5 Interrelations between First Home-Ownership, Constitution of the Family, and Professional Occupation in France

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An important aim in the life of a Frenchman or Frenchwoman is to become the owner of his or her own home. Nevertheless, in 1982, only 50.6% of French households were home-owners, and among households whose head was between 55 and 64 years old, this proportion rose to 63.5%. These results, which reflect a behaviour pattern toward home-ownership distinct from other European countries, are well known from census data. Nevertheless, the processes that lead to the fulfilment of this ambition to own a home are more difficult to study. To analyse this process of first home-ownership, longitudinal data are necessary. In order to obtain such data, we conducted a survey that collected retrospective information on the entire family, professional career, and migration histories of the interviewees. The sample consists of the life histories of 4602 individuals, and is representative of the population living in France in 1981 and born between 1911 and 1935. These data will enable us to explore in more detail the process of home-ownership.

The first step consists of the identification of ways in which the building of a family interacts with the fact of becoming a home-owner. Qualitative as well as economic studies have stressed the problems of costs involved. The cost of rearing children competes with the cost of purchasing a home, and thus plays an important role in the timing of the purchase. Previous sociological studies (Culturello and Godard 1982), using the last birth as a time-reference, have identified the timing differentials of buying a home for different social groups. These results concerned earlier generations of individuals between the ages of 24 and 44. For our study of the factors affecting the process of first home-ownership, we also chose the last birth in the family as the event of interest (other choices being marriage, births of successive children, and final departure of children from the parental home).

The validity of the choice of the last birth has provoked some controversy (Hoem 1985). In our case, the women surveyed were at least 45 years old at interview and therefore most of them are past reproductive age.[1] Consideration

[1] Only for women born between 1931 and 1936. Some late births may introduce a slight bias. However, as we are working on a retrospective survey, the selection by virtue of survival introduces an equivalent bias.

of the last birth in this study does not, therefore, constitute a bias due to incomplete birth histories. It should be emphasized here that the use of such information to define family completion is unlike using the last previous birth, which is obviously subject to length bias. Such a bias could also occur with our data if we use information concerning men, since there is no such age limitation on men's ability to father children. For that reason, the results that we obtained for men are given here only as indicative trials, and we will concentrate on the results for women. We consider women without children as censored at the date of the survey. Another possible choice could have been to consider their family constituted at the date of marriage. However, this option seemed less realistic.

We will also take into account job characteristics that determine the ownership propensity of individuals. From census data we know that 77.5% of the households whose head is a farmer are home-owners, whereas the proportion of home-owners drops to 41.3% if the head of the household is a manual worker. But these cross-sectional data give no information about the timing of home-ownership. Our concern here is not focused on the study of how a professional change may induce a change in the probability of becoming a home-owner,[2] and so we consider the professional occupation of the husband at marriage when studying the subsample of women. This allows us to distinguish five different professional groups (farmers, unskilled manual workers and domestic staff, qualified manual workers, white-collar and management, and craftsmen and small tradesmen), all of which are studied separately. The different timing observed for the purchase of a home by each of these groups justifies the disaggregation of the population according to the professional occupation of the householder. It is important not to consider occupation merely as a categorical variable in the framework of a proportional-hazards model. Such a model could lead to inconsistent results as the timing effect of occupation may not act proportionally on the rates. Only the first professional occupation of men is available in the data set (in addition to their occupation at marriage). As many changes in occupation may occur before marriage (Courgeau and Lelièvre 1986), this first occupation is a more unreliable indicator than occupation at marriage for the husbands of the married women in the sample. This constitutes another justification for the choice of the subsample of married women.

We have adopted both non-parametric and semiparametric methodologies in this analysis. These approaches are complementary. The non-parametric methods represent a generalization of demographic longitudinal analysis. They are used to study complex interactions among events, including those that do not generate or impede the phenomenon under observation. We will use a bivariate model here that allows the study of interactions between the end of the formation of the family and the first purchase of a home. Using the semiparametric method, we introduce into the previous bivariate model a study of the relationship between the rates of home-ownership or the rates of last child birth, and a variety of

[2] The data used here did not give the whole professional life of the individuals.

observable variables (e.g. education, birth order, number of siblings, place of birth, and mobility during childhood).

The following questions are explored in this chapter. First, is there a strong dependence whereby the end of the constitution of the family precedes becoming a home-owner, so that the following sequence would mainly be observed?

family formation → last birth → becoming home-owner

Or is the dependence between the two events even more complex? Or is there a total independence between the two processes? Second, does social class differentiation allow us to find different behaviours toward home-ownership that permits the use of proportional-hazard models? Given that each social class corresponds roughly to a different mean family size, how does this influence the likelihood of becoming a home-owner? Third, France was for a long time a mainly rural country, populated primarily by small-farm owners. Does the preference for home-ownership still prevail when the urbanization process has become more important? The methods and variables that we intend to use in the study of these questions will next be presented in more detail.

Non-Parametric Analysis

Non-parametric bivariate models are particularly appropriate in the study of the interactions between life course events, here the birth of the last child and the first purchase of a home. These models formalize two stochastic processes developing with time. Each of these processes may influence the local development of the other, leading to different concepts of dependence or independence. Stochastic independence between the two processes is observed when the occurrence of one type of event is wholly unrelated to the occurrence of the other and vice

