Home and Where the Heart Is: Marriage Timing and Joint Home Purchase

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Abstract

This article evaluates the relationship between the timing of marriage and the purchase of a jointly owned home among Swedish cohabiting couples. Data for this analysis come from the Swedish Housing and Life Course Cohort Study (*N* = 1,596 couples; 2,006 cohabiting spells). The author develops models to proxy for simultaneity and intentions and test hypotheses about positive and negative and long- and short-run relationships between the two life-course events. The author uses a novel modeling approach, allowing for differences in the risk before, concurrently and after the conditioning event. Results indicate a positive relationship between marriage and joint home purchase and suggest the possibility of an ordering of events: For some couples, formalizing their union through marriage may be a prerequisite for a joint home purchase.

Keywords

Marriage; Housing; Event-history analysis; Sweden

1 Introduction

Major changes have occurred in the way families are organized in Europe and the United States during the past 30 years. Marriage is increasingly preceded by cohabitation and occurs at later ages. Both cohabiting and married couples face a higher risk of union dissolution. Fewer children are born and these children are more likely to be born to cohabiting parents or parents not romantically involved rather than to married parents (Lesthaeghe and van de Kaa 1986). Collectively, these trends are often referred to as the *second-demographic transition*, and they are associated with broad shifts in values toward individualism and gender egalitarianism.

Despite these dramatic changes, marriage continues to thrive as the preferred type of long-term union. Even in the Nordic countries where cohabitation is common, legally recognized and a socially acceptable union for bearing children, the vast majority of people eventually marry (Tucker 2000; Goldstein and Kenney 2001; Bernhardt 2004; Wiik et al. 2010). Family scholars are only beginning to develop an understanding of what people are trying to achieve through marriage and continuing to develop theories about what life-course phenomena trigger the marriage decision for couples within a second-demographic transition context.

This article explores the meaning of marriage *vis-à-vis* couples' financial interdependence and home ownership. Home and family are two deeply entwined institutions. The establishment of a joint home is the defining stage in union formation and is a prerequisite for childbearing for the vast majority of parents (Andersson and Philipov 2002; Sobotka and Toulemon 2008). In Anglo-Saxon, Southern European and many Western contexts, an owner-occupied independent home is viewed as a prerequisite for family building (Mulder 2006). An owned home is an asset and a long-term investment associated with residential stability. It may also signal relationship stability and a couple's commitment to one another. The timing of the purchase of a home and the timing of union formation, marriage and childbearing may therefore be closely linked. The ordering of these events may contribute to our understanding of the meanings of and motivations for the timing of particular family life-course transitions.

In this study, I consider several hypotheses with respect to positive and negative and long- and short-term associations between the purchase of a jointly owned home and marriage. The modeling approach used here addresses methodological challenges associated with intentionality and the possible simultaneity of marriage and joint home purchase. Results speak to the broader meaning of marriage in the Swedish context, a forerunner of the second-demographic transition, where marriage and cohabitation are seemingly indistinguishable (Kiernan 2001; Heuveline and Timberlake 2004; Andersson 2008).

2 Home Purchase and the Family Life Course

Residential characteristics and residential moves are an important part of the life course and have been demonstrated to be strongly related to family life-course events (see, for example, Mulder and Wagner 1998, 2001; Feijten and Mulder 2002; Mulder 2006; Kulu and Vikat 2007; Lauster 2008; Michielin and Mulder 2008; Smits and Mulder 2008; Feijten and van Ham 2010; Mulder and Lauster 2010; Ström 2010). However, this relationship is complex and may be multidirectional. Theoretical conceptualizations and previous empirical research into the nature of home and couple relationships over the life course lead to several different hypotheses about how home purchase and the family life course may be related. These hypotheses may be competing, complimentary or simply coincident, however, each leads to particular conclusions about the meanings couples place on marriage and the establishment of a jointly owned home.

Marriage may be the capstone of the family life-course, where couples expect to cohabit and set up an independent household, be financially independent and bear children before they consider themselves ready to marry (Duvander 1999; Bernhardt 2002; Cherlin 2004; Edin and Kefalas 2005; Smock et al. 2005; Gibson-Davis et al. 2005; Wiik et al. 2010; Thornton and Philipov 2009). An owned home may be an essential component of the economic prerequisites for marriage, as it is a major form of savings and often a couple's largest asset (Mulder 2006). The pooling of resources and the joint investment in a shared asset increases the couple's financial interdependence (Duvander 1999). A shared financial investment can also increase levels of commitment within the couple, thereby resulting in other forms of relationship-specific investment, such as marriage and childbearing (Bracher et al. 1993; Lauster 2008). The accumulation of wealth associated with home ownership may enhance a couple's financial situation, thus, increasing the risk of union formalization and childbearing (Becker 1991; Megbolugbe and Linneman 1993; Morgan and King 2001; Sweeney 2002). Furthermore, a jointly owned home may serve as a symbolic prerequisite for marriage, demonstrating "success" and "middle-class status" (Cherlin 2004; Edin and Kefalas 2005). If a joint home purchase is an important catalyst for marriage, we could expect:

> H1 Capstone Marriage The risk of marriage is higher after than before a joint home purchase (Fig. 1a).

So too is it possible that the direction of the relationship is reversed. It is often bureaucratically easier for married couples to jointly purchase a home. Policy and legal constraints in nearly all Western countries support a standard that privileges marriage with regard to the acquisition and joint ownership of assets (Waaldijk 2005). Even in Sweden, where cohabiting couples are granted the same rights and responsibilities as married couples in nearly all areas of life, regulations regarding joint assets and inheritance privilege marriage (Ytterberg and Waaldijk 2005). Cohabiting couples do not automatically hold the rights of inheritance to their partner's assets or their partner's share of joint assets. In case of death, the full rights of the deceased partner's assets go instead to parents, siblings and children (Ytterberg and Waaldijk 2005; Bøe 2010). Cohabiting couples can draft contracts or wills to ensure some rights for partners, but the claims of children (shared or from previous partnerships) always come before the rights of cohabiting partners (Bøe 2010). To the extent that these legal constraints provide incentives for marriage, we may observe a clustering of joint purchases immediately after marriage. Beyond legal considerations, marriage may be associated with normative and value changes in what are considered to be appropriate residential characteristics (Feijten and Mulder 2002). If owned homes are considered more stable and secure, they may be favored over rental properties among married couples (Hiscock et al. 2001; Mulder 2006). Studies in both the United States and Europe find that married couples experience the highest rates of transition into owner-occupied homes (Lauster and Fransson 2006). If marriage enhances the value of or facilitates joint home purchase, we would expect:

> H2 Secure Investment The risk of joint home purchase is higher after than before marriage (Fig. 1b).

