POPULATION
STUDIES
TRANSLATION
SERIES

No. 5

FERTILITY OF MARRIAGES IN FRANCE FROM 1946 TO 1964

by Chantal Blayo



UNITED NATIONS
1983

ESCAP POPULATION PUBLICATIONS

Asian Population Studies Series*

No. 31 *Report of the Multinational Study in Methodologies for Setting Family Planning Targets in the ESCAP Region* (ST/ESCAP/14): 1977

No. 32 *Guidelines for Preparing Subnational Population Projects* (E/CN.11/1230): 1975

No. 33 *Report of the Expert Group Meeting on Population Projections* (E/CN.11/1250): 1976

No. 34 *Report and Selected Papers of the Expert Group Meeting on Translation of Population Materials* (ST/ESCAP/13): 1977

No. 35 *Population Aspects of Manpower and Employment*

A: A Regional Overview, 1976 (mimeographed)
B: Comparative Study of Five Countries (under preparation)

No. 36 *Report of the Expert Group Meeting on Organizational Aspects of Integrating Family Planning with Development Programme* (ST/ESCAP/38)

No. 37 *Report on Evaluation of the Role of Population Factors in the Planning Process through the Application of Development Models* (ST/ESCAP/64)

No. 38 *Report of the Expert Group Meeting on Migration and Human Settlements* (ST/ESCAP/46)

No, 39 *Report of the Expert Group Meeting on Population and Development Planning* (ST/ESCAP/49)

No. 40 *Population Growth and Economic Development in Subnational Areas – Report of an Expert Group Meeting* (ST/ESCAP/54)

No. 41 *Report of the Expert group Meeting on Socioeconomic Measures Affecting Fertility Behaviour with Special Emphasis on Actionable Programmes*

No. 42 *Problems to be Solved in the Development of Data for Integrated Population and Development Planning – Report of an Expert Group Meeting* (ST/ESCAP/75): 1978

No. 43 *Measuring the Social Impact of Population Trends and Development – Report of an Expert Group Meeting* (ST/ESCAP/77): 1979

No. 44 *Report and Selected Papers of the Regional Workshop on Techniques of Analysis of World Fertility Survey Data for the ESCAP Region* (ST/ESCAP/89): 1979

No. 45 *An Integrated Approach to Population, Food and Nutrition Policies and Programmes for National Development – Report of a Regional Seminar*

No. 46a. *Organizational Determinants of Family Planning Programme Performance: Evaluation of Integrated Family Planning Programmes in the ESCAP Region – Report of a Study Directors' Meeting*

No. 47 *Report of the Advisory Committee on Migration and Urbanization on its First Session*

No. 48 *Report of the Advisory Committee on Migration and Urbanization on its Second Session, 1980* (ST/ESCAP/138)

No. 49 *Multivariate Analysis of World Fertility Survey Data for Selected ESCAP Countries – Report and Selected Papers of the Regional Workshop and Seminar* (ST/ESCAP/151)

No. 50 *A Report of Levels and Trends of Fertility in the ESCAP Region: Comparative Analysis of Wprld Fertility Survey Data*

No. 51 *Regional Seminar on Evaluation of Schemes and Strategies for Integrated Family Planning Programmes with Special Reference to Increased Involvement of Local Institutions* (ST/ESCAP/161)

No. 52 *Report and Working Papers of the ESCAP/SPC Conference Seminar on Population Problems of Small Island Countries of the ESCAP/SPC Region* (ST/ESCAP/194)

No. 53 *Regional Seminar on Strategies for Meeting Basic Socio-Economic Needs and for Increasing Women's Participation in Development to Achieve Population Goals* (ST/ESCAP/199)

No. 54 *Modelling Economic and Demographic Development*

No. 55 *Report of the Third Asian and Pacific Population Conference*

No. 56 *Report of the Regional Meeting on Social and Cultural Factors Affecting the Acceptance, Continuation and Discontinuation of Family Planning Practice* (ST/ESCAP/229)

Country Monograph Series

No. 1 *Population of Hong Kong* (E/CN.11/1120)

No. 2 *Population of the Republic of Korea* (E/CN.11/1241)

No. 3 *Population of Thailand* (ST/ESCAP/18)

No. 4 *Population of Sri Lanka* (ST/ESCAP/30)

No. 5 *Population of the Philippines* (ST/ESCAP/63)

No. 6 *Population of Nepal* (ST/ESCAP/115)

No. 7.1 *Population of American Samoa*

No. 7.2 *Population of Papua New Guinea*

No. 7.3 *Population of Cook Island* (under preparation)

No. 8 *Population of Bangladesh* (ST/ESCAP/147)

No. 9 *Population of Australia* (in press)

No. 10 *Population of India* (in press)

No. 11 *Population of Japan* (under preparation)

---

* Asian Population Studies Nos. 1-6 are available in microfiche; Nos. 7-30 are available in microfiche or printed form.

FERTILITY OF MARRIAGES IN FRANCE FROM 1946 TO 1964

FOREWORD

In continuation of the French component of the ESCAP Population Studies Translation Series, "Fertility of Marriages in France from 1946 to 1964", an analysis based on available data, by Madame Chantal Blayo is published herewith. The main focus of the study is on cohort analysis over a given period of time. The approach is innovative, and a distinct change is noticeable in the methods of analysis of demographic phenomena. It is therefore hoped that this translation will enrich the fund of available knowledge in this field, and suggest new methological approaches to demographers engaged in similar areas of research in the ESCAP region.

Published by

The Population Division
Economic and Social Commission for Asia and the Pacific (ESCAP)
Bangkok 1983

Note: The views expressed by signed articles are those of the authors and do not necessarily reflect those of the United Nations.

INTRODUCTION

In the wake of changes that have taken place in the last 20 years in the analysis of demographic phenomena, fertility ought to be studied more from survey data than from registration data; however, since observation can only gradually adapt itself to the needs of analysis, civil registration still remains the principal source of data. Such is the case in France, where in addition this source of information yields as much as one can possibly expect regarding fertility.

In this article Madame Chantal Blayo analyses some of the data collected through civil registration.

After the Second World War there was a very distinct change in the methods of analysis of most demographic phenomena. Instead of studying only, as had so far been done, what happened in a given period, that is, consequently, what happened to a combination of cohorts observed at different durations, attention was now focused on the history of each cohort throughout its life; this manner of studying phenomena was termed longitudinal in cohort analysis as opposed to cross-sectional or period analysis which had long been prevalent.

The demographic phenomenon most affected by this important change is probably fertility, if not for the fact that the problems encountered in the period analysis of fertility were at the origin of the change.

However, to go beyond the field of theory to that of practice suitable data are needed. Since such data are not available, vital statistics remain the principal source of data on fertility and these statistics are traditionally compiled within the framework of the calendar year. In order, to adapt data collection to the new methods of analysis, most of the information on fertility will have to be drawn from surveys. Indeed, through retrospective observation, these surveys provide data which are immediately adapted to cohort analysis.

To our knowledge, the only survey of this kind whose results have been published was the one carried out in Great Britain in 1946.[1/]

In France two surveys had indeed been undertaken along with the census, one in 1954 and the other in 1962, but their results have not so far been published. However, France does have, since 1946, the most detailed vital statistics on fertility in the world. Hence, in view of the lack of retrospective data, INED, on the proposal of INSEE, has decided to analyse these vital statistics.* The present study is a analysis of cohort the fertility of French women who married since 1946, according to duration of marriage and age at marriage.

The charts given to us by INSEE specify the annual number (from 1946 to 1965) of legitimate live births, according to the year of birth of the mother, the year of marriage and the number of children born alive in the present marriage. The figures were combined by 5-year age group of the mother at the time of marriage[2/], by INSEE for the

CONTENTS

	Page
Introduction	2
Part One:	
The factors of fertility	4
Duration of marriage	4
Age at marriage	10
Part Two:	
Variation in cumulation fertility according to age at marriage and evolution of fertility in French marriages	13
Part Three:	
Fertility trends	21
Conclusion	24

* INED stands for Institut National d'Etudes Demographiques – the French National Institute of Demographic Studies – and INSEE for Institut National de la Statistique et des Etudes Economiques – the National Institute of Statistics and Economic Studies.

1/ D.V. Glass and E. Grebenik, "The Trend and Pattern of Fertility in Great Britain". Part I: Report. Part II: Tables.

2/ Age at marriage is the age reached during the year under consideration.

years 1946 to 1955 and by us for the following years. Moreover, for the years 1949 to 1955 only these grouped data are available. The data were published, or will be published in the statistics of population change.

Every year, for a certain number of births, the year of marriage of the mother is not stated. For births that occurred between 1946 and 1955, INSEE had distributed proportionately these not stated cases. INSEE had also detected and corrected errors in the grouping of data by age at marriage. We were unable to see whether the differences apparent in our data stemmed from the distribution of the not stated cases or from the correction of errors. Given the small percentage of not stated cases in the total number of births in a given year (always less than 1%), we chose to work on the raw data[3/], and later we graphically corrected errors that we could detect regarding the constitution of age groups.

We then calculated, for each annual marriage cohort of women who married at a certain age[4/], the fertility rates according to duration of marriage (in calendar year differences as well as in completed years) and parity at each anniversary. We did not consider women married at the age of 40 and above. Since the number of undissolved marriages at each duration of marriage (taking into account widowhood, divorce and migration) was not known, calculations were done using the initial number of marriages. However, this initial number was adjusted in order to include repatriations that have occurred since 1954 of French of North-African and Indochinese origin.

In the light of observations on the variations of fertility rates in marriages according to woman's age, duration of marriage and age at marriage, we shall, in the first part, analyse the importance of these different factors and *study the relationship between the age at marriage of a woman and the number of children she has had during her fertile life.*

In the second part, we shall study the family formation process of marriage cohorts constituted by the marriages that occurred in France between 1946 and 1964, as well as the corresponding trends and fluctuations.

3/ Except for the year 1965, when the birth statistics used include not stated cases distributed by INSEE at the data processing stage.

4/ The aggregate of marriages that occurred during a calendar year is called marriage cohort. A similar definition is used for cohorts of women who married at a certain age.

PART ONE

THE FACTORS OF FERTILITY

Duration of marriage

For all marriage cohorts, and whatever the age at marriage, the greater the duration of marriage the lower the fertility rate (figure 1). The curves indeed never cross one another, and while the level of fertility varies according to age at marriage, the general pattern of the curves, however, scarcely changes with this factor. What seems to be the effect of duration is perhaps only the result of age, for if duration lengthens, the woman's age also increases. We have, therefore, traced the lines of annual births that occurred in the marriage cohorts under study, for every single woman's age and every age group at marriage (figure 2), thus attempting to dissociate the role of duration from the role of age.

We shall see that the immediate post-war cohorts are different from the cohorts 1950 and after, but generally speaking, the pattern of the curves varies only slightly from one cohort to another; we shall thus represent only those curves which relate to the 1946 and 1950 cohorts and it is to this latter that we shall most frequently refer.

