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Anthropometric history of the French Revolution in the Province of Orleans

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ABSTRACT

We estimate the trend in average height of the population of the French province Orleans from 1715 to the beginning of the 19th century using data on recruits who were drafted either through a lottery system or through general conscription. After controlling for age, residence, and occupation, we find a general decline in the biological standard of living in the decades before the French Revolution. The results support a Ricardian–Malthusian interpretation of the causes of the French Revolution. In the debate 'Revolution de la misère ou de la prospérité' our findings support the side which argues that the French Revolution was a culmination of a long-lasting economic malaise during the final phases of the Ancien Régime.

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1. Introduction

How the French standard of living developed in the 18th century is still not entirely clear, leading to different interpretations of the French Revolution. One group of historians including Jaures (1901) and Lefebvre (1989) maintained that the French Revolution was a political event triggered by the economic prosperity of the 18th century and the resulting rise of the bourgeoisie. In contrast, a second group of historians that includes Mathiez (1922) and Labrousse (1944) saw the French Revolution as the product of a long-lasting economic malaiseduring the Ancien Régime that destabilized society. In recent years, a debate has emerged about Labrousse's (1933) suggestion that real wages decreased substantially in the second half of the 18th century (Weir, 1991; Daudin, 2004). This debate is mostly conducted in terms of real income, the classical measure of living standards. However, a number of problems are associated with this concept. First, nominal wages and prices were rarely recorded systematically in the 18th century. Moreover, many wages were paid in kind, making calculation of real wages even more difficult, and furthermore variations in unemployment are not accounted for as data on unemployment is unavailable (Lepetit and Sinarellis, 1995). Thus, estimates of real income have their limitations and are not likely to settle the debate on the course of living standards in the 18th century.

Instead of conventional indicators we use trends in French physical stature as a proxy measure of the "biological standard of living, in order to estimate the evolution of nutritional status, an important dimension of welfare (Komlos, 1989). Since food expenditure made up a large share of disposable income in the 18th century, the anthropometric method also enables us to draw tentative inferences about real income. The following study investigates the trend in the biological standard of living from 1715 to the turn of the 19th century and is an extension of Komlos' (2003) study, in which he examined the biological standard of living in France during the period 1670–1760. He argued that heights declined indeed during the second half of the century thereby connecting to the

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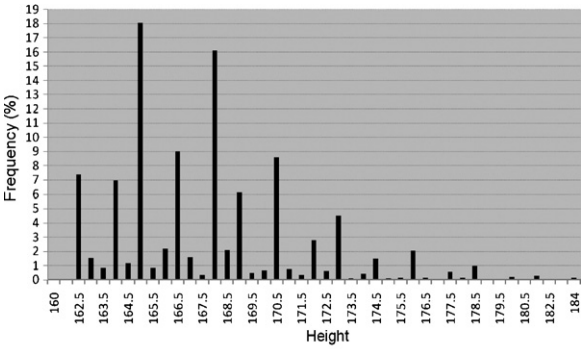
'let them eat cake' version of the storming of the Bastille, but pointed out at the same time that the diminution in height was not worse than in other parts of Europe, and also did not reach 17th century crisis levels. Thus, he inferred that French economic performance alone is an insufficient explanation for the outbreak of the political turmoil (Komlos, 2003). Similar studies exist for the birth cohorts of 1784–1902 (Weir, 1997) and 1780–1920 (Heyberger, 2005) but they do not pertain, in the main, to the pre-revolutionary period.

2. Data

A sample of 29,523 recruits was drawn from the Military Archives (Chateau de Vincennes)[1] in Paris. The men – all members of the 3rd estate –, were from the province of Orleans, which was absorbed by the departments of Eure-et-Loir, Loir-et-Cher und Loiret after the administrative reform of 1789.[2] The sample is divided evenly between militia recruited in the period 1750–1788 and soldiers recruited in the years 1783–1837. The latter is again separated in a subsample consisting of soldiers measured in pieds, pouces, and ligne and a second subsample containing soldiers measured in cm.[3]

In our sample, the militias were randomly chosen using a lottery system. The soldiers in contrast were drafted based on universal conscription. In both cases, it is thus plausible that our sample is representative for the male population of the province Orleans. This provides an advantage in contrast to other anthropometric studies of the 18th century which used records of soldiers who had volunteered for military service and who had received a premium that increased with the height of the recruit.