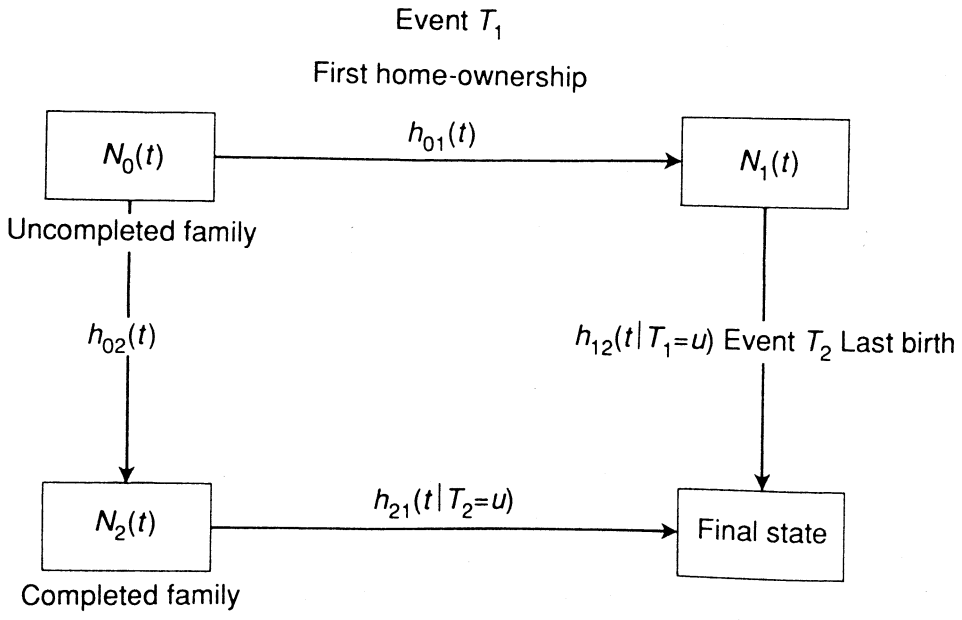

Fig. 5.1 State–space diagram for the bivariate case.

versa. When a stochastic process influences the local development of another process while the converse is not true, we say that there is local dependence (Schweder 1970). If this ever occurs, then we are able to say that there is a one-sided influence of the first process on the second one. In contrast, we have stochastic dependence if the two processes are mutually dependent. We are working here in terms of the state–space diagram presented in Fig. 5.1, which considers the relationship between the birth of the last child and the first purchase of a home. In this case, we have two failure times represented by the random variables T_1 and T_2, and four possible states (not owner before the end of the family completion; owner before the end of the family completion; not owner after the end of the family completion; and owner after the end of the family completion).

The hazard function, defined in the univariate case as the instantaneous rate of failure conditional upon survival to time t, can be generalized into four hazard functions:

$$h_{01}(t) = \lim_{\Delta t \to 0} \frac{\Pr(T_1 < t + \Delta t \mid T_1 \geq t, T_2 \geq t)}{\Delta t} \tag{1}$$

with a similar one for $h_{02}(t)$ and

$$h_{12}(t \mid u) = \lim_{\Delta t \to 0} \frac{\Pr(T_2 < t + \Delta t \mid T_1 = u, T_2 \geq t)}{\Delta t} \quad \text{with } t \geq u \tag{2}$$

with a similar one for $h_{12}(t \mid u)$, where u stands for the time of the previous event. If we do not take into account the time u of the previous event, then these two series of hazard functions become $h_{12}(t)$ and $h_{21}(t)$. In a later phase, it would be interesting to study the hazards indexed by the duration since the previous event. Unfortunately, doing so leads to small-sample problems that render the estimates unstable.

Let us now consider the ways of estimating these hazard functions from our yearly data.[3] Let $N_i(t)$ $i = 0, 1, 2, \ldots$, be the population in state i at the beginning of year t, and let $n_{ij}(t)$ $j = 1, 2, \ldots$, be the number of events of type j occurring in the population of state i during the year t. To simplify the presentation, we assume here that the behaviour of the observed individuals will depend only on their age and not on the time at which the previous event occurred. The approximate estimates of the continuous distribution with piecewise-constant hazard rates at time t are given as follows:[4]

$$h_{0j}(t) = n_{0j}(t) / \left| N_0(t) - 1/2 \sum_i n_{0i}(t) \right| \tag{3}$$

$$h_{ij}(t) = n_{ij}(t) / \{ N_i(t) - 1/2 \, (n_{ij}(t) - n_{0i}(t) \} \tag{4}$$

[3] In the questionnaire, every date is recorded on a monthly and yearly basis. However, the use of monthly data does not appear to improve the estimation.

[4] See Courgeau and Lelièvre (1988) for the assumptions leading to such an estimation, and Cox and Oakes (1984: 53–6) for the estimation of such rates.

We can also include censored individuals that are then assumed to be exposed to risk for approximately 0.4 years, because the survey took place during the spring of 1981. We can cumulate these rates from the beginning of the observation. These cumulative rates will give smoother curves than the annual ones. We can then test the equalities $h_{01}(t) = h_{21}(t)$ and $h_{02}(t) = h_{12}(t)$. If both equalities hold true, we can conclude that there is stochastic independence between the two processes. If only one holds true, we can conclude that there is local dependence. If neither holds true, we have a stochastic dependence between the two processes. The following test statistic, for example, can be used for the first hypothesis:

$$U(t) = (h_{01}(t) - h_{21}(t)) \Big/ \left[\frac{h_{01}(t)}{N_0(t) - 1/2 \sum_i n_{0i}(t)} + \frac{h_{21}(t)}{N_2(t) - 1/2 \{n_{21}(t) - n_{02}(t)\}} \right]^{1/2} \tag{5}$$

and the cumulative:

$$U = \frac{1}{\sqrt{n}} \sum_{t=t_0}^{t=t_0+n} U(t) \tag{6}$$

which is asymptotically normal $N(0,1)$ when the equality holds (Hoem and Funck Jensen 1982). The multivariate case may be formalized in a similar way (Courgeau and Lelièvre 1988; 1989). The tables given in the text will present the hazards and both the annual and the cumulated test statistics. The hypothesis of equality between the hazards is rejected when $| U | > 1.96$ (when $\alpha = 5\%$).

Non-Parametric Analysis Results

A preliminary investigation of the data gives some insights on the relevance of occupational categories. Of the married couples observed, 30.8% were not home-owners at interview, but the proportion is far from being evenly distributed among the professional groups. Less than a quarter of the farmers or craftsmen at marriage had not yet purchased a dwelling of their own at the time of the interview, but nearly half of the unskilled workers remained tenants; 30% of the skilled workers as well as the white-collar workers are not yet home-owners.

