

Denominational and social class differences in infant and child mortality and vulnerability to economic stress in Western Hungarian rural parishes, 1830–1939.

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Abstract

Using individual level and longitudinal data reconstructed from Western Hungarian parish registers, the present paper study denominational and social class differences in infant and child mortality during the period 1830–1939, and responses to short-term changes in food prices during the period 1828–1914, using event history models. This research extends studies of standards of living in the past to new geographic and economic contexts. The results shows that there were no significant mortality differences between denominational groups.

Socioeconomic class in contrast affected mortality, and during the period of investigation social class differences emerged, middle class and skilled workers infant and child mortality rates starting to decline around the end of the 19th century, while farmers and unskilled workers mortality rates show no change until the period between the two World War. The results show that child mortality was sensitive to short-term fluctuations of rye prices in the period before the WWI.

Preliminary draft, please do not cite!

Introduction

One indicator of living standards is the ability of individuals, households, and communities to overcome short-term economic stress, especially changes in the price of food (Bengtsson 2004). Communities and households with high standards of living can adapt to price fluctuations without evidence of adverse demographic effects. This can be accomplished through a variety of means, both intentional and unintentional. Planning for lean years, such as through savings and economic diversification may mitigate short-term economic stress. Demographic responses, including increased mortality and decreased or delayed fertility, are another possible outcome of short-term stress, and have been the focus of a wave of comparative research on standards of living in the past (Bengtsson, Campbell, & Lee, 2004; Tsuya, Feng, Alter, & Lee, 2010, Lundh & Kurosu 2014). We extend this research by examining demographic responses to short-term stress in a setting with a diverse rural economy, the Western Transdanubia (Hungary), in the 19th century.

Mortality responses to food price increases is an indicator of low living standards. There is variation within communities in demographic responses to food prices. Individuals who are net producers, such as free holding and tenant farmers are buffered from the effects of high prices, as they produce much of the food required by their households. Landless labourers are at especially high risk, as they must both sell their labour on the market and purchase food at market prices. Thus, even among the poor, there is diversity in responses to high prices, as poor labourers are more vulnerable than poor cultivators. With limited land resources and diversity in rural occupations, the parishes from Western Hungary provide a good context to study variation in living standards, not only in comparison to other regions of Europe, but among socioeconomic groups within the community.

The structure of the paper is as follows; Part 2 presents the characteristics of the studied community. Part 3 demonstrates the data and methods used to examine the evolution of infant and child mortality by denomination and socioeconomic status in detail. Part 4 presents the results of multivariate analysis. The paper finishes with conclusions and suggestions for further research.

The area under study

The studied communities, Bük and Szakony are located in Western Hungary, close to Austrian border. 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. Both settlements were inhabited by Roman Catholics and Lutherans (Gyurácz, 2000; Németh, 2014; Szabó, 1985). The population growth of Bük was mainly due to agricultural modernization, namely, the construction of a railroad by 1865, and the establishment of a modern sugar factory in 1867-1869, which resulted in a robust immigration into the settlements. The sugar factory leased the lands of local landowners and purchased the smaller lands owned by local freeholders. The sugar factory provided work for the poor living in Bük and the surrounding villages. They could work in the factory as “factory day labourers” or agricultural servants. At the same time, the factory owners built up 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). In addition, a brick factory was established and other workshops of local artisans were opened in order to meet the increasing demands resulting from the constructions and the rapidly growing population size. The Great War put an end to this development, and unfortunately, the sugar factory burned down, in 1917. Between 1925 and 1930, the management gradually dissolved the factory, and its lands were purchased in part by local freeholders and in part by a big landowning family. A portion of the workers left the village, whereas others found jobs at the manorial farm of the estate formed after the fall of the sugar factory. The brick factories established around the turn of the century ceased to exist mainly due to the Great Depression (Németh, 2014). In the interwar period the population of the village continually decreased.

The immigration of the 1860s fundamentally transformed the denominational composition of Bük (*Figure 1*). While the number of Lutherans per 100 Roman Catholics was 82 before the agricultural modernization, this rate gradually changed, and Roman Catholics constituted the overwhelming majority (the two thirds of the entire population) by 1941 (49 Lutherans per 100 Roman Catholics).

