OLD HABITS DIE HARD (SOMETIMES)
WHAT CAN DÉPARTEMENT HETEROGENEITY TELL US ABOUT
THE FRENCH FERTILITY DECLINE?

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This draft: July 30, 2005
Preliminary paper - Please do not quote

Abstract: The onset of the French fertility decline, because it was the earliest in Europe and
did not seem to follow the pattern other countries experienced, has motivated a considerable
amount of literature. Still, there is not a common accepted explanation for it. In this paper I
contribute to that debate with some quantitative analysis of the factors explaining different
levels of fertility within France. The long-term evolution of French fertility rates places the
onset of the decline somewhere around 1800. Yet, this process was by no means homogenous
throughout the country and some regions maintained high birth rates quite late in the nine-
teenth century. In fact, variation in the average levels of fertility among départements
reached its peak in the last third of that century. I take advantage of this diversity within
France to explore which local characteristics contribute to explain the different levels of ferti-
licity in each region. From various sources, I collected and put together a panel of départe-
ment level data for the last quarter of the nineteenth century that I use to study with a ran-
dom-effects model the correlates of fertility and find clues to understand the driving forces
behind the downfall.

Keywords: economic history, demographic history (Europe pre-1913), France,
demographic economics, fertility.


* This paper is part of the research I am carrying out for my doctoral thesis at the Department of Eco-
nomics at Oxford University and was done while being a member of Nuffield College and a Student
Research Associate of TARGET (University of British Columbia, Canada). It has benefited greatly from
discussions with my supervisor, Bob Allen, and some colleagues at Nuffield College, specially Natàlia
Mora-Sitja and Roman Studer. Jean-Pascal Bassino provided also very useful suggestions. An earlier
version of this article was presented at the Graduate Workshop on Economic and Social History (Oxford
University) and at the TARGET Student Workshop (University of British Columbia), and I want to
thank their participants for helpful comments. In particular, Leah Bassel, Alberto Behar, Mauricio
Drelichman, Regina Grafe, Knick Harley, Mike Huberman, Jane Humphries, Avner Offer, Martin Rossi
and Javier Silvestre. The support and advice I received from all these people has been very valuable to
me, but the responsibility for all remaining errors and omissions is, of course, entirely mine.
David Malthus –an English lawyer turned into country gentleman- always found in the youngest of his sons an enthusiastic challenger to his ideas and, quite often, the two of them would engage in endless debates about the potential for human improvement. As a devoted disciple of Jean-Jacques Rousseau, the father would talk wonders about the achievements of the French Revolution and praise the utopian ideas of the Marquis de Condorcet or William Godwin about the perfectibility of society. The son, not really convinced of any other perfectibility than that of God, would almost invariably cast serious doubts about the righteousness of humanity. Stimulated by these discussions, the young Robert (his first name was Thomas, but he used to go by his second) took upon the task of showing that no technical nor social progress could improve the human lot. And he did it producing, at the same time, one of the most provocative and influential essays in the history of social sciences.

