

Fertility Decline, Fertility Reversal and Changing Childbearing Considerations in Sweden: A turn to subjective imaginations?

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Abstract

During the 2010s, Sweden, like other Nordic countries, encountered falling fertility rates. This was puzzling, since no structural processes, such as those related to the business cycle or social policy can explain the development. Based on register data, we show that the fertility decline was confined to first births in couples and that it was surprisingly homogenous across socio-demographic groups and regions of residence. Data from the Generations and Gender Survey in 2021 further revealed that it is the childless with a dire outlook on the future and a lack of trust in institutions who are hesitant to become parents. The Covid-19 pandemic seems to have brought another twist to Swedish fertility trends: Monthly data on child births during 2020-2021 suggest that the fertility decline came to a halt during the pandemic. We conjecture that Swedish fertility developments may reflect a “subjective turn” in childbearing considerations. The decision to have children seems less determined by factual circumstances and more by perceived (un)certainities and subjective imaginations of the future.

Keywords: fertility, fertility decline, uncertainty, global uncertainties, Sweden

Introduction and summary

Between 2010 and 2020 Sweden and many other developed countries encountered a continual decline of its fertility rates. This decline has puzzled demographers. It occurred across countries with very different social, labor-market, welfare, gender or family-policy regimes, such as the USA, UK, France, Italy, the Netherlands, the Nordic countries, and Estonia. Moreover, the decline could not be linked to structural processes, such as a shrinking economy, increasing unemployment or retrenchment of welfare support, which are commonly associated with falling fertility rates. Comparing this decline with previous declines in fertility, demographers therefore theorized that perceived uncertainty about the future may have made couples more hesitant to have a(nother)child (see e.g. Vignoli et al. 2020b). When the Covid-19 pandemic hit, demographers predicted fertility rates to drop even further due to the new uncertainties entailed by it. To their surprise, however, this seems not to have happened. The number of births resulting from conceptions during the pandemic appears to have risen in many countries. This tentative increase would be just as puzzling as the previous fertility decline. It poses questions regarding the role of uncertainty of the future and other explanations of fertility behavior in times of crises and during more normal circumstances.

In our study, we investigate these conundrums with a focus on Sweden. We examine whether and how the decrease of fertility during the 2010s, the (still tentative) increase of birth rates in the aftermath of the Covid-19 pandemic, and perceptions of uncertainties may be related to each other. We argue that prevalent economics-based concepts of perceived uncertainties of the future need to be complemented by additional sociological concepts of perceived uncertainties. By scrutinizing the decline of fertility and its halt in Sweden, we empirically assess the central tenets of these theories on the drivers of fertility and fertility change. We aim both to provide insight into the structure and determinants of the hitherto unexplained fertility development in Sweden during the 2010s and to hone the discussion of theories that link fertility developments to uncertainty perceptions and imaginaries of the future.

For our study we utilize three sources of data. To investigate the decline in fertility rates during the 2010s, we use Swedish register data for an in-depth analysis of the spatial, socio-economic, and socio-demographic factors that may underlie the decade-long fertility decline. To discuss fertility developments during the Covid-19 pandemic, we resort to monthly fertility data from Statistics Sweden that allow us to describe aggregate changes in fertility during 2021 and early

2022. These correspond to conceptions during the pandemic years 2020-2021. To explore associations between the economic and sociological concepts of perceived uncertainty of the future and fertility development we use data from the Swedish Generations and Gender Survey of 2021 (GGS2021) into which we have incorporated new modules to test these theoretical assumptions.

Our analyses of the register data reveal that the decline of fertility during the 2010s is confined to first births among women and men in couples and that it is surprisingly homogenous across all types of municipalities, socio-economic and socio-demographic groups. The fertility development since the onset of the Covid-19 pandemic rather suggests a minor fertility recovery than a continued fertility bust. Aggregate data from Statistics Sweden indicate that also this trend reversal occurred with a high degree of similarity across socio-demographic groups but that it appears to have been more concentrated to the continued childbearing of parents than to a clear trend reversal in first births (Statistics Sweden 2022). The GGS2021 responses of childless women and men living in a union indicate that any perceived negative impacts of the Covid-19 pandemic on their lives need not lower fertility intentions. However, those who have a dire economic outlook on their upcoming years, who worry about issues related to global future developments, or who lack trust in institutions are less likely to intend to become a parent than those who look more optimistically to their economic future, express less concerns about global developments, and have confidence in institutions. Factual circumstances seem to matter less for fertility intentions, for the childless as well as for all respondents. Based on these findings, we conjecture that the recent fertility developments in Sweden may reflect a “subjective turn” in couples’ consideration to become parents. The decision to have children may be less determined by factual circumstances and more by perceived (un)certainties and subjective assessments of the future.

Perceived uncertainty and fertility

The Great Recession of 2007/2008 and the prolonged fertility decline thereafter have spurred research on the impact of uncertainty on fertility in many countries. Economic research has often assumed that fertility rates swing in line with macro-economic developments, that is that fertility rates decline during an economic recession and recuperate during subsequent economic recovery. Similarly, researchers assume that individual economic precariousness tends to lower fertility intentions and childbearing, while economic security enhances them (for overviews on

these assumptions see Sobotka et al. 2011; Kreyenfeld et al. 2012). Empirical research shows that these assumptions do not always hold: The impact of macro- and micro-level economic insecurity on fertility may vary by country, period, welfare-state configuration, family-policy support, gender system, or class (ibid; see also: Comolli et al. 2021; Alderotti et al. 2021). The continued decline of the fertility rates during the 2010s further challenged the claim of a direct link between objective economic changes and fertility behavior, since the fertility rate also declined in countries that were not severely hit by the Great Recession and whose economy subsequently prospered during the 2010s (see, e.g., Comolli et al. 2021). This led demographers to turn to the theory of “imagined futures” and “perceived uncertainties” (Beckert and Bronk 2018; Beckert 2016). It proposes that not only past and current factual developments, but also perceptions and imaginations of the future shape people’s fertility intentions and decisions (see, e.g., Bernardi et al. 2019; Vignoli et al. 2020a; Vignoli et al. 2020b; Comolli et al. 2021). Within the framework of this theory, the decline of fertility during the 2010s is interpreted as a consequence of an increasing perception of economic uncertainty that concerns not only people’s present, but also their future (op.cit.). Empirical studies have shown that perceived economic uncertainty about the future may indeed lower fertility intentions and childbearing outcomes (Comolli and Vignoli 2021; Vignoli et al. 2022). As with the association between objective economic uncertainty and fertility, the effect of perceived uncertainty on fertility may depend on the country context, in particular the social- and family-policy support that a person may expect to receive in case of economic hardship (Vignoli et al. 2022; Lappegård et al. 2022; Ermisch 2021;). This may also play a role regarding a person’s “perceived agency” and “perceived resilience” (Hitlin and Johnson 2015), that is the extent to which s/he expects to have the capacity to minimize or counter economic uncertainty or adverse (economic) life-course events in case they occur. Gatta et al. (2021) found that a person’s perception of agency and resilience, i.e. her/his belief to be able to handle a future economic rupture, such as a job loss, is a more powerful predictor of fertility intentions than the economic stability s/he may enjoy. They conclude that the effect of perceived economic uncertainty on fertility cannot be fully understood without taking perceived resilience into account (see also: Vignoli et al. 2020b).

Economic uncertainties, whether caused by loss of employment or by economic recessions, are usually experienced individually. This makes it possible to imagine whether one has the capacity to deal with such uncertainties. Consequently, perceived agency and perceived resilience are tied to individual uncertainties. However, over the past decades there has been

an increase in risks and uncertainties that cannot be handled and controlled through individual agency, such as perceived risks related to climate change, terrorism, organized crime, mass (im)migration, or world-wide pandemics, like the Covid-19 pandemic. Beck (1992; 1999) and Giddens (1990) pointed out that the global character of these risks produces uncertainties that are uncalculable and that people may therefore perceive as uncontrollable. Individual precautions may not protect against them. This may attribute a new role to institutions that handle such risks. The degree of trust in these institutions may counterbalance, mitigate or aggravate the perceived uncertainties produced by the fear of global risks (Beck 2002; 2006; Giddens 2009). This adds a new - sociological - dimension to the theory of perceived uncertainties and imaginations of the future. It links perceived uncertainties that concern society or the world at large to trust in institutions that deal with the issues at stake and are perceived as capable of managing them.

Perceived global uncertainties and trust in institutions became particularly relevant with the onset of the Covid-19 pandemic. This pandemic affected all individuals and societal life in a new manner, generating uncertainties regarding health, work, family life and private relationships, but also uncertainties concerning public life, such as transportation, education, health care, workplace organization, leisure and the functioning of the whole economy. It put the relationship between individuals and public institutions and the trust in institutions to the test. Studies have shown that in times of economic uncertainty social trust may matter for fertility (Aasvve et al. 2021). One may therefore expect that trust in institutions in times of global uncertainties also matters for fertility, including the uncertainties brought about by the Covid-19 pandemic, which affected all aspects of private and public life and the interaction between the two to a previously unknown extent.

