Introduction

Whereas the Nordic countries and much of Western Europe and beyond have experienced a significant fertility decline since the 2010s, the Total Fertility Rate (TFR) in Estonia was stable during the last decade hovering around 1.6. Starting from 2022, however, Estonia was witnessed an abrupt decline in fertility with the TFR falling from 1.61 in 2021 to 1.18 in 2024, which is the lowest figure recorded in history. Age-specific birth rates indicate that this is not a question of postponement among the young, since birth rates have declined across ages. In 2025 the decline is continuing. In public discourse the "era of crises" is commonly thought to be the cause and this refers to COVID, fears of war due to Russian aggression in Ukraine and rapid inflation. The aim of the study is to assess these period effects on Estonian fertility.

The study aligns with the literature that seeks to determine the role of uncertainties in modern fertility behaviour (Vignoli et al. 2020). The literature so far has focused more on economic aspects, both at an individual as well as macroeconomic prospects (Alderotti et al. 2021; Lappegård et al. 2022; Vignoli et al. 2012, 2022). Also, there is research on the possible role of anxieties due to global warming (Bastianelli 2025; Berrington et al. 2024; Peters et al. 2025).

The COVID pandemic also has been studied with respect to fertility behaviour and overall the effects have been minimal (Buber-Ennser et al. 2024; Bujard and Andersson 2024; Sobotka et al. 2024). To the best of our knowledge there exists two studies that have analysed the link between the full-scale invasion of Ukraine by Russia and fertility intentions in Finland and Austria (Buber-Ennser 2025; Golovina et al. 2025) and both do find some negative effects.

We argue that the Russian aggression in Ukraine can be expected to influence Estonia a lot. First, Estonia borders Russia and has been invaded by Russia numerous times in history, also in living memory. Second, although Estonia had one of the highest defence budgets compared to GDP, defence spending has increased substantially during the past years and has been financed by tax hikes. Third, Estonia has recorded the highest increase in the cost of living during the past few years in Europe, to a great extent this is also an effect of the war, with the consumer price index having increased by 42% compared to 2021.

Data and methods

"We draw on multiple data sources. First, we analyse monthly fertility statistics to identify not only the impact of the war's outbreak but also the effects of its subsequent phases—such as Ukraine's military successes in late 2022. Second, we use survey data commissioned by the Estonian government to monitor public sentiment and anxiety, including concerns related to external security and personal financial well-being. We especially are interested in questions such as "How secure can the Estonian state feel at the present time" and „Which of the following descriptions best corresponds, in your opinion, to your household's current financial situation".

Third, we use the Estonian Generations and Gender Survey (GGS). The first wave of the Estonian GGS was completed in 2021 and early 2022, as COVID was decreasing in salience and just before the full-scale invasion of Ukraine by Russia. The second wave was done in 2024–25. Data collection was implemented as a fully self-administered web-based survey. The response rate of

the first wave was 27%. While the relatively low response rate raises concerns about representativeness, it is important to note that the distribution of respondents by number of existing children and age-specific fertility rates closely mirrors population-level data (Leocádio et al. 2023; Puur et al. 2024). The second wave achieved a retention rate of 63%. Unpublished analysis shows that retention is not related to fertility-related variables.

The Estonian GGS offers a valuable opportunity to examine the impact of all three crises on fertility behaviour. The first wave included a county-specific module addressing how the COVID-19 pandemic had affected respondents' lives (for instance, their health and partnership). Both waves featured questions on uncertainty and included items probing concerns about armed conflict, albeit without specifying particular contexts. In addition, both waves contain extensive questions on respondents' current financial situation and future outlook. Fertility ideals and intentions are also covered, and actual fertility between the two waves is captured.

These facts and the numerous questions on fertility ideals and intentions allow for numerous ways to judge the effect of the three crises. First, as cross-sectional analysis at both waves. Second, we are able to analyse how (changes of) concerns are linked to (changes) in fertility ideals and intentions and crucially actual fertility between the two waves.

In this paper, we present preliminary findings with a focus on the impact of war-related fears. Further analyses are planned for the conference.

Results

Monthly birth data clearly indicate that the decline in fertility began in early 2022, preceding Russia's invasion on February 24. This timing suggests that the downturn was unlikely to be caused by the war. Instead, it may be linked to the rollout of COVID-19 vaccinations and the easing of pandemic-related restrictions, as has been suggested in the cases of Sweden and Germany (Bujard and Andersson 2024). However, the decline in the number of births clearly increased at the end of 2022 coinciding with the invasion.