Bük was gradually transformed and its social stratification became more complex in the course of the 19th century. According to the census of 1857, 51% of the working age men (above the age of 25) were classified as day-labourers, whereas smallholders constituted 40%, tradesmen and artisans 6.5% and intellectuals 3%.¹ The occupational data of censuses 1910,

¹ Individual records of Census 1857: National Archives of Hungary MNL OL X B 1762 microfilm.

1920 and 1930 show that more than 20% of the breadwinners were industrial workers from the local handicraft industry and the sugar factory (*Table 1*).

Map 1. Map of the area under study

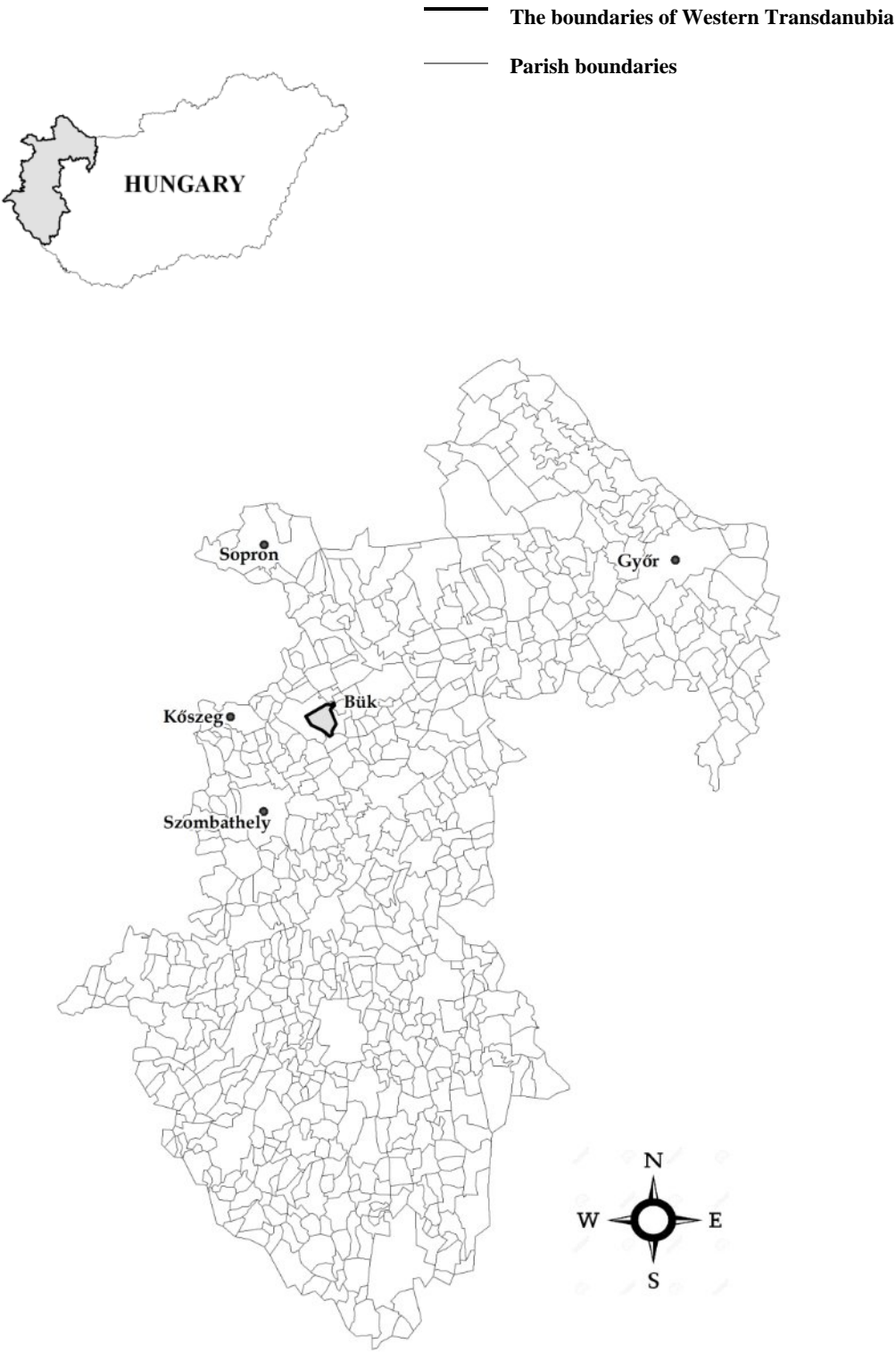
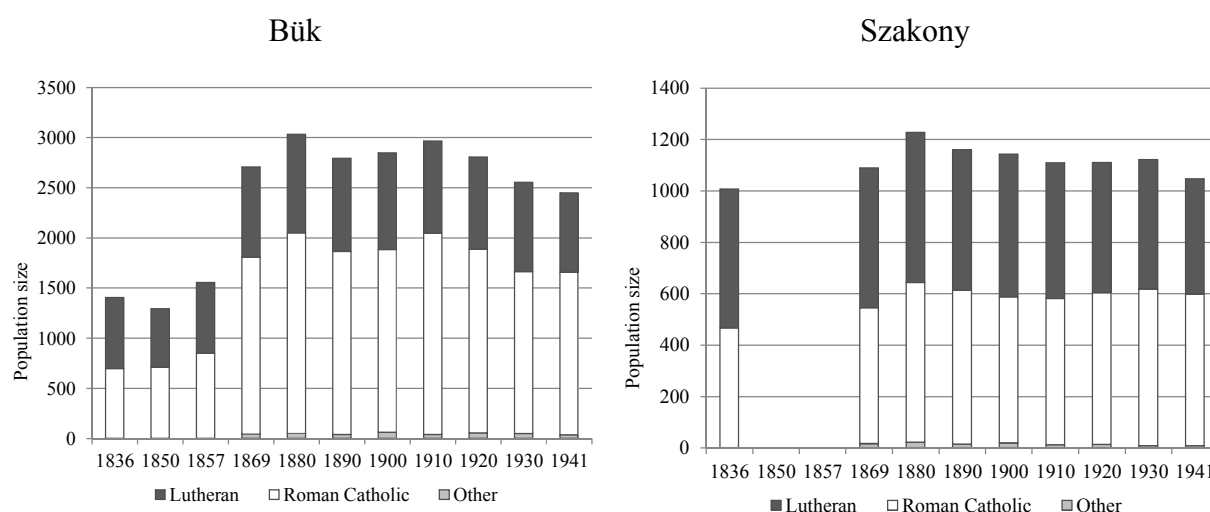


