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Uncertainty, Doubts, and Delays: Economic Circumstances and Childbearing Expectations Among Emerging Adults

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Abstract Fertility, or childbearing, expectations have been increasingly identified as an important area of research, at least in part because expectations may help us to understand family issues of concern across the globe such as unintended pregnancies, low fertility, and delayed childbearing. While much research has focused on the link between expectations and behavior, this study extends the literature by asking how those expectations were shaped initially. Specifically, we explore how one's economic context is related to expectations. This paper further extends the literature by focusing on two dimensions of the parenthood expectations of young people (men and women aged 18–27). Using the 2005, 2007, 2009, and 2011 waves of the Panel Studies of Income Dynamics (PSID) Transition to Adulthood (TA) sample, we considered whether young people expected to have children in the future and, for those who did, when they expected to do so. The results support financial-strain theories of the relationship between (subjective and objective) economic circumstances and childbearing expectations. Women and men with lower earnings, less education, and more worries about their future job prospects are more uncertain whether they will have children. Of those who expect to have children, those with more education and more worries expect to do so later in life. Further analyses reveal that race and gender condition these relationships.

Keywords Childbearing · Childbearing expectations · Fertility intentions · Economic well-being · Work and family · Economics · Economic worries

Introduction

The US has consistently had some of the highest fertility among large, economically advanced, low-fertility countries (Morgan 2003; Rindfuss et al. 2003) and has seen increases in the mean age at childbearing (Martin et al. 2013) and childlessness (Lundquist et al. 2009) in recent years. A growing body of research has explored the link between intentions, desires, and expectations about childbearing and actual childbearing behavior (Hayford 2009; Schoen et al. 1999; Shreffler and Johnson 2013). Yet, we know relatively little about what shapes those expectations themselves[1] (for exceptions see Hayford and Guzzo 2013; McQuillan et al. 2015; Shreffler et al. 2010)). This means while scholars have pointed to expectations about childbearing as the best, albeit imperfect, predictor of fertility behavior, our understanding of the process through which the social world influences expectations about the timing of parenthood and family size is limited.

Economic circumstances or context[2]—employment status, earnings, and job prospects—have long been linked to

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[1] Although the terms "fertility intentions" and "expectations" are commonly used in the literature, we prefer the terms childbearing or parenthood intentions and expectations to shift the focus from fertility and pregnancy to parenting.

[2] We use the terms economic context and circumstances interchangeably throughout this paper.

fertility behavior. Recent evidence has suggested that overall there is a pro-cyclical relationship between economic circumstances and fertility outcomes (del Bono et al. 2012; Hofmann and Hohmeyer 2013; Schneider 2015), although for older generations these relationships might have been negative (Kingsbury and Greenwood 1992; Rindfuss et al. 2003). Young people today face an increasingly uncertain economic situation (Blossfeld et al. 2006). Globalization has changed labor markets so that they are increasingly characterized as unstable, with less job tenure and security, and with a shift away from career jobs (Sullivan 1999). Media reports have been replete with tales of unemployed college graduates returning to their parental homes, although empirical research on this topic has been mixed (Sandberg-Thoma et al. 2015; Wiemers 2014). At the same time that young people are attempting to navigate these uncertain and poor economic realities and establish themselves financially, they are also attempting to establish families.

Given the link to fertility behavior, the changing nature of the economic situation young people face, and the temporal overlap in these transitions, we explored the intersection of these life course arenas. We investigated the relationship between economic context and childbearing expectations, specifically individuals' ideas about whether and when they would enter parenthood. Our goal in this study was to improve our knowledge of the economic-fertility relationship by expanding the idea of what constitutes economic circumstances and emphasizing the uncertainty accompanying those circumstances. Our theoretical framework of the relationship between economic circumstances and childbearing expectations included both "subjective" and "objective" assessments of individuals' economic context.

This study contributes to the existing literature in three ways. First, our analysis explored two dimensions of childbearing expectations, *whether* and *when* to enter parenthood. To our knowledge, this was the first exploration into an age-specific childbearing expectation. Second, we focused on how economic circumstances were related to expectations in the US, in contrast to much of the limited extant research in this setting, which has explored religion, norms, or relationship status. Third, this paper addresses a gap in the literature by investigating how both subjective and objective economic circumstances are related to the childbearing expectations of young men and women in the US.

