

# **Social differences in sex preference for children in France**

Laurent Toulemon and Arnaud Regnier-Loilier, 15 Novembre, 2013

Paper abstract for 2014 European Population Conference,

Theme: Fertility. Convener: Trude Lappegard

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## **Short abstract**

Sex preferences for children may influence fertility behaviors in different ways. In France as in many developed countries, there is a marked preference for having at least one boy and one girl.

The aim of this paper is Twofold. First, to check that no disequilibrium in the sex ratio at birth or in the sex structure of siblings is appearing in France. Second, to use the effect of sex composition of siblings on the progression to a next child to reveal sex preferences for children, and to describe the social contrasts in these preferences in France. A preliminary analysis on sex-ratio at birth by country of birth of the mother did not show any evidence of sex-selective abortion, but we still need to get access to data by birth order. No information on siblings is available in the civil registration data, but preliminary analyses based on a previous survey has shown that the progression to the third child is lower for couples with already one boy and one girl; among couples with two children of the same sex, farmers and self-employed prefer boys, while white-collar workers prefer girls.

We will use three large data sources: French civil registration data, and two one-percent surveys conducted within the 1999 and 2011 population census, both including a fertility history of more than 230,000 women and 120,000 men. The first one has been used to build specific assumptions, which will be tested with the most recent one.

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## **I. Introduction**

Research on family preferences and behaviors in developed countries focuses more and more on gender preferences for children, while there is already a large literature on such behaviors in developing countries (Cleland, Verrall, Vaessen 1983; Arnold 1997; Bongaarts 2013). These preferences are related to the comparative value of men and women in the society, according to parents-to-be. In low fertility societies, gender preferences may increase the overall level of fertility, if couples are going on having children until they are satisfied. On the other hand, sex selective abortion may reduce fertility.

## **II. Background**

In France as in many countries, there is a marked preference for having at least one boy and one girl. This can be seen when looking at the propensity of couples with two children or more to have an other one, depending on the sex of the children ever born. The main contrast concerns couples with two children, who more often have a third one if they have two children of the same sex, and less often if they have one boy and one girl. A second-order difference nevertheless appears, which shows that parents with one girl more often have a second child than parents with one boy, and that parents with two girls more often have a third child than parents with two boys (Desplanques 1985). The differences are very small but statistically significant and stable over time. Recent attempts to evaluate such preferences in Europe from the Fertility and Family Surveys (Hank, Kohler 2000; 2003) did not lead to stable, consistent and significant results, because of the small size of the national samples, related to the small magnitude of the effects.

Fertility is stable around 2.1 children per woman in France, and we will check whether these preferences are stable in France, like they are in the Nordic countries (Andersson, Hank, Ronsen, Vikat 2006), or if they are diminishing like in the US (Pollard, Morgan 2002). General opinion surveys including questions about the possibility to choose the sex of children show negative attitudes towards this possibility. In 2001, there was a change in the law on abortion, moving the maximum duration when the abortion is allowed from 10 to 12 weeks of pregnancy. This raised the question of sex-selective abortion. These sex-selective abortions are not formally illegal in France, but there is a strong reluctance of medical practitioners to tell the sex of the embryo before the end of the period when abortion is allowed. There was an official consensus on that point. The new law on abortion abandoned the idea that the woman had to prove being in a “situation of distress”, but there was an agreement about the fact that the sex of the embryo may not be considered as a “legitimate” reason to get an abortion, despite the fact that, by the law, women are not asked to give any “reason” to have recourse to an abortion.

### III. Methods

We will first check from civil registration data that the sex ratio at birth remains constant in several groups that can be identified from the civil registration data: country of birth of the mother, region of residence, age and marital situation of the mother. As civil registration data does not contain very accurate data on birth order, and no information on the sex of older siblings, they can be used only to identify recourse to sex-selective abortion if it is widespread. This is the case in some immigrant populations in some countries (Indians in England and Wales and Canada, Chinese in the US and in Canada, see Dubuc and Coleman 2007; Almond and Edlund 2008; Almond et al. 2009).

Using the one percent retrospective survey on Family history which took place in 1999, we also checked that there is no sex selective abortion, by looking at the composition of siblings by sex. The distribution of children at each birth order does not vary with the sex-composition of older siblings. On the one hand the eventual propensity of some couples to have many children of the same sex is very minor or non existent. On the other hand we may assume that if there were some sex selective abortions, the sex of the newborns would be negatively correlated with the sex of the older children.

