Home and Where the Heart Is
Marriage timing and joint home purchase

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Abstract

This paper evaluates the extent to which the purchase of a jointly-owned home is a catalyst for marriage among Swedish cohabiting couples. Joint home ownership may provide an indicator for commitment and relationship, economic and residential stability. Data for this analysis come from the Swedish Housing and Life Course Cohort Study (N = 1,908 couples; 2,568 cohabiting spells; 4,240 housing spells). I run separate models for the risk of marriage conditioning on a joint home purchase event and the risk of joint home purchase conditioning on a marriage event. I allow for differences in the risk 12 or more months before, 12 month before, 12 months after and more than 12 months after the conditioning event. Results indicate a positive relationship between marriage and joint home purchase. Furthermore, the risks of marriage and of a joint home purchase are particularly elevated in the 24 month window around each respective conditioning event. The analysis suggests the possibility of an ordering of events: home purchase may be a prerequisite for marriage in Sweden.

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INTRODUCTION

Home and family are two deeply entwined institutions. The establishment of a joint home is an essential stage in the union formation process and is a nearly uniform prerequisite for childbearing. In Anglo-Saxon, Southern European and many Western contexts there is an expectation of an owner-occupied, independent home for family building. An owned home is an asset and a long-term investment. This financial commitment parallels long-term family commitments such as marriage and childrearing. An owned home may signal relationship stability and a couple's commitment to one another. Indeed, the timing of the purchase of a home and the timing of particular family processes may be closely linked. The ordering of events may contribute to our understanding of the meanings of and motivations for the timing of particular family life-course transitions.

This paper evaluates the relationship between the purchase of a jointly-owned home and marriage. I test whether there is an elevated risk of marriage in months surrounding a joint home purchase and investigate several causal explanations for the relationship. If the purchase of a jointly-owned home is a catalyst for marriage, I expect an elevated risk of marriage after the purchase of a home. I consider several alternative hypotheses: the relationship may be reversed, whereby marriage increases the risk of joint home purchase; the marriage and home purchase events may be jointly determined by couples' characteristics, such as economic status, relationship quality or commitment; if both acts are indicators of commitment, marriage and joint home purchase may be substitutes; and a competing costs hypotheses, whereby couples may value both marriage and a jointly owned home, however the costs associated with the wedding and home purchase require adequate spacing of the two events. The modeling approach used here addresses methodological challenges associated with intentionality and the possible simultaneity of marriage and joint home purchase processes. Results speak to the broader meaning of marriage with a context where marriage and cohabitation are seemingly indistinguishable (Heuveline and Timberlake 2004).

HOME PURCHASE AND THE FAMILY LIFE COURSE

Major changes have occurred in the way families are organized in Europe and the United States over the past 30 years. Increasingly marriage is 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 accompanied by 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 across socioeconomic and demographic characteristics eventually marry (Tucker 2000; Goldstein and Kenney 2001; Bernhardt 2004; Wiik 2008). Family scholars are only beginning to develop an understanding of what people are trying to achieve through marriage and we continue to develop theories about what life-course phenomena trigger the marriage decision for couples within a Second Demographic Transition context.

Attitudinal data and longitudinal research conducted with cohabiting couples in the United States and Europe suggest that marriage is associated with particular economic conditions and there is an expectation of meeting certain economic prerequisites before couples will marry

(Bernhardt 2004; Duvander 1999; Edin and Kefalas 2005; Holland 2008; Waite and Gallagher 2000). An essential component of economic stability is the accumulation and maintenance of assets. In the United States, asset building is associated with a "Middle Class Ideal," whereby, in tandem with marriage, couples expect to jointly acquire "symbols of success," such as a home (Edin and Kefalas 2005). Evidence for an expectation of an owner-occupied, independent home is also found in Anglo-Saxon, Southern European and in some Western European countries (Mulder 2006). Indeed, 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). 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. Furthermore, home ownership is associated with economic and residential stability, often considered prerequisites for family building. Expectations of joint asset building for economic stability suggest strong incentives and norms that acquisition of joint assets should be conditioned on marriage.

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. However, this relationship is complex and may be multi-directional. On the one hand, the purchase of a home may be a catalyst for marriage, where the joint purchase increases economic and residential stability. The pooling of resources and the joint investment in a shared asset increases the couple's financial interdependence. The purchase of a shared home may induce the couple to reinforce their partnership through marriage, a more stable form of corresidential union. 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. Additionally, if marriage and childbearing are associated with a particular level of economic success, 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; Holland 2008). If a joint home purchase is a catalyst for marriage we could expect:

[Figure 1 about here]

H1 Marriage Catalyst: The risk of marriage is higher after a joint home purchase than before the joint purchase. (Figure 1a)

Alternatively, the direction of the relationship could be reversed. 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, Kearns et al. 2001; Mulder 2006). 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 which 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). Any advantages associated with marriage can only be enjoyed once a couple is legally married; the intention to marry is not enough. If marriage is a prerequisite for a joint home purchase we would expect:

H2 Home Purchase Prerequisite: The risk of joint home purchase is higher after marriage than before marriage. (Figure 1b)

It is possible that the relationship between home purchase and marriage is purely driven by selection. Marriage and home purchase may be 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. In such a case, it is important to disentangle these characteristics and other life course processes that may jointly determine both events and thus may confound the relationship of interest (Lillard and Panis 2003). These confounders may include demographic processes, such as childbearing, socio-economic events, such as the completion of education, employment and earnings trajectories, and individual-level characteristics, such as nativity and other background characteristics (Upchurch, Lillard et al. 2002). The two events should be linked, however, the specific ordering of events is not important under this hypothesis.

