

## *Summaries of Doctoral Dissertations*

### *Why Did Fertility Decline? An Analysis of the Individual-Level Economic Correlates of the Nineteenth-Century Fertility Transition in England and France*

The decline of fertility in nineteenth-century Europe is one of economic history's greatest puzzles. There is no consensus on the causes of this revolutionary change in human behavior. Following a critical review of the empirical and theoretical literature, this thesis examines the economic correlates of the fertility decline through the analysis of two new individual-level data sets from England and France. For the first time, the relationship between wealth and fertility can be studied during the period of the fertility transition. I propose that changes in economic inequality and the environment for social mobility suddenly made family size relevant in the determination of relative social status. Once this occurs, family sizes fall.

Despite over 50 years of concentrated research, we still do not know why fertility declined during the Demographic Transition. Further, there is no convincing explanation for why fertility declined in France over a century before her richer and more industrialized neighbor, England. The conclusions to the European Fertility Project (EFP), the largest ever empirical investigation on the question, stressed that fertility decline in Europe was not related to socioeconomic changes.<sup>1</sup> Time itself, the decade of the 1890s, and not the level of economic development, was the best indicator for the onset of sustained decline. Recently, John C. Brown and Timothy W. Guinnane have detailed two critical problems in the EFP's methodology.<sup>2</sup> Firstly, the level of aggregation (counties, *départements*, cantons etc.) was ill-suited for the precise detection of individual-level fertility differentials. Secondly, the project failed to collect relevant socioeconomic data and this fact precluded any serious test of the role of economic factors in the decline.

This thesis directly addresses these two concerns via the collection and analysis of new individual-level fertility life histories linked to wealth at death estimates for England and France, during the fertility transition. The data reveal striking patterns.

For England, I sampled 3,000 wills from the southern counties of Suffolk, Essex, and Ipswich, for men dying between 1800 and 1920. The wills were sourced from the National Archives, multiple local archives, and the Principal Probate Registry in London. Each will was closely read and coded into a database for 24 different

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<sup>1</sup> Summarized in Coale and Watkins, *Decline of Fertility in Europe*.

<sup>2</sup> Brown and Guinnane, "Regions and Time."

demographic and economic variables such as marital status, number of children, amount and type of property held, cash bequests, and literacy. Following this, robustness checks were employed and the testator data set was checked for representativeness with respect to the general population.<sup>3</sup>

The wealth-fertility relationship was examined via negative binomial regressions, controlling for period and location (urban/rural). Two large and opposing patterns are discovered—a positive association of wealth and net fertility, and a negative association of occupational status and net fertility.<sup>4</sup> The analysis reveals that it was the poorest members of the top occupational status classes who had the lowest fertility, although the wealth effect diminishes in strength over time and is much weaker in urban areas. Also changing over time is the relationship between occupational class and wealth. For the top occupational status class, there appears to be a breakdown in the strength of the relationship between wealth at death and occupational status. Within the top status group, it is the poorest who have the lowest fertility. It is speculated that this low fertility is a result of a desire to preserve the concentration of wealth within a family and between offspring.

In joint work with Greg Clark, we extend the testator database back to 1500 and find an earlier Demographic Transition to the one traditionally associated with the 1890s.<sup>5</sup> Around 1800 the super-high fertility of the richest testators, which was evident from at least 1500, quickly converges to the level of the poorest. This suggests that the origins of the English fertility transition are significantly earlier than we first thought. We show that the Demographic Transition actually began at the same time as the Industrial Revolution. Net fertility among the rich fell rapidly towards modern levels for marriages formed after 1800. But aggregate fertility rose in these years, because net fertility among the poor increased to equal that of the rich. Expanding the database by linking testators to parish records, we discover that the early fertility decline of the rich was not related to changes in child survival. Further, it appears that it was variation in the reproductive span, and not “spacing” of births, which drove this convergence. The drop in fertility of the rich could not be a response to changing incomes: Before 1800 there is no threshold level of income that is related to smaller families.