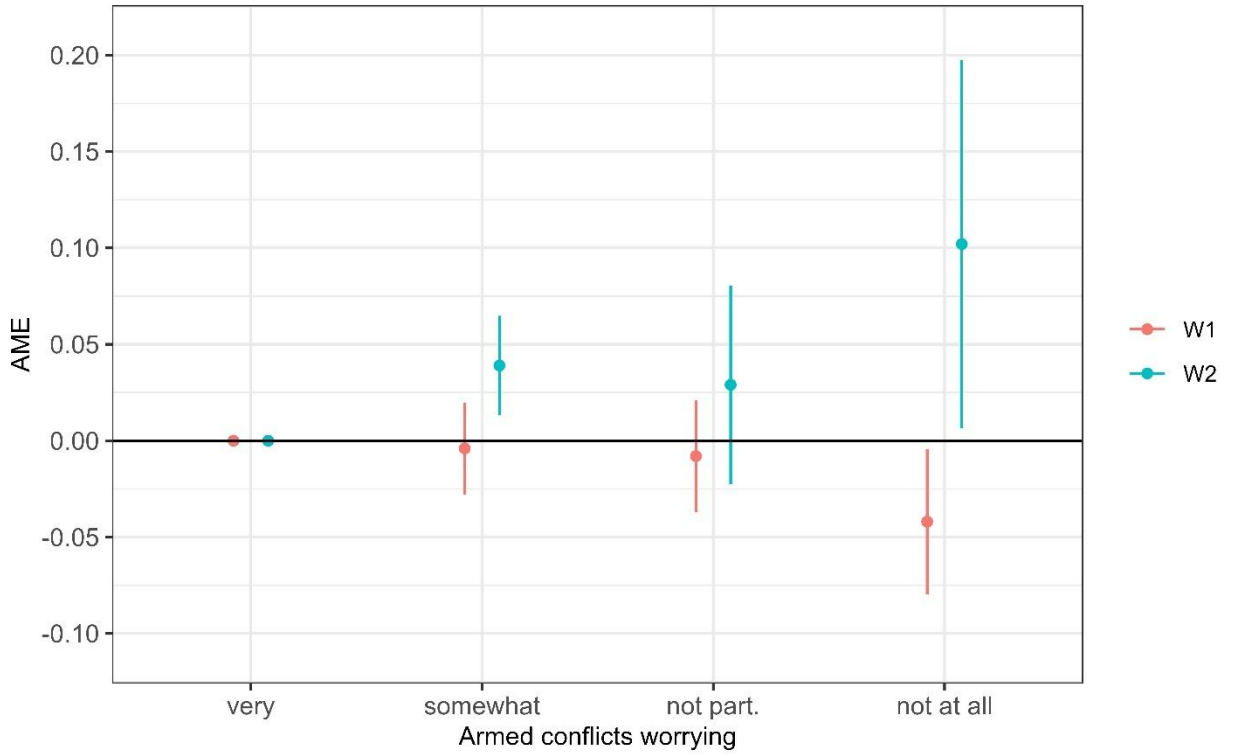
At the same time, it is important to recall that since February 24, 2022, the war initiated by Russia and the fear it has instilled, has not remained a constant. The initial shock and pessimism surrounding the outbreak of full-scale war soon gave way to optimism, especially after Russia failed to capture Kyiv and following Ukraine's successful counteroffensive in the east and south in autumn 2022, which led to Russian retreat. In 2023, the initiative largely remained with Ukraine, and there was widespread hope for success in the summer counteroffensive. Perhaps the peak of Russia's vulnerability came with Prigozhin's mutiny in July 2023, which cast serious doubt on the reputation and capability of the Russian central government.

Estonian monthly fertility data does not demonstrate reactions to these events. This is odd, since the opinion data gathered regularly throughout these years does show such changes. Individuals of childbearing age expressed heightened concern about Estonia's security following the initial full-scale invasion; these anxieties subsided during Ukraine's advances, only to intensify again as Russia regained momentum in 2024–25 and speculation grew about a potential test of NATO's eastern border.

"Data from the GGS reveal a marked increase in the share of young people who are very concerned about armed conflicts. Just prior to the war, this proportion stood at one-third; by the second wave in 2024–25, it had risen to two-thirds. In parallel, the share of respondents reporting short-term fertility intentions declined from 27% to 21%.

When worries about armed conflicts are linked to three-year fertility intentions, we also see a change. Figure 1 presents average marginal effects (AME) based on regression models. For interpretation of effect size, these should be compared to the shares of having such intentions given above. In the first wave being not at all worried correlated with lower fertility intentions. In the second wave those who were very worried exhibited lower and those least worried, a very small group, markedly higher short-term intentions.

Figure 1. Average Marginal Effects of being worried about armed conflicts on the three-year fertility intention, Estonian men and women aged 20–44.