In a previous study (Toulemon and Régnier-Loilier 2007), we identified behaviors proving that the parents are not indifferent to the sex composition of their offspring. Parity progression ratios depending on the sex of the previous children allowed us identifying specific “stopping rules”. In order to check whether the preferences have changed since the 1970s, we compared the contrast in the progression ratio to the third child (PPRs) among couples with 2 boys and with to girls to couples with one boy and one girl, taken as the reference group. As the overall progression to the third child has decreased over the period, we compared three different scales on the parity progression ratios. First (method A), a logistic regression compares the logit-transformed of the PPRs; second (method B), the simple difference between PPRs gives almost similar results, as PPRs are in the range 20-80%. Third (method C), we assume that a proportion  $p$  of couples would have a third child in they are not happy with the sex-composition of the two older children, while their PPR is at the baseline level if they already have a boy and a girl. This last method explicitly simulates the choices of couples and thus takes into account (and thus controls for) the fact that, if overall PPRs are on the decline, the contrast between couples with or without 2 children of different sexes may increase, with constant preferences, because more couples are happy with two children, as far as they are one boy and one girl.

Three indices to estimate the over fertility of couples with two children of the same sex (BB or GG), compared to couples with one boy and one girl (BG)

B for Boy, G for girl, BB for two boys, BG for one boy and one girl, PPR|BB and PPR|BG for Progression to the third child, among couples with two boys (resp. one boy and one girl)

Method A (odds ratios):  $A = \text{PPR|BB} * (1 - \text{PPR|BG}) / \text{PPR|BG} / (1 - \text{PPR|BB})$

Method B (differences):  $A = \text{PPR|BB} * (1 - \text{PPR|BG}) / \text{PPR|BG} / (1 - \text{PPR|BB})$

Method C (simulation):  $A = (\text{PPR|BB} - \text{PPR|BG}) / (1 - \text{PPR|BG})$

We also look, as a confirmatory analysis, at some other behaviors of couples, such as marriage (more than half the first-born are born outside of marriage), union disruption and divorce, which may vary not only with the number of children but also with the number of boys and girls (Morgan, Lye, Condran 1988; Andersson, Woldemicael 2001, Diekmann, Schmidheiny 2004). The commitment of men in fatherhood may also be estimated in two

ways. First, official recognition of children is not compulsory in France, and some 6% of children are not officially recognized by their father during the year of their birth, a proportion which remains stable since the 1960s (Beaumel, Kerjosse, Toulemon 1999). Data on official recognitions, recently made available at the individual level, will allow us to check whether recognition is depending on the sex of the newborn. Second, the survey we use was conducted on men as well as on women, and some 5% of children are “missing” in the males’ records, when we compare the figures with females’ ones, and take into account recognitions after the first year of the child, differential migration and mortality (Mazuy, Toulemon 2001). Some men may not have described all their children, especially the men who have broken their union with the mother, and who have other children in a new union (Toulemon, Knudsen 2006; Besson 2013). We will compare men and women’s answers on the sex composition of their offspring at the global level. As women’s answers are likely accurate, because women most often live with their children, after a union disruption, this will give us information on under-reporting of their children by men, depending on the sex structure of their children.

These analyses will be differentiated by social group, as preliminary results have shown large differences in progression to the third birth. The preference for the sons was less pronounced among the most educated groups in the 1970s (Desplanques 1985). Similar differences have recently been found for Sweden (Andersson, Hank, Vikat 2006). In a previous analysis, we showed similar differences in France, which will be confirmed with a dataset coming from a more recent survey.

#### **IV. Data**

Civil registration data are exhaustive in France, and some 800,000 children are born each year. The French statistical institute, (*Institut national de la statistique et des études économiques*, INSEE) publishes a yearly document on main results on the population trends (Beaumel, Daguet, Richet-Mastain, Vatan 2006). The INSEE has recently made available individual microdata on births and recognitions since 1990, including the sex of the newborn and much information about the parents. Unfortunately, nothing is known about the sex composition of the kinship. This dataset will then be useful to describe the trends in the sex ratio at birth. The information on the country of birth of parents is very limited, and we have asked for a specific access to more precise data, in order to look at some immigrant minorities coming from countries where sex-selective abortion is widespread. We have access to cross tabulated data, but without information of birth order.

This paper will update a previous exploratory work based on a one percent survey conducted by the INED and the INSEE within the 1999 general population census, on fertility and family histories of men and women. This large-scale survey includes information on 235,000 women and 145,000 men aged 18 and over in 1999. Respondents were asked to fill in, in addition to the census documents, a 4-pages form on their children, stepchildren, first and last unions (Lefèvre, Filhon 2005). This survey is described in English in (Cassan, Héran, Toulemon 2000). The data file also includes many socio-economic variables coming from the census forms. It is available for comparative research (see <http://www-ehf.ined.fr>).

