FERTILITY

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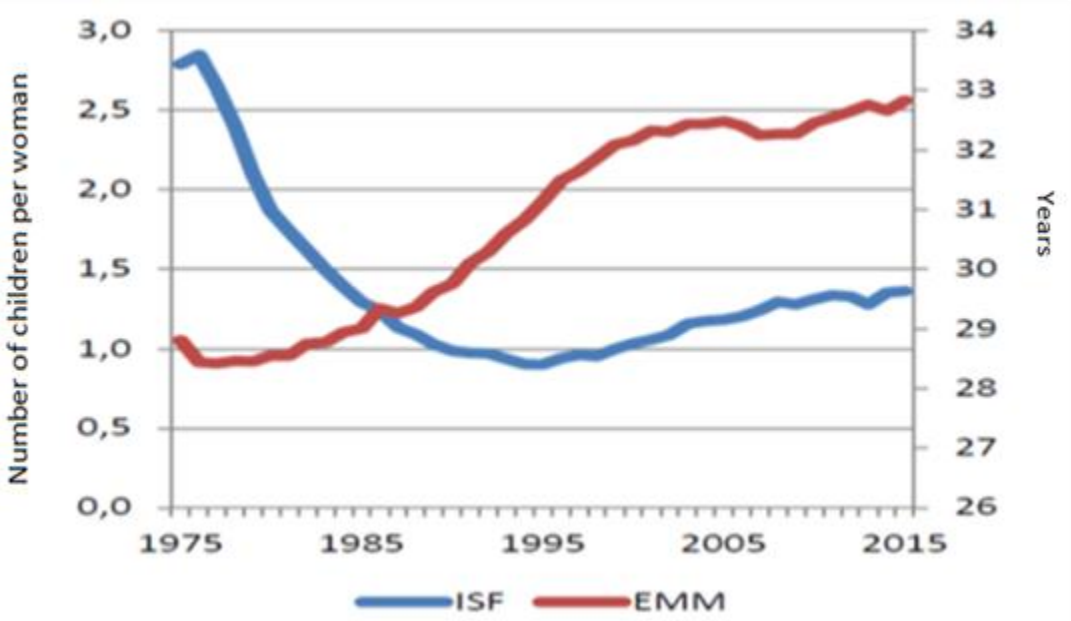
Over the last three decades there has been a significant transformation in the reproductive level and schedule of women residing in the Basque Country. The drop in fertility with the resulting reduction in numbers of children and young people had an impact on many areas such as education, health or the production of goods intended for this group. However, the decline in child and youth population was proportionately lower than the drop in fertility due to an offsetting effect: the increase in the number of people of child-bearing age, a result in turn of high fertility in the 1960s and 70s. Conversely, the decline in birth rates in recent decades will lead to a reduction in the population of reproductive age in the coming years with a negative impact on the future development of birth numbers, even if the fertility rate recovers.

Recent decades have shown a very marked decrease in population fertility levels with a reduction in the average number of children per woman from 2.84 in 1976 to minimum levels of 0.9 in the mid 1990s, followed by an upturn to 1.36 children in 2015 (Graph 1 and Table 1). This reduction can be explained, firstly, by the virtual disappearance of third children and large families in general, since order 3-and-over fertility is currently at 0.14 children per woman, a level six times lower than that observed in 1975. This fall in the birth rate was accompanied by sharp drops in first and second child fertility levels which have the greatest impact on total fertility with decreases of 30 and 45 percent respectively between 1975 and 2015. The unequal pace of reduction in fertility according to birth order has led to an increase in the proportion of first children in the total, corresponding to 53 percent in 2015 when in the mid 1970s they represented 40 percent.

Graph 1: Development of TFR and MMA in the Basque Country. 1975-2015



Another key dimension of fertility, related to the life cycle of people and families, is maternal age. Undoubtedly, the most significant development in recent decades was a six-year increase in the age of entry into reproductive life, i.e. of first maternity, which is currently around 32, possibly the highest in all the regions of Europe. Such a high age of first maternity means that a significant proportion of women think about having their second or third child after the age of 35, when the biological probability of pregnancy and a live birth begins to fall. Currently, Basque women have their second children when they are over 34, which is also the average age for third and further children (these last two figures are identical precisely because of a delay in the schedule since at present women who have third and further children are mainly those who had a first and second child at a younger age due to the biological constraint mentioned above).