We therefore argue that fertility research that aims to understand the fertility decline during the 2010s and subsequent fertility development during the Covid-19 pandemic needs to consider economic as well as sociological concepts of perceived uncertainties. Both may influence childbearing intentions and behavior. Perceived economic uncertainties and perceived resilience direct the focus to tangible individual life-course risks, so that individuals may weigh having a child against their own imagined life-course development; perceived global uncertainties and trust in institutions direct the focus to societal and collective risks, so that individuals may weigh having a child against their imaginations of societal development.

Data and methods

Our analyses are based on three different data sets: First, register data that cover the entire Swedish population and the childbearing histories of women since the early 1990s to the end of the 2010s. Detailed information of their socio-economic, spatial and socio-demographic characteristics allow us to draw a comprehensive picture of patterns and differentials in the fertility decline of the 2010s. These provide insight into what may have shaped childbearing behavior during this period.

Second, we rely on monthly data on childbirths, by birth order and migration background that stretch into early 2022. This allows us to draw conclusions on a sufficiently long period of conceptions that ended in childbirths during the pandemic so that more precise interpretations of the pandemic-induced fertility processes are possible.

Third, we analyze data from the Swedish Generations and Gender Survey that we fielded in 2021, and in which 8,082 women and men at ages 18-59 years participated. In the survey we implemented new modules to test the relevance of the theories of “perceived economic uncertainties - perceived economic resilience” and those of “perceived global uncertainties - institutional trust” as drivers of childbearing intentions and fertility behavior. Because the survey took place during the pandemic, we also added questions to investigate changes in women’s and men’s lives in relation to the period immediately before the pandemic that may have influenced their intentions to have a child (Andersson et al. 2020; 2021). This provided an additional dimension to envisage how perceived uncertainties and perceived pandemic effects may be related to fertility intentions.

Our data sources complement each other and provide a unique set to gain insight into how different forces, e.g., past developments, the factual pandemic context, welfare state responses, and perceived economic and global uncertainties shape childbearing behavior and childbearing intentions. The results not only provide a solid basis to corroborate assumptions about recent Swedish fertility decline and the fertility development during the pandemic, but also contribute to the emerging new theoretical ventures in demography that aim to incorporate past, present and imagined futures in research on fertility developments in post-industrial societies (see, e.g., Bernardi et al. 2019; Vignoli et al. 2020b). Together they allow us to see whether recent fertility developments may be related to newly emerging patterns of childbearing considerations in which subjective assessments play a more decisive role than what is commonly assumed.

Fertility decline during the 2010s – a new transition?

From 1990 to 2020 Sweden experienced two major fertility declines: Following the economic crisis that hit Sweden in the early 1990s, the TFR fell to the lowest level ever recorded, but as the economy subsequently recovered, fertility also recovered to come close to the replacement level of two children per woman in 2010. From then on, like in other Nordic and many other developed countries, the TFR declined continuously during the 2010s. It reached a level of 1.67 in 2020, which was not an all-time low for Sweden, but still a remarkably low level by Swedish standards. The decline did not get much attention in Swedish local debate, as it was obscured by and accompanied by the fact that the large cohorts born in the late 1980s to early 1990s entered the peak of their childbearing ages. The result was that the annual number of children born did not change much during the 2010s (Statistics Sweden 2021a). This differed from the situation in neighboring Norway and Finland, where even stronger declines in fertility rates were swiftly translated into declining numbers of children born.

Table 1: Total Fertility Rates of the Nordic countries in 1990, 2000, 2010 and 2020

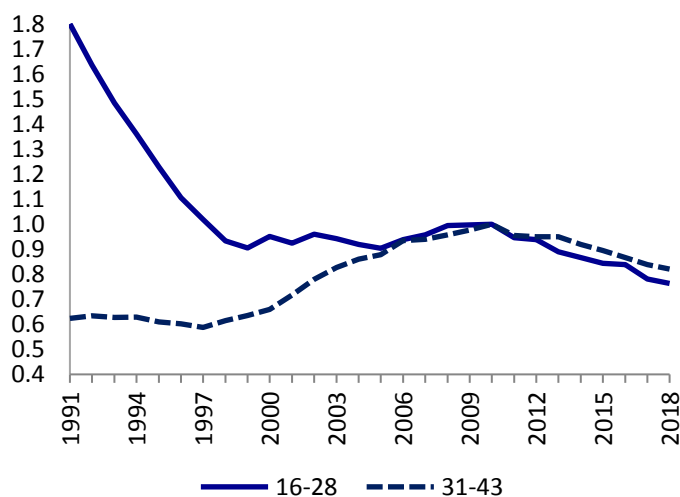
	1990	2000	2010	2020
Sweden	2.13	1.55	1.98	1.67
Finland	1.78	1.73	1.87	1.37
Denmark	1.67	1.77	1.88	1.67
Norway	1.93	1.85	1.95	1.48
Iceland	2.31	2.08	2.20	1.72

Source: Nordic Statistical Central Bureaus

In the 1990s, the Swedish TFR had dropped much faster than the TFR of other Nordic countries which also, to different degrees, encountered economic down-turns. Researchers attributed this to different responses and structures in the welfare-state support systems that were implemented in Sweden and other Nordic countries in the wake of the crisis of the early to mid-1990s (Comolli et al. 2021). Moreover, during the 1990s crisis in Sweden, it was mainly childless women at younger ages (below age 30), and the increasing number of women in education and with low income who abstained from having a child (Andersson 2000). As analyses of register data show, the subsequent increase of fertility in the first decade of the 2000s was primarily attributable to higher childbearing propensities among childless women at ages 30 and above, and to some degree to an increase in second and third birth rates (Andersson and Kolk 2015; see our Figures 1-2 below).

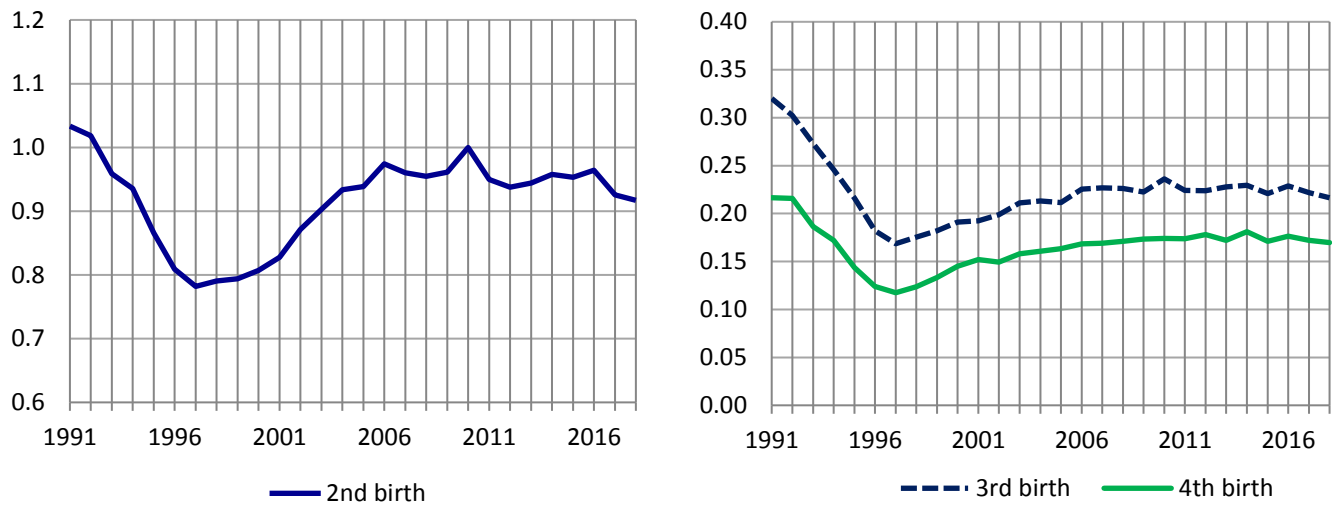
In the 2010s, the pattern was different and reflects three remarkable changes of larger significance (see also Ohlsson-Wijk and Andersson 2022; Comolli et al. 2021). First, in the 2010s the decline of fertility was almost exclusively concentrated to and fuelled by a decline in the first-birth rates among childless women and men (Ohlsson-Wijk and Andersson 2022). Our Figure 1 demonstrates that it was not only childless younger women (as in the 1990s) who abstained from having a child but it also concerned women in their 30s. In contrast to the decline in first-birth risks, childbearing propensities of mothers of one or two and more children remained largely stable (Figure 2). The structure of the changes of childbearing propensities of childless people indicate an astonishing and significant transformation of fertility behavior; for a similar development in Finland, see Hellstrand et al. (2022).

Figure 1. Relative risks of first birth in Sweden, by calendar year in 1991-2018, separately for age ranges 16-28 and 31-43 years. Risks controlled for age in single years, reference category is 2010 for both age groups.



