Can demographic transition only be explained by altruistic and neo-Malthusian models?

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ABSTRACT

Previous researches on demographic transition are based on models incorporating altruism in their utility function. These models are all neo-Malthusian in their essence, since they assume a positive relationship between income and fertility rates. This paper presents a model which departs from the neo-Malthusian frameworks in its definition of altruism. This framework better fits the data and socio-economic context of the early nineteenth century, a period where fertility rates went up. This paper stresses that the evolution of capital, wages and child labor may provide an alternate explanation for the observed pattern of fertility rates during the early European industrialization.

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1. Introduction

In the recent literature on demographic transition, many elements play a preponderant role in the framework analyzing the relationship between fertility rates and economic growth. However, there is one element included in all these models, and which is crucial in determining the structure of these models: it is altruism. Indeed, already in the first model of Becker on family behavior, we find that altruism is the main element explaining the dynamics of the family.

Altruism takes many facets, but in most models the definition of altruism relates to the fact that an individual cares not only on the welfare of his children but more specifically, he cares about the welfare of *each* of his children.[1] Adding to altruism, also the assumption of equality between children, these models generate the result that the number of children positively affects utility.

In consequence, the standard models analyzing fertility rates are based on the view that children are a consumption good, that is, the higher the income level, the higher the fertility rate. It is in the line of thought of the Malthusian concept that claims: "Population will always grow until there is enough misery or enough vice or more likely a sufficient mixture of both to achieve equilibrium".[2] These neo-Malthusian models assert that an increase in income that occurred in the first half of the nineteenth century led to an increase in fertility.[3]

There is, however, a different – non-Malthusian – paradigm to explain this increase in fertility. It was already developed in the nineteenth century, but has been totally ignored by economists up to now: that of Marx.[4] Marx indeed claimed: "In fact . . . the absolute size of the families stands in inverse proportion to the height of wages. . . Misery up to the extreme point of famine and pestilence, instead of checking, tends to increase population" (Marx, 1887, pp. 796–797).

This paper aims at presenting a model that fits the non-Malthusian view presented by Marx: wages and fertility rates are negatively correlated. Its main advantage is that it better fits the data and the socio-economic context of the first half

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[1] There is also a literature on the nature of altruism (see for instance Paolilli, 2009).

[2] Malthus (1798, p. 47).

[3] See Becker (1960), Becker and Barro (1988), and Becker et al. (1990). For more recent works, see Dahan and Tsiddon (1998), Galor and Weil (2000), and Galor and Moav (2002).

[4] Marx views on family economics were avoided by economists, probably because his economic opinions had been put aside. However, they are recognized by demographers, e.g., Caldwell and Schellekens.

of the nineteenth century. The model presented in this paper will view altruism in a totally different way than the Malthusian model.

Indeed, the postulate that altruism towards children is a natural and biological tendency as presented in the standard model has been questioned (see Badinter, 1980; Aries, 1973). There is increasing evidence that conventional-altruism is not a good representation of what occurred in the eighteenth-nineteenth centuries – the centuries during which fertility rates increased. The parent–children relationship is part of a whole set of values and social norms that evolve over time and are affected by changes in the economic environment. Parental care is not an intrinsic value, which is independent and invariant to economic changes. It has evolved over time, and especially in the eighteenth-nineteenth centuries, the period of industrialization.[5]

Focusing more specifically on Europe before the modern times, parental behavior as displayed towards their children is not compatible with conventional-altruism. In France, for instance, Parisian women, but the very poor, sent their children for nursing far away from Paris, even though they knew that the children were likely not to come back. Badinter reports that in the 1780s, 18,000 out of the 21,000 children born each year in Paris were sent away to a wet-nurse; more than two-thirds did not return.[6] Women knew the danger of sending their children for nursing, but nevertheless did it. There are descriptions of women who sent two or three of their children away for nursing, and although they never returned from nursing at a specific location, still sent their subsequent children to the very same place.[7]

The legal system of that time, that somehow reflects the social norms of the period, exposes how society was treating children: parents had rights over children, but children had no rights. In France, a father who killed his son was not in violation of the existing criminal law.[8] The laws enacted by Henri II and Henri III (1556 and 1579) instituted that children who married against parental will or permission, were not only ineligible for an inheritance, but could also be accused of abduction which was legally punishable by the death penalty (see Badinter, 1980, p. 32). Moreover, when parents were not satisfied with their children, the latter could be sent away for deportation (French Law, 1763).