It is possible that the relationship between home purchase and marriage is because of the two events being part of the same transition to stability. Characteristics of the couple, such as economic status, relationship quality or commitment, may simultaneously increase the risk of both marriage and home purchase. Indeed, joint home ownership may be a proxy for the level of commitment within a couple and thus may be linked to other life-course processes associated with high relationship commitment, such as marriage or childbearing. It is therefore important to disentangle, where possible, characteristics and other life course processes that may jointly determine both events. Examples of such common sources of marriage and home purchase are childbearing, completion of education, economic status and family background (Upchurch et al. 2002). Beyond mere selection, such simultaneity suggests that the two events should occur contemporaneously, but their ordering is not important.

> H3 Simultaneity The risk of marriage is higher immediately before and after a joint home purchase; the risk of a joint home purchase is higher immediately before and after marriage (Fig. 1c).

There may be more innate characteristics of the couples and individuals that create a propensity for both marriage and joint home purchase that are manifested over the longer-term. In this case, we would not expect merely simultaneity, where both events occur in close proximity to each other, but a positive association across the duration of the co-residence.

> H4 Selection Both joint home owners and those with intentions to become joint home owners are at a higher risk for marriage; both married and those who intend to marry are at a higher risk for a joint home purchase (Fig. 1d).

The previous four hypotheses posited a positive relationship between marriage and a joint home purchase. It is also possible that the relationship between the events may be negative. If both marriage and a jointly owned home symbolize the couple's stability and long-term commitment, it may not be necessary to do both. Some scholars postulate that marriage and

cohabitation have become indistinguishable in the Swedish context, with wide social acceptance of unmarried cohabitation, broad institutional supports for parents regardless of marital status and high proportions of children born into cohabitation rather than marital unions (Kiernan 2001; Heuveline and Timberlake 2004). In such circumstances, family behaviors, such as childbearing or home purchase, may replace marriage as the symbolic act indicating long-term commitment for couples. We, therefore, expect:

> H5 Substitutes The risk of marriage is lower after a joint home purchase; the risk of a joint home purchase is lower after marriage (Fig. 1e).

Finally, even if marriage and joint home purchase are not substitutes, the cost of a home and the costs of a wedding may compete, at least in the short-term (Michielin and Mulder 2008). Both marriage and home purchase can be costly: In 2010, the average couple spent an average of 54,000 SEK (approximately 8,031 USD; 5,904 Euro) on their wedding, whereas the average price of a one- or two-dwelling home was 2,024,000 SEK (approximately 301,015 USD or 221,286 Euro; June through August 2010), with down payments typically around 15% of the value of the home (Mulder 2006; Dagens Nyheter 2010; Statistics Sweden 2010). Both marriage and a jointly owned home may be desired, but a couple may not be able to choose both in the same period because they must allow additional time to save for the other event.

> H6 Competing Costs The risk of marriage is lower immediately before and after a joint home purchase; the risk of a joint home purchase is lower immediately before and after marriage (Fig. 1f).

3 The Swedish Context

Sweden is a particularly appropriate context for studying the relationship between marriage and home acquisition. Despite high rates of premarital cohabitation and non-marital births, marriage continues to be an important institution of family life in Sweden. The majority of Swedes eventually marry: In 2001, 83 and 75% of 50-year-old Swedish women and men, respectively, had been married at least once (Bernhardt 2004). Since the late 1990s, there is evidence of increasing marriage rates, particularly among women older than the age of 28 (Ohlsson-Wijk 2011). It is common for young adults to form independent households before marriage. Men and women leave home at an early age: The median age of leaving home for recent cohorts is 20.7 for women and 21.6 for men (Statistics Sweden 2008). By age 25, only 7 and 2% of men and women, respectively born in 1959 had never left the parental home (Billari et al. 2001; Mandic 2007).

There is a long tradition of public recognition of the link between housing and family life in Sweden. As early as the 1930s, politicians and scholars emphasized the importance of adequate housing stocks for the well-being of families (Myrdal and Myrdal 1935; Lauster 2008). Motivations for the expansion of publicly funded or subsidized housing across the twentieth century universally cited the importance of supporting of families (Ström 2010). Today, the Swedish housing market is flexible and homeownership is common, with nearly 60% of people owning their homes individually or as part of an ownership cooperative (Mulder 2006; Mulder and Billari 2010; Ström 2010). Mortgages are relatively easy to obtain and the amount required for the down payment is relatively low (on average, 15% in Sweden, as compared to 40–45% in Austria, France, Germany and Greece) (Scanlon and Whitehead 2004; Mulder 2006). There is also an extensive state-subsidized rental market (Lauster 2008; Ström 2010). These first-hand rentals are a very stable form of housing in Sweden. These contracts are long-term leases, contract holders have a "right to rent" the property and they cannot be easily evicted. Properties are owned by both public and private rental companies. Rents for publicly owned residences are set by semi-public municipal

corporations and rents for privately owned properties are typically matched to those set by the municipal corporations (Lauster 2008).

Additionally, there is a smaller less-attractive second-hand rental market (Ström 2010). These leases are shorter-term less-stable housing arrangements. In some cases, second-hand rentals are riskier, as they are illegal if not approved by the building association or rental authority.

4 Timing and Intention

Typically, demographic data capture events, such as births, deaths, marriages and moves. Although we can easily measure the occurrence of each event, it is more difficult to identify when the decision is made, in this case, to purchase a home or to marry (Mulder and Lauster 2010). Each decision is likely made several months before the event takes place. Furthermore, one decision may precipitate the other, and the order of subsequent events may not be the same as the order of decisions. Housing biographies capture the timing of moves, not the timing of the housing search, signing a contract or negotiating a home purchase. The process of home search and purchase may be long or short, depending on the housing market in a particular region or time period. Additionally, there is a lag between the purchase of a home and the move-in date. A similar argument can be made with respect to the timing of the decision to marry (engagement) and the marriage date.

