Sibling Competition for Marriage and Reproduction: Evidence from Western Hungarian Rural Populations during the Demographic Transition

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Abstract

One influential theory explaining the fertility transition is the changing parental investment strategies, as parents tend to invest more in child quality than in child quantity. Moreover this theory predict that parental investment diverge during the demographic transition according to resource availability: the wealthiest couples invest more in quality than in quantity of children. The objective of this paper is to study sibling competition for marriage and reproduction during the period of demographic transition, by using longitudinal micro-level data, reconstructed for two rural communities from Western Hungary. Logistic regression and event-history analysis are used to investigate whether family characteristics, especially the presence of older and younger brothers and sisters in the family, were detrimental or not to marriage and local reproduction of sons with different socioeconomic background. Preliminary results suggest that the presence of brothers were detrimental to local reproduction, while the presence of sisters did not affect the reproduction of sons who reached adulthood. Socioeconomic status of the father was a key factor of differentiation: sons of farmers had the highest odds for local reproduction, while sons of day labourers had the lowest. The position of sons among their sibling groups had the greatest and statistically significant effect among the sons of farmers. Within-family differences emerged also in the process of marriage timing of those who married in the parish of origin. First born and middle born sons married significantly later than sons without living brothers. Moreover, the sons of farmers significantly married later in the presence of sisters (younger and older too), a pattern that did not characterise sons of day labourers.

Introduction

One influential theory explaining the fertility transition is the changing parental investment strategies, as parents tend to invest more in child quality than in child quantity (Becker 1991). Moreover this theory, modified by evolutionary anthropologists, predict that parental investment diverge during the demographic transition according to resource availability: the wealthiest couples invest more in quality than in quantity of children (Gibson & Sear 2010). Recently, parallel with growing availability of historical and longitudinal micro-level databases, we can observe a strong research interest focusing on the economic and family influences of marriage and social reproduction in pre-industrial populations (Lundh & Kurosu et al. 2014). However there is little research focusing on the period of fertility transition (exceptions are Dribe et al. 2012; Bras et al. 2012; van Bavel et al. 2011).

In this paper I test the model by investigating whether family characteristics, especially the presence of older and younger brothers and sisters in the family, were detrimental or not to marriage and local reproduction of sons with different socioeconomic background in two western Hungarian rural communities during the period of fertility transition. The analysis covers the period before and during the fertility transition, mainly from the second part of the 19th century up to the First World War.

In Hungary, the ethnographic literature dating from the first decades of 20th century documented that the one-child system which was quite common in some parts of the country grows out of the dilemma of inheritance: it was an answer to the challenge of passing property from one generation to the next, without fragmenting valued farms or creating paupers (Buday 1909, Vásáry 1989). These works pointed to the fact that the possibilities of economic development for the petty peasant proprietors, especially in the southern-western part of the country, were closed, as a result of which the larger families, being able to increase their farm, became necessarily impoverished.

In this paper I test the following questions:
1) Does sibling configuration (presence of older and younger brothers and sisters) when the individual reach age 17 influence or not the local reproduction of those sons who reached adulthood, and the marriage timing of sons who married in the parish of origin?
2) Does investment vary according to socioeconomic status of the father?
I predict that the presence of same sex siblings (i.e. brothers) will influence the chances of local reproduction of sons, and the parental discrimination will be more nuanced in case of individual with farmer's background.

Material and data selection

The study population

The studied communities, Bük and Szakony are located in the western part of the country, close to Austrian border (Map 1). They lie 5 kilometres from each other. During the 19th century, Bük consisted of three separate villages (Lower, Upper and Middle Bük) that were united in 1902. Szakony consisted of two villages, and was formed in 1928 by the unification of Lower Szakony and Upper Szakony. In 1850, the total population of three Bük was 1,294, and this figure grew to 2,447 by 1941. The population growth was due to the agricultural modernization, namely, the construction of railroads in 1865 and the establishment of the modern sugar factory in 1867-1869, which was accompanied by a robust immigration to the settlement. The sugar factory leased the lands of local landowners and purchased the smaller lands owned by local freeholders. The sugar factory provided employment for the poor living in Bük and surrounding villages as "factory day labourers" or agricultural servants, and built modern facilities for the servants and the workers. The economic development reached its peak in the first decade of the 20th century. In 1910, the sugar factory employed 706 people (Gyurácz 2000: 82). Parallel there were established a brick factory and other handicraft small artisan workshops opened. The Great War put an end to this development and the sugar factory was unfortunately burnt down in 1917. Between 1925 and 1930, the management gradually dissolved the factory, therefore its lands were purchased partly by the local freeholders and a big landowner family. A portion of workers left the settlement whereas others find a job at the manorial farm. The brick factories established around the turn of the century ceased to exist mainly due to the Great Depression. The interwar period is characterized by population decrease.

