

Concepts and Operationalisation of Reproductive Decisions Implementation in Austria, Germany and Switzerland

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Abstract: Recently the difference between actual and hypothetical fertility (fertility gap) has served as an indication to enforce family policies with the purpose to increase births. This paper examines the relevance of hypothetical fertility measured with fertility ideals and intentions, to the estimation of the gap. Based on a literature review we discuss the meaning of these concepts and their operationalisation with empirical observations in three German-speaking countries (Austria, Germany, and Switzerland). Although the concept of societal ideal fertility is ambiguous it can be useful for understanding reproductive decisions when measured scrupulously. Operationalisation of short-term and long-term fertility intentions is discussed, along with their realisation. Analyses of intentions should rest on a theoretical background, such as the Miller-Pasta framework and the socio-psychological theory of planned behaviour. The latter is implemented in Austria and Germany using GGS data. The paper concludes that the fertility gap can be misleading both because the indicator of actual fertility as well as indicators of intended fertility can be imprecise. Useful policy-relevant information can be received by a specific form of the gap, when realisation of individual short-term intentions is considered.

Keywords: Reproductive decision-making · Ideal number of children · Fertility intentions · Theory of planned behaviour · Fertility gap

1 Introduction

The fertility decline observed during the recent decades in the European countries raised concerns among policy-makers and other stakeholders with respect to the reproductive decisions of contemporary citizens. These concerns were addressed in a series of documents issued by international bodies such as the European Commission and the European Parliament, where the expression that “*Europeans want more children than they actually have*” is included either in this or a similar form. For example, the Green Paper from 2005 (EC 2005: 5) states that “*Surveys have re-*

vealed the gap which exists between the number of children Europeans would like (2.3) and the number they actually have (1.5)." (Philipov et al. 2009 and Sobotka/Lutz 2010, give several additional citations.) The difference is understood as a result of negative obstacles, which prevent people from fulfilling their fertility preferences. Thus the gap is seen as a "latent demand for family policies" (Chesnais 2000). A range of European governments introduced expansions in the family policies aiming to support better parenthood and thus indirectly contribute to an increase in fertility levels.

Recently, the measurement of the gap between actual and hypothetical fertility (in brief: the fertility gap) raised interest among scholars. Lutz (2007) introduced the use of the adjusted total fertility rate (TFR) as a measure of actual fertility instead of the conventional TFR. Sobotka and Lutz (2010) discuss in detail the measurement of actual fertility and the use of completed cohort fertility. The gap is intriguing also for another reason: the way hypothetical fertility should be measured. This is usually done with the ideal number of children, as is the case in the statement above (2.3) or, alternatively, with the intended number of children. No contemporary research has addressed in detail the meaning and measurement of ideal or intended fertility and whether they are appropriate for the estimation of the fertility gap. Hence a series of crucial governmental decisions lies on inferences that might be ambiguous.

The purpose of this paper is to contribute to the better understanding of hypothetical fertility and its relevance to the measurement of the gap. We analyse definitions and measurement in surveys (the term *operationalisation* is used instead, to avoid confusion with quantitative measurement) of the key concepts which are used for the estimation of hypothetical fertility: ideal family size and fertility intentions; also key concepts in reproductive decisions.

The findings indicate inconsistencies and ambiguities in the measurement of hypothetical fertility for the purposes of the estimation of the gap. The ideal number of children is ambiguous because the concept of "ideal" is unspecified: it may refer either to the best number of children, or to the best conditions of life. The personal ideal, when operationalised to refer to best conditions of life, measures fertility desires as defined in socio-psychological theories. We recommend proper formulations of questions to avoid these ambiguities. Fertility intentions are a useful concept in demography; yet the use of intended family size as an indicator of the level of hypothetical fertility may bring to misleading interpretations. Short-term intentions can be compared with their realisation and the difference is informative about the impact of current conditions; this approach suits for the measurement of a specific "fertility intentions" gap although it does not refer to the total number of wanted children.

The argumentation in this paper is based on reviews of the existing literature. While contemporary analyses of ideals and intentions are abundant, there is virtually no discussion on the validation of the concepts, whether in the three countries of interest or elsewhere. The paper relies mainly on earlier publications and reminds about concerns that cannot be rejected today.

2 Fertility ideals

In 1936 George Gallup included in a poll a question formulated as follows: “*What do you think is the ideal number of children for a family to have?*”¹ The question was constructed in the framework of the innovative at the time approach to examine Americans’ attitudes to the societal situation after the 1929-1933 Great Depression. The concept “ideal number of children” was designed to measure attitudes towards fertility and, particularly, towards population growth (*Girard/Roussel* 1982: 337). Since 1936 the question, in various forms, was systematically included in an increasing number of surveys. Comprehensive discussions emerged as of the 1950s and the 1960s on what is measured with the question and what is the meaning of this concept.

2.1 Interpretations of the Concept

The concept of “ideal” as used in demography is not based on a theoretical ground. The “Ideal” is a fundamental concept in philosophy, ethics, and social psychology. Its demographic implementation has never been referred to these disciplines. Apparently demographers use it in the common meaning of the word, and interpret it in accordance with the empirical findings.

During the baby-boom in the U.S.A. at the end of the 1950s, the average ideal number of children did not differ significantly from actual fertility measured with period indicators such as the TFR. The concept was interpreted as a measure of expected fertility that could be informative for the construction of population projections. This interpretation was soon abandoned because actual fertility started declining and deviated increasingly from the ideal number of children. The introduction of new questions that referred directly to fertility desires, expectations, and intentions deprived the concept of similar interpretations. The interpretation as an attitude towards population growth also faded with the increasing rigorosity with which the concept of “attitude” was specified during the development of socio-psychological theories.

Another interpretation of the ideal number of children emerged during the 1960s: an expression of family-size norms (see *Gustavus/Nam* 1970 for a brief discussion, also *Trent* 1980). Accumulated poll results during the 1950s and the 1960s in the U.S. revealed that respondents strongly prefer answers for 2 or 3 children, fewer respondents would favour a higher number of children, and very few (less than 5 %) prefer 0 or 1 child. This narrow range of answers and the grouping towards 2 or 3 children was interpreted as a reflection of a societal norm about the number of children in a family. In particular, the empirical observations were considered to indicate a non-acceptance by society of childlessness or having only one child; it is a normative requirement to families to have more than one child. Understanding

¹ URL: <http://www.gallup.com/poll/9091/desire-children-alive-well-america.aspx>, 23.04.2012.

the concept as a social norm thus rests on empirical observations, which precede a relevant theoretical background. To the best of our knowledge, *Trent* (1980) provides the only rigorous examination of the interpretation of ideals as a normative concept. He states: “*Ideal family size is now appropriately regarded as a measure of a societal pronatalist norm*” (*Trent* 1980: 309) (pronatalism defined as orientation towards large families).

Girard and Rousset (1982: 337) posted a slightly different definition: “*The ideal size is a collective image that corresponds to a precise standard of the desirable for all the members of a community at a certain time and in a given context.*” The ideal size as an image of a “standard of the desirable” helps families in their orientation towards their own family size without the imposition of normative restrictions. This understanding differs from the one as a social norm insofar as norms act restrictively while a standard supports a personal orientation in a decision-making.

The “societal norm” interpretation of the ideal rested on three empirical observations: (i) The average ideal number of children, when measured for an average American family is above replacement-level fertility. It comes in agreement with the assumption that people will not approve a long-run population decline and hence will not approve low-size families. This inference is underlined by *Trent* (1980) in the accentuation on the pronatalist-norms view on the ideal. (ii) Very few respondents indicate that the ideal number of children is 0 or 1. In the light of the previous observation this one indicates that having 0 or 1 child is deviant behaviour. (iii) The question does not ask for the respondent’s personal but for his/her impersonalised preferences.

The literature is rich in critiques of the concept of ideal number of children, particularly where its straightforward meaning is considered (*Hagewen/Morgan* 2005 in recent years). In her overview of survey data over a period of 25 years, *Judith Blake* (1966: 160) states: “*Clearly any question regarding ‘ideal’ family size which specifies no conditions or points of reference for the respondent to take into account leaves him free to answer whatever terms seem relevant to him. But are these terms similar to all respondents? Or, rather, is one respondent thinking of an ‘ideal’ number of children who will appear under ‘ideal’ conditions, whereas another is thinking of the best number under the stress of realistic limitations? Equally, are some respondents answering in personal terms and others in terms of hypothetical ‘average man’? There are no satisfying and elegant answers to such queries [...] since typically only one general question was asked.*”² In early studies no difference is made between “ideal number of children” and “ideal family size”. The latter term is usually used understanding that a family includes a mother, father, and children. The two concepts are not distinguished in this paper and for short they are referred to as “ideals”.

