The Digital Shift: Working From Home and the Educational Gradient in Fertility Rates

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Abstract (max 250 words)

The rapid advancement of information and communication technologies has transformed labour markets, expanding opportunities for remote work. However, this flexibility remains unevenly distributed across educational groups. Highly educated workers are substantially more likely to work from home than their lower-educated counterparts, potentially enhancing their ability to reconcile paid work and family life. This study examines how increased availability of remote work influences fertility rates among high- and low-educated workers in Belgium. We use Belgian population register data (2000–2019) linked with regional indicators of remote work availability derived from the Labour Force Survey. Multistate discrete-time hazard models are applied to estimate the association between regional remote work levels and birth risks, followed by microsimulation techniques to assess how and to what extent expanded access to remote work may reshape the educational gradient in aggregate fertility. Preliminary results reveal pronounced educational and age-specific differences in the relationship between remote work availability and the transition to motherhood. Among low-educated women, higher regional availability of working from home is generally associated with lower first-birth risks. For medium- and highly educated women, the association shifts with age—from negative in their twenties and early thirties to positive from age 35 onwards. The effects for second and higher-order births are more articulated but consistently positive across all educational groups. These findings suggest that the expansion of remote work may reshape educational differences in the timing and intensity of childbearing. Ongoing microsimulation analyses will further explore the macro-level implications and potential redistributive effects on fertility patterns.

Extended abstract

Over the past three decades, the world of work has undergone a profound transformation, fuelled by the rapid advancement of information and communication technologies (ICTs). The widespread adoption of ICTs in the labour market, along with the increasing availability of broadband internet, has facilitated novel modes of communication and collaboration that were once considered unattainable (OECD, 2019). Simultaneously, rapid globalization has intensified the pressure on companies to adapt and innovate, leading, among other things, to the implementation of high-commitment policies (Piva & Vivarelli, 2017). Altogether these developments have substantially expanded workers' opportunities for remote work. The benefits of these changes, however, are not uniformly experienced across all workers (Lopes et al 2017; Lu et al 2023). Specifically, highly educated workers are more frequently granted working from home. This is because they are more often concentrated in sectors in which remote working does not disrupt work processes, such as Finance, ICT, Accounting or R&D. Employers may also grant work from home to the best performing highly skilled employees to boost their work commitment. In contrast, lower-educated workers have limited access to work from home, as they are more often employed in sectors requiring physical presence, such as Manufacturing, Transportation, and Construction. Moreover, when lower-educated workers do have the option to work from home, it is frequently in precarious, low-paid positions offered by employers primarily for cost-saving purposes (Schor et al 2020, Christiaens 2022).

This disparity in the availability of remote work between low- and highly-educated workers may contribute to a polarization in their fertility behaviors. This is because larger autonomy over the working place has the potential to reduce the incompatibilities between paid work and care. Past research has demonstrated that working from home allows workers to adjust the working hours to family obligations and reduce commuting time (Hill et al 2003, Allen at al 2013) though there are also arguments that it can lead to blurring of the boundaries between work and family life, intensifying work-family conflict (Schieman et al 2009, Demerouti et al., 2014). Past research has documented slightly positive relationships between work from home and second birth intentions / risks (Sinyavskaya and Billingsley 2015, Osiewalska et al 2024, Osiewalska and Matysiak 2025) which suggests that those individuals who have the opportunity to organize their working life more flexibly have better conditions for family enlargement beyond parity one. Furthermore, the recent study by Osiewalska and Matysiak (2025) showed that work autonomy, including working from home, is particularly positively

related to fertility behaviours of highly educated employees. Conversely, the low educated individuals who are autonomous at work were shown to be less likely to have a second child than their counterparts without such autonomy. All in all, the increasing prevalence of remote work could potentially contribute to changes in the educational gradient between education and fertility rates from negative to positive.

We test this hypothesis by examining two key aspects: first, how the availability of jobs with potentially high entitlements to work from home in the region affects individual fertility behaviors (in general and by education), and second, how these micro-level relationships aggregate to influence macro-level fertility trends. We focus our analysis on Belgium, a country with a relatively high prevalence of remote work in Europe. The share of employees working at least occasionally from home has increased in this country from around 16% at the beginning of the 21st century to 36% in 2023.

To address our objectives, we proceed as follows. First, we compute the measure of regional availability of work from home among female workers using Labour Force Survey microdata. Second, we make use of longitudinal microdata drawn from the 2011 Belgian census and the tax return registers for the period 2000-2019. The data provide population-wide individual-level longitudinal information on women's age, level of education, municipality/district of residence, parity and age of their youngest child on the 1st of January in every observation year. We additionally control for household composition using the LIPRO-typology by Van Imhoff and Keilman (1991), as well as income.The measure of regional availability of work from home is linked with this data at the NUTS2 level. We then utilize descrite-time cloglog multistate hazard models to estimate the relationship between the availability of work from home in the region and order-specific birth risks (first, second, third, fourth, and subsequent births). Baseline includes women's age (4-order polynomial), education, and calendar year. Additionally, we investigate the differences in the effects of the availability of work from home on birth risks between highly and low educated workers given that the two groups are differently exposed to remote work and that past research demonstrated that work from home has differential impact on their fertility behaviours. We do so by interacting regional level availability of work from home with individuals' education. We also account for age changes in these relationships by interacting individual education, regional level of work from home, and woman's age. Finally, to further understand the macro-level implications, we employ microsimulation methods as proposed by Neels et al (2024) to examine how micro-level relationships between education and availability of work from home affect the overall

educational gradient in fertility. This analysis focuses on changes over time and considers parity progression ratios calculated assuming two counterfactor scenarios: 1) actual WFH, (2) WFH remaining at the 2001 level.

The preliminary analysis reveals pronounced educational and age-specific differences in the relationship between remote work availability and the transition to motherhood. Among low-educated women, higher regional availability of working from home is generally associated with lower first-birth risks. For medium- and highly educated women, the association shifts with age—from negative in their twenties and early thirties to positive from age 35 onwards. The effects for second and higher-order births are more articulated but consistently positive across all educational groups.

These findings suggest that the expansion of remote work may reshape educational differences in the timing and intensity of childbearing. The very first microsimulation results for first births indicate that low-educated women have experienced the steepest recent decline in the progression to motherhood and have benefited little from the growing availability of work-from-home arrangements, likely due to limited access to such jobs in their occupational sectors. In contrast, highly educated women have seen only a mild decline in their transition to motherhood—a trend that would have been considerably sharper without the expansion of remote work. Thus, they appear to benefit the most from its increasing availability. Ongoing microsimulation analyses will further explore these potential redistributive effects on fertility patterns.

This research will provide comprehensive insights into how availability of work from home influences fertility behaviors across different educational groups and trends in fertility level by education and parity. By integrating micro- and macro-level analyses (Billari, 2015), we aim to reveal potential shifts in the education-fertility gradient due to the growing prevalence of work from home. Our findings will have significant implications for policymakers and employers, highlighting the need for policies which enhance (or not) remote work considering its diverse impacts on workers' family planning decisions.

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