Source: authors calculations based on Swedish register data

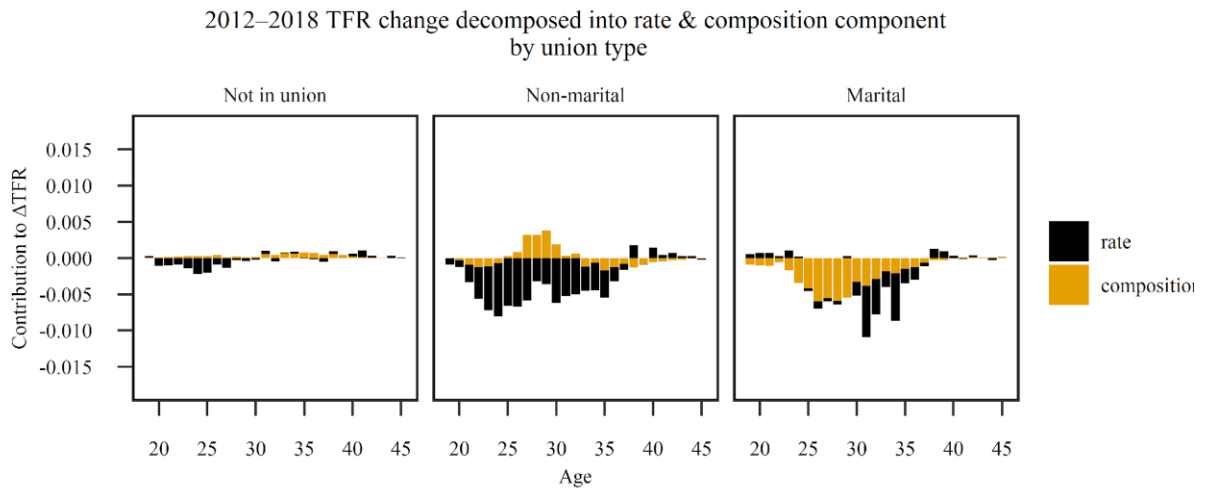
Figure 2. Relative risks of second, third and fourth birth in Sweden, by calendar year. Risks controlled for age of mother and time since last previous birth. Reference category is second-birth risk in 2010.



Source: authors calculations based on Swedish register data

Second, a natural follow-up question is whether the decline in first-birth rates is due to declining rates of couple formation or because women and men in couples abstain from becoming a parent. During the 2010s, there have been signs that the educational attainment, rural-urban location and even the voting patterns of women and men tend to have become increasingly polarized (Comolli and Andersson 2021). It would thus not be unreasonable to expect that some strata of the female and male populations at family-formation ages have become less compatible with each other and that union formation may have slowed down over the period we cover. We therefore examined the extent to which differences in age-specific fertility rates between 2012 and 2018 were due to changes in the composition of women at childbearing ages across family types or to the changing behavior of people in cohabiting and marital unions. A decomposition of fertility data by different household types clearly demonstrates that changes in fertility happened because of declining fertility rates within cohabiting unions and because fewer cohabitators proceeded to get married (Figure 3). In Sweden, marriage formation often occurs after becoming a parent (Ohlsson-Wijk et al. 2020), and the latter compositional change thus also reflects the hesitancy of cohabiting couples to move on towards a family form that is more strongly connected with parenthood. Findings from Finland show that the main part of the first-birth decline in that country was also due to declining fertility within unions and that very little was related to lack of union formation (Hellstrand et al. 2022; Andersson 2021).

Figure 3. Difference between 2012 and 2018 in women’s Total Fertility Rates, decomposed into changes attributed to period differences in age specific fertility rates by family types, and period differences in the age specific relative size of that family type.

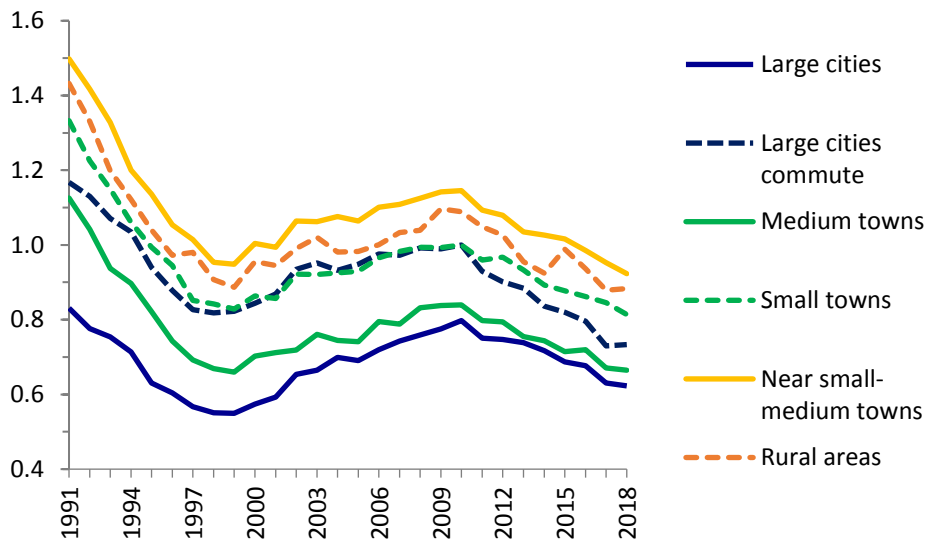


Source: authors calculations based on Swedish register data

Third, the decline of first births in the 2010s appears to have been remarkably homogeneous across all other socio-demographic indicators, apart from union status, that are available for observation in register data and usually incorporated in fertility research (Ohlsson-Wijk and Andersson 2022). For example, the pattern of decline did not vary by types of municipalities in Sweden and remained the same irrespective of different groupings of municipalities; there was thus no divide in childbearing developments between metropolitan areas and the economically less advanced hinterlands of Sweden (Figure 4). In addition to the spatial uniformity of the decline, there were also no differences by women and men with different migration background, that is, between those with no migration background through their parents and those born to parents who had moved to Sweden from other countries (Ohlsson-Wijk and Andersson 2022). Nor has the decline varied much across socio-economic indicators, such as women’s different levels of earnings or their different types of labor-market attachment, even though women and men with a weaker standing in the labor market had a slightly stronger fertility decline than those established with higher levels of earnings (Ohlsson-Wijk and Andersson 2022). Such a similarity of changes in childbearing behavior across the population is striking, not least because structural transformations and the divergence in factual circumstances cannot explain such an identical development. Together with the concentration of the decline among childless women of all ages living in a union, this may be an indication of an emerging new pattern of non-childbearing behavior brought about by factors that

influence parenthood considerations and which need to be explored in greater detail with other types of data.

Figure 4. Relative first-birth risks by type of region, 1991-2018, women in Sweden. Interaction of type of region and calendar year. First-birth risks are standardized for age of woman.



Source: authors calculations based on Swedish register data

Pandemic babies – a new puzzle?

The outbreak of the Covid-19 pandemic in 2020 added a new facet to the fertility conundrum of the preceding decade and the theoretical assumption of perceived uncertainty as a driving force behind it. The results of the analyses of register data presented above indicate that the decline during the 2010s marked the onset of a new fertility behavior in Sweden. The concentration of the decline among childless couples of all childbearing ages and the homogeneity of the decline across all social groups suggested that the previous Swedish (and Nordic) pattern of postponement of parenthood at younger ages and recuperation at higher ages may no longer hold. The new childbearing trend seemed to be “not just later, but fewer” (Hellstrand et al. 2021), and was assumed to originate from increasing perceptions of uncertainty in the population about the future (see, e.g. Comolli et al. 2021; Hellstrand et al. 2021, 2022; Vignoli et al. 2020a; Guetto et al. 2020; Comolli and Vignoli 2021).

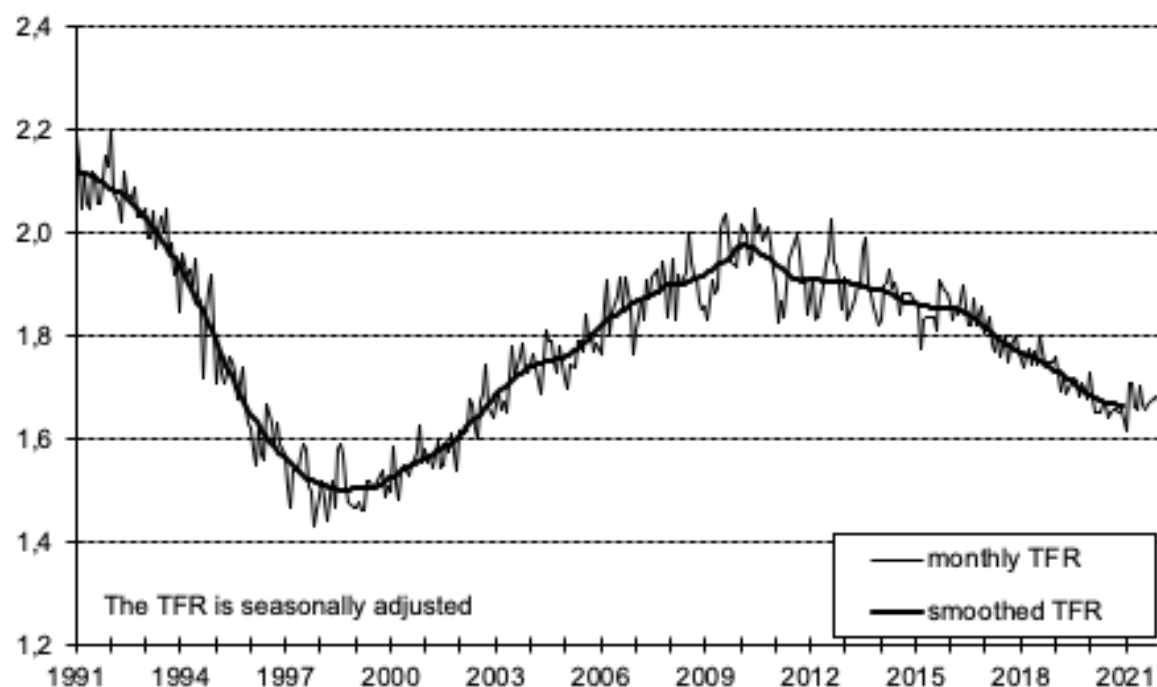
With the new uncertainty brought about by the Covid-19 pandemic most demographers assumed a further, even precipitous decline of fertility (see, e.g., Aassve et al. 2020; Berrington