Since age at marriage is the age attained in the year of marriage, we admitted that the fertility rate at duration 0 of women married between 20 and 24, applied, on an average, to women aged exactly 22.5 years[5/]. Since marriages are not evenly distributed according to age in the group 15-19 years (the average age was 18.3 in 1946), the first point in the curve relative to this group was placed at 18.8 rather than at 17.5 years.

The concavity of the resulting curves, that illustrate the fertility of French women, faces upwards. For a given age at marriage the rates decrease rapidly in the first years of marriage, and much more gradually later, as age advances.

Like the population of almost all developed countries, the French population practices birth control to a large extent, which results in a discontinuous behaviour; at the beginning of marriage, fertility is somewhat close to the level of natural fertility, and later drops rapidly towards 0, as soon as the couples have attained the desired number of children (see graph at the bottom of preceding page).

Moreover, the curves are quite separate from each other; at a given age, the greater the age at marriage – and hence the smaller the duration of marriage – the higher the fertility. For example, the fertility at age 34.5 of women who married in 1950 varies from 1 to 4 according to the age at which they married.

In the various studies that he has undertaken on the fertility of historical populations, L. Henry has noticed that variations with age and duration could be rather different. Without family limitation the curves are clearly convex; the rates decrease progressively at younger ages and suddenly very rapidly at older ages. Here, the determining factor is the woman's age, as the proportion of henceforth sterile couples varies with it. Fertility scarcely changes with duration of marriage, the rates being almost independent of age at marriage (figure 3).

In a Malthusian population as that of France today, fertility is no longer only a function of age, but also of duration, largely because it depends on the behaviour of couples. The proportion of those who become voluntarily infertile because they have attained the desired number of children, grows regularly with duration of marriage in an undisturbed period.

With the duration of marriage, the proportion of dissolved marriages (through death or divorce) also grows, a loss that is only partly compensated for by net international migration. Since rates are calculated using the initial number of marriages as base, the effect of this phenomenon is to lower fertility rates as duration of marriage grows.

5/ $22.5 = \frac{19+25}{2} + 0.5$ (the women considered were between 19 and 25 years old when they married).

Figure 1. Live births by duration of marriage and year of marriage, for 10,000 marriages

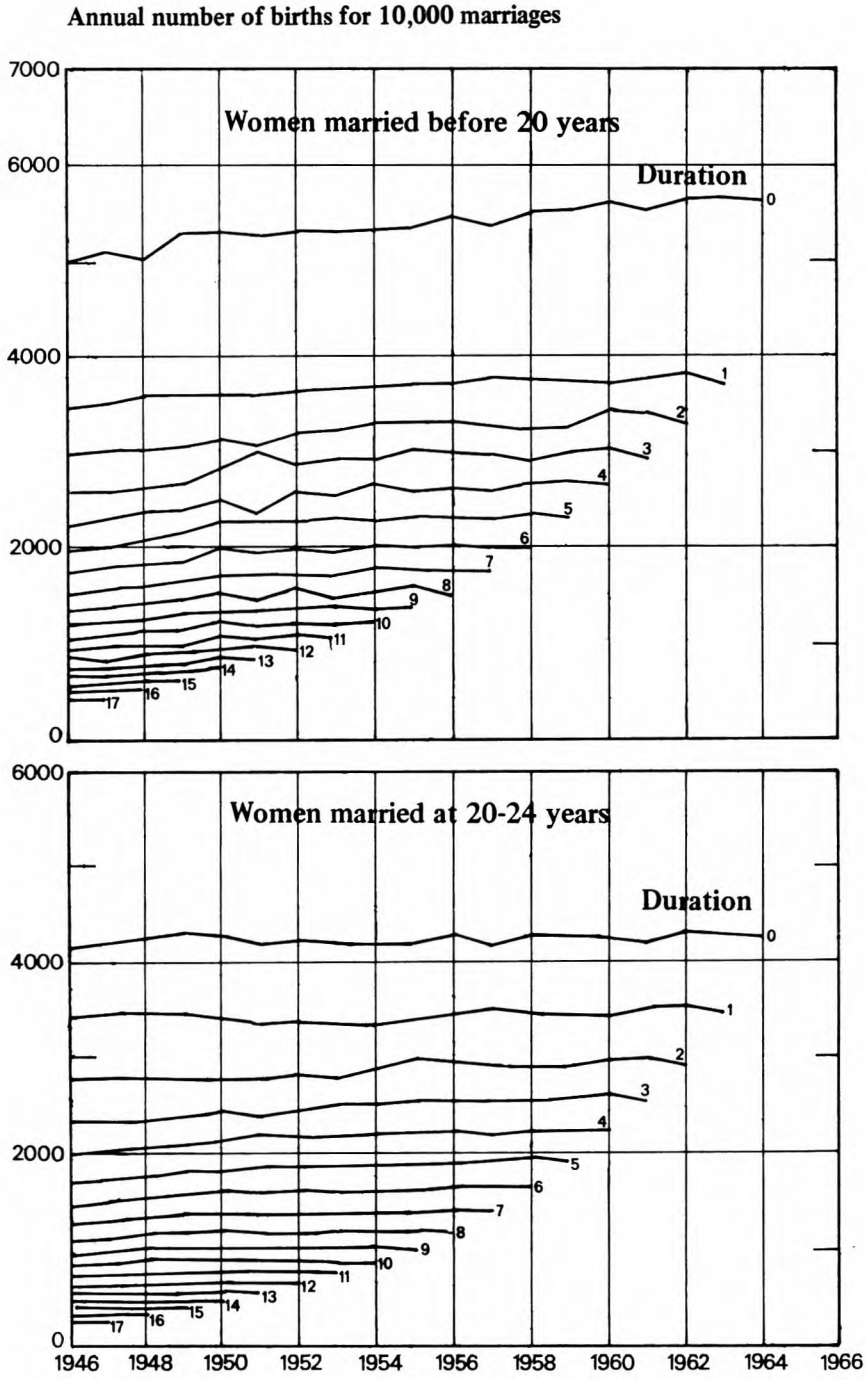


Figure 1. (Contd.) Live birth by duration of marriage and year of marriage, for 10,000 marriages

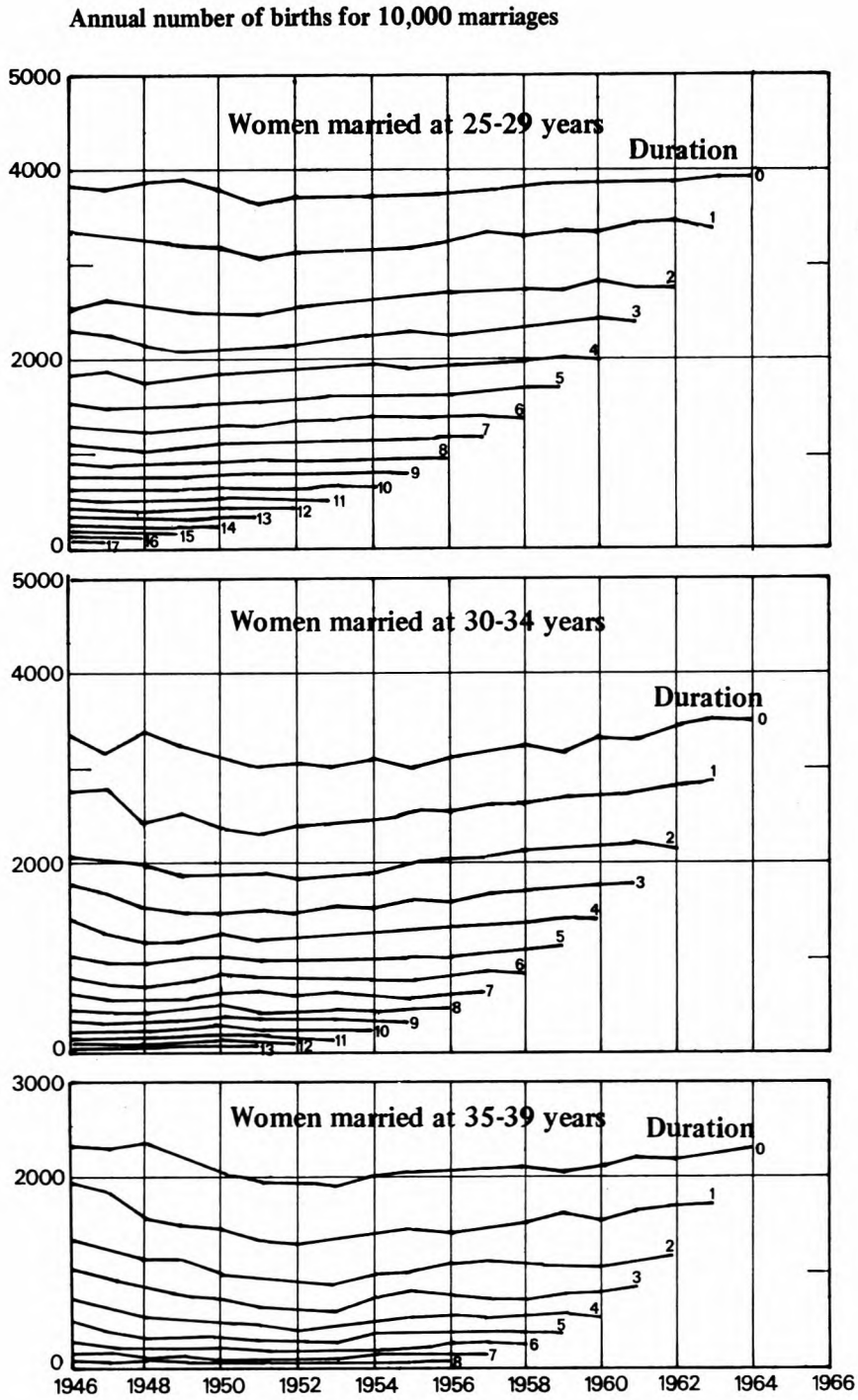
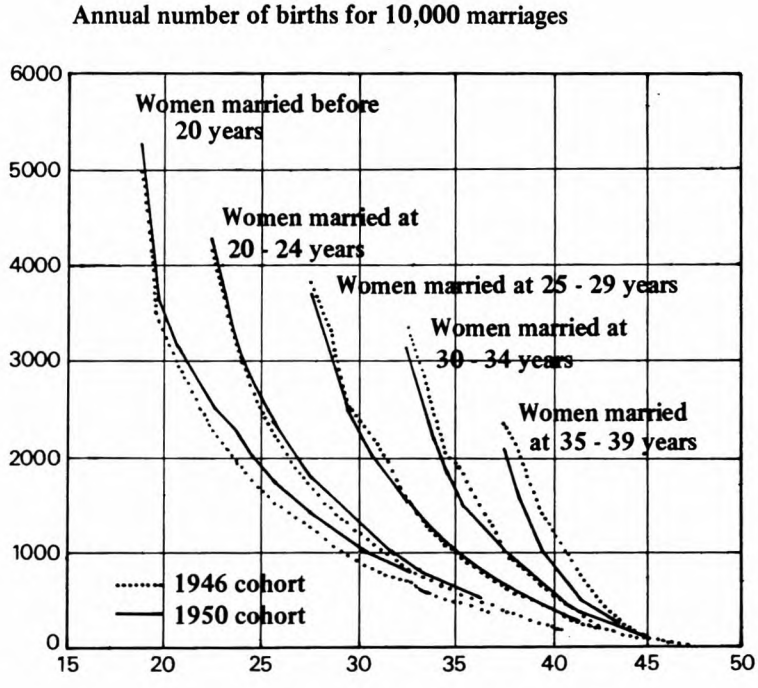