Childbearing Expectations: Whether and When

Social psychologists have spent considerable effort carefully defining and delineating intentions, expectations, attitudes, desires, beliefs, and other psychological constructs (Ajzen 1991; Miller 2011). The conceptualization we employed in this study was that childbearing desires reflect unconstrained personal motivations regarding childbearing; intentions incorporate desires, attitudes, and beliefs about childbearing and other behaviors; and expectations combine intentions with external factors, or perceptions of external factors, which are constraints to childbearing (Bachrach and Morgan 2013; Iacovou and Tavares 2011). Although Warshaw and Davis (1985) argued that childbearing intentions and expectations are theoretically distinct concepts, others have demonstrated that they are virtually indistinguishable empirically (Iacovou and Tavares 2011). The implication of this is that when something influences intentions (or beliefs) it would extend to influence expectations as well. As we were interested in whether individuals' consider their economic context as a constraint to childbearing, we focused on expectations.

Of course, along with an individual's desires or intentions for the future there is some degree of uncertainty. This is particularly likely when asking young people about distant future circumstances. A tepid expectation may be one manifestation of this uncertainty. We investigated the certainty young people have regarding whether they expect to have children and, if they do, when they expect to do so (i.e., relatively early in their life course, before age 30, or late, after age 30).

A focus on the childbearing expectations of young adults is important, as those early expectations predict later expectations and behavior (Hayford 2009; Heiland et al. 2008; Liefbroer 2009; Shreffler and Johnson 2013). Further, these young adult years are a transitory, demographically dense period (Rindfuss 1991) when substantial life course changes occur as young people transition out of high school and the parental home and into adult roles and living arrangements. Questions about family and jobs are therefore paramount as they grapple with these changes, drawing on new, salient experiences while looking forward and planning their futures. Young adults in this period consciously construct meaning from their economic experiences and use that information in anticipating their future life trajectories, including whether and when to have children.

This forward-looking assumption is a key place where our study diverged from the existing literature. Much research on the effects of work on family life has considered the immediate effects: When a woman loses her job she has fewer opportunity costs to give up and therefore will have a child at that moment. This relationship is qualitatively different from the one we considered where young people make projections regarding their future economic situation based on their current experiences.

Linking Economic Context to Childbearing Expectations: Strain and Uncertainty

A long history of empirical research has linked economic context to family domains such as childbearing behavior and marital relationships. We used the lessons from that literature to shape our theoretical framework and motivate our hypotheses regarding childbearing expectations.[3] We first provide a broad presentation of our framework and then give more details and review specific empirical evidence in the following sub-sections.

One common thread throughout much of this literature, and the first component of our framework, is financial strain or resource constraints. Raising children involves substantial direct and indirect costs (DiPrete et al. 2003). Assuming all potential parents desire to provide for their children to the greatest degree possible, in response to financial strain they may perceive children as too costly. When potential parents feel they are unable to provide for children, as rational actors they may express uncertainty about becoming a parent. This uncertainty may appear both as doubts about whether they will have children at all and in "putting off" childbearing for a later date (e.g., expressing a later expected age at childbearing).

A second theme in the literature we incorporated into our framework concerns uncertainty spillover. A poor economic context generates feelings of economic uncertainty. These feelings are not limited to the realm of economics—they spill over into other areas of the life course. Research on the impacts of globalization on the lives of young people has demonstrated that the economic uncertainty arising from the changed labor markets does indeed spill over and cause stress, strain, and uncertainty in other areas (Blossfeld et al. 2006; Conger et al. 1990). Relating this specifically to childbearing expectations then, when young people feel greater economic uncertainty, they are likely to express greater uncertainty regarding childbearing.

Of course, young people can take efforts to counter any financial hardship or uncertainty; and, in fact, individuals typically enroll in higher education at least partly for its long-term effect on earnings and economic stability. On average, college graduates in the US earn more than those with only a high school diploma and, historically, have had lower unemployment rates (Office of Employment and Unemployment Statistics 2015). Therefore, the potential benefits of education, even net of other dimensions of economic context, are an important consideration. The anticipated future employment and earnings arising from current investments in education are a major piece of information young people use when constructing meaning and planning for the future.

A final theme that became immediately apparent when examining the existing literature is that "economic context" is multi-dimensional and cannot easily be measured by a single indicator. One approach scholars have taken to best operationalize economic context is to create scales or other composite measures of its various dimensions. For example, Hilton and Devall (1997) developed a complex scale that has been used for understanding family economic strain and its impact on adults' and children' lives (Hayes et al. 2015). In part because these measures are not commonly available, we followed a separate approach to operationalize economic context and explored two dimensions of economic context separately. Specifically, we theorized and measured both "objective" and "subjective" economic circumstances.