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

On the other hand, it is possible that there is a negative relationship between marriage and a joint home purchase. On the one hand, if marriage and a jointly owned home both symbolize stability and long-term commitment within a couple, it may not be necessary to do both. Some scholars postulate that marriage and cohabitation have become indistinguishable from one another in the Swedish context, in that there is wide social acceptance of unmarried cohabitation, there are broad institutional supports for parents regardless of marital status and children are likely to be born into cohabitation rather than marital unions (Heuveline and Timberlake 2004). In such a case, family behaviors such as childbearing or home purchase may replace marriage as the symbolic act indicating long-term commitment of a union for some couples. In such a case, we might expect to that marriage and joint purchase of a home are substitutes: for those who see joint home purchase as symbolic of stability and long-term commitment, we would observe a lower risk of marriage after a joint home purchase, whereas among couples who continue to value marriage as symbolic of stability, we would observe a lower risk of joint home purchase after marriage.

H4 Substitutes: The risk of marriage is lower after a joint home purchase; the risk of a joint home purchase is lower after marriage. (Figure 1d,e)

It is possible that marriage and joint home purchase are not substitutes, but to the extent that couple intend to have a wedding party, the cost of a home and the costs of the wedding may be competing (Michielin and Mulder 2008). Both marriage and a jointly owned home may be desired, but a couple cannot choose both in the same period because they must allow additional time to save.

H5 Competing Costs: The risk of marriage is lower immediately before and immediately after a joint home purchase; the risk of a joint home purchase is lower immediately before and immediately after marriage. (Figure 1f)

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 institution of family life in Sweden. The vast majority of Swedes will 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 over the age of 28 (Ohlsson 2009). It is common for young adults to form independent households before marriage. Men and women leave home at an early age. By the age of 25, only 7% and 2% of men and women (respectively) born in 1959 had never left the parental home (Billari, Philipov et al. 2001; Mandic 2007). In 2003, 61% of men and 55% of women between the ages of 18 and 34 lived independently, alone or in couples (Statistics Sweden 2008).

With respect to housing context, the Swedish housing market is flexible, homeownership is common and mortgages are relatively easy to obtain (Mulder 2006). There is also an extensive, state-subsidized rental market. These first-hand rentals are a very stable form of housing in Sweden. These contracts are long-term leases and contract holders have a "right to rent" the property. Rents are controlled by the government and renters cannot be easily evicted from the property. The second-hand rental market is less attractive. These leases are shorter-term, less-stable and in some cases riskier, as they are illegal if not approved by the building association or rental authority.

MODELLING AND METHODOLOGICAL CHALLENGES
The approach followed here assumes that marriage and joint home purchase are interacting processes. To evaluate their relationship I consider the risk of each event in relation to the other: the timing of marriages relative to a fixed joint home purchase event and the timing of a joint home purchase relative to a fixed marriage event. Typically, demographic data captures events, such as births, deaths, marriages and moves. While we can easily measure the occurrence of each, it is more difficult to identify when the decision is made to purchase a home or to marry; the time horizon of each decision is unknown. The decision to marry or the decision to purchase a home is likely made several months before the event takes place and this intention may change individual behavior. Furthermore, 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 home market in any 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. In both cases, we can only identify the event: the move in date or the marriage date. To better capture intentions and the decision-making process, I allow the risk of each event of interest to vary before and after the conditioning event, as well as within a 24-month window around the conditioning event (12 months prior and 12 months post).

A possible concern with such an analysis is that bias is introduced into the models when conducting anticipatory analysis, i.e. conditioning behavior on future events (Hoem and Kreyenfeld 2006). However, modeling of this sort has a long tradition in family research. In

studies of fertility, it is common to back-date birth date information to study the period of pregnancy, i.e. behavior among individuals with plans to give birth. In this case, the pre-birth window is biologically defined—birth typically occurs 38-42 weeks after conception. Such analyses fail to capture the behavior of women fail to give birth because of miscarriages or induced abortion, however this bias is typically considered acceptable.

Another area of research that consistently uses the anticipatory approach is in the analysis of cohabiting couple outcomes. These studies typically distinguish between married couples, cohabiting couples with plans to marry and those cohabitors without plans to marry. The nearly universal finding in these studies is that cohabitors with plans to marry behave more like married couples. Unlike with fertility studies, in the case of cohabitors with marriage plans we do not have explicit information on the typical duration of the marital planning period. Plans are self reported by respondents or imputed based on marriage date.

In this study, information on plans for marriage or plans for home purchase is lacking. 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. However, in the absence of such data, sensitivity analysis suggests that the 24-month window specification provides a reasonable estimate for the duration of engagement and home-search.[2]

DATA AND METHODS
Data for this analysis come from the Swedish Housing and Life Course Cohort Study (HOLK) (Ström and Brandén 2006; Ström, Brandén et al. 2008). HOLK is the first survey in 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 and had 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 six months or more. These data are matched to respondent and partner register data records on birth, civil status changes, occupation, income, government transfers, education and residential moves.