Table 1: Development of TFR and MMA expressed as totals and by order. Basque Country 1975-2015

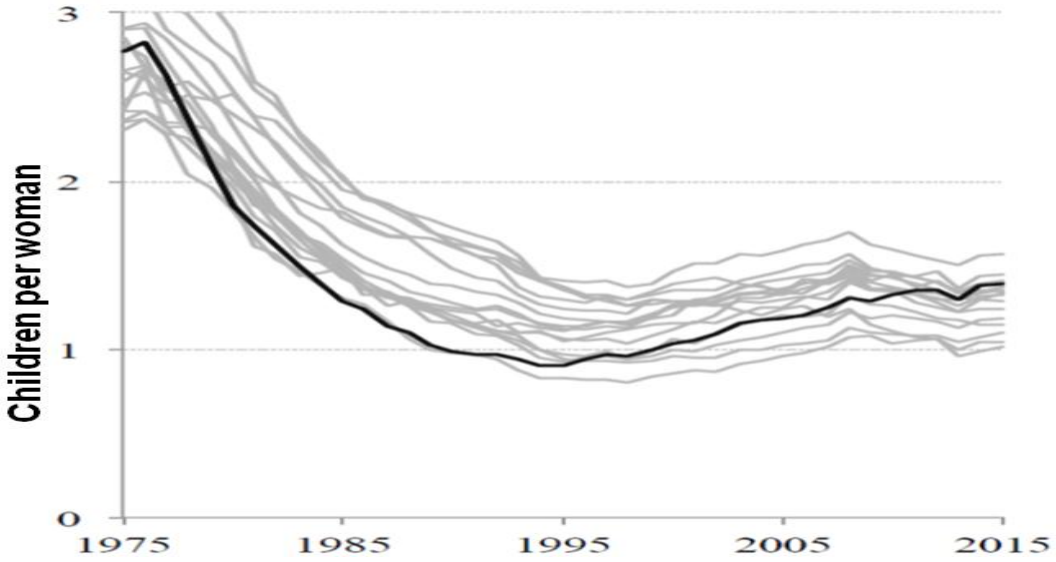
	1975	1980	1985	1990	1995	2000	2005	2010	2015
TFR									
Total	2,78	1,86	1,29	0,98	0,90	1,03	1,18	1,31	1,36
1 child	39%	44%	48%	52%	57%	57%	57%	55%	53%
2 children	31%	34%	36%	38%	36%	37%	37%	36%	37%
3+ children	30%	23%	16%	10%	7%	6%	7%	9%	10%
MMA									
Total	28,8	28,5	29,0	30,2	31,6	32,7	33,0	32,9	33,3
1 child	25,7	25,8	26,9	28,6	30,4	31,5	31,7	31,8	32,2
2 children	28,7	29,0	29,7	31,5	32,9	34,0	34,6	34,4	34,6
3+ children	33,0	33,1	33,8	34,2	35,0	35,3	35,5	34,6	34,5

In the most recent five-year periods, fertility levels have recovered from the record lows of 1994-95 with a rate below 0.9 children per woman to reach 1.34 children in 2015, i.e. a 50 percent increase in two decades. The key question is whether this trend will continue in the future as a result of a more lasting change in reproductive behaviour or it will be a temporary phenomenon as women make the move into motherhood that they had delayed at a younger age. The answer to this question would lead to a future development hypothesis of a continuing upward trend or one in which the current level remains constant.

An interesting observation is that the upturn in the fertility rate was more intense in the Basque Country than in the rest of the Autonomous Communities (Graph 2). Whereas the Basque Country was characterised during much of the 1980s and the first half of the 1990s by having the lowest levels of fertility, in the most recent five-year periods it has been one of the regions with the highest fertility rates. This improvement in relative position can be explained by a more intense upturn in delayed fertility due to the low levels attained in previous years, but also because the upward trend continued until the most recent period while in most Autonomous Communities it had fallen as a result of the situation of financial crisis.