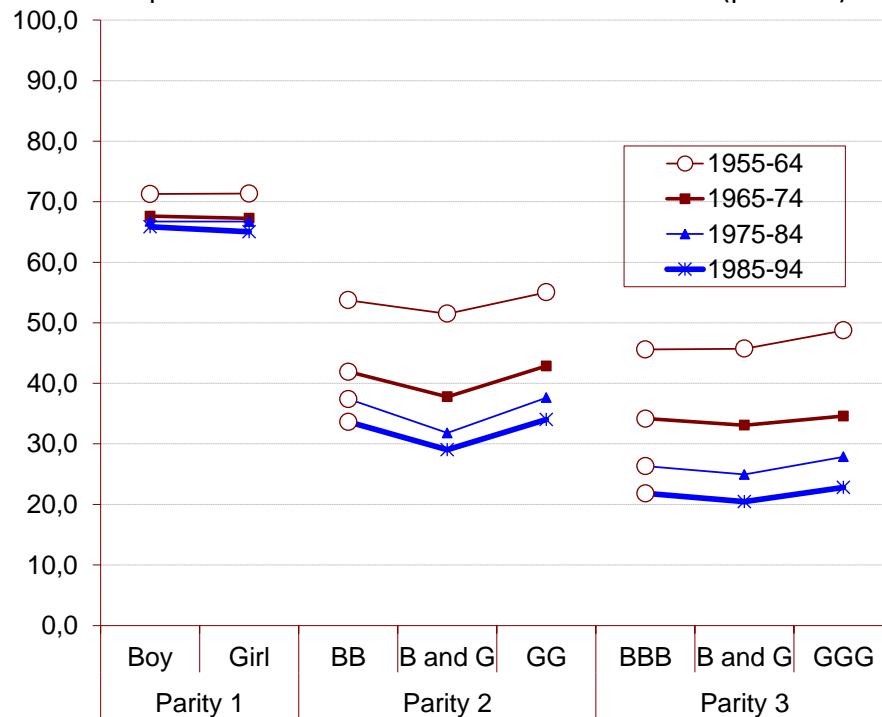
In 2011, we conducted a new survey on Family and Dwellings, based on a similar sampling frame, on a subsample of the 2011 census survey wave. The 239,000 women and 120,000 men aged 18 and over in 2011 filled a form indicated the date of birth and sex of their children, as well as of their coresiding stepchildren. As in 1999, socio-economic variables coming from the census forms, and the dataset is available for comparative research (see <http://lili-efl2011.site.ined.fr/en/>).

## V. Results

The results presented here come from (Toulemon and Régnier Loilier 2007), an exploratory study which we will use to test specific assumptions.

The parity progression ratios from one to two children seems to have decreased much for respondents with one girl than with one boy, so that the (small) preference for a boy as a single child shown in previous analyses (Desplanques 1985) seems to have been replaced by a small preference for girls (Figure 1, left panel). Among couples with two children, the progression to the third child is more frequent when both children are of the same sex, with no significant differences between couples with two boys and two girls (figure 1). At higher parities, no significant contrast can be found, except for parents with girls only, who more often have another child.

Figure 1. Parity progression ratio during the five years following a birth, by mother's parity and sex of previous children. Children born in 1955-94 (per cent)



Source: 1999 French survey on family histories

Using odds ratios or simple difference in the PPRs to the third child, the preference for having at least one boy and one girl seems to have increased, from couples who had their second child around 1966 to 1980, with a small decline for child cohort around 1990 (Table 1). In the 1960s, the PPRs was highest among couples with two girls, but this difference has disappeared in our more recent cohorts (children born around 1990).

Using our preferred scale based on the simulated proportion of couples who have a third child because they are not happy with the sex-composition of the two first children, the increase in sex preference appears to be much more limited, and the preference for boys is lower around 1990 than around 1960.