Figure 1: Population size and distribution by religion in Bük and Szakony 1836–1941



Source: Censuses (own calculations).

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 role of agriculture was dominating in Szakony, therefore the percentage of landowners (smallholders) was nearly 80%.

Table 1: The distribution of breadwinners by broad occupational groups in Bük and Szakony, 1900–1930 (%)

	Bük				Szakony			
	1900	1910	1920	1930	1900	1910	1920	1930
Agriculture	58,05	52,45	63,19	64,04	78,26	78,41	83,77	76,47
Mining	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Industry	24,88	28,48	16,11	15,88	11,07	8,96	8,19	12,75
Commerce	2,76	1,72	1,56	2,72	1,38	1,43	0,62	1,57
Transport	3,09	2,25	2,80	3,86	0,20	0,41	0,46	0,78
Civil service and lib. prof.	1,79	1,32	1,87	2,54	1,98	1,22	0,93	2,35
Soldiers	0,16	0,20	0,78	0,26	0,00	0,20	0,00	0,20
Day-labourers	0,49	2,98	4,12	1,23	2,57	2,44	1,08	0,00
Domestics	6,02	3,97	5,14	3,60	2,77	2,65	2,01	1,76
Others and unknown	2,76	6,62	4,44	5,88	1,78	4,28	2,94	4,12
N	1230	1510	1285	1140	506	491	647	510

Source: Unpublished Working Tables on occupational distributions. Census 1900, 1910, 1920, 1930. National Archives of Hungary.