Malthus’ Essay on Population was first published in 1798. At the heart of its argument, it was demographic dynamics that condemned the future of society, for ‘the power of population is indefinitely greater than the power in the earth to produce subsistence for man’ [Malthus, 1985: 71]. This key statement followed from two self-evident ‘truths’: that we live in a world with limited resources, and that population growth is impossible to restraint. That population was impossible to restraint was obvious to Malthus because ‘the passion between the sexes is necessary and will remain nearly in its present state’ [Malthus, 1985: 70, my emphasis], and only by delaying or avoiding marriage would population be on check. But, though there are no strong reasons to believe the passion between the sexes to have changed since then, it is clear that it does not follow from it that population will be out of control for ever if people keep on marring. In fact, by the end of the twentieth century in many regions of the world (in both developed and developing economies) population is far from incontrollable and fertility rates have reached historical minimums. Something indeed did not remain the same.
This is particularly true for Europe. Current European fertility rates, most of them well below replacement level, are the result of a secular decline that began at some point in the late eighteenth or early nineteenth century. Although there has been a considerable amount of literature in economics, sociology, history and demography devoted to study this phenomenon, little consensus has been reached on the actual causes of this fall, and even less consensus on the peculiarities of some specific cases within the region, specially the French one. Many things make the French fertility decline of particular interest. Although there are some doubts about the actual timing of the ‘beginning of the fall’, France was undoubtedly the first to experience it. Further, not only did it play the role of first mover, it was also the first mover by many years, suggesting that whatever happened there, it did not spread easily elsewhere. Standard theoretical literature in development suggests a strong link between low levels of fertility and modern, industrial, urbanised societies. But, if those are the key elements in explaining part of the difference, why do we have this process taking place in a backward (at least with respect to England) and traditional part of Europe? Lastly, distinctively from other European experiences, France maintained a considerable amount of heterogeneity within the country all throughout the process.

Suggested answers range from considering the importance of the French Revolution or the availability of contraceptives to claim the absolute irrelevance of economic variables in the fertility transition. In this paper I contribute to the debate by taking advantage of the heterogeneity of the French case to assess quantitatively these and some other claims. To do that, I was able to gather a considerably rich dataset. Using variables collected basically from the Annuaire Statistique de la France [Service de la Statistique Général de France, 1878-1903], but using other sources as well, I put together a panel of département level data comprising a period of 25 years (quinquennial data between 1876 and 1896) that I use to evaluate some hypotheses regarding the factors that might have affected differences in fertility in the way Schultz [1997] did for developing countries. I find evidence that confirms the standard variables associated with modernisation actually played a relevant role explaining local differences. My results are also consistent with some arguments that highlight that some processes that supposedly were stimulated by the French Revolution contributed to the decline. These outcomes give some clues to understand the possible driving
forces behind the downfall. In particular, they turn out to be consistent with the argument sometimes pointed out— but rarely quantified—that some of the social changes fomented by the French Revolution (like secularisation and individual self-determination) could have been crucial in explaining the early onset of the decline in fertility in that part of Europe.

A LOOK AT THE FERTILITY DECLINE IN FRANCE

Economists are fond of convergence. The idea of convergence, because it implies a unique (albeit not always ideal) state toward which everyone tends, is closely tied with that of equilibrium. And economists love equilibria. Divergences in income, wages or prices are some of the great ‘puzzles’ in development, labour or international economics, and much effort is sometimes put in theoretical and empirical discussions to understand them. But there are some successful stories of convergence and human fertility in the Western world is one of them [Wilson, 2001].

Fertility is the rate at which women bear children (not to be confused with fecundity, which refers to the biological capacity of becoming pregnant). The fact that Europe experienced a decline in fertility that led rates across regions to a common, low level is widely known. Current below replacement rates create great worries in policymakers that have to deal with pension systems heavily reliant upon future generations, curiosity in academics that wonder whether this will ever revert, and hope in those many pessimists that feared the world will become irreversibly overpopulated anytime soon. But families consisting of a couple with one or two children are increasingly becoming the norm and countries that not long ago looked very different in this respect such as Italy and Germany, or Spain and Belgium are now quite similar. This contrasts with what happened a quarter of millennia ago in, when the average household across the region had six or more children. As with many other variables, historic data on births is scarce, but family reconstitution figures suggest that before 1750 all European regions behaved somewhat alike in terms of fertility [Flinn, 1981: 30-31]. Between the mid-eighteenth and late twentieth centuries, however, those trajectories diverged.
The peculiarity of France in the European context

A sense of the different experiences can be grasped by looking at some carefully selected cases. Here I begin by looking at the crude birth rate. The crude birth rate (that is, the number of births per 1,000 population), because it overlooks many important factors such as age structure or marriage pattern, is considered a coarse measure of fertility (at least, as opposed to more sophisticated measures like the total fertility rate or the gross reproduction rate). Still, it remains as the most readily and widely available, and can be useful to illustrate the main differences among regions in Europe. Figure 1 depicts (smoothed) series of this variable for England and Wales, France and Sweden since the middle eighteenth till the late twentieth century.