Blake’s text highlights several flaws in the interpretation of the meaning of “ideal”. One primary interpretation is that it reflects the number of children a family

² *Blake* (1974) also notes that respondents might understand the “ideal” as referring to the number of ideal children rather than to the ideal number of children.

would wish to have under “ideal” living conditions. Usually “ideal” conditions do not include the effect of factors that may go against having children, such as limited economic resources, time availability, housing conditions, intimate life and the quality of the relations with a partner. Another interpretation is that the “ideal” number of children is the most appropriate number that people might have under the prevalent conditions of life. This understanding is evident also in the citation of Girard and Roussel cited above, where they consider a “given context”. The latter understanding was considered in the ESS surveys (rotating module, round 3, 2006/7) which included questions on an ideal age for certain demographic events; an instruction for interviewers explains that “ideal age” means “a most appropriate age”.

Ryder and Westoff (1971) note that the concept does not have face validity, i.e. it is not clear to the respondents what it exactly measures. In a two-week test-retest reliability test they found that the ideal number of children had a low reliability ratio of 0.63, while intended family size scored 0.86.

This short review shows that the ideal number of children gained different interpretations which did not stand scientific scrutiny. An invalidation of the concept would be however premature. Although *Ryder and Westoff (1971)* note that it does not have face validity, *Trent (1980)* found evidence on its *construct* validity, with validation of the ideal as a societal pronatalistic norm. Recent literature on this topic is scanty. *Hagewen and Morgan (2005)* criticise the concept when measured with the original Gallup question and, based on empirical observations conditionally accept its interpretation as a societal fertility norm in the U.S. However in this country the gap between ideal and actual fertility and hence the deviance of a social norm from actual behaviour is not large. In countries where fertility is well below replacement level it is awkward to interpret the ideal as a societal norm because it is significantly higher than actual fertility. For this reason the term “societal ideal” (used for example by *Testa 2006*) is preferable. It can be interpreted as a socially desirable level of fertility in similarity to the “standard of desirable fertility” discussed by *Girard and Roussel (1982)*.

2.2 Issues of Operationalisation

Attempts to clarify the concept of ideal family size (or ideal fertility in short, excluding ideal timing of having children and other childbearing-related ideals) were directed towards its precise operationalisation, starting from the initial Gallup formulation. A diversity of survey questions reflects such attempts. One type of operationalisation addressed the normative aspect involved in the concept, developing questions on family size norms. *Blake (1974)* examined questions on respondents’ assessment of what family size is too large or too small. In the same line, *Gustavus and Nam (1970)* discuss questions asking how many children are too few, or too many.

A second and major line of research to improve the operationalisation of the concept focused on the need to specify a point of reference for respondents while thinking about an ideal number of children. In particular, the new questions anchored the number of children to a specific societal group under specified conditions of life. An early example is the slight modification of the initial question with reference to

an *average* family. The Detroit Area Study from the beginning of the 1950s included the following question: *"People have different ideas about children and families. As things are now, what do you think is the ideal number of children for the average American family?"* (cited after *Freedman/Sharp* 1954: 35). The expression *"as things are now"* serves to clarify that the ideal does not refer to ideal conditions of life but to the most appropriate number of children. INED surveys during the 1970s and later included a question with which the respondent is anchored to his/her own societal and economic environment: *"Among persons in the same class as you and with the same material resources, what would be the ideal number of children in a family?"* (*Girard/Roussel* 1982).

Another important reference point is auto-referential where questions asked the ideal number of children for the self. A typical formulation reads as follows *"For you personally, what is the ideal number of children that you would like to have?"* Similar questions have been included in U.S. surveys since the 1960s (*Gustavus/Nam* 1970). Since a personal ideal refers to the self and not to a hypothetical family, it anchors the respondent to his or her specific family situation. A personal ideal is contrasted with a societal ideal where the reference point is the (average) family.

Although a variety of operational instruments have become available, the original Gallup question, anchored to society or to the self, dominated fertility surveys. Other variations or extensions have remained less familiar. Next follow examples of how the ideal number of children has been measured in Austrian, German, and Swiss surveys.

- The Fertility and Family surveys (FFS) carried out during the 1990s included in the standard questionnaire the following question: *"How many children do you think is the ideal number of children for a family to have in this country?"* Respondents had to answer either with an exact number or with two numbers, such as "2 or 3", "3 or 4". The latter option is helpful to respondents who have an approximate but no exact answer. The option "don't know" was also available.³
- Although the standard Generations and Gender Surveys (GGS) questionnaire did not include questions on ideals, the Austrian team included two questions for the measurement of impersonal and personal ideals: *"What do you think is the ideal number of children for a family in Austria?"* and *"And for you personally, what is the ideal number of children which you would like to have or would like to have had?"* Respondents answered with an exact number. The question on the societal ideal included an additional option: "there is no such ideal". It is of particular interest in case ideals measure a family size norm or a desired standard: respondents with this choice actually state explicitly that there is no norm for a family size or a desired standard.

³ Since the option "don't know" is included in all questions we do not mention it further.

- A recent survey in Germany: "Panel Study on Relationship and Family Dynamics in Germany" (PAIRFAM) includes the following question: "*Assuming ideal circumstances: How many children would you like to have altogether?*" The respondent is asked to consider the children he or she already has. The question asks for a mixture of two components: actual achieved fertility and hypothetical ideal fertility. Respondents answer with an exact number. Being a mixture of a real and a hypothetical situation the question does not measure personal ideal as discussed above. Some respondents might think of a personal ideal that is lower than the actual number of children they already have, while infertile respondents might see an ideal situation fit their specific status (nearly 15 % of the infertile respondents stated their ideal is 0 children).
- The *Institut für Demoskopie Allensbach* applies the original Gallop question as of 1950 in yearly interviews in Germany.
- The Swiss Household Panel Survey (SHP) included the question: "*What would you say is the ideal number of children for a family living in Switzerland?*" The interviewer is advised to make sure that the respondent considers the number of children in general, not speaking for their own. The question was included in the SHP waves from 2002 to 2005, and removed from the subsequent waves. Table 1 illustrates the results of observations from the 2005 wave (7th) only since the proportions did not change significantly during the 4-year period.
- The *Eurobarometer* surveys include regularly questions on ideals. The surveys from 2001 and 2006, for example, include the following two questions: "*Generally speaking, what do you think is the ideal number of children for a family?*" and "*And for you personally, what would be the ideal number of children you would like to have or would have liked to have had?*" Respondents give an exact number or "don't know", or the option "there is no ideal" as in the Austrian GGS. The second question is problematic because it sets two conditions: "would like to have" and "would like to have had". It is unclear whether the respondent considers only one of these conditions, or both of them. For example, a respondent aged 30 might answer only to the first condition which assumes the ideal number of children as of age 30, or only to the second condition which assumes an ideal only by age 30, or to both conditions when the respondent considers the whole reproductive age span.
- The World Values Surveys included a question on ideals formulated usually as follows: "*What do you think is the ideal size of a family – how many children, if any?*" Respondents answer with an exact number or "don't know". The European Values Surveys included the same question in the master questionnaire in the 1990 round and in the later rounds the question was excluded.

- The International Social Survey Programme (ISSP) included in earlier rounds the question “*All in all, what do you think is the ideal number of children for a family to have?*” The question was excluded in survey waves carried out during the 2000s.

Notably the question has been removed from several recent international surveys, such as the Generations and Gender Surveys (GGS), recent waves from the World and European Values Surveys (WEVS) and the ISSP. *Eurobarometer* remained the only international survey which included the question during the 2000’s.

In all the above-mentioned surveys, except the PAIRFAM, the question on societal ideal is similar to the original Gallup formulation.

An important aspect of measurement is the age span of respondents. Usually it is age at reproduction, say 18-49, although a span of ages above 49 is also feasible. Another aspect is the marital status of the respondents. In earlier surveys the questions were asked to married persons, while in recent surveys marital status is not used as a filter.

2.3 Empirical Illustration

Table 1 includes data for the three German-speaking countries from surveys which included a question related to ideal fertility. The discussion aims to show that the concept of ideal can be used for the derivation of important inferences; no analysis of ideals in the three countries of interest is attempted. It is assumed that the concept is consistent all throughout and it denotes either only the number of children under ideal conditions of life, or only the best number of children under the prevalence of the real conditions of life.

- With the exception of the *Eurobarometer* surveys,⁴ more than 60 % of the respondents indicate two children as an ideal number. The 1958 survey in Western Germany is also an exception and it is the only one where half of the respondents indicate that the ideal number of children is 3 or more. This survey is incompatible with the others because fertility was considerably higher at the time when it was performed and it is logical to observe that societal ideals were higher.
- Next preferred number of children is three, with some exceptions in the *Eurobarometer* and the German FFS. About 60 to 90 % of all respondents indicate two or three children as an ideal.