For France, I linked the Louis Henry/INED<sup>6</sup> family reconstitution database (*Enquête Henry*) to detailed wealth at death estimates from the *Tables des Successions et Absences* (TSAs), sourced from multiple *Archives Départementales*, for 1810–1870.<sup>7</sup> This period covered the last few decades of the *Enquête Henry* data and the beginning of the fertility transition in France. Four villages were selected based on record availability. At this time, the vast majority of the French population lived in rural villages of a similar size to those in the

<sup>3</sup> The robustness checks included comparing the sex ratio of mentioned children in the wills with that of the general population (to reveal sex-based omission from a will—none was found). Comparisons were also made using the marriage characteristics, occupational representativeness, and the net reproduction rate of the testator sample compared with that of the general population. The sample was biased towards those with high-status occupations but the testator fertility rates closely track those of the population Net Reproduction Rate estimates. (The average difference between the measures for the cohort years of 1750–1850 is slightly over 1 percent.) This evidence confirms the reliability and validity of the testator wills as a source for the calculation of relative fertility levels.

<sup>4</sup> I employed the occupational classification schema devised by Stevenson, a categorization based upon skill, see Stevenson, “Fertility of Various Social Classes.”

<sup>5</sup> See Clark and Cummins, “Urbanization, Mortality, and Fertility” and “Malthus to Modernity.”

<sup>6</sup> Institut National Etudes D’émographiques.

<sup>7</sup> Results also discussed in Cummins, “Marital Fertility.”

sample. The villages display a heterogeneity: two exhibit large decreases in fertility over the sample period (Rosny and Cabris), while the other two (St. Paul and St. Chely) do not.

The results show that where fertility was in transition, it was the richest villagers who reduced their family size first, and that they used both “stopping” and “spacing” strategies to achieve this. Where fertility was not in decline, there is a positive wealth-fertility gradient. Infant mortality appears to play a role: Where fertility is declining, infant mortality rates were between 50–70 percent of the levels where fertility was not declining.

Various hypotheses are tested for the early French fertility decline, including “neo-Malthusian” explanations (which fail to be supported as it is the rich who reduce their family size first—the opposite of that predicted by “neo-Malthusian” reasoning) and the importance of the Revolution in initiating the decline is quantified. The Revolution is not exactly simultaneous with the new demographic regime: Fertility decline originated before 1789.

Any explanation for why fertility declined during the Demographic Transition in Europe must account for France. Why did fertility decline in France over 100 years before it declined in England? What was unique about France and what was the universal underlying mechanism behind Europe’s Demographic Transition?

I answer these questions by developing a new economic model of fertility linking the determination of family sizes to social mobility and economic inequality. The intuition is simple. It is a stylized fact of economic history; Preindustrial societies were highly unequal relative to modern societies.<sup>8</sup> Take this hypothetical example of a preindustrial society, ruled by 1 percent rich “elites,” 99 percent “peasants” living at subsistence and no middle class. There is no incentive for the peasants to reduce family sizes in this society because it does not matter how many children a peasant has, both parent and child will still be peasants. The economic distance between the two status groups is too large—neither the peasants nor the elites perceive the possibility of gaining or losing status via fertility decisions. The high level of inequality reflects the narrow opportunity for social mobility.

The formal model in the thesis directly relates parent’s fertility decisions to the level of economic inequality in their society. Parents choose a level of fertility consistent with their status aspirations, for both themselves and their offspring. Where upward/downward mobility is close to impossible, parents do not control. Where mobility is possible, they do. They make the decision to control based upon their perceptions of the probability of social mobility—this judgment is based upon the observable level of economic inequality in their society.<sup>9</sup>

When inequality falls below a certain threshold, parents control fertility because they now perceive the realistic probability of ascending or descending the social ladder.<sup>10</sup> Empirically, the thesis investigates the relationship between inequality in the samples and the presence of fertility decline. For both England and France, where fertility is declining, inequality is lower, the “perseverance” of wealth within families is lower and there is a significant drop in the proportion of wealth held by the top occupational status groups, and a rise for all below.<sup>11</sup> The sample data provide suggestive evidence for the operation of the theorized mechanisms during

<sup>8</sup> Milanovic, Lindert, and Williamson, “Measuring Ancient Inequality.”

<sup>9</sup> Inequality is the cross-sectional analogue of social mobility. On this, see Becker and Tomes, “Equilibrium Theory.”

the Demographic Transition in England and France. At the aggregate level, variations in economic inequality may explain why it was France, and not England, who entered a modern fertility regime first.

This thesis, through the analysis of new micro-level data, argues that there were clear economic patterns to the fertility transition in England and France. Future research will continue to document the empirical character of the decline and search for the causes of this momentous change.

<sup>10</sup> Examples of literature discussing forces similar to those proposed here are Banks, *Prosperity and Parenthood* (for England); Dumont, *Dépopulation et Civilisation*; and Blacker, “Social Ambitions” (for France).

<sup>11</sup> As measured by the relationship between father’s and son’s wealth.

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