Figure 2. Live births according to current age and age at marriage, in cohorts of 10,000 marriages



curve representing couples having had their last child at duration of marriage u

curve generally observed: combination of the various individual representations

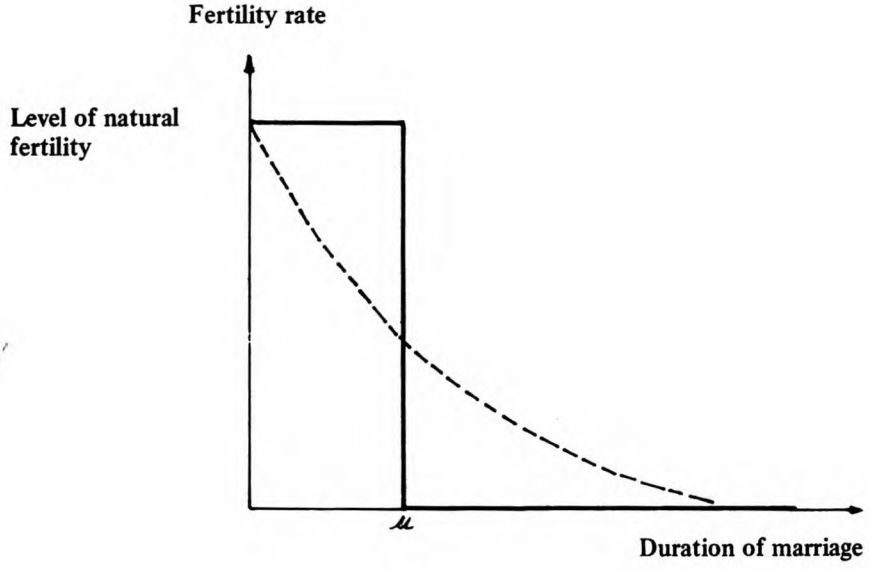
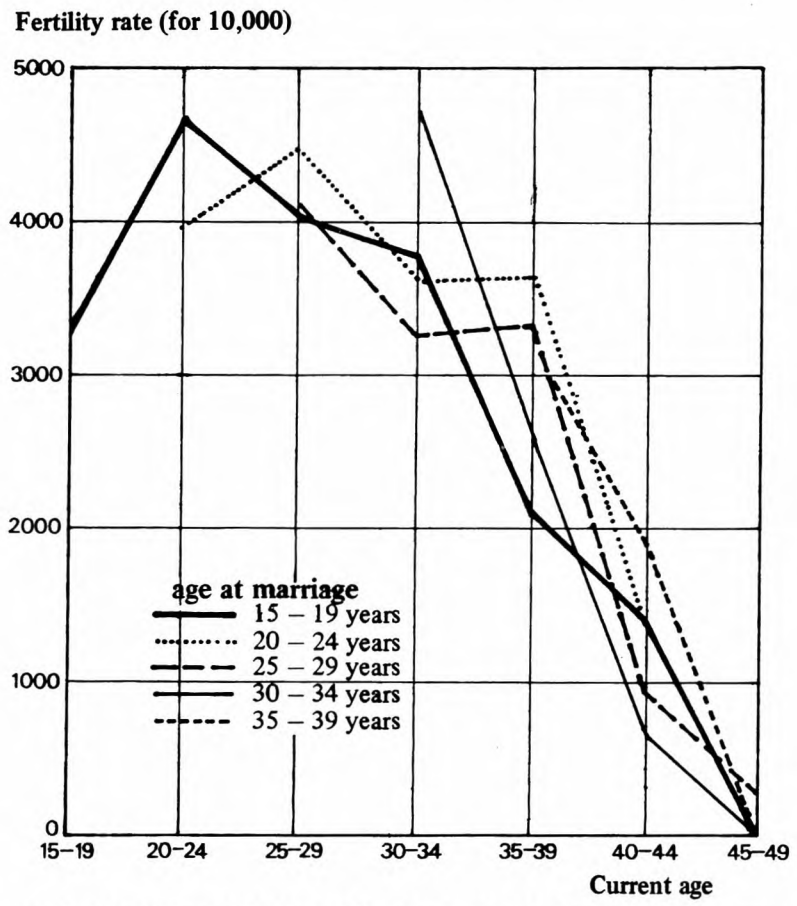


Figure 3. Age-specific legitimate fertility rate according to the woman's age at marriage (completed families). Crulai, 1674-1742 marriages.



Source: E. Gauthier and L. Henry "La population de Crulai, paroisse normande, étude historique" Travaux et documents de l' I.N.E.D., No. 33, 1958.

The progressive spacing of sexual relations as duration of marriage, and not only age, increases could also be a factor in the decrease of fertility as duration of marriage augments. However, it should be merely considered as a secondary factor, since its influence in the past was very small.

Among the factors we have enumerated, the number of children already born plays a preponderant role in Malthusian populations. It is because a majority of couples wish to have and indeed do have only a few children, that fertility decreases with duration of marriage as couples attain the number of children they wish to have or do not want to exceed; comparatively, other factors such as ageing, spacing of sexual relations and thinning from the initial number of couples play only a secondary role, especially in the first five or ten years of marriage for young couples.

Let us compare to the French data similar data available for Great Britain, although they were obtained in a different manner. The comparison is between British women married in 1920[6/] and French marriages of 1950. The British rates are calculated by half five-year age groups. We have computed the arithmetic mean of the rates of two successive groups in order to obtain data comparable to the French data (table 1).

Age at marriage is defined here as the woman's age at the time of marriage. The points on the figure are thus shifted by a half-year as compared to points representing French data (figure 4).

6/ Op. cit. Part II, Tables, p. 87.

Table 1. Fertility rates by duration of marriage and age at marriage

Duration of marriage (in years)	Under 20		20-24 years		25-29 years		30-34 years		35-39 years	
	France 1950 (1)	G.B. 1920 (2)	France 1950 (1)	G.B. 1920 (2)	France 1950 (1)	G.B. 1920 (2)	France 1950 (1)	G.B. 1920 (2)	France 1950 (1)	G.B. 1920 (2)
0	0.53	0.44	0.43	0.38	0.38	0.28	0.31	0.24	0.21	0.16
1	0.36	0.40	0.34	0.37	0.32	0.32	0.24	0.29	0.15	0.22
2	0.31	0.33	0.28	0.27	0.25	0.24	0.19	0.21	0.10	0.15
3	0.28	0.27	0.24	0.24	0.21	0.20	0.15	0.17	0.07	0.12
4	0.25	0.27	0.21	0.21	0.18	0.17	0.13	0.15	0.05	0.08
5	0.23	0.24	0.18	0.19	0.15	0.15	0.10	0.12	0.03	0.06
6	0.20	0.21	0.16	0.17	0.13	0.14	0.08	0.11	0.02	0.04
7	0.17	0.20	0.14	0.15	0.11	0.10	0.06	0.07	0.01	0.02
8	0.15	0.17	0.12	0.13	0.09	0.09	0.05	0.06	0.01	0.02
9	0.13	0.17	0.10	0.12	0.08	0.08	0.04	0.04	0.00	0.01
10	0.12	0.15	0.09	0.11	0.06	0.07	0.03	0.03	0.00	0.01
11	0.11	0.14	0.08	0.09	0.05	0.05	0.02	0.03	0.00	0.00
12	0.10	0.13	0.07	0.08	0.04	0.05	0.01	0.01	0.00	0.01
13	0.09	0.10	0.06	0.08	0.03	0.04	0.01	0.02	0.00	0.00
14	0.08	0.10	0.05	0.06	0.02	0.03	0.00	0.01	0.00	0.00

(1) Births divided by the initial number of marriages
(2) Births divided by the number of currently married women.

Since British data were obtained from a retrospective survey, the births were related to the number of surviving marriages, whereas French rates were calculated using the initial number of marriages. Moreover, in Great Britain, only the first marriages were taken into consideration.

The fertility curves of French women married in 1950 are very close to those of British women married on the morrow of the First World War; except for a different movement at the beginning of marriage, the outline is very similar. The curves are, however, slightly less concave, which illustrates the fact that the diminution of fertility with duration of marriage is less rapid in that country. The difference can have several causes.

– statistics have a different content in France, and marriage dissolutions tend to lower fertility in a country where their influence has not been eliminated. Such is not the case in Great Britain.

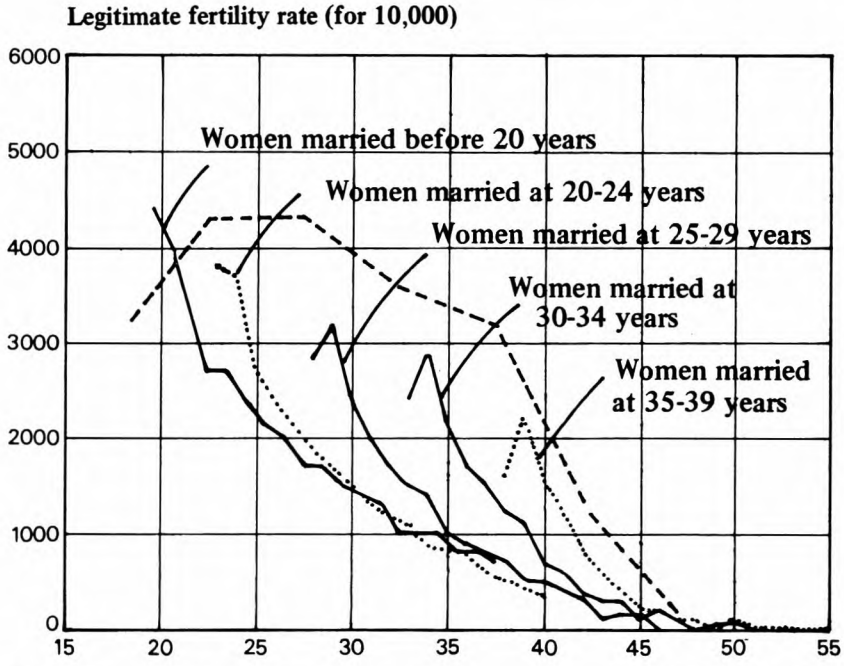
– British women might have a tendency to space out their children wider than the French.

