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Fertility and contraceptives: the experience of Spanish women born in the first half of the twentieth century

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Introduction: background and purposes

Common sense and academic literature agree that contraceptive use is one of the most relevant factors explaining fertility levels and differentials among human societies. In an influential and now classic paper, Bongaarts (1982) included contraceptive use and effectiveness among the so-called intermediate variables that directly and powerfully influences fertility: contraceptive use and effectiveness, together with the rest of intermediate fertility variables, determine the general level of fertility in a population. By the same token, the availability of different contraceptive methods and techniques is always a major constraint on human reproductive behavior. In one way or another, changes in the availability of contraception make changes in fertility possible.

In fact, the increasing use of modern contraceptives has been considered one of the most important correlates for the historical process of fertility decline during the demographic transitions, first in developed world and then in developing countries (Fisher, 2006; Szreter and Fisher, 2010). On the one hand, the growing supply of more convenient, efficient, and affordable methods has driven the transition from natural fertility to parity-specific family planning. The availability of modern methods of birth control (pills, IUDs, injections and so on), together with better access to them, have become a genuine milestone in the fertility transition. Together with the expansion of these methods, major changes in family size preferences and acceptance of the new contraceptive technology have been considered a companion, or a prerequisite, of the fertility decline the world over. Considering how new these ideas and behavior were, it is not surprising that these processes have been conceived and modeled as innovation-diffusion processes (Castetrline, 2001). This perspective has brought about an entire stream of research and theory on fertility change —focusing on the appearance, acceptance, circulation and extension of these new contraceptive techniques and ideas— that can be labeled 'diffusionist' (Bryant, 2007).

As for the case of Spain, to date several important aspects of the fertility transition have been subject to ample scrutiny (Fernández Cordón 1976; Reher, 1996; Reher & Iriso 1989; Reher & Sanz-Gimeno, 2007; Reher, Ortega & Sanz-Gimeno, 2008; Requena, 1988; Requena 2004; Requena & Salazar, 2006). However, the growing diffusion of contraceptives among Spanish women during this crucial historical period is still relatively unknown (but see Ruiz Salguero et al., 2005). In this paper we are interested in studying the timing and spread of contraception among the cohorts of women that participated in the process of fertility transition in Spain as well as in deepening our knowledge of its determinants. We will make an initial foray into this subject thanks to data from an ambitious survey carried out recently among older women which yields ample data about the cohorts born during the first half of the twentieth century and promises to change our understanding of the determinants of reproductive behavior during this period of fertility change.

Data and Methods

The data used in this study come from a recent survey carried out within the context of an on-going research effort to understand the determinants of fertility during the demographic transition in Spain.

The *Baby Boom and Bust Survey of Spain* was conducted between January and April of 2012, with a reference date for the survey of 1 March 2012 (hereafter, BBBS). The total sample consists of 1,021 interviews with women above 60 years of age. The BBBS is made up of a number of sections or modules addressing different aspects of women's reproductive histories as well as their current status of health and well-being (personal situation, partner history, reproductive history, health history, employment history, family of origin and values). The survey is representative for the entire country and thus far the initial results appear to suggest that the universe covered is closely associated with what we know of the population of Spain today (by age, region, and education). The most important advantages for this survey with respect to the first and subsequent rounds of the World Fertility in Spain (1977) are that it includes women born before 1928 (the earliest birth date for the WFS Spain survey) and also includes only women with completed reproductive histories (unlike the WFS). In addition, the BBBS contains ample retrospective information about reproductive health. In any case, our results will be compared with those coming from the WFS.

This survey includes several questions about use of different methods of both natural and synthetic fertility control: withdrawal, periodic abstinence, sterilization of the informant (tubal ligation), sterilization of main spouse/partner during her reproductive life (vasectomy), pills, IUD (intrauterine device), injections, diaphragms (cervical caps, sponges, spermicidal lubes), condom, and abortion. Other relevant information on the use of contraceptives methods was also collected by the survey: use frequency, periods of use, and main reasons for not using them. This rich information permits us to operationalize our dependent variable in different ways.

Several explanatory variables referring to the respondent have been used in the analysis: year of birth, number of children ever born, marital status, education, labor experience, partner social status, age at first child, age at last child, number of miscarriages, number of reproductive health problems, number of siblings of informant, and Spanish regions.

The explanatory variables were defined as follows:

Year of birth has been coded into seven birth cohorts: before 1924 (reference category), 1925-1929, 1930-1934, 1935-1939, 1940-1944, 1945-1950, and 1950-1954 so as to distinguish different stages in the Spanish Fertility Transition.