Regarding the population living on agriculture, the proportion of landowners was around 40%. More than 60% of the agricultural employees were servants and agricultural workers (*Table 2*). The majority of peasant landholders farmed personally on the land that provided a living for the family. In the interwar period, the ratio of smallholders with 1-10 acres rose by 4-5% as compared to the earlier period, which can be explained by the division of lands and/or the land acquisitions of agricultural workers. Farm hands and wage labourers had also a considerable role in the agricultural production, most of them living and working on the estate owned by the sugar factory (prior to the 1920s).

Table 2: Distribution of bread-winners in agriculture in Bük and Szakony, 1910–1930, (%)

	Bük			Szakony		
	1910	1920	1930	1910	1920	1930
Landowners, >1000 acres (575,5 ha)	0,00	0,13	0,00	0,00	0,00	0,00
Landowners, 200–1000 acres (115,1–575,5 ha)	0,00	0,13	0,00	0,00	0,00	0,00
Landowners, 100–200 acres (57,55–115,1 ha)	0,13	0,00	0,00	0,00	0,00	0,00
Landowners, 50–100 acres (28,78–57,55 ha)	0,13	0,13	0,35	0,00	0,00	0,00
Smallholders, 10–50 acres (5,76–28,78 ha)	14,56	15,66	10,97	25,71	29,57	29,08
Smallholders-day labourers, 1–10 acres (0,58–5,76 ha)	22,86	28,20	26,37	50,39	49,72	54,34
Smallholders-day labourers, <1 acre (0,58 ha)	0,89	1,13	0,53	0,52	0,92	3,32
Office holders	0,26	0,38	0,35	0,00	0,00	0,00
Farm hands	14,43	13,78	19,29	8,31	5,73	5,36
Labourers	46,74	40,48	42,12	15,06	14,05	7,91
N	783	798	565	385	541	392

Source: Censuses (own calculations).

Individual census data showing the denominational and socio-occupational distribution of the population are available only for 1857 (Census 1857). According to the census data, Lutherans were overrepresented among landholders (62%). By contrast, this proportion was exactly the opposite among the landless, who were characterised by a slight Roman Catholic majority (55%). Historical reconstructions of the later periods constantly highlight the physical and social separation of the two denominational groups (Szabó, 1985). Starting from the 1870s Lutherans constituted only one third of the total population, however they owned two thirds of the lands around the village. Smallholders and servants represented a significant majority among Roman Catholics. Social and denominational separation was manifested by the elementary schools of the two churches working independently of one another throughout the entire period studied, and similarly by the fact that Lutheran landholders established their own “Saving Granary” (Szabó, 1975).

Data and methods

Life course data

A database for the analysis was compiled by gathering the records of the parish registers of Bük and Szakony from the 19th century and the civil registers from the period 1895 and 1980. A longitudinal database has been created from parish register data by applying the method of family reconstitution (Henry and Blum, 1988; Gutmann and Alter, 1993). Furthermore, the family reconstitution database has been linked to the annual lists of voters (a minority group of population who had political rights at the time) for the period between 1861 and 1948, to the individual data from the census held in 1857, and the list of Roman Catholics living in Bük in 1850.