An indepth study would be required to decide the matter.

The fertility of British women married after the age of 25 reaches its maximum only in the second year of marriage (in the last three groups, the rates at duration 0 are respectively 0.28, 0.24 and 0.16 children per woman as against 0.32, 0.29 and 0.22 at duration 1). In France, however, the rate for the first year of marriage is never lower than the rate for the second year (table 1,figure 4). It is always greater than the corresponding British rate, although at greater durations fertility in the British marriages considered is generally somewhat higher than in the French. The difference in nature between the denominators of the rates (first marriages, undissolved marriages on the one hand, all marriages, initial number on the other) helps to explain the inequality of levels beyond the first year of marriage. At the beginning of marriage the movement of the last 3 British curves owing to pre-marital conceptions. In Great Britain, pre-marital conceptions occur mainly to women who marry early, whereas in France they occur whatever the age at marriage.

The importance of pre-marital conceptions in France appears also very clearly in the curves shown on figure 1. Births decrease constantly with duration of marriage, but for women married before the age of 25, the gap between the rates is widest between the first and second years of marriage. The line relating to duration

Figure 4. Great Britain. Women married in 1920: legitimate fertility rates



Broken line: Legitimate fertility rates (all ages at marriage) in a Malthusian population. *Source:* **"La population de Crulai, paroisse normande", op. cit.**

0 is more clearly set apart from the other lines than they are among themselves. The difference is particularly conspicuous for women married before 20 where pre-marital conceptions are much more frequent. Women married in 1950 at 25-29 years and 20-24 years show at duration 0 (one completed year) rates equal respectively to 80 per cent and 71 per cent of those for women who married before 20 years. But if we consider only the births occurring in the calendar year of marriage, of which births many result from pre-marital conceptions, the corresponding rates drop to only 72 per cent and 66 per cent.

Age at marriage

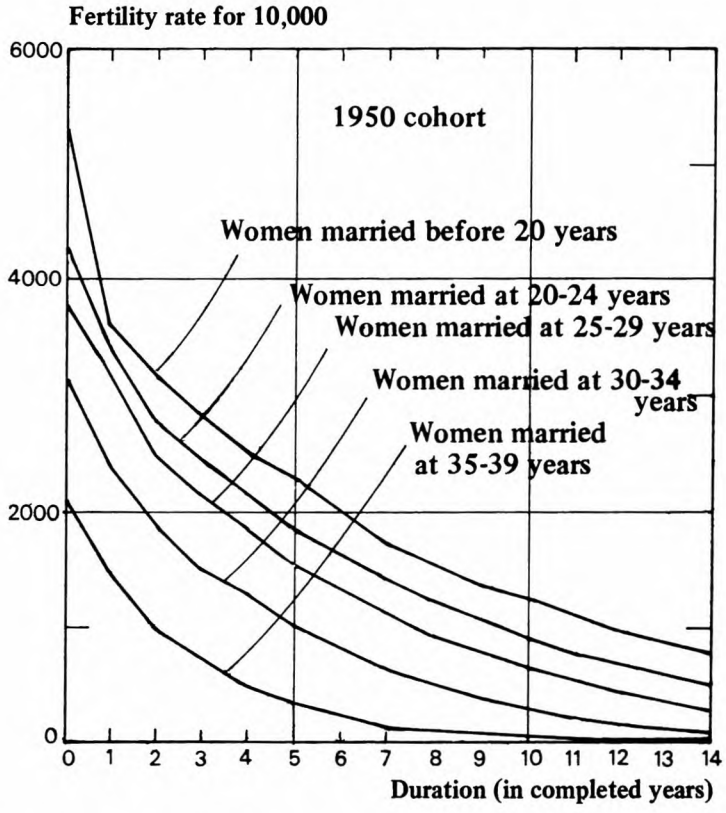
We have just seen that *woman's age being equal,* there was a positive correlation *between age at marriage and fertility,* and that the correlation was, in reality, only an effect of duration of marriage or of the number of children already born. There is also, duration of marriage being equal, a negative correlation between age at marriage and fertility: for a given duration of marriage, fertility decreases when age at marriage increases (figure 5). When the latter rises, age at each duration rises along with it. However, are age differences alone sufficient to explain variations in fertility – duration of marriage being equal – between two groups of women married at different ages? Or else, do variations result from the variations with the age at marriage itself of voluntary factors of fertility, such as firm desire to have a certain number of children versus relative indifference, total vigilance versus negligence in the practice of contraception?

1. Role of physiological factors

A comparison with historical populations leeds us to attribute differences in fertility, duration of marriage being equal, to factors other than the sole influence of ageing. In fact, if ageing were the only factor to play a role, as is more or less the case in non-Malthusian regimes, the differences, duration of marriage being equal, between rates for women married before 30, should be practically nil during the first five years of marriage.[7/]

7/ This remark is not based on empirical evidence, since fertility rates by duration of marriage have not so far been calculated for historical populations.

Figure 5. Live births according to duration of marriage and age at marriage, in cohorts of 10,000 marriages



In that case, indeed, the rates are very close to one another as long as the woman is still young. In France, however, in the case of the 1950 marriage cohort for example, the fertility in the 5 first duration of a woman who married at 20-24 years or 25-29 years is always less (by at least 10 per cent), duration of marriage being equal, than the fertility of a woman who married 5 years younger; this is of true for duration 1 where rate variations are lowest. Thus, age at marriage plays a specific role: women's behaviour varies not only with the number of children they have borne but also with the age at which they married.

2. Nature of the relationship between age at marriage and fertility

To say that behaviour varies with age at marriage amounts to saying that a woman's state of mind varies with the age at which she marries; this may be interpreted in two ways:

Either, that marrying later than expected leads a woman to adopt a different behaviour (greater reticence to face maternity, refusal to have children after a certain age or other Malthusian attitudes). Behaviour would thus be directly related to age at marriage.

Or, that age at marriage is influenced by individual or social, psychological or cultural factors, which also determine, at least partially, attitudes towards fertility. The least Malthusian women would have a tendency to marry young. Age at marriage, therefore, would not exert influence by itself, but there would be a link between age at marriage and behaviour, both of which being determined by common factors. In this case, an involuntary modification (resulting from disturbing external events) of the age at which a woman intended to marry breaks the apparent link between age at marriage and fertility.

If women destined to marry between 20-24 years because of their social and psychological characteristics, in fact marry between 25-29 years for other reasons, the completed fertility that they should have attained will scarcely be affected by the delay.

This kind of situation is noticeable in French cohorts in the aftermatch of the War; many marriages were deferred, some women who married at 20-24 years and especially 25-29 years in 1946 were destined to marry earlier. The distribution of marriages according to age at marriage that year supports this view. The proportion of the under-20 group is less than in subsequent cohorts, while the proportions of the 20-24 group and especially the 25-29 group are greater.

3. Fertility in cohorts of marriages that occurred just after the war

The hypothesis of a link between age at marriage and fertility will be verified if the delayed age at marriage of many women who married just after the war, results (in these cohorts) in increasing the fertility of older groups and hence in lessening the differences in fertility between various groups.

It has been observed that fertility of women who married before the age of 25 in 1946 is less than the fertility of women who married at the same age in 1950, whereas the fertility of women married after 25 is greater (figure 2). The curves in figure 1 lead to the same conclusion. At all durations and whatever the age at marriage, the rates are higher in the more recent cohorts, with the exception of the rates for women who married after 25 between 1946 and 1950. The fertility of women married before 25 years would increase whereas that of women married at older ages would decrease.

If age at marriage were to exert a specific influence, then delays owing to the War should not modify the fertility level of marriage age groups in cohort 1946 and following and we would thus have to concede that variations in fertility from one cohort to another may occur in opposite directions for different age groups. However, an analysis of these variations in the post 1950 cohorts leads us to assume the opposite.

Hence, everything points to the fact that women who would have married young during an undisturbed period have the behaviour they would have had, or at least a similar behaviour, if their marriage had not been deferred by circumstances. Every age group at marriage in the 1946 cohort is, in some way, made up of two classes of women, those who would have married at a younger age and those who would have married at this age. The fertility measured in each group is, somehow, a weighted average of fertility levels "normally" observed in the classes which compose the group.

PART TWO

VARIATION IN CUMULATIVE FERTILITY ACCORDING TO AGE AT MARRIAGE AND EVOLUTION OF FERTILITY IN FRENCH MARRIAGES

The fertile life of most women we observed has not ended in 1965. Nonetheless a measure summarizing the fertility of these women would have been worthwhile, such as an estimate of the completed fertility. We tried to obtain this estimate for a few cohorts, namely 1946, 1950, 1955, 1958 and 1960.

To achieve this, we worked in 3 stages:

1. First, we estimated the completed fertility of the 1946 cohort for which data are available only up to the 19th anniversary of marriage; we assumed that the cumulative fertility on the 19th anniversary represented 95 per cent, 97 per cent and 100 per cent of completed fertility for women married respectively before 20 years, at 20-24 years and at 25 years or more. These are the percentages observed for the 1920 marriage cohort in Great Britain.

2. In the 1950 and 1955 cohorts, calculations were made on the assumption that the already known fertility and the completed fertility would be in the same ratio as in the 1946 cohort (for the 1950 cohort) or in the 1950 cohort (for the 1955 cohort), for the relevant durations of marriage.

3. Finally, the calculation of the completed fertility of the post-1955 cohorts is based on the hypothesis that these cohorts will, from their 5th anniversary onwards, follow the same pattern of family formation as the 1955 cohort.

Table 2 shows the cumulative fertility at some anniversaries in the 1946, 1950 and 1955 cohorts for each age group at marriage; the estimates of corresponding completed fertility are given in table 4.

Table 2. Distribution of 100 births according to duration of marriage

Duration of marriage	Age at marriage														
	Under 20			20-24 years			25-29 years			30-34 years			35-39 years		
	Marriage Cohort			Marriage Cohort			Marriage Cohort			Marriage Cohort			Marriage Cohort		
	1946	1950	1955	1946	1950	1955	1946	1950	1955	1946	1950	1955	1946	1950	1955
2 years	27	25	25	29	28	27	32	33	31	41	39	39	51	54	52
5 years	51	50	50	56	55	55	63	63	62	75	71	73	88	87	87
10 years	76	75	75	81	81	81	88	89	89	97	95	95	100	100	100
15 years	89	89	89	93	93	93	99	99	99	100	100	100	100	100	100
19 years	95	95	95	100	100	100	100	100	100	100	100	100	100	100	100
End of fertile period	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Variations with age at marriage

We noted that it was not possible to study the fertility of older cohorts without considering the disturbances brought about by the Second World War, which singled out those cohorts from following ones. Perhaps the Algerian War also had some effect on the 1957 and succeeding cohorts. Since, however, variation with age at marriage show some constancy from one cohort to another between 1950 and 1957, we are led to distinguish, as we analyse the variations of fertility according to age at marriage, cohorts we shall qualify as "normal" from others who were "disturbed".