To capture intentions and the decision-making process, the risk of each event of interest is allowed to vary not only before and after the conditioning event but also within a window around the conditioning event (see also figures referenced above). In general, one must exercise caution as to not condition behavior on future events and introduce bias into estimates that may include both the effect of the conditioning behavior on the event of interest and the effect of the event of interest on the conditioning behavior (see, for example, Hoem and Kreyenfeld 2006a, b). The best solution for avoiding such potential estimation pitfalls is better data collection, such that we have complete information on plans and intentions. For instance, in the analysis of differences between cohabiting and married couples, studies typically distinguish between married couples, cohabiting couples with intentions to marry and those cohabiters without intentions to marry. The nearly universal finding in these studies is that cohabiters with intentions to marry behave more like married couples.

Often in life history data, however, we do not have explicit information on plans and intentions. In such a case, a next best solution is to estimate the effect of the unobserved plans by specifying a differential risk for the period before the conditioning event when the individual or couple does, indeed, anticipate the coming event. Anticipation, in this case, can be considered a distinct state and its effect is not simply an artifact of the effect of the event of interest on the conditioning event. Of course, we do not know exactly how long it takes between the decision and the event. Although we know that intending to marry is a very strong predictor of subsequent marriage in the Swedish context, we do not know the shape of the survival curve (the "time-to-marriage") for those with intentions (Duvander 1999; Noack et al. 2011). Norms may have some impact on the duration of engagements, and housing markets data might provide an estimate of the average time to home purchase. In the absence of data on marriage intentions or average home search duration, we may empirically test for an appropriate window of time to capture the intention period. So long as this window is sufficiently short (months rather than decades), we can be confident that the potential for introducing biases into the risk estimates is small.

5 Data and Methods

Data for this analysis come from the Swedish Housing and Life Course Cohort Study (HOLK) conducted in the spring of 2005 (Ström and Brandén 2006; Ström et al. 2008). HOLK is the first survey to include both detailed housing histories and rich life history data. The survey consists of a random sample of all individuals born in Sweden in 1956, 1964 and 1974. The survey includes information on 2,242 individuals with a response rate of 62%. The survey data, collected through postal questionnaires, are matched to extensive register data for the period 1972–2005. The HOLK data include housing biographies for up to 11 residences, with information on type of dwelling, dwelling size and quality and ownership. The survey also includes detailed partnership biographies, including year and month of cohabitation, marriage and separation for all partnerships lasting 6 months or more. Register data include information on births, civil status changes, occupation, income, government transfers, education and residential moves.

The data were organized into longitudinal monthly cohabitation spells for each respondent between age 17 and the date of the event of interest (marriage or home purchase), separation or censoring, whichever comes first. Of the 2,935 co-residential spells, those in which the respondent had been previously married or married directly were excluded (10.2%).[1] As a result of censoring rules (discussed in greater detail below), 5.9% of spells were excluded because they began less than 36 months before interview. Spells in which the couples jointly owned the home in which they began their co-residence were excluded (5.7%). An additional 9.6% of spells were excluded because the housing history was incomplete. A trivial number of spells were excluded because of missing the co-residence start date or the co-residence ended before the respondent was 17 years old. Spells in which the co-residential period begins before age 17 were left truncated; truncation does not affect the measure of duration, but periods at risk before age 17 were not included in the analyses. See Appendix 2 for details. The analytic sample consists of 1,596 respondents and 2,006 cohabiting spells.

The risk of marriage and the risk of a joint home purchase were modeled separately using continuous-time proportional hazards models (Cox 1972; Blossfeld et al. 2006). Cox regression is a semi-parametric regression, modeled in continuous time. The duration variable is not parameterized and thus there is no assumption about the shape of the hazard function in relation to duration. Because individuals can contribute multiple spells to the analysis, standard errors were adjusted for clustering within individuals. Models take the form of:

$$\text{Marriage:} \ln y_{tij} = \gamma^{(y)} \, x_{tij} + \beta^{(y)} \, \mathbf{z}_{tij}^{(y)}$$
$$\text{Joint home purchase:} \ln x_{tij} = \lambda^{(x)} \, y_{tij} + \beta^{(x)} \, \mathbf{z}_{tij}^{(x)}$$

with subscripts corresponding to time (t), individuals (i) and spells (j). For models of the risk of marriage, spells consisted of periods of cohabitation, the event of interest was marriage and the primary duration dependence ("clock") of interest was x_{tij}. This clock was conditional on jointly purchasing a home and was specified with piecewise constant hazards corresponding to periods relative to the timing of moving into a joint home. Because the HOLK data do not capture the date of purchase, the date of moving into a jointly owned home was used as a proxy; measurement error introduced by this proxy is trivial in the Swedish case as the average time between home purchase and move-in is short. I used log-

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[1]See Appendix 1 for marriage rates of cohabiting and non-cohabiting couples in the HOLK data.

likelihood tests, Akaike information criteria, Bayesian information criteria and Wald statistical tests to select the best cut points for the piecewise constant hazards specification (results not presented here but available on request). In models of the relationship between marriage timing and the timing of a joint home purchase, time periods ranging from 60 months previous to a subsequent joint home purchase through 24 months after a joint home purchase were distinguished. Each period covered 12 months, except for periods immediately around the joint purchase, which were divided into 6-month intervals as follows: 12–6 months previous to joint purchase, 6–0 months previous to home purchase, 0–6 following a joint home purchase and 6–12 months following a joint home purchase. Using the fit statistics detailed above, adjacent (statistically) similar categories were collapsed to achieve the best fit. The best-fitting model for the analysis of the risk of marriage includes five periods: Periods not close to a joint purchase, 36–6 months prior to a joint purchase, 6–0 months prior to a joint purchase, 0–24 months after a joint purchase and 24 months or more after a joint purchase (reference). Couples who did not jointly purchase a home before marriage, separation or censoring are always observed in the period not close to a joint purchase. This specification allowed for a distinction of periods before and after the move and for the identification of a possible elevated risk in marriage related to the intention to jointly purchase a home.

Spell censoring occurred if there is no marriage or if the union dissolves prior to 36 months before the interview. Censoring at 36 months prior to interview was necessary to accurately identify periods prior to joint home purchase or marriage. Without censoring, correctly identifying periods prior to the conditioning event would be impossible if that conditioning event were to occur shortly after the interview. For example, the 24 months prior to interview among couples whose joint home purchase takes place 12 months after the interview (and is therefore unobserved) would be wrongly categorized as being not close to a joint home purchase. Misidentifying these periods would bias risk estimates for periods prior to the conditioning event.

