Predicted happiness from childbearing, Intentions and Fertility Outcomes.

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Abstract

Using longitudinal data from the Generations and Gender Surveys (for Bulgaria, France and Italy) we study the determinants of predicted happiness associated with childbearing and then its role for explaining realized childbearing. "Expected happiness" as declared by individuals, is indeed a powerful predictor of their fertility behavior. Those who expect to be happier from childbearing, have indeed a much higher probability of having a child within the next three years. But the results also show strong gender and country differences in the level of expected happiness and its effect on fertility behavior. For instance, in Italy we see that individuals tend to have a strong association between expected happiness with childbearing, whereas realized fertility is low. We then study how predicted happiness from childbearing is connected to fertility intentions. The two measures appear to be strictly connected, suggesting that expectations about the effect of having a child is important for the formation of positive fertility intentions. In particular, intentions seem to mediate the effect of expected happiness from childbearing on the fertility behavior. What separates this study from recent papers considering happiness and fertility, is that in the GGS the question about happiness is specific with respect to childbearing. Previous studies tend to focus on overall happiness, which has the drawback of first - having relatively low variation in responses, and second - it refers to the general level of happiness, which incorporates a whole range of factors - not only children. Moreover, in this study we bring together two different strands of literature, namely the one on happiness and childbearing and the one on the role of intentions.

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1. Introduction

Low fertility has important implications for our societies, and given its persistency, scholars and policy makers have taken a strong interest in explaining its pattern and trends. Traditional theories concerning demographic transition have not been particularly successful in explaining contemporary fertility trends, and they certainly fail to explain persistent below-replacement fertility levels as we observe in so many societies (see Balbo et al 2012 for a review). As a result, demographers have started to look towards alternative theoretical perspectives. One recent strand of this literature concerns the relationship between subjective wellbeing and childbearing. This is an interesting development in demographic analysis, since having children is increasingly viewed as part of a series of choices aimed at the self-realization of the individual. As a result, Billari and Kohler (2009) make the suggestion that subjective wellbeing might be the "missing link", suggesting that fertility choices is an important part of individuals' quest for happiness and satisfaction. Consequently, studies of childbearing and subjective wellbeing has flourished in recent years (Kohler et al 2007, Margolis and Myrskale). Whereas these papers have improved our understanding of the role of subjective wellbeing for fertility outcomes, one important drawback is that it tends to use a general measure of subjective wellbeing, such as the level of happiness or general life satisfaction (Kravdal 2013). This is problematic for two reasons. First, an individual's subjective wellbeing depends on a whole range of aspects and not only children. Secondly, individuals may vary widely in their preferences for children, which may in turn affect their reported subjective wellbeing when having children. For instance, someone with three children, and who also had the preference for having three children, would presumably - all else equal - be more satisfied. On the other hand, an individual with the same preference (i.e. preference for having three children), but who ended up with *no* children, would presumably have a much lower level of subjective wellbeing, which would again contrast with a childless couple who had preference for having no children - again leading to a higher subjective wellbeing - all else equal. This paper deals with this issue head on. Instead of using a general measure of subjective wellbeing, we consider directly how individuals predict their wellbeing to become if they have another child. For this we use the Generations and Gender Survey (GGS), which in every round include a question about how childbearing may improve (or decrease) ones perceived wellbeing. Though still subjective in nature, the measure has the advantage over the more general measures in that it captures individuals' preferences for childbearing. A key question however, is to what extent such individual predictions

actually make good predictors for actual childbearing outcomes. We test this by considering childbearing outcomes as recorded by the follow-up wave of the GGS made three years later.

The set-up just described relates to another key development in fertility analysis, namely that of childbearing *intentions*. Recently, a wealth of studies have followed up on the Theory of Planned Behaviour (TPB) to understand to what extent individuals and couples intend to have children, and several studies then follow up by considering to what extent intentions are followed by childbearing realizations. An intention refers to the way couples are planning to have children in the near future (in most surveys the reference period is within the next three years). TPB then postulates that intentions are driven by three aspects, namely own attitudes toward a certain behavior, perceived ability and social influence. Our study demonstrates that predicted happiness from childbearing is closely connected to intentions. Consequently, our analysis brings together two recent strands of fertility analysis and it does so by responding to the criticism made towards the literature concerning subjective wellbeing and fertility. On one hand this means that intentions can be used as proxy for how individuals predict their wellbeing to be if they have children. On the other hand, it brings further insight to the meaning of what an intention is. Our analysis would suggest that the sensation of increased wellbeing if individuals are able to acquire the subject of interest - here referring to childbearing- is an important component of intentions.

2. Background

The *value of children* approach, first introduced by Hoffman and Hoffman (1973) and re-proposed by Friedman et al. (1994), considers fertility as the outcome of purposeful decision-making. Individuals choose to have children on the basis of their perception of the current situation and their expectations about the future. They will decide to have a child if they believe that the benefits provided outweigh its expected costs. From the researchers' point of view, the idea is that taking into account the positive and negative consequences of childbearing helps us to understand fertility-related decision-making. Consequently the approach has improved out comprehension of fertility trends and the process of declining fertility (Buhler, 2006). Related to this perspective, Billari (2009) and Billari and Kohler (2009) argue that the *commonality* in demographic decision making is the natural desire of individuals to increase their wellbeing. Individuals would decide to have a child if they expect to have a positive impact on their lives. Recently, a number of studies have focused on the link between subjective wellbeing and childbearing as an explanatory key to understand fertility choices. Many of these are based on cross-sectional data sources. For example, Aassve et al (2012) use the European Social Survey focussing on European countries, whereas Margolis and Myrskyla (2011) undertakes a similar analysis based on the World Value Survey (WVS), thereby giving a more global perspective on happiness associated with childbearing. This is an interesting approach, because it informs us about how country characteristics may matter for the way individuals associate subjective wellbeing with having children, and is therefore informative in explaining fertility trends. For instance, Aassve et al (2011), compare levels of reported happiness within countries with different fertility levels and focus on how institutional settings and welfare provision affect happiness associated with childbearing.