1. "Normal" cohorts

For a few anniversaries of marriage we have computed the ratio between the cumulative fertility in the 20-24 marriage age group and that in the under-20 group; we also computed the ratio for the 25-29 and 20-24 marriage age groups (table 3).

Right from the first years of marriage, these three groups tend to differ one from the other, but the differences tend to be more marked after the fifth anniversary (table 3). At the end of five years of marriage, fertility in the 20-24 marriage age group is 15 per cent less than in the under-20 group. At the end of fertile life completed fertility is approximately 22-23 per cent less (table 4). Women married at 25-29 years will, at the fifth anniversary of their marriage, have only 10 per cent less children than women married at 20-24 years; but the ultimate difference is barely lower than that observed in the first two groups (approximately 20 per cent, table 4). We shall see that women who marry older build the family faster; thus gaps tend to widen with duration.

Table 3. Ratios between cumulative fertility levels at various marriage anniversaries for women married at different ages

Marriage Cohort	Fertility of women married at 20-24 years			Fertility of women married at 25-29 years		
	Fertility of women married before 20 (in per cent)			Fertility of women married at 20-24 years (in per cent)		
	at the 2nd anniversary	at the 5th anniversary	at the 10th anniversary	at the 2nd anniversary	at the 5th anniversary	at the 10th anniversary
1946	89	90	88	95	96	92
1947	89	90	88	93	93	90
1948	90	90	88	92	91	87
1949	87	88	86	92	90	86
1950	86	87	84	90	89	86
1951	85	86	84	89	88	86
1952	85	86	84	90	89	86
1953	84	85	83	91	91	86
1954	84	85	83	91	90	88
1955	84	85	83	91	90	88
1956	84	85		90	90	
1957	84	85		93	92	
1958	83	85		92	92	
1959	83	85		93	93	
1960	82	84		94	94	

Table 4. Estimated average completed fertility (per woman)

Marriage Cohort	Age at marriage				
	less than 20 years	20-24 years	25-29 years	30-34 years	35-39 years
1946	3,16	2,62	2,21	1,51	0,85
1950	3,49	2,74	2,13	1,41	0,66
1955	3,60	2,77	2,21	1,43	0,68
1958	3,61	2,80	2,28	1,52	0,69
1960	3,69	2,81	2,33	1,56	0,70

The cumulative fertility of women married between 1950 and 1957 at 20-24 years, at the end of five years of marriage, is approximately equal to 85 per cent of that of women who married before 20. For women married at 20-24 and 25-29 years, the value of the ratio is 90 per cent. In natural fertility conditions, the first ratio would be approximately 100 per cent and the second 92 per cent[8].

The earlier women marry, the higher their completed fertility (table 4).

The completed fertility of a woman married after 20 is approximately equal, depending on the age group considered, to four fifths, three fifths, two fifths and one fifth of that of women married before 20 (table 5).

Table 5. Ratio of the completed fertility of women married at a given age to the completed fertility of women married before 20 (in per cent)

Marriage Cohort	Age at marriage				
	less than 20 years	20-24 years	25-29 years	30-34 years	35-39 years
1946	100	83	70	48	27
1950	100	79	61	40	19
1955	100	77	61	40	19
1958	100	78	63	42	19
1960	100	76	63	42	19

L. Henry has shown that in the absence of birth control, completed fertility is an almost linear and decreasing function of age at marriage so long as this age falls within 20 and 35 years.[9] This completed fertility is approximately equal to the product of fertility at 25 years by the difference between age at marriage and 40 years, that is about 18 for women married at 20-24 years and 13 for those married at 25-29 years. Whatever the level of fertility at 25 years, the completed fertility for women married at 25-29 years is equal to about 72 per cent of that of women married at 20-24 years.[10]

If, from the beginning of marriage to the end, all women were to reduce identically their fertility, the above ratio would still have the same value in Malthusian conditions. In reality, contraception, while little or poorly practised at the beginning of marriage, is practised quite effectively once the desired number of children is reached.

Thus, because of birth control, groups of women married at different ages become voluntarily infertile, even before the disparity of risks of physiological sterility has been fully felt; the differences between completed fertilities are thus considerably lessened. L. Henry concluded that if the desired number of children did not vary with age at marriage, the completed fertility of women married at 25-29 years would be equal to 93 per cent of that of women married at 20-24 years assuming contraception is 100 per cent effective (starting from the moment the desired number of children is reached) or 85 per cent if contraception is only 98 per cent effective.[11]

If there were only physiological factors, percentages less than those cited above should not be obtained.

For the 1950 and 1955 marriage cohorts in France, the ratios computed from table 4 for the completed fertility of women married at 25-29 years (the completed fertility of women married at 20-24 years being taken as base, equal to 100) amount respectively to 78 and 80. If statistics had enabled us to compute the

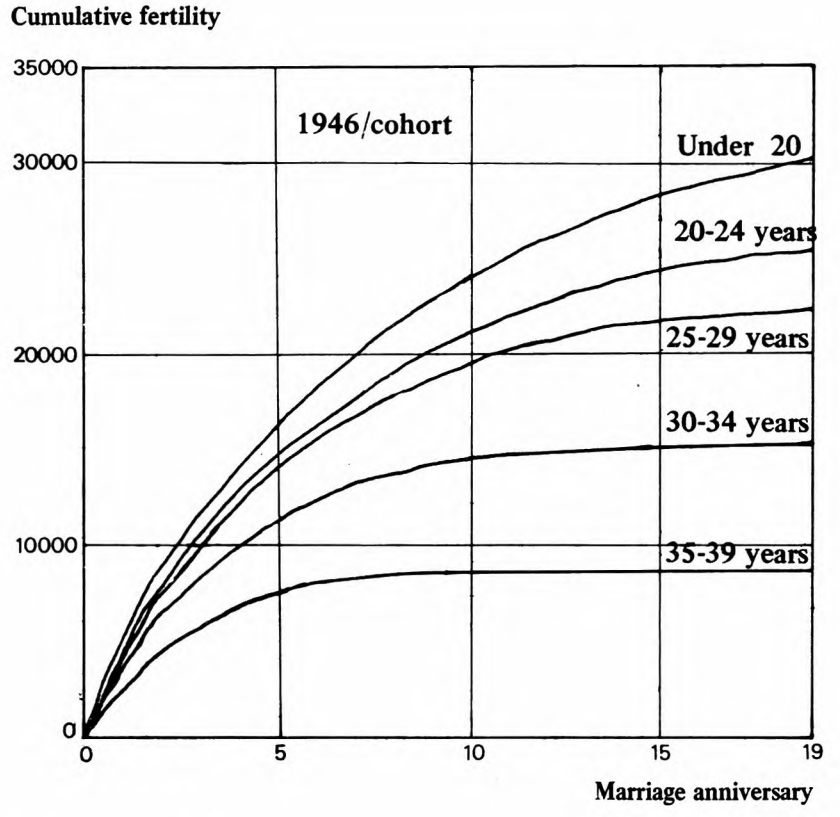
8/ The 92 per cent ratio was obtained by comparing, from the average of 10 series of fertility rates for historical populations, fertility at about 25 years (average of rates at 20-24 and 25-29 years) and fertility at about 30 years (average of rates at 25-29 and 30-34 years) without taking into account the age at marriage. If the latter had indeed been considered, the ratio would have been slightly raised, since even in historical populations, there is a slight correlation between fertility at a given age and age at marriage, similar to what we observe in modern populations.

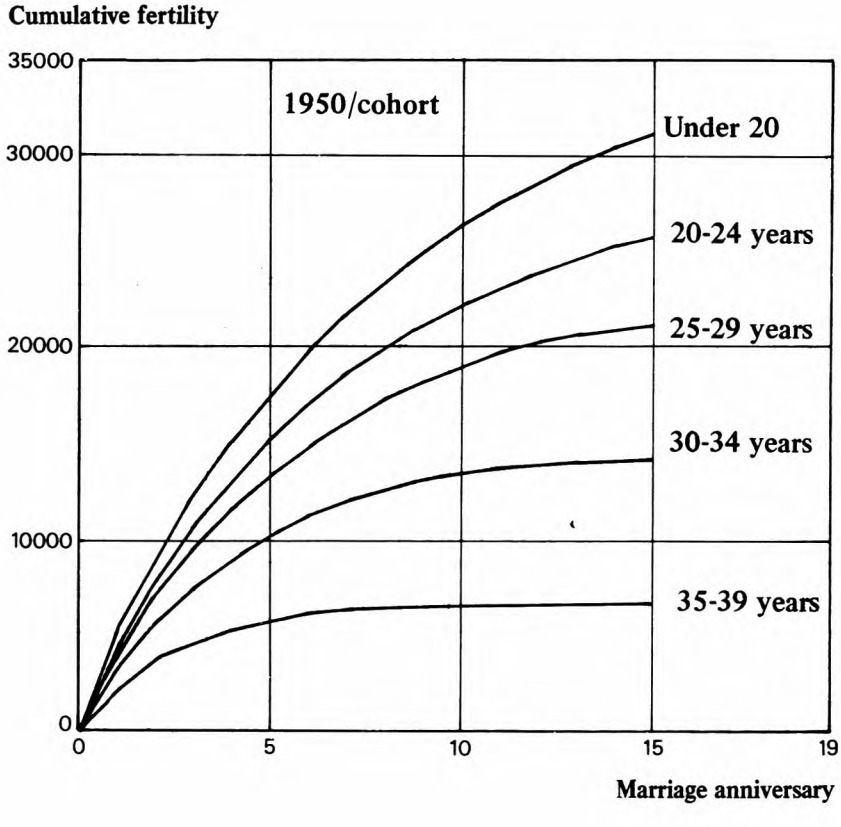
9/ L. Henry " Some data on natural fertility", Eugenics Quarterly, Vol. 8, No. 2, 1961, p. 81-91.

10/ 72 per cent is equal to 13/18; with 14/19 it would be a little less than 74 per cent.

11/ Unpublished note.

Figure 6. Cumulative fertility at each marriage anniversary according to the woman's age at marriage (for 10,000 marriages)





completed fertility (taking widowhood and divorce into account), the ratios would have been even lower because the risks of marriage dissolution, which are probably greater for women who marry early, would have lowered the completed fertility of women married at 20-24 even more than that of women married at 25-29. Thus, in France today, the desired number of children and perhaps also the effectiveness of contraception vary with age at marriage.

2. "Disturbed" cohorts

Variation in completed fertility with age at marriage, insofar as it is only apparentness and depends more on individual, social and economic characteristics common to women marrying at the same age, should be mitigated in marriage cohorts in the first years after the War.

