

Highly Educated Women Are No Longer Childless: The Role of Marketization*

Moshe Hazan

Tel Aviv University and
CEPR

David Weiss

Tel Aviv University

Hosny Zoabi

The New Economic
School

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Abstract

Baudin et al. (2015) document that childlessness rates in the U.S. in 1990 exhibited a U-shaped relationship with women's education, with highly educated women much more likely to be childless than other women. We show that this is no longer true: the childlessness rate of highly educated women has converged to that of other women. We argue that highly educated women are now able to marketize the time cost of child rearing, allowing them to have both a family and a career.

Keywords: Childlessness, Education, Marketization.

JEL: I24, J13, J16.

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1 Introduction

Baudin et al. (2015) document that childlessness rates in the U.S. in 1990 exhibited a U-shaped relationship with women’s education. They attribute the increasing part of the U-shape to the opportunity cost of women’s time. We document that the increasing part of the U-shape is no longer empirically true: the childlessness rate of women with advanced degrees has converged to that of other women since 1990. We show that the ability of highly educated women to marketize the time cost of childcare can explain about 20% of their decline in childlessness.

Our hypothesis is motivated by the large increase in income inequality widely documented in the U.S. over the same time period (Autor et al., 2008; Heathcote et al., 2010). This inequality resulted in higher wages for highly educated women relative to the wages of workers providing home production substitutes (HPS). Indeed, Hazan and Zoabi (2015) documented that the cross-sectional relationship between fertility and women’s education has become U-shaped since the early 2000s, while Bar et al. (2018) found similar results when studying fertility as it relates to family income. Both papers argue that growing income inequality, and thus marketization of child-rearing costs, can explain the observed changes in fertility. Our contribution here is to show how this insight allows for a reexamination of the childlessness patterns documented in Baudin et al. (2015).

2 Data and Stylized Facts

Our first dataset is the Current Population Survey (CPS) Fertility and Marriage June Supplement, for the years 1990–2016. The data contains information on marriage and fertility. However, the sample size is limited. We study childlessness of women aged 40–44. Given the small sample size, we pool all women with education up to a college degree into one group and women with advanced degrees into a second group. Figure 1 shows the childlessness rate of women with advanced degrees decreases and converges to that of women with less than advanced degrees between 1980 and 2016.

We use the Annual Social and Economic (ASEC) supplement of the CPS from 1980–2020 for our main analysis, which contains more observations, but lacks detailed information on fertility (Flood et al., 2020). The sample size allows us to break education down into finer categories, including less than high school, high school graduate, some college, college graduate, and advanced degrees. We define a woman as “currently childless” if she has no children of her own living in the household. However, this definition is a bit problematic: younger women might not have children at home because they are simply

waiting to start their families, whereas older women might not have children at home because the children have grown up and left the household. To mitigate this problem, we find the 10-year age window for which the fraction of women having no children in the household is minimized, assume that this indicates that the “currently childless” problem is minimized at this age, and use this for our sample. We use “childless” as an indicator equal to 1 if the woman has no children. For women with up to some college education the age group is 30–39, and for those with college or advanced degrees the age group is 35–44. Figure 2 shows that the currently childlessness rate for women with less than advanced degrees increased between 1980 and 1990, then stayed roughly constant until 2020. The currently childlessness rate of women with advanced degrees has decreased and converged to that of women with less than advanced degrees.

The ASEC allows us to estimate the connection between childlessness and the cost of HPS workers relative to a woman’s wage. We observe wages only for women who work, but not wage offers for women who do not work. Accordingly, our main specifications use as a sample only women who work. We include robustness tests with imputed wages for women who do not work, and obtain similar results to our main specifications.

Our sample comprises women aged 25–50, for the years 1980 to 2020. Our measure of “marketization” is the ratio between the average of wages in HPS sectors by state and a woman’s wage (Hazan and Zoabi, 2015; Bar et al., 2018). We define HPS workers as in Mazzolari and Ragusa (2013). Between the early 1980s and the latter part of the 2010s this relative cost increased by 0.39, 0.28, 0.16, and 4 log points for women with less than a high-school diploma, women with exactly a high-school diploma, women with some college, and women with college degrees, respectively. Conversely, this cost declined by 0.12 log points for women with advanced degrees over this time period.