Another line of analysis considers subjective wellbeing and childbearing using longitudinal data. In contrast to the cross-sectional comparative perspective, individuals are followed over time, and their reported happiness is held up against childbearing events. The use of longitudinal data is important when trying to estimate a causal relationship between subjective wellbeing and life events. Indeed, if evidence show that happiness and, for instance, marriage are strongly correlated with several measures of subjective wellbeing, it is also likely that these events are related to the level of happiness prior to the event. In other words, relatively happy individuals may have a higher probability of getting married than unhappy ones (Clark et al. 2008). Clark et al. (2008) use the German Socio-economic panel to follow individuals before and after a number of economic and demographic events, including childbearing. Their findings show that, while the recent arrival of a child has a positive effect on women´s life satisfaction, it has little impact on men´s happiness, and

in the long run the impact is negative for both parents. Myrskyla and Margolis (2012), using both the British and German panel data sets with fixed effect estimation, demonstrate the way happiness changes both before and after childbearing events, and also how it differs by parity and other individual characteristics. Their results show that in general, happiness increases in the years around the birth of the first child, for then to decrease to pre-birth levels. However, there is important variation in both the short- and long-term effects on parental wellbeing by parity and socio-demographic characteristics. Although the first two children increase happiness, the third does not. They also find that those who have children at older ages and those with higher socioeconomic resources have more positive and long lasting impact on reported happiness. Taking a different approach, Kohler et al. (2005) use a sample of monozygotic twins to estimate the contributions of marriage and children to subjective wellbeing-or happiness. Using this specific data, they are able to control for many unobserved factors affecting both happiness and demographic behaviour, and therefore getting closer to the causal effect of children and marriage for subjective wellbeing. Their findings show that the general effect of children on subjective wellbeing is remarkably small, being insignificant for women, while significant, but with very low impact for men. However, when the impact of children is decomposed by parity, they find that the arrival of the first child has large positive effect on both women and men, while higher order childbearing events have no significant effect, and if at all, it appears to be negative. Similar results are found by Baranowska and Matysiak (2011) who use longitudinal data to study the impact of childbearing on individual-happiness in Poland. Their findings show that parenthood is an important determinant of subjective wellbeing for women, but not for men, and that the impact of children on individuals´ happiness depends on parity. The arrival of a first child increases the well-being of new mothers, while the effect of second or higher order births is ambiguous. Women with two children declare to be happier than childless ones, but the birth of a second child does not increase wellbeing with respect to the first. For men, the effect of childbearing on subjective wellbeing is generally very weak.

Assessing the causal impact of children on individuals' happiness give rise to several problems. As Kravdal (2013) argues, one outstanding issue is the significantly different perceptions individuals may have about the effects of having a child, which is likely to affect both the choice to have a child and the subsequent increase or decrease in happiness coming from it. "Many of those who have few or no children have chosen this because they think their life will be best this way, and their happiness therefore tells us little about how happy their more fertile counterparts - who to a large extent have other preferences – would have been if *they* had few or no children" (Kravdal, 2013). A related issue is that questions about happiness are general, and many factors other than children will matter for individuals' overall assessment of their wellbeing. Thus any reported effect

of childbearing tend to be rather small, and as such an overall happiness effect of children seems not to be very informative nor necessarily reliable. These aspects add to the fact that results on the effect of childbearing on subjective wellbeing tend to be quite mixed (Billari and Kohler, 2009), showing no strong and unison direction.

All of this would suggest that a more fruitful approach would be to ask individuals directly about how their subjective wellbeing is affected from having children, or, how their wellbeing will be affected if they go on to have children. This is a promising avenue, because instead of considering the general measure of happiness, individuals will in this case report specifically the subjective wellbeing they derive from childbearing. With a positive assessment, one would naturally argue that the likelihood of childbearing is higher.

This approach bears resemblance to the theory of planned behaviour (TPB), in which the focus lies on individuals' intentions to have children. These can be predicted with high accuracy by attitudes towards that behaviour, together with subjective norms and perceived behavioural control (Ajzen, 1991). Intentions express the motivational factors that influence a behaviour, i.e. how hard an individual is willing to behave in a certain way. Intuitively, the higher the intentions to engage in a behaviour, the higher the probability that this is performed. However, the realization of intentions will depend on whether individuals can decide at will to perform that behaviour (behavioural control) and, more specifically, on their perception of it. In this framework, a subjective assessment of external conditions and of the consequences of a behaviour in a specific context are relevant components for explaining individual behaviour.

A consistent strand of literature has recently studied to what extent the theory of planned behaviour is useful for explaining fertility behaviour. In particular, intended fertility seems to be constantly higher than realized fertility, so that many scholars have focussed on the factors leading to the (non) realization of fertility intentions (ref). On the other side, other studies have analysed the factors affecting fertility intentions (ref). Although we do consider the predictive power of fertility intentions on behaviour, our work aims mainly at improving the knowledge about the very nature of fertility intentions. As attitudes toward a certain behaviour refer to *behavioural beliefs,* the perceived positive or negative consequences of having a child and the subjective values or evaluations of these consequences (Ajzen and Klobas, 2013), an interesting question is therefore how expected happiness from childbearing and fertility intentions relate to each other. Liefbroer (2005) studied how the predicted effect of childbearing on different life domains affect the timing of fertility, referring to the important aspects mentioned in the main theoretical frameworks for fertility choice. In their application of the TPB, Ajzen and Klobas (2013) use GGS questions on the expectations about childbearing and show that the expected effects of childbearing on different life

domains are indeed an important driver of fertility intentions. Consistently with these finding, we expect predicted happiness from childbearing to be strictly connected to fertility intentions. Moreover, since expected happiness from childbearing is likely to reflect an overall evaluation of the effects of childbearing on different life domains, we want to investigate whether intentions and expected happiness contain the same information or not. Literature have studied to what extent fertility intentions provide information per se on the determinants of fertility choices, or whether they are only the results of the combination of other factors, and in this sense, act as a mediator (Schoen et al. 1999).

In this way, we bring together two strands of literature, i.e. the one on fertility intentions and the one about subjective wellbeing and fertility, to improve the understanding of mechanisms underlying fertility choices.

3. Data

We use longitudinal data from Generations and Gender Surveys (GGS) – comparative cross-country and individual-level surveys – for Bulgaria, France and Italy[1], for which we have available information about individuals' expected happiness from having a child (in the first wave) and information about fertility events in the three following years that is derived from the second wave[2]. We include only individuals living in a couple, aged from 18 to 40 at the first wave and who answered the questions of interest.[3] As result, the analysis is performed on a sub sample composed by 5,778 individuals, of whom 2,501 are Bulgarian, 1,259 are French and 2,018 are Italians.