For the analysis of the risk of marriage I build longitudinal, monthly cohabitation duration records for each unmarried individual over the age of 20 who has never been married and is living in a cohabiting union. I limit the analysis to cohabitors because almost no marriages occur without prior cohabitation in the Swedish context. Furthermore, as to not confound the process of leaving the parental home and marriage, I only follow cohabitations from the age of 20. Cases with cohabitations that begin before age 20 are left truncated; truncation does not affect the measure of cohabitation duration, but the case does not contribute observations until the respondent's 20th birthday. Finally, I have eliminated a small number of cohabitation spells where respondents did not report a spell start date. Analysis records include the duration of cohabiting unions, timing of childbearing, duration of all education spells, annual

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[2] Goodness of fit tests for 6-month, 12-month, 24-month and 36-month window (not shown) specifications suggests an optimal fit is achieved with a 24-month window (12 months pre- and 12 months post-conditioning event).

earnings and income, and demographic characteristics. The analytic sample for the risk of marriage consists of 1,908 respondents and 2,568 cohabiting spells.

The analytic sample for the risk of a joint home purchase is a subset of the risk of marriage sample. Here the unit of analysis is housing spells within cohabiting unions. Here the sample is limited to those individuals with complete housing records with non-missing housing start and end dates. Furthermore, I eliminate housing spells where the couple had previously jointly owned their home. The analytic sample for the risk of a joint home purchase consists of 1,733 respondents, 2,238 cohabiting spells and 4,240 housing spells.

I model the risk of marriage and the risk of a joint home purchase separately using continuous-time, proportional hazards models (Cox 1972; Blossfeld, Golsch 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 underlying relationship between shape of the hazard function with relation to duration. For models of the risk of marriage, spells consist of premarital cohabiting unions, the event of interest is marriage and censoring occurs if there is no marriage before December 2004 or if the union dissolves. For models of the risk of joint home purchase, spells consist of premarital cohabiting housing durations, the event of interest is the joint purchase of a home and censoring occurs if there is no joint purchase before December 2004 or if the union dissolves. Individuals can contributed multiple spells to the analysis; in marriage models standard errors are adjusted for clustering within individuals and in joint home purchase models standard errors are adjusted for clustering within individuals and cohabiting unions. Models take the form of

$$\text{Marriage}: \ln y_{ti} = \gamma^{(y)} x_{ti} + \beta^{(y)} \mathbf{z}_{ti}^{(y)} + e_{ti}^{(y)}$$
$$\text{Joint Home Purchase}: \ln x_{ti} = \lambda^{(x)} y_{ti} + \beta^{(x)} \mathbf{z}_{ti}^{(x)} + e_{ti}^{(x)}$$

where $\mathbf{z}$ is a vector of time-fixed and time-varying covariates and e time-varying residuals. The primary duration dependence ("clock") of interest for the marriage risk is x_{ti}. This clock is specified with a set of conditional indicator variables relative to the timing of a joint home purchase.[3] Indicators correspond to periods more than 12 months prior to moving into a jointly-owned home, periods 12 to 1 month(s) before the move in date, the date of move until 12 months after moving into a jointly-owned home and 12 months or more after the move in date (reference group). This "window" specification allows for a distinction of periods before and after the move and for the identification of an elevated risk in marriage surrounding the joint purchase of a home.

Similarly, in the risk of home purchase equation, marriage duration (y_{ti}) is included in the risk of home purchase. This clock is a conditional for those who marry and is specified relative to more than 12 months before the marriage, 12 to 1 month before marriage, the month of marriage until 12 months after the marriage and more than 12 months after marriage. Again,

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[3] The timing of joint purchase is specified as the month when the couple moves into a jointly owned home. Because the HOLK data do not capture the date of purchase, I use the date of moving into a jointly owned home as a proxy; measurement error introduced by this proxy is trivial in the Swedish case as the average time between home purchase and move it short.

this "window" allows for the identification of an elevated risk of a home purchase in the periods immediately before and after marriage.

It is important to take into account individual characteristics that may confound the relationships of interest. I include indicators on demographic characteristics of the respondent including an indicator for female, birth cohort and age with a set of dummy variables indicating ages 20-24 (reference), 25-29, 30-34 and 35 or older. I capture relationship characteristics with an indicator for first cohabitation and parity: no children, one, two or three or more children.

More economically advantaged couples may be both more likely to marry and more likely to purchase a home. Consequently, it is important to take into account socioeconomic characteristics. Education is captured with a set of time-varying indicators for highest level of education competed: less than secondary education, secondary education (reference), some tertiary education and completed tertiary or more education. A continuous measure of logged individual total annual income in the previous calendar year is also included in the model (standardized for inflation to year 2000 SEK).

Characteristics of the couple's shared residence may also be related to the propensity to jointly purchase a home. To this end in models of joint home purchase I include two sets of dummy variables to capture housing characteristics: the first, indicators of residing in an owned home, first-hand rental (baseline) property, second-hand rental property or any other type of property; the second, an indication if only the respondent, only the partner, both the respondent and the partner or someone else holds the contract or ownership rights for the current residence.[4][5]

RESULTS
Risk of Marriage

[Table 1a – 1b about here]

Table 1a and 1b present descriptive results for spells at risk of marriage. The mean duration of cohabiting spells is just over 5 years, with more than half ending by the 4th year; 43% of these spells end with a marriage (Table 1a). The marriage risk sample has a slightly higher proportion of women (57%). The sample is balanced across cohorts, with approximately 1/3 of respondents born in 1956, 1964 and 1974. With respect to time-varying covariates (Table 1b), nearly two-thirds of months at risk for marriage occur before age 30. Those at risk for marriage are less likely to have children: 55% of months at risk occur to respondents without children, 23% with one child, 29% with two children and only 4% of months at risk occur when the respondent has three or more children. By-and-large the sample has completed secondary education or more: respondents have a secondary degree in 44% of spell months, have completed some tertiary education in 6% of spell months and have received at least tertiary degree in 17% in spell

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[4] Interacting tenure and contract holder variables did not change the pattern of association, nor did it improve model fit. The relationship between home characteristics and joint home purchase appear to be additive.