For models of the risk of joint home purchase, spells consisted of periods of cohabitation or marriage, the event of interest was the joint purchase of a home, and marriage timing (y_{tij}) was included as the primary duration dependence ("clock") of interest. Following the procedure described above, the best-fitting model for the risk of a joint purchase relative to the timing of marriage was developed. The first model distinguished 12-month time periods ranging from 60 months before a subsequent marriage through 24 months after marriage, with time immediately around the marriage captured in 6-month intervals. The best-fitting model selected by fit statistics for the analysis of the risk of a joint home purchase includes five periods: Unmarried periods not close to a marriage, 24–12 months prior to a marriage, 12–0 months prior to a marriage, 0–12 months after a marriage and 12 months or more after a marriage (reference). Again, this specification allowed for the identification of an elevated risk of a home purchase in the periods immediately before and after marriage. Couples who did not marry before joint home purchase, separation or censoring are always observed in the period not close to a marriage. In models of the risk of a joint home purchase, spell censoring occurred if there was no joint purchase or if the union dissolved by 36 months before the interview. Because the best-fitting model for the risk of a joint purchase distinguishes periods 24 months before marriage, it would be reasonable to censor at 24 months prior to interview for these estimates. However, to have comparable samples for the analyses of the risk of marriage and of joint home purchase, the stricter 36 months before interview censoring rule was applied to both analysis samples.

It is important to take into account individual characteristics that may confound the relationships of interest (vector **z**). Demographic characteristics of the respondent were included: An indicator for female and a set of age dichotomous variables indicating 17–24

(reference), 25–29, 30–34 and 35 or older. Period was specified with time-varying indicators for the 1970s (reference), 1980s, 1990s and 2000s. These variables capture both demographic and economic temporal changes that may both affect the propensity to marry and the housing market. Relationship characteristics included indicators for first cohabitation and parity: no children (reference), one, two or three or more children.

Because more-advantaged couples may be both more likely to marry and more likely to purchase a home, it is important to take into account socioeconomic characteristics. Education was captured with a set of time-varying indicators for highest level of education completed: less than secondary education, secondary education (reference), some tertiary education and tertiary or more education. Unfortunately, because the education registers cover only the period 1985–2003, there is missing information on the highest grade completed for some time periods. A dummy variable indicating missing education information for periods before 1985 was included. A continuous time-varying measure of logged individual annual income in the previous calendar year was also included in the model (standardized for inflation to year 2000 SEK).

Characteristics of the couple's prior shared residence may also be related to the propensity to jointly purchase a home. In models of joint home purchase, two variables to captured time-varying housing characteristics in an ongoing cohabitation spell. First, type of tenure was specified with indicators for periods spent in homes owned by one or the other partner but not both, first-hand rental contract (reference), second-hand rental contract or any other type of contract. Second, the owner or holder of the housing contract was specified with indicators for periods spent in homes owned or contracted only by the man (reference), only by the woman, by both the man and the woman (rental only) or by someone else.[2,3]

6 Results

Tables 1, 2 and 3 provide descriptive results for the analysis sample. The mean duration of cohabiting spells where the event of interest is a marriage is less than 6 years, with half ending in the fourth year (50 months) (Table 1). On average, joint purchases occur somewhat earlier: The mean duration of cohabiting spells where the event of interest is a joint home purchase is approximately 4½ years, with half ending by the 42nd month. Nearly equal proportions of spells include an observed marriage or an observed joint purchase: 40% of spells include a marriage and 38% of spells include an observed joint home purchase. Spells ending with a marriage are likely to include or take place shortly before joint home purchase (56% of marital spells). Among spells ending with a joint home purchase, about 45% include or take place shortly before a marriage. Women contribute a slightly higher proportion of spells (58.8%); this is as expected because respondents were sampled at a fixed age and women form unions at younger ages than men. The sample is balanced across cohorts, with approximately 1/3rd of respondents born in 1956, 1964 and 1974. Eighty percent of spells are the first-reported cohabitations by respondents.

Time-varying descriptive statistics is reported separately for spells at risk of a marriage and spells at risk of a joint home purchase (Tables 2, 3). Approximately, half of the time at risk for a marriage models occur during periods not close to a joint purchase, 9.5% of time at risk occur 36–6 months before a joint purchase, 3.7% in the 6 months before a joint purchase, 9.5% in the 24 months after a joint purchase and the 12.2% more than 24 months after a joint purchase (Table 2). With respect to models of the risk of a joint home purchase, three

[2]Interacting tenure and contract holder variables did not change the pattern of association, nor did it improve model fit.
[3]These models predict joint home purchase. Therefore, the independent variable on ownership characterizes only those homes that are owned by the man or the woman; similarly, jointness characterizes only rental (first- or second-hand) properties.

quarters of time at risk is during periods not close to a marriage, 6.2% 24–12 months prior to marriage, 6.6% in the last 12 months before marriage, 3.2% of time in the year after marriage and 9.5% more than 12 months after marriage. In models of the risk of joint home purchase, time at risk is conditioned on time-varying measures of housing characteristics (Table 3). Approximately, 22.5% of time at risk is spent in an owned home, with approximately two thirds of that time in homes owned by the male partner and one third in homes owned by the female partner. About 64% of the time at risk for a joint home corresponds to periods when couples live in a first-hand rented property; these properties are most often held jointly (approximately, 46.6% of time in a first-hand rental and 30% of total time at risk). Only a small proportion of time at risk corresponds to periods when couples live in a second-hand rented property (2.8%).

Because the sample of cohabiters for the models of the risk of marriage and of joint home purchase is the same, descriptive statistics of additional time-varying covariates is largely similar, except where noted. Time periods at risk for either a marriage or a joint home purchase reflect the cohort sampling structure of the data: Approximately, 10% of time at risk occurs in the 1970s, a third during the 1980s, two fifths in the 1990s and approximately one fifth in the 2000s. More than two thirds of months at risk for marriage occur before age 30; a slightly higher proportion (74%) of months at risk for a joint purchase occurs before age 30. Periods at risk for both events are most likely to occur before childbearing: Roughly 60% of months at risk occur to respondents without children, 21% with one child, about 15% with two children and only 3% of months at risk occur when the respondent has three or more children. By-and-large, periods at risk occur during times when respondents have at least completed secondary education: Respondents have a secondary degree in more than 50% of spell months, have completed some tertiary education in almost 7% of spell months and have received a tertiary or higher degree in nearly 20% of spell months. Finally, the median income during the analysis period is 152,900 SEK (year 2000; approximately 21,123 USD) in models of the risk of marriage and 198,224 SEK (year 2000; approximately 27,384 USD) in models of the risk of a joint home purchase.