"Objective" Economic Context

By "objective" economic context we are referring to concrete observed statuses such as employment, earnings, and human capital (e.g., education). Our theoretical model allowed for several mechanisms through which these objective circumstances are related to childbearing intentions. For example, individuals may interpret them to be indicative of future objective situations. Given our assumption that young people understand childbearing and rearing to be a resource-intensive undertaking, those with low or strained economic resources may assume that this economic strain will continue and therefore expect to have fewer children or be less certain that they will have children at all. Previous research from Australia found that unemployed men were less likely to expect to have children in the future (Gray et al. 2013) and Perelli-Harris (2006) found that Russian women engaged in informal work to gain additional financial security had higher odds of wanting additional children than those in less financially well-off situations. Two studies of German adults found that employment and income were positively related to childbearing expectations in such a way that unemployed adults had a lower ideal family size (Heiland et al. 2008) and that men with lower incomes were less likely to say they wanted to have a baby now (Berninger et al. 2011). Additionally, empirical research found that young people with higher educational expectations also had higher childbearing expectations (Lynn et al. 2013).

[3] This includes a handful of studies using non-US data which have investigated the relationship between economic circumstances and childbearing expectations or intentions. Although that literature is useful for motivating hypotheses, additional tests of this relationship in the US context are warranted. Expectations and work experiences reflect deep cultural and societal factors that likely vary systematically by country. Understanding the relationship between work and fertility in European countries which often have relatively generous, well-established welfare states and both (very) low fertility and low childbearing expectations tells us little about how expectations may be linked to economic circumstances in the US.

A second potential pathway through which "objective" economic resources may influence childbearing expectations is by increasing individuals' stress levels, negative mental health symptoms, and interpersonal conflict (Conger et al. 1990), leading to spillover as described above. High levels of economic strain, such as short-term debt, have been linked to depressive symptoms (Berger et al. 2016) and found to interfere with family stability and functioning (Conger et al. 1990; Gudmunson et al. 2007). Because family functioning is disrupted, these individuals then may be less certain about their future childbearing.

Another way current strained economic resources may influence childbearing expectations is through the timing of the transition to parenthood. Young people with fewer or strained resources may anticipate that they will have the requisite resources to bear and raise children if they delay their childbearing (Kohler et al. 2002). That is, they plan to spend more time saving or improving their economic situation before having children.

This leads to our first hypothesis, Objective Economic Strain.

H1 Not being employed (either being in school or current unemployment), lower levels of education, and lower income are related to less certainty about whether to have children and, for those who do want children, to an expected later transition to parenthood.

"Subjective" Economic Context

By "subjective" economic context we are referring to individuals' perceptions of their economic situation. One's assessment of one's economic situation (e.g., whether someone is worried about his or her current or future employment) is relatively independent of one's current economic circumstances (Lebert and Voorpostel 2016). As a consequence, it is likely to matter above and beyond "objective" economic context for shaping childbearing expectations (as found in Gray et al. 2013). Previous studies demonstrated that both objectively and subjectively perceived job insecurity have far-reaching consequences for the mental and physical well-being of individuals (De Witte 1999; Virtanen et al. 2005). This implies that young people who feel insecure in their employment prospects will be less certain about whether they will eventually become parents.

As when considering objective measures of economic circumstances, expectations of the timing of childbearing may also be influenced by subjective circumstances. Regardless of their objective circumstances, individuals with a worse perception of their economic situation will want more time to accumulate the resources necessary for parenting. Therefore, if they do expect to have children, they will anticipate having them later (Kohler et al. 2002). Begall and Mills (2011) found that subjective measures of work experiences were related to childbearing expectations among European women.

This leads us to our Subjective Economic Strain hypothesis.

H2 Being uncertain about future employment prospects is related to less certainty about whether to have children and, for those who do want children, to an expected later transition to parenthood.

Hypotheses H1 and H2 are both motivated by a financial strain-based framework which runs counter to the well-known opportunity cost argument. The opportunity cost argument suggests that, for women, having and raising children means decreased earnings opportunities and thus lowered fertility (Becker 1981). There has been some empirical support for this argument as applied to behavior (e.g., Hondroyiannis 2010), but we did not anticipate finding support here for two main reasons. First, empirical evidence has suggested the financial strain resulting from job loss, unemployment, or low earnings increasingly outweighs the lowered opportunity costs of having children—children are still too expensive (Hofmann and Hohmeyer 2013; del Bono et al. 2012). Second, even though young adulthood is when women typically start having children, most of our observations are of a period still a few years prior to most childbearing, which makes the cost trade-offs not immediately applicable.