⁴ The *Eurobarometer* surveys frequently constitute an exception probably because of small sample sizes; moreover the 2006 wave yielded incredible results for Austria and for this reason they are not displayed in the table. For example 0 % of the male respondents aged below 25 indicate zero children as a social ideal, while 23 % of the males aged 25-39 indicated it as the ideal number (*Testa* 2006). The unusually high proportion of 23 % can be due to the small number of observations (152) or other data-related inadequacies.

Tab. 1: Ideal number of children measured in Austria, Germany, and Switzerland, in percent, respondents in reproductive age (18-45)

	Ideal number of children					There is	Don't	N resp.	Mean	TFR
	0	1	2	3	4+	no ideal	know			obs.*
<i>Austria</i>										
Societal ideal										
1988, ISSP	2.2	1.2	65.1	27.3	4.2	-	-	972	2.31	1.45
1990, WEVS	2	7	61	25	5	-	-	653	2.3	1.46
1994, ISSP	0.5	5.4	70.4	20.6	3.2	-	-	977	2.21	1.47
1996, FFS	2	7	68	21	2	-	-	4,640	2.2	1.42
2001, Eurobarometer	6.8	12.1	46.1	9.7	2.7	18.5	4.1	486	1.88	1.33
2009, GGS	0.5	3.9	64.6	17.8	1.6	11.5	0.2	5,000	2.2	1.39
Personal ideal										
2001, Eurobarometer	11.5	15.4	46.7	9.6	2.8	-	14.1	469	1.75	1.33
2009, GGS	3.0	10.6	59.2	20.5	6.3	-	0.3	5,000	2.2	1.39
<i>Germany</i>										
Societal ideal										
1958, Friedman et al. (1959), West	1	3	46	38	12			1,811	2.6	2.4
1988, ISSP, West	1.3	8.8	65.6	20.1	4.2	-	-	2,994	2.18	1.45 ¹
1990, WEVS	2	16	63	15	4	-	-	1,650	2.0	1.45
1992, FFS, West	2	19	64	13	2	-	10	4,532	2.0	1.40
1992, FFS, East	3	29	60	8	1	-	4	4,690	1.7	0.83
1994, ISSP, West	0.8	5.2	69.5	19.8	4.7	-	-	2,324	2.24	1.35
1994, ISSP, East	0.6	10.1	77.7	10.7	0.9	-	-	1,097	2.01	0.77
1997, WEVS	3	8	70	14	5	-	-	1,031	2.2	1.37
2001, Eurobarometer, West	7.2	8.3	50.9	10.0	1.8	15.7	6.0	432	1.89	1.38
2001, Eurobarometer, East	7.9	21.6	51.0	6.0	2.1	6.5	4.9	431	1.71	1.23
2003, IfD Allensbach (IfD 2004)	3	13	57	13	2	-	12	1,257	2	
2006, Eurobarometer, West	2	6	56	15	5	14	1	506	2.2	1.34
2006, Eurobarometer, East	3	9	59	13	3	12	1	201	2.04	1.30
Personal ideal										
1958, Friedman et al. (1959), West	1	6	43	29	20	-	-	1,781	2.7	2.4
2001, Eurobarometer, West	16.0	16.3	45.8	8.7	2.4	-	10.9	424	1.61	1.38
2001, Eurobarometer, East	11.7	28.4	44.9	6.9	3.1	-	5.0	419	1.60	1.23
2006, Eurobarometer, West	7	11	52	14	6	8	2	465	2.03	1.34
2006, Eurobarometer, East	5	14	56	10	5	6	3	201	1.96	1.30
2008, PAIRFAM ² , personal ideal	6.6	7.8	51.4	21.6	9.6	-	2.8	8,064	2.3	1.38
<i>Switzerland</i>										
Societal ideal										
1989, WEVS ³	0	2	62	23	13	-	-	663	2.5	1.56
1994-1995, FFS ⁴	1	3	63	30	3	-	4	4,905	2.3	1.48
1996, WEVS	2	4	66	20	8	-	-	606	2.3	1.50
2005, SHP wawe 7	1.4	2.7	65.7	21.5	4.3	=	4.4	2,716	2.3	1.42

¹ in 1990. ² Age range in completed years: 15-17, 25-27, 35-37. ³ An unlikely large number of respondents indicating 9 or more children excluded. ⁴ The number of respondents aged 20-24 is considerably lower than that at higher ages.

* Comparisons between the average societal ideal and observed fertility are more preferable when the adjusted TFR is used (see text). Its estimation for Germany and Switzerland and in Austria before 1986 is tricky because of the lack of adequate data; for this reason it is not included in the table.

- Only few respondents, usually less than 3 %, indicate a societal ideal of zero children (again *Eurobarometer* data are exceptional). One child as an ideal is also rarely preferred, except for Germany during the turbulent years after the unification. *Hagewen* and *Morgan* (2005) note that childlessness is not desirable at a societal level because it would lead to extinguishing of the population in one generation; non-zero proportions of childlessness they explain with erroneous understanding of the question by some respondents who might have thought of their personal ideal instead of a societal ideal.
- Personal ideals have an apparently larger variance than the societal ideal due to the combined effect of the larger proportion of respondents who indicate 0 or 1 child and the larger proportion of those who select a number of children higher than 2.
- The societal ideal is persistently stable across time and a trend of decline seems to be very slow if there is any at all.
- *Comparisons with observed fertility* deserve a special attention. The average societal ideal is measured as the number of children per family which is a measure attributable to completed cohort fertility. On the other side the average ideal is observed over all ages and hence is a cross-sectional (period) measure across cohorts. The average ideal is therefore a two-dimensional measure: one is cross-sectional and the other is cohort. Hence it is more convenient to compare it with a period measure of observed fertility which is as close as possible to cohort fertility than with conventional measures of cohort or of period fertility. This is for example the adjusted TFR (*Bongaarts/Feeney* 1998) which controls for the tempo effect related to the postponement of childbearing. The latter is estimated using data specified by birth order which are not available in the three countries (except for Austria since 1986). *Sobotka et al.* give more details (2011, in CPoS 36,2-3). Else, a comparison with completed cohort fertility will satisfy the requirement for equal measures on both indicators but it is disturbed by differences in the time of measurement: the ideal is measured during the time of interview which is usually one calendar year and conditions of life prevalent during this year, while completed fertility is measured over a sequence of years, i.e. under the prevalence of a diversity of conditions of life. A comparison with the observed TFR which is a pure period measure bears the inverse advantage and deficiency: both the ideal and the TFR are measured under the prevalence of one and the same conditions of life but the conventional TFR is not a measure of the number of children per woman (this interpretation is common but it is well known not to be true).
- When the adjusted TFR are not readily available the observed TFR can be used with a caution to the incompatibility of the measurement units. The data in table 1 show that there is a discrepancy between observed and ideal

fertility. Were adjusted TFR available they would have indicated a smaller difference because during the years under consideration there has been a significant postponement of fertility in all three countries (*Sobotka et al.* 2011 in CPoS 36,2-3).

The ideal family size has been analysed for diverse population structures such as age, sex, education, marital status. We analysed the FFS data to compare ideals by sex and found that women have slightly higher ideals than men in the three countries, although differences were not statistically significant. Differences by age are more pervasive and more indicative. Younger generations indicate lower ideal sizes. This observation has been discussed by *Goldstein et al.* (2003) and by *Testa and Grilli* (2006). Since fertility declined during recent decades, younger generations form their ideals in a context of lower fertility. *Goldstein et al.* termed this "cultural lag". *Heiland et al.* (2008) made similar inferences in their analysis of the desired family size in Germany.

Both societal and personal ideals are considerably higher than observed fertility, with the exception of the early 1958 survey in Western Germany. We return to this observation in the discussion on the fertility gap. The distribution of actual fertility by parity also significantly deviates from that for ideal fertility. Table 2 illustrates the parity distribution of cohort 1956 whose fertility is completed. Actual fertility is considerably lower because of the high proportion of respondents who remained childless or had only 1 child. Hence ideal fertility is significantly higher than actual fertility both with respect to level and parity distribution.

Tab. 2: Completed actual fertility of the cohort born in 1956

Parity	0	1	2	3+	Completed fertility
Austria	15.3	23.4	37.8	23.5	1.80
Eastern Germany	7.0	27.0	50.1	15.9	1.82
Western Germany	17.4	23.7	38.6	20.3	1.62
Switzerland	17.7	18.8	41.9	21.6	1.76

Notes: The data for Austria are based on 2001 census data. The data for Germany are based on the micro-census of 2008 and refer to five-year cohort groups. The data for Switzerland are based on the census 2000 (the calculation was made without consideration of women with an unknown number of children).

Source: Statistisches Bundesamt (2009); Statistik Austria (2005); Human Fertility Database (2011); as well as data for Switzerland, by courtesy of Marion Burkimsher.

