Where and for Whom Are Fertility Intentions Predictive of Actual Fertility at the Population Level?

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Abstract: Using recent data from 21 European countries, we assess whether and in what country contexts fertility intentions about the ensuing three years provided an accurate projection of actual fertility behavior over the same interval. For childless women 25-44 years old, we find that actual births fall short of intentions to have a birth by a dramatic margin, with particularly severe shortfalls in Eastern and Southern European regions. For mothers, intentions to have an additional child correspond more closely to actual births; however, in Southern Europe, mothers fall short of their fertility intentions by a fairly large margin. In future analyses, we will examine these patterns, as well as the countries and subgroups that depart from these overall patterns, in greater detail. Our aim is to develop hypotheses to explain why aggregate intentions are sometimes over or under achieved and to provide guidance on the conditions under which fertility intentions can be expected to accurately reflect future fertility.

Are fertility intentions realized? If, as one would expect, the answer is not always positive, for whom and in which country contexts is fertility markedly different than originally intended? The question can be posed at the individual level, but also at the population level, and it is of key relevance for at least two reasons. The first is fertility forecasting: completed fertility levels for cohorts of women currently in their childbearing years will not be known for a number of years, but needs to be predicted to inform general population forecasts or to predict, for example, cohort childlessness. The second reason is monitoring trends, and the gap between realized and desired fertility is particularly important in many countries that are experiencing low fertility levels with potentially important implications (Adsera 2006, Bongaarts 2008, Goldstein, Lutz and Testa 2003). In the context of European very low and lowest low fertility, in particular, increasing postponement has made it difficult to anticipate completed fertility for cohorts using the latest observed period rates.

We here examine the usefulness of predicting how cohort fertility unfolds by using shortterm (i.e. over a three-year horizon) measures of fertility intentions that are often available in standard surveys, even in a cross-national setting. While such measures have the potential to provide an early indication of future fertility, the validity of intentions for predicting actual fertility behavior has been a topic of considerable debate. In this paper we assess more specifically the issue of whether, and for what countries and sub-groups in the population, shortterm fertility intentions are predictive of fertility behavior at the population level in the ensuing years.

Prior research in several countries, including the U.S., France, and the Netherlands, has shown that fertility intentions often have predictive validity at the aggregate level even if they do

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not always correspond to behavior at the individual level. (Monnie 1989, Morgan and Rackin 2010; Quesnel-Vallee and Morgan 2003, Van de Giessen 1992). However, research on other European countries finds that women fall short of lifetime childbearing intentions in the aggregate (Berrington 2004).

In a recent paper, Dimiter Philipov (2009) called for cross-country analyses of the realization of fertility intentions. Our paper aims to fill this gap in the literature by taking a cross-national, comparative approach in assessing the predictive validity of short-term fertility intentions at the population level. Short-term intentions are likely to be more reliable than lifetime intentions, and potentially useful to forecasters and policy makers (Philipov 2009). We will also test the factors predicting whether cohorts of women systematically underachieve or overachieve their short-term intentions. This analysis might also shed light on the societal differences in the ability to realize intentions and therefore on potential obstacles between desires and achievements in childbearing.

In addition to our cross-national comparisons of fertility intentions and fertility behavior, we will also consider whether the predictive validity of fertility intentions varies across population subgroups defined by age and parity. Prior research gives us reason to expect that fertility intentions are more strongly related to behavior for some groups than for others. In particular, we predict that fertility intentions will be more strongly predictive of transitions to higher parities than of transitions to first births (Schoen et al. 1999; Barber 2001, Freedman et al. 1980, Spéder & Kapitány 2009). We also predict that intentions will be more strongly predictive at older ages than at younger ages (Noack & Ostby 2000, Thomson 1997, Spéder & Kapitány 2009, Williams et al.1999). Using repeated cross-sectional data from 21 European countries, collected in successive waves of the European Social Survey, our paper will assess whether, and in what country contexts, fertility intentions collected in 2004 and corresponding to the ensuing three years provided an accurate projection of actual fertility behavior measured in 2008 and corresponding to the same three-year interval.