et al. 2021). They based their assessment partly on the findings from previous pandemics, e.g. the Spanish influenza, on the impact of the Great Recession of 2007/2008, and on the economic uncertainty hypothesis as the most plausible explanation for the fertility decline in the 2010s (ibid). Studies carried out at the beginning of the pandemic seemed to confirm the prediction. In Italy, France, Germany, Spain, and the UK research revealed that the pandemic had lowered people's fertility plans. However, people's negative reactions to the pandemic varied by country and by social belonging (Luppi et al. 2020). In Poland, only about a fifth of those who had planned to have a child, changed their plans due to the outbreak of Covid-19 (Malicka et al. 2021). As the pandemic continued, its effect on fertility became more heterogeneous. An Italian study on changes of fertility intentions showed that eight months into the pandemic, respondents had reacted differently to their economic outlooks than at the beginning of the pandemic (Arpino et al. 2021). Initial negative reactions of individuals working in vulnerable occupations partly petered out, while individuals that continued to experience adverse economic consequences of the pandemic and maintain a dire outlook on their economic future continued to have lower childbearing intentions than their less affected and more optimistic peers. These studies suggested that the associations between the Covid-19 pandemic and childbearing considerations are contextually sensitive, with respect to the country of observation, the development of the pandemic and the timing of the investigation. Researchers also contended that the extent to which fertility will decline may depend on the governmental reaction to the pandemic, the coping mechanism and the degree of trust in the population (Aassve et al. 2020).

Early comparisons of the monthly numbers of children born during the last quarter of 2020 and early 2021 seem to corroborate the basic assumptions of a decline: In most European countries, the number of births declined, and the decline seems to have accelerated over the investigated months (Sobotka et al. 2020). However, to the surprise of most demographers, later data showed that this did not keep holding and that in many countries the number of births increased during 2021. This certainly applies to the Nordic countries: In Denmark, Finland, Iceland and Norway, the number of births increased already during the first quarter of 2021 (Rotkirch 2021; Andersen 2021; Statistics Denmark 2021; Visir 2021). It also applies to Sweden, whose monthly TFRs during 2021 suggest a clear trend reversal from previous fertility declines and an increase in Swedish birth rates during that year (Figure 5; Statistics Sweden 2021b).

However, the monthly TFR does not provide any insight into who decided to have a child during the pandemic. Given that the childbearing behavior of childless couples and parents clearly differed during the 2010s, it would be essential to know whether the increase in the TFR during 2021 indicates a reversal of the behavior of childless couples or whether the pattern observed during the 2010s continues. Data for an in depth investigation of any continuation or rupture of the underlying pattern of childbearing through 2021 are not available yet; however an analysis of aggregate birth rates indicate that the elevated birth rates in 2021 were due to more rapid higher-order childbearing among those who were already parents as much as to any trend reversal among the childless (Statistics Sweden 2022).

Figure 5. Monthly Total Fertility Rate for Sweden, January 1991 - December 2021



Source: Statistics Sweden

Perceived uncertainties and childbearing intentions: New indications of a “subjective turn” in family formation?

In our case, we are fortunate to also be able to resort to data from the GGS2021 that provide insight into which factors may have shaped fertility decisions during the pandemic, and whether the assumptions of increasing relevance of uncertainty perceptions in childbearing decisions holds. Further, Sweden is a pivotal case for the study of any linkages between

objective and perceived uncertainties and fertility and to assess whether the factors that may have shaped childbearing considerations during the pandemic may also be of relevance beyond it. From the onset of the Covid-19 pandemic, Swedish authorities anticipated a long-lasting pandemic and oriented their strategies towards maintaining normalcy as far as possible. The measures to contain the pandemic were less invasive than in other post-industrial countries (Esaiasson et al. 2021). Rather than imposing severe restrictions, e.g., complete lock-downs or closure of grade schools and childcare facilities, the government largely relied on people's cooperation and their compliance with "soft" recommendations to avoid spreading the virus (e.g., home office, social distancing). To maintain economic stability and avoid individual economic hardship, labor-market and social-policy supports were increased and previous restrictions were loosened. This also applied to fertility-related policies (e.g. the elimination of requirements for and extension of available days of temporary parental leave to take care of a child in case s/he or the usual childminder is sick or the childcare institutions was closed (cf. Koslowski et al. 2020). Access to health and maternity care were kept up, although with additional measures to avoid virus transmission. Studies showed that despite the pandemic only a minority of women opted for an abortion due to Covid-19 or had difficulties to access contraceptives (Niemeyer Hultstrand et al. 2022); preterm births and stillbirths did not increase (Pasternak et al. 2021), and Swedish mothers' assessment of the quality of maternal and newborn care at delivery during the pandemic was above the average of twelve European countries (Lazarini et al. 2022).

However, especially during the initial months of the pandemic, Sweden encountered soaring numbers of Covid-19 related deaths and its mortality remained higher than in the other Nordic countries (cf. Drefahl et al. 2020; Brandén et al. 2020; Kolk et al. 2022). The high death toll of Covid-19 during the initial months of the pandemic raised criticism of the lenient measures applied in Sweden (cf. Esaiasson et al. 2021). Despite the increased death rates, critical discussions, and overall uncertainty during the first acute phase of the pandemic, trust in the government and institutions, which had been high by international comparison even before the pandemic, increased further, even among groups that have otherwise been distant to the government (Esaiasson et al. 2021). To the surprise of researchers, not only institutional trust, but also interpersonal trust increased in Sweden during the pandemic (Esaiasson et al. 2021).

How do such aspects of factual experience and perceived uncertainties influence childbearing intentions of Swedish women and men and what can they tell us about fertility development

during the pandemic? Which uncertainties matter for their considerations to have or not to have a child? To answer these questions, we use modules that we specifically implemented in the Swedish GGS2021 to capture three essential aspects of uncertainties that may influence fertility: (a) the perceived impact of the Covid-19 pandemic on people's financial situation, their satisfaction with the work situation, relationship with friends and family, and their mental well-being, (b) their concerns about employment security and their perceived resilience in case of job loss, (c) their worries about global events, such as terrorism, climate change, overpopulation, and pandemics, and their trust in institutions (Andersson et al. 2020). These modules allow us not only to weigh the impact of real and perceived economic and global uncertainties and the forces that may mitigate them; but by focusing on the group of childless women and men living in a couple relationship, they also allow us to unravel part of the fertility puzzles of the past decade and the pandemic period. We present the key results from our analyses of the GGS2021 responses of childless participants aged 20 to 40 who were in a relationship at the time of the survey.

The impact of the Covid-19 pandemic on childbearing intentions

Generally, it seems that the Covid-19 pandemic had a limited impact on the financial security and the relationship with family and friends (Table 2a). About half of the respondents reported that the situation had stayed the same as prior to the pandemic, and fairly equal fractions that the situation had improved or worsened. However, relatively large fractions reported that their mental wellbeing had deteriorated during the pandemic (47%) and that the satisfaction with their situation at work had also declined (41%).

The situation for childless women and men in couples (Table 2b) deviates somewhat from that of the general population (Table 2a). The responses of the childless living in a relationship tend to be stretched somewhat more towards the extreme, that is that they either experienced their situation as worsened or as improved. In contrast, the situation for one- and two-child parents does not deviate at all from the patterns we observe for the general population (results not shown but available on request). Together, these findings seem to reflect that the population sub-groups that have contributed to the fertility decline are also the ones who are most sensitive to changing circumstances such as those that occurred during a pandemic.