An important observation by *Goldstein et al.* (2003) is that the German-speaking countries are unique with societal ideals below replacement level for the age group 25-39. Hence, according to their hypothesis about the cultural lag it can be expected that ideals would remain below replacement, as low fertility levels have been also persistent. The Austrian GGS, *Eurobarometer* 2006 data for Germany, and *PAIRFAM*

however indicate that ideals during the second half of the 2000s were above replacement level. I.e. there was an upward change in fertility ideals in the two countries during the 2000s. The survey carried out by the IfD Allensbach in Germany also supports this observation. The cultural lag hypothesis needs a re-examination with more detailed data.

Below replacement ideals were observed in Germany in 1992 with especially low levels in the Eastern provinces as a result of the aftermath of the re-unification when fertility declined drastically. Below replacement ideal fertility was observed in Austria and Germany in 2001; however the unlikely high levels of societal childlessness cast doubt in data quality, as societal childlessness means that the population would extinguish in one generation.

2.4 Fertility ideals: to use or not to use?

The concept of an ideal number of children has been criticised for its ambiguity when operationalised with the original question: the concept does not have a theoretical justification, and the use of one single word “ideal” without any additional explanations raises doubts whether respondents ascribe to it one and the same meaning.

Ambiguity is expressed in three different ways of understanding the concept and the whole question:

- (1) The concept of “ideal” refers to the conditions of life that respondents keep in mind while they answer the question; in this case respondents are expected to hypothesize ideal circumstances for having children;
- (2) Alternatively, “ideal” refers to the “appropriate” number of children under the current conditions of life;
- (3) Respondents can imagine any kind of a family whose ideal number of children is considered: an average family for the country, a family typical for their social class, or their own family even if the question is not formulated for the latter.

The first ambiguity can be relaxed by extending the question to indicate what kind of life conditions are considered, as has been done in the German *PAIRFAM* survey where “ideal circumstances” of life are indicated. The last ambiguity for a societal ideal can be relaxed by indicating an average family, or a family like the one of the respondent.

As we noted earlier the decision “not to use the question” has come to prevail during the last decade, as no question on ideal fertility was included in recent waves of the ISSP, WEVS, SHP, and GGS. Although no published explanations are available, it is likely that ambiguity of the concept played a major role in its abandonment.

Yet, the data in Table 1 and their brief description show that the concept can bring valuable information about societal fertility, particularly when the concept is expressed to measure social fertility norms. It is undesirable to reject such information provided the concept of ideal fertility is rigorously measured. It is much more promising to direct further research towards a better formulation of the rel-

evant question. This direction has a large potential: experiments might include for example a replacement of the phrase “ideal number of children” with more clear expressions like “the most appropriate number of children” or “the best number of children”. It is strange not to see experiments with batteries of questions that can disentangle different ambiguities into separate lines of information. A notable exception in this direction, beyond the preferable formulation of the question in PAIR-FAM, is an on-going research reported by *Goldstein et al.* (2010). Recent qualitative analyses examined what individuals think of when answering questions about their childbearing plans. These analyses provide valuable information which can be used to improve the formulations of questions on fertility ideals and fertility intentions (*Bernardi et al.* in print; *Bernardi/Cavalli/Mynarska* 2010).

A final note is due to the concept of a personal ideal number of children. When it is defined with respect to ideal circumstances in life the concept measures child-bearing desires. More details are given below.

3 Fertility intentions

The first National Fertility Survey in the U.S.A. from 1955 was designed to gather information for the improvement of population forecasts (*Westoff/Ryder* 1977). Respondents who were in the reproductive age were asked whether they intended to have more children and if so, how many; intended fertility was expected to indicate plausible future level of fertility in population projection scenarios. Since then fertility intentions have been regularly studied in diverse surveys throughout the world. Research on intentions is much larger than that of ideals, and its review is outside the scope of this paper; the accent here is on contemporary theories and operationalisation of the concept.

Cumulated work (for example *Westoff/Ryder* 1977; *Hendershot/Placek* 1980) soon showed that fertility levels indicated by intentions deviate from actual fertility and hence forecasts based on intentions were inaccurate; *Morgan* (2001) provides a recent literature review of this issue. However, research also indicated that fertility intentions, as antecedent of childbearing, are valuably informative about fertility behaviour. Also, deviation of intentions from actual fertility was found to be useful in the search of explanations on why people fail to reach their fertility plans.

Initial uses of intentions referred to family size, i.e. respondents were asked how many children they intend to have. These intentions are known as “intended family size”, or “life-time intentions”. We refer to them as synonymous, along with the term “intended number of children”. They inform about intended completed fertility. Later researchers increased their interest in intentions to have a child during a short time period such as 2-3 years. These are short-term intentions, which inform about timing of childbearing. Thus two main types of fertility intentions are being studied: life-time intentions and short-term intentions.

Analysts distinguish the concepts of intentions, expectations and desires. Theoretically (*Miller/Pasta* 1993, 1994, 1995) childbearing desires influence the formation of expectations and the latter influence the formation of intentions. Desires are sup-

posed to reflect a preferred number of children when obstacles to childbearing, such as subfecundity, housing or financial shortage, conflict in time-use, are neglected. So a desired and a personal ideal number of children are two different expressions for the same concept. Desires are operationalised with questions that ask about a “wanted” number of children. *Heiland et al.* (2008) discuss fertility desires in Germany. Expectations reflect the number of children that an individual thinks might be achieved under the restriction of prevalent conditions but independently of whether the children were intended or not. Hence desires and expectations should reflect a larger number of children than intentions as the latter are supposed to reflect the existence of a plan of action. However both early (*Westoff/Ryder* 1977) and recent empirical findings (*Hagewen/Morgan* 2005) indicate that respondents do not distinguish the three concepts. Empirically the concepts are similar and reflect about the same fertility levels. A detailed analysis is necessary to distinguish the reasons for this similarity and in particular whether their measurement might be improved; this analysis is beyond the scope of our paper.

3.1 Theoretical approaches

Traditionally demographers analyse intentions using micro-econometric models where a variable which measures intentions is considered dependent on a number of predictors. The latter are defined usually following theories on fertility. *Miller* (1994) and *Miller and Pasta* (1993, 1994, 1995) noted that an intention is a concept rigorously defined in social psychology and demographers can benefit from using relevant psychological theories. In a series of publications they developed their theoretical approach which, regrettably, remained out of the scope of fertility research in Europe. Recently the theory of planned behaviour (TPB) has gained considerable attention among demographers. It has been measured in the GGS and a few other surveys so it can be empirically used for analyses of intentions.⁵

Nauck (2010) applied a psychological approach in combination with the theory of the value of children to the analyses of ideal and intended fertility and its realisation, in contrast and as complement to traditional socio-economic theories on fertility. His analysis supports the stand that hypothetical fertility can be considered as a psychological construct.

The Miller-Pasta theoretical approach

The Miller-Pasta theory rests on a definition of a psychological and behavioural sequence related to childbearing. At the most general level, and furthest away from a decision to have a child are the childbearing motivations, attitudes, and beliefs. They have an effect on the building of childbearing desires defined as wishes that do not necessarily relate to action. Desires influence the construction of childbear-

⁵ Specifically, the TPB was applied in PAIRFAM, see <http://www.pairfam.uni-bremen.de/de/studie/inhaltl-schwerpunkte/elternschaftsentscheidungen/ausfuehrlichere-informationen.html>

ing intentions, which are a commitment to act and thus form the reproductive behaviour. Individual's attributes such as age, education, employment status etc., and macro-level factors if included in a study, have a role in the formulation of the components of the sequence.

This scheme involves three types of childbearing desires and intentions: childbearing, child-number and child-timing desires and intentions. Childbearing intentions refer to the intention to have another child or not; child-number intentions refer to the number of children wanted, and child-timing refers to the proper time when the next child is wanted. The Miller-Pasta theory therefore includes both long-term and short-term intentions in its framework.

An important feature of this theory is the rigorous definition of behaviour. While by tradition demographers define the behaviour subsequent to a childbearing intention as a birth or its non-occurrence, the theory considers components of behaviour such as proceptive behaviour and conception. Proceptive behaviour is the action directed to the achievement of pregnancy such as stopping use of contraceptives. *Miller* (1986) first introduced the concept. Achievement of a pregnancy is the outcome of the intention to have a child. The theory thus described refers to an intention to have a biological child but it can be rephrased for an adoption of a child.

Miller and *Pasta* note another important issue in the formation of intentions. Childbearing involves two persons, while intentions are individual. Relations between the two partners have an important role in the formation of intentions. *Miller* and *Pasta* note that partners usually form a consensus as a result of living together and continuous exchange of opinions. When couples disagree on intentions, the outcome is difficult to predict because each one of the partners may dominate in the couple's decision-taking, depending on culture or strength of personal motivation. For example in "patriarchal" decision-making the husband's opinion prevails. *Voas* (2003) notes that where gender equality is achieved, when partners disagree the most likely outcome is that the decision will be not to have a child, independently of the sex of this partner who did not intend to have a child; *Thomson* and *Hoem* (1998) report they did not find the pattern of couple's decision-making to depend on gender arrangements and ideals (see also *Thomson* 1995).