In our preliminary analyses, we find that for populations of childless women (especially those 25 years and older) actual births fall short of intentions to have a birth by a dramatic margin. This pattern of falling short of fertility intentions is particularly severe in Eastern and Southern European regions. For populations of women who are already mothers, intentions to have an additional child correspond more strongly to actual births; however, in Southern Europe, mothers fall short of their fertility intentions by a fairly large margin. In our future analyses, we will examine the countries and subgroups that depart from these overall patterns in greater detail. Our aim is to develop hypotheses to explain why aggregate intentions are over or under achieved in particular countries and age/parity groups. As potential explanations, we will consider labor market, policy, and social contexts.

## **Data and Method**

We use data from Wave 2 and Wave 4 of the European Social Survey (ESS-2 and ESS-4). Data for both survey waves is available for 21 European countries.<sup>1</sup> The ESS is a biennial social survey that measures attitudes, values, and behaviors of Europeans in a comparative perspective. The questionnaire for each round consists of a core module and rotating modules. The core module provides general background information, while rotating modules are designed

<sup>&</sup>lt;sup>1</sup> In Northern Europe: Denmark, Estonia, Finland, Great Britain, Norway, Sweden; in Southern Europe: Spain, Greece, and Portugal; in Eastern Europe: Czech Republic, Hungary, Poland, Slovakia, Slovenia, Turkey, Ukraine; in Western Europe: Belgium, Switzerland, Germany, France, and Netherlands.

to investigate specific topics. In the ESS-2, the rotating module on family, work, and well-being included a question on fertility intentions. In the ESS-4, new children can be identified based on a household roster.

For our paper, we will focus on women aged 15-44 years old in the 21 countries represented in both waves 2 and 4 of the ESS, representing over 10,000 women. About 6% of the sample will be excluded because of missing fertility intentions data. We divide the 9,571 women with valid intentions data into four groups based on age and parity: childless younger women (aged 15-24 years), childless older women (aged 25-44 years), younger mothers (aged 15-34 years), and older mothers (aged 35-44 years). We define age groups differently for the childless women and mothers to avoid small cell sizes. The Ns for each of these groups, by country, are shown in Table 1. Note that these N's are based on the ESS-2. Because of the sampling design was the same for Waves 2 and 4, we expect the N's for the ESS-4 to be similar to those shown. Across the four groups of interest, country-specific cell sizes were rarely below 50 (the minimum N is 44 women) and were more typically around n=100. Cell sizes are sufficient to provide fairly reliable estimates of aggregate short-term fertility intentions and achieved fertility for the analytic groups we define by country, age, and parity.

*Fertility intentions*. The ESS-2 collected fertility intentions by asking women whether they planned to have a child within the next three years, with response categories of probably yes, definitely yes, probably not, and definitely not. For our preliminary analyses we use a dichotomous indicator of intentions, coded 1 if women responded definitely yes or probably yes. Respondents who were pregnant at the time of the interview are also coded 1. (In future analyses we will test the sensitivity of the results to excluding pregnant respondents.)

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*The pseudo-panel.* To assess the predictive validity of our intentions measure, we exploit the repeated cross-sectional design of the European Social Survey, using a "pseudo-panel" approach. Although it is not possible to compare fertility intentions with parity progressions at the individual level, we can test the predictive validity of fertility intentions at the population level by comparing country-level (and sub-group level) fertility intentions at Wave 2 with the corresponding country-level (and sub-group level) parity progressions at Wave 4.

Using the 2004 data, we calculate the proportion of women who intend to have a birth in the subsequent three years. We compare this to the proportion of women in the same birth cohort who had a birth between 2004 and 2007, using the data collected in 2008. Births are measured based on a household roster that identifies biological children and indicates their ages. This approach will miss a small number of young children who are not living with their mothers.