Table 2a. Assessment of the impact of the Covid-19 pandemic on different personal domains of life, all GGS respondents (n= 8,082)

Comparing your current situation with your situation just before the outbreak of COVID-19 in March 2020, would you say that the following aspects of your life have improved, worsened or stayed the same?			
	Worsened	Stayed the same	Improved
a. Your sense of financial security	22%	54%	24%
b. Your mental well-being	47%	38%	15%
c. The relationship with friends and family	28%	52%	20%
d. The satisfaction with your work situation	41%	36%	23%

Table 2b. Assessment of the impact of the Covid-19 pandemic on different personal domains of life, childless GGS respondents with a partner, ages 20-39 (n= 1,004)

Comparing your current situation with your situation just before the outbreak of COVID-19 in March 2020, would you say that the following aspects of your life have improved, worsened or stayed the same?			
	Worsened	Stayed the same	Improved
a. Your sense of financial security	24%	41%	35%
b. Your mental well-being	54%	26%	20%
c. The relationship with friends and family	31%	44%	25%
d. The satisfaction with your work situation	42%	29%	28%

Source: Sweden's Generation and Gender Survey of 2021

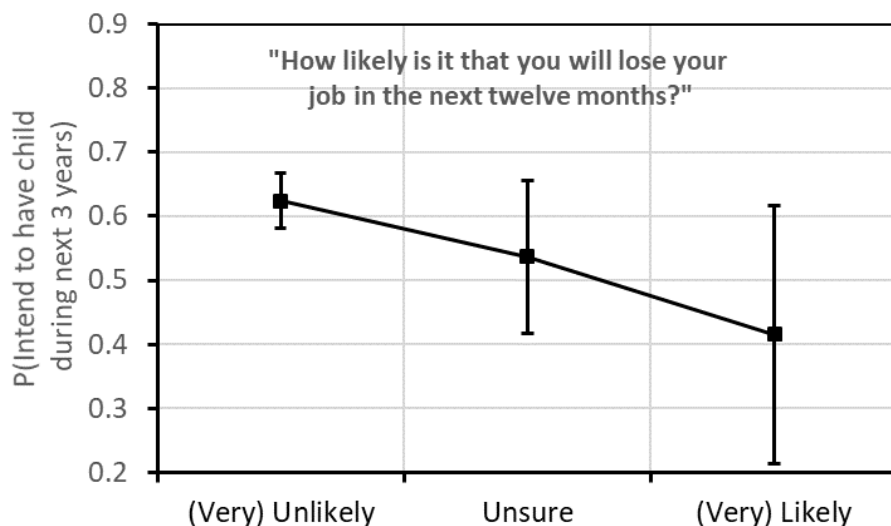
Surprisingly, and in contrast to the Polish and Italian studies cited above, an impairment of mental well-being or of the work situation does not seem to lower childbearing intentions, neither with respect to ever wanting to have a child nor with respect to intending to have a child in the next three years. The share of childless women and men in a union who intend to have a child is roughly the same for those who report worse, the same, or better mental or work conditions. The results appear to be similarly non-striking for the assessment of the financial situation and relationships to friends and families before and during the pandemic (results not shown but available on request). In sum, factual changes of the employment, economic, private and personal situation during the pandemic did not matter for childless couples' intentions to

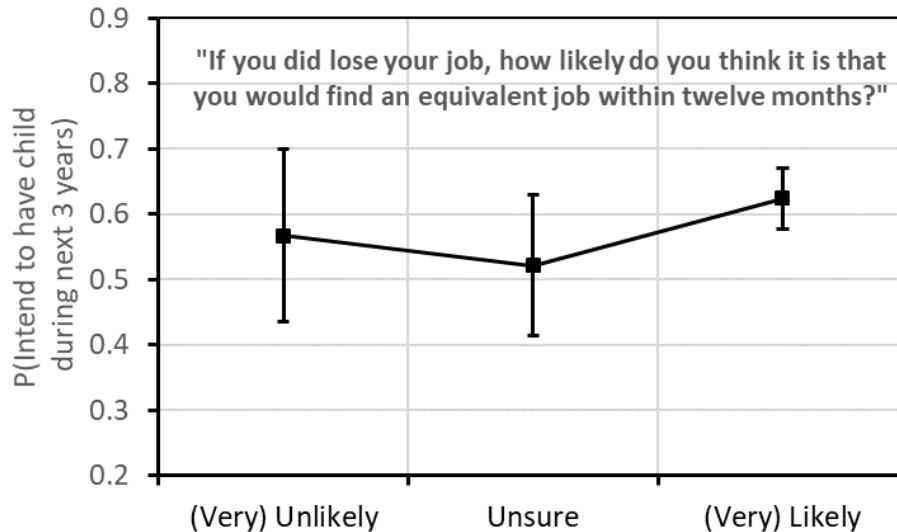
have or not to have a child in the next three year. This underlines the need to look at the link between perceptions of future economic and global uncertainties and childbearing intentions.

Perceived uncertainties and childbearing intentions

As regards economic uncertainty, worries about one’s own and one’s partner’s job security and fears of remaining unemployed if oneself or the partner loses the job seem to reduce short-term childbearing intentions in childless couples. Respondents who believe that their own job is safe, and that should they lose their job they will find an equivalent one within 12 months are more likely to consider becoming a parent in the next three years than those who are not as optimistic about their own employment security and potential re-employment prospects (Figure 6). The results are not as striking as in studies for other countries (e.g. Gatta et al. 2021 for Italy). High employment rates among women and men and comprehensive social-security protection in Sweden may reduce the fear of labor-market related uncertainties. The confidence intervals in Figure 6 underline that most people in Sweden think that it is very unlikely that they will lose their job, and very likely that they will find another job should they lose it.

Figure 6. Predicted probabilities for intention to have a child during next three years, by Job Uncertainty, with controls for sex, age and educational attainment. Weighted results. Childless R in a relationship (incl. LAT) aged 20 to 40 whose main activity is (Self-)Employment. “Probably yes”, “Definitely yes” and “currently trying to get pregnant” = 1. “Probably not” and “Definitely not” = 0.





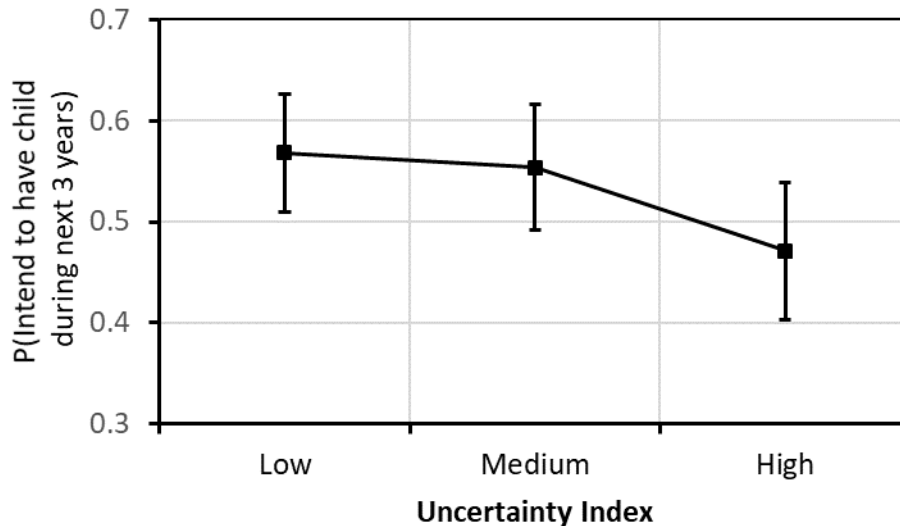
Source: Authors calculations based on Sweden's Generation and Gender Survey of 2021

Fears concerning the overall global situation depress plans to become a parent (Figure 7). Those who are very troubled by global issues appear to be less likely to consider having a child in the next three years than those who are less or not worried at all. Each individual global event is in itself only moderately associated with childbearing intentions, however with somewhat stronger associations for worries about overpopulation, economic crises, social inequalities, and political extremism (cf Appendix Figure 1). None of the individual associations are very strong and some indicators, such as worries about crime and terrorism rather work in the opposite direction.

Figure 7. Predicted probabilities for intention to have a child during next three years, by Global Uncertainties Score, with controls for sex, age and educational attainment.

Weighted results. Childless R in a relationship (incl. LAT) aged 20 to 40 (n = 941). “Probably yes”, “Definitely yes” and “currently trying to get pregnant” = 1. “Probably not” and “Definitely not” = 0.

Uncertainty Score: 0-19 points = “Low”, 20-25 points = “Medium”, 26-39 points = “High”.



Source: Authors calculations based on Sweden’s Generation and Gender Survey of 2021.

Note: Points for Global uncertainties index are calculated from summaries of individual items presented in Appendix Figure 1, with 1 point given for each “Not particularly worrying”, 2 points for each “Somewhat worrying”, and 3 points for each “Very worrying”.

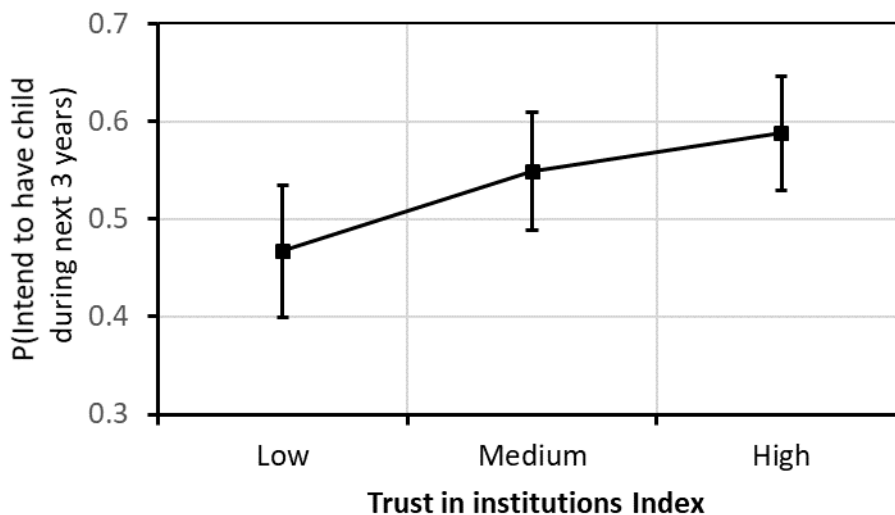
The same analyses for women and men who are already parents show no similar patterns of associations of perceptions of global uncertainties with the intentions to have a second or a third child (results not shown but available on request). Taken together, this underlies the significance of perceived global uncertainties for the childbearing decisions for the specific group of childless people who contributed to the decade-long period of fertility decline.