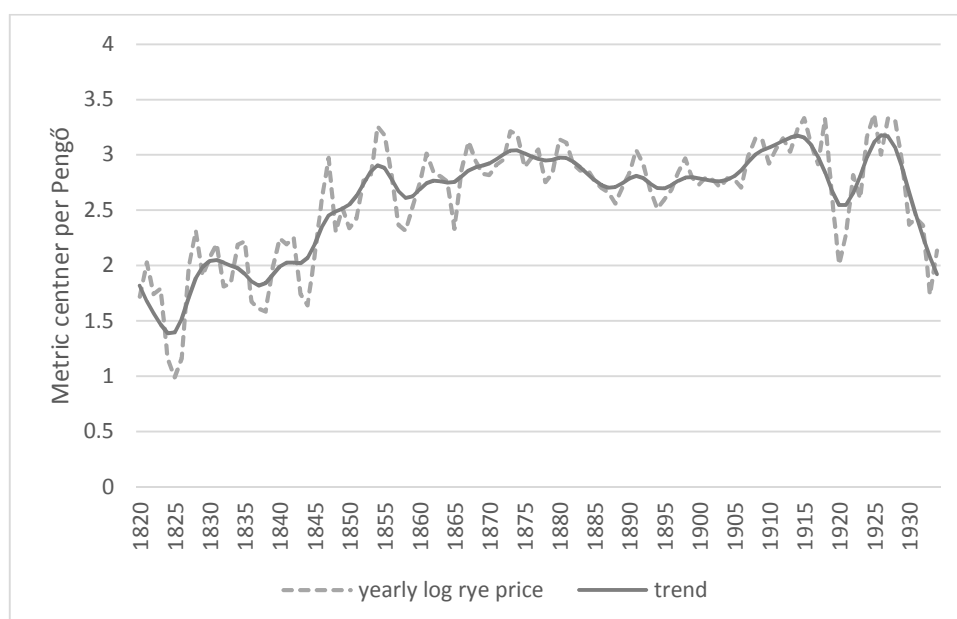
Categorization of socioeconomic groups

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.

Food prices

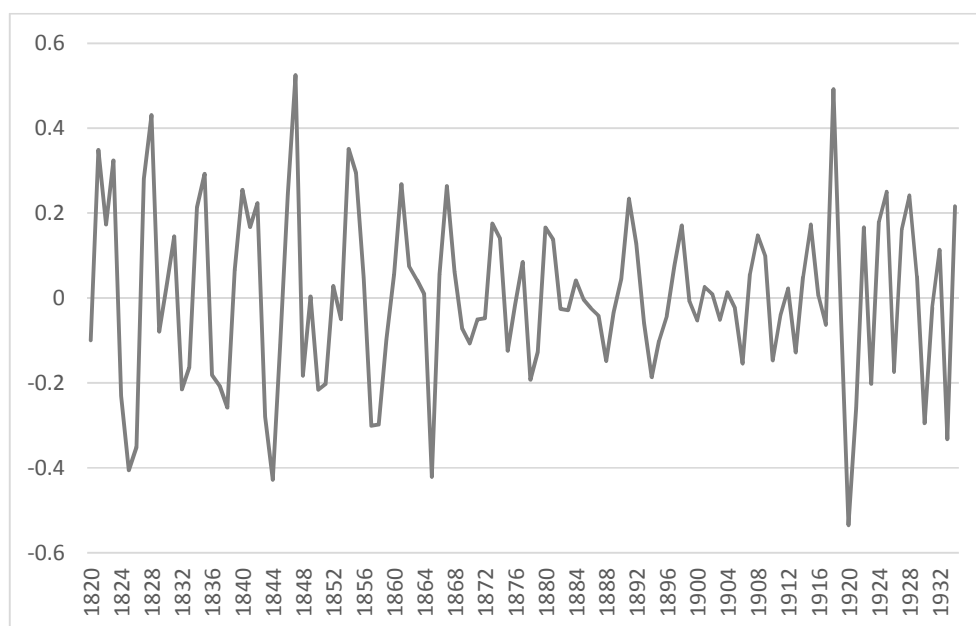
Rye prices come from the marketplace of Budapest.

Figure 2. Time series of log rye prices in the marketplace of Budapest, per unit of Austrian currency, 1820–1934.



Source: Szőnyi 1935.

Figure 3. Deviations from the trend in rye prices, 1820–1934.



Source: Szönyi 1935.

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.

Methods

Piecewise constant exponential hazard models are used to explore social differences in infant and child mortality and the relationship between grain prices and the timing of deaths.

Grain and rye prices are detrended by taking the natural log of prices and then applying a Hodrick-Prescott (HP) filter (Hodrick & Prescott 1997) with a filtering factor of 6.25.