The Fertility section in wave 1 of GGS contains a series of questions concerning the predicted effects of having a/another child in the following three years. Among them, it is asked the effect this event would have on "the joy and satisfaction you get from life". The possible answers are "much better", "better", "neither better or worse", "worse", "much worse". We recode the variable so that our measure ranges from value 2 ("much better") to value -2 ("much worse"), and the value zero predicts a neutral effect. It should be clear that this measure differs from the more standard way of considering subjective wellbeing and fertility, since individuals are here asked to what extent *childbearing* will bring about a deviation away from what would otherwise be their

[1] For Italy the GGS survey is the harmonised version of a national panel survey called Family and Social Subjects (FSS) conducted by ISTAT (the Italian National Statistical Office) in 2003 and 2007, in the wider framework of the so-called Multi-Purpose surveys.

[2] Germany, for which data from the second wave were also available, was excluded from the analysis because of the bad quality of the data. We also decided to exclude Georgia because of the very different social and economical setting compared to the other considered countries.

[3] Observations missing information about expected happiness from childbearing for individuals in the age intervals are 3245.

preset level of wellbeing. The measure overcomes the common criticism concerning the reliability of subjective wellbeing (e.g. the different interpretation of words such as *better*, *worse*, *much better*; Oswald and Clark, 2002). The subjectivity of the measure is desirable in the sense that our interest lies in individuals' expectation of its effect more then the real effect of children. From an econometric point of view, an important feature of such a variable is that it is not a cardinal measure, which we deal with in our econometric analysis.

4. Descriptive findings

Table 1 shows descriptive statistics of the sample. Average age of the interviewees in all countries lies between 30 and 36 years. The Italian sample is the oldest ones, with an average age of around 35 years. As indicator of the parenting situation of the individuals, we consider both the total number of children and the proportion of individuals being childless, with one child or two and more children. The number of children an individual has is of particular interest in our analysis, since it is likely to influence strongly the expectations about a (new) birth. The French sample shows a surprising low average number of children (0,7 on average compared to Italian and Bulgarian values, both around 1.4), as we know that France has the highest fertility level among the considered countries. On the opposite, the Bulgarian and Italian samples show a high proportion of individuals with two or more children. A strong gender difference emerges in activity status, showing a much higher proportion of employed men than women. In general, in the Bulgarian sample the ratio of employed individuals is lower than in the other countries. An opposite gender pattern emerges in education, where women show a higher proportion of tertiary education level than men do (except for the Italian sample).

The last rows of the table show the average values and the distribution of the two main variables of interest, i.e. the level of expected happiness from childbearing and the proportion of individuals who had a child in the three years between the two waves. Italy shows the highest expected happiness, with a level around 0.9. France follows, with a level around 0.7 for women and 0.8 for men, while Bulgaria shows a much lower value (around 0.2). In the French sample, the high level of expected happiness from childbearing corresponds to a relatively high ratio of individuals who had a child in the following three years. The same is not true for Italy, where the ratio of *new child* is similar to the Bulgarian one. It seems that, in Italy, many people predict a high increase in happiness from having a child, but only a relatively small part goes on having a(nother) child.

4.1 Distribution of expected happiness from childbearing

To provide an idea of who expects to be happy from having children (and who does not), Figure 1.1 shows the average levels of expected happiness, by gender and country. As we already noticed in the previous section, the average level of expected happiness is positive and lies between 0 and 1, for both genders and in all countries. The country where individuals have the highest expectations about the effects of childbearing is Italy, followed closely by France, while in Bulgaria the average answer is rather neutral. A striking feature is the gender difference: in all countries men show a higher level of expected happiness. The difference is not huge, but appears consistent across countries. Differences among countries become significant when we consider the patterns of expected happiness by parity. Figure 1.2 shows the average levels of expected happiness by the number of children individuals already have at wave 1. The patterns suggest that a big proportion of the observed country differences are driven by variation in the expectations about higher parity births. All countries show similar levels of expected happiness when considering first or second births, while significant differences emerge from the third onwards. While in France and Italy expected happiness remains positive, for Bulgaria it becomes negative or very close to zero.

Table 1: Individual characteristics by country

	Bulgaria		France		Italy	
variable	***Female***	***Male***	***Female***	***Male***	***Female***	***Male***
Age	31.7	32.7	31.9	34.2	34.6	35.9
Average number of children	1.5	1.4	0.7	0.7	1.5	1.4
Childless (%)	8.2	15.4	47.3	46.3	14.1	17.1
One child (%)	39.1	36.6	36.6	40.0	31.7	34.7
Two kids (%)	52.6	47.9	16.0	13.5	54.1	48.1
Job status (%)						
Employed	59.2	69.9	70.1	81.9	59.7	95.9
Unemployed	22.9	26.8	8.2	8.7	4.3	2.8
Student	0.5	0.0	3.7	4.3	0.7	0.01
Education (%)						
Tertiary	25.8	12.4	46.5	34.9	42.6	49.5
Secondary	41.9	59.4	41.9	53.1	44.1	38.8
Primary	22.2	27.4	11.5	11.9	11.1	09.7
Average of expected happiness from childbearing	0.20	0.36	0.69	0.81	0.91	0.99
Much better (%)	6.2	6.7	21.9	22.5	21.7	22.8
Better (%)	30.8	33.3	38.2	39.5	49.5	51.0
Worse (%)	14.1	13.2	6.8	5.2	2.5	2.2
Much worse (%)	4.7	3.9	3.3	2.9	0.2	0.1
New birth between first and second waves (%)	18.1	22.8	29.2	34.2	21.9	26.6

Figure 1.1: Average values of expected happiness from childbearing by gender and country