To test our propositions of a relationship between reliance on institutions, uncertainty perception and fertility (see Comolli et al. 2021), we also explored how trust in political, regulatory, welfare-state and civil institutions is associated with childbearing intentions. Indeed, our data show that those who have low trust in institutions appear to be less likely to consider having a child in the next three years than those who have medium or high trust in these institutions (Figure 8). This extends corresponding results of a study on the impact of generalized social trust on fertility in Italy (Aassve et al. 2021).

Figure 8. Predicted probabilities for intention to have a child during next three years, by Trust in Institutions Score, with controls for sex, age and educational attainment.

Weighted results. Childless R in a relationship (incl. LAT) aged 20 to 40 (n = 941). “Probably yes”, “Definitely yes” and “currently trying to get pregnant” = 1. “Probably not” and “Definitely not” = 0.

Trust in institutions index: 0-11 points = “Low trust”, 12-15 points = “Medium Trust”, 16-24 points = “High Trust”.



Source: Authors calculations based on Sweden’s Generation and Gender Survey of 2021.

Note: Points for Trust in institutions index are calculated from summaries of individual items presented in Appendix Figure 2, with 1 point for each “Quite low trust”, 2 points for each “Neither high or low”, 3 points for each “Quite high trust”, and 4 points for each “Very high trust”.

The same analyses for one-child parents show a similar positive relation of trust in institutions with the intention to have a second child, but no association is found for the intention of two-child parents to have a third child (results not shown but available on request). This again underlines the significance of global uncertainties for childbearing decisions that happen at the early stages of family building.

Conclusions

The decade-long fertility decline in Sweden, the Nordic countries and other post-industrial societies with a total fertility rate that used to be close to replacement level has puzzled demographers. It challenges theoretical assumptions in fertility research, namely that a sound economy, comprehensive family support, and gender equality in families and society work as a safeguard against depressed fertility levels. In search for explanations of the recent fertility change, researchers have suggested that economic uncertainties invoked by the Great

Recession may have continued to shape women and men's childbearing behavior in the aftermath of that recession (e.g. Comolli et al. 2021). People who perceive their economic future as uncertain and who are also uncertain of whether they will be able to handle an uncertain future, are likely to be less inclined to have a child (Vignoli et al. 2020b). The onset of the Covid-19 pandemic further highlighted the relevance of these assumptions and spurred research into fertility behavior under uncertain circumstances.

With this study we aimed to further this line of research and to add new angles to ongoing theoretical discussions and empirical investigations on the role of perceived uncertainties in family dynamics. First, empirically our research demonstrates that the decline of fertility cannot be properly understood and assessed without a detailed analysis of the demographic, socio-economic and spatial patterns that underlie it. Our analysis of population-based register data clearly showed that the general fertility decline was mainly attributable to changes in childbearing behavior among childless couples and that it occurred across all socio-economic groups and spatial units. Viewed together with similar findings for Finland (Hellstrand et al. 2022), this suggests that factors or considerations that guide the transition to parenthood, rather than those that guide the transition to have another child, have become essential for fertility trends. To become a parent is a fundamental change in a person's and a couple's life. A lot of research has shown that having the first child may have far-reaching income- and employment consequences, especially for women. If perceived economic uncertainty and uncertainties about how to deal with them in the future have become a decisive factor in fertility decisions, it is plausible that this plays out more at the transition to a first than to subsequent births, leading to the pattern of decline that we found.

Second, however, Sweden had neither encountered a severe impact of the Great Recession nor any other objective changes during the past decade that could have increased the factual economic concerns among couples in that time. Comparing the fertility decline after the 1990s economic crisis and the Great Recession in Sweden (and the other Nordic countries), Comolli et al. (2021) suspected that a broader range of perceived uncertainties and less trust in public institutions to protect against future uncertainties may have made couples hesitant to have a child. The outbreak of the global pandemic made it even more necessary to broaden the framework of childbearing considerations in order to capture the impact that uncertainties brought about by global issues and decreasing institutional trust may have on childbearing considerations. We therefore amended the Swedish Generations and Gender Survey of 2021 in

order to be able to analyze to what extent factual circumstances, perceived economic uncertainties and perceived global uncertainties may matter for childbearing intentions, and what role could be ascribed to economic resilience and trust in institutions in childbearing considerations. The results of our analyses provide support for the theoretical assumption that imaginations of the future indeed have become a decisive aspect in women and men's childbearing considerations. Our findings revealed that objective factors that had been affected by the intervention of the Covid-19 pandemic, such as the financial situation, work, private relationships, and mental well-being did not matter significantly for childbearing intentions, neither for all respondents, nor for childless couples or parents. The lack of a significant influence of the factual situation during the pandemic held irrespective of whether their situation improved, worsened or remained the same during this time. This is yet another signal that the most recent development of people's life circumstances may not have played the decisive role for their fertility considerations that researchers often have attributed to it.

In contrast, perceived uncertainties related to a broader range of subjective dimensions appear to have mattered for childbearing intentions. We concentrated on childless couples' perceived uncertainties because they were the ones who had altered their childbearing behavior during the past decade, they reported more polarized impacts of the pandemic on their objective life situations, and for them, potential parenthood bears more perceived uncertainties than for those who already have a child. The results indicate that at least in the case of Sweden, different dimensions of perceived global uncertainties and the degree of trust in institutions may matter as much, or more, for couples' childbearing intentions than what do economic uncertainties. They may also provide better explanations for the fertility developments during the last decade, as indicators of economic performance improved rather than deteriorated during that decade, while the climate of general trust and subjective perceptions of the state of affairs in different societies and domains of life showed no similar improvement.

Viewing these findings together we regard them as reflections of changes in behavior and perceptions that are of wide significance for fertility development and for fertility research. It seems that the decision to become a parent has become less determined by different factual circumstances and more by perceived (un)certainties and subjective imaginations of the future. This concerns foreseeable uncertainties, such as our investigated economic uncertainties, as well as less foreseeable and controllable uncertainties related to a range of global factors. We regard this new development as representing a "subjective turn" in fertility considerations and

childbearing behavior. It may be that individuals' subjective assessments of their lives and the context in which they live, their perceptions of realities and (un)certainities, and imaginations and subjective interpretations of future developments have become much more influential than before in childbearing considerations. This may lead to less predictable fertility outcomes in the future, in particular if resilience and trust in institutions decrease. For fertility research this subjective turn in events may require a broader methodological approach than what is currently common in demographic research. It would benefit from combining in-depth quantitative analyses that bring out the underlying structure of patterns behind the aggregate developments with more qualitative research that focuses on the perceptions and imaginations of the future.

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References

- Aassve, A., Le Moglie, M. and Mencarini, L. (2021). Trust and fertility in uncertain times. *Population Studies* 75(1): 19-36.
- Aassve, A., Cavalli, N., Mencarini, L., Plach, S., & Bacci, M. L. (2020). The COVID-19 pandemic and human fertility. *Science*, 369(6502), 370–371. <https://doi.org/10.1126/science.abc9520>
- Alderotti, G., Vignoli, D., Baccini, M. and Matysiak, A. (2021). Employment stability and fertility in Europe. A meta-analysis. *Demography* 58: 871-900.
- Andersen, E. (2021). Surprising increase in birth numbers. Statistics Norway (May 20, 2021): <https://www.ssb.no/en/befolkning/folketall/statistikk/befolkning/articles-for-population/surprising-increase-in-birth-numbers>.
- Andersson, G. (2000). The impact of labour-force participation on childbearing behavior: Pro-cyclical fertility in Sweden during the 1980s and the 1990s. *European Journal of Population* 16: 293-333.