Linking Economic Context to Childbearing Expectations: Gender and Race

The relationship between economic context and childbearing expectations may not be the same for all groups. There has been widespread evidence for persistent gender inequality in contemporary society (Ridgeway 2011) as well as continued pervasive racial inequality (Bonilla-Silva 2010), conditions which are not limited to, but are particularly observable in, economic circumstances. As a result, we hypothesized that these different economic and childbearing contexts are likely to condition this relationship (Bachrach and Morgan 2013). For example, one's gender may transform a similar event, such as unemployment, into different situations: an ideal time for childbearing or a time to avoid childbearing at all costs.

One recent study examined the relationship between economic circumstances and childbearing expectations among men and women in dual-earner households and found that men who worked non-standard shifts or who believed their partner experienced more work-family conflict were less likely to expect to have more children (Shreffler et al. 2010). Studies on mental health outcomes found men experienced

more job insecurity and, as a result, more stress because they were more likely to hold the main responsibility for the family income and identified more strongly with the role of breadwinner (Charles and James 2003; Gaunt and Benjamin 2007). In a similar vein, Schieman and Young (2010) found that the impact of economic hardship on perceived work-family conflict was stronger for men than for women. We expected the mechanism to be similar for the role of economic circumstances on parenthood expectations, leading to our Breadwinner Vulnerability Hypothesis.

H3 Men's childbearing expectations will be more sensitive to economic circumstances.

No study of economics or family and fertility in the US would be complete without acknowledging substantial, persistent racial inequalities. Given the history of racial oppression and economic disadvantage we cannot simply assume that economic context shapes one's orientation towards the future or plans about when and whether to have children in the same way for young people of color as it does for Whites (Blum et al. 2000; Grodsky and Pager 2001). Men and women of color face steeper/different career trajectories than Whites, making the connections between current and future economic circumstances less comparable. Furthermore, there has been rich scholarship on racial differences in fertility (Lundquist et al. 2009; Sweeney and Raley 2014). A few studies on attitudes related to childbearing have also revealed sharp racial differences (Hayford and Guzzo 2013; McQuillan et al. 2015). We therefore expected that racial disadvantage would further increase the effect of economic disadvantage, leading to our Racial Disadvantage Hypothesis.

H4 The childbearing expectations of young people of color will be more sensitive to economic circumstances.

In summary, extant research has shown that economic context is an important sphere of influence in the lives of young people. At the same time, childbearing expectations have been seen as an increasingly important part of understanding the economics-fertility link. This study has merged these existing literatures by examining how economic context is related to the childbearing expectations of young men and women in the US. We further contribute to the literature by examining how this relationship varies by important social markers, gender, and race.

Data and Methods

We used data from the 2005, 2007, 2009, and 2011 waves of the Transition to Adulthood (TA) study in the Panel Study of Income Dynamics (PSID) (https://psidonline.isr.umich.edu/). The TA study bridges the gap between the "traditional" PSID interview for adults and the Child Development Supplement (CDS) (see, for example, McGonagle et al. 2012). Designed to be representative of young adults it therefore collects data from individuals from age 18 until age 28 (PSID 2015a). The first year of data collection for the TA study was 2005 and included former CDS respondents age 18 and up. We also used information from the follow-up waves in 2007, 2009, and 2011. We excluded 187 17-year-olds who had been administered the survey despite their not being age 18. Dropping respondents for missing data (of which missing earnings was the most common) yielded an analytic sample of 3545 person-year observations from 1465 respondents.

Dependent Variables

We examined two interconnected, yet distinct dimensions of childbearing expectations: uncertainty regarding having children; and, among those who were considering being parents at some point in their future, the expected timing of this transition.

Uncertainty about becoming a parent

We created a measure to capture whether a respondent expressed uncertainty that he or she would have children in the future or did not plan to become a parent. Parenthood in the US is still nearly universal, so this indicator operationalizes the non-normative response of uncertainty. Those who responded to the question "What do you think are the chances that you will have children?" with "no chance," "some chance," or "about 50–50" were coded as uncertain. Those who stated that future parenthood was "pretty likely" or "it will happen" were coded as certain. For obvious reasons, parents were not asked this question. To address this potential selection issue, we included already having children as a competing outcome in our analyses, thus categorizing respondents as being uncertain they would have children, being certain they would have children, and already having a child. Table 1 presents descriptive statistics for all measures of childbearing expectations. At their first interview, 20% of young people said they were uncertain whether they would have children (Column 2).