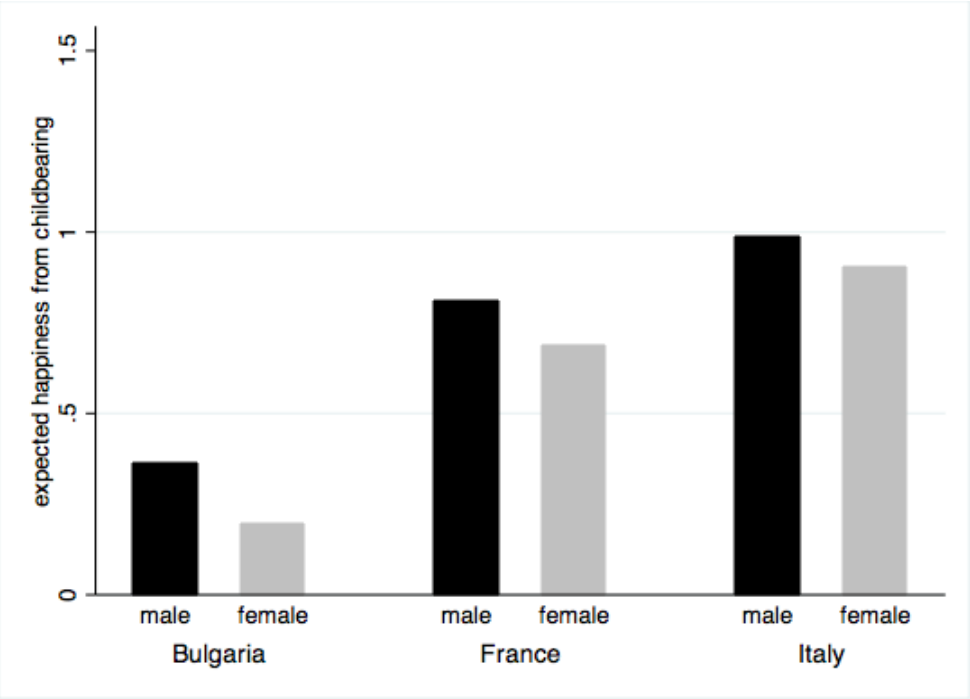
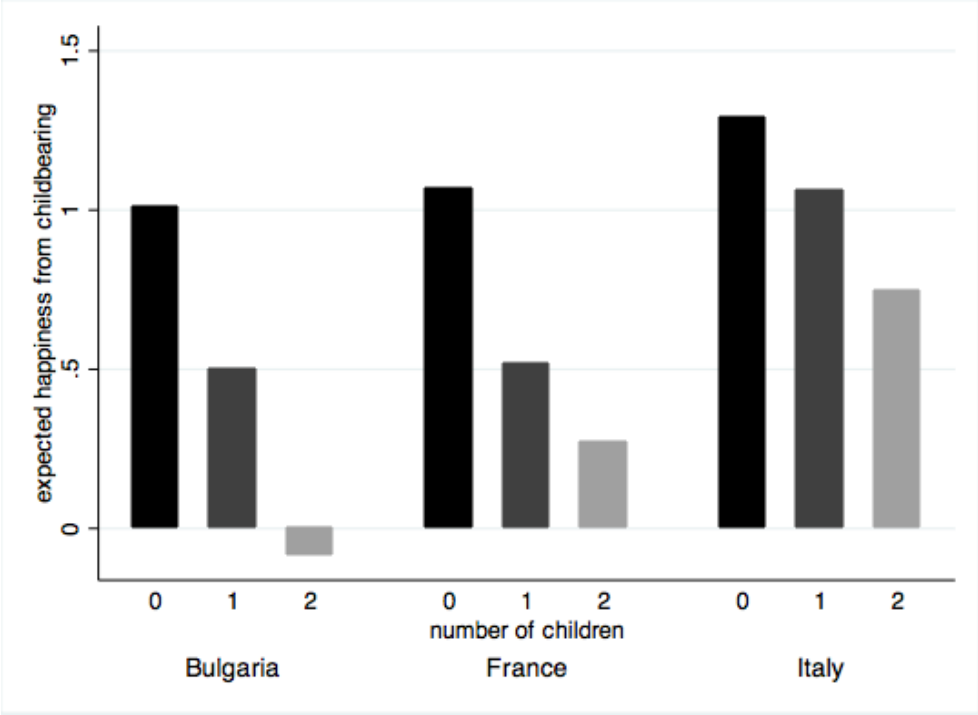


Figure 1.2: Average values of expected happiness from childbearing by parity and country



5. Determinants of expected happiness

We start by assessing the determinants of the self reported measure of future change in personal satisfaction linked to childbearing. For this purpose, we run a regression model with the level of predicted happiness from childbearing as the dependent variable and a set of individual control variables. Since the dependent variable is ordinal we estimate an ordered probit model. The regressions are run separately for women and men, since the descriptive analysis suggest that men and women differs in their predicted happiness from childbearing. As before, we consider the different country samples separately. The regression model can be expressed as follows:

$$(1)\ \textit{Exp. Happiness} = \alpha + \beta X_{ij} + \varepsilon_{ij}$$

where the vector X_{ij} includes individual controls and ε_{ij} is an individual error term. The explanatory variables include gender, age, number of children, job situation and educational level. The different job statuses are represented by three dummy variables: *employed* for individuals who are either employed or self-employed, *unemployed* for those individuals who declare not to be working (either unemployed or inactive individuals) and *student.* Highest educational level obtained are coded according to the international ISCED classification, and we use three different dummies, namely *low, middle* and *high education*, indicating that the individual has reached respectively primary or low secondary education, high secondary or post-secondary non-tertiary education, and low or high tertiary education. To better understand the effect of the number of children the individual has, a particularly important variable in our analysis, we use three different dummies accounting for whether the individual is childless (*childless*), has a child (*one child*) or two or more children ("*two kids*"). All individual controls refer to the time of first wave. Unfortunately, we are not able to include any measure of income in our analysis since this is lacking in the Italian sample.

Table 2 shows the results of the regression model (1), performed on the sample divided by country and by gender. Results seem to confirm the general trends observed in the descriptive analysis, but also add further insights. The number of children the individual has at the time of wave 1 negatively affects the expectations about a new birth. Both coefficients of *one child* and *two kids* are negative and significant, except for in the female Italian sample, where only the second one shows a significant coefficient.