Number of children ever born as a measure of reproductive intensity.

Marital status. We expect that the likelihood of using contraceptives will be greater among women who are ever married (those most exposed to sexual intercourse).

Educational attainment has been grouped into three educational levels: those with primary education or less, those who finished secondary education and those who completed university studies. This rather limited distribution is due to the very low levels of educational attainment among Spanish women during this period. We expect more educated women to be more likely to use contraceptives.

Work experience identifies whether or not the informant has worked outside the household during the course of her life. We expect lower levels of contraceptive use among those who have not worked before.

Partner occupation has been coded into four occupational classes: high class, middle class, skilled workers, and non-skilled workers.

Age at first child and *age at last child*. Age at first child should be linked to marriage timing and age at last child will be related to the use of traditional forms of fertility limitation.

Number of miscarriages is a variable that indicates the number of pregnancies that did not end in a live birth. It includes miscarriages during the first three months of pregnancy, spontaneous fetal deaths during the last six months of pregnancy, and the infants dying at birth.

Number of reproductive health problems refers to the number of health problems of the informant during her reproductive years.

Number of siblings is an indirect indicator to measure the origin family size of the woman.

Region. As a way of control, Spain has been grouped into three main regions with different historical levels of fertility. The first region includes the North of Spain, Catalonia and Balearic Island. The second one includes the South of the country. And the last one includes the Center and East of Spain.

Summary statistics of these independent variables by contraceptive use and type of method for the full sample are shown in Table 1.

Table 1: Use of contraceptives and type among Spanish women.

CONTRACEPTIVES USE	No	Yes	Yes		
			Natural	Others	Both types
Total	29.8%	70.2%	36,4%	10,8%	23,0%
Birth Cohort					
Before 1924	56.3%	43.8%	33,3%	6,3%	4,2%
1925-1929	37.7%	62.3%	48,5%	3,8%	10,0%
1930-1934	37.9%	62.1%	44,8%	2,5%	14,8%
1935-1939	31.7%	68.3%	40,7%	10,3%	17,2%
1940-1944	24.1%	75.9%	35,7%	9,5%	30,7%
1945-1949	18.8%	81.2%	30,0%	18,3%	32,9%
1950+	20.5%	79.5%	9,6%	28,9%	41,0%
CEB					
0	80.6%	19.4%	8,1%	7,3%	4,0%
1-3	20.8%	79.2%	40,8%	13,1%	25,3%
3+	28.3%	71.7%	39,1%	6,0%	26,6%
Marital Status					
Single	85.1%	14.9%	4,5%	6,0%	4,5%
Married	22.9%	77.1%	34,0%	13,5%	29,6%
Sep/Div	19.6%	80.4%	27,5%	23,5%	29,4%
Widow	29.8%	70.2%	45,3%	6,5%	18,4%
Education					
Primary & Less	30.7%	69.3%	39,7%	7,9%	21,7%
Secondary	20.4%	79.6%	29,3%	20,4%	29,9%
Tertiary	36.7%	63.3%	13,3%	25,0%	25,0%
Labor Experience					
Without	31.9%	68.1%	37,2%	6,9%	24,0%
With	28.9%	71.1%	36,2%	12,3%	22,6%
Partner Occupation					
High	25.0%	75.0%	30,6%	19,4%	25,0%
Medium	26.7%	73.3%	31,0%	12,9%	29,3%
Skilled Workers	24.8%	75.2%	41,4%	10,4%	23,5%
Unskilled Workers	28.3%	71.7%	51,0%	3,4%	17,2%
Spanish Region					
South	27.0%	73.0%	41,5%	8,2%	23,4%
North	37.3%	62.7%	30,5%	13,6%	18,6%
East	23.3%	76.7%	34,4%	14,1%	28,2%
Center	33.7%	66.3%	37,0%	8,7%	20,7%
Means					
Age at first child	27.0	25.4	25,5	26,4	24,9
Age at last child	33.4	31.9	32,2	31,4	31,6
Number of miscarriages	0.3	0.3	0,3	0,3	0,4
Number of reproductive health	0.5	0.6	0,5	0,6	0,8
Number of siblings	4.2	4.0	4,0	3,6	4,2