Table 4 includes continuous hazards model estimates of the risk of marriage. Model 1 differentiates periods relative to the timing of a joint home purchase. The risk of marriage is lowest in periods not close to a joint home purchase. During periods 36–6 months prior to a joint purchase, the marriage risk increases dramatically but remains 14% less than that for periods 24 months or more after marriage (insignificant). In the 6 months prior to a joint purchase, the risk of marriage is 7% higher than but not significantly different from the risk after 24 months of marriage. The highest risk of a joint home purchase is in the 2 years immediately following marriage (marginally significant).

While the overall positive association between joint home purchase and marriage remains, the pattern of time dependence is largely explained by demographic (Model 2), relationship (Model 3), education (Model 4) and income (Model 5) characteristics.[4] The risk is statistically distinguishable during periods not close to a joint home purchase; the risk of marriage in all other periods is statistically indistinguishable from periods 24 months after a joint home purchase (Fig. 2).

Consistent with demographic changes over time, there is a lower propensity to marry in later years. Marriage is least likely in periods when the respondent is under the age of 25 and most likely in periods when the respondent is between ages 25 and 34. Marriage is more likely in periods when the couple has children. Marriage is positively associated with education, but the coefficients on particular educational levels are not statistically different

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[4]I present only results from the full model; results from intermediate models available on request.

from one another. Finally, lagged income is positively associated with marriage; however, the coefficient is only marginally significant at the 10% level. The relationship between income and marriage is linear across the income distribution; allowing for non-linearity in the relationship between income and marriage (spline specifications) did not improve the fit of the model.

Table 5 presents results for the continuous time hazards models of the risk of joint home purchase. Model 1 differentiates periods relative to a marriage. During periods at when the couple is unmarried and not close to marriage, the risk of joint home purchase is half that of periods after a year of marriage. There is an increasing risk of joint home purchase in the lead-up to marriage. The risk of a joint purchase peaks in the 12 months after marriage when the risk is 80% higher as compared to periods at least a year after marriage (statistically significant at the 0.001% level).

This pattern and the strength of the association are largely robust to the inclusion of current housing (Model 2), demographic (Model 3), relationship (Model 4), education (Model 5) and income characteristics (Model 6).[5] Joint home purchase risks continue to peak in the 12 months after marriage, with a 68% higher risk relative to periods at least 1 year after marriage (Fig. 3). Differences in the rental or ownership status of the home in which the couple resides, whether owned, rented first-hand or rented second-hand, are statistically indistinguishable in their relationship to subsequent joint home purchase, for the most part. An exception, the risk of a joint home purchase is lower during periods of time living in an owned home (relative to periods living in a first-hand rental property), regardless of whether the man or the woman is the owner. There is no difference between periods when the man or woman is the owner/contract holder.

There is a notable increase in the propensity to purchase a home in later decades. In addition to reflecting the changing accessibility of homeownership, this pattern is likely because of an expansion in the stock of first-hand rental properties in Sweden in the late-1960s through the mid-1970s (Lauster 2008; Ström 2010). During these years, couples likely found an abundance of high-quality rental properties as they came of age, lowering their overall propensity to purchase a home. It is also possible that macro-level changes in the age structure of the Sweden because of low birth rates during the period may have contributed to slower growth in home prices in some regions of the country around the turn of the twenty-first century (Malmberg 2010). This trend may also have increased young families' access to owned homes. Joint home purchase is most common in periods when respondents are aged 25–34, relative to younger ages. There is a somewhat negative association between number of children and joint purchase, although none of the coefficients reach significance. The propensity to jointly purchase a home is not differentiated by education level. There is a strong positive linear relationship between previous year's income and joint purchase. As with the marriage model, allowing for the possibility of nonlinearity in the relationship between income and joint home purchase (spline specifications) did not improve the fit of the model.

7 Discussion

The results presented here are consistent with hypotheses predicting a positive relationship between marriage and joint home purchase. There is no evidence for either a long- or short-term negative relationship, as predicted by the Substitution (H5) and Competing Cost (H6) hypotheses, respectively. Quite to the contrary, these results provide clear evidence of a positive state effect: There is a higher risk of marriage in periods of joint ownership and a

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[5]I present only results from the full model; results from intermediate models available on request.

higher risk of joint purchase in periods when couples are married. That these events are positively linked suggests that couples value both marriage and jointly owning a home and may even make financial plans to allow for the two events to occur in tandem.

The elevated risks of marriage and of joint home purchase, respectively, are not only evident once the conditioning event has occurred but there is also evidence of a lead effect. In the 36 months prior to joint home purchase, the risk of marriage is about the same as when the couple has owned their home for at least 2 years, all else equal. Similarly, the risk of a joint purchase in the 24 months prior to marriage is statistically indistinguishable from that after more than a year of marriage. This lead effect suggests that the specification used here may be capturing couple's intentions: These lead periods may correspond to months when couples have made plans to purchase a home and may already be actively looking for a home to buy and months or when couples may have made plans to marry and may already be engaged. The lead effects are consistent with the Selection hypotheses (H4).

There is no evidence that the events necessarily take place in concordance, as suggested by the Simultaneity hypothesis (H3). The highest risks of each event are not uniformly observed immediately before and immediately after the conditioning event. With respect to marriage, it is unlikely that the joint purchase event itself is salient: The risk of marriage is no higher in the period immediately surrounding the joint purchase event. On the other hand, marriage does seem to be important with respect to the couple's decision to purchase a home together. The strong positive increase in the risk of a joint purchase in the year after marriage suggests a possible ordering of events: Marriage followed closely by a joint home purchase. This finding gives weight to the Secure Investment hypothesis (H2). Couples seem to respond to policy incentives that privilege marriage over cohabitation, particularly with respect to inheritance rights. Although inheritance may not be of great concern to those with few assets, marriage may be a necessary prerequisite for the purchase of a jointly owned home. And because the extra rights of marriage are only conferred at the time of marriage, the timing of these events may be particularly meaningful for prospective home buyers. That said, the importance of formalizing one's union to jointly purchase a home should not be overstated, as there is evidence of an elevated propensity for a joint purchase as early as 24 months prior to marriage. Future analyses must attempt to establish why the 12 months after marriage may be meaningful and if particular types of couples (such as those with unequal balance of earnings) are more likely to formalize their unions immediately prior to a joint home purchase.