3 Empirical Approach and Results

We estimate models of the following form:

$$y_{ist} = \alpha + \beta \ln \left(\frac{w_{st}^{HPS}}{w_{ist}} \right) + \sum_{j=1}^5 e_{ijst} \ln \left(\frac{w_{st}^{HPS}}{w_{ist}} \right) \theta_j + \sum_{j=1}^5 e_{ijst} \pi_j + X'_{ist} \kappa + \delta_a + \delta_m + \delta_t + \delta_s + \delta_r + \delta_h + \epsilon_{ist}, \quad (1)$$

where, y_{ist} is an indicator for woman i being childless. w_{st}^{HPS} is the average of the real hourly wage of workers in the HPS sector in state s and year t while w_{ist} is the real hourly wage of woman i . θ_j is a vector where each entry j indexes one of the five educational

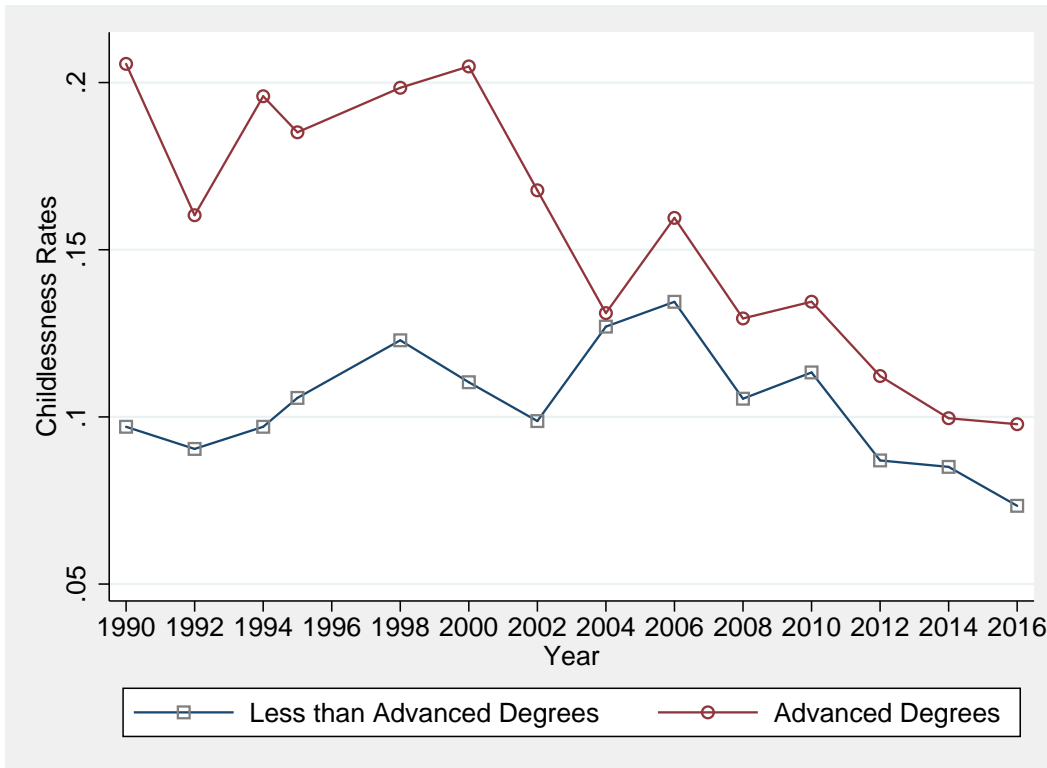


Figure 1: Childlessness Rates among Women with Advanced Degrees and Women with less than Advanced Degrees.

Notes: Data is from the Fertility and Marriage supplement of the Current Population Survey (CPS) from 1990–2016. The sample includes married women aged 40–44.