The neighbouring village Szakony was rural throughout the period analysed and the population size stabilized around 1000. Prior to abolition of serfdom (1848), a significant part of the population was copyholder living on the landlords' estates. Their descendants became "smallholders" after 1848. In the second half of the 19th century the parcels of smallholders (formerly serfs) were the characteristic locations of the agricultural production.

The population of both villages belonged to Lutheran and Roman Catholic Church. The immigration of the 1860's fundamentally transformed the religious composition of Bük. While the number of Lutherans per 100 Roman Catholics was 82 before the agricultural modernization, this balance was gradually turned to the latter, constituting two thirds of the entire population in 1941 (49 Lutherans per 100 Roman Catholics). In Szakony denominational ratio was 115 in 1836 and it became 76 in 1941.

According to census figures from the first half of the 20th century in Bük nearly 50% of breadwinners worked outside agriculture, and a substantial part of breadwinners in agriculture were landless agricultural workers. The role of agriculture was dominating in Szakony, therefore the percentage of landowners (smallholders) was nearly 80%.

Data selection

Database for the analysis was compiled by gathering the parochial registers of the 19th century and the state registers between 1895 and 1950. Parish register data were converted to longitudinal database by applying the method of family reconstitution (Henry & Blum 1988). The family reconstitution database was further linked to the lists of voters (the minority of population who had the political rights at the time) in the period between 1861 and 1948, and the individual data of census held in 1857.

I included only those individuals who met the following conditions: 1) their parents were married and died in one of the two villages; 2) they themselves were born between 1820 and 1910 and survived until at least age 17. In calculating the presence of brothers and sisters we included the siblings who were alive when the individual reached age 17. I included only individuals born between 1820 and 1910 as the parish and state registers were available until 1950. Thus for individuals who remained in their village of birth, they had at least forty years after their birth to marry and reproduce. Those for whom no marriage or child birth record was found were classed as permanently celibate if a death record was found indicating they died single. Those for whom no marriage record, death record or census record was found were assumed to have left the village.

In table 1 I describe the dataset. I have selected families with at least one surviving son (N=1380). Eventually, children from 627 families were included in the analysis.

Categorization of socioeconomic groups

For socioeconomic status I used the occupational information as was recorded in parish registers, census lists and the lists of voters. I have coded all occupations on the basis of HISCO coding scheme (van Leeuwen, Maas & Miles 2002) and I classified according to the HISCLASS scheme (van Leeuwen & Maas 2010). Due to small number of cases in some of the HISCLASS categories, it is not possible to use the range of the HISCLASS in the analysis. The final classification used is displayed in the table below.

Classification of social classes and HISCLASS correspondences

HISCLASS	SES	Examples
1–6	1 – Middle class	Higher managers, higher professionals, lower managers, lower professionals, clerical and sales, lower clerical and sales, foremen, etc.
8	2 – Farmer	
7	3 – Skilled worker	Craftsmen, blacksmith, crofters, carpenters etc.
9–12	4 – Labourer	Day labourers, workers, farm servants, farm workers etc.

Dependent variables and methods of analysis

Logistic regression is used to determine the effects of siblings on marriage and local reproduction of sons in the communities under study.
Event history analysis (Cox proportional hazard regression with shared frailty at the mother's level) is used to investigate the differences in marriage timing among those sons who married in the parish of origin.
I discriminated the position of the index individual in the sibling group according to the gender and age of siblings. I also included the age of the individual at mother's and father's death and the socioeconomic status and religious affiliation of the father as control variables.

Results

The results of the logistic regression analysis on the probability of local reproduction (table 2) suggest that the sons of farmers had the greatest odds for local reproduction compared to sons of day labourers. For boys having only older brothers or having both younger and older brothers there is a reduction in the likelihood of marriage and local reproduction compared to the reference category of boys without surviving brothers. On the other hand, the presence of sisters does not have a significant effect on the probability of local reproduction.

Within-family differences emerged also in the process of marriage timing of those who married in the parish of origin (Cox regression estimates in the table 3). First born and middle born sons married significantly later than sons without living brothers. Moreover, the sons of farmers significantly married later in the presence of sisters (younger and older too), a pattern that did not characterise sons of day labourers.

Discussion

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Tables and figures

Table 1. Structure of the data set of the present study

Sample population	N persons	N families
First generation (parents)		
Couples who married between 1820 and 1890 in Bük and Szakony		1313
Reconstructed postnuptial life courses		798
Second generation (children/sibling sets)		
Children born between 1820 and 1910, including stillborn and infant deaths	4076	798
Children who survived until age 17	2700	751
Sons who survived until age 17	1380	627
Later life events		
Marriage in a neighbouring parish without further information	75 (5.4%)	
Marriage and reproduction*	780 (56.5%)	
Death unmarried	144 (10.4%)	
Lost/emigrated	381 (27.6%)	

Note: * Further informations regarding childbirth and/or death available on local registers

Table 2. Logistic regression analysis of the probability of marrying and reproducing in the village of origin for sons, Western Hungarian rural parishes, Bük and Szakony, birth cohorts: 1820–1909.