Being employed has a negative impact only for French women, and a positive one for Bulgarian men. Interestingly, being a student is positively correlated with expected happiness from childbearing in the female Bulgarian sample, while in the French female one, there is a negative

association. It has no significant effect on men at all. A high educational level leads women to higher expectations about childbearing, except for France, while it seems not to be important for men (the reference category is having completed a secondary educational level). A low educational level is negatively correlated to expected happiness only for the Italian sample, for both genders. Such features seem in contrast with theories as the *second demographic transition* one, which relates women's high education with low fertility level, but might go in the same direction as the findings of a direct relationship between development and fertility in highly developed societies (Myrskyla et al., 2009)

6. Expected happiness and realized fertility

We now turn to the effect of predicted happiness on actual childbearing - the latter measured by whether the respondent had a(nother) child between the two waves (we build the dichotomy variable *new child* taking value 1 if the individual had a child and 0 otherwise). Table 3 shows the proportion of individuals predicting the different levels of change in happiness and, among each group, the proportion of individuals who have a child in the following three years. It is immediately clear that people who predict an increase in happiness from childbearing have the highest proportion of realized fertility**.** The ratio of individuals having a child among those who predict either a decrease in wellbeing or no great effect is much lower. Interesting, there is almost no difference in the ratio of realized fertility for these three categories (individuals who answered "much worse", "worse" or "neither worse or better"). The prediction of an increase in wellbeing coming from childbearing seems then to be connected to a higher probability of having a child, while the prediction of a decrease does not make any significant difference compared to the expectation of a "neutral" effect. In general, the proportion of realized fertility is in quite low, since only the 35% of individuals who declared they would be much happier with a child did actually have one in the three following years (and 20% of the whole sample).

However, Table 3 does not tell anything about the causal relationship between expected happiness and consequent fertility behaviour, indeed, it might be that other individual characteristics lead both to a higher level of predicted happiness and to a higher probability of having a child. To assess the direct link between expected happiness and fertility, we perform a regression analysis with controls for individual characteristics and countries. We estimate a series of regression models where *new child* is the dependent variable and expected happiness from childbearing, divided in dummy variables, is the main explanatory variable. We use a logistic

model, since the dependent variable is binary-response. We include the set of individual controls and country dummies. The general equation of the model is the following:

$$(2)\quad \text{Prob}\,(newchild)_{ij} = \alpha + \beta X_{ij} + \gamma\, exp.\, happiness_{ij} + \delta_j + \varepsilon_{ij}$$

Where X_{ij} is a vector including individual controls and ε_{ij} is again the individual error term. We run different specifications of the model, on the whole sample divided by gender and by country.

Table 2: Ordered probit regression of expected happiness from childbearing on individual characteristics. Fe divided by country

	Bulgaria		**France**		**Italy**	
	Female	***Male***	***Female***	***Male***	***Female***	***Male***
Age	-0.0482 (-0.86)	-0.0733 (-0.92)	0.288*** (-3.31)	-0.0224 (-0.17)	0.148 (-1.4)	-0.0119 (-0.06)
Age square	0.000313 (-0.35)	0.000834 (-0.66)	0.00519*** (-3.76)	-0.00017 (-0.08)	-0.00285 (-1.79)	-0.000265 (-0.09)
One child	-0.702*** (-6.52)	-0.589*** (-4.99)	-0.535*** (-5.45)	-0.644*** (-5.35)	-0.12 (-1.18)	-0.475*** (-3.76)
Two kids	-1.283*** (-11.54)	-1.403*** (-11.32)	-0.823*** (-6.28)	-0.766*** (-4.58)	-0.492*** (-4.79)	-0.901*** (-7.06)
Employed	0.0248 (-0.4)	0.294*** (-3.46)	-0.197* (-2.08)	-0.0609 (-0.33)	0.0831 (-1.23)	0.0428 (-0.2)
Student	1.179** (-2.59)	0 (.)	-0.734** (-3.14)	0.15 (-0.28)	0.27 (-0.69)	5.048 (-0.03)
High education	0.273*** (-4.19)	0.2 (-1.77)	0.033 (-0.36)	0.215 (-1.74)	0.324*** (-3.29)	-0.137 (-0.99)
Low education	-0.0974 (-0.83)	-0.0875 (-0.55)	-6.536 (-0.03)	0.852 (-0.79)	-0.194** (-2.78)	-0.293*** (-3.35)
N	1593	908	756	503	1257	735

t statistics in parentheses

* p<0.05, **p<0.01, ***p<0.001

Table 3: Expected happiness from childbearing and fertility realization

Expected happiness from childbearing (percentage of individuals)	**Proportion of birth of a new child between wave 1 and wave 2**
Much better (15.8%)	35.0 %
Better (40.5%)	23.7 %
Neither worse or better (38.3 %)	12.0 %
Worse (7.6 %)	11.9 %
Much worse (2.4%)	12 .1%
Total	20.4 %

6.1 Results

Results of model (2) are shown in Tables 4 and 5, respectively on the female and male sample. We want now to explore in details how our measure of expected happiness from childbearing impacts fertility behaviour and how it changes depending on gender and the country where individuals live. Reference category for what concerns expected happiness is the answer " neither worse or better", then the coefficients of *better*, *much better* and *worse* show how expecting an increase (or decrease) in wellbeing affect the odds of having a child with respect to expecting no variation. Notice that the variable *worse* includes both original answers "worse" and "much worse". Including individual controls in the regression model accounts for the possible factors affecting both the level of expected happiness from childbearing and the choice to have a child, allowing us to estimate the net effect of expected happiness.

The main result of the regression model is that the variables on expected happiness seem to be good predictors of the fertility behaviour, however strong differences exist among countries.

Table 4. Logistic regression the presence of a/(another) child on expected happiness from childbearing and individual controls by country, female sample

	Bulgaria	**France**	**Italy**
Female			
Age	0.346* (-2)	1.160*** (-4.85)	1.066** (-2.98)
Age square	-0.00924** (-3.07)	-0.0219*** (-5.42)	-0.0194*** (-3.54)
Number of children	0.0539 (-0.52)	-0.332* (-2.05)	-0.830*** (-7.68)
Employed	-1.117*** (-6.45)	-0.805*** (-3.53)	-0.0996 (-0.55)
Student	-0.708 (-0.79)	-1.710** (-3.11)	-0.594 (-0.77)
High education	0.556** (-2.88)	0.407 (-1.95)	0.647** (-2.85)
Low education	-0.162 (-0.58)	0.295 (-0.84)	-0.456* (-2.33)
Much better	0.24 (-0.79)	0.731** (-2.73)	0.567* (-2.29)
Better	0.308 (-1.69)	0.367 (-1.49)	0.522* (-2.36)
Worse	-0.011 (-0.05)	-1.275* (-2.25)	-0.152 (-0.20)
N	1593	756	1257

t statistics in parentheses

* p<0.05, **p<0.01, ***p<0.001

Table 5. Logistic regression of the presence of a/(another) child on expected happiness from childbearing and individual controls by country, male sample