Theory of Planned Behaviour

The theory of reasoned action became known during the 1970s through several publications of *Fischbein* and *Ajzen* (*Fischbein/Ajzen* 1975). An extension of this theory introduced later by *Ajzen* (*Ajzen* 1985, 1991) became known as the theory of planned behaviour (TPB), whose application is discussed in this paper. *Billary et al.* (2009) applied the theory for the study of fertility. Appendix 1 gives a short description of the theory.

The key proposition in the TPB is that intentions are a contiguous antecedent of behaviour, and attitudes towards the behaviour, subjective norms, and perceived behavioural control are proximate antecedents of intentions. The theory requires rigorous definitions of its basic concepts, and in particular of intentions and the intended behaviour. Usually demographers operationalise fertility intentions with

reference to having a child. However, this intention is not specified well because it is not clear to what behaviour it refers; “having a child” is an outcome of behaviour, not proper behaviour. A convenient behaviour is the proceptive one, as specified by Miller-Pasta which refers to actions such as stopping use of contraceptives and having regular sexual intercourse with the purpose to achieve pregnancy; other relevant actions may refer to decrease infecundity. A proper definition of behaviour and the related intention requires an in-depth analysis which goes beyond the scope of this paper.

Family-size intentions and an intention to have a child within the next 2-3 years differ significantly with respect to the time horizon of their realisation. The first one is defined in the long-term, which makes it problematic for the application of the TPB, because a rigorous definition of behaviour in the long run is unlikely to be realistic. To our understanding the TPB can be applied successfully to short-term intentions while long-term intentions can serve as a background factor (Appendix 1).

3.2 Intended number of children – use and operationalisation

As mentioned above this concept entered demographic research with the purpose to inform construction of fertility forecasts. Yet comparisons of the intended number of children with actual fertility indicated considerable deviations at the micro level, while at the macro level the deviations are smaller. *Liefbroer* (2009) studied a sequence of waves of a Dutch panel survey to show that some respondents do not meet their initially targeted intentions while others have more babies than they intended to have; at the macro level both deviations cancel each other out to a large extent. *Morgan and Rackin* (2010) reached analogous inferences for the U.S, refining earlier findings by *Quesnel-Vallée and Morgan* (2003). *Iacovou and Tavares* (2011) made the same inference for Great Britain.

Similar analyses based on panel data are not available in the German-speaking countries. *Sobotka* (2009) presents a detailed analysis of life-time intentions in Austria using *Microcensus* surveys taken during the period 1986-2001. The sequence of surveys is used to construct family-size intentions of cohorts, sex and education. He finds that trends in fertility intentions reveal persistent preferences towards below-replacement fertility levels. *Bernardi, Le Goff and Ryser* are currently carrying out a similar research for Switzerland.

Operationalisation of intended number of children is usually done using at least two questions: “Do you intend to have another child sometime?” and if the answer is “yes”, the second question is asked: “How many more children do you intend to have?” In the GGS the questions are combined with the measurement of short-term intentions (the basic questions are 6.22 to 6.26 in the standard questionnaire, see *United Nations* 2005). In the FFS the term “intend” in the above mentioned questions is replaced by “want” and thus relates to the measurement of fertility desires (standard FFS country reports refer to expectations) rather than intentions; no specific questions for intentions were included.

The concept of life-long intentions is linked with uncertainty: at the time of interview the respondent might be uncertain about having children at all or about the

number of intended children, if any. This uncertainty can be revealed by appropriate answers to the questions about intentions.

In some surveys in the U.S. an answer to the first question placed in the preceding paragraph is selected on an ordinal scale from 1 to 5 or 1 to 10, where on the one end of the scale is the choice “certainly yes” and on the other “certainly no”. Another option traditionally used is to use a nominal scale, for example a choice among “yes”, “uncertain” and “no”. It was applied for example in the Austrian Micro-census analysed by *Sobotka* (2009) and in the FFS. Findings show that a significant number of respondents select the option “uncertain” which raises problems with the estimation of the intended number of children. How should “uncertain” be classified for the purposes of this estimation? Researchers used to exclude from their analyses these answers; *Morgan* (1982) noted that they bring important information for understanding intentions and measuring intended number of children and hence should not be excluded. The FFS standard country reports included analyses of means of expected number of children estimated on the assumption that uncertain expectations are very likely to remain unrealised and therefore they were added to the answers “no”. Another option is to divide them, say half as if having said “yes” and the other half “no”. *Sobotka* (2009) used several variants and thus analysed a range of possible numbers of children.

During the last decade the 3-category scale for answers related to uncertainty was replaced by a 4-level scale: certainly-yes, probably-yes, probably-no, and certainly-no. It has been applied in the GGS and in *PAIRFAM*. This option was found to work well in surveys. The second question about the intended number of children is not asked to those respondents who chose the option “certainly no” on the first question.

In the FFS, uncertainty with respect to the number of intended children is considered by the possibility to give responses in an interval, such as “2 or 3 children”. In recent surveys (GGS, SHP, *PAIRFAM*) the answer can be only an exact number of children (again skipping conventional options such as “don’t know” or “does not wish to answer”).

Uncertainty related to the realisation of an intended number of children has been discussed extensively in the literature. *Lee* (1980) noted that life-long intentions will

Tab. 3: Intended number of children in the three countries

	Year of survey	Personal ideal number of children		Intended number of children		TFR at year of survey	Adjusted TFR*
		Males	Females	Males	Females		
Austria (GGS)	2009	2.15	2.22	2.02	2.10	1.42	1.66
Germany (<i>PAIRFAM</i> ¹)	2008-09	2.18	2.24	1.93	2.03	1.38	1.62
Switzerland (SHP)	2005	2.31	2.31	2.19	2.21	1.42	1.60

* Adjusted TFR are for the period 2005-2007; source: European Demographic Datasheet 2010, Vienna Institute of Demography

¹ Age range in completed years: 15-17, 25-27, 35-37

hardly get realised and hence cannot be considered as a “fixed target”: under the pervasiveness of changing conditions of life people revise their intentions and thus they reflect a “moving target”. The observation of this type of uncertainty requires the use of panel surveys (*Liefbroer 2009; Iacovou/Tavares 2011*).

The intended number of children presented in table 3 includes the number of actual children which the respondent has towards the interview and the number of expected children.

As expected, the intended number of children is lower than the ideal number of children in a family. In Austria and Germany women tend to have slightly higher ideals and intentions than men, while in Switzerland the difference is insignificant. Actual fertility at year of survey is considerably lower than intended fertility. The latter comparison can be useful insofar as it might indicate how actual fertility relates to the formation of hypothetical life-time fertility. The adjusted TFR is not subject to a tempo effect and is preferable to the conventional TFR for comparisons of indicators measured in terms of the number of children. It is higher than the TFR but still considerably lower than the intended number of children.

3.3 Short-term intentions: operationalisation and empirical illustration

Short-term intentions refer to having a child within a short time-period such as 2 or 3 years. Over a short period the respondent is expected to be familiar with his or her personal situation in life and with the obstacles which might frustrate the intention to have a child. For example the respondent is aware of her family situation and her partner’s fertility preferences; she is aware of her housing situation, employment situation, income etc. An advantage of these intentions is that it is easier to trace the effect of relatively unchanged current conditions of life on their realisation; a disadvantage is that they do not inform about the intended number of children.

Short-term intentions can be operationalised with a variety of questions as to the timing of the next expected birth. A question used in the FFS for the measurement of desires (which can be used for intentions as well, insofar as respondents do not distinguish between the two concepts) asked about the age at which the respondent would like to have her/his next (or first) child. In the GGS the question was formulated with respect to a fixed period: within the next three years.

The GGS data can be used to estimate the TPB antecedents to fertility intentions in Austria and Germany applying the procedure described by *Billari et al. (2009)*; Appendix 2 lists the GGS questions used for the estimates. Table 4 displays the findings. Negative attitudes are the strongest factor that determines fertility intentions for a first child in Austria and in Germany, both among males and females. That is, people restrain of having children because of expected negative consequences. In Austria positive attitudes are as effective as subjective norms, while in Germany norms have a stronger effect than positive attitudes among women. Perceived behavioural control is found insignificant except for Austrian men for whom the p-value of 0.066 might be considered as indicative of significance. We note that the measurement of this variable in the GGS is not optimal and it may only partially reflect perceived control. Intentions to have a second child in Austria are mostly

Tab. 4: Logistic coefficients of TPB variables on intentions to have a first or a second child; estimates based on GGS data

	Intentions to have a first child		Intentions to have a second child	
	Men	Women	Men	Women
Austria				
Negative attitudes	-1.4	-1.3	-1.2	-1.4
Positive attitudes	0.8	0.8	1.1	0.8
Subjective norms	0.8	0.9	1.0	1.0
Perceived control	0.1*	-0.04 (ns)	0.4	0.2 (ns)
Germany				
Negative attitudes	-0.9	-0.7	-0.8	-0.5
Positive attitudes	0.5	0.3	1.4	0.6
Subjective norms	0.6	1.0	1.0	0.8
Perceived control	-0.1 (ns)	-0.1 (ns)	-0.2 (ns)	0.2 (ns)

All coefficients are statistically significant at a level of $p < 0.05$, except for (*) $p = 0.066$; ns=not significant

The „intention“ as a dependent variable is operationalised by a binary expression.

affected by negative attitudes, while in Germany negative attitudes submit to the stronger effect of both positive attitudes and subjective norms.