The development of fertility according to the mother's age allows us to identify two long periods (Table 2). In the first one, from 1975 to 1985, there was a general drop in fertility that affected all age groups. The decline was very intense in ages that are traditionally more fertile, with a reduction in the fertility rate of 50 percent for ages 25 to 29 and 72 percent for ages 20 to 24 in just one decade. In the second period, since the mid 1980s, the predominant phenomenon has been the increase in fertility from age 30 onwards due to the increase in the age of first maternity; two stages can be identified depending on the general level of fertility. In the first stage the upturn in rates for women over 30 was not enough to compensate for the drop that occurred in the rates for lower age groups, which caused the average number of children per woman to continue falling until the mid 1990s. What changed profoundly was the fertility schedule as the 30 to 34 set dislodged age 25 to 29 as the most fertile group and the rates for the 35 to 39 set were greater than those for age 20 to 24. In the second stage, from 1995 onwards, TFR began to recover due to a slowdown in the decline in fertility rates at younger ages and because the upward trend continued for the over 30s, which explains the 90 percent increase in total fertility from 1995 to 2015. The most notable development is that women aged 35 to 39 currently have rates that are twice those of the 25 to 29 set, while in 1975 the latter were three times higher than the former.

Graph 2: Comparison of development in the Basque Country and the remaining Autonomous Communities. 1975-2015



Note: the graph does not include data for Ceuta and Melilla.

Table 2: Development of five-year fertility rates. Basque Country 1975-2015 (rates per thousand)

Rate	1975	1980	1985	1990	1995	2000	2005	2010	2015
15-19	16	16	9	3	2	2	4	5	4
20-24	133	87	44	21	10	9	12	19	16
25-29	201	134	104	68	46	36	36	41	42
30-34	123	85	68	76	85	98	102	100	102
35-39	62	38	25	23	33	54	70	79	84
40-44	20	11	6	4	4	7	12	17	21
45-49	2	1	1	0	0	0	1	1	2
TFR	2,78	1,86	1,29	0,98	0,90	1,03	1,18	1,31	1,36

This general pattern has been modified in recent years by an upturn in fertility for women under 25. However, this break was not the result of a change in behaviour, i.e. the reproductive schedule being brought forward, but a consequence of the arrival of foreign women with a younger pattern of fertility. The role played by this immigration can be seen in the development of the proportion of children born to foreign mothers in the total number of births. This percentage increased considerably for children born to mothers under 30 to the extent that from 2007 to 2015 babies born to foreign women represented the majority of births among mothers under 25 residing in the Basque Country and still accounted for 47% of the total in 2015, despite the reduction in immigration from abroad. In other words, without the effects of this immigration, fertility rates for younger ages would have continued on a downward trajectory as they had been doing since the mid 1970s.

A second aspect worth noting is that the increase in fertility between 1995 and 2015 can be explained firstly by the development of order 1, which rose from 0.52 to 0.72 first children per woman

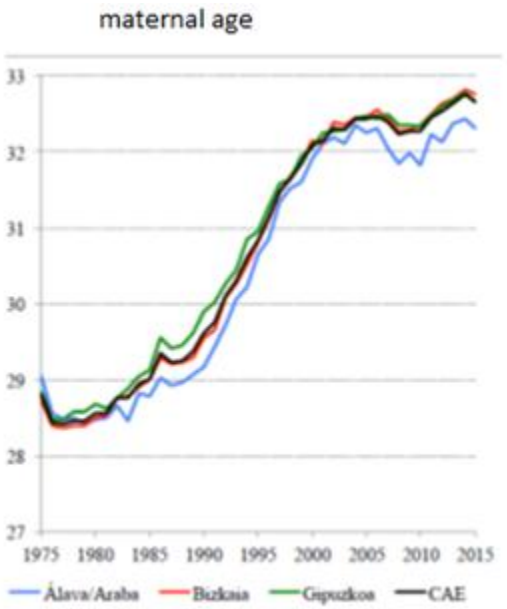
and contributed 44 percent to the overall increase in TFR (Table 3). This tendency, and the concentration of the upturn in ages over 30, allows us to answer the question posed above: Does the increase in TFR indicate a change of trend towards greater fertility or is it a consequence of a schedule adjustment, a variation in childbearing ages? The increase in order 1 from a very low level in 1996 and the marked variations in their schedule indicate that fertility has been influenced more by the upturn effect of maternity that had been delayed at younger ages than by a variation in intensity, i.e. the number of children that women will ultimately have.