	Bulgaria	**France**	**Italy**
Female			
Age	0.225 (-1.17)	1.316*** (-4.1)	0.259 (-0.53)
Age square	-0.00664* (-2.09)	-0.0213*** (-4.23)	-0.00662 (-0.92)
Number of children	0.107 (-0.96)	-0.340* (-1.98)	-0.707*** (-5.70)
Employed	-0.0361 (-0.18)	-0.368 (-0.96)	0.367 (-0.62)
Student	0 (.)	0.38 (-0.37)	0 (.)
High education	0.374 (-1.4)	0.304 (-1.35)	0.223 (-0.75)
Low education	0.0766 (-0.23)	-0.309 (-0.79)	-0.434* (-2.11)
Much better	0.526 (-1.59)	1.428*** (-4.41)	0.682* (-2.17)
Better	0.122 (-0.58)	1.013*** (-3.4)	0.674* (-2.37)
Worse	0.072 (-0.25)	0.384 (-0.68)	0.548 (-0.65)
N	908	503	735

t statistics in parentheses

* p<0.05, **p<0.01, ***p<0.001

In the French and Italian sample, coefficients of *much better* and *better* are positive and significant (except for French women, for whom *better* is not significant), showing that the expectation of an increase in happiness coming from childbearing leads to a higher probability of having a child in a three-years-period of time. French men, in particular, show very high coefficients. On the opposite, the variables of interest have no significant effect at all in the Bulgarian sample, suggesting that, in this country, the expected happiness from childbearing has no significant impact on fertility behaviour.

Surprising, the coefficients of *worse* do not suggest an analogous (opposite) effect of a predicted decrease in happiness coming from childbearing. This result goes in contrast to the one reported by literature, which finds a strong reliability of fertility negative intentions as predictors of the (non) realization of them (Régnier-Loilier and Vignoli, 2011), but it was already noticed in the graph above. It might suggest that the expectation of a decrease in happiness from childbearing do not translate into negative fertility intentions. An exception are French women, for whom the coefficient of *worse* is also significant.

Considering individual controls, both some similarities and differences can be found across the three considered countries. In the female sample, being employed has a significant (and negative) impact on the probability to have a child only in Bulgaria and France, while being a student in France only. In the male sample neither of them does, for any country. Having a high educational level has positive impact in the female sample in all countries but France, while a low educational level has negative impact only in Italy. In the male sample, high education does not show any significant impact, while having a low education impacts negatively the probability to have a child in Italy.

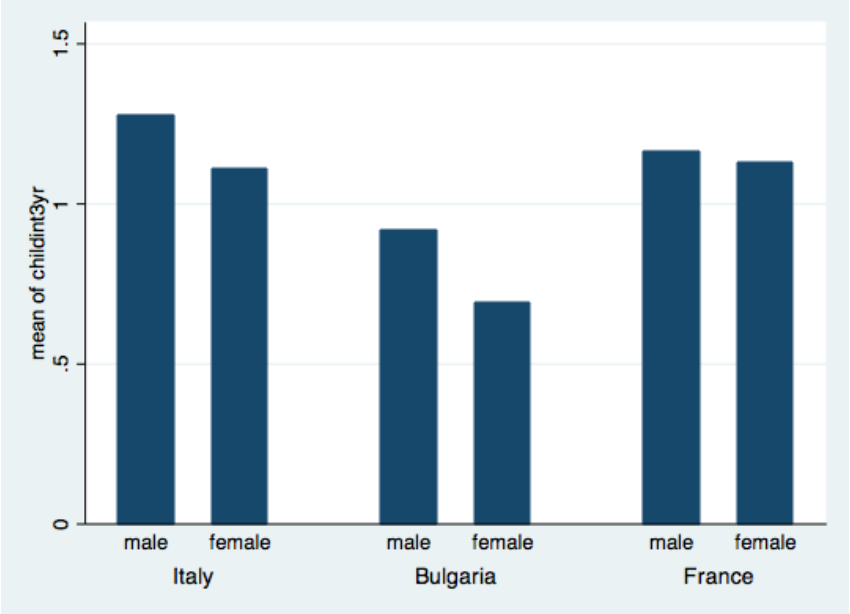
7. Expected happiness from childbearing and fertility intentions

We now focus on the relationship existing between expected happiness from childbearing and fertility intentions. An important question raised in the literature is whether fertility intentions are only the combination of different factors affecting the individual choice to have a child (), and in this sense act as a mediator, or if they reflect other information. The main questions we want to answer in this section refer to the nature of expected happiness and intentions. Are expected happiness and fertility intentions the same? Do they provide the same information about fertility choices? Are they influenced and explained by the same determinants? Is expected happiness from childbearing a determinant of fertility intentions, or the intentions to have a child lead to positive expectations about childbearing through an anticipation effect? On one hand, if expected happiness

and fertility intentions explain the same portion of fertility behaviour, it means that intentions actually depend on the expected effects of a certain behaviour. In this sense, studying expected happiness from childbearing as determinant of fertility brings together the two strands of literature and provide important results regarding the very nature of fertility intentions. In the GGS questionnaire, individuals are asked very specifically about their intentions to have a/another child within a three-years period of time. For this reason, information about expected happiness and intentions as they are provided by GGS are suitable to be compared and reach a better understanding of the mechanisms underlying fertility choices. Indeed, an important aspect of intentions highlighted in the literature is that to be relevant for the creation of the intention to perform a certain behaviour, attitudes must refer specifically to that behaviour and a particular moment (Ajzen and Klobas, 2013). This means that, for example, ideal family size or general attitude toward the family are not relevant for the creation of a positive (or negative) intention to have a child, while it is the case for the attitude toward having. Possible answers to the question about fertility intentions go from 1 to 4: "Definitely yes", "probably yes", "probably no" and "definitely no". In the graphs, the answers where re-scaled from 0 to 3.