For the married couples in our sample, the acquisition of a house normally either preceded the birth of the first child or followed the birth of the last child. The financial expense involved in the upbringing of the children clearly makes the purchase of a property difficult for all professional subgroups. And, conversely, one might expect that once the financial means are invested in a home, they are no longer available for eventual children. What we observe is here, again, the less favourable position of the white-collar and unskilled workers. Only women married to farmers or craftsmen are likely (30% of them) to own their home

before the first birth. A bivariate non-parametric model is applied to the last birth and first home-ownership. In the first application, we compare the instantaneous rates of ownership before or after the birth of the last child and, reciprocally, the last birth rates before and after the change of status to ownership. We will, as explained in the introduction, concentrate mainly on the results for women. The reciprocal approach is conducted in order to disaggregate the correlation observed between the two events. In fact, its purpose is to confirm the assumption of proportionality made in the next step of the analysis, and to detect local dependencies between the two events. Is the last birth a compulsory step before becoming a home-owner? Does this new state favour a last birth? Both questions must be answered prior to the use of proportional-hazard models and the introduction of explanatory variables. The second application derives from the timing of the purchase of a home. As described above, for a large majority of the married couples, acquisition of a home occurs once the family is completed. In that context, it seems appropriate to conduct a univariate analysis of first home-ownership after the birth of the last child in different professional groups.

First Home-Ownership

For only two professional groups does first home-ownership clearly appear to depend on the last birth. For couples where the husband is a craftsman or farmer at marriage, chances of becoming a home-owner are significantly greater before or during family constitution. Paradoxically, for these couples the process of becoming a home-owner seems to be independent of the financial capital invested in the children's upbringing. This corresponds in fact to the inheritance not only of a home but also of the family 'enterprise', either agricultural or artisanal, or at least to a share of this inheritance. This happens when the couple's parents let them take over certain responsibilities, and this change is relatively independent of the stage they have reached in their family life cycle. For farmers an additional phenomenon is observed. The national mean age at independence, defined as having their first independent dwelling, is 29 years, and they are more likely than others to be a home-owner at this age (Lelièvre 1987). They also constitute the professional group with the largest families. Consequently, the change to home-owner happens before the birth of the last child for those below the age of 33; at later ages the tendency reverses. This can be detected in Table 5.1 by the clear reversal of the test statistic sign. This confirms the relative independence of the two processes, which develop at their own pace. For farmers and craftsmen, becoming a home-owner is influenced by other factors and does not depend on the completion of the family.

For other couples, becoming a home-owner does not depend upon the birth of the last child. Fig. 5.2 shows the cumulated rates when the husband is a skilled worker as an example. It is clear that the two curves cannot be considered as different, and the test statistic allows the verification of this.

TABLE 5.1. *First home-ownership for wives—husband farmer : non-parametric rates before and after the last birth.*

Age	Before last birth	After last birth	Test statistic : annual	Test statistic : cumulated U	Test statistic : cumulated U
t	$h_{01}(t)$	$h_{21}(t \mid u)$	$U(t)$	From age 15	From age 33
28	0.0214	0.0181	−0.2147	0.3772	
29	0.0363	0.0076	−2.0076	−0.6771	
30	0.0227	0.0066	−1.3223	−1.1970	
31	0.0407	0.0306	−0.5103	−1.3010	
32	0.0645	0.0172	−2.1670	−2.0236	
33	0.0270	0.0379	0.5539	−1.6970	0.5539
34	0.0311	0.0417	0.4917	−1.4361	0.7394
35	0.0563	0.0657	0.3176	−1.2619	0.7870
36	0.0225	0.0347	0.5951	−1.0238	1.9792
37	0.0130	0.0593	2.1544	−0.3583	1.8393
38	0.0469	0.0596	0.3954	−0.2345	1.8404
39	0.0189	0.0350	0.7001	−0.0389	1.9685
40	0.0440	0.0457	0.0500	−0.0247	1.8591

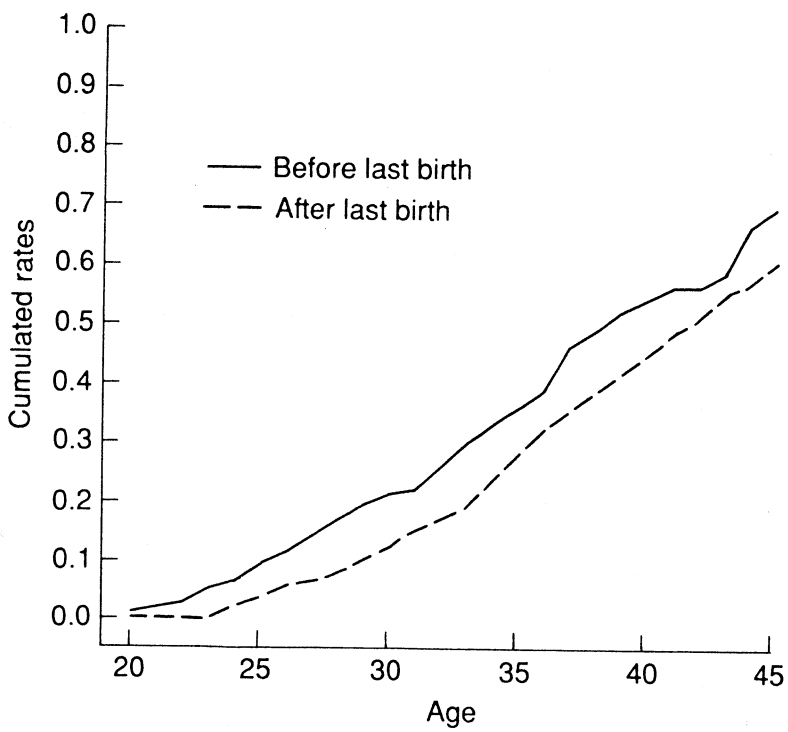

Fig. 5.2 First home-ownership for wives: husband skilled worker.