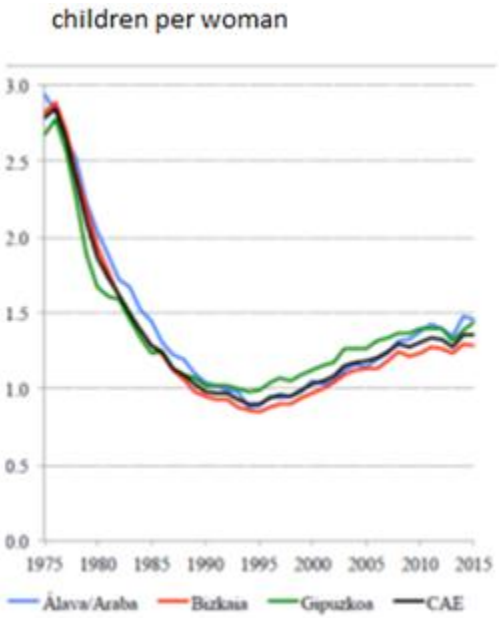
Table 3: Development of fertility rates by birth order. Basque Country 1995 and 2015 (rates per thousand)

	All orders		Order 1		Order 2		Order 3 and over	
	1995	2015	1995	2015	1995	2015	1995	2015
15-19	3	4	2	4	0	0	0	0
20-24	12	16	9	11	2	4	0	1
25-29	53	42	39	28	12	11	1	4
30-34	82	102	43	59	35	34	5	9
35-39	28	84	10	34	14	40	5	10
40-44	3	21	1	8	1	10	1	3
45-49	0	2	0	1	0	1	0	0
TFR	0,90	1,36	0,52	0,72	0,32	0,50	0,06	0,14

Finally, the analysis of fertility patterns by Province allows us to identify trends and differences, either permanent or temporary, that will continue or lessen in the coming years (Graph 3). Among the changes, it is worth noting that over the last twenty years Guipúzcoa has inverted its relative position in the Basque Country to become the most fertile Province, while the development in Álava and Vizcaya showed greater similarity in both rate and tendency up to 2005. However, in the most recent period a greater relative increase in fertility is observed for women residing in Álava, which is largely explained by the proportion of children born to foreign mothers. As regards the schedule, Álava has been characterised since the 1980s by a significantly lower mean maternal age than the other Provinces while the greatest delay is found in Guipúzcoa. These differences are explained by higher fertility rates for under 25s in Álava due to the greater relative impact of immigration on fertility in this Province. The current situation is characterised by a fertility level ranging from 1.28 children per woman in Vizcaya to 1.46 in Álava, while the average maternal age varies from 32.3 in Álava to 32.7 in Vizcaya.

Graph 3: Development of Total Fertility Rate and Mean Maternal Age. Basque Country and Provinces. 1975-2015





Generational analysis

It is important to complete the previous analysis on a generational basis. Indeed, Total Fertility Rate (TFR) for these years tends to fluctuate more over time than the value of the similar indicator for generations, Eventual Family Size (EFS), which remains more stable. The difference between the TFR and EFS values is due to the change that occurs in the maternal age of the generations. The relationship between both indicators can be expressed by the following equation[1]:

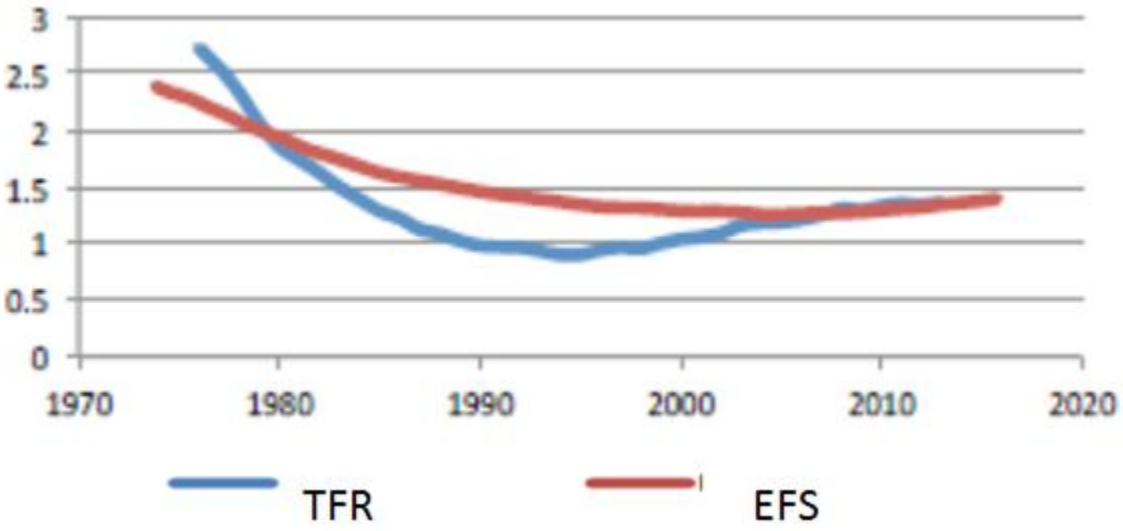
$$TFR'_{g+m_g} \approx EFS'_g \cdot \left(1 - \Delta m_g\right)$$

where g is the year of birth of a generation, m_g is its mean maternal age and Δm_8 is the variation of that age in relation to the generation born the previous year.

This equation allows us to explain the difference between fertility values at a given time (TFR) and for generations (EFS) during the period 1976-2015 in terms of the variations in the maternal age of the generations. As such, for total fertility (Graph 4), it can be observed that the rates at a given time are lower than those for generations during the entire period of the delay in maternal age, until the year 2005 approximately. On the other hand, from that year onwards the level of the mean maternal age stabilises, which explains why the fertility values at a given time and for generations are very similar in recent years, with values close to 1.4 children per woman for the Basque Country. One significant consequence of this is the observation that the increase in TFR values from 1995 cannot be explained by an increase in the generations' fertility, which continues to decrease until the second half of the 2000s. This increase in TFR from 1995 can therefore be explained by a schedule effect, specifically a slower pace in the process of delaying maternal ages.

[1] N B Ryder (1964), "The Process of Demographic Translation", in *Demography*, vol 1, no. 1, pp.74-82.

Graph 4: Comparative development of the fertility rate at a given time (TFR) and for generations (EFS) in the Basque Country