When we examined transitions in the outcome between waves, we found that of those who expressed uncertainty about being a parent, roughly 40% changed their minds at some point, with about one-third (12% of the entire sample) being more confident they would have a child at some point. Similarly, roughly 12% of respondents transitioned from saying they were sure they would have children to having some uncertainty.

Table 1 Descriptive statistics childbearing expectations: uncertainty about having children and expected timing of transition to parenthood (percent in each category)

Uncertainty about becoming a parent	All observations (n = 3545)	First observation (n = 1465)	Age 18 (n = 482)	Age 25 (n = 160)
Uncertain about having children	19.4	20.1	17.0	19.4
Expects to have children	59.3	65.2	74.9	44.4
Already has children	21.3	14.7	8.1	36.3
Total	100	100	100	100
Expected timing of parenthood	(n = 3445)[b]	(n = 1419)	(n = 467)	(n = 157)
Expects children past age 30[a]	14.9	11.1	9.9	25.5

[a]Expected timing is not ascertained from those who indicate there was "no chance" they would ever have children

[b]Due to missing data sample sizes for the analyses of expected age at parenthood are smaller than the total sample size minus those who reported "no chance" for whether they expect to have children

Table 1 also shows the distribution of whether the respondent expected to have children according to respondents' age and the proportion of those who were already parents in each age group. As could be predicted, the probability of transitioning into parenthood was higher among those who expected to be parents, with about 12% becoming parents during the time we observed them.

Expected Timing of Parenthood

Those who said that there was at least "some chance" they would have children were also asked, "At about what age do you think you will have your first child?" We used responses to this question to create a measure of an expected late transition to parenthood, our second outcome measure. There was a fair amount of age heaping in the responses, particularly at age 30. Consequently, we created a measure for whether the respondent expected to have his/her first child after age 30. Those who were already parents were coded according to their age at first parenthood (early transition). Transitioning to parenthood at that late stage in the life course (after age 30) likely has greater implications for completed family size (Liefbroer 2009; Morgan and Taylor 2006) and also may reflect an understanding of a late transition. Overall, 15% of all respondent-observations had an expected transition to parenthood after age 30. The proportion was lower for younger respondents (9.9% among 18 year olds compared to 26% among 25 year olds).

Independent Variables

Objective Economic Context

Our key measures of interest are economic context variables. We measured objective economic strain at the individual level with three measures. We included current employment status with a set of dichotomous variables for employed (reference category), unemployed, in school, and "other," which included all other possible statuses and last year's earnings; individual earnings from all sources are shown in descriptive tables with the logged values used in the analyses. Because the earnings measure refers to all jobs held in the previous year and the measure of employment status is for primary status, even those who were currently unemployed or enrolled in school could and did report earnings. The third measure captures educational attainment (respondent's level of education, which was coded "1" for those who had at least some college education, and "0" for those who had none).[4] Descriptive statistics for these and all independent variables are in Table 2.

Subjective Economic Context

Our subjective measure reflects worries about future employment: "*How often do you worry that you will not have a good job in the future?*" Response options ranged from 1 (*never*) to 7 (*daily*) and were nearly normally distributed, so we included it as a continuous measure.

Gender and Race

To examine gender differences in the relationship between economic context and childbearing expectations we included a dichotomous measure equal to 1 for women and 0 for men. We measured race and ethnicity with measures that distinguished between non-Hispanic Whites, non-Hispanic non-Whites, and those who identify as Hispanic of any race.

[4] Given the age range of our sample, it is entirely possible that some people had not yet graduated from high school but were on track to attend college; however, that does not appear to have been the case. Of those 18-19 year olds who were currently in school, only 24 out of 1465 respondents (1.6%) had less than a high school diploma.

Table 2 Descriptive statistics independent variables (n = 3545)