	All			Farmers			Day labourers		
	%	Odds ratio	p-value	%	Odds ratio	p-value	%	Odds ratio	p-value
Socioeconomic status of the father									
Day labourer (ref.)	38.2	1.00							
Farmer	50.5	1.63	0.000						
Artisan	8.9	0.89	0.566						
Middle class	2.4	0.41	0.032						
Religious affiliation									
Lutheran (ref.)	50.5	1.00		65.0	1.00		36.4	1.00	
Roman Catholic	49.5	1.08	0.528	35.0	1.17	0.376	63.6	0.91	0.643
Year of birth	1866 (19.8)	0.99	0.000	1866 (20.7)	0.99	0.002	1867 (18.8)	0.99	0.167
Brother(s)									
None (ref.)	17.1	1.00		17.5	1.00		18.0	1.00	
Only younger	28.7	0.84	0.343	28.8	0.72	0.193	28.3	1.14	0.651
Only older	27.5	0.81	0.229	27.6	0.95	0.848	27.1	0.63	0.085
Both younger and older	26.7	0.61	0.007	26.1	0.51	0.007	26.6	0.68	0.188
Sister(s)									
None (ref.)	18.7	1.00		17.7	1.00		20.9	1.00	
Only younger	32.7	0.82	0.259	34.3	0.63	0.080	30.4	1.10	0.726
Only older	26.7	1.08	0.677	25.4	0.85	0.570	28.3	1.34	0.333
Both younger and older	21.9	0.92	0.681	22.7	0.88	0.647	20.5	0.88	0.678
Age at mother's death	36.6 (15.3)	1.01	0.019	38.0 (15.6)	1.00	0.925	34.4	1.02	0.006
Age at father's death	33.8 (14.7)	0.99	0.722	36.3 (14.6)	1.00	0.631	31.0 (14.4)	0.99	0.781
Parish of birth									
Bük (ref.)	67.0	1.00		56.0	1.00		81.6	1.00	
Szakony	32.9	0.92	0.524	44.0	0.98	0.891	18.4	0.89	0.669
N	1380			697			527		
Events	780			437			272		
Wald Chi square	50.4			24.9			22.4		
-2LL	-915.3			-447.5			-353.1		
Chi2	0.000			0.009			0.021		

Table 3. Event-history analysis of the relative risk of first marriage of sons in Western Hungarian rural parishes, Bük and Szakony, birth cohorts: 1820–1909.

	All			Farmers			Day labourers		
	%	Rel. risk	p-value	%	Rel. risk	p-value	%	Rel. risk	p-value
Socioeconomic status of the father									
Day labourer (ref.)	38.5	1.00							
Farmer	51.7	0.91	0.448						
Artisan	9.2	0.66	0.041						
Middle class	0.6	1.29	0.632						
Religious affiliation									
Lutheran (ref.)	50.9	1.00		65.6	1.00		36.0	1.00	
Roman Catholic	49.1	1.09	0.392	34.4	1.03	0.839	63.9	1.06	0.693
Year of birth	1866 (19.6)	0.98	0.000	1866 (20.4)	0.98	0.000	1867 (18.0)	0.99	0.156
Brother(s)									
None (ref.)	19.0	1.00		19.6	1.00		19.4	1.00	
Only younger	27.8	0.73	0.033	26.1	0.70	0.069	31.7	0.68	0.050
Only older	28.9	0.88	0.426	31.2	0.83	0.335	24.0	0.82	0.361
Both younger and older	24.3	0.79	0.104	23.1	0.73	0.116	24.9	0.87	0.503
Sister(s)									
None (ref.)	16.8	1.00		15.6	1.00		17.0	1.00	
Only younger	28.5	0.87	0.345	27.9	0.56	0.005	30.1	1.32	0.162
Only older	31.9	0.92	0.564	29.9	0.71	0.094	34.7	1.12	0.597
Both younger and older	22.8	0.88	0.426	26.6	0.62	0.024	18.1	1.27	0.283
Age at mother's death	34.8 (14.8)	0.99	0.026	35.6 (15.3)	0.99	0.192	34.0 (13.8)	0.99	0.179
Age at father's death	31.3 (13.6)	0.99	0.033	33.2 (14.1)	0.99	0.008	29.3 (12.9)	1.00	0.804
Parish of birth									
Bük (ref.)	71.3	1.00		61.4	1.00		83.2	1.00	
Szakony	28.7	1.43	0.002	38.6	1.49	0.005	16.8	1.23	0.265
Shared frailty		0.34	0.000		0.33	0.000		0.09	0.203
Number of individuals		763			417			280	
Number of events		763			417			280	
Person-years at risk		9633.6			5284.2			3449.8	
Log likelihood		-4263.5			-2062.8			-1295.8	
Overall p-value		0.000			0.000			0.394	