For example, let us compare the 1946 and 1950 marriage cohorts in figure 6; the spread of curves is far less wide in the case of the first marriage year than of the second. Moreover, the cumulative fertility at all durations of marriage, shown in figure 7 are greater in the more recent cohorts, whatever the age at marriage, except for women married after 25 years between 1946 and 1951.

The completed fertilities undergo the same variations and the spread for the 1946 cohort (0.9 child per woman who married at 35-39 years as against 3.2 children per woman who married before 20) is narrower than that for the 1950 cohort (0.7-3.5, table 4). Thus, the ratios between the completed fertility of women who married at every age and that of women who married before 20, which are usually constant whatever the cohort, are different in the 1946 cohort (table 5). Here, the variations in fertility between groups of ages at marriage are much less noticeable. For example, the fertility of the 25-29 group, is equal to 70 per cent of that of the under 20, whereas normally the ratio is 61 to 63 per cent.

It seems that the Algerian War caused a slight disturbance. The completed fertilities of women who married between 25 and 35 years are a little closer to those of women who married before 20 in the after 1957 marriage cohorts than in the preceding ones. From the 1950 to the 1960 cohort the total fertility of women who married at 25-29 years and 30-34 years would have increased more than that of women who married before 25. Similarly, the fertility of the under 20 and 20-24 years age groups at marriage of the 1957 cohort is less than that of neighbouring cohorts. The calling up of reservists and the sending of draftees to Algeria could have affected only women who had married youngest, thus lessing the gap in fertility between the 20-24 and 25-29 groups at marriage from 1957 onwards. This is clearly illustrated by figure 8 which presents data shown in table 3.

Age at marriage thus has a distinctive role; but the age at which one is destined to marry (depending on one's personal and social characteristics) is in some ways more important than the age at which one does marry. The 1946 marriage cohort and to a lesser extent the 1947 cohort, owing to marriages deferred by the War, comprise a higher percentage of women who were "destined to marry before 25" than succeeding cohorts. Thus, 1946 and 1947 marriages will show, on the whole, higher completed fertility than later marriages. In fact, fertility is on the rise, but this rise is hidden up to 1950 by the above phenomenon.

Timing of childbearing

We know that completed fertility varies with age at marriage; does its distribution according to duration of marriage also vary with that factor?

The time it takes for a birth cohort of women to achieve half of the completed fertility varies between 2 to 5 years, depending on the age at marriage of this birth cohort (table 6).

Figure 7. Cumulative fertility at each anniversary, by cohort, for 10,000 marriages

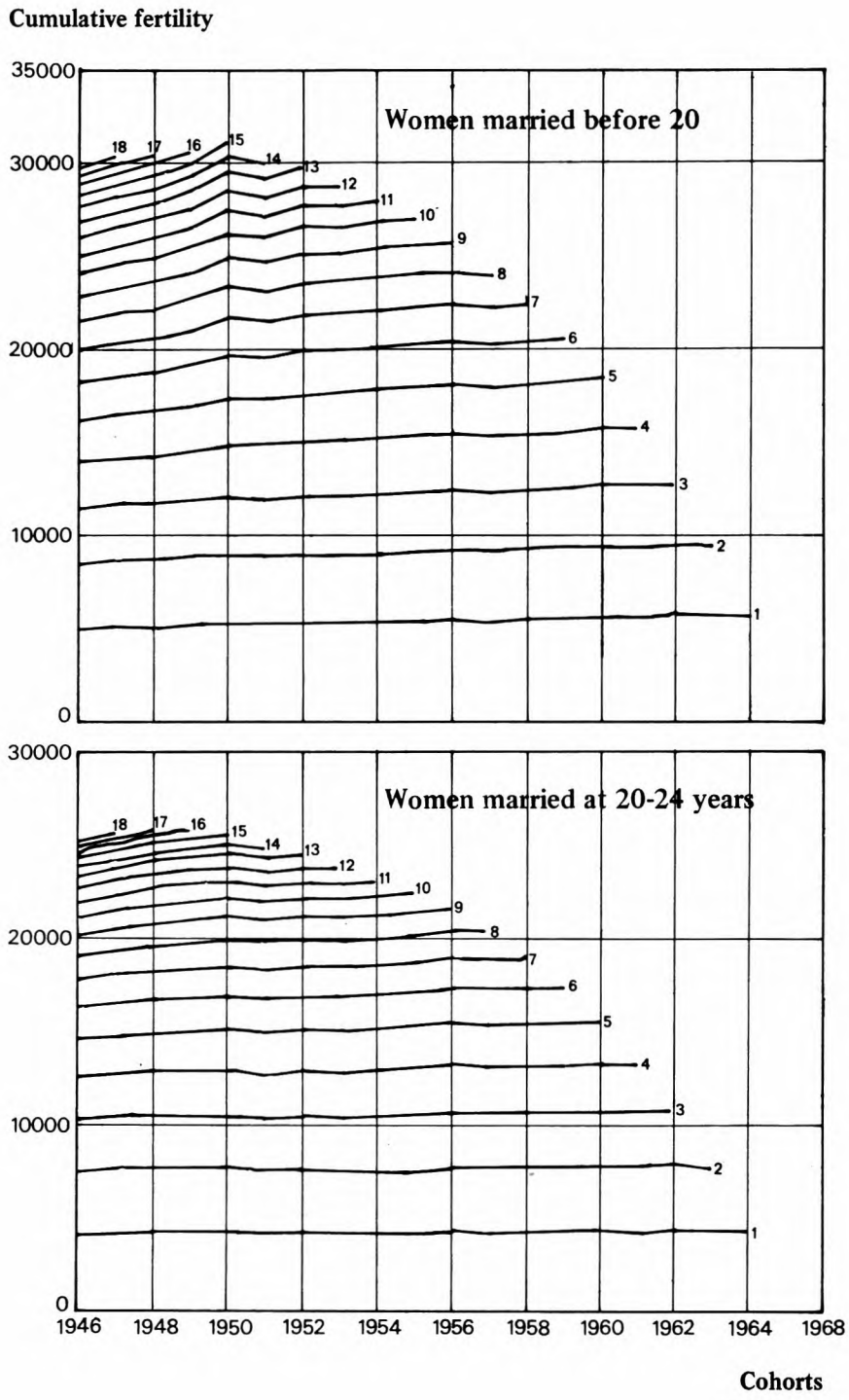


Figure 7. (Contd.) Cumulative fertility at each anniversary, by cohort, for 10,000 marriages

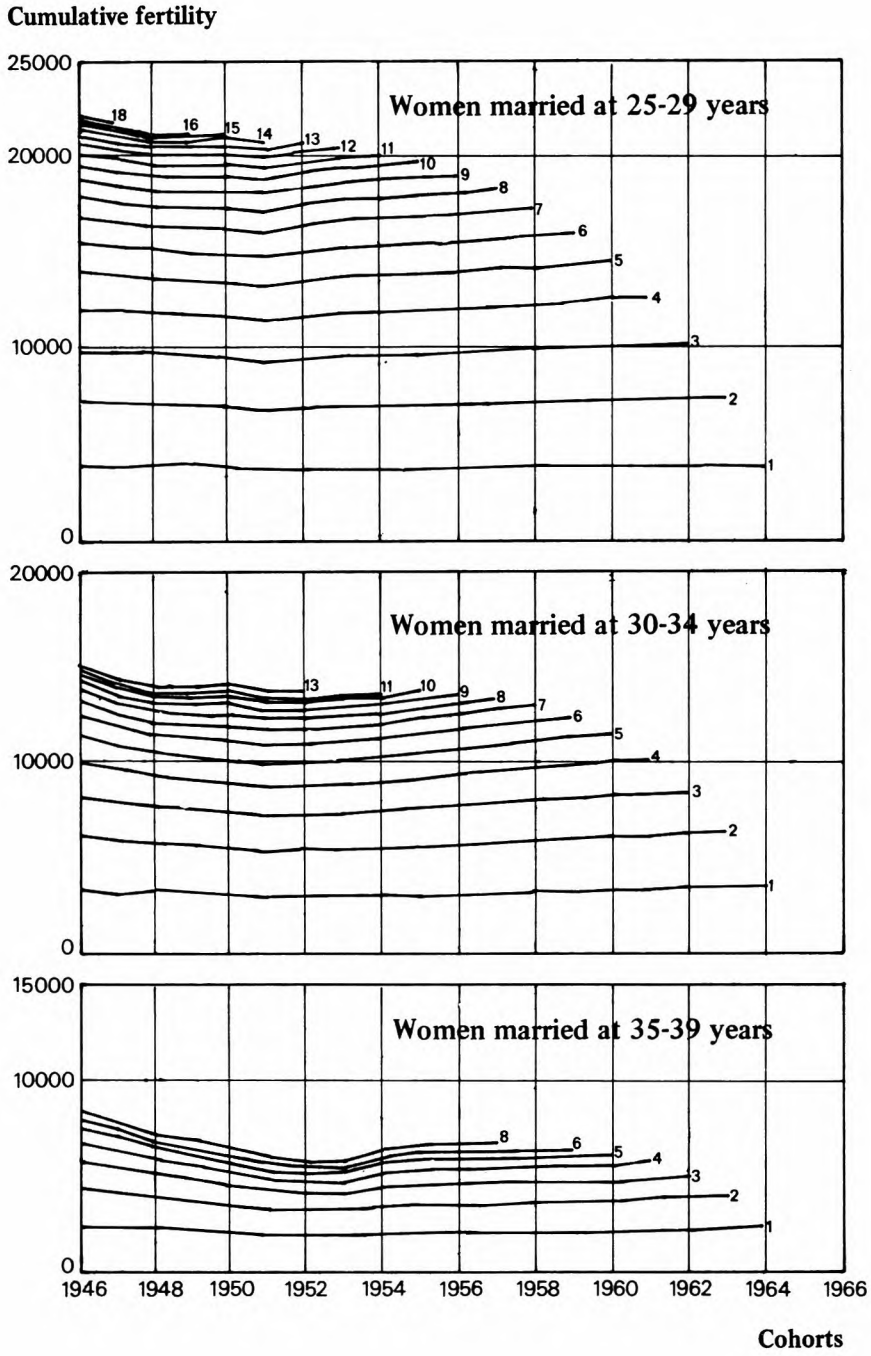


Figure 8. Ratios of levels of cumulative fertility reached at the 5th anniversary of marriage by women who married at different ages