This illustrative analysis can be extended to encompass the impact of diverse components of attitudes, subjective norms or perceived behavioural control, as well as of the background factors.

3.4 Contemporary issues in operationalisation

The preceding discussion referred to conventional survey instruments and tools. Yet recent findings suggest that intentions are not adequately defined and operationalised.

Types of uncertainty

Qualitative research shows that respondents who are uncertain whether to have a child or not may belong to two different categories: (a) conditional uncertainty: individuals who have a strong desire for a child but they do not know whether or when to have one because their choice is conditional on contingent factors like employment or housing conditions; (b) fundamental uncertainty: individuals who do not express any strong desire to have a child, but do not rule out this possibility. The latter may have never thought about becoming parents or having another child; they are uncertain about the time frame they would prefer and they want to maintain an open and non-committing attitude towards the possibility of childbearing. This

distinction between two types of uncertainty is important since the second type refers to individuals whose childbearing behaviour is unpredictable (*Bernardi et al. 2010*).

There is yet a third type of uncertainty where individuals are just indifferent as to whether they wish or do not wish to have a child. During qualitative interviews these individuals do not express a clear “yes” or “no” when asked about their intention to have a child in the short term. They are observed as being ambivalent because they waver from an expression of desire to have a child to its opposite. Their contrasting intentions are not justified with reference to material conditions, life course situations or biographical age. Rather, wavering is related to individuals’ alternating between more or less defined fears of the responsibility of childrearing or to perceived personal immaturity on the one hand, and the foreseen satisfactions of having a child on the other hand (*Bernardi et al. 2010*). With reference to the TPB intentional ambivalence is better understood in terms of competing goals than in terms of lacking behavioural control (*Barber 2001*).

In order to improve predictability of uncertain intentions it is necessary to distinguish the various components of this rather heterogeneous group. In large-scale surveys where an initial question on intentions is included, and additional follow-up question could be added in case of answers like “probably yes, probably not” which would ask what the uncertainty depends on. Explorative qualitative data may be used as a base to create a list of possible closed answers to such a question. Another possibility for improvement is to add an indicator telling how certain respondents are of their attitudes, subjective norms and perceived control items when measuring predictors of intentions. This way we could better weight the strength of the intentions indicator and consequently better predict possible changes in intentions and behavioural outcomes.

Intention to have a child or not to have a child?

The Miller-Pasta theory and the TPB explicitly alert that intentions should be properly defined. In particular, questions on intentions have to be carefully specified to encompass all kinds of intentions relevant to the behaviour of interest. Thus in practice a negative answer to the conventional question “Do you intend to have a/another child?” is interpreted as an indication that the respondent intends not to have a child, while the negation actually means that the respondent does not intend to have a child. The subtle issue here is that some respondents may intend neither to have nor not to have another child. These respondents leave it to “whatever happens”. This issue is under analysis by *Barber et al. (2010)* who used an extended measurement of desires to become pregnant or to avoid pregnancy. They identified four groups of respondents: those who want to become pregnant, those who do not want to become pregnant, those who express indifference to any outcome (neither want nor do not want), and those who waver from wanting to be pregnant to not wanting (ambivalent). The group of indifferent respondents is of the same kind as the third type of uncertainty revealed with qualitative surveys, and the group of

ambivalent respondents is similar to the second group of uncertainty (those who waver during the process of interview).

Respondents from either the second or from the third group will give a negative answer to the conventional question on intentions and hence the two groups cannot be identified. In order to disentangle them the measurement of intentions has to be changed. In fact the issue is not new. *Miller* (1994, also *Miller/Pasta* 1994, 1995) suggested a sequence of questions out of which we give only one as an example: the question “Do you intend to have a/another child?” and the answer is a choice of one of the following five items:

1. I fully intend to have a/another child.
2. I mostly intend to have a/another child.
3. I am not sure whether or not I intend to have a/another child
4. I mostly intend not to have a/another child.
5. I fully intend not to have a/another child.

Monnier (1989) discussed a similar scale used in a French longitudinal survey, except that the second and fourth options were skipped.

Contemporary surveys like those we discussed in the previous sections do not include this detailed measurement and the group of indifferent respondents cannot be separated from those who intend not to have a child.

3.5 Realisation of intentions

Realisation of short-term intentions

One powerful application of short-term fertility intentions is linked with a follow-up of their realisation or frustration at the individual level. Apparently panel data are necessary for relevant research which can supply useful information on the barriers which people meet towards their attempts to realise intentions to have a child. Findings due to *Spéder* and *Kapitány*, reported in the project “Repro” in the 7th Framework program of the EU (<http://www.oeaw.ac.at/vid/repro/>), serve as an illustration. 75 % of the respondents in the Netherlands who declared they want a child within the next three years realised this intention; in Switzerland this holds for 55 % of the respondents and in Hungary for 40 % (findings for Hungary analysed by *Spéder* and *Kapitány* 2009). Most of the respondents who did not realise their intention declared they intend to have a child during the subsequent three years (15, 27, and 42 % correspondingly) and the rest (11, 18, and 18 %) declared they did not want to have a child. The analysis focuses on the individual level to distinguish factors that lead to fulfilment, postponement, or rejection of an initial intention to have a child as well as on an international comparison among the three countries. Apparently similar analyses can provide important policy implications. They become feasible with the use of the GGS data when the second wave becomes available in Germany and after its running in Austria, presumably in 2012. The *PAIRFAM* survey is also designed as

a panel and will provide appropriate data. The above cited data for Switzerland were derived using the SHP waves.

Realisation of long-term fertility intentions: do they have a predictive validity?

Morgan (2001) outlined three strategies that have been used for the construction of fertility forecasts based on life-time intentions. The first one is – from a contemporary point of view – a crude use of completed intended fertility as an indication of future fertility levels. This approach assumes that intentions will not change in the future and will get realised. These assumptions are incorrect; *Lee* (1980) for example noted that intentions do not constitute a fixed target under the prevalence of changing circumstances and emphasised a moving-target approach where intentions change with time. The second one is based on an examination of stated intentions using additional information: for example, downsizing young people’s intentions which can be considered too optimistic, or downsizing overly high intentions at advanced reproductive ages where subfecundity and infecundity increase. The third strategy is to apply a “moving target” approach, i.e. identify trends in change of fertility intentions with age using panel data. *Morgan* (2001) suggests ultimately examining the predictive value of fertility intentions by subgroups of respondents, identified by cohorts, parity, ethnicity and other important factors that can play a substantive role in the formation of intentions. Patterns of postponement of fertility by cohorts and parity should also be incorporated. Thus heterogeneity effects will be decreased and the predictive value improved. The use of a sequence of cross-sectional data is also feasible (*Beer* 1991), although *Morgan* (2001) is critical of this approach.

As mentioned above, recent studies for the Netherlands (*Liefbroer* 2009), the U.S. (*Morgan/Rackin* 2010), and *Iacovou* and *Tavares* (2011) show that on the aggregate, intended fertility does not deviate much from actual fertility although it is a result of compensating diversities at the individual level. It is risky to transfer these country-specific findings to other countries. The findings do not constitute a predictive value because the match of predicted and actual fertility is coincidental.

The SHP can be applied for a study of the predictive validity of life-time fertility intentions in Switzerland, although its time span is still too short (some 10 years). PAIRFAM and GGS panels have been started too shortly and can be informative only for cohorts close to the end of the reproductive age.

An important topic relevant to the analyses of realisation of intentions, only mentioned here, is the separation of intended from unintended births.

4 The fertility gap

The concept originated during the 1950s and the 1960s when accumulated observations showed that the ideal number of children exceeds actual fertility. During the subsequent decades the expected or the intended number of children was used

as an alternative to ideal fertility in the measurement of hypothetical fertility. The difference between hypothetical and actual fertility is considered as indicating the need for policies. The validity of this idea strongly depends on the way hypothetical and actual fertility are measured.