[5] In these models we are predicting 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 (1st or 2nd hand) properties.

months. Finally, the median income over the analysis period is 162,678 SEK (year 2000; approximately $22,473 US).

[Table 2 about here]

Table 2 includes continuous hazards model estimates of the risk of marriage. Model 1 includes indicators for the relative timing of a joint home purchase. Relative to periods 1 year after a joint home purchase, those who do not jointly own and are at least 12 month prior to a joint purchase are approximate 35% less likely to marry. In the 12 months before the purchase, rates of marriage are equally as likely to marry as the reference group, suggesting that those with plans to purchase a home are more like those who have jointly owned their homes for at least a year. The risk of marriage is highest in the twelve months after a joint purchase: 24% higher risk than those who have owned for at least a year.

This pattern is robust to the inclusion of demographic (Model 2), relationship (Model 3), education (Model 4) and income (Model 5) characteristics. Women are slightly more likely to marry than men, all else equal. Consistent with demographic changes over time, there is a lower propensity to marriage among younger cohorts. Marriage is most likely between age 25 and 34. Marriage is marginally more likely if the respondent is in their first cohabitation and if the relationship involves children. There are few differences in the propensity to marry across education, however those with a tertiary degree or more are about 26% more likely than those with only a secondary degree. Finally, there is a positive linear relationship between lagged income and marriage.[6]

Risk of a Joint Home Purchase

[Tables 3a – 3d about here]

Table 3a – 3d present descriptive results for spells at risk of a joint home purchase. The mean duration of a housing spell is just short of 5 years, with half of the spells ending just after 3 years (Table 3a). Similar to the marriage sample, more than half of respondents are female and there is an equal balance of respondents across cohorts. The majority of residences involve only one cohabiting union (94%), suggesting that beginning new cohabitations typically involve a move into a new residence. With respect to time-varying housing characteristics, approximately 60% of housing spell months occur in first hand rented properties (Table 3b). The new most common tenure type is owned home (31% of spell months). Slightly more months are spent in residences where the man rents or owns the property (37%) relative to housing contracted by the woman (27%) or contracted jointly (26%).[7] As with the marriage analysis, the majority of analysis months take place when the respondent is younger than age 30 (62%). Most families are small with 51% of months spent with no children and 21% with one child. In 42% percent of sample

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[6] Allowing non-linearity in the relationship between income and marriage (spline specifications) did not improve the fit of the model.

[7] In the analysis of joint home purchase, jointly contracted properties are rented (1st or 2nd hand) (note the by-definition empty cells, Table 3c).

months respondents have only a secondary degree, while in 17% of months respondents have a tertiary degree or higher. Finally, the median income in the previous year was 157,781 SEK (year 2000; approximately $21,797 US).

[Table 4 about here]

Table 4 presents results for the continuous time hazards models on the risk of joint home purchase. Model 1 includes only indicators for the timing of joint purchase relative to marriage. Relative to respondents who have been married for more than a year, unmarried individuals and those unmarried individuals who are more that 12 months prior to their marriage are 25% less likely to purchase a home together. The risk of home purchase increases significantly in the 12 months prior to a marriage when respondents are at a 47% higher risk of a joint purchase as compared to those married for 1 year. The elevated risk extends into the 0-12 months after marriage period, but a lower level (24% more likely).

While the over all pattern and significance levels remain, the propensity to marry is reduced (relative to those married for 1 year or more) when characteristics of the current housing situation are included in the model. Owning a home (regardless of if the man or woman owns the home) is associated with a 46% reduced risk of purchasing a new jointly owned home; first or second hand rentals are indistinguishable in their relationship to subsequent joint home purchase. Holding a joint (rental) contract is associated with a higher risk of joint home purchase relative to the man holding the contract on the residence. There is no difference between male and female contract holders with respect to subsequent joint purchase.

The addition of demographic (Model 3), relationship (Model 4), educational (Model 5) and income information (Model 6) do not change the overall relationship between the risk of joint home purchase and the timing of marriage. Female respondents are no more likely to purchase a joint home relative to their male counterparts. There is a notable positive increase in the propensity to purchase a home among the 1964 and 1974 cohorts. This likely reflects an expansion in the stock of 1st hand rental properties in Sweden in the 1970s and 1980s; members of the cohort of 1956 likely found an abundance of high quality rental properties as they came of age, lowering their propensity to purchase a home overall. Joint home purchase is most common when respondents are aged 25 to 34, relative to younger respondents. Respondents in their first cohabitation are marginally less likely to purchase a home and there is a somewhat negative association between number of children and joint purchase. Relative to those completing secondary education, not completing secondary school reduces the risk of a jointly owned home purchase by 25%, while having a tertiary degree or higher increases the risk of a purchase by 19%. Finally, there is a positive, linear relationship between previous year's income and joint purchase.