Preliminary Results

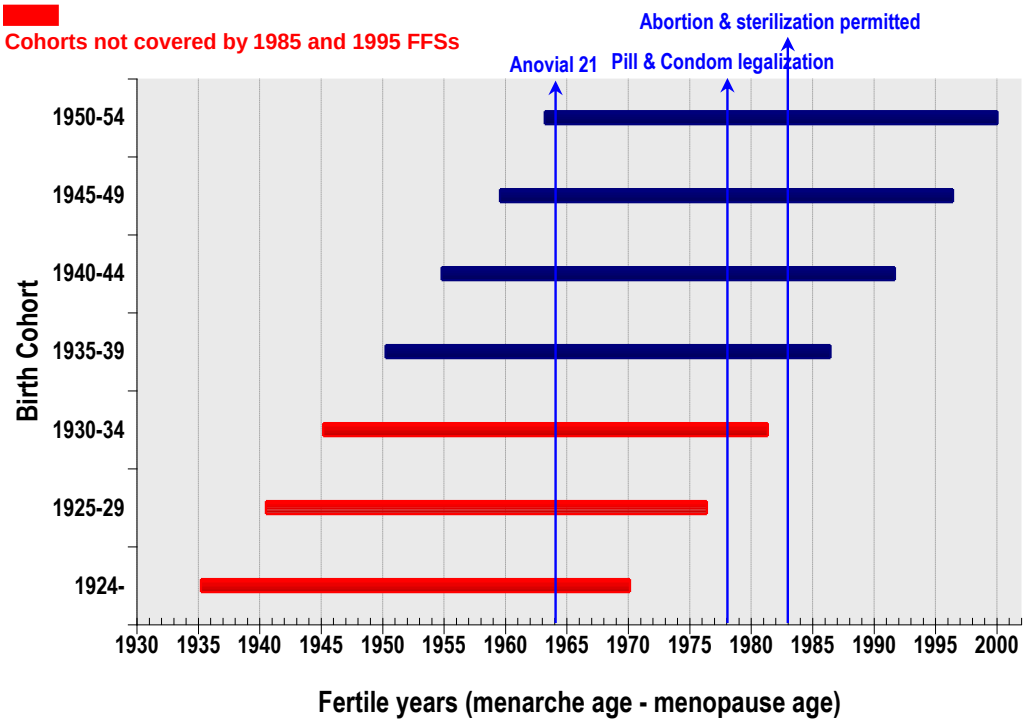

Figure 1: The Period & Cohort Frame of Our Analysis

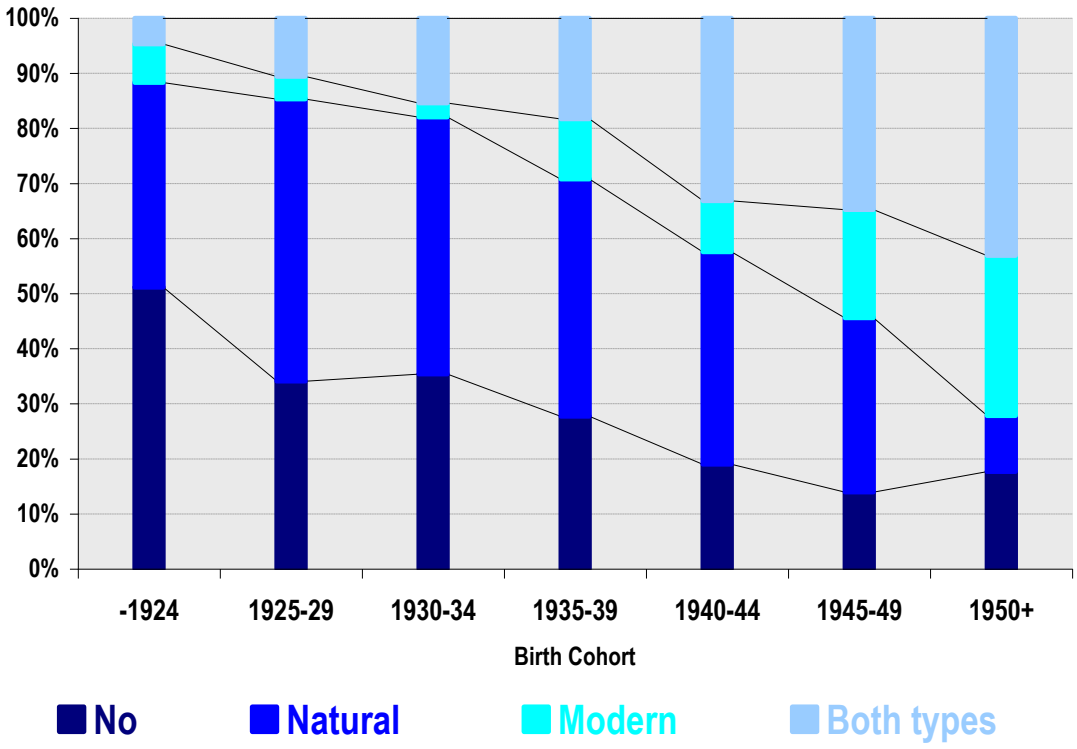

Figure 2: Contraceptive use among Spanish Ever Married Women

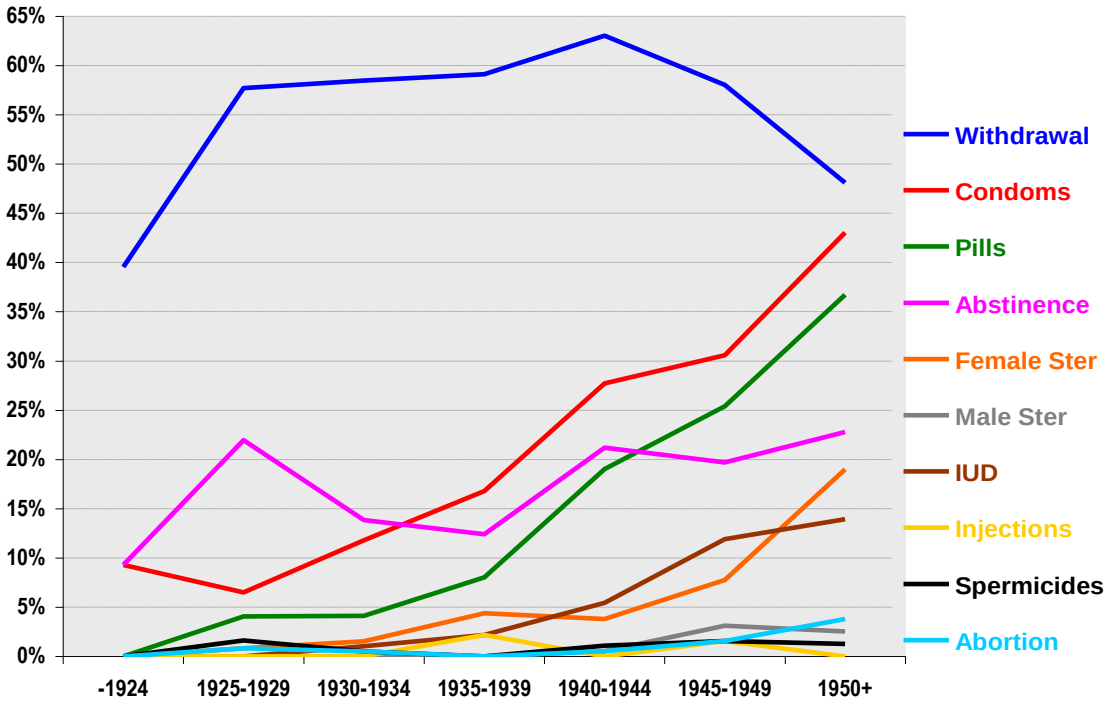

Figure 3: Ever Married Contraception Users by Type

Table 2: Logistic regression: Contraceptive Users vs Non-Users

Logistic Regression				**Ever Married Women**	
				Number of obs =	923
				LR chi2 (14) =	178.01
				Prob > chi2 =	0.000
Log likelihood = 873.574				Pseudo R2 =	0.175
	Coef.	**Std. Err.**	**z**	**P>z**	**OR**
COHORT					
-1924					
1925-29	0.594	0.393	2.284	0.131	1.81
1930-34	0.487	0.368	1.748	0.186	1.63
1935-39	0.834 *	0.391	4.563	0.033	2.30
1940-44	1.512 ***	0.396	14.592	0.000	4.53
1945-49	1.566 ***	0.403	15.088	0.000	4.79
1950-54	1.295 **	0.479	7.325	0.007	3.65
CEB					
0 Child					
1-2	2.773 ***	0.366	57.475	0.000	16.01
3	2.652 ***	0.390	46.367	0.000	14.19
4+	2.385 ***	0.384	38.648	0.000	10.86
AGE AT MARRIAGE	-0.036 *	0.017	4.535	0.033	0.96
EDUCATION					
Primary & Less					
Secondary +	0.459 †	0.260	3.124	0.077	1.58
HABITAT					
-10,000					
10,001-200,000	0.388 †	0.199	3.804	0.051	1.47
200,001+	0.928 ***	0.247	14.146	0.000	2.53
Cons	-2.293 ***	0.758	9.156	0.002	0.101