## **Preliminary results**

We analyze fertility intentions and realized fertility in four population subgroups defined by age and parity. Our unit of analysis is country-age-parity groups. We analyze 84 groups (21 countries x 2 age groups x 2 parity groups).

Figures 1 through 4 display scatterplots of fertility intentions along the x-axis and actual fertility along the y-axis for younger childless women, older childless women, younger mothers, and older mothers, respectively. Each point represents one of the European countries in our sample. Intentions and actual fertility are unadjusted probabilities. In our future work, we will add controls for population characteristics. Data points above the diagonal line represent country/age/parity groups in which actual fertility exceeded intended fertility, and data points below the diagonal represent groups in which actual fertility fell short of intended fertility.

Tables 2 and 3 display fertility intentions and actual fertility, respectively, for our 21 countries arranged within four continental regions (Northern, Southern, Eastern, Western). These tables provide details on country-specific values of intentions and realized fertility, and also provide a way to compare patterns across continental regions.

We expected that fertility levels would be more likely to fall short of fertility intentions for childless women than for mothers, and our analysis provides strong support for this prediction. The underachievement of fertility intentions was modest for younger childless women (15-24 years old) and dramatic for older childless women (25-44 years old).

In most countries, only a small proportion of childless younger women (aged 15-24 years old) are intending to have a birth in the next three years (typically between 8% and 20%). Although fertility intentions are low, the subgroup of childless younger women falls short of its fertility intentions in all but 3 countries (Figure 1, Tables 2 and 3). Across the 21 countries, 16% of young, childless women intend to have a birth, on average, and 10% actually have a birth.<sup>2</sup> The three exceptional countries where young childless women had *more* births than they intended were Great Britain, Slovakia, and Turkey.

Overall, fertility intentions are high for childless women 25-44 years old. Across the 21 countries, between 36% and 68% of these women intend to have a birth (Table 2). In all 21 countries, actual fertility falls far short of these intentions. Across the countries, between 9% and 28% of the women do have a birth (Table 3).

<sup>&</sup>lt;sup>2</sup> France is an extreme outlier on intentions, with 43% of young childless women intending to have a birth but is average in terms of realized fertility, with 9% of young childless French women having a birth. The cell size for this group is relatively small at n=76. In the future when we control for population characteristics in each wave of the pseudo-panel, we can adjust for random sampling variations that may partially explain the surprisingly large gap between intentions and realized fertility in France, e.g., if by chance the Wave 2 sample was relatively older than the Wave 4 sample in France.

The underachievement of fertility intentions for childless older women is perhaps not surprising, but the large magnitude of the gap between fertility intentions and actual fertility for this subgroup is striking and noteworthy. In all 21 countries, the realized fertility of childless older women subgroup falls substantially below the intended fertility levels. On average, this subgroup falls short of its intentions by 33 percentage points. Figure 2 shows this large fertility shortfall graphically. Comparing across Tables 2 and 3 shows that in only 3 countries (Norway, Belgium, and the Netherlands) does the level of actual fertility reach 50% of the level of fertility that is intended by this group of women.

Childless older women, in the aggregate, have far fewer children than they were intending to have in all four continental regions of Europe. In Northern Europe, 59% of childless women aged 25 and above intend to have a birth and 24% do have a birth. In Western Europe, 47% of this group intends to have a birth and 22% actually do have a birth. The gulf between fertility intentions and actual fertility is even larger in Southern and Eastern Europe. In Southern Europe, 46% intend to have a birth and 13% do have a birth. In Eastern Europe, 56% intend a birth and 18% do have a birth.<sup>3</sup>

We expected that fertility intentions would be more strongly related to actual fertility for mothers than for childless women, and we found this to be the case. The correspondence between fertility intentions and actual fertility was generally high for mothers.