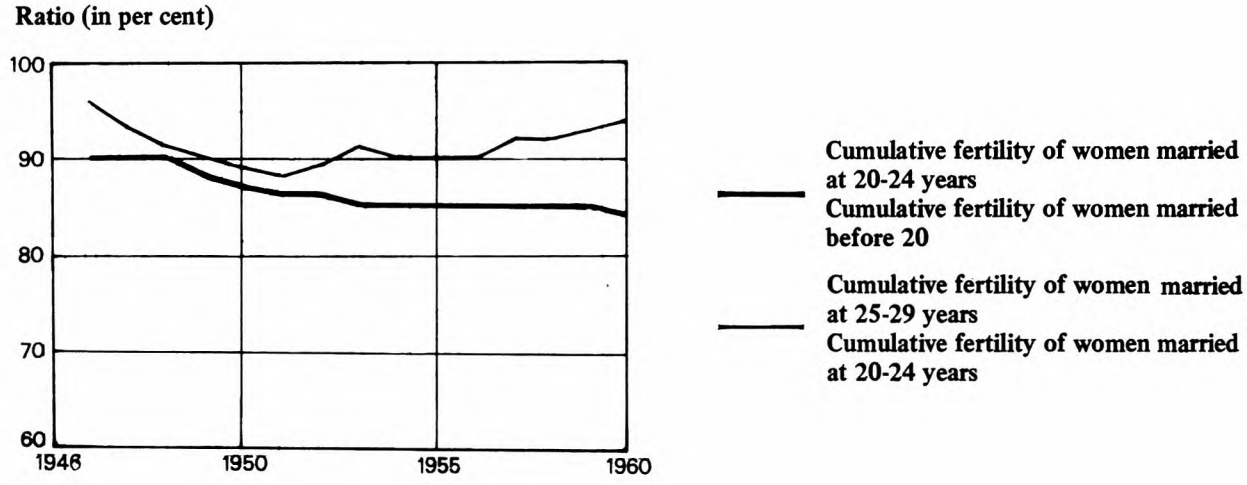


Table 6. Median duration of family formation

Marriage cohort	Median duration (in years) according to age at marriage				
	Under 20 years	20-24 years	25-29 years	30-34 years	35-39 years
1946	4,8	4,2	3,6	2,7	1,9
1950	5,0	4,4	3,6	2,8	1,8
1955	5,0	4,3	3,6	2,8	1,9

The higher the age at marriage, the quicker the timing of childbearing. There are two possible interpretations:

Family size being equal, the later women marry the quicker they tend to have their children and consequently the shorter the intervals between births.

The later women marry, the higher the percentage of those having few children.

These two phenomena may be concomitant. As age at marriage rises, high parities become less frequent. The desire not to bear children after a certain age could lead women to shorten intervals between births. This hypothesis has yet to be verified. This would necessitate to compare intervals between successive births for women who married at different ages; therefore, we would need data that can only be obtained through retrospective survey.

Fertility diminishes continuously with duration; if it takes two years for a cohort to attain a given level of cumulative fertility, it will require three more years to double this level and five years further to triple it. This holds for the three groups of women who married before 30 (table 2).

We observed that in many respects the 1946 marriage cohort was different from the others. It is different also in its more rapid timing of childbearing as compared with those cohorts (table 2). It seems that delay in marriage incited women to have their children more quickly.

PART THREE

FERTILITY TRENDS

1. Variations from cohort to cohort

Cumulative fertility at all the anniversaries for which we were able to compute it increases from cohort to cohort, whatever the age at marriage (figure 7). As we have seen, this tendency is hidden in the 1946-1950 cohorts by the phenomenon of deferred marriages.

The completed fertilities that we have estimated tend also to increase for the later marriage cohorts. The estimation of completed fertilities rests on hypotheses made on the patterns of childbearing of cohorts. For this reason, the observed rise is perhaps real, but may also result from a variation in the timing of childbearing. If there would be a greater accumulation of births in the first years of marriage, the completed fertility of recent cohorts – such as we estimated it – would have been over-estimated. The margin of error is lowest for earliest cohorts. However, it is unlikely that the timing might have changed so much as to give the 1960 cohort for instance, a lower completed fertility than the 1950 cohort. It must be noticed indeed, that there is a continuing increase in the actually observed cumulative fertilities, and that the distribution of births during the first five years of marriage is fairly constant.

Therefore, the most recent marriage cohorts will, if they follow the timing of former cohorts, and if they are subject to the same laws (as far as dissolutions of marriages and international migrations are concerned), undoubtedly have on an average slightly more children than the preceding ones.

In the earliest cohorts, women who married before 20 show levels of fertility during the first two years of marriage which are nearer to each other than in the most recent cohorts. The increase in rate was more perceptible at duration 0 than at duration 1 (figure 1); premarital conceptions have certainly been less widespread just after the war.

It is not possible to evaluate premarital conceptions according to age at marriage; but tables on first legitimate births according to duration of marriage in months, that have occurred in a calendar year, enable us to make the evaluation for all ages at marriage together. These tables are available for the years 1946 to 1952 and 1957 to 1966.[12/]

Let us take, for example, the year 1947. By dividing the number of legitimate live births that occurred in 1947 in the first month of marriage by the number of marriages anticipated during the first 11 months of 1947 augmented by half the marriages celebrated in December 1946 and December 1947, we obtain a legitimate fertility rate at duration 1 month duration in the cohort in which these births occurred. Next we divide the legitimate live births that occurred in1947 during the second month of marriage by the number of marriages of the last month of 1946 and in the first 10 months of 1947 augmented by half the marriages of November 1946 and November 1947, and so on. Assuming that births occurring during the first 8 months of marriage are the result of premarital conceptions, we can add up the rates (per 10,000) for the first 8 durations; thus we obtain the proportion, for 10,000 women who marry, of those already pregnant at time of marriage and who will deliver during the first 8 months of their marriage in 1947. The results are given in table 7.[13/]

12/ Tables published by INSEE for the years 1946-1952 in the volumes entitled "Mouvement de la Population". Years 1946-1947, Vol. 1, p. 30 & p. 59, years 1948-1949, Vol. 1, p. 149 & P. 182, years 1950-1951, Vol. 1, p. 136 & P. 178, year 1952, Vol. 1, p. 119. For 1957 and onwards, the still unpublished tables were forwarded to us by INSEE.

13/ We have made the calculations for the years 1946 to 1952, the figures for the years 1957 and after were kindly given to us by M. Piro, attache of INSEE, who had already done this evaluation.

Table 7. First legitimate live births(1) occuring in the first 8 months of marriage, for 10,000 marriages

Year of birth	Premarital conceptions for 10,000 marriages	Year of birth	Premarital conceptions for 10,000 marriages
1947	1.474	1959	1.736
1948	1.586	1960	1.765
1949	1.659	1961	1.800
1950	1.711	1962	1.822
1951	1.653	1963	1.934
1952	1.676	1964	2.023
.....	.....	1965	2.206
1957	1.669	1966	2.259
1958	1.687		

(1) The mother has not had any other living or still born child before this birth, both during this or the previous marriage.

It would have been desirable and easier to make the computations for marriage cohorts, but the necessary data (1st births according to marriage duration in months and year of marriage) are only available from 1959 onwards.[14/]

Since the birth order is not defined with reference to the *current* marriage, premarital conceptions are slightly underestimated.

The proportion of women who are pregnant at the time of marriage is actually on the increase from 1947 to 1950; the number has risen from 1474 to 1711 for 10,000 marriages. Two other observations confirm this assessment:

1. Marriages contracted in the first three months of a year are the only ones where births can occur in the same year as the marriage without there being premarital conception. Now the number of such marriages has gone down by 43 per cent from 1946 to 1950, whereas the number of births occurring during the year of marriage has gone down by only 24 per cent.

2. Besides, the fertility rates for the year of marriage have increased continuously during the same period, whatever the age at marriage, whereas the rates for the first year of marriage have less increased in the case of women who married before 25 and even gone down for women married after 25.[15/]

From 1950 to 1959 the trend is not so clear, but from 1959 onwards the proportion of women who are pregnant at the time of marriage continues to grow from year to year. The decrease in the number of marriages may partly be the cause.

14/ The calculations of premarital conceptions for marriage cohorts were also done by M. Piro from 1959 to 1965. The results are shown below:

Marriage cohort	Premarital conceptions for 10,000 marriages	Marriage cohort	Premarital conceptions for 10,000 marriages
1959.....	1.748	1963.....	1.974
1960.....	1.783	1964.....	2.096
1961.....	1.801	1965.....	2.223
1962.....	1.872		

One can note that the above results fit in well with the results of table 7.

15/ It is difficult to be both simple and precise. The year of marriage is the calendar year during which the marriage was contracted; the first year of marriage is the duration of 1 year between the marriage and its first anniversary.

2. Annual fluctuations

The number of births varies from one year to the next, but in any given year, should births be more numerous or less, it shows in all cohorts and all age groups at marriage (figure 9). This simultaneousness is not something new. It was observed for instance, during the great economic crisis of the thirties. Since 1957, a saw-like movement can be seen, the odd years being years of high fertility and the even years being years of low fertility.

The amplitude of the movement is never very important; nonetheless, the rise in 1963 as compared to 1962 is noticeable; then, for two consecutive years we witness a decline (figure 9).

Figure 9. Fertility rate according to duration of marriage (in calendar year differences) for 10,000 marriages of each cohort.