† p<0.10 * p<0.05 **p<0.01 ***p<0.001

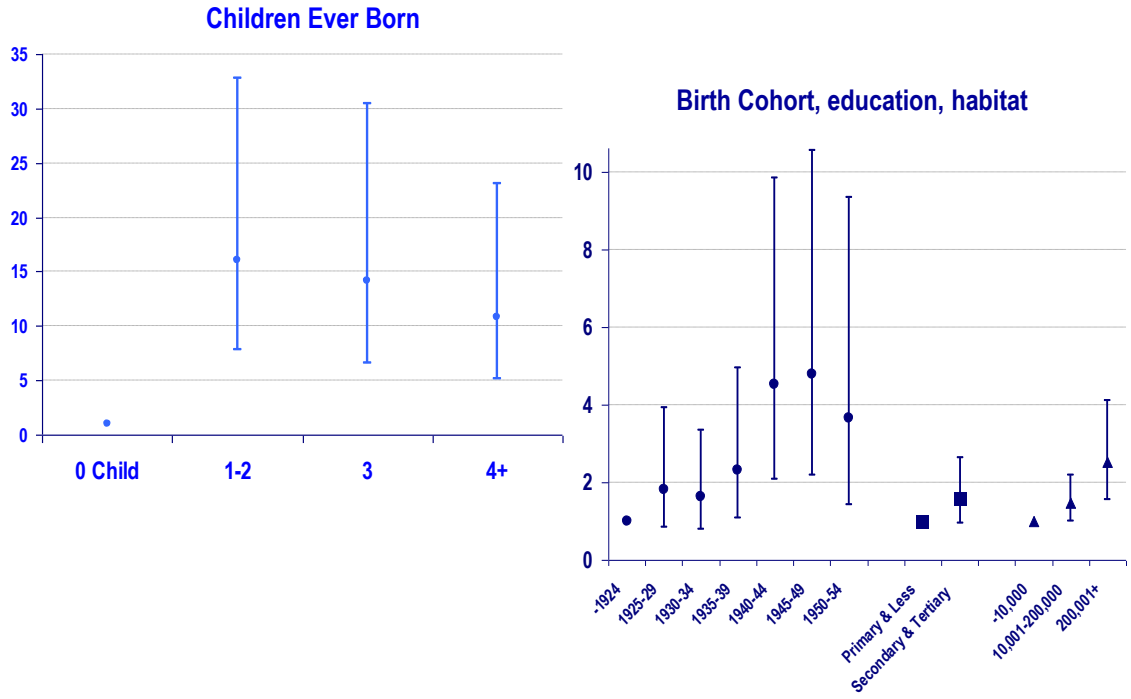

Figure 4: Ever Married Women: Adjusted OR - Contraceptive Users vs Non-users

Table 3: Logistic regression: Modern vs Natural Contraceptive Users

Logistic Regression			Number of obs =	684
			LR chi2 (10) =	129.82
			Prob > chi2 =	0.000
Log likelihood = 817.702			Pseudo R2 =	0.173

	Coef.	**Std. Err.**	**z**	**P>z**	**OR**
COHORT					
1925-29					
1930-34	0.353	0.339	1.086	0.297	1.42
1935-39	0.936 **	0.342	7.478	0.006	2.55
1940-44	1.416 ***	0.320	19.567	0.000	4.12
1945-49	1.764 ***	0.318	30.778	0.000	5.83
1950-54	3.114 ***	0.470	43.905	0.000	22.50
EDUCATION					
Primary & -					
Secondary	0.416 †	0.244	2.891	0.089	1.52
Tertiary	1.081 *	0.461	5.501	0.019	2.95
HABITAT					
-10,000					
10,001-200,000	0.342	0.228	2.258	0.133	1.41
200,001+	0.536 *	0.246	4.738	0.029	1.71
REGION					
South					
North	0.319 †	0.176	3.279	0.070	1.38
Cons	-1.858 ***	0.343	29.331	0.000	0.16