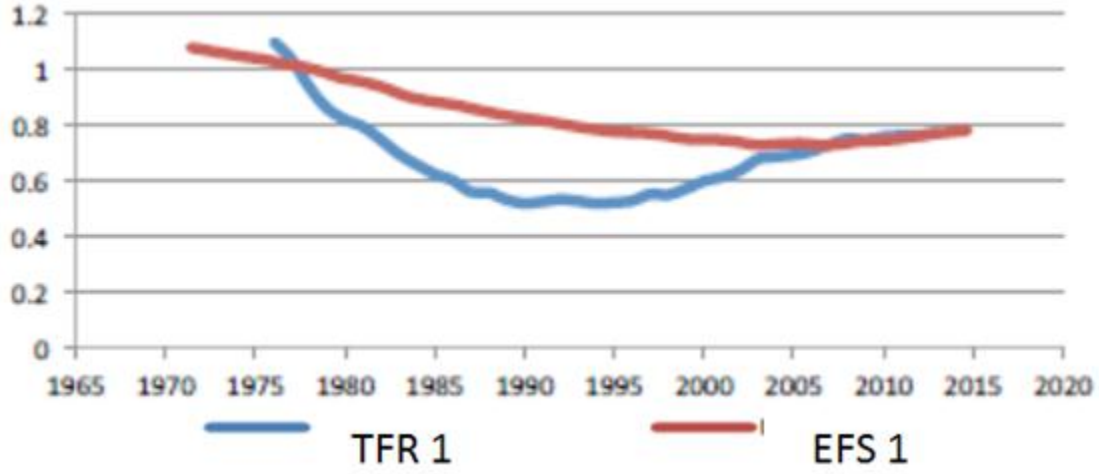


Note: for TFR, values observed up to 2012. For generations, the EFS value is partially estimated for all generations, except those born in the 1960-67 period. The EFS value for generations is represented on the graph at the time corresponding to their year of birth plus their mean maternal age. For example, the 1960 generation has an EFS value of 1.47 for the Basque Country. The value is represented on the graph in the middle of 1988 when this generation reaches its mean maternal age.

Using the same methodology, it is possible to explain why the level for the fertility rate at a given time for order 1 attained such low values, close to 0.5 first children per woman, during the decade of the 1990s (Graph 5). Indeed, the corresponding value for generations was around 0.8 children during that period and the difference between the two indicators can be explained by the pronounced delay in the age of first maternity.

The values for this indicator may also be interpreted in another way since if the one's complement is calculated, the proportion of women without children, or definitive childlessness, is obtained. For example, the Eventual Family Size value for order 1 in the generation born in 1974, which, according to the values for this projection, reached the age of first maternity in 2005, would be 0.7 first children per woman. This means that 30 percent of women in that generation will not have children at age 50, i.e. they will be childless. According to the results of this prediction, minimum fertility for order 1 and therefore maximum childlessness would correspond to this generation. Extrapolation of the rates by age leads to a prediction of a reduction in the level of childlessness to about 22 percent for the generation born in 1982 that will reach its average age of first maternity in 2015.

Graph 5. Comparative development of the fertility rate for order 1 at a given time (TFR_1) and for generations (EFS_1) in the Basque Country



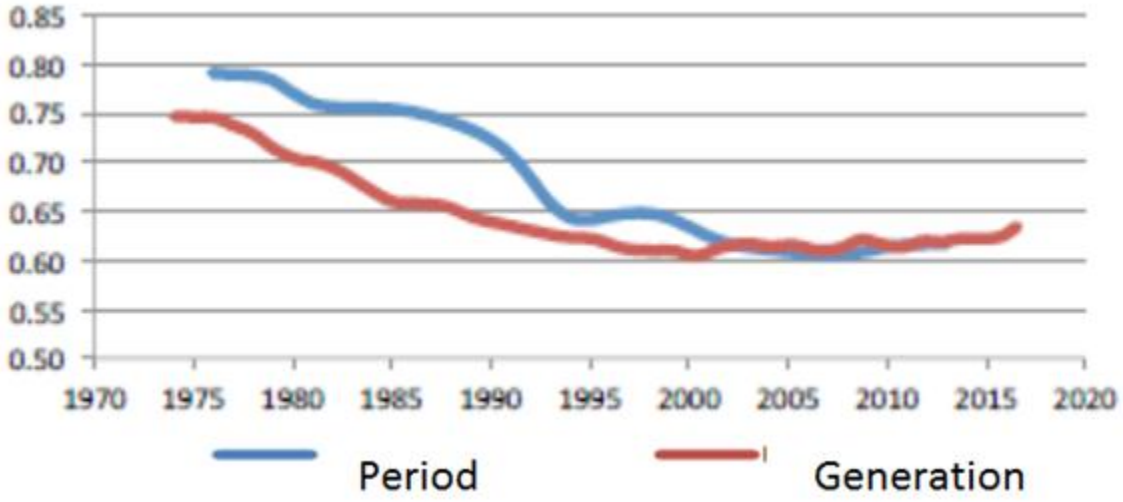
Note: for TFR_1, values observed up to 2012. For generations, the EFS_1 value is partially estimated for all generations, except those born in the 1960-64 period. The EFS_1 value for generations is represented on the graph at the time corresponding to their year of birth plus their mean maternal age. For example, the 1960 generation has an EFS_1 value of 0.87 for the Basque Country. The value is represented at the beginning of 1987 when this cohort reaches its mean maternal age.