It has been suggested by qualitative research that home purchases might occur 10–20 years following, rather than soon after, the last birth. In fact, in our sample, among those who become owners after the end of family completion, 23% become home-owners within 10 years and 43% within 20 years after the birth of the last child. The results for the subsample of married men give an interesting

indication of a selection effect among the men who started their professional career as unskilled workers. Table 5.2 shows a significant propensity to become a home-owner after the birth of the last child from age 35 onwards. In fact, couples from this professional background are less likely to become home-owners if they are still unskilled workers at marriage. Hence the influence detected at later ages for those who started in this disadvantaged subgroup may be due to those who ascended professionally and thus adopted the behaviour patterns of higher professional subgroups toward home-ownership.

TABLE 5.2. *First home-ownership for husbands—unskilled worker : non-parametric rates before and after the last birth.*

Age	Before last birth	After last birth	Test statistic : annual	Test statistic : cumulated U
t	$h_{01}(t)$	$h_{21}(t \mid u)$	$U(t)$	From age 15
34	0.0287	0.0308	0.1416	1.1836
35	0.0168	0.0476	2.0652	1.7294
36	0.0098	0.0301	1.7189	2.1383
37	0.0281	0.0440	0.9388	2.3114
38	0.0324	0.0496	0.9142	2.4691
39	0.0224	0.0648	2.2418	2.9511
40	0.0084	0.0541	2.9849	3.5869
41	0.0094	0.0120	0.2353	3.5413
42	0.0435	0.0296	−0.5850	3.3127
43	0.0377	0.0419	0.1706	3.2670
44	0.0000	0.0306	—	3.2670
45	0.0150	0.0341	1.0468	3.4167

Last Birth

While becoming a home-owner appears to happen independently of the last birth, the coming of the last child is for all groups (except unskilled workers, few of whom became home-owners) associated with a change in home-owner status. This influence becomes statistically significant at older ages, which suggests that becoming a home-owner may have a positive influence on building a larger family. Illustrative results are displayed in Table 5.3 for couples in which the husband was a craftsman or tradesman at marriage.

Univariate Analysis

For couples who become home-owners after the birth of their last child, a univariate analysis for the five professional groups was performed. The results are shown in Fig. 5.3. The two extreme behaviour patterns occur among women

TABLE 5.3. *Last birth of wives—husband craftsman, tradesman : non-parametric rates before and after the acquisition of a home.*

Age	Before last birth	After last birth	Test statistic: annual	Test statistic: cumulated U
t	$h_{02}(t)$	$h_{12}(t \mid u)$	$U(t)$	From age 15
27	0.0724	0.1013	0.5335	1.6350
28	0.0395	0.2308	2.4402	2.4887
29	0.0545	0.0263	−0.8826	1.9705
30	0.0658	0.1892	1.6570	2.4291
31	0.0879	0.1127	0.4008	2.4238
32	0.0992	0.1176	0.2824	2.3887
33	0.0837	0.0923	0.1427	2.3206
34	0.1099	0.1408	0.4303	2.3460
35	0.1781	0.1370	−0.5222	2.1091
36	0.1345	0.1818	0.5374	2.1760
37	0.0800	0.2759	1.8580	2.5820
38	0.0706	0.0357	−0.6436	2.3391
39	0.1714	0.1053	−0.7138	2.0961
40	0.1053	0.0351	−1.0000	1.8013
41	0.0400	0.1071	0.9115	1.9624
42	0.0435	0.0755	0.4648	2.0166