† p<0.10 * p<0.05 **p<0.01 ***p<0.001

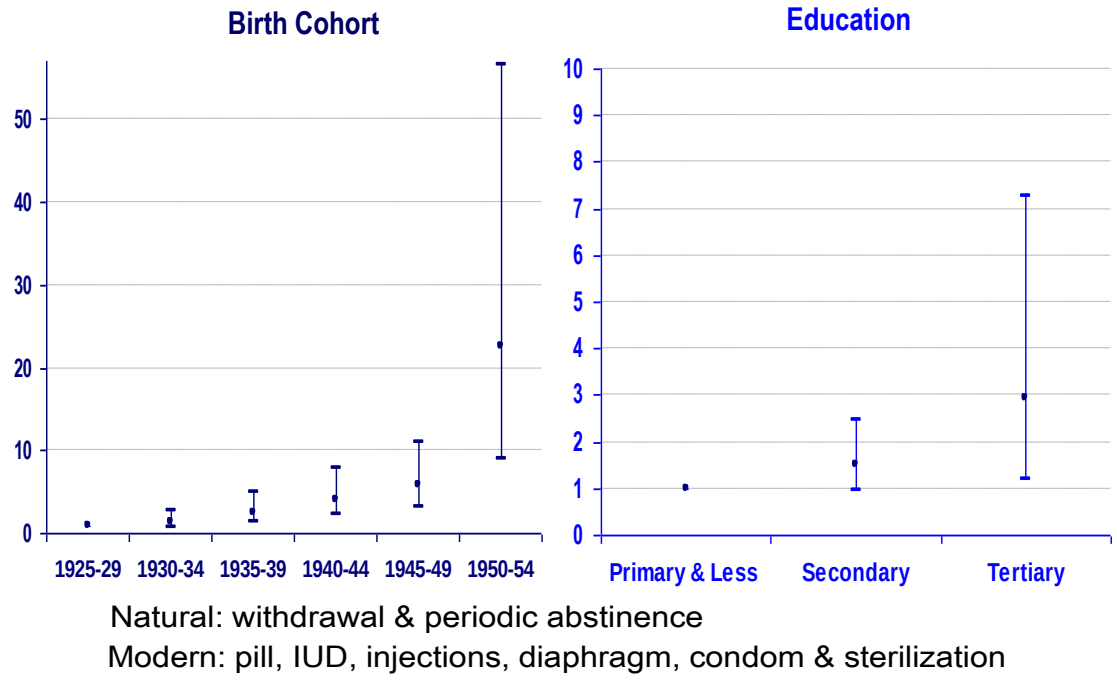

Figure 5: Adjusted OR: Modern vs Natural Contraceptive Users

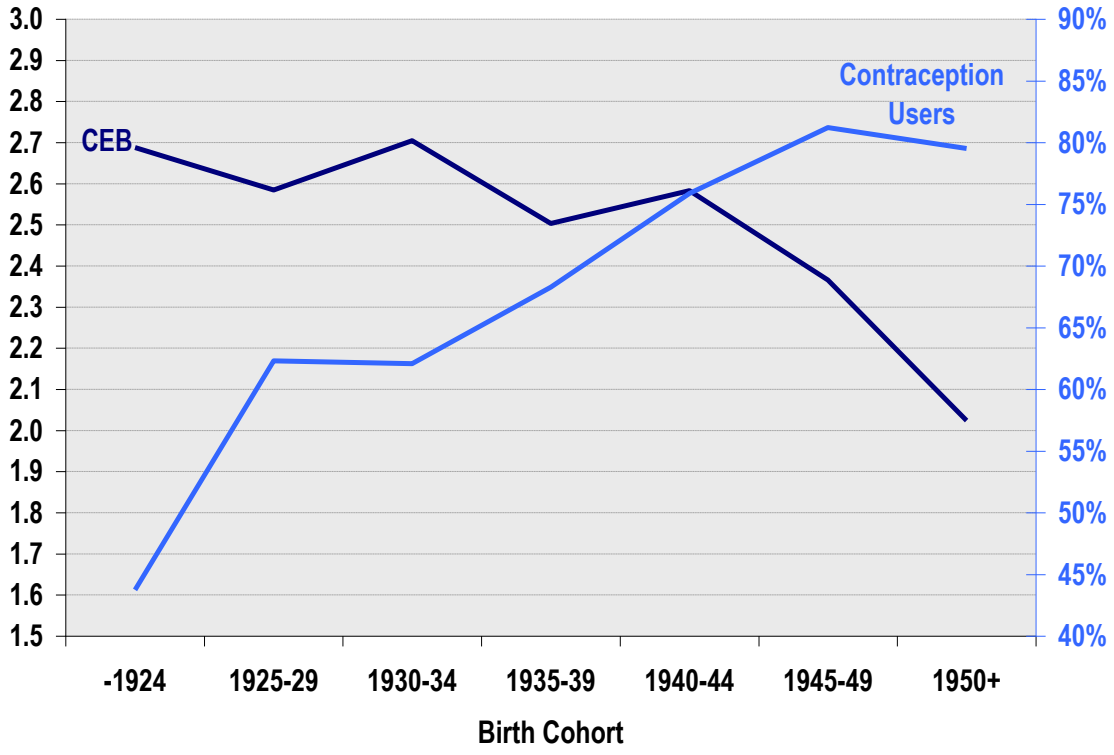

Figure 6: CEB and Contraception Users by birth cohort

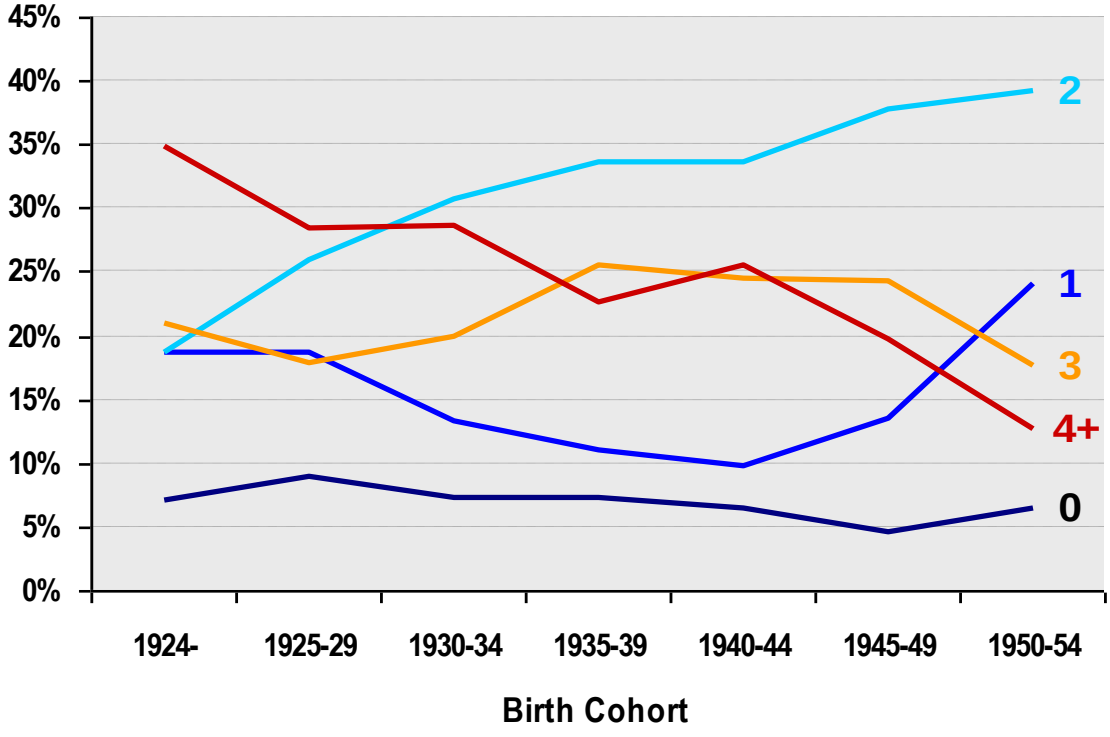

Figure 7: Completed Parity by birth cohort

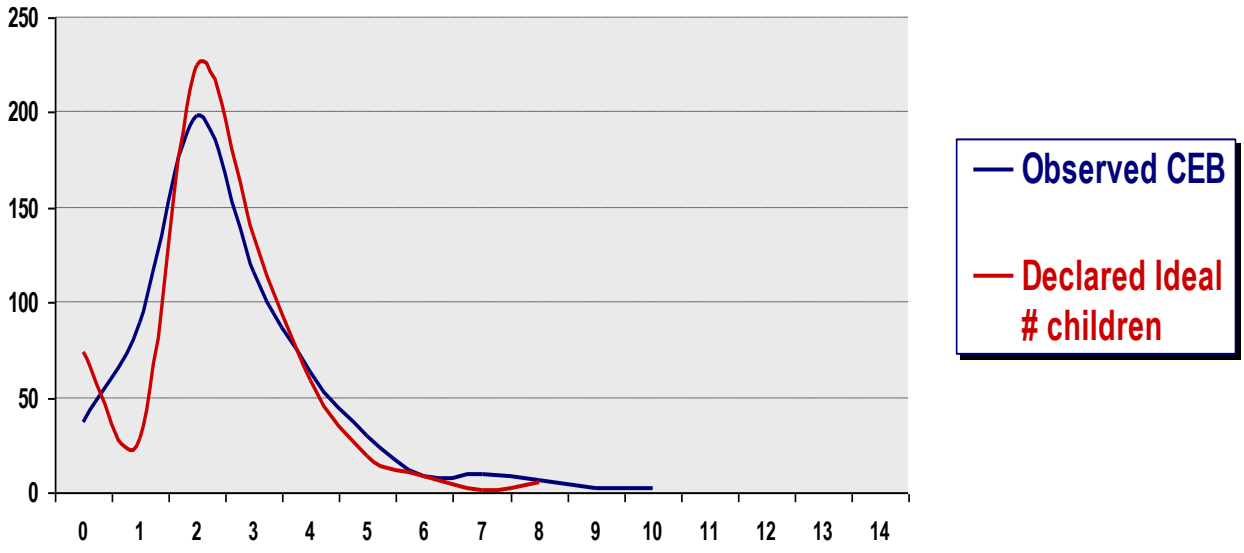