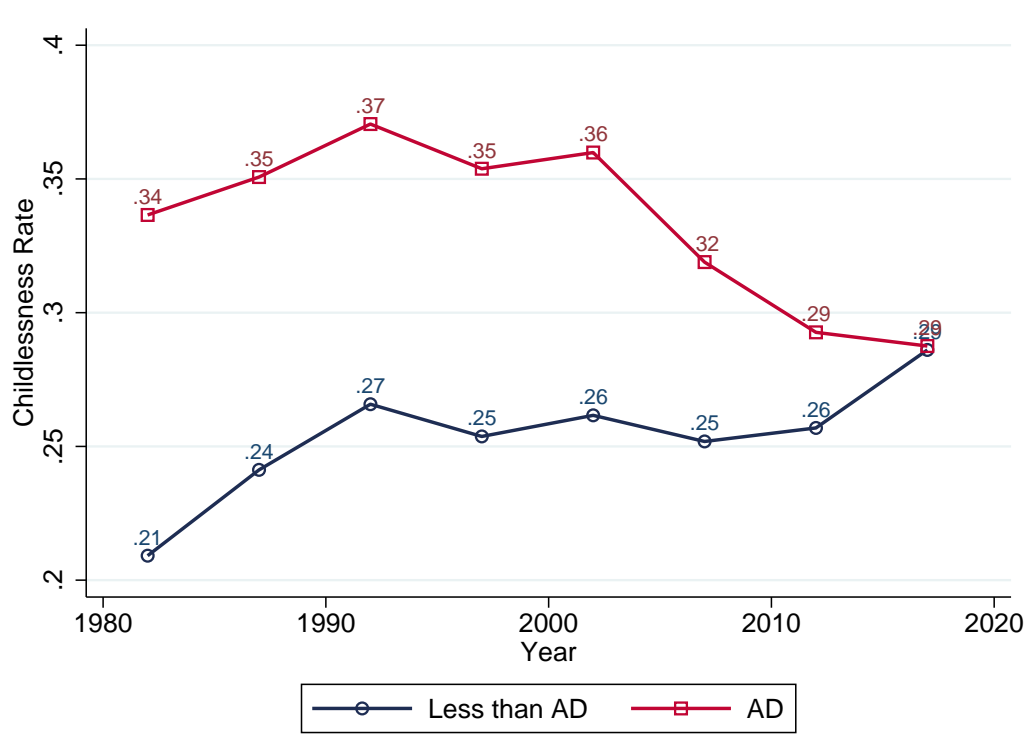


Figure 2: Rates “Currently Childless” among Women with Advanced Degrees and Women with less than Advanced Degrees, 1980–2020.

Notes: Years are divided into five-year periods and labeled by the middle year. A woman is “currently childless” if she has no children of her own living in the household. Data is from the Annual Social and Economic supplement of the CPS, 1980–2020.

groups. By interacting θ with the wage of HPS workers relative to woman i we allow for a differential effect of the relative cost of childcare on the fertility decision of women by educational group. X'_{ist} are individual controls, including a quadratic in total personal income and the spouse's real hourly wage (in thousands of dollars). Finally, $\delta_a, \delta_m, \delta_t, \delta_s, \delta_r,$ and δ_h are fixed effects for age, marital status, year, state, race, and Hispanic origin, respectively. We cluster the standard errors by state.

Table 1 reports our estimates. In Column (1) we use the sample of women for whom we observe a wage and include all fixed effects listed above except marital status. Column (2) includes marital status fixed effects. Column (3) includes as a control the woman's spouse's wage. Column (4) repeats Column (2), but uses the sample for Column (3). Column (5) repeats Column (2), but uses the sample of married women. Column (6) repeats Column (2), but uses the sample of single women. Finally, Column (7) repeats Column (2), but uses all women in the dataset, including those with imputed wages. The relationship between relative childcare costs and the childlessness rate of women with advanced degrees is always positive and statistically significant at the 1% level. Using our preferred specification (Column (2)), we find that a 1 log point increase in the relative childcare cost is associated with an increase in the childlessness rate by $-0.011 + 0.095 = 0.084$ for highly educated women. Since the relative childcare cost declined by 0.12 log points over the time period studied, our estimate accounts for a decline in the childlessness rate by 0.010 log points. Since the childlessness rate fell by 5 percentage points, the decline in the relative childcare cost can account for 20% of the increase of women with advanced degrees who became mothers.¹ Growing inequality can help account for why the U-shaped relationship between a woman's education and childlessness, documented in Baudin et al. (2015), disappears over time.