Although a jointly owned home may be associated with higher marriage rates, it is notable that acquiring a home asset does not seem to be a prerequisite for marriage, as suggested by the Capstone Marriage hypotheses (H1). However, these aggregate results may mask an underlying heterogeneity among couples with respect to the timing of marriage and home purchase as well as to the broader meaning couples ascribe to marriage. For instance, if many couples see marriage as a Capstone event but more couples hold to the Secure Investment model, we might also observe the patterns of marriage and joint home purchase reported here. Indeed, although the Secure Investment hypotheses emerges as a somewhat stronger pattern of behavior, these results may represent an average effect across couples who place distinctly different meanings on the timing of marriage and timing of a joint home purchase. Again, it may be useful to explore differences in the timing of marriage and joint home purchase among particular subpopulations.

These results on the relationship between the timing of marriage and the timing of a joint home purchase speak more broadly to the meaning of marriage. It is clear that even in Sweden, marriage and cohabitation are not indistinguishable with respect to joint financial investments. Married couples and cohabiters with plans to marry are more likely to purchase

a home together than their counterparts for whom marriage is more distant or unlikely. Indeed, marriage is a more stable long-term commitment and these characteristics parallel the home investment.

It is notable that income and assets operate independently vis-à-vis marriage: Including lagged household income in the model did not diminish the positive association between joint home ownership and marriage. Indeed, income and assets are closely linked, as demonstrated by models of joint home purchase. However, in the Swedish context where there is a vast system of social support guaranteeing a relatively high standard of living over the life-course, longer-term economic prospects, such as the home asset or completing tertiary education, may be more salient for the marriage decision than shorter-term economic inflows.

In interpreting these findings, it is also important to note that Sweden may be a unique context. In Sweden, there is an extensive market for long-term high-quality rental properties. Although mortgages are widely available, the proportion of renters is sufficiently high that we might conclude that renting is an acceptable alternative to owning, even for families (Mulder and Billari 2010). The strength of the association between marriage and joint ownership may be suppressed in this context, as couples can secure residential stability in rental as well as owned properties. Consequently, although the goal may be to own one's home, family life need not wait.

Acknowledgments

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Appendix 1

See Table 6.

Appendix 2

See Table 7.
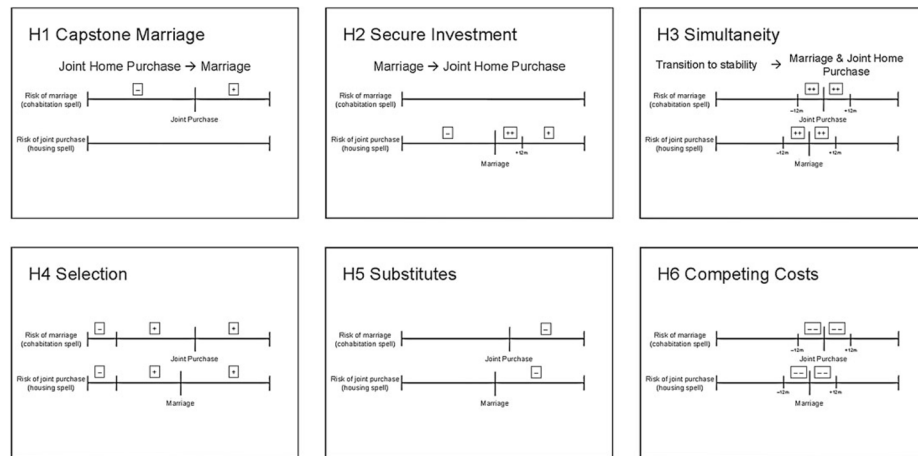
Fig. 1.
Hypotheses
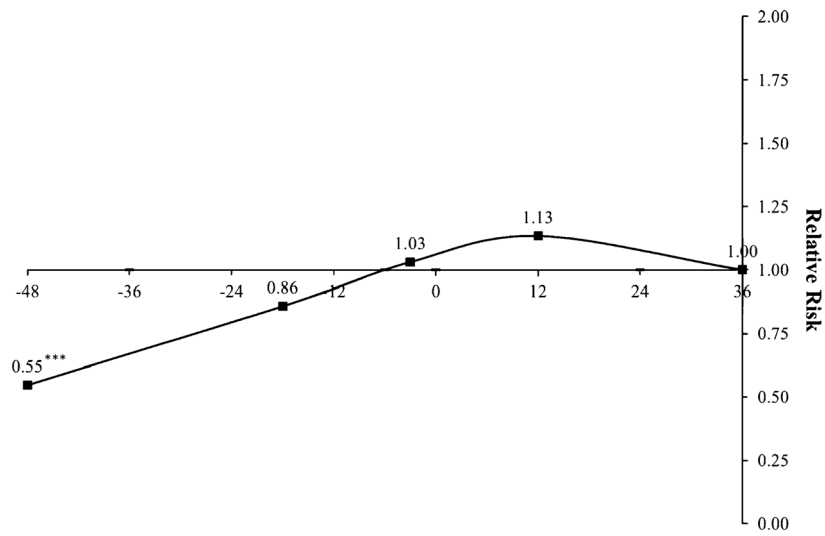
Fig. 2.
Risk of marriage relative to timing (in months, abcissa) of joint home purchase ($t = 0$) (full model)
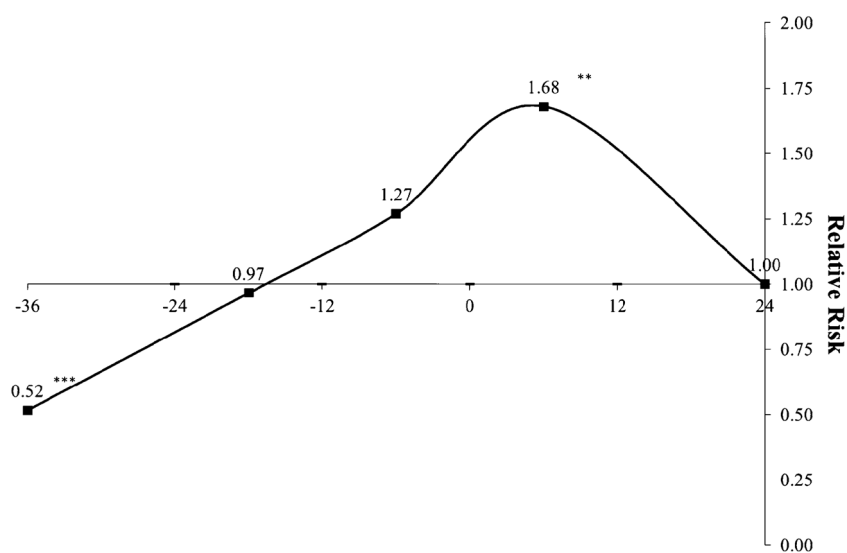
Fig. 3.
Risk of joint home purchase relative to timing (in months, abcissa) of marriage ($t = 0$) (full model)