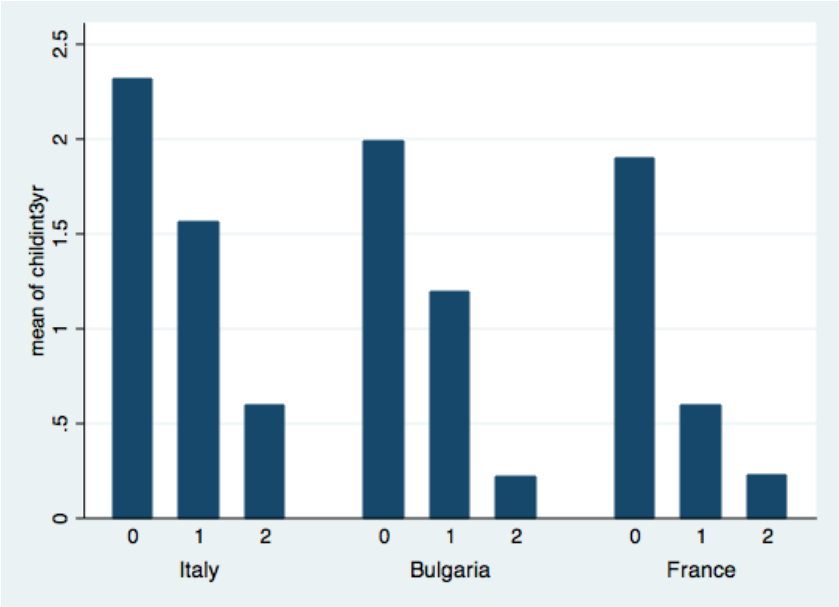
7.1 Distribution of fertility intentions

Similar to how we proceeded in the earlier sections for expected happiness from childbearing, we start with some descriptive analysis to see how fertility intentions are distributed among individual and try to discern some general patterns.



The graph above shows that, on average, individuals have positive fertility intentions (meaning that the average answer is between "definitely yes" and "probably yes" in France and Italy, while in Bulgaria fertility intentions are lower. This country pattern is very similar to the one we observed for the levels of expected happiness from childbearing. Also, a similar gender pattern suggests that men express, on average, more positive fertility intentions than women.

Again, we are particularly interested in studying how intentions change depending on parity.



Graph two shows the average levels of fertility intentions in the three countries, where individuals are divided according to the number of children they already have. As was the case for expected happiness, fertility intentions decrease with higher parity.

The similarity in the patterns of the two measures might further suggest that the two dimensions are connected to each other.

	childi~r	joyfro~d
childint3yr	**1.0000**	
joyfromchild	**0.5231**	**1.0000**

The table above shows the correlation matrix between expected happiness from childbearing and fertility intentions. The two measures appear to be moderately correlated.

To study whether fertility intentions and expected happiness from childbearing depend from individual characteristics in the same way, we run an ordered probit regression model of fertility

intentions (used as categorical variable) on individual controls. In a second specification, we include the dummy variables on expected happiness from childbearing. Results show that fertility intentions depend from age of the respondent in a non-linear way, increasing and then decreasing with age. Intentions to have a child decrease with the number of children the individual already has, consistently with observed fertility levels and with the patterns of expected happiness from childbearing (as we hypothesized that the two are strictly connected). Being employed does not seem to have an impact on fertility intentions, while being a student does have a significant negative effect. The last two columns of the table show the result of the regression model where expected happiness from childbearing was included. Both coefficients of *much better* and *better* are positive and significant showing a strong impact on the probability of having positive fertility intentions. In line with our hypothesis, these results suggest that expecting a positive impact of childbearing on happiness and satisfaction in life is an important component of the formation of positive fertility intentions.

Table 6. Ordered probit regression of fertility intentions on individual controls

	(1) intention3yr	(2) intention3yr	(3) intention3yr	(4) intention3yr
intention3yr				
age	**0.388*** **	**0.356*** **	**0.384*** **	**0.408*** **
	(6.57)	**(4.47)**	**(6.08)**	**(4.83)**
agesquare	**−0.00769*** **	**−0.00662*** **	**−0.00750*** **	**−0.00729*** **
	(−8.04)	**(−5.30)**	**(−7.33)**	**(−5.49)**
onechild	**−0.759*** **	**−0.711*** **	**−0.647*** **	**−0.537*** **
	(−10.37)	**(−8.37)**	**(−8.26)**	**(−5.96)**
twokids	**−2.167*** **	**−2.130*** **	**−1.985*** **	**−1.870*** **
	(−24.02)	**(−20.65)**	**(−20.44)**	**(−16.98)**
employed	**−0.0515**	**0.104**	**−0.0753**	**0.00899**
	(−0.87)	**(1.01)**	**(−1.18)**	**(0.08)**
student	**−0.780*** **	**0.514**	**−0.722** **	**0.261**
	(−3.66)	**(0.83)**	**(−3.18)**	**(0.40)**
higheduc	**0.148***	**0.0917**	**0.144***	**0.121**
	(2.50)	**(1.19)**	**(2.27)**	**(1.49)**
loweduc	**0.277*** **	**0.0717**	**0.298*** **	**0.201***
	(3.37)	**(0.75)**	**(3.30)**	**(1.97)**
FRA	**−0.813*** **	**−0.948*** **	**−0.613*** **	**−0.746*** **
	(−10.47)	**(−10.10)**	**(−7.32)**	**(−7.48)**
BUL	**−0.808*** **	**−0.648*** **	**−0.431*** **	**−0.320*** **
	(−11.83)	**(−7.32)**	**(−5.72)**	**(−3.33)**
muchbetter			**1.612*** **	**1.526*** **
			(18.15)	**(13.88)**
better			**1.111*** **	**0.922*** **
			(15.86)	**(10.89)**
cut1				
_cons	**3.370*** **	**3.321** **	**4.583*** **	**5.371*** **
	(3.80)	**(2.69)**	**(4.81)**	**(4.06)**
N	**3628**	**2150**	**3628**	**2150**

t statistics in parentheses
* p<0.05, ** p<0.01, *** p<0.001

7.2 Intentions, expected happiness and fertility realization

```
. corr joyfromchild newchild
(obs=5778)

             | joyfro~d newchild
-------------+------------------
joyfromchild |   1.0000
    newchild |   0.1890   1.0000
```

```
. corr childint3yr newchild
(obs=5590)

             | childi~r newchild
-------------+------------------
 childint3yr |   1.0000
    newchild |   0.4310   1.0000
```

The two tables show the correlation matrix respectively of expected happiness and fertility intentions and the variable indicating a new birth in the three years-interval. The coefficient for fertility intentions is much higher than the one for expected happiness, showing that the first measure is more correlated with the choice to have a child than the second one.