This increase in fertility for order 1, and the resulting reduction in the level of childlessness, is largely a consequence of the recent growth in fertility for women under 25 due to the arrival of the immigrant population. If the flow of immigration slowed down, the reduction in childlessness would be smaller than expected. Another conditioning factor that should be considered is the role of biological constraints from age 30 onwards since women's chances of having their first child decrease due to the increase in infertility with age, reduced fertility and the increased risk of pregnancy loss due to natural factors. The projection for order 1 leads to a very significant increase in fertility rates over the age of 30, which may be uncertain due to these constraints. By contrast, the introduction and wide availability of assisted reproductive technology may mitigate the impact of biological constraints. This is a relevant issue since the level of order 1 fertility largely determines that of total fertility.

Finally, an indicator was used that measures the proportion of women who with a certain number of children have another child, i.e. the "probabilities of enlargement". A probability was calculated for order 2 births that indicates the proportion of women with one child who had a second child ($_{p1->2}$) and for the higher orders the probability for women with two children and over having another child ($_{p2+->3+}$).

In the Basque Country, the proportion of women with one child who had a second child dropped from 0.7 in the 1980s to 0.6 in the period 1995-2006. Stability in behaviour can be observed for this range and the 2025 horizon projection maintains the probability value between 0.6 and 0.65 second children for women who already have one (Graph 6).

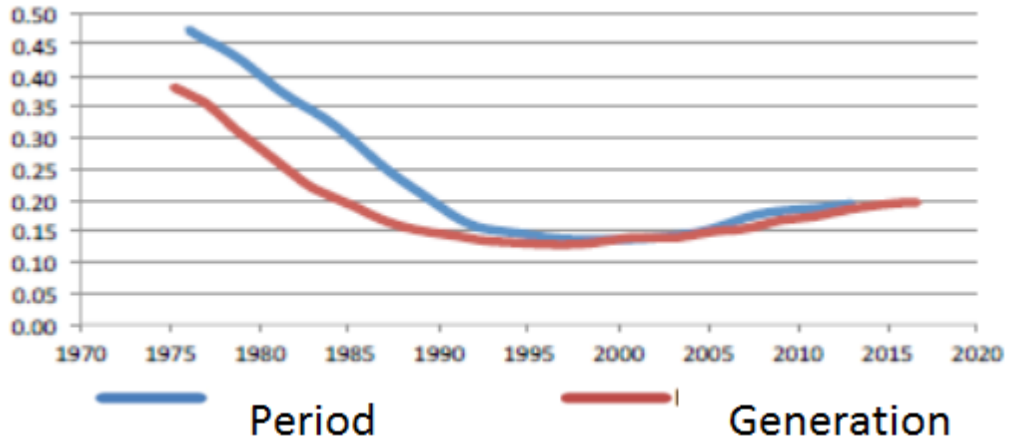
Graph 6. Development of values at a given time and for generations for the probability of enlargement for women with one child ($p_{1->2}$). Basque Country.



Note: $_{p1->2}$ is the proportion of women with one child who had a second child. For the values at a given time or for a period, the data are observed up to 2012. For generations, the probability value is partially estimated for all generations, except those born in the 1960-67 period. The probability value for generations is represented on the graph at the time corresponding to their year of birth plus the appropriate mean maternal age.

For order 3 and above, there is a generalised, significant decrease in the probability value of having one more child for women who already have 2 children and over. In the 1970s, a period corresponding to generations born in the late 1940s and early 1950s, between 40 and 50 percent of women with 2 children and over had another child. This proportion drops to 15 percent in the most recent period, with a slight upward trend in recent years (Graph 7)

Graph 7. Development of values at a given time and for generations for the probability of enlargement for women with 2 children and over ($_{p2+->3+}$). Basque Country.



Note: $_{p2+->3+}$ is the proportion of women with 2 children and over who had another child. The procedure followed to represent the values at a given time and for generations with the same time scale is the same one used for the lower ranges.