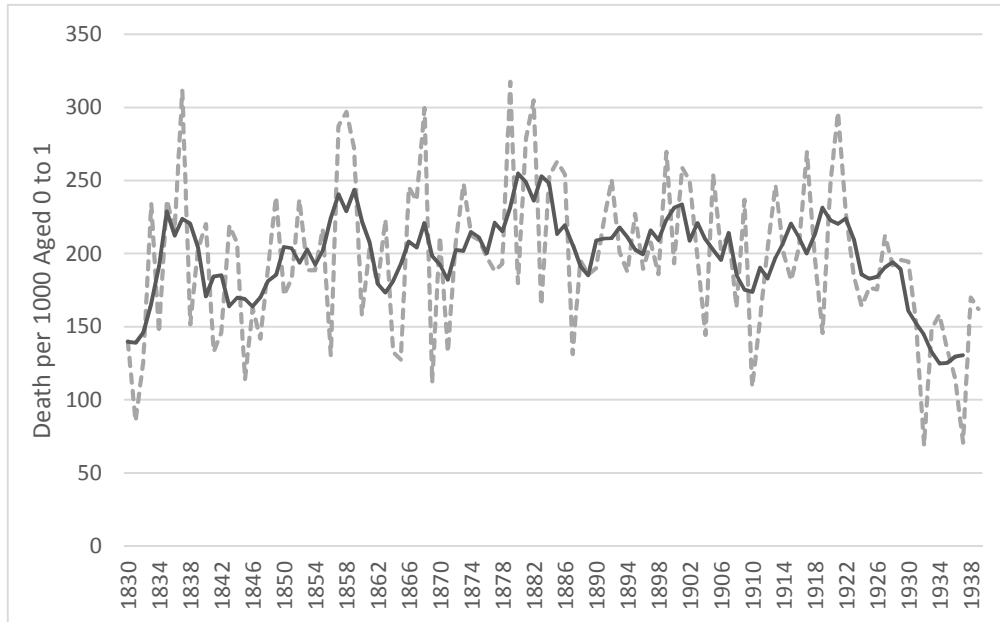
Mortality models are estimated for different age (0-1 and 1-4) and occupational groups.

Results

Descriptive results

Figure 4. Infant and child mortality rates in Bük and Szakony, 1830–1939.

a) Infant mortality



b) Child mortality

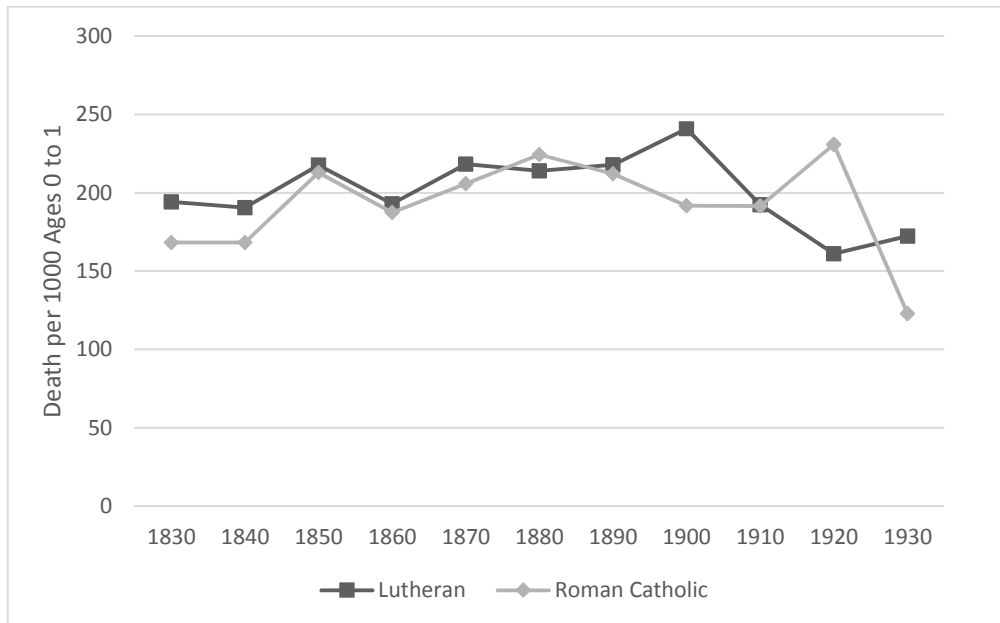


Source: Family reconstitution database of Bük and Szakony.

