits and drawbacks of human capital concentration, ensuring balanced regional development and mitigating the negative effects of spatial inequalities.

The findings predominantly support the human capital theory of migration. Educational attainments and regional labour market characteristics are critical predictors of who will migrate and who will not, but primarily during the early stages of the adult life course. However, the effects of social norms on gender roles add nuance to the human capital theory. Internal migration behaviour in the Netherlands exhibits a moderate gendered pattern from the moment graduates complete their education. Partner ties significantly reduce internal migration for both genders, but women face more restrictive socio-demographic contexts than men, as they tend to start cohabitation at younger ages.

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