Table 1

Sample descriptive statistics: fixed covariates

	%	N
Spell duration (months)		
Spells at risk for marriage		
Mean	–	69
25th percentile	–	26
50th percentile	–	50
75th percentile	–	91
Spells at risk of a joint home purchase		
Mean	–	55
25th percentile	–	23
50th percentile	–	42
75th percentile	–	73
Marriage		
Percentage of spells ending in marriage	39.6	795
Joint ownership status at marriage for those who marry		
Jointly owned, more than 24 months	11.4	91
Jointly owned, less than 24 months	18.4	146
Not jointly owned, less than 6 m before joint purchase	6.0	48
Not jointly owned, 36-6 months before joint purchase	20.0	159
Not jointly owned, not close to a joint purchase	39.6	315
Other housing, previous to first housing, missing	4.5	36
Joint home purchase		
Percentage of spells ending in joint purchase	38.3	768
Marital status at joint purchase for those who jointly purchase		
12+ months after marriage	14.7	113
1–12 months after marriage	9.4	72
Unmarried 12–0 months prior to marriage	12.8	98
Unmarried and 24–12 months prior to marriage	8.6	66
Unmarried, not close to a marriage	54.6	419
Sex of respondent (% of spells)		
Male	41.2	827
Female	58.8	1,179
Cohort of respondent (% of spells)		
1956	33.7	676
1964	33.9	681
1974	32.4	649
Cohabitation count		
First cohabitation	79.6	1,596
Second- or higher-order cohabitation	20.4	410
Sample (spells)		2,006

	%	N
Individuals		1,596
Marriages		795
Joint home purchases		768

Source: HOLK. Author's calculations

Table 2

Sample descriptive statistics: time-varying conditioning covariates

	Marriage		Joint home purchase	
	%[a]	N[a]	%[a]	N[a]
Joint home purchase timing				
Jointly owned, more than 24 months	12.2	14,814	–	–
Jointly owned, less than 24 months	9.5	11,558	–	–
Not jointly owned, less than 6 m before joint purchase	3.7	4,515	–	–
Not jointly owned, 36-6 m before joint purchase	9.5	11,481	–	–
Not jointly owned, not close to a joint purchase	52.7	63,895	–	–
Other, missing information	5.9	7,120	–	–
Marriage timing				
12+ months after marriage	–	–	9.5	9,665
1–12 months after marriage	–	–	3.2	3,228
Unmarried 12–0 months prior to marriage	–	–	6.6	6,781
Unmarried and 24–12 months prior to marriage	–	–	6.2	6,354
Unmarried, not close to a marriage	–	–	74.5	76,194
Sample (spells)		2,006		2,006
Individuals (clustering)		1,596		1,596
Person-months observed		121,333		102,222

Source: HOLK. Author's calculations

[a]Percentage/*N* of analysis time (months)

Table 3

Sample descriptive statistics: other time-varying covariates

	Marriage		Joint home purchase	
	%[a]	N[a]	%[a]	N[a]
Type of housing				
Own				
Man owns	–	–	14.0	14,341
Woman owns	–	–	8.5	8,677
Rent first hand				
Man contractee	–	–	18.2	18,627
Woman contractee	–	–	16.1	16,421
Joint contractee	–	–	30.0	30,624
Rent second hand	–	–	2.8	2,857
Other housing	–	–	7.2	7,336
Missing housing type, owner/contractee	–	–	3.3	3,339
Year				
1970s	9.4	11,434	11.3	11,545
1980s	33.8	41,061	36.8	37,638
1990s	43.9	53,262	41.5	42,435
2000s	12.8	15,576	10.4	10,604
Age of respondent				
< 25 years	36.2	43,936	41.4	42,296
25–29 years	32.4	39,303	32.8	33,506
30–34 years	16.9	20,464	15.2	15,580
35+ years	14.5	17,630	10.6	10,840
Number of children				
0	58.3	70,728	62.5	63,868
1	21.6	26,200	21.2	21,689
2	16.4	19,851	12.9	13,199
3+	3.8	4,554	3.4	3,466
Education (highest grade completed)				
Less than secondary	8.3	10,115	7.2	7,406
Secondary	53.8	65,270	53.1	54,277
Some tertiary	6.7	8,071	6.5	6,617
Tertiary or more	19.4	23,547	19.7	20,106
Missing: valid register, missing	0.9	1,115	1.0	1,022
Missing: no register (pre-1985)	10.9	13,215	12.5	12,794
Previous year's income (lag)	SEK	USD	SEK	USD
Mean	150,167	20,745	212,165	29,310
25th percentile	98,136	13,557	120,300	16,619
50th percentile	152,900	21,123	198,224	27,384
75th percentile	193,919	26,789	281,933	38,948

	Marriage		Joint home purchase	
	%[a]	N[a]	%[a]	N[a]
Sample (spells)	2,006		2,006	
Individuals (clustering)	1,596		1,596	
Person-months observed	121,333		102,222	

Source: HOLK. Author's calculations

[a]Percentage/*N* of analysis time (months)