- Andersson, G. and Kolk, M. (2015). Trends in childbearing, marriage and divorce in Sweden: An update with data up to 2012. *Finnish Yearbook of Population Research* 2015: 21-30.
- Andersson, G., Dahlberg, J. and Neyer, G. (2021). A Swedish Generations and Gender Survey 2021: Familjer och vardagsliv i Sverige och Europa. Stockholm Research Reports in Demography 2021:07.
- Andersson, G., Dahlberg, J. and Neyer, G. (2020). New sub-module on Uncertainties and resilience in the Swedish GGS2020. Technical working paper. The Hague, Netherlands Interdisciplinary Demographic Institute.
- Andersson, L. (2021). Partnerships and fertility: Trends and conjectures', paper presented at 'What happened to Nordic fertility?' 3 February 2021, Turku, Finland.
- Arpino, B., Luppi, F. and Rosina, A. (2021). Changes in fertility plans during the Covid-19 pandemic in Italy: The role of occupation and income vulnerability. ALR-preprint 3: <https://osf.io/preprints/socarxiv/4sjvm/>
- Beck, U. (1992). *Risk Society. Towards a New Modernity*. London: Sage.
- Beck, U. (1999). *World Risk Society*. Cambridge: Polity Press.
- Beck, U. (2002). The terrorist threat. World risk society revisited. *Theory, Culture & Society* 19(4): 39-55.
- Beck, U. (2006). Living in a world risk society. *Economy and Society* 35(3): 329-345.
- Beckert, J. (2016). *Imagined Futures. Fictional Expectations and Capitalist Dynamics*: Cambridge: Harvard University Press.
- Beckert, J. and Bronk, R. (2018). An introduction to uncertain futures. In: Beckert, J. and Bronk, R. (eds). *Uncertain Futures: Imaginaries, Narratives and Calculations in the Economy*. Oxford: Oxford University Press.
- Bernardi, L., Huinink, J., and Settersten, R.A. (2019). The life course cube: A tool for studying lives. *Advances in Life Course Research* 41: 100258.
- Berrington, A., Ellison, J., Kuang, B., Vasireddy, S., and Kulu, H. (2021). Scenario-based fertility projections incorporating impacts of COVID-19. *Population, Space and Place*: e2546. DOI: 10.1002/psp.2546.
- Brandén, M., Aradhya, S., Kolk, M., Härkönen, J., Drefahl, S., Malmberg, B., Rostila, M., Cederström, A., Andersson, G. and Mussino, E. (2020). Residential context and COVID-19 mortality among adults aged 70 years and older in Stockholm: a population-based, observational study using individual-level data". *The Lancet Healthy Longevity* 1: e80-88. DOI: 10.1016/s2666-7568(20)30016-7.
- Comolli, C.L. and Andersson, G. (2021). Partisan fertility in the aftermath of the Great Recession. Stockholm Research Reports in Demography 2021: 25.
- Comolli, C.L. and Vignoli, D. (2021). Spreading uncertainty, shrinking birth rates: A natural experiment for Italy. *European Sociological Review* 37(4): 555-570.
- Comolli, C.L., Neyer, G., Andersson, G., Dommermuth, L., Fallesen, P., Jalovaara, M., Klaengur Jónsson, A., Kolk, M. and Lappegård, T. (2021). Beyond the economic gaze: Childbearing during and after recessions in the Nordic countries. *European Journal of Population* 37: 473-520.
- Drefahl, S., Wallace, M., Mussino, E., Aradhya, S., Kolk, M., Brandén, M., Malmberg, B. and Andersson, G. (2020). A population-based cohort study of socio-demographic risk factors for

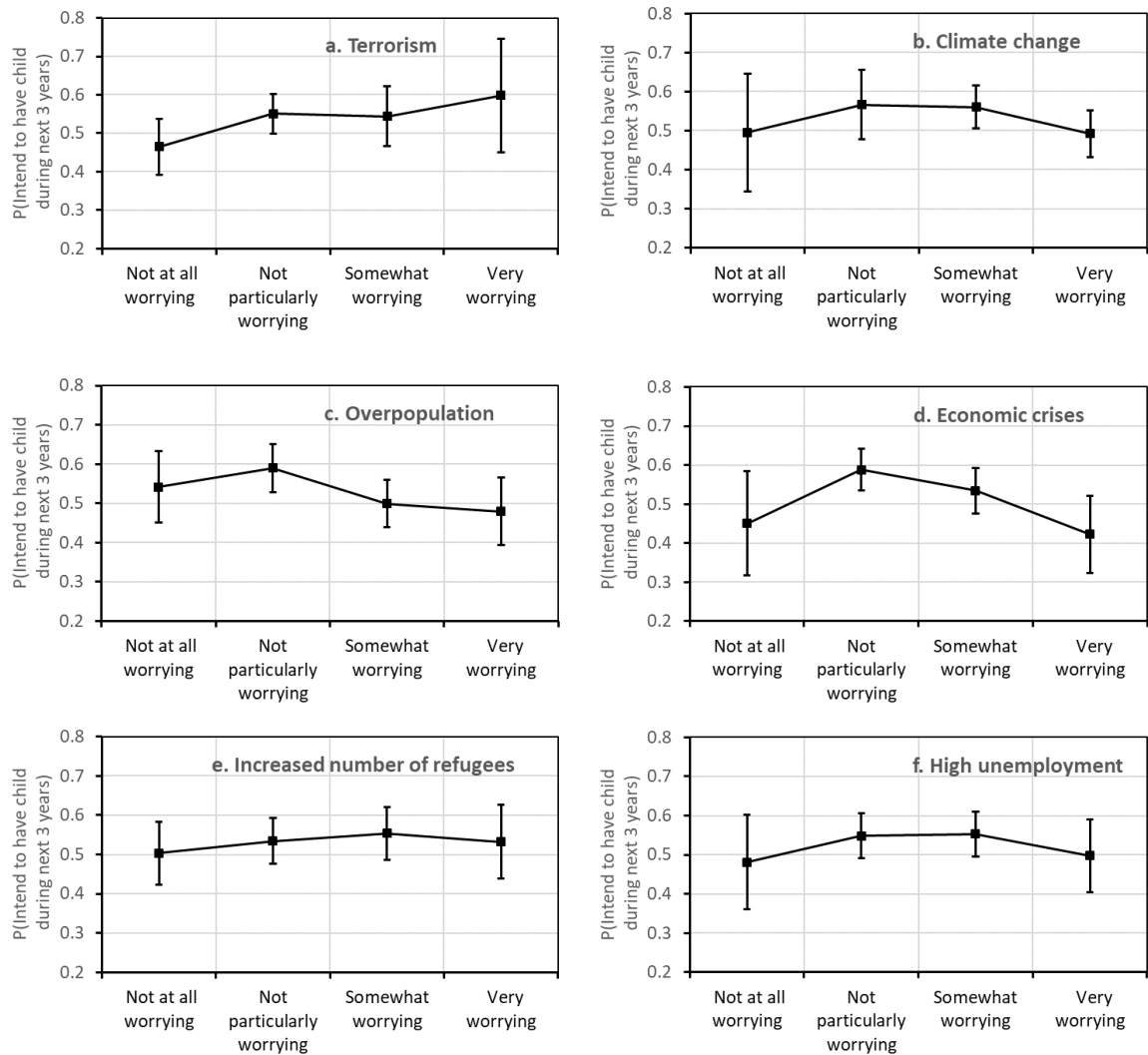
- COVID-19 deaths in Sweden. *Nature Communications* 11: 5097. DOI: 10.1038/s41467-020-18926-3.
- Ermisch, J. (2021). English fertility heads south: Understanding the recent decline. *Demographic Research* 45(29): 903-916. DOI: 10.4054/DemRes.2021.45.29.
- Esaiasson, P., Sohlberg, J., Ghersetti, M., and Johansson, B. (2021). How the coronavirus crisis affects citizen trust in institutions and in unknown others: Evidence from 'the Swedish experiment'. *European Journal of Political Research* 60: 748-760. DOI: 10.1111/1475-6765.12419.
- European Center for Disease Control and Prevention (2021). Data on country response measures to covid 19: <https://www.ecdc.europa.eu/en/publications-data/download-data-response-measures-covid-19> (30 June 2021).
- Gatta, A., Mencarini, L., Mattioli, M. and Vignoli, D. (2021). Employment uncertainty and fertility intentions: Stability or resilience. *Population Studies*. DOI:10.1080/00324728.2021.1939406
- Giddens, A. (1990). *The Consequences of Modernity*. Stanford: Stanford University Press.
- Giddens, A. (2009). *The Politics of Climate Change*. Cambridge: Polity Press.
- Guetto, R., Bazzani, G. and Vignoli, D. (2020). Narratives of the future shape fertility in uncertain times. Evidence from the Covid-19 pandemic. DISIA Working Paper 2020/11.
- Hellstrand, J., Nisén, Miranda, V., Fallesen, P., Dommermuth, L. and Myrskylä, M. (2021). Not just later, but fewer: novel trends in cohort fertility in the Nordic countries. *Demography* 58(4): 1373–1399. doi: <https://doi.org/10.1215/00703370-9373618>
- Hellstrand, J., Nisén, J. and Myrskylä, M. (2022). Less partnering, less children, or both? Analysis of the drivers of first birth decline in Finland since 2010. *European Journal of Population*, online first, 14 February 2022. <https://doi.org/10.1007/s10680-022-09605-8>
- Hitlin, S. and Johnson, M.K. (2015). Reconceptualizing agency within the life course: The power of looking ahead. *American Journal of Sociology* 120(5): 1429-72.
- Kolk, M., Drefahl, S., Wallace, M., and Andersson, G. (2022). Excess mortality and COVID-19 in Sweden in 2020: A demographic account. *Vienna Yearbook for Population Research* 2022, Vol. 20. DOI: 10.1553/populationyearbook2022.res2.2.
- Koslowski, A., Blum, S., Dobrotić, I., Kaufman, G. and Moss, P. (2020). Policy responses to the Covid-19 pandemic for parents and other carers. Supplement to *International Review of Leave Policies and Related Research 2020*. Available at: <https://www.leavenetwork.org/annual-review-reports/review-2020/>.
- Kreyenfeld, M., Andersson, G., and Pailhé, A. (2012). Economic uncertainty and family dynamics in Europe. Introduction. *Demographic Research* 27(28): 835-852.
- Kulu, H., Vikat, A. and Andersson, G. (2007). Settlement size and fertility in the Nordic countries. *Population Studies* 51(3): 265-285.
- Lappegård, T., Kristensen, A.P., Dommermuth, L., Minello, A., and Vignoli, D. (2022). The impact of narratives of the future on fertility intentions in Norway. *Journal of Marriage and Family*. DOI: 10.1111/jomf.12822.
- Lazzarini, A. et al. (2022). Quality of facility-based maternal and newborn care around the time of childbirth during the Covid-19 pandemic: online survey investigating maternal