A moderately large proportion of the younger mother subgroup (aged 15-34) intends to have another birth in the next three years (between 21 and 55%). The younger mother subgroup falls short of its intentions in most countries, but usually by a relatively small margin (Figure 3, Tables 2 and 3). The average gap between intentions and realized fertility is 8 percentage points.

<sup>&</sup>lt;sup>3</sup> These regional averages do not weight by country population size, but are simple averages of the country-level data presented in Tables 2 and 3.

Among younger mothers, the correspondence between fertility intentions and actual fertility is strongest in Eastern Europe. On average in the region, 26% of younger mothers intend to have a birth and 23% do have a birth. The correspondence is also strong in Western Europe where 39% intend and 34% have a birth. There is a weaker correspondence between fertility intentions and actual fertility in Northern and especially Southern Europe (see Tables 2 and 3).<sup>4</sup>

Overall, only a small proportion of older mothers (aged 35-44 years) intend to have a birth in the next 3 years, with between 3 and 14% of these mothers intending a birth. The older mother subgroup falls short of fertility intentions in all countries but usually by a very small margin (Figure 4, Tables 2 and 3). Spain is the country with the highest level of intentions for this subgroup. No other country has more than 10% of the older mother subgroup that intend to have a birth. Although Spain ranks high on intentions, this country is average in terms of realized fertility with just 5% of older mothers having a birth.

## **Discuss and Future Work**

Prior research has suggested that short-term fertility intentions correspond more closely to actual fertility compared with longer-term/lifetime fertility intentions. Prior research has also suggested that short-term intentions are more closely linked to actual fertility for mothers than they are for childless women. Building on this literature, we provide new evidence on the contexts in which fertility intentions correspond more or less closely with actual fertility behavior. In particular, we examine the correspondence between intentions to have a birth and actually having a birth for four age and parity groups in 21 European countries.

<sup>&</sup>lt;sup>4</sup> Again, regional averages are not weighted by country population size. Characterizations of strength of correspondence between intentions and actual fertility within continental regions are based on comparison of intentions and actual fertility for each country within a region.

We have generated preliminary estimates that reveal interesting patterns. We find that actual fertility rarely exceeds and usually falls short of intended fertility. For childless women 25-44 years old, the shortfall can be described as severe. In the aggregate, these women have fewer than 40% of the births they intend to have.

In our future work, we will refine the estimates in the current paper and work to further explain patterns of variation across countries and population subgroups. We will refine our estimates of intentions to have a birth and actual fertility for country and population subgroups by incorporating controls for population composition that will adjust for sampling variation between waves of the European Social Survey.

As we go forward, we expect that a focus on the extreme examples as well as the exceptions to the patterns described above will be instructive. Ultimately, we hope to generate plausible theories – and provide evidence of their face validity -- to explain why fertility falls short of intentions at the aggregate level in some contexts more so than others. We also hope that our research will provide some guidance on the contexts in which short-term fertility intentions can be expected to accurately predict future fertility.

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	Childless women		Mothers	
	Younger	Older	Younger	Older
	(15-24 years old)	(25-44 years old)	(15-34 years old)	(35-44 years old)
Northern Europe:				
Denmark	87	68	64	141
Estonia	148	50	104	149
Finland	144	101	82	138
Great Britain	78	80	144	173
Norway	98	64	93	156
Sweden	125	80	70	148
Southern Europe:				
Spain	96	116	53	122
Greece	101	125	127	179
Portugal	102	119	120	154
Eastern Europe:				
Czech Republic	111	97	171	188
Hungary	102	69	84	101
Poland	141	56	123	125
Slovakia	107	45	116	111
Slovenia	114	61	65	117
Turkey	161	70	229	166
Ukraine	89	44	122	170
Western Europe:				
Belgium	111	69	101	143
Switzerland	83	162	95	177
Germany	153	119	99	273
France	76	72	105	158
Netherlands	67	103	88	163
min cell size	67	44	53	101
max cell size	161	162	229	273
average cell size	109	84	107	155

Table 1. Number of Women in the European Social Survey (Wave 2) by Age and Parity

Notes: Sample sizes for women who responded to the ESS-Wave 2, had a valid response to the question about short-term fertility intentions, and resided in 1 of 21 countries included ESS-Wave 4.