DISCUSSION

[Figure 2 about here]

The results presented here are consistent with hypotheses predicting a positive relationship between marriage and joint home purchase. There is no evidence of an overall negative relationship, as predicted by the substitution hypothesis. Quite the contrary, these results provide clear evidence of a state effect: the risk of marriage and the risk of joint purchase are enhanced

once the conditioning event takes place, providing possible evidence for the Marriage Catalyst and Home Purchase Prerequisite hypotheses. Additionally, there is no evidence of a negative relationship in the 24-month window around each event, as predicted by the Competing Costs hypothesis. That these events are closely and 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 risk of marriage and joint home purchase, respectively, is not only evident once the conditioning event has occurred. There is also evidence of a lead effect. In the 12 months prior to joint home purchase there is an elevated risk of marriage on par with the risk of marriage among couple who have owned their home for at least a year. Similarly in the joint home purchase models, we find evidence of an increased risk of purchase in the 12 prior to marriage. This lead effect suggests that the window specification used here is capturing couple's intentions among those couples who have plans to purchase a home and may already be actively looking for a home to purchase and those who have plans to marry and may already be engaged.

While we find evidence of a higher risk of joint home purchase after a marriage, the anticipation effect, demonstrated by a further elevated risk of joint home purchase in the 12-months before marriage, is inconsistent with the hypotheses that marriage is a prerequisite for joint home purchase. Any legal or financial privileges enjoyed by married couple with respect to purchasing the home asset would not be conferred to a couple before the marriage event. Moreover, this hypothesis suggests that we should find a further elevated risk of home purchase after the marriage event. Consequently, this hypothesis is only partially supported.

The evidence of lead effects could, on the face, be consistent with the Simultaneity hypotheses. However, it is notable that the relationship between marriage and joint home purchase and their respective conditioning events is not symmetrical within the 24-month period, a finding that is not consistent with the Simultaneity hypotheses. The asymmetry, where there is a higher risk of marriage after a joint home purchase and a higher risk of joint home purchase before marriage suggests a possible ordering of events: joint home purchase followed closely by marriage. Although we cannot rule out the possibility of Marriage Catalyst or Simultaneity completely, this finding does give the most weight to the Home Purchase Prerequisite hypothesis. The timing of these events may be meaningful for couples, with joint home purchase likely demonstrates the economic success and stability necessary before a couple will be willing to marry.

Figure 1

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Figure 2

Results: modeled separately

Risk of marriage (cohabitation spell): relative risks at −12m before Joint Purchase = 0.68*, 1.10, 1.24*, +12m after = 1.00

Risk of joint purchase (housing spell): relative risks at −12m before Marriage = 0.71*, 1.34*, 1.12, +12m after = 1.00

Relative risks: * p ≤ 0.05
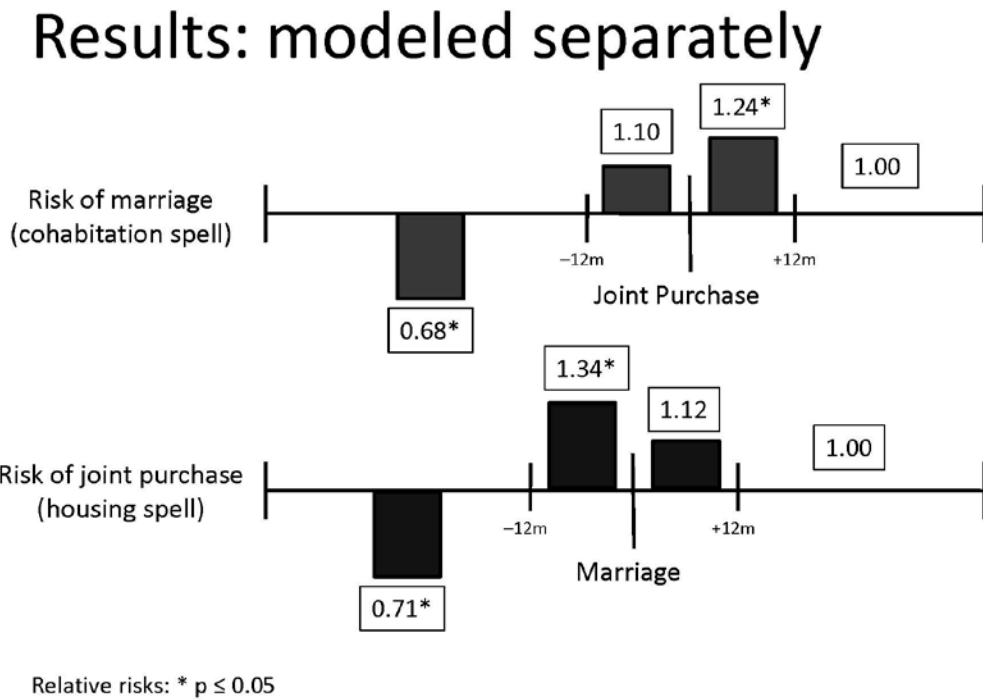
ANALYSIS OF THE RISK OF MARRIAGE

