

Proposal for the workshop 'Quantifying knowledge: human capital measurement, ca. 1700-2010'

HUMAN CAPITAL FORMATION FROM OCCUPATIONS: ENGLAND 1550-1850

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Most economic growth theorists see human capital formation as a key factor in long-term economic development. Little is known, however, about the role of human capital formation in the historical process of industrialization of the now-developed world. Recent empirical attempts to identify human capital formation in the past face the problem that human capital is difficult to quantify, particularly before public schools become widespread. Existing measures of human capital prior to public schooling (notably literacy rates, numeracy rates and number of apprenticeships) suffer from the drawbacks that they either proxy very basic skills (as in the case of numeracy and literacy) or that they cover only a tiny fraction of the population (as in the case of apprenticeships). Furthermore, all of them are subject to the criticism that not all skills acquired are necessarily used in productive activities.

The present study offers a new approach to measuring human capital formation *based on occupational records*. The methodology relies on a well-established classification of historical occupations known as the HISCO system. The HISCO system covers tens of thousands of occupational titles from countries and languages all around the world from the sixteenth to the twentieth century. In combination with the HISCLASS system, which maps occupational titles into skills, it is possible to subdivide occupations according to four degrees of working competences depending on the level of dexterity required to perform the work, namely *higher-skilled*, *medium-skilled*, *lower-skilled* and *unskilled* occupations. The main novelty of the present study is to assign a score to each of the four skill-levels and then compute and study the evolution of the labour force's skill-competences across time, space and social groups.

The current paper uses the CAMPOP data (i.e. a comprehensive set of demographic statistics derived from church books registers) to study the evolution of working-skills in historical England. The CAMPOP data includes more than 20,000 individual occupations of male and female workers across various parts of England between 1550 and 1850, spanning the entire socio-economic rank of the English society. The findings sharply contrast with the theoretical prediction that human capital is conducive to economic growth. That is, the growth of GDP per capita in England after 1700 is associated with a *substantial decline* in the average level of male working-skills used in production. This is true both for rural and urban parts of England and arises chiefly from a boom in the number of unskilled male workers throughout the industrial revolution. The parts of England dominated by industrial activities do show a modest rise in the average skill-level early into the industrial revolution, but only to return to the preindustrial level after 1800. Astonishingly and by contrast to the productive skills of male workers, the average skill-level of female workers *rises* in the later half of the industrial revolution, so that by 1800 this is significantly higher than that of male workers. Moreover, the fact that the overall decline in skills coincides with an upsurge in the number of births between 1650 and 1850 squares nicely with Gary Becker's *child quantity-quality trade-off* hypothesis. The data also indicates that literacy rates are an acceptable proxy for working-skills used in production, especially for women. Finally, the international comparability permitted by the present measure of human capital allows a crude insight into the average working-skills used in production across historical Europe. The numbers suggest that the level of human capital in England were among the lowest in western Europe in the nineteenth century.