The following characteristics have been recorded: date, name of recruit, height, residence of the recruit by subdelegation (from 1790 on by district), age of the recruit at the time of the examination, and, where possible, information on the occupation of the recruit.[4]



Note: The militia were recruited in the period 1750-88. N=14.031
Source: Chateau de Vincennes military archives.

Fig. 1. Distribution of height, Orleans militia.

3. Minimum height requirements

A minimum height requirement existed for both militia and soldiers. Hence, we exclude men who were shorter than of the minimum height requirement and estimate the trend in height with truncated regression analysis in STATA (Komlos, 2004). This method requires information about the truncation point. For militia, minimum height requirement was clearly stated at 5 pieds 0 pouces and 0 lignes (60 pouces, or 162.4 cm). It remained unchanged during the period under investigation and was strictly enforced (Fig. 1). In the recruitment records, height of 60 pouces is less often reported than we might expect in a normal distribution. One might suspect that this is the case because some individuals of the respective height were spared military service by well-meaning recruiters. This in mind, we define a truncation point for militia at 162.5 cm, slightly in excess of the minimum height requirement. Robustness checks are also performed.

Matters are more complicated for soldiers. For them, the minimum height requirement changed frequently in response to demand for soldiers. According to Heyberger (2005), minimum height was 159.8 cm (59 pouces) in 1802, but only 158.4 cm (58.5 pouces) in 1812. Our data suggest that recruits shorter than the minimum height requirement were frequently (Fig. 2). We therefore use period-specific truncation points.[5]

We also experimented with variations in the lower limits in order to check for robustness. In order to increase the accuracy of estimates, we set the baseline standard deviation exogenously to 6.858 cm, which is equal to today's value (A'Hearn, 2004). The reason for this is that under certain circumstances this strategy provides more robust estimates, especially if the mhr is close to the mean or if there are sampling errors.

[1] Chateau de Vincennes, Avenue de Paris, 94300 Vincennes, Tel./fax : +33 1 48 08 31 20, http://www.chateau-vincennes.fr/. Signatures are 13YC72, 13YC10, 13YC61, 13YC63, 13YC64, 13YC59, 13YC53, 13YC69, 13YC68, 13YC75, 13YC80, 13YC50, 13YC70, 16YC215, 13YC77, 13YC83, 13YC85, 13YC76, 13YC52, 13YC51, 13YC82, 13YC79, 13YC74, 16YC228, 13YC60, 13YC49, 13YC81, 16YC81, 16YC142, 16YC143, 16YC217, 16YC227, 16YC229, 16YC144, 16YC218, 16YC2280, 21YC536, 21YC133, 21YC140, 21YC541, 21YC733, 21YC763, 21YC764, 21YC134, 21YC537, 21YC210, 21YC135, 21YC538, 21YC136, 21YC766, 34YC2576, 34YC1402, 34YC1632, 34YC469, 34YC2942, 34YC1918, 34YC2107, 34YC2585, 34YC1454, 34YC2631, 34YC1968, 34YC2443, 34YC2444, 34YC898, and 34YC2302.

[2] On December 22, 1789, generalities and subdelegations were replaced by departments and districts.

[3] The metric system was introduced in France on November 15, 1800. 1 pied = 12 pouces, 1 pouce = 12 lignes. 1 pouce = 2,706,667 cm.

[4] The precision of the measurements can be appreciated by calculating the ratio of height records with a reported ligne of zero to all height records. The higher the ratio, the more rounding has taken place. The results suggest that there was less rounding for militia than for soldiers. The share of height records with ligne equal to zero is 58.6% for militia and 71.1% for soldiers. As compared to its expected value of 8.3%, rounding is most prevalent during the general call-up of soldiers in the 1790s, the decade of revolution.

[5] The mhr for soldiers measured in pouces was set equal to 60.1 pouces. The mhr for the soldiers measured in cm was defined as follows (MHRI): 1802–1805: 161.99 cm; 1806–1811: 159.99 cm; 1822–1837:154.99 cm. Furthermore, a second set of mhr values was applied (MHR II): 1802–1805: 158.99 cm; 1806–1811: 154.99 cm; 1822–1837:156.99 cm.

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