Figure 1. Crude birth rates in France, England and Wales, and Sweden, 1745-1985

Without loss of generality, the pattern followed by Sweden is representative of what went on in most other regions of Europe. Pre-industrial fertility history is characterised by some fluctuation around a relatively high (to modern standards) mean. At some point after the middle of the nineteenth century, however, a decline begins that goes all the way up to the interwar period. For Sweden that initial mean was about 33 births and the fall became evident after 1865. Other countries started at a higher rate like Finland (around 40) or at a lower rate like Denmark (around 31), and had

different timings for their respective turning points, but their story is essentially the same. England and Wales could be included in that description, but its fertility rate had the particularity of showing an increasing trend well into the nineteenth century. That trend reaches a halt around 1820, when a deep fall leads births to a level of 35.7, which is maintained in a 50 years plateau until the definitive (and steep) decline in the last quarter of the century. These patterns contrast with that of France, where the initial level is quite high (40 births), the fall comes early (around 1800), and the rest of Europe caught up only after the First World War.

The early arrival of the French fertility decline is, to some degree, quite puzzling. There is an ongoing debate on the actual forces driving this whole process, but there is some consensus on the fact that modern, industrialised, urban economies tend to have low fertility rates (see, for example, Dasgupta [1995] or Schultz [1997]). At the same time, many studies agree on noting that France was -at least compared to Britain- relatively traditional and rural (for example, O’Brien [1996]). Even in this context, the assertion that the fertility decline in Western Europe began in the wrong place might sound like an overstatement. Still, it is the case that on the eve of the nineteenth century two of the largest economies in Europe were about to take two very different and divergent trajectories. It is also the case that one of them entered a process of rapid technological change, industrialisation and urbanisation while the other remained for the most part rural and agricultural-based. And it is the case that one of them experienced -from the very onset of this period- a secular decline in the number of births while in the other that process had to wait quite a few decades. Any economist, and probably many informed individuals, will assert with little hesitation that the early fall in fertility rates took place in the economy going through this impressive modernisation. And they will be wrong. In this convergence story France was clearly the forerunner. Why was that the case? Were the modernising factors not really relevant for that transition? Or are we narrowing too much the definition modernising factors? Or is there a special case for France?

These questions have attracted many researchers and as early as in 1902 more than 200 works on French ‘depopulation’ could be counted [van de Walle, 1974: 6]. Although many of these studies, and those that followed in the twentieth century, worked with a considerable amount of data, analyses remained mainly descriptive.
and conjectural at best. Only recently have there been some attempts to bring a more systematic quantitative approach to the subject (as can be seen in Weir [1983, 1984a, 1995] or Bonneuil [1997]). But there is still some way to go in exploiting already available data and, with the help of rigorous quantitative techniques, unveil a part of France’s particular story.

In this paper I will not draw any comparison between France and other regions in Europe to find out what was peculiar about it, but what accounts for the differences in fertility levels within France. As Schultz [1997] does to understand the logic behind different levels of fertility in developed and developing countries, I will take advantage of the heterogeneity among départements to do a cross-sectional analysis of the covariates of fertility. This way of studying fertility has become increasingly popular in the last years but, with few exemptions, it has rarely been applied to historical analysis, basically due to scarcity of data. But, even if one has data, one would need to have a variation to be explained. In other words, one would need to have some degree of heterogeneity in the variable to be explained (and in its potential covariates). Did France have that?