	All observations		First year			
	Mean	Std. dev.	Mean	Std. dev.	Min	Max
Objective economic context						
Current employment status						
Employed (ref.)	0.59	0.49	0.50	0.50	0	1
Unemployed	0.14	0.35	0.16	0.36	0	1
In school	0.22	0.42	0.31	0.46	0	1
Other	0.04	0.20	0.04	0.19	0	1
Last year's earnings (in 1000s)	10.64	13.83	6.21	8.66	0	17
Has at least some college education	0.71	0.45	0.66	0.47	0	1
Subjective economic context						
Worry about having a good job in the future[a]	3.64	1.93	3.62	1.98	1	7
Female	0.53	0.50	0.53	0.50	0	1
Race						
Non-Hispanic White (ref.)	0.49	0.50	0.47	0.50	0	1
Non-Hispanic non-White	0.42	0.49	0.44	0.50	0	1
Hispanic	0.09	0.28	0.10	0.30	0	1
Controls						
Parental education[b]	13.24	2.63	13.02	2.66	0	17
Married or cohabiting	0.23	0.42	0.13	0.34	0	1
Head of household	0.33	0.47	0.17	0.38	0	1
Religious affiliation						
Protestant (ref.)	0.60	0.49	0.60	0.49	0	1
Catholic	0.15	0.36	0.15	0.36	0	1
Other	0.04	0.19	0.04	0.21	0	1
Atheist/no religion	0.21	0.40	0.20	0.40	0	1
Religious attendance						
Not at all (ref.)	0.31	0.46	0.30	0.46	0	1
Up to once/month	0.34	0.47	0.31	0.46	0	1
2–3/month	0.14	0.34	0.14	0.35	0	1
At least once/week	0.21	0.41	0.25	0.43	0	1
Religious importance [c]	2.95	1.17	2.96	1.16	1	4
Respondent's age	21.12	2.26	19.29	1.36	18	27
Year						
2005/2007 (ref.)	0.37	0.48	0.62	0.49	0	1
2009	0.37	0.48	0.33	0.47	0	1
2011	0.27	0.44	0.06	0.23	0	1

[a]Frequency of job worry: 1 (*never*) to 7 (*daily*)

[b]Parental education: years of education of primary parent

[c]Religious importance: 1 (*not at all important*) to 4 (*very important*)

Controls

We further included multiple controls in our models. We included parent's education, measured in years of education, as a reflection of parental economic background. Although, generally, mother's education was more readily available than father's education, for 93 respondents (142 observations) information about mother's education was not available, and instead father's education was substituted. Relationship status is an important predictor of childbearing expectations. We distinguished between respondents who were single (reference category) and those who were married or living with a partner. We also included a measure that indicates whether or not a respondent was a "head" of household, which is an indicator that s/he no longer lives with a parent or other relative (PSID 2015b). We included three measures of religiosity: religious affiliation (with categories Protestant [reference category], Catholic, other, and atheist/agnostic/no religious affiliation), attendance (not at all [reference category], up to once/month, 2–3 times/month, once a

week or more), and a continuous measure of the importance of religion in the young adult's life, ranging from "not at all" to "very important." We also controlled for respondents' age.

Macro-level economic context influences the broader schema regarding employment security and the way individuals interpret or understand their own economic circumstances (Schneider 2015; Sobotka et al. 2011). We combined 2005 and 2007 and treated them as the reference group, as both years were before the "Great Recession" which brought increased economic uncertainty and higher unemployment rates. The years 2009 and 2011 were in the immediate aftermath that still saw very high unemployment rates despite the "official" end of the recession (BLS 2015). Because unemployment rates were rising (and high) in 2009 but falling (and high) in 2011 we included separate dummy variables for these years.[5]

Analytic Strategy

Our analyses examined our two dependent variables in two steps each. First, we estimated the overall relationship between economic context and childbearing expectations. To achieve these analytic goals, we estimated random effects models to account for the multiple observations per respondent and to control for unobserved heterogeneity (within individuals) to the extent that it is constant over time. Although fixed effects models would allow us to model change within individuals, our theoretical interest in the effects of time-invariant characteristics (gender and race) mandated random effects models.

When using our measure of uncertainty about parenthood as the dependent variable we estimated multinomial random effects models using the general structural equation model routine in STATA (Pope 2014). The contrast of interest was that between being uncertain whether he/she would have children vs. expecting to be a parent; but the models estimated all contrasts, including the comparison to already being a parent. As a complete analysis of fertility behavior is beyond the scope of this paper, we present only the results from the main contrast here. Full models are available upon request. For our second outcome, expected timing of parenthood, we estimated logistic random effects models.

The second step of our analyses focused on examining whether the relationship between economic context and childbearing expectations varies by gender (H3) and race (H4). This required a different analytic approach. Group comparisons in nonlinear models can be problematic, as direct tests for the equality of coefficients across groups face identification issues (Long 2009). Since the impact of the odds ratio depends on the probability of the outcome at baseline, directly comparing odds ratios does not always reveal the real-life implication of an estimated effect. To assess whether a variable matters differently across groups, we calculated the change in predicted probability associated with a change in each of our variables of interest. Statistical significance for these estimated changes was made on the basis of 95% confidence intervals. For these tests, we held independent variables at the group mode for categorical predictors and at the group mean for continuous ones. Rather than directly testing whether odds ratios were statistically different, we examined whether the probability of our outcomes was shaped differently across groups. This was a very conservative approach, as, especially when the underlying (baseline) probability is relatively small, even sizeable odds ratios can be associated with rather small changes in predicted probabilities. Note, this approach does not allow us to say whether an effect of an independent variable for women was statistically different from that for men, but it did indicate whether the predicted probability for women and/or men was expected to change significantly.