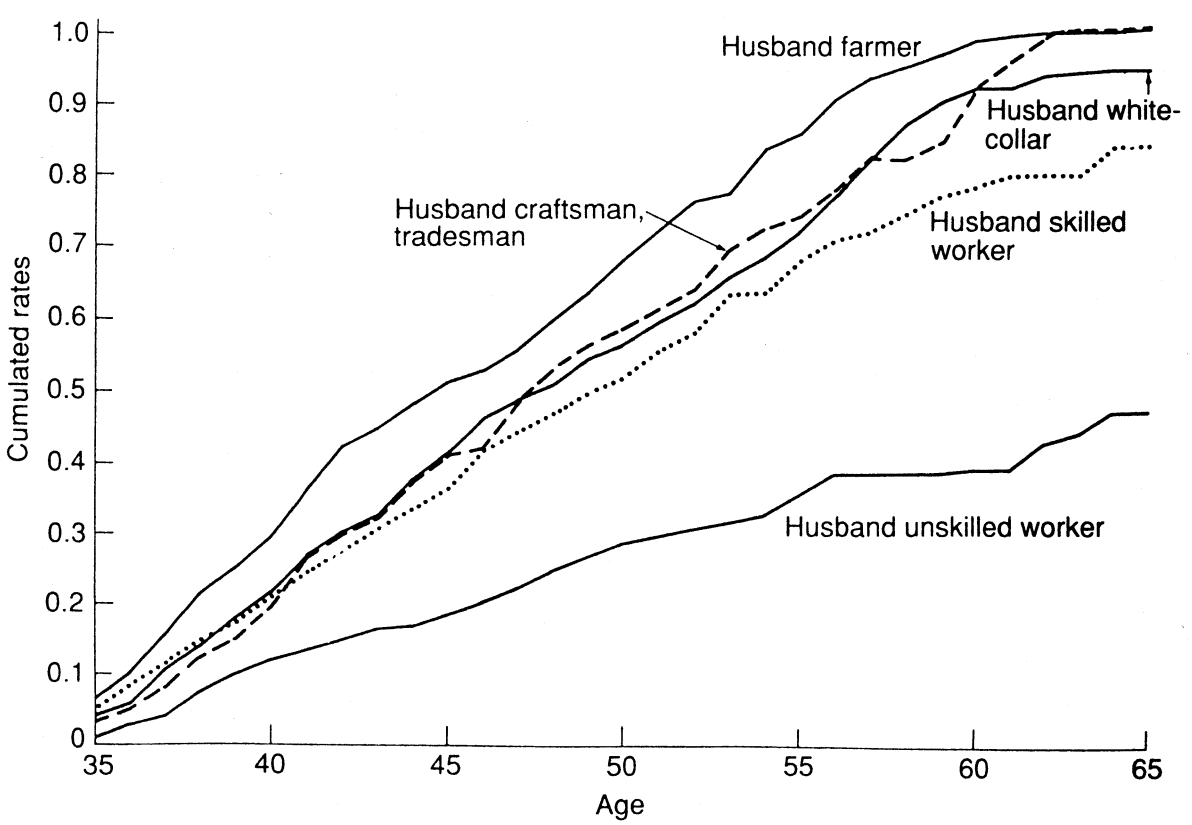

Fig. 5.3 First home-ownership for wives after birth of last child.

married to farmers and among women married to unskilled workers, whose chances of becoming a home-owner are half those of farmers. The rates for the intermediate groups tend to be closer to those of the farmers, and their behaviour patterns cannot be differentiated from one another.

Semiparametric Analysis

To introduce some explanatory variables we use a semiparametric model. In the bivariate case, we can introduce a model using proportional hazards for the two rates we want to compare, h_{01} and h_{21} (or h_{02} and h_{12}). Let $\mathbf{Z}$ be a row vector of explanatory variables $\mathbf{Z} = (\mathbf{Z}_1, \ldots, \mathbf{Z}_r, \ldots, \mathbf{Z}_s)$ with r basic time-independent variables and $(s - r)$ variables depending on the second state reached at time u. These last variables are thus time-dependent. Under the hypothesis that individual behaviour will depend only on the age and not on the time the previous event occurred, we can write the following rates:

$$h_{01}(t \mid \mathbf{Z}, \beta_1) = h_0(t) \exp(\mathbf{Z}\beta_1) \tag{7}$$

$$h_{21}(t \mid u, \mathbf{Z}, \beta_2) = h_2(t) \exp(\mathbf{Z}\beta_2) \tag{8}$$

where β_1 and β_2 are two column vectors of estimated regression parameters, and $h_0(t)$ and $h_2(t)$ are two unspecified baseline hazard functions.

Some constraints on the parameter values may be desirable or necessary. A first constraint can be used to force the $(s - r)$ last parameters in the vector β_1 to be zero. As the variables corresponding to these parameters depend on the state reached at time u, they do not need to operate before this time. For example, when studying the risk of becoming a home-owner, the characteristic 'final family size' should not be introduced before the last birth. Such a variable will play a role only when family formation is finished.

It is interesting to consider the hazard function $h_{21}(t \mid u; \mathbf{Z}, \beta_2)$ separately from $h_{01}(t; \mathbf{Z}, \beta_1)$ for women older than 50 years as at these ages the second hazard function will be identically null. At younger ages it may also be interesting to compare the two hazard functions. If we verify that during the ages at child-bearing the two hazard functions are proportional, we can rewrite the two previous rates under a more concise formulation (Crowley and Hu 1977) thus:

$$h(t \mid u, \mathbf{Z}, \beta_1, \beta_2) = h_0(t) \exp\{\mathbf{Z}\beta_1 + H(t - u)(\beta_0 + \mathbf{Z}\beta_2)\} \tag{9}$$

where $H(t - u)$ is the Heaviside function that takes the value 0 when $t < u$ and 1 when $t \geqslant u$. For example, if the covariate is a dummy one, the rate (for those who have the characteristics) of becoming a home-owner before the last birth will be equal to $h_0(t) \exp(\beta_1)$; after the last birth the rate will be then equal to $h_0(t) \exp(\beta_1 + \beta_0 + \beta_2)$. The parameters β_0, β_1, β_2 as well as their covariance matrix can be estimated by partial likelihood methods (Cox 1972; Kalbfleisch and Prentice 1980). Some of the first r parameters in vector β_2 may also be constrained to zero. In this case, the corresponding variables are considered as acting

independently of the state of the individual. For example, some variables related to home-ownership may be assumed to operate independently of family formation. Thus, the model is flexible enough to cover different kinds of interactions among demographic phenomena. The variables used are displayed in Table 5.4. This table contains the measures of the different variables used in the semiparametric analysis.

TABLE 5.4. *Measures of variables for wives.*

	Variable	Indicator for the study of	
		Ownership	Birth of last child
Education (continuous)	No grade of any kind	0	0
	Primary school certificate	1	1
	Professional aptitude or first general educational level	2	3
	Baccalaureate or higher degrees	3	2
Elder	If not elder	0	0
	If elder	1	1
No. of sibs (continuous)			
Type of place	High fertility areas	0	0
	Low fertility areas	1	1
No. of residences during childhood (continuous)			
Father farmer	If not farmer	0	0
	If farmer	1	1
No. of children (continuous)			
Owner at the end of the period	If at the beginning		0
	If not at the beginning		1
Previously tenant	If not tenant		0
	If tenant		1
No. of previous migrations (continuous)			
Occupation when becoming owner (continuous)	Farmer and farmworker		0
	Unskilled manual worker		1
	Qualified manual worker		4
	Craftsmen and small tradesmen		5
	White-collar and management		3
	Not working		2

Effects of the Different Characteristics

The use of a proportional-hazards model allows us to pinpoint the main effects of the different characteristics of the individual and her family on both events,

becoming a home-owner and the birth of the last child. We have here again disaggregated the population according to the husband's profession at marriage, as the non-parametric analysis showed us that this variable introduces non-proportional timing in the different rates of first home-ownership. First, we distinguish the child-bearing period during which women are subject to both risks, and second, we consider only the women who have completed their family before becoming a home-owner.