Table 1a: Sample Descriptive Statistics: Fixed Covariates		
	%	N
Spell (Unmarried Cohabitation) Duration (Months)		
Mean	65	
25th-percentile	24	
50th-percentile	47	
75th-percentile	87.5	
Marriage		
% of Cohabiting Spells ending in marriage	42.9	1,101
Sex of Respondent (% of cohabiting spells)		
Male	42.6	1,095
Female	57.4	1,473
Cohort of Respondent (% of cohabiting spells)		
1956	33.2	853
1964	33.6	862
1974	33.2	853
Sample (cohabiting spells)		2,568
Individuals (Clustering)		1,908
Person- months observed		161,603
Marriages		1,101
Source: HOLK. Author's Calculations		

Table 1b: Sample Descriptive Statistics: Other Time-varying Covariates

	%*	N*
Age of respondent		
20 to <25	29.1	47,019
25 to <30	34.3	55,365
30 to <35	17.0	27,542
35+	19.6	31,677
Number of children		
0	54.7	88,442
1	22.6	36,500
2	18.7	30,180
3+	4.0	6,481
Education (highest grade completed)		
Less than secondary	9.1	14,736
Secondary	43.5	70,257
Some tertiary	6.0	9,679
Tertiary or more	17.4	28,189
Missing: valid register, coding error	0.1	106
Missing: valid register, missing	1.1	1,771
Missing: no register (pre-1985, post-2003)	22.8	36,865
Previous year's income (lag)	SEK	Approx. US $
Mean	166,399	22,987
25th-percentile	112,942	15,602
50th-percentile	162,678	22,473
75th-percentile	209,844	28,989
Sample (cohabiting spells)		2,568
Individuals (Clustering)		1,908
Person- months observed		161,603
Marriages		1,101
Source: HOLK. Author's Calculations		
* Percent/N of analysis time (months).		

Table 2: Relative Risk of Marriage	Model 1	Model 2	Model 3	Model 4	Model 5
	Joint Purchase Event, Housing	H/ Demographic	H/D/Kids, Cohab	D/H/C/ Education	D/H/C/Ed/ Total Income
Type of Housing					
Not jointly owned, more than 12m before joint purchase	0.64 ***	0.66 ***	0.67 ***	0.67 ***	0.68 ***
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Not jointly owned, 12m before joint purchase	1.11	1.13	1.12	1.10	1.10
	(0.22)	(0.23)	(0.23)	(0.05)	(0.22)
Jointly Owned, less than 12 months	1.24 +	1.26 *	1.27 *	1.25 *	1.25 *
	(0.14)	(0.14)	(0.14)	(0.22)	(0.14)
Jointly Owned, more than 12 months	1.00	1.00	1.00	1.00	1.00
Other Housing	0.46 ***	0.48 ***	0.49 ***	0.50 ***	0.52 ***
	(0.09)	(0.10)	(0.10)	(0.10)	(0.10)
Missing Disp, Ownr/Cntrct	1.25	1.19	1.22	1.20	1.21
	(0.23)	(0.23)	(0.23)	(0.23)	(0.23)
Previous to First Housing	1.00	1.11	1.13	1.15	1.17
	(0.20)	(0.22)	(0.22)	(0.22)	(0.22)
Demographic Characterisitcs					
Female	-	1.16 *	1.16 *	1.13 +	1.15 *
		(0.07)	(0.07)	(0.07)	(0.07)
Birth Cohort					
1956	-	1.00	1.00	1.00	1.00
1964	-	0.72 ***	0.73 ***	0.81 *	0.80 **
		(0.05)	(0.05)	(0.07)	(0.07)
1974	-	0.51 ***	0.53 ***	0.57 ***	0.57 ***
		(0.04)	(0.04)	(0.05)	(0.05)
Age					
20 - 24 years	-	1.00	1.00	1.00	1.00
25 - 29 years	-	1.66 ***	1.68 ***	1.65 ***	1.61 ***
		(0.14)	(0.14)	(0.14)	(0.14)
30 - 34 years	-	1.91 ***	1.92 ***	1.94 ***	1.88 ***
		(0.19)	(0.21)	(0.22)	(0.22)
35 + years	-	0.87	0.89	0.89	0.85
		(0.12)	(0.13)	(0.14)	(0.13)
Relationship Characteristics					
First Cohabiation	-	-	1.16 +	1.15 +	1.16 +
			(0.10)	(0.10)	(0.10)
Number of Children					
0	-	-	1.00	1.00	1.00
1	-	-	1.21 *	1.23 **	1.24 **
			(0.10)	(0.10)	(0.10)
2	-	-	1.21 +	1.24 *	1.25 *
			(0.13)	(0.13)	(0.13)
3+	-	-	1.55 *	1.62 **	1.68 **
			(0.27)	(0.28)	(0.29)
Education					
Less than Secondary	-	-	-	0.87	0.88
				(0.11)	(0.11)
Secondary	-	-	-	1.00	1.00
Some Tertiary	-	-	-	0.88	0.90
				(0.14)	(0.14)
Tertiary or more	-	-	-	1.26 **	1.26 **
				(0.11)	(0.11)
Missing: Valid Reg, Coding Error	-	-	-	0.86	0.85
				(0.47)	(0.45)
Missing: Valid Reg, Missing	-	-	-	1.26	1.32
				(0.30)	(0.31)
Missing: No Reg (pre-1985, post-2003)	-	-	-	1.23 *	1.23 *
				(0.12)	(0.12)
Lagged Logged Total Income (n-1)	-	-	-	-	1.07 *
					(0.03)