To assess the robustness of our results to our assumptions and analytic choices regarding parents, we conducted additional sensitivity analyses to reveal whether including parents on the basis of the age when they have their first child might substantively alter our conclusions. When we restricted our sample to 18–20 year olds, for whom there is very little childbearing, we found substantively similar, if slightly stronger, estimates to those presented below. Additionally, models that censor respondents when they become parents found stronger effects than those shown here. Analyses that excluded respondents who were already parents also led to substantively identical conclusions.

Results

Childbearing Expectations

Table 3, Model 1 shows the results, as odds ratios, for our model of whether the respondent was uncertain he/she would have children in the future. Being childless and certain about future parenthood was the reference category. Additional columns with the reference group of already being a parent and rows for the control variables are available upon request.

Our results support both of our hypotheses motivated by a financial strain framework, suggesting that objective (H1) and subjective (H2) economic insecurity increases uncertainty about having children. Respondents with higher earnings were significantly less likely to say they were uncertain about having children [odds ratio (OR) 0.93, $p < 0.001$]. Our findings regarding education support

[5] We also explored whether the relationship between individual economic circumstances and childbearing expectations varied by macro-level economic context, but we did not find this to be the case.

Table 3 Relationship between childbearing expectations and economic context among young men and women

Variables	Uncertain about parenthood vs. expects to be parents (reference category)	(Expecting to) have first child after age 30 vs. at or before age 30 (reference category)
	Model 1[a]	Model 2
Objective economic context		
Current employment status[b]		
Unemployed	1.43	0.68
	(1.76)	(− 1.47)
In school	1.11	1.16
	(0.57)	(0.78)
Other	5.34***	0.54
	(3.61)	(− 1.12)
Last year's earnings (logged)	0.93***	0.99
	(− 3.58)	(− 0.66)
Has at least some college education	0.48***	2.06**
	(− 3.69)	(3.02)
Subjective economic context		
Worry about having a good job in the future	1.10**	1.12*
	(2.63)	(2.71)
Female	1.46*	0.50***
	(2.02)	(−3.63)
Race/ethnicity[c]		
Non-Hispanic Non-White	2.35***	0.34***
	(3.93)	(− 4.78)
Hispanic	1.65	0.62
	(1.53)	(− 1.37)
Constant	< 0.001***	< 0.001***
	(− 6.21)	(− 9.45)
Number of observations	3545	3445
Number of respondents	1465	1449

Odd ratios shown (z values in parentheses). Models include all controls

***p < 0.001, **p < 0.01, *p < 0.05, two-tailed tests

[a]Model is selected output from multinomial models with additional comparison to becoming a parent

[b]Employed is reference category

[c]Non-Hispanic White is reference category

the argument that young people consider their economic potential when anticipating their childbearing future. Respondents with at least some college education had significantly lower odds (OR 0.48, $p < 0.001$) of expressing uncertainty about being parents. Those with more education were more certain they would have children at some point in the future.

We also found that our subjective measure, how frequently people worry that they will not have a good job in the future, had a significant effect: Those who were worried about their future employment were more likely to be uncertain about their future childbearing (OR 1.10, $p < 0.01$). Specifically, each one unit increase in the worry scale corresponded to an increase in the odds of being uncertain whether he/she would have children by a factor of 1.1.

Gender and race were also statistically significantly related to childbearing expectations. Women (OR 1.46, $p < 0.05$) had higher odds of being uncertain about becoming parents than men. Non-Hispanic non-Whites had higher odds of being uncertain (OR 2.35, $p < 0.001$) than non-Hispanic Whites. The results for our controls are largely in line with previous research, and as such we do not discuss them.