In Section A.1 of the Online Appendix, we discuss several issues that arise from our analysis including sample selection, potential confounding explanations, changing selection into education groups over time, and the interpretation of the different regression coefficients by education group documented above.

4 Conclusions

The childlessness rate of highly educated women has converged to that of other women. Marketization can help explain this convergence. However, this channel can explain only

¹ Similarly, the R-squared on our regressions are all low, but comparable to similar papers. Hazan and Zoabi (2015), who study a similar hypothesis to the one proposed here, obtain R-squared of at most 0.1 across specifications.

Table 1: Relative Childcare Cost by Educational Group and the Probability of Childlessness: 1980–2020 – All Women

| Dependent Variable | Probability of Childlessness | | | | | | |
|-----------------------------|------------------------------|---------------------|----------------------|---------------------|---------------------|----------------------|---------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Relative Childcare Cost | 0.019*** (0.007) | -0.011** (0.005) | 0.011* (0.006) | 0.013** (0.006) | 0.014** (0.005) | -0.064*** (0.011) | -0.010** (0.004) |
| Relative Childcare Cost×HSG | 0.023*** (0.007) | 0.009 (0.006) | 0.018** (0.007) | 0.018** (0.007) | 0.019** (0.008) | 0.020 (0.015) | 0.005 (0.006) |
| Relative Childcare Cost×SC | 0.026*** (0.005) | 0.013*** (0.004) | 0.025*** (0.005) | 0.025*** (0.005) | 0.023*** (0.005) | 0.023* (0.012) | 0.008** (0.004) |
| Relative Childcare Cost×CG | 0.064*** (0.006) | 0.055*** (0.005) | 0.054*** (0.006) | 0.054*** (0.006) | 0.052*** (0.006) | 0.069*** (0.014) | 0.053*** (0.004) |
| Relative Childcare Cost×AD | 0.119*** (0.010) | 0.095*** (0.008) | 0.096*** (0.008) | 0.098*** (0.008) | 0.094*** (0.008) | 0.101*** (0.014) | 0.094*** (0.007) |
| Spouse’s Wage (in \$1000s) | | | -0.898*** (0.114) | | | | |
| Marital Status FE | No | Yes | Yes | Yes | – | – | Yes |
| Sample | Main | Main | Spouse Wage | Spouse Wage | Main-Married | Main-Single | All |
| N | 390,877 | 390,877 | 239,539 | 239,539 | 252,369 | 63,283 | 546,087 |
| R ² | 0.0361 | 0.1842 | 0.0532 | 0.0525 | 0.0257 | 0.2254 | 0.1838 |

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, clustered at the state level, are in parentheses. The sample comprises White, non-Hispanic women, drawn from the Current Population Survey (ASEC samples). The “Main” sample comprises all women with observed wages. “Spouse Wage” is the subset that includes observations of a spouse’s wage. “Main-Married” is the subset comprised only of married women. “Main-Single” is the subset comprised only of single women. “All” includes observations with imputed wages.

a portion of the change over time, leaving room for other potential explanations. One might be increased access to fertility technology (such as IVF) that permits women to begin families later in life while investing in their careers (Gershoni and Low, 2021). Another could be increased awareness of women's career and family needs among potential employers, perhaps depending on the employer's views on the topic (Cohen et al., 2021). Albanesi and Prados (2022) explain the stagnation in the women's labor force participation rate through income inequality among men, which also may impact childlessness rates. As it is beyond the scope of this paper to evaluate alternative mechanisms, we leave them for future research.

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