Table 2 *continued* : Relative Risk of Marriage			Model 1	Model 2	Model 3	Model 4	Model 5
			Joint Purchase Event, Housing	H/ Demographic	H/D/Kids, Cohab	D/H/C/ Education	D/H/C/Ed/ Total Income
Observations (months at risk)			161603	161603	161603	161603	161603
Cohabitation Spells			2568	2568	2568	2568	2568
Clusters (Individuals)			1908	1908	1908	1908	1908
Failures (events)			1101	1101	1101	1101	1101
ll (null)			-7700.071	-7700.071	-7700.071	-7700.071	-7700.071
ll (model)			-7660.162	-7585.078	-7579.01	-7571.113	-7567.997
df			6	12	16	22	23
AIC			15332.32	15194.16	15190.02	15186.23	15181.99
BIC			15392.28	15314.07	15349.91	15406.07	15411.83
*** p<0.001 ** p<0.01 * p<0.05 + p<0.1							
Source: HOLK. Author's Calculations							

ANALYSIS OF THE RISK OF JOINT HOME PURCHASE

Table 3a: Sample Descriptive Statistics: Fixed Covariates		
	%	N
Spell (Cohabiting Housing Spells) Duration (Months)		
Mean	56	
25th-percentile	19	
50th-percentile	38	
75th-percentile	71	
Marriage		
% of Housing Spells in which a marriage occurs	14.3	605
Sex of Respondent (% of cohabiting spells)		
Male	42.2	1,790
Female	57.8	2,450
Cohort of Respondent (% of cohabiting spells)		
1956	34.9	1,478
1964	32.4	1,372
1974	32.8	1,390
Number of cohabitations within one residence		
1	94.4	4,003
2	5.1	216
3	0.5	21
Sample (housing spells)		4,240
Individuals (Clustering)		1,733
Person- months observed		149,638
Transitions to Joint Contracts (1st hand rent, own)		1,110
Source: HOLK. Author's Calculations		

Table 3b: Sample Descriptive Statistics: Time-varying Housing Covaria

	%*	N*
Marriage[a]		
12 - 0 months prior to marriage[a]	5.3	7,958
1 - 12 months after marriage[a]	4.4	6,600
12 or more months after marriage[a]	26.3	39,351
Type of Housing[b]		
Own (vs. Rent)		
Rent 1st Hand	57.1	85,484
Rent 2nd Hand	2.4	3,519
Own	31.2	46,669
Other Housing	6.2	9,241
Missing Disp, Ownr/Cntrct	3.2	4,725
Owner/Contractee		
Man	37.2	55,705
Woman	26.9	40,248
Joint	26.5	39,719
Other Housing	6.2	9,241
Missing Disp, Ownr/Cntrct	3.2	4,725
Sample (cohabiting spells)		4,240
Individuals (Clustering)		1,733
Person- months observed		149,638
Marriages		1,110
Source: HOLK. Author's Calculations		
* Percent/N of analysis time (months).		
[a] Relationship between housing event (joint home purchase) and marriage;		
[b] Baseline relationship between housing type and marriage.		

Table 3c: Sample Descriptive Statistics: Time-varying Housing Crosstabs (%)

Owner/Contractee	Man	Woman	Joint	Other Housing	Missing Disp, Ownr/Cntrct	Total
Own (vs. Rent)						
Rent 1st Hand	16.6	14.7	25.8	0.0	0.0	57.1
Rent 2nd Hand	0.8	0.8	0.8	0.0	0.0	2.4
Own	19.8	11.4	0.0	0.0	0.0	31.2
Other Housing	0.0	0.0	0.0	6.2	0.0	6.2
Missing Disp, Ownr/Cntrct	0.0	0.0	0.0	0.0	3.2	3.2
Total	37.2	26.9	26.6	6.2	3.2	100.0
Sample (cohabiting spells)	4,240					
Individuals (Clustering)	1,733					
Person- months observed	149,638					
Marriages	1,110					
Source: HOLK. Author's Calculations						
* Percent/N of analysis time (months).						

Table 3d: Sample Descriptive Statistics: Other Time-varying Covariate

		%*	N*
Age of respondent			
	20 to <25	29.3	43,898
	25 to <30	32.5	48,692
	30 to <35	16.9	25,251
	35+	21.3	31,797
	Own		
Number of children			
	0	51.0	76,287
	1	21.0	31,448
	2	20.0	29,954
	3+	8.0	11,955
Education (highest grade completed)			
	Less than secondary	10.3	15,444
	Secondary	42.2	63,103
	Some tertiary	5.8	8,621
	Tertiary or more	17.1	25,651
	Missing: valid register, coding error	0.0	52
	Missing: valid register, missing	1.5	2,254
	Missing: no register (pre-1985, post-2003)	23.1	34,519
Previous year's income (lag)		SEK	Approx.
	Mean	158,852	21,945
	25th-percentile	102,565	14,169
	50th-percentile	157,781	21,797
	75th-percentile	204,060	28,190
Sample (cohabiting spells)			4,240
Individuals (Clustering)			1,733
Person- months observed			149,638
Marriages			1,110
Source: HOLK. Author's Calculations			
* Percent/N of analysis time (months).			