**How can we tell when a society is controlling fertility?**

To evaluate this point we have to take a closer look at how fertility behaved in that region. Now, fertility –like many other rather intuitive ideas- becomes elusive at the moment of being measured. In the case of current populations there are a considerable number of refined alternatives, but when dealing with historical data the choice is very much restricted to coarse measures [Ewbank, 1993]. I referred above to the crude birth rate as one of them. It only describes the contribution of newborns to population and hides many relevant facts about the actual behaviour of couples like ages of conception, spacing between pregnancies, or illegitimate births, that might be of particular interest for the researcher. When trying to understand a process as dramatic in terms of behavioural change as the fertility decline more descriptive terms could become useful.

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The most basic behaviour one must be able to identify is whether couples were controlling fertility or not. When can it be said that a family is in fact controlling its reproduction? It seems possible to distinguish two alternative states: one of natural fertility with complete absence of deliberate birth control, and another of fertility limitation. Still, between these concepts there are many grey areas. Under no contraception but intense breastfeeding, for example, only three out of six women can be expected to conceive within one year of the previous confinement but five out of six can be expected to become pregnant if they do not breastfeed their child [Santow, 1995: 24]. Then, a society that practices prolonged breastfeeding might in fact have low levels of birth but, can we say it is controlling fertility? Researchers have devoted some time to define exactly the idea of fertility control and, so far, the most successful term was devised by the French demographer Louis Henry in the 1950s. Henry distinguished the terms of limited and natural fertility depending whether or not a society showed parity dependant fertility. That is to say, whether the decision to have another child depended or not on the number of children the parents already had. Taking consideration of the example on breastfeeding I detailed above, it is worth noting that parity independence is compatible with some kind of birth control, though normally a systematic or cultural kind of control. Families can exhibit low fertility because they space their pregnancies without regard to the number of offspring. These families are considered, under Henry’s classification, to be in a state of natural fertility even if they do not reach the biological maximum. Since it is more common to find controlling societies having parities closer together, this definition does not seem to be assuming anything too far-fetched.

Due to lack of appropriate details about cohort birth rates, information about an interesting and very intuitive measure such as total fertility rate (that is, the estimated number of children per woman) is scarce and scattered at best for the nineteenth century. It is probably fair to say that for France in that period a crude birth rate of 40 in the pre-transition stage represented a total fertility rate of about 6 (that is, a woman on average has around 6 children) whereas a birth rate of 15 in the post-transition stage can be associated with a total fertility rate of about 2, but measures do not fully overlap.
Fortunately, much work has been devoted to another helpful measure, an index of marital fertility normally called ‘Ig’. The Ig index was developed in the context of the European Fertility Project carried out at Princeton University from the 1960s [Coale and Watkins, 1986]. For the sake of evaluating divergences among countries a comparable measure was sought. The unit of reference chosen was the biologically maximum fertility attainable. This index of marital fertility is then defined as:

$$I_g = \frac{\sum_{a=15-19}^{45-49} B_{a,t}^m}{N_{a,t} m_{a,t} h_a}$$

Where $B_{t}^m$ is number of legitimate births in year $t$, $N_{a,t}$ is the number of women of age $a$ in year $t$, $m_{a,t}$ is the proportion of women of age $a$ actually married in year $t$ and $h_a$ is the rate of childbearing of married Hutterites at age $a$.\(^2\) Considering that Hutterite fertility establishes a proxy for the ceiling of what is biologically possible, Ig represents the proportion of births with respect to the maximum biologically attainable given the age structure of married women. For the sake of comparison, I depicted in Figure 2 the evolution of the crude birth rate and the Ig estimates for France [Weir, 1994].

Marital fertility in the initial part of the period was around 0.8. This roughly means that married women were having as many children as 80% of what was biologically possible given the age and marriage structure. Such a level can indeed be considered high and suggests little or no control over fertility in the eighteenth century, especially if one bears in mind that cultural differences such as longer breast-feeding periods or biological disparities such as nutritional deficiencies prolonging post-partum amenorrhoea could explain by themselves the divergence from the Hutterites rates. With respect to the crude birth rate, the picture is not substantially altered but some distinctions can be pointed out. Most notably, marital fertility does not immediately follow the crude birth rate in the fall after the middle of the eighteenth century and something similar happens in the first half of the nineteenth century.