The purpose of this paper is to present a model which aims at fitting these observations on the relationship between parents and children. The conventional-altruistic model in which parents care about the consumption of children is certainly adequate when modeling the family economics of the twentieth century, but it is at odds with nineteenth century behavior. Hence, another utility function should be used to represent family economics, a function which is appropriate for the social norms and values of the nineteenth century.

In the nineteenth century, children of the working class were necessary: "In a quite literal sense, children were an investment good during the early industrial period" (Birdsall, 1983, p. 116). As Marx claimed: "All family ties among the proletarians are torn asunder, and their children transformed into simple articles of commerce and instruments of labour" (Marx and Engels, 1955, p. 28). In consequence, this model assumes that child labor is a necessity, and shows that more hands are needed when wages decrease: this leads to an increase in the number of children.

Table 1
Correlation between fertility rates and real wages during the nineteenth century.

Time period	(1)	(2)	(3)	(4)
1800–1850	−.36	+.90	−.19	−.49
1800–1840	−.30	+.77	−.76	−.72
1800–1900	−.69	−.43	−.52	−.43

Sources: All correlations are based on the same index of legitimate fertility rate (Ig), from Bardet and Dupaquier (1998). Column (1) is the correlation between Ig and the real wages series based on the wages presented in Mitchell and Deane (1971, p. 349). Column (2) is based on the real wages presented by Feinstein (1998). Column (3) is based on the real wages in the cotton industry as presented Mitchell and Deane (1971); and column (4) on Brezis and Crouzet (2004).

The model I present in this paper not only suits better the social norms of the nineteenth century, but it also permits a closer fit to the data of the nineteenth century. Indeed, in the first half of the nineteenth century, the income of the most important social class – the workers – did not increase, and for some even decreased.[9] Consequently, the correlation between workers' income and fertility rates is negative (see Table 1). Thus, those models that assume altruism predict a decrease in fertility, and cannot, therefore, explain the increase in fertility that occurred during the first half of the nineteenth century.

Hence this paper, unlike neo-Malthusian models, posits a negative relationship between earnings of the proletariat and fertility rates, as expressed by Marx: "In order that the family may live, four people must now not only labour, but expend surplus labour for the capitalist. . . Previously, the workman sold his own labor power, which he disposed of nominally as a free agent. Now he sells wife and child. He has become a slave dealer" (Marx, 1887, p. 395).[10]

This negative correlation between wages and fertility rates is at the root of demographic transition. At the onset of the Industrial Revolution, wages decreased and "neither men nor women could subsist on their pay alone" (Hilden, 1984, p. 364). This led to a fertility increase, since child labor kept family incomes high enough to allow for consumption at the subsistence level. During the second half of the nineteenth century, when wages rose, workers started to reduce the number of children they had: the fertility rate went down.[11]

The dynamics of this model are therefore different than in the standard neo-Malthusian models. In their model, the whole dynamics are driven by human capital, which increases during the process of development. In the first phase the higher income leads to higher fertility rates due to the Malthusian view of altruism. In my model, during the first phase, output increases, but real wages decrease (what happened in the nineteenth century) and therefore the poor increase their fertility rates.

During the second phase, our models are in fact complementary. In the neo-Malthusian models, by introducing education and human capital, they generate a substitution effect between quantity of children and quality. In consequence, fertility rates decrease. In the model presented in this paper, capital–labor ratio increases during the second phase, and therefore wages go up, which reduce

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[5] See Zelizer (1985).

[6] Badinter (1980, p. 57).

[7] Mortality rate of children sent to wet-nurse was much higher than mortality rate of children staying at home.

[8] This law was already enacted in the thirteenth century, and already existed in Greece and Rome: the father had all rights over life and death of his sons; he had also the right to put them in prison (see Cicero, prodomo 3).

[9] While there is no doubt that total income increased in the first half of the nineteenth century, the income of the most important social class – the workers – did not increase.

[10] See Brezis and Young (2003). Note that the Latin word *proletarii* means "the beggars who have children".

[11] When workers are not constrained anymore – as was the case in the late nineteenth century – child labor is not a necessity and human capital enters in the picture. Thus, this model, and the models focusing on the transition from "child quality" to "child quantity," are not contradictory for the last part of the nineteenth century; they are complementary. Indeed "the rise in real wages released the working class from its dependence on child and adolescent labor and enabled it to change its reproductive behavior. Thus the rise in real wages probably was a *precondition* for a fertility decline among the working class" (Schellekens, 1993, p. 10).