Traditionally the fertility gap is measured as the difference between an ideal or intended family size, and the TFR. One line of critique to this measurement is directed towards the improper comparison of an average number of children, which is a cohort measure, with a period indicator of fertility like the TFR whose interpretation as the number of children per woman is distorted (Sobotka/Lutz 2010). Lutz (2007) suggested the use of the adjusted TFR which clears the tempo effect and thus reflects a level of fertility that would have been observed if births were not postponed to later years of life, or advanced to earlier years. Table 3 shows a large difference between life-time intentions and the TFR for the three countries of interest in this paper. When the adjusted TFR is considered the difference will decrease with about 0.2 for each country but remains significant. Were ideal fertility is considered, the difference would be larger. Sobotka and Lutz (2010) give a detailed discussion of this issue; they show that when a cohort's intended number of children is compared with the actual completed fertility of the same cohort the fertility gap is smaller. For example the intended number of children of Austrian cohorts born in 1956-1960 or 1966-1970 was less than 0.2 lower than their completed fertility (Sobotka 2009).

Another line of critique refers to the interpretation of hypothetical fertility as a period indicator. Respondents answer questions about intentions (or ideals) under the prevalence of diverse individual, structural and institutional circumstances at the time of survey. Intentions reveal fertility preferences formed under these fixed circumstances, and changes in the latter during subsequent years impute intentions different from those already stated. A comparison of intended fertility and cohort completed fertility therefore compares a value observed under one fixed set of circumstances with a value observed under the prevalence of a diversity of circumstances. This mismatch perplexes policy-related inferences, unless it is assumed that circumstances did not change.

Understanding intended family size not only in a cohort but also in a period perspective is rarely discussed in scientific research. Monnier (1989) briefly notes: "*The notion of intended family size may be regarded as a fixed intention which will cover the couple's total reproductive lifespan [...] or it may be viewed as an attitude which depends on circumstances at the time and be modified by population policies ...*" although his analysis focuses on the first alternative only. Westoff and Ryder (1977: 449) note that respondents build their intentions under the invalid assumption "*that the future will resemble the past*" and conclude that "*... reproductive intentions are tailored at conditions at time of interview and, thus, share the same possibilities for misinterpretation as other period indices.*" These indications that intended fertility bears a period perspective have not been used for the examination of the fertility gap.

A rigorous measurement of the gap thus needs to consider two crucial conditions depending on the purposes of the analysis: (i) consistency of living conditions, and (ii) consistency of the indicators of its two components (hypothetical and

actual fertility). Under the cohort perspective, actual fertility is measured with the observed completed number of children, but in this case living conditions are not consistent. Under the period perspective, the TFR and the adjusted TFR can be compared with the hypothetical fertility, under one and the same set of living conditions. This comparison gives information in two ways. First, the TFR is used only for a comparison with the adjusted TFR to derive information on how conditions influence postponement of births. Next, the adjusted TFR and hypothetical fertility indicators are compared to derive an estimate of the gap measured under the same living conditions with consistent indicators which denote the mean number of children per woman (insofar as the adjusted TFR can be interpreted as the number of children per woman).

An important inaccuracy in the measurement of hypothetical fertility may arise when respondents construct their fertility preferences under the prevalence of limited or biased information. Additionally optimism may prevail, particularly among young adults (*Weinstein* 1980). Preferences stated at an interview can also depend on the population discourse: recently mass media widely discuss low fertility and its negative consequences which can influence individual towards reporting higher values than actually planned. Since these effects cannot be removed their presence may invalidate the use of the fertility gap.

Philipov (2009) proposed an entirely different approach for defining and measuring the gap at the micro-level, based on the information that can be derived from the realisation of short-term intentions. Individuals are supposed to be aware in the short run of their situation and of the obstacles they may experience for having a baby. Therefore their short-term intentions are expected to be realised at a much higher extent than the long-term ones. Analysts get information about obstacles that frustrated these intentions. This approach has the advantage of avoiding the ecological fallacy which can be observed in the measurement of the gap with macro-level measures such as the observed and the intended number of children. The latter might be approximately equal, and then the gap would not indicate any need of policies. However, it might have happened that some people have ultimately had less while others more than the intended number of children, and these two deviations cancel each other. At the micro-level this will not be observed.

5 Conclusions

Recently the observed fertility gap measured with conventional indicators has permeated high-level international and governmental policy-related texts. Still the measurement of the gap can be misleading: first, because key concepts are not operationalised rigorously; second, because the concepts have a period and a cohort interpretation that may provide different magnitudes of the gap; third, because the conventional macro-level measurement can constitute an ecological fallacy.

The first issue: unclear concepts, refers mainly to the ideal number of children. Early research literature has warned that the concept is ambiguous as it is based on one single word "ideal" which can be understood differently by respondents.

Moreover the concept does not lie on a theoretical ground; it is interpreted on the bases of empirical observations and in relation to actual fertility. Since its values slightly higher than 2.1 children per woman prevail over countries and time, it has been interpreted as a social norm.

The brief review of diverse observations of the ideal number of children in the German-speaking countries shows that the concept can bring valuable information about the reproductive decision-process, where its operationalisation reliable. Instead of dismissing the concept as has been done in recent international surveys it is preferable to improve its operationalisation with the purpose to avoid ambiguity. Below follow two suggestions for a reshape of the initial Gallup formulation, that can be useful in the search of a precise statement of the concept in survey instruments:

- When the ideal number of children denotes the best, or the most appropriate, number of children the societal ideal can be operationalised as: "Under the present conditions of life, what is the most appropriate number of children for an average family to have?" For the personal ideal the formulation is similar: "Under the present conditions of life, how many children would you like to have altogether?"
- When the ideal is understood as ideal conditions of life, the questions can be formulated following the formulation in the PAIRFAM survey which fits for the personal ideal (see section 2.2) conditional on a precise formulation with respect to past and future number of children. For example two questions can be used instead of one: "Assuming ideal circumstances: how many children would you have liked to have by now?", and "Assuming ideal circumstances, how many children would you like to have in the future?" For a societal ideal the following rephrase is suitable: "Assuming ideal circumstances of life, what is the most appropriate number of children for an average family to have?"

An important outcome of the discussion in this paper is that the personal ideal when referred to ideal circumstances of life, measures fertility desires as the latter are defined in socio-psychological theories.

Another crucial concept related to hypothetical fertility is the childbearing intention. Its operationalisation might need an improvement to capture a specific group of persons who neither intend, nor do not intend to have a child. These persons differ from those who are uncertain in their intentions to have a child (*Barber et al.* 2010). The "neither-nor" category may refer to people who are uninterested in the outcome of their sexual behaviour, leave it to whatever happens, or leave it to God to decide whether they should have a child. The size of this group is unknown, although it can be expected to be very small to an extent that would make the additional operationalisation redundant.

The second issue: period or cohort measurement of the gap was discussed in the preceding section. The cohort perspective might be applied when information about future fertility is needed, while the application of the period perspective is preferable for the inference of policy-relevant implications because both components of the gap are measured under one and the same living conditions.

The third issue: ecological fallacy, may arise when a macro-level observation of the gap is considered to be valid at the micro-level. In practice macro-level values of the gap have been used to infer that where the gap is large, there is a need of policies, and where it is small, there is no need of policies. This inference can be misleading which becomes evident in the following example. *Iacovou* and *Tavares* (2011: 104, Table 3) showed that among the women aged 25-29, 22 % revised down and 15 % revised up their fertility expectations in a period of 5-6 years, i.e. 37 % changed their intentions. At the macro-level however 15 % cancel out and only 7 % remain as having changed their intentions. The ecological fallacy can be alleviated with detailed studies like the one done by *Iacovou* and *Tavares* (2011). As noted in the preceding section it is convenient to consider the match between short-term intentions and their subsequent realisation as informative about policy-relevant obstacles that lead to the frustration of childbearing intentions. This approach is promising but requires considerable deliberation until reliable policy implications can be drawn.

The inferences in this paper by and large relied on literature published two decades ago or earlier. We failed to find recent research on the validity of fundamental demographic concepts such as intentions and ideals. Similar research is highly desirable, for example by using test-retest interviews and other tools that can help understand better how respondents understand the concepts under contemporary conditions of life.

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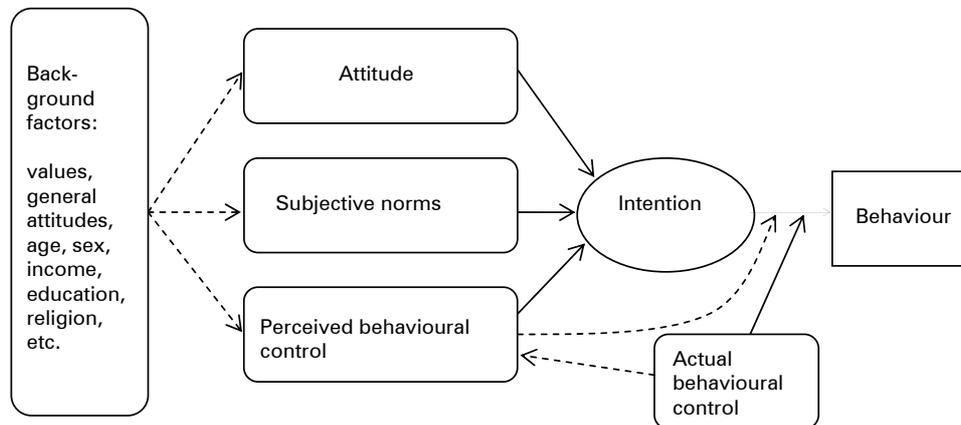
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Appendix 1

Theory of Planned Behaviour

The key proposition in the TPB is that intentions are a contiguous antecedent of behaviour, and attitudes towards the behaviour, subjective norms, and perceived behavioural control are proximate antecedents of intentions. Figure 1 gives a simplified presentation of the theory. The discussion follows figure 1 from the right to the left, adapted to the case of childbearing intentions and behaviour. This exposition draws on *Billari et al. (2009)* who provide an extensive discussion.