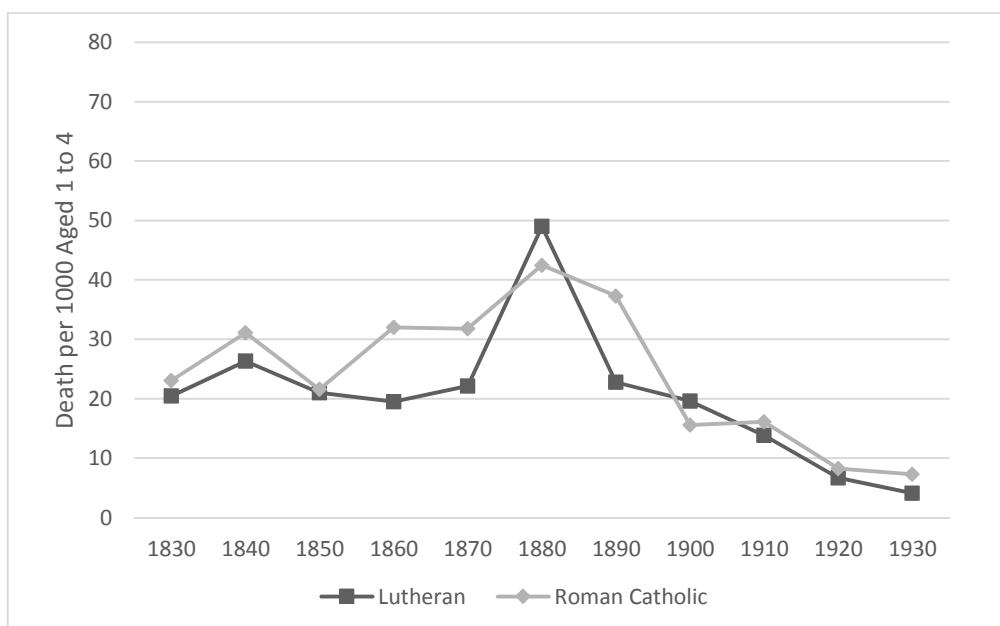
Denominational group and social class differentials

Figure 5. Infant and child mortality rates by denominational group in Bük and Szakony, 1830–1939.