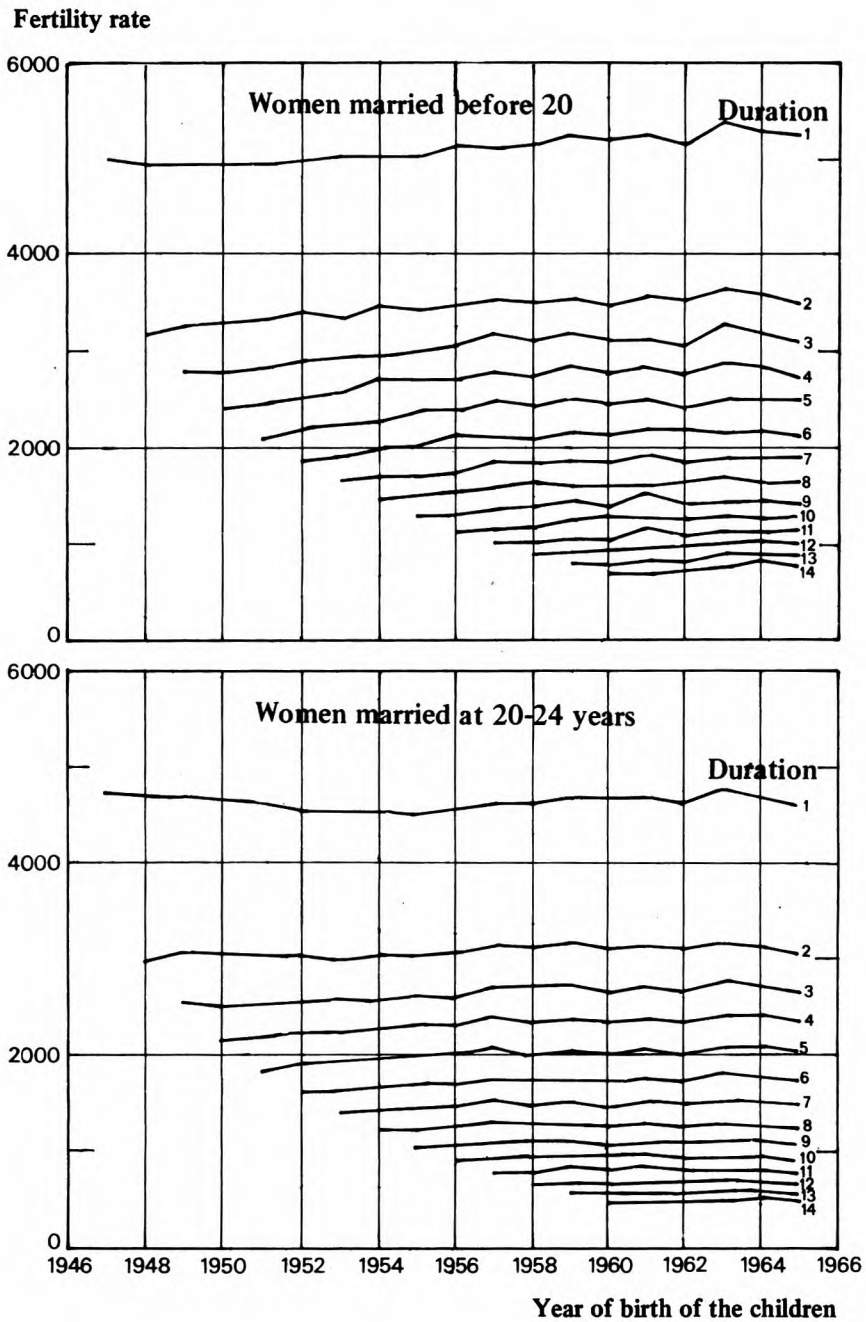
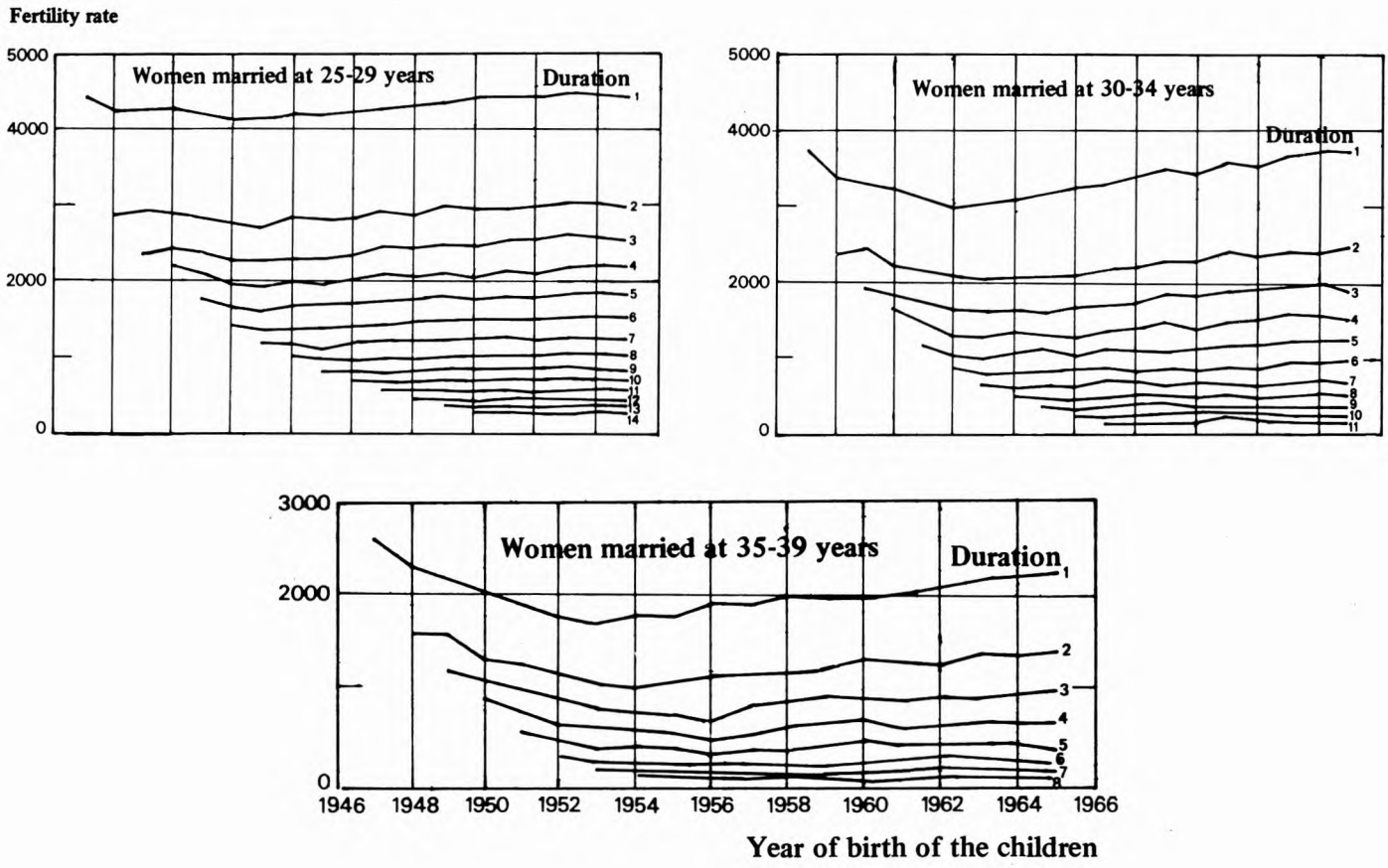


Figure 9. (Contd.) Fertility rate, according to duration of marriage (in calendar year differences) for 10,000 marriages of each cohort.



CONCLUSION

Insofar as no study of fertility in France had as yet introduced the factor "age at marriage", it was interesting to conduct a study which took this variable into account, even though statistical data analysed did not have all the required qualities. The data that we used here are indeed rather heavy to handle, and do not nevertheless allow for very detailed analysis.

We have given no attention to the analysis based on birth order: such analysis would have been defective since the available data did not even enable us to compute birth intervals.

Retrospective surveys yield statistics that are better adapted to this kind of study. They allow for analyses according to birth order, as well as occupational category, level of education and income. With such data, one could highlight the relationship between socio-cultural level and age at marriage.

The scope of the present study was thus very limited. It was but a first overall look at the question which will be further challenged when the data from the 1954 and 1962 surveys will be available.

No. 12 *Population of New Zealand* (under preparation)

No. 13 *Population of Malaysia* (under preparation)

Comparative Study on Migration, Urbanization and Development in the ESCAP Region -- Country Reports

No. 1 *Republic of Korea* (ST/ESCAP/93)

No. 2 *Sri Lanka* (ST/ESCAP/94)

No. 3 *Indonesia* (ST/ESCAP/169)

No. 4 *Malaysia* (ST/ESCAP/174)

No. 5 *Thailand* (ST/ESCAP/211)

No. 6 *South Pacific Countries* (ST/ESCAP/178)

Comparative Study on Migration, Urbanization and Development in the ESCAP Region — Survey Manuals

No. 1 *Survey Organization and Monitoring* (ST/ESCAP/118)

No. 2 *The Core Questionnaire* (ST/ESCAP/120)

No. 3 *Manual for Interviewers* (ST/ESCAP/122)

No. 4 *Manual for Supervisors* (ST/ESCAP/126)

No. 5 *Manual for Interviewer Trainers* (ST/ESCAP/127)

No. 6 *Sample Design Manual* (ST/ESCAP/128)

No. 7 *Manual for Office Editors and Coders* (ST/ESCAP/129)

No. 8 *Guide to the Development of a Data-Processing System* (ST/ESCAP/155)

No. 10 *Guidelines for Analyses* (ST/ESCAP/203)

Population Studies Translation Series

No. 1 (I) *Fecundity of Japanese Women*
(II) *The Effect of Induced Absortion and Contraceptive Practice on Material Fecundity in Pre-and Post-War Japan*

No. 2 (I) *The Development of Family Planning in Japan with Industrial Involvement*
(II) *Basic Guidelines for Propagating Family Planning in Business Organizations* (ST/ESCAP/72)

No. 3 *Fertility of Marriage: A New Method of Measurement* (ST/ESCAP/97)

No. 4 (I) *Interpretation of Short-term Birth Rate Variations*
(II) *Birth Intervals: New Empirical Data* (ST/ESCAP/113)

No. 5 *Population Policy and Family Planning Programme in the Republic of Korea* (under preparation)

No. 6 *Population Problems and National Development Plan in Japan: Post-War Trends* (ST/ESCAP/175)

Population Research Leads

No. 1 *The Asian Population Programme: A Mosaic of Activities*

No. 2 *Alternative Growth Patterns: The ESCAP Programme of Population Projections*

No 3 *Towards Organizational Effectiveness of Integrated Family Planning Programmes*

No 4 *Demographic Aspects of Labour Force Participation*

No. 5 *Development of Data for Integrated Population and Development Planning*

No. 6 *Comparative Study on Migration, Urbanization and Development in the ESCAP Region*

No. 7 *Activating Inter-Related Links in Population, Food, and Nutrition Programmes: Theory and Practice*

No. 8 *Significance of the Relationship between Nutrition and Human Reproduction*

No 9 *Regional Trends in Psycho-social Research in Fertility and Family Planning*

No 10 *Study of Socio-psychological Aspects of Fertility: Research Needs and Priorities*

No. 11 *The Age Structure of Selected Countries in the ESCAP Region*

No. 12 *Integration and Family Planning Programme Performance: An Interpretive Summary*

No. 13 *Population Distribution and Development Policies in the ESCAP Region*

Population Bibliographic Series

No. 1 *Reading Profile on Islam and Family Planning An Index of Materials, and How to Obtain Them*

No. 2 *Reading Profile on the Status of Women*

No. 3 *Integration of Population and Development Programmes: A Documentation Support: Indonesia, Malaysia, Philippines, Singapore and Thailand*

Asian-Pacific Population Programme News

A quarterly regional newsletter, published since 1971.

Population Headliners

A monthly mimeographed newssheet. Circulation is limited to ESCAP Population Correspondents and member Government decision-makers.

ADOPT (Asia and World-wide Documents on Population Topics)

A monthly listing of publications with in-depth subject analysis for population libraries and reference centres in the ESCAP region. Available to institutions, professionals, libraries and reference centres on request.

HOW TO OBTAIN ESCAP POPULATION PUBLICATIONS

ESCAP population publications may be obtained in printed form and microfiche from:

Chief, Clearing-house and Information Section
ESCAP Population Division
United Nations Building
Rajadamnern Avenue
Bangkok 2, Thailand

December 1983

United Nations publication
RAS/71/P21