Table 4: Relative Risk of Joint Home Purchase

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Marriage Event		Marriage Event & Home		M/H/ Demographic		H/D/Kids, Cohab		D/H/C/ Education		D/H/C/Ed/ Total Income	
Unmarried or 12+ months prior to marriage[a]	0.75	***	0.72	***	0.72	***	0.70	***	0.71	***	0.71	***
	(0.06)		(0.06)		(0.06)		(0.06)		(0.06)		(0.06)	
12-0 months prior to marriage[a]	1.47	***	1.41	**	1.41	**	1.37	**	1.37	**	1.35	*
	(0.18)		(0.17)		(0.17)		(0.17)		(0.17)		(0.16)	
1-12 months after marriage[a]	1.24	+	1.21		1.19		1.15		1.15		1.12	
	(0.16)		(0.16)		(0.16)		(0.15)		(0.15)		(0.15)	
12+ months after marriage[a]	1.00		1.00		1.00		1.00		1.00		1.00	
Type of Housing[b]												
Own (vs. Rent)												
Rent 1st Hand	-		1.00		1.00		1.00		1.00		1.00	
Rent 2nd Hand	-		1.16		1.13		1.16		1.15		1.19	
			(0.20)		(0.19)		(0.19)		(0.19)		(0.20)	
Own	-		0.54	***	0.54	***	0.54	***	0.55	***	0.54	***
			(0.06)		(0.06)		(0.06)		(0.06)		(0.05)	
Owner/Contractee												
Man	-		1.00		1.00		1.00		1.00		1.00	
Woman	-		1.09		1.06		1.06		1.07		1.06	
			(0.10)		(0.09)		(0.09)		(0.09)		(0.15)	
Joint	-		1.32	***	1.30	***	1.30	***	1.29	***	1.28	**
			(0.10)		(0.10)		(0.10)		(0.10)		(0.09)	
Other Housing	-		1.09		1.05		1.05		1.07		1.13	
			(0.15)		(0.15)		(0.15)		(0.15)		(0.16)	
Missing Disp, Ownr/Cntrct	-		0.91		0.90		0.90		0.87		0.85	
			(0.16)		(0.15)		(0.15)		(0.15)		(0.15)	
Demographic Characterisitcs												
Female	-		-		1.05		1.04		1.01		1.09	
					(0.07)		(0.07)		(0.06)		(0.07)	
Birth Cohort												
1956	-		-		1.00		1.00		1.00		1.00	
1964	-		-		1.31	***	1.31	***	1.50	***	1.43	***
					(0.09)		(0.09)		(0.13)		(0.13)	
1974	-		-		1.31	***	1.30	***	1.46	***	1.42	***
					(0.11)		(0.11)		(0.14)		(0.14)	
Age												
20 - 24 years	-		-		1.00		1.00		1.00		1.00	
25 - 29 years	-		-		1.55	***	1.50	***	1.46	***	1.38	***
					(0.13)		(0.13)		(0.12)		(0.12)	
30 - 34 years	-		-		1.63	***	1.54	***	1.56	***	1.43	**
					(0.17)		(0.17)		(0.19)		(0.17)	
35 + years	-		-		1.27	+	1.19		1.21		1.07	
					(0.17)		(0.18)		(0.19)		(0.17)	
Relationship Characteristics												
First Cohabiation	-		-		-		0.86	+	0.85		0.87	+
							(0.07)		(0.07)		(0.07)	
Number of Children												
0	-		-		-		1.00		1.00		1.00	
1	-		-		-		1.09		1.11		1.12	
							(0.09)		(0.09)		(0.09)	
2	-		-		-		0.89		0.92		0.95	
							(0.10)		(0.10)		(0.10)	
3+	-		-		-		0.65	*	0.69	+	0.75	
							(0.13)		(0.13)		(0.15)	

Table 4 *continued* : Relative Risk of Joint Home Purchase	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	Marriage Event	Marriage Event & Home	M/H/ Demographic	H/D/Kids, Cohab	D/H/C/ Education	D/H/C/Ed/ Total Income
Education						
Less than Secondary	-	-	-	-	0.75 *	0.77 *
					(0.10)	(0.10)
Secondary	-	-	-	-	1.00	1.00
Some Tertiary	-	-	-	-	0.90	0.98
					(0.13)	(0.15)
Tertiary or more	-	-	-	-	1.19 *	1.18 +
					(0.10)	(0.10)
Missing: Valid Reg, Coding Error	-	-	-	-	4.23 +	4.87 *
					(3.26)	(3.33)
Missing: Valid Reg, Missing	-	-	-	-	0.50 +	0.60
					(0.18)	(0.22)
Missing: No Reg (pre-1985, post-2003)	-	-	-	-	1.30 **	1.29 *
					(0.13)	(0.13)
Lagged Logged Total Income (n-1)	-	-	-	-	-	1.23 ***
						(0.07)
Observations (CM at risk)	149638	149638	149638	149638	149638	149638
Housing Spells	4240	4240	4240	4240	4240	4240
Clusters (Individuals)	1733	1733	1733	1733	1733	1733
Failures (events)	1110	1110	1110	1110	1110	1110
ll (null)	-7639.213	-7639.213	-7639.213	-7639.213	-7639.213	-7639.213
ll (model)	-7611.671	-7559.776	-7530.182	-7523.861	-7509.246	-7509.246
df	3	9	15	19	25	26
AIC	15229.34	15137.55	15090.36	15085.72	15068.49	15023.7
BIC	15259.09	15226.8	15239.1	15274.13	15316.39	15281.52
*** p<0.001 ** p<0.01 * p<0.05 + p<0.1						
Source: HOLK. Author's Calculations						
[a] Relationship between housing event (joint home purchase) and marriage.						
[b] Baseline relationship between housing type and marriage.						

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