Women of Reproductive Age

Table 5.5 gives the semiparametric results for the risks of becoming a home-owner before or after the child's birth. It presents 14 models, each including only one variable at a time. We will not discuss these results in detail here but try to pinpoint some of the more interesting ones.

Notice first that, when introducing only the change in family status variable (Model 1), we find results similar to those given by the non-parametric approach, namely, a very significant decrease in the probability of becoming a home-owner once family completion is achieved for women married to craftsmen or tradesmen, a less significant decrease for those married to farmers, and no significant decrease for other women.

The number of siblings (Model 4) has a very similar effect for every professional category. We observe a significant reduction in the probability of becoming a home-owner when the number of siblings increases. This reduction is maintained after the last child's birth for women married to farmers or unskilled workers, while it disappears for those married to craftsmen or tradesmen. A similar negative influence exists for all the indicators of large families. The probability of becoming a home-owner decreases when the number of the husband's siblings increases (Model 12), or when the number of children of the married couple increases (Model 11), but this is significant only for some professional groups. The first influence (Model 12) is observed when the husband is a skilled or unskilled worker, craftsman, or tradesman, and the second relation (Model 11) exists when the husband is a farmer or unskilled worker. Both are, however, always negative. We can relate these results to different motives. First, as the individual portion of inheritance decreases because the number of siblings increases, it is more difficult for those raised in large families to find enough money to become a home-owner. Second, it is more difficult for those who have a large family to put aside money when they have numerous dependent children. We will see later that, once the children are independent, this variable no longer deters acquisition of a home.

Birth order (Model 3) of the individual also affects the probability of becoming a home-owner. Before the birth of the last child, being the eldest child in a family generally increases the probability of becoming a home-owner, while after the last birth this effect disappears. Again, this is not true for every profession; there is no effect for the woman whose husband is a craftsman or tradesman. However,

TABLE 5.5. *First home-ownership for wives, before or after child's birth: semiparametric analysis values of the* β_1, β_0, *and* β_2 *parameters (single-variable analysis).*

Variable	Model	Husband farmer			Husband unskilled			Husband skilled			Husband white-collar			Husband crafts–tradesman		
	No.	β_1	β_0	β_2	β_1	β_0	β_2	β_1	β_0	β_2	β_1	β_0	β_2	β_1	β_0	β_2
Last birth	(1)		-0.221[a]			-0.159			-0.090			-0.023			-0.368[b]	
Education	(2)	0.219[b]	-0.124	-0.187	-0.022	-0.347[b]	0.273[a]	- 0.029	-0.119	0.040	0.057	-0.177	0.115	-0.058	-0.752[b]	0.287[a]
Elder	(3)	0.217[a]	-0.172	-0.145	0.178	-0.083	-0.209	0.272[a]	0.052	-0.331[a]	0.299[a]	0.082	-0.210	0.049	-0.302[a]	-0.145
No. of sibs	(4)	-0.033[a]	-0.197	-0.010	-0.057[b]	-0.164	-0.003	-0.062[b]	-0.214	0.045	-0.076[b]	-0.086	0.029	-0.058[a]	-0.542[b]	0.064
Born in low-fertility area	(5)	-0.009	-0.190[a]	-0.398	-0.368[a]	-0.243[a]	0.528[a]	-0.490[b]	-0.131	0.310	0.088	0.023	-0.228	-0.249	-0.371[a]	-0.011
No. of residences during childhood	(6)	-0.040	-0.387[a]	0.113	0.029	-0.047	-0.072	-0.044	-0.067	-0.011	0.025	-0.012	-0.007	0.166[b]	-0.053	-0.193[a]
Father born in low-fertility area	(7)	-0.419	-0.239[b]	0.328	-0.598[a]	-0.271[a]	1.069[b]	0.009	-0.113	-0.177[b]	-0.570	0.107[b]	-0.688[b]	-0.249	-0.399[b]	0.083
Mother born in low-fertility area	(8)	-0.426[a]	-0.251[b]	0.403	-0.392	-0.258[a]	0.945[b]	-0.382	-0.111	0.288	-0.633[b]	-0.084	0.529	-0.095	-0.296[a]	-0.594[a]
Father farmer	(9)	0.203	-0.272	0.064	0.262[a]	-0.145	-0.010	0.250[a]	-0.008	-0.324	0.144	-0.022	0.002	0.203	-0.348[b]	-0.070
Husband's education	(10)		-0.295[b]	0.143		-0.375[b]	0.316[b]		-0.134	0.051		-0.149	0.078		-0.735[b]	0.193[a]
Final no. of sibs	(11)		-0.044	-0.069[a]		0.304[a]	-0.206[b]		0.038	-0.059		0.050	-0.034		-0.265	-0.048
Husband's no. of sibs	(12)		-0.127	-0.025		0.095	-0.076[b]		0.031	-0.040[a]		-0.088	0.025		-0.249[a]	-0.039
Husband lives in low-fertility area	(13)		-0.199[a]	-0.286		-0.144	-0.060		-0.013	-0.301[a]		0.010	-0.109		-0.398[b]	0.103
Husband born in low-fertility area	(14)		-0.191[a]	-0.515[a]		-0.148	-0.069		-0.041	-0.243		-0.047	0.128		-0.431[a]	0.281

[a] Significantly less than or greater than 0: 1-tailed test with size 5%.
[b] Significantly less than or greater than 0: 1-tailed test with size 1%.