Fig. 1: A schematic presentation of the theory of planned behaviour



Source: *Ajzen/Fishbein 2005: 194*

(a) Behaviour

Behaviour is "... an action directed at a target, performed in a given context, at a certain point in time" (*Ajzen/Fischbein 2005: 182*). In the case of fertility it is what *Miller (1986)* termed a *proceptive* behaviour. In demographic studies behaviour is frequently approximated by the date of start of a pregnancy or the birth of a child. This approximation can be biased, because the latter events include unintended pregnancies. Unwanted pregnancies and births are out of the scope of the TPB when it is applied to the study of childbearing intentions because they are the outcome of unreasoned action.

(b) Intentions

The TPB sets rigid requirements to the definition of intentions. One is temporal stability. It is based on observations that the longer the period between an intention

and the corresponding behaviour, the less likely it is that intentions will be fulfilled, because the social environment around the individual may change with a corresponding impact on behaviour. Hence intentions are defined better over a short time period. *Miller and Pasta (1995)* brought forward the importance of focusing on a reference time window when collecting data on intentions (see also *Schoen et al. 1999; Philipov et al. 2006*). Another important aspect of intentions is their certainty at the time of measurement: the more certain the expressed intention, the more likely is its realisation (*Miller/Pasta 1995; Thomson/Brandreth 1995*).

Another important specification of fertility intentions is their parity (e.g. *Morgan 2001*). Intentions to have a first child refer to becoming a parent which is a crucial transition in one's life course. Intentions to have a second or a third child are constructed on different grounds because the person has experienced parenthood previously.

The TPB is specified for individual intentions and does not deal directly with couple's intentions.

(c) Attitudes towards behaviour

In the TPB, attitudes relate to the likely consequences of the behaviour in interest and thus associate closely with behavioural beliefs (beliefs that the behaviour will bring about certain desirable or non-desirable consequences). The TPB postulates that attitudes should refer strictly to the behaviour in question and should be explicitly personalised. In the case of childbearing this means that a person's attitudes should refer towards this person having or not having a child within a specified time period. General, impersonalised attitudes even if referring to the behaviour in question are not expected to be precise determinants of intentions.

Attitudes and the underlying beliefs should be compatible with the behaviour and the relevant intentions. In the case of childbearing this means that attitudes should refer to the same time period for which intentions are considered, for the same parity, and for the same conditions under which intentions were measured. Specifically when intentions refer to having a child within a period of two years say, attitudes should refer towards consequences of having a child within two years.

(d) Subjective norms

Subjective norms, normative pressure, social influence: all these concepts apply to the TPB and we consider them as synonyms in this short description. Normative pressure can be detected within an individual's network of relevant others, and more specifically it is the perception of social influence that is supposed to have an impact on reproductive behaviour (*Bernardi 2003*).

The impact of social influence is reflected in the TPB by the influence of important members of one's social network (frequently referred to as "important others"). This influence is exercised through their approval or disapproval of the person having a child within the specified time period for which the intentions are measured. The higher the approval, the higher will be this person's certainty in his/her inten-

tion and the more likely it is that the person will intend to have a child. Normative pressure measured in this way is personalised, refers directly to the behaviour in question, and refers to the same time period for which the intentions are measured. The influence of important others is exercised also through the way they act with respect to the behaviour in question. In the case of fertility, this means that the number of children they have will influence one's intentions to have or not to have a child.

(e) Perceived and actual behavioural control

Actual behavioural control is related to the importance of resources and constraints on the specific type of behaviour and on the opportunities to be able to overcome these constraints. Most of the literature that focuses on childbearing decisions is concerned with studying the impact of these constraints, for instance the importance of income and wealth, labour force situations, education, housing and health. In the spirit of the TPB, these constraints and the ability to overcome them influence the decision to perform the behaviour. According to the scheme presented in figure 1, actual behavioural control moderates the impact of intentions on behaviour; as mentioned earlier this directional link is out of the scope of the present discussion. Actual behavioural control influences the perceived one, and it is the latter that is significant for the construction of intentions.

Typically, perceived behavioural control refers to those constraints over the behaviour, which an individual assumes that can be modified to a certain extent, e.g., level of income or housing conditions. In past analyses of the determinants of childbearing intentions, perceived behavioural control has not been considered as a potential factor explaining intentions besides objective measures of control such as actual level of income (which could be considered as measures of actual behavioural control). Perceived control is regarded also as a proxy for the actual control. This approximation can be of importance in a study of realisation of intentions, as exemplified on figure 1 by the dotted arrow leading towards the line that unites intentions with behaviour.

(f) Background factors

The background factors influence the construction of beliefs related to attitudes, subjective norms, and perceived control over the behaviour. Their influence is depicted with dotted lines because the selection of factors depends on theories that lie outside the TPB. *Ajzen and Fischbein (2005)* view three groups of background factors. The first group: individual factors, they exemplify with personality, mood, emotion, intelligence, values, stereotypes, general attitudes, experience. They see the second group, social factors, as including education, age, gender, income, religion, race, ethnicity, and culture. Knowledge, media, and intervention constitute the group of information factors.

Conventional demographic studies of childbearing intentions and behaviour include many of the constituents of the three factor groups in models where the fac-

tors have a direct impact on intentions or childbearing. Demographers chose the factors based on specified theories and approaches, such as the economic theory of the family, ideational changes, etc. Demographic variables, such as age and gender, are hardly ever missed. Therefore the choice of background factors in the application of the TPB for the study of childbearing intentions can conveniently rest upon these familiar theories and approaches.

Appendix 2

Application of the theory of planned behaviour in the Generations and Gender Survey – Standard questionnaire (http://live.unece.org/pau/pub/ggp_survey_instruments.html or *United Nations* 2005): questions used in the estimation of table 4.

Intentions:

6.22 Do you intend to have a/another child during the next three years?

- 1 – definitely not
- 2 – probably not
- 3 – probably yes
- 4 – definitely yes

Attitudes:

6.27 Now, suppose that during the next 3 years you were to have a/another child. I would like you to tell me what effect you think this would have on various aspects of your life. Please choose your answers from the card.

If you were to have a/another child during the next three years, would it be better or worse for...	much better	better	neither better nor worse	worse	much worse	not applicable
a. the possibility to do what you want	1	2	3	4	5	99
b. your employment opportunities	1	2	3	4	5	99
c. your financial situation	1	2	3	4	5	99
d. your sexual life	1	2	3	4	5	99
e. what people around you think of you	1	2	3	4	5	99
f. the joy and satisfaction you get from life	1	2	3	4	5	99
g. the closeness between you and your partner/spouse	1	2	3	4	5	99
h. your partner's/spouse's employment opportunities	1	2	3	4	5	99
i. the care and security you may get in old age	1	2	3	4	5	99
j. certainty in your life	1	2	3	4	5	99
k. the closeness between you and your parents	1	2	3	4	5	99

Subjective norms:

6.29 Although you may feel that the decision to have a/another child is yours (and your partner's/spouse's) alone, it is likely that others have opinions about what you should do. I'm going to read out some statements about what other people might think about you having a/another child during the next three years. Please tell me to what extent you agree or disagree with these statements, choosing your answer from the card.

	much better	better	neither better nor worse	worse	much worse	not applicable
a. Most of your friends think that you should have a/another child	1	2	3	4	5	99
b. Your parents think that you should have a/another child	1	2	3	4	5	99
c. Most of your relatives think that you should have a/another child	1	2	3	4	5	99

Perceived behavioural control:

6.28 How much would the decision on whether to have or not to have a/another child during the next three years depend on the following?

	not at all	a little	quite a lot	a great deal	not applicable
a. your financial situation	1	2	3	4	99
b. your work	1	2	3	4	99
c. your housing conditions	1	2	3	4	99
d. your health	1	2	3	4	99
(...five more items)					

7.19 How much control do you feel you will have over the following areas of your life in the next three years?

	not at all	a little	quite a lot	a great deal	not applicable
a. your financial situation	1	2	3	4	99
b. your work	1	2	3	4	99
c. your housing conditions	1	2	3	4	99
d. your health	1	2	3	4	99
(e. your family life)					

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