- perspectives in 12 countries of the WHO European Region. *The Lancet Regional Health-Europe* 2022, 13: 100268 <https://doi.org/10.1016/j.lanepe.2021.100268>
- Luppi, F., Arpino, B., and Rosina, A. (2020). The impact of Covid-19 on fertility plans in Italy, Germany, France, Spain, and the United Kingdom. *Demographic Research* 43(47): 1399-1412.
- Malicka, I., Mynarska, M. and Świdarska, J. (2021). Perceived consequences of the Covid-19 pandemic and childbearing intentions in Poland. *Journal of Family Research*, Early View: 1-29.
- Matysiak, A., Sobotka, T. and Vignoli, D. (2021). The great recession and fertility in Europe: A sub-national analysis. *European Journal of Population* 37: 29-64. doi.org/10.1007/s10680-020-09556-y.
- Niemeyer Hultstrand, J., Törnroos, E., Gemzell-Danielsson, K., et al. (2022). Induced abortion and access to contraception in Sweden during the COVID-19 pandemic. *BMJ Sexual & Reproductive Health*, Online First: 24 March 2022. DOI: 10.1136/bmj.srh-2022-201464.
- Ohlsson-Wijk, S., and Andersson, G. (2022). Disentangling the Swedish fertility decline in the 2010s. *Stockholm Research Reports in Demography* 2022: 2.
- Ohlsson-Wijk, S., Turunen, J., and Andersson, G. (2020). Family forerunners? An overview of family demographic change in Sweden. In: Farris, N., and Bourque, A., Eds., *International Handbook on the Demography of Marriage and the Family*: 65-77. International Handbooks of Population 7. Springer Nature Switzerland AG. DOI: 10.1007/978-3-030-35079-6_5.
- Pasternak, B., Neovius, M., Söderling, J., Norman, M., Ludvigsson, J. and Stephansson, O. (2021). Preterm birth and stillbirth during the Covid-19 pandemic in Sweden: A nationwide cohort study. *Annals of Internal Medicine*. Letters, June. <https://doi.org/10.7326/M20-6367>.
- Rotkirch, Anna (2021). Is Finland having a pandemic baby boost? Väestöliiton blogi, 04/06/2021: <https://vaestoliitonblogi.com/2021/06/04/is-finland-having-a-pandemic-baby-boost/>.
- Settersten, R., Bernardi, L., Härkönen, J., Antonucci, T., Dykstra, P., Heckhausen, J., Kuh, D., Mayer, K.U., Moen, P., Mortimer, J., Mulder, C., Smeeding, T., van der Lippe, T., Hagestad, G., Kohli, M., Levy, R., Schoon, I., and Thomson, E. (2020). Understanding the effect of Covid-19 through a life course lens. *Advances in Life Course Research* 45: 100350.
- Sobotka, T., Jasilioniene, A., Alustiza Galarza, A., Zeman, K., Németh, L., and Jdavnov, D. (2021). Baby bust in the wake of the Covid-19 pandemic? First results from the new STFF data series. Version 24 March 2021.
- Sobotka, T., Skirbekk, V., and Philipov, D. (2011). Economic recession and fertility in the developed world. *Population and Development Review* 37(2): 267-306.
- Statistics Denmark (2021). Live Births Statistics BEV3A – monthly births): <https://www.statbank.dk/10017>.
- Statistics Sweden (2021a). <https://www.statistikdatabasen.scb.se>, gathered 2021-11-16.
- Statistics Sweden (2021b). Fruktsamhetstal och antal födda per månad 2015–2021 (unpublished data).
- Statistics Sweden (2022). Barnafödande i coronatider. 2020–2021 jämfört med 2016–2019 [Childbearing during Corona times. 2020–2021 compared to 2016–2019]. Demografiska rapporter 2022:3. ISSN: 1654-1510.

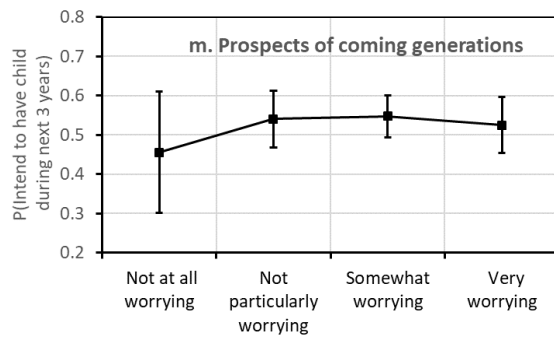
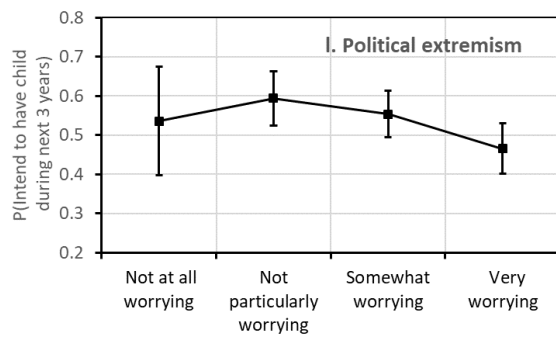
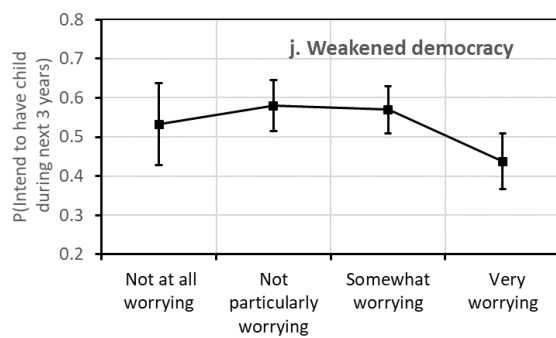
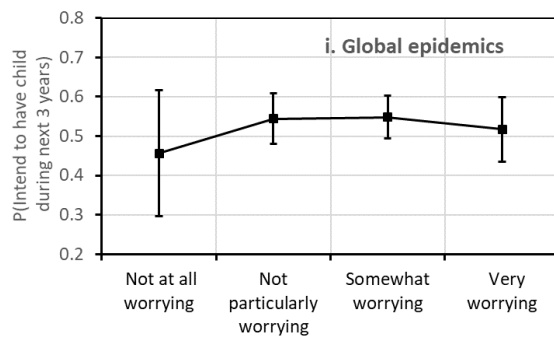
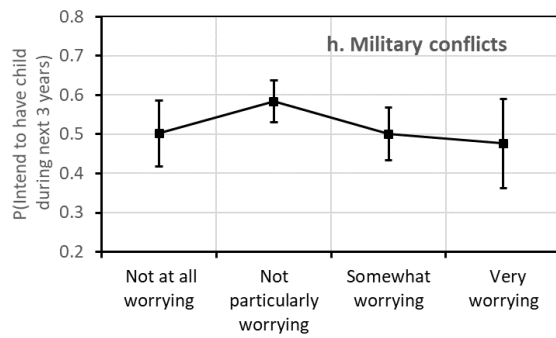
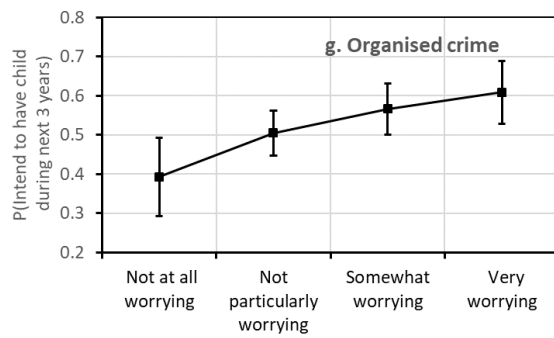
- Vignoli, D., Bazzani, G., Ghetto, R., Minello, A. and Pirani, E. (2020a). Uncertainties and narratives of the future. A theoretical framework for contemporary fertility. In: Schoen, R. (ed). *Analyzing Contemporary Fertility*. Springer Online, pp: 1-20.
- Vignoli, D., Guetto, R., Bazzani, G., Pirani, E. and Minello, A. (2020b). A reflection on economic uncertainty and fertility in Europe: The narrative framework. *Genus* 76: 28.
- Vignoli, D., Minello, A., Bazzani, G. *et al.* (2022). Narratives of the Future affect fertility: Evidence from a laboratory experiment. *European Journal of Population* 38: 93–124.
<https://doi.org/10.1007/s10680-021-09602-3>
- Visir (2021). Record number of births expected (24 May 2021, in Icelandic):
<https://www.visir.is/g/20212113358d>.

Appendix Figure 1. Predicted probabilities for intention to have a child during next three years, by individual items of Global Uncertainties Score, with controls for sex, age and educational attainment. Weighted results. Childless R in a relationship (incl. LAT) aged 20 to 40. “Probably yes”, “Definitely yes” and “currently trying to get pregnant” = 1. “Probably not” and “Definitely not” = 0.

Survey question: *Thinking about the future, how much does the following worry you?*



(cont.)



Appendix Figure 2. Predicted probabilities for intention to have a child during next three years, by individual items of Trust in Institutions Score, with controls for sex, age and educational attainment. Weighted results. Childless R in a relationship (incl. LAT) aged 20 to 40. “Probably yes”, “Definitely yes” and “currently trying to get pregnant” = 1. “Probably not” and “Definitely not” = 0.

Survey question: *How much confidence do you have in the way the following institutions and groups do their job?*