	Childless women		Mothers	
	Younger	Older	Younger	Older
	(15-24 years old)	(25-44 years old)	(15-34 years old)	(35-44 years old)
Northern Europe:	16.4	58.7	44.8	7.1
Denmark	12.6	67.6	50.0	2.8
Estonia	20.3	68.0	36.5	9.4
Finland	18.1	53.5	54.9	7.2
Great Britain	14.1	50.0	22.9	5.8
Norway	20.4	51.6	51.6	8.3
Sweden	12.8	61.3	52.9	8.8
Southern Europe:	12.6	46.3	37.5	8.7
Spain	9.4	44.8	39.6	13.9
Greece	12.9	53.6	38.6	8.9
Portugal	15.7	40.3	34.2	3.2
Eastern Europe:	15.9	56.4	25.5	4.2
Czech Republic	18.9	51.5	26.9	2.7
Hungary	13.7	68.1	25.0	5.9
Poland	20.6	64.3	26.0	4.0
Slovakia	11.2	46.7	23.3	3.6
Slovenia	7.9	63.9	29.2	4.3
Turkey	9.9	41.4	26.6	5.4
Ukraine	29.2	59.1	21.3	3.5
Western Europe:	19.7	46.5	39.1	7.0
Belgium	19.8	46.4	35.6	4.2
Switzerland	13.3	49.4	41.1	9.6
Germany	13.1	36.1	28.3	3.7
France	43.4	59.7	49.5	8.9
Netherlands	9.0	40.8	40.9	8.6

Table 2. Percentage of Women intending to have a Birth in the Next Three Years, ESS-2

Notes: Women who reported they would "definitely" or "probably" have a birth in the next 3 years were coded as intending a birth. Averages for continental regions (Northern, Southern, Eastern, Western) appear in **bold**.

	Childless women		Mothers	
	Younger	Older	Younger	Older
	(15-24 years old)	(25-44 years old)	(15-34 years old)	(35-44 years old)
Northern				
Europe:	11.1	24.1	34.0	5.3
Denmark	7.7	28.4	28.1	1.4
Estonia	13.9	18.8	15.6	2.5
Finland	10.4	22.0	44.3	7.5
Great Britain	19.6	17.2	33.8	9.7
Norway	11.4	31.3	42.5	5.5
Sweden	3.7	27.0	40.0	5.3
Southern				
Europe:	5.6	13.1	20.6	3.0
Spain	5.9	16.4	19.0	4.5
Greece	3.8	8.5	25.9	3.2
Portugal	7.0	14.4	16.8	1.4
Eastern Europe:	12.5	18.0	22.7	3.6
Czech Republic	10.6	23.6	27.4	2.9
Hungary	11.0	21.4	20.2	5.9
Poland	7.6	27.5	23.9	1.0
Slovakia	12.0	13.5	20.0	2.4
Slovenia	7.8	15.1	25.4	4.0
Turkey	15.3	14.1	30.0	6.4
Ukraine	23.3	10.9	12.3	2.9
Western Europe:	6.4	21.8	34.0	5.8
Belgium	6.1	28.2	38.2	5.2
Switzerland	4.4	13.2	33.9	5.0
Germany	5.3	17.6	22.8	5.3
France	9.4	22.4	41.8	5.6
Netherlands	6.8	27.5	33.3	8.0

Table 3. Percentage of Women having a Birth in the 3 year period corresponding to fertility intentions ESS-4

Notes: Averages for continental regions (Northern, Southern, Eastern, Western) appear in bold.