a) Infant mortality



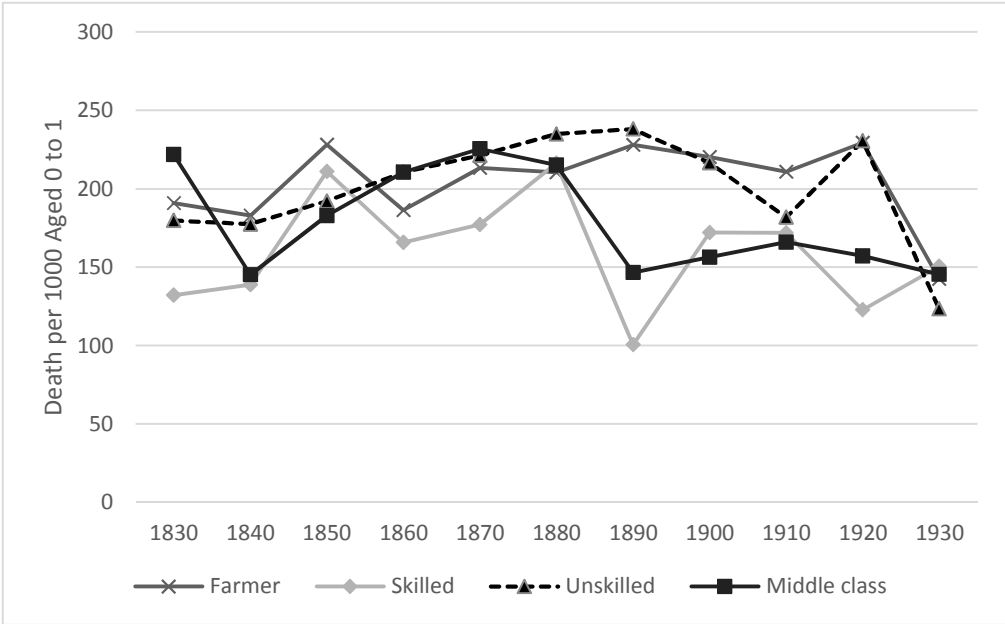
b) Child mortality



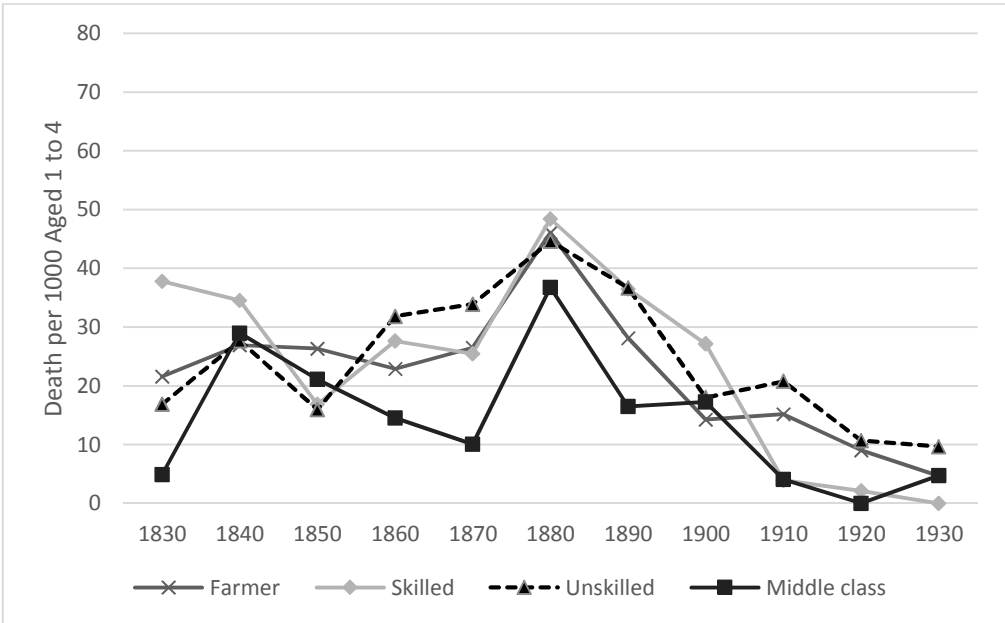
Source: Family reconstitution database of Bük and Szakony.

Figure 6. Infant and child mortality rates by social class in Bük and Szakony, 1830–1939

a) Infant mortality



b) Child mortality



Source: Family reconstitution database of Bük and Szakony.

Table 3. Hazard ratios (HR) of infant and child mortality, Bük and Szakony, 1830–1939.

	Infant mortality		Child mortality	
	HR	p value	HR	p value
Denominational group				
Lutheran	(ref)		(ref)	
Jewish	0,75	0.433	1,31	0,602
Roman Catholic	0,95	0.341	1,13	0,108
Socioeconomic class				
Middle class	(ref)		(ref)	
Skilled	0,87	0,227	1,60	0,015
Farmer	1,06	0,557	1,55	0,016
Unskilled worker	1,07	0,507	1,72	0,003
Missing	1,02	0,951	2,83	0,001
<hr/>				
Deaths		2115		906
Individuals		12307		10436
Time at risk (person-day)		3878364		14016713
Log-likelihood		-9927,4		-3369,8

Notes: Hazard ratios and p values are taken from piecewise constant hazard models of infant and child mortality. In addition to the variables shown above, the models control for the sex of the child, the observed birth order of the child, the parish of residence and whether or not the child was born as twin.

Source: Family reconstitution database of Bük and Szakony.

Mortality responses to short term economic stress

Table 4. Mortality response to short-term deviations in rye prices in Bük and Szakony, 1830–1914. Effects of the 1% change in rye price.

	Infant mortality		Child mortality	
Current rye price	1,09	0,911	1,22	0,001
Deaths		1756		831
Individuals		10073		8511
Time at risk (person-day)		3158025		11119097
Log-likelihood		-8220,3		-3018,3

Source: Family reconstitution database of Bük and Szakony.

Infant mortality shows no sensitivity to short term variations of food prices. Child mortality in contrast remained sensitive to price fluctuations. Current rye prices were positively and significantly associated with mortality.

Discussion

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