TABLE 5.6. *First home-ownership for wives, before or after last child's birth: semiparametric analysis values of the* β_1, β_0, *and* β_2 *parameters (optimal models).*

Optimal models	Husband farmer			Husband unskilled			Husband skilled			Husband white-collar			Husband crafts–tradesman		
	β_1	β_0	β_2	β_1	β_0	β_2	β_1	β_0	β_2	β_1	β_0	β_2	β_1	β_0	β_2
Education	+0.259[b]		-0.290[a]										-0.128[a]		0.317[a]
Elder															
No. of sibs				-0.062[b]		0.010	-0.075[b]		0.059[a]	-0.069[a]		0.014	-0.070[a]		0.079[a]
Born in a low-fertility area	0.573[b]		-1.218[b]				-0.720[b]		0.419	0.407[a]		-0.743[b]			
No. of residences during childhood													0.187[b]		-0.266[b]
Father born in low-fertility area							0.433[a]		0.156	-0.458		0.916[b]			
Mother born in low-fertility area	-0.760[b]		1.263[b]							-0.668[a]		0.460	-0.164		-0.662
Father farmer	0.273[a]		-0.062	0.302[a]		0.079	0.284[a]		-0.364[a]						
Last birth		-0.121			0.212			-0.175			-0.065			-0.824[b]	
Husband's education			0.153			0.239[b]									0.176[a]
Final no. of children						-0.173[b]									
Husband's no. of sibs						-0.060[b]									
Husband lives in low-fertility area									-0.342[a]						

[a] Significantly less than or greater than 0: 1-tailed test with size 5%..
[b] Significantly less than or greater than 0: 1-tailed test with size 1%.

TABLE 5.7. *Last child for wives, before or after becoming home-owner: semiparametric analysis values of the* β_1, β_0, *and* β_2 *parameters (single-variable analysis).*

Variable	Model	Husband farmer			Husband unskilled			Husband skilled			Husband white-collar			Husband crafts–tradesman		
	No.	β_1	β_0	β_2	β_1	β_0	β_2	β_1	β_0	β_2	β_1	β_0	β_2	β_1	β_0	β_2
Home-owner	(1)		0.384[b]			0.187[a]			0.275[b]			0.289[b]			0.416[b]	
Education	(2)	-0.008	0.407[b]	0.039	0.144[b]	0.221[b]	-0.052	0.065	0.185	0.134	-0.048	0.275	0.008	-0.032	0.376[b]	0.033
No. of sibs	(3)	-0.019	0.296[b]	0.023	-0.008	0.079	0.033	0.017	0.492[b]	-0.076[b]	0.003	0.283[b]	0.004	-0.052[b]	0.289[a]	0.047
Father farmer	(4)	0.067	0.338[b]	0.055	-0.102	0.086	0.290	-0.044	0.249[b]	0.097	-0.024	0.313[b]	-0.111	-0.110	0.308[b]	0.562[b]
Occupation at becoming owner	(5)		0.494[b]	-0.149[b]		-0.057	0.164[b]		0.273[a]	0.001		0.336[b]	-0.020		0.459[b]	-0.018

[a] Significantly less than or greater than 0: 1-tailed test with size 5%.
[b] Significantly less than or greater than 0: 1-tailed test with size 1%.

this effect, when observed, may be a spurious one. To see if such is the case, we will have to consider the simultaneous effects of the number of siblings and the fact of being the eldest child. When this is done, we can verify that the only significant effect is the effect of sibship size. We can thus see in the optimum model (Table 5.6), which contains only the variables that have a simultaneous significant effect, that being the eldest does not in fact have an effect on the probability of becoming a home-owner.

It is also interesting to see that to have a father who is a farmer increases the probability of becoming a home-owner before the last child's birth particularly for the woman whose husband is a skilled or unskilled worker. Again this phenomenon may be due to the fact that those workers whose fathers are farmers get their portion of the inheritance before completing their family, thereby permitting them to become home-owners earlier than others.

Finally, we observe in Table 5.5 that the educational level affects home-ownership for farmers only before their last child's birth. Those who have achieved a better education become owners of their farm earlier than the others. We will see later the significant part that education plays in becoming an owner when individuals grow older.

Let us now consider the reciprocal interaction: the effect of becoming a home-owner on the birth of the last child, according to different characteristics. Table 5.7 gives the results of this analysis. First let us note that, when only the interaction of becoming a home-owner (Model 1) is introduced, we get results similar to those given by the non-parametric approach, namely, a significant increase in the probability of the last child's birth occurring after the parents have become home-owners. This is true to different degrees for every professional group. When we observe the effects of the other characteristics, we are surprised to see that each professional group is affected by a different cluster of variables. What we generally observe here is the lack of influence of the variables chosen, which are educational status, number of siblings, farmer father—the very characteristics that played an important role in the purchase of a home. The only significant interaction is the influence observed for the variable 'occupation when becoming a home-owner' for farmers and unskilled workers (Model 5). A woman married to a farmer who has left the agricultural sector has a decreasing probability of having the last child; in fact, the favourable effect of becoming a home-owner on the last birth is slightly but significantly decreased if they left their original environment. On the other hand, home-owners of the unskilled-workers group have greater chances of having a last birth if the husband has been promoted to a higher professional category. We also know that very few of them turn to the agricultural sector for advancement.

Women after Last Child's Birth

We now introduce a semiparametric analysis of women who did not become a home-owner before completing their family. Table 5.8 gives the results for the

TABLE 5.8. *First home-ownership for wives, after last child's birth: semiparametric analysis values of the β_i parameter (single-variable analysis).*

Variable	Model	Husband farmer	Husband unskilled	Husband skilled	Husband white-collar	Husband crafts–tradesman
	No.	β_i	β_i	β_i	β_i	β_i
Education	(1)	0.314[b]	0.538[b]	0.222[b]	0.326[b]	0.332[b]
Elder	(2)	0.337[b]	0.207	0.174	0.217[a]	0.092
No. of sibs	(3)	0.000	0.005	0.029[a]	0.030	0.047
Born in low-fertility area	(4)	−0.052	0.360[a]	−0.045	−0.042	−0.123
No. of residences during childhood	(5)	0.282[b]	0.220[b]	0.130[b]	0.135[b]	0.143[b]
Father born in low-fertility area	(6)	0.232	0.762[b]	0.395[b]	0.063	0.047
Mother born in low-fertility area	(7)	0.298	0.715[b]	0.113	−0.100	−0.554[b]
Father farmer	(8)	0.684[b]	0.524[b]	0.149	0.310[b]	0.506[b]
Husband's education	(9)	0.293[b]	0.594[b]	0.296[b]	0.236[b]	0.318[b]
Final no. of children	(10)	0.021	−0.002	0.007	0.053	0.069
Husband's no. of sibs	(11)	0.025	0.013	0.016	0.059[b]	0.001
Husband lives in low-fertility area	(12)	−0.118	0.206	0.037	0.040	0.144
Husband born in low-fertility area	(13)	−0.236	0.002	−0.116	0.154	0.323[a]

[a] Significantly less than or greater than 0: 1-tailed test with size 5%.
[b] Significantly less than or greater than 0: 1-tailed test with size 1%.

various professional groups. The data mainly concern the behaviour of couples for whom the main expenses involved in building a family have begun to decrease, offering new possibilities of becoming a home-owner. For these couples, we observe an increasing similarity of behaviour patterns regardless of their professional occupation.