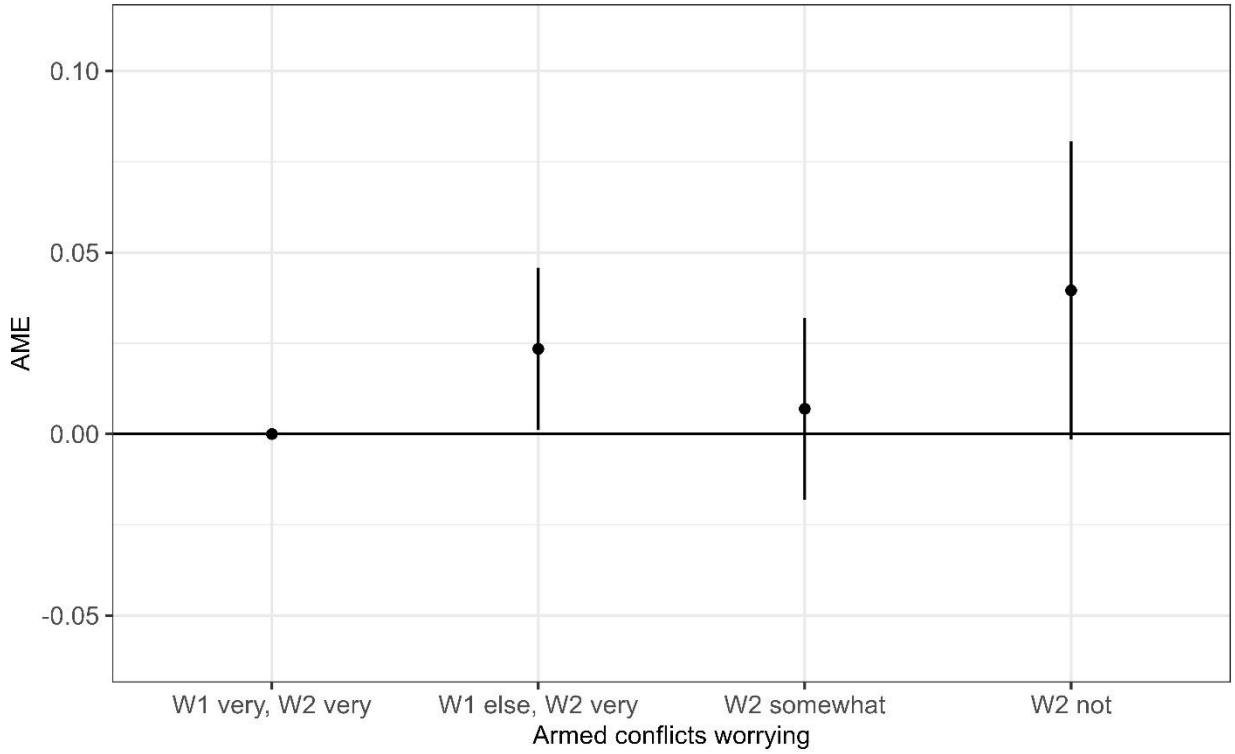


Notes: Based on logistic regression models with "probably yes" and "definitely yes" coded as having intentions and "unsure", "probably not" and "definitely not" as not. Control variables are: sex, age group, partnership status, ethnicity and existing number of children.

Figure 2 presents the link between worries about armed conflicts and actual fertility between the two waves. We have constructed four groups for the main independent variable. The reference group are those who were very worried about armed conflicts during both waves. Second group consists of those who were not very worried in the first wave but were during the second. Third group consists of those who were somewhat worried and fourth holds individuals who were not

particularly or not at all worried during the second wave. For interpretation, the share who has a(nother) child between the two waves is 16%.

Figure 2. Average Marginal Effects of being worried about armed conflicts on actual fertility between the two waves, Estonian men and women aged 20–44 at the first wave.



Notes: Based on logistic regression models. Control variables are: sex, age group, partnership status, ethnicity and existing number of children, all recorded at first wave.

Figure 2 does indicate that those who were very worried about armed conflicts at both waves record lower propensity to have had a(nother) child between the two waves. Oddly the same does not apply to those who had changed their minds to being very worried at the second wave. However, when we introduce an additional control variable for short-term fertility intentions at the first wave, all group differences disappear.

From these results it does not appear that anxieties about armed conflicts play a substantial part in individual-level fertility intentions or behaviour and this would not support the thesis that fears of war have markedly contributed to the decline of fertility in Estonia. Public opinion polls do show that financial concern and anxieties top the ranking of salient issues, which is understandable given the high inflation. In the presentation we plan to analyse it at the individual-level with GGS data. Particularly, we want to highlight how Estonia's' parental leave system which is the most generous in world (Otto et al. 2021), incentivises individuals to postpone having children in a high-inflation environment, thus contributing to the fertility decline. This is a stark contrast to Great Recession, which was dominated by layoffs and wage reductions and hence the parental leave system had a pro-natalist effect then.

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