\(^2\) The Hutterites are an Anabaptist sect that adheres scrupulously to precepts forbidding the practice of contraception or abortion, and their mothers do not nurse their infants more than a few months. They have the highest fertility rates recorded to date and are representative of the maximum biologically attainable.
This phenomenon partly shows how poor substitutes are both series for each other. In those two periods France experienced sharp decreases in the marriage rate that, by reducing the population under risk of having children, produced a decrease in the birth per population. Increases in population that followed the notable decreases in mortality of the period further reduced that variable. Fertility within marriage, however, seems to have remained less sensitive in those periods. Hence, to some degree, this index is indeed an improvement from the alternative measure we have. Also, as the data requirements to generate it are quite modest, estimates of marital fertility are available for France at département level for the census years from 1831 onwards [Coale and Watkins, 1986: 94-107], making it an appealing candidate for any study of fertility. The Princeton group produced also similar indices to describe non-marital fertility (Ih) and total –of the whole population- fertility (If) using this principle (see Coale and Treadway in Coale and Watkins [1986: 153-162]), but I will concentrate my analysis on marital fertility. On the one hand, there are good reasons to think that information on births out of the wedlock is less reliable than information referring to marriage couples. On the other, and probably more importantly, given the scale of the phenomenon in France, a radical change must have happened within the family and -in particular- in the mind of the married couples. The index is, of course, not...
without drawbacks. Guinnane et al. [1994] have highlighted some of them, most notably the difficulty of inferring the timing of fertility transitions from it. Also, the correlation between this index and the total fertility rate—a more intuitive concept—is not straightforward. Still, I will argue later that many of these problems do not pose any impediment in drawing cautious conclusions from the analysis I perform here.

The blessing of diversity

Now, to answer whether there was any degree of heterogeneity in terms of fertility in France, I begin by plotting in a series of maps the levels of marital fertility for some of the year I have information available. The story conveyed by the maps in Figure 3 is quite telling. All throughout the period it is easy to see—quite distinctively—at least two zones of low fertility, in the valley of the Seine (the Bassin Parisien) and the region of Aquitaine (the Bassin Aquitaine), spreading while the two ‘islands’ of high fertility, the region of Bretagne in the north-west and the Massif Central in the centre-south-east, keep shrinking. As early as in 1831 one can find départements with indexes below 0.40 (evidencing clearly attempt and some success in fertility limitation), such as Gironde, Lot-et-Garonne or Eure, and as late as 1901 places like Finistère or Côtes-du-Nord were resisting to change and still had indexes above 0.70 (showing little or no limitation at all).

Looking at the maps it is difficult to avoid thinking about a (slow) process of diffusion from the Parisian and Aquitaine basins towards these ‘islands’ of high fertility. As in other diffusion processes, from a fairly homogenous population a particular region begins with a new ‘status’ and it transfers it to the surrounding areas which, in turn, will transfer it to their surrounding areas, and so on spreading like a disease. It is quite unfortunate that there is no data available for earlier periods, as it would be interesting to spot the early focuses of this new behaviour, but the picture we already have is revealing. The thing that is still quite puzzling—if we are to assume that there was indeed diffusion—is its speed. The diffusion of knowledge or new technologies is expected to be fast, and the picture just depicted describes a process that takes more than a century. If there was diffusion of this new behaviour, what was actually been diffused?
Figure 3. Marital fertility index (Ig) in France for each département, 1831-1921

Sources: Maps are mine, constructed using data from Coale and Watkins [1986: 94-107].
Figure 3 (cont.). Marital fertility index (Ig) in France for each *département*, 1831-1921

Sources: Maps are mine, constructed using data from Coale and Watkins [1986: 94-107].