First, education (Model 1), whose effect was obvious only for farmers before the last child's birth, now has a very similar effect on all professional groups. The likelihood of becoming a home-owner increases with the educational level of individuals, whatever their professional group may be. The same is true for the husband's educational status (Model 9). In fact, educational status, as sociological studies show, is a good indicator of the future professional career.

TABLE 5.9. *First home-ownership for wives, after last child's birth: semiparametric analysis values (optimal models).*

Optimal models	Husband farmer	Husband unskilled	Husband skilled	Husband white-collar	Husband crafts–tradesman
	β_1	β_1	β_1	β_1	β_1
Education	0.197[a]	0.442[b]	0.105	0.355[b]	0.246[b]
Elder	0.300[b]			0.209[a]	
No. of sibs				0.048[a]	
Born in low-fertility area			−0.516[b]		
No. of residences during childhood	0.255[b]	0.135[a]			
Father born in low-fertility area			0.098[a]		
Mother born in low-fertility area		0.750[b]	0.738[b]		−0.747[b]
Father farmer	0.591[b]	0.579[b]		0.313[b]	0.649[b]
Husband's education	0.227[b]	0.481[b]	0.203[b]		0.280[b]
Final no. of children					
Husband's no. of sibs				0.056[b]	
Husband lives in low-fertility area					
Husband born in low-fertility area					
Log likelihood	−956.41	−739.20	−1 032.61	−1 054.43	−541.17

[a] Significantly less than or greater than 0: 1-tailed test with size 5%.
[b] Significantly less than or greater than 0: 1-tailed test with size 1%.

Second, to have a farmer father (Model 8) increases the probability of becoming a home-owner for all professional groups, even if it is not statistically significant for those whose husband is a skilled worker. This influence identified previously extends to most of the professional groups after the last child's birth.

Third, a new characteristic introduced into the analysis appears to have a similar effect on all professional groups. To have had a large number of different residences during childhood (Model 5) increases the probability of becoming a home-owner after the last child's birth. This characteristic appears also to be very significant for different migration behaviours (Courgeau 1985*a*; Courgeau 1985*b*). We observe that those individuals who have moved a lot are more inclined to become a home-owner in the latter phase of their life.

Fourth, the number of siblings (Models 3 and 11) no longer plays a significant role in the propensity for becoming a home-owner after the last child's birth. This is again very different from what we observed for women of reproductive age. However, for women whose husbands are in the white-collar or management category, we observe an interesting phenomenon. To have many siblings and to be the eldest are no longer inhibiting factors; instead, both characteristics increase the probability of becoming a home-owner when they are acting simultaneously (Table 5.9). For those social categories, having many siblings may be helpful in raising the money to buy a house.

Conclusion

The approach used here to study a sample of married women allowed us to identify different behaviour patterns according to the professional occupation of the husband. If we had used a single model for the whole population, postulating a proportional effect of the profession on the hazard, we would have missed these differences and observed only the common features, such as the effect of the number of siblings on home-ownership. Some other characteristics might also have disappeared in an analysis of the entire population because they only affect some professional subgroups. Conversely, some factors could still appear to be important when in fact they characterize only a subgroup. It is only unfortunate that the size of the sample, as well as the characteristics available, did not allow us to go into further detail.

By splitting the sample into different professional groups we were able to reduce the problems of residual heterogeneity. The unobserved factors are not explicitly modelled here. Other qualitative disciplines, such as anthropology or psychology, would be more likely to identify the factors unobserved by quantitative approaches. They could provide insights into the problems of heterogeneity that modelling has not succeeded in solving satisfactorily. Nevertheless, the use of a reciprocal analysis has again proved its value here in clarifying a complex interrelation. Our search for local dependence led us to perform a reciprocal analysis of interactions among various events. In the present example we actually observe a local dependence of birth of the last child on home-ownership, whereas a relative independence exists between the purchase of a home and the completion of the family.

Analysis of the professional occupation of the husband at marriage shows that different opportunities attach to specific professional groups. Traditional patterns of home-ownership and inheritance in the agricultural sector not only enable young farmers to become home-owners more easily but also facilitate the buying of a home for those who have left this sector. Even for unskilled workers, coming from the agricultural sector constitutes one of their few advantages in trying to become a home-owner during the building of the family. The attachment to home-ownership and the strong link to rural antecedents is here confirmed.

Another important result of our analysis is the support for the controversial finding that confirms the favourable effect of home-ownership on the birth of the last child. It has been argued that couples without children constitute a large proportion of home-owners. This argument remains true, but couples with one or two children constitute an even higher proportion of home-owners.

Finally, one of the main advantages of our approach is its demonstration of the clear need for multidisciplinary analysis. The complex results we obtain demand collaboration with other researchers, especially those who work more qualitatively. For example, we observed previously that individuals who have moved frequently are more inclined than others to become home-owners in the latter phase of their lives. This finding cannot be interpreted with the information collected in this survey, and so a more anthropological approach might be helpful. On the other hand, an important benefit of our approach is its ability to confirm or deny through empirical analysis the behavioural hypotheses proposed by those working in other disciplines.

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