To analyse how the two measures are correlated to each other and to the probability of having a child we run the same logistic regression model implemented in the previous section where we add fertility intentions to the explanatory variables. To do that, we create three dummy variables indicating positive intention (if individual answered definitely yes), negative intention (definitely no) or uncertainty (either probably yes or probably no). Table 7 shows the results of the model. It is interesting to see that when the variables on fertility intentions are added to the regression model (column 3 and 4), the significant effect of the variables on expected happiness from childbearing does not hold anymore. It appears that all the explanatory value of expected happiness is captured by the intentions. The other interesting result of the model is that the dummy variable indicating negative fertility intentions is highly significant (negative), differently from the dummy variable on negative expectations about childbearing, which was not significant in any specification of the model. As concerns the coefficients of the individual controls, they do not vary when fertility intentions are included, except for the variable on the number of children in the male sample. The result of this regression model would suggest that expected happiness from

childbearing is indeed a main component of fertility intentions and that these act as mediator between these individual expectations about the effect of childbearing and the effective choice to have a child. Likewise, if interest lies in understanding how individuals differ in their valuation of how childbearing affect their happiness, then fertility intentions appears to be a good proxy.

	(1) newchild	(2) newchild	(3) newchild	(4) newchild
newchild				
age	**0.586*** **	**0.509*** **	**0.465*** **	**0.354***
	(5.28)	**(4.40)**	**(3.44)**	**(2.50)**
agesquare	**−0.0127*** **	**−0.0112*** **	**−0.00963*** **	**−0.00765*** **
	(−6.85)	**(−5.82)**	**(−4.48)**	**(−3.40)**
children	**−0.596*** **	**−0.259*** **	**−0.383*** **	**−0.116**
	(−8.34)	**(−3.44)**	**(−5.02)**	**(−1.44)**
employed	**−0.791*** **	**−0.838*** **	**0.0645**	**0.0860**
	(−6.77)	**(−6.85)**	**(0.16)**	**(0.21)**
unemployed	**−1.189*** **	**−1.263*** **	**0.245**	**0.244**
	(−6.64)	**(−6.78)**	**(0.57)**	**(0.55)**
student	**−1.425*** **	**−1.633*** **	**0.537**	**0.435**
	(−3.76)	**(−4.09)**	**(0.58)**	**(0.46)**
higheduc	**−0.0408**	**−0.0590**	**0.0333**	**0.00220**
	(−0.37)	**(−0.52)**	**(0.25)**	**(0.02)**
loweduc	**0.615*** **	**0.575*** **	**0.151**	**0.0980**
	(4.39)	**(3.92)**	**(0.93)**	**(0.59)**
FRA	**−0.969*** **	**−0.862*** **	**−1.252*** **	**−1.135*** **
	(−6.74)	**(−5.60)**	**(−7.36)**	**(−6.27)**
BUL	**−0.769*** **	**−0.690*** **	**−0.742*** **	**−0.629*** **
	(−5.94)	**(−5.11)**	**(−4.79)**	**(−3.94)**
muchbetter	**0.712*** **	**−0.0602**	**0.772*** **	**0.136**
	(4.78)	**(−0.36)**	**(4.35)**	**(0.70)**
better	**0.416*** **	**−0.0647**	**0.449** **	**0.129**
	(3.41)	**(−0.48)**	**(3.05)**	**(0.83)**
worse	**−0.00978**	**0.0870**	**0.453**	**0.546***
	(−0.04)	**(0.37)**	**(1.68)**	**(1.97)**
intyes		**1.434*** **		**1.225*** **
		(10.67)		**(7.91)**
intno		**−0.883*** **		**−0.860*** **
		(−6.36)		**(−5.31)**
_cons	**−5.627*** **	**−4.720** **	**−5.333***	**−3.984**
	(−3.42)	**(−2.75)**	**(−2.52)**	**(−1.79)**
N	**3606**	**3606**	**2147**	**2147**

t statistics in parentheses

* p<0.05, ** p<0.01, *** p<0.001

7. Conclusion

Using the recently-released second wave of GGS, we focussed on the expected effect of childbearing on life satisfaction as a key explanatory variable of fertility choices in three European countries (Bulgaria, France and Italy). In the first part of our work, we provided an overview of how the expected wellbeing associated with childbearing is distributed among individuals, showing that there are differences across gender, country of residence and other individual characteristics. Men declare, on average, a higher level of expected happiness than women, a feature that remains robust in all three countries. The level of expected happiness decreases with the number of children already present, which relates both to practical difficulties in caring about more than one child at the same time. In this sense, the measure of expected happiness from childbearing assumes a different meaning when considering childless couples as opposed to those already being parents. These results are not unexpected, since the event of becoming a parent is a different experience than having additional children. Moreover, before having the first child, prospective parents might have unrealistically high expectations about the joy derived from being a parent. When assessing the joy derived from having further children, expectations are in part a result of their experience from already being a parent. Interestingly, differences among countries emerge only when considering individuals that already have one child. An interpretation is that, since their expected wellbeing from having children is based on own experience, they are likely to be more influenced by the environment and context. As for the French sample, our findings are consistent with what expected. Where parents fare better due to generous state support, individuals declare higher levels of expected happiness from childbearing. As shown by Aassve et al. (2011), in countries where fertility is high, mothers are happier than non-mothers, while the opposite is true in countries with low fertility levels, and our results here give some support to this idea.

The high level of expected happiness observable in the Italian sample is surprising. Whereas Italians have the most positive expectations from having children (for all parities) we also see that the rate of realization is low. In addition, we know that actual fertility levels in Italy are low, especially for higher parities. It is interesting to compare this to Bulgaria, where also the fertility level is low. But here the predicted level of happiness from childbearing is much lower. It appears that low fertility level in Bulgaria is driven (in part) by individuals' non-positive outlook for the future - thereby reporting difficulties associated with childbearing. In Italy, individuals are generally very positive towards childbearing, but they appear not to realize it, suggesting that the mechanism is different from what we see in Bulgaria. One possible explanation might also be found

in the Italian culture and social structure. For example, the great importance of the family and a strong Catholic culture might lead to a general, positive feeling of the importance to have children. In addition, the prediction of a decrease in happiness coming from childbearing might be considered as socially inacceptable.

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