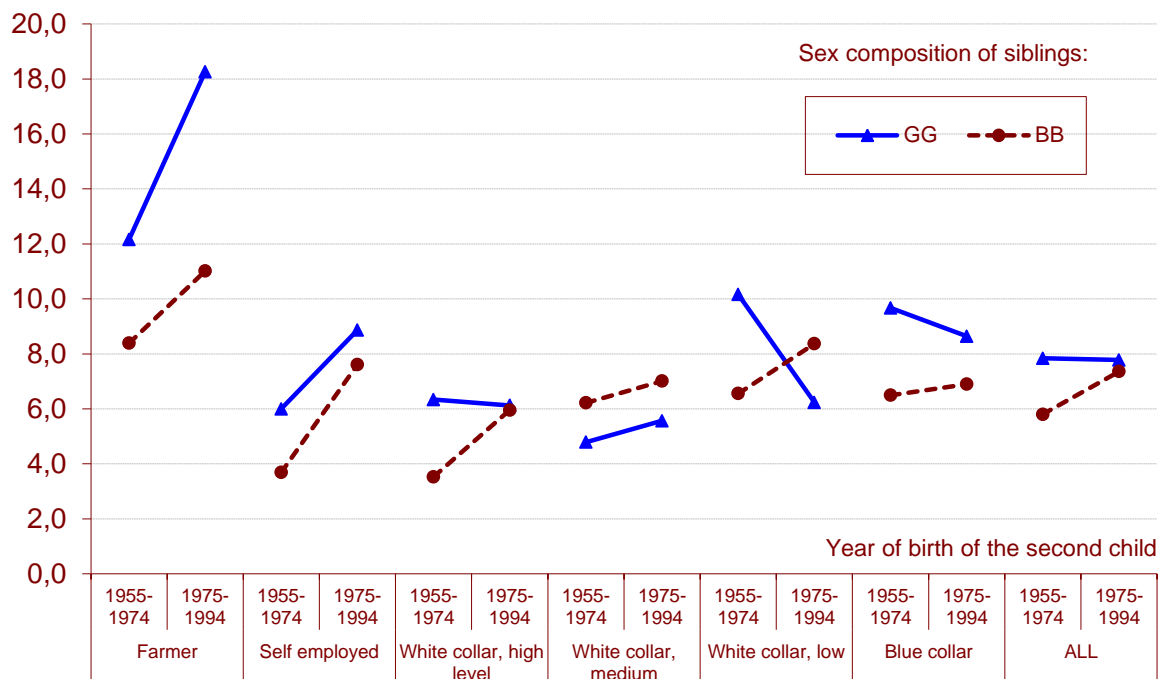
Table 1. Proportion of couples who had a third child because of the sex composition of their two first children (per cent). Comparison of three estimates

		Year of birth of the last child			
		1955-64	1965-74	1975-84	1985-94
Method A	BB	1,09	1,19	1,28	1,24
(odds ratio)	GG	1,15	1,24	1,29	1,26
Reference	BG	1,00	1,00	1,00	1,00
Method B	BB	2,23	4,15	5,63	4,64
(difference)	GG	3,53	5,09	5,83	5,00
Reference	BG	0,00	0,00	0,00	0,00
Method C	BB	4,61	6,67	8,26	6,54
(simulation)	GG	7,86	8,91	9,35	7,58
Reference	BG	0,00	0,00	0,00	0,00

Source: 1999 French survey on family histories

We ran different analyses by social group (level of education of both parents, profession. Figure 2 presents the sex-preference among each social groups identified by father's occupation, during and after the baby boom (around 1960 and 1990), estimated from method C. In all social groups, there is a preference for at least one child of each sex: all is like if 8% of couples with two children were having a third child because they want to have at least one child of each sex. The wish to have a girl is increasing in all social groups, so that in the most recent cohort the wish to have a girl is as common as the wish to have a boy.

Figure 2. Percentage of couples having a third child because they want at least one child of each sex



Note: estimates based on method C, see text. Source: 1999 French survey on family histories

These overall trends put together contrasted preferences between social groups; while farmers, blue collars and self-employed men prefer boys, white collars prefer girls. Among blue collars, the dramatic decline in fertility after the baby boom is associated with a decreasing wish to have at least one boy, but this could not be seen from the odds ratios, which are increasing with time among this group.

## VI. Summary and further work

This preliminary analysis allowed showing that gender preferences for siblings are still active in French fertility behaviors. Their main consequence is to encourage some couples to have a third child if their two first children are of the same sex (two boys or two girls), while no evidence of sex-selective abortion can be shown. Due to the decline in the progression to the third child, the odds ratios usually computed can be misleadingly showing an increase in gender preferences for siblings. We propose a new method based on an explicit estimate of the proportion of couples who want at least one child of each sex. A simulation method estimating the proportion of couples having a third child because of the sex of the two first children shows that the wish to have one boy remained stable since the 1960s, while the wish to have a girl increased to a similar level than the wish to have a boy. Large differences remain between social groups: farmers and the self-employed still more often want a boy than a girl; the same is true for blue collars, but the difference is decreasing. Among white-collar workers, the wish to have a girl is now more frequent than to have a boy.

Using the more recent Family and Dwellings survey, we will be able to update these results, as well as to test explicit assumptions based on the previous results presented above.

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