Table 4

Continuous time proportional hazards models of the risk of marriage

	Joint Purchase Event			Full Model		
	B	Robust SE	e^B	B	Robust SE	e^B
Type of housing						
Jointly owned, more than 24 months	0.00	–	1.00	0.00	–	1.00
Jointly owned, less than 24 months	0.17	0.102$^+$	1.19	0.13	0.103	1.13
Not jointly owned, less than 6 months before joint purchase	0.07	0.167	1.07	0.03	0.168	1.03
Not jointly owned, 36-6 months before joint purchase	−0.15	0.119	0.86	−0.15	0.120	0.86
Not jointly owned, not close to a joint purchase	−0.62	0.104***	0.54	−0.60	0.104***	0.55
Other housing	−0.87	0.273***	0.42	−0.79	0.283**	0.46
Missing housing type, owner/contractee	−0.04	0.262	0.96	−0.18	0.251	0.84
Previous to first housing	0.74	0.740	2.10	0.93	0.743	2.53
Demographic characteristics						
Female	–	–	–	0.06	0.077	1.07
Period						
1970s	–	–	–	0.00	–	1.00
1980s				−0.44	0.159**	0.65
1990s	–	–	–	−1.12	0.175***	0.33
2000s	–	–	–	−1.28	0.216***	0.28
Age						
< 25 years	–	–	–	0.00	–	1.00
25–29 years	–	–	–	0.77	0.121***	2.15
30–34 years	–	–	–	0.89	0.141***	2.43
35+ years	–	–	–	0.51	0.218*	1.66
Relationship characteristics						
First cohabitation	–	–	–	0.05	0.109	1.06
Number of children						
0	–	–	–	0.00	–	1.00
1	–	–	–	0.18	0.094$^+$	1.19

	Joint Purchase Event			Full Model		
	B	Robust SE	e^B	B	Robust SE	e^B
2	–	–	–	0.19	0.132	1.21
3+	–	–	–	0.42	0.209 *	1.52
Highest grade completed						
Less than secondary	–	–	–	–0.15	0.153	0.86
Secondary	–	–	–	0.00	–	1.00
Some tertiary	–	–	–	0.00	0.155	1.00
Tertiary or more	–	–	–	0.15	0.098	1.16
Missing: valid register, missing	–	–	–	0.19	0.283	1.21
Missing: no register (pre-1985)	–	–	–	–0.19	0.129	0.82
Lagged logged total income ($n − 1$, 1,000SEK)	–	–	–	0.04	0.027 +	1.05
Observations (months at risk)	121,333			121,333		
Cohabitation spells	2,006			2,006		
Clusters (individuals)	1,596			1,596		
Failures (events)	795			795		

Source: HOLK. Author's calculations

***
$P < 0.001$,

**
$P < 0.01$,

*
$P < 0.05$,

+
$P < 0.1$

Table 5

Continuous time proportional hazards models of the risk of joint home purchase

	Marriage event			Full model		
	B	**Robust SE**	**e^B**	**B**	**Robust SE**	**e^B**
Marital status						
12+ months after marriage	0.00	–	1.00	0.00	–	1.00
1–12 months after marriage	0.59	0.164 ***	1.80	0.52	0.165 **	1.68
Unmarried 12–0 months before marriage	0.25	0.153+	1.29	0.24	0.158	1.27
Unmarried and 24–12 months before marriage	−0.04	0.168	0.96	−0.03	0.172	0.97
Unmarried, not close to a marriage	−0.65	0.124 ***	0.52	−0.66	0.132 ***	0.52
Type of housing						
Own (vs. rent)						
Rent first hand	–	–	–	0.00	–	1.00
Rent second hand	–	–	–	0.10	0.211	1.10
Own	–	–	–	−0.46	0.111 ***	0.63
Owner/contractee						
Man	–	–	–	0.00	–	1.00
Woman	–	–	–	0.06	0.103	1.06
Joint	–	–	–	0.12	0.098	1.12
Other housing	–	–	–	0.08	0.162	1.09
Missing housing type, owner/contractee	–	–	–	−0.34	0.225	0.71
Demographic Characteristics						
Female	–	–	–	0.09	0.079	1.09
Period						
1970s	–	–	–	0.00	–	1.00
1980s	–	–	–	0.29	0.174+	1.34
1990s	–	–	–	0.53	0.195 **	1.70
2000s	–	–	–	0.66	0.228 **	1.94
Age						
< 25 years	–	–	–	0.00	–	1.00

	Marriage event			Full model		
	B	**Robust SE**	**e^B**	**B**	**Robust SE**	**e^B**
25–29 years	–	–	–	0.27	0.108 *	1.30
30–34 years	–	–	–	0.31	0.140 *	1.37
35+ years	–	–	–	-0.03	0.201	0.97
Relationship characteristics						
First cohabitation	–	–	–	0.17	0.113	1.18
Number of children						
0	–	–	–	0.00	–	1.00
1	–	–	–	0.11	0.096	1.11
2	–	–	–	-0.06	0.141	0.95
3+	–	–	–	-0.41	0.277	0.67
Highest grade completed						
Less than secondary	–	–	–	-0.17	0.153	0.84
Secondary	–	–	–	0.00	–	1.00
Some tertiary	–	–	–	0.10	0.149	1.10
Tertiary or more	–	–	–	-0.15	0.101	0.86
Missing: valid register, missing	–	–	–	-0.11	0.392	0.89
Missing: no register (pre-1985)	–	–	–	-0.11	0.139	0.90
Lagged logged total income ($n − 1$)	–	–	–	0.18	0.055 ***	1.20
Observations (months at risk)	102,222			102,222		
Housing spells	2,006			2,006		
Clusters (individuals)	1,596			1,596		
Failures (events)	768			768		

Source: HOLK. Author's calculations

***
$P < 0.001$,

**
$P < 0.01$,

*
$P < 0.05$,

+
$P < 0.1$

Table 6

Full survey sample

	N	*%*
Ever marry	1,232	54.95
Ever cohabit	1,228	100
Never cohabit	4	0
Never marry	1,010	45.05
Ever cohabit	796	79
Never cohabit	214	21
Total	2,242	100.00

Source: HOLK. Author's calculations

Table 7

Analytic sample

Co-residential spells	N
Total	2,935
Previously married or married directly	300
Co-residence spells ending before age 17	2
Co-residence starts after 36 m pre-interview	173
Missing co-residence start date	4
Jointly own at the beginning of co-residence	168
Incomplete or missing housing biography	282
Sample (co-residential spells)	2,006
Individuals	1,596
Marriages	795
Joint home purchases	768

Source: HOLK. Author's calculations