Figure 8: Ever Married Women: CEB and Ideal Number of Children

Table 3: Ever Married Women: CEB and Declared Ideal Number of Children

	Observed CEB	Declared Ideal # children	*R*		*p*	N
All Ever Married Women	2.46	2.55	0.215	***	0.000	561
Contraception Non-Users	2.04	2.39	-0.046		0.623	114
Contraception Users	2.68	2.48	0.290	***	0.000	447
Natural Contreception Users	2.75	2.40	0.319	***	0.000	215
Modern Contraception Users	2.31	2.18	0.403	**	0.001	67
Only Before Last Child	2.92	2.85	0.177		0.093	91
Only After Last Child	2.51	2.39	0.272	***	0.000	276

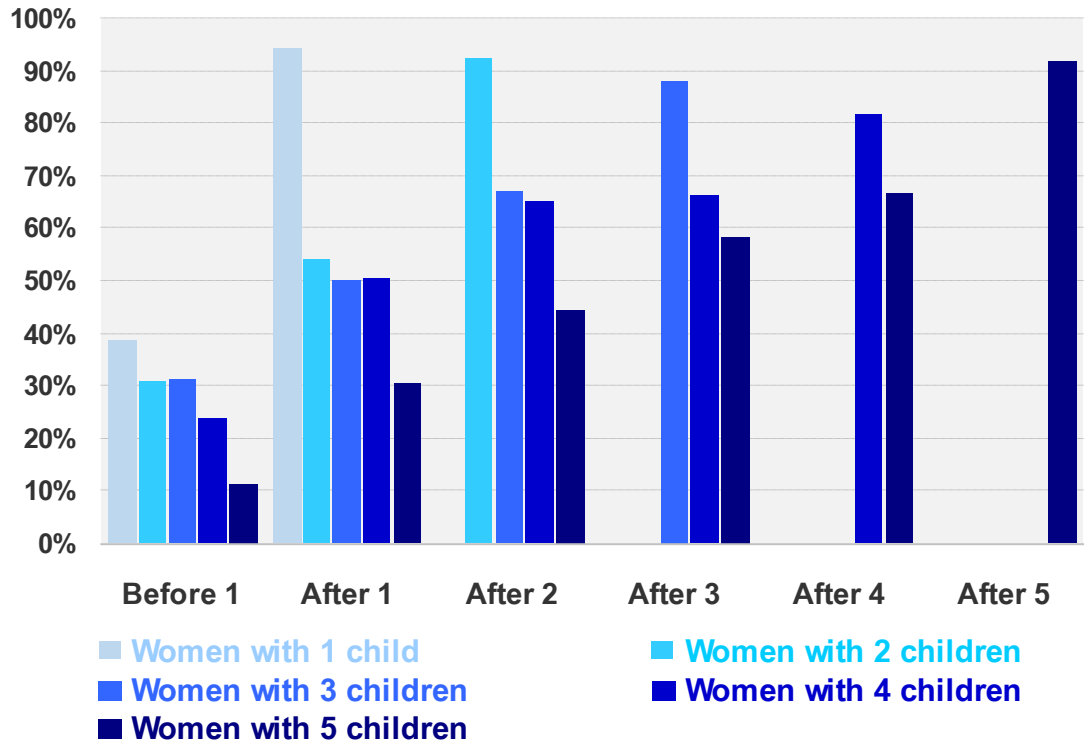

Figure 9: Ever Married Women. Timing of Contraceptive Use by CEB

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