To test Hypotheses 3 and 4 we estimated separate models by gender and race. The relationships between economic context and childbearing expectations were consistent across subgroups, generally yielding odds ratios of similar size, direction, and significance. Higher earnings, more education, and less worry were associated with less uncertainty (not shown in the tables). To understand what shapes the probabilities of childbearing expectations for "average" men

Table 4 Statistically significant changes in predicted probabilities due to differences in economic circumstances, race, and gender for "average" respondents (all changes based on 1 unit change)[a]

	Women	Men	Non-Hispanic White	Non-Hispanic non-White
Panel A. Uncertainty about parenthood				
Last year's earnings (logged)	−0.01	ns	ns	−0.01
Has at least some college education	−0.07	−0.06	ns	−0.08
Worry about having a good job in the future	0.01	ns	ns	ns
Non-Hispanic non-White (vs. non-Hispanic White)	0.11	0.06	n/a	n/a
Panel B. Expecting to have first child after age 30				
Unemployed (vs. working)	ns	ns	−0.07	ns
Unemployed (vs. student)	ns	ns	−0.09	ns
Has at least some college education	ns	0.24	ns	ns
Worry about having a good job in the future	ns	0.04	0.03	ns
Female	n/a	n/a	−0.06	ns
Non-Hispanic non-White (vs. non-Hispanic White)	−0.06	−0.15	n/a	n/a

ns Change in predicted probability was not statistically different from zero

n/a not applicable

[a]The "average" respondent was: employed, with mean log earnings, had some college education, mean worries about having a good job in the future, non-Hispanic White, mean parents education, not married or head of household, Protestant, attended church a few times a year, religion was somewhat important, 21 years old, in 2009. Means are determined within subgroup. Key characteristics are varied as labeled

and women and for "average" non-Hispanic White and non-Hispanic non-White respondents, we calculated predicted probabilities for the four subgroups. Table 4, Panel A shows the statistically significant changes in the predicted probability of the "average" respondent being uncertain (s)he will have children in the future as a function of changes in the measures of economic context as well as by race and gender.[6]

Comparing the predicted probabilities from separate models of women and men we see that for both typical, or "average," women and men, college educated individuals had a lower probability of being uncertain about parenthood. Specifically, the predicted probability was 0.07 lower for women with some college education than for women without any college education, and was 0.06 lower for men with some college vs. men without.

Non-Hispanic non-White women and men both had significantly higher predicted probabilities than non-Hispanic White women and men. The difference in predicted probabilities for the different racial groups for women (0.11) was almost twice what it was for men (0.06). Other differences are that both objective (as measured by last year's earnings) and subjective economic circumstances significantly affected the predicted probability of being uncertain about parenthood for women but not for men. Increasing last year's earnings decreased the predicted probability of being uncertain, whereas increasing the frequency women worried about having a good job in the future increased the predicted probability. Although these findings support our hypotheses about financial strain (H1 and H2), the fact that these relationships exist for women but not for men or are two times greater for women than men is in contrast to H3, our Breadwinner Vulnerability Hypothesis, and to Shreffler et al. (2010), who found significant effects for men but not women when looking only at partnered individuals in dual-earner households.

Turning to racial differences we see that for non-Hispanic non-Whites increased earnings and having some college education significantly lowered the predicted probability of being uncertain about parenthood. Changes in economic circumstances did not result in significant changes in the predicted probability for non-Hispanic Whites. These findings support H4, our Racial Disadvantage Hypothesis.

Expected Age at Parenthood

Next, we examined whether respondents who thought there was some chance they would become parents expected to do so after age 30. We present the odds ratios in Model 2, Table 3. Among our objective measures of economic circumstances, we found a significant relationship between education and expected late parenthood. However, it is in contrast to H1: Higher levels of education were associated with higher odds of expected late transition to parenthood

[6] Across groups there were differences in the probability of being uncertain when comparing employed and those in the "other" employment status category. However, because the "other" group is homogenous, we do not believe it wise to interpret these differences as substantively meaningful.

(OR 2.06, $p < 0.01$). Young people with higher education expect to have children later. This may be because they anticipate conflict between the student-parent roles (Rindfuss 1991) or because they want more time to establish themselves financially after finishing school and before starting a family. In support of H2 we found that those who worried more frequently about having a good job in the future had greater odds of expecting a later transition to parenthood (OR 1.12, $p < 0.05$).

Women (OR 0.50, $p < 0.001$) and non-Hispanic non-Whites (OR 0.34, $p < 0.001$) had greatly reduced odds of expecting to delay parenthood until after 30. That is, they may be less certain they will have children (seen in Model 1); but if they think this may happen at all, they expect it will occur earlier than men and non-Hispanic Whites do.

Next, we examined the predicted probability of expected late parenthood separately by gender and race to test hypotheses H3 and H4, shown in Table 4, Panel B. Here we see that the relationship between economic circumstances and the expected timing of parenthood is driven by men. The predicted probabilities for women are not statistically different with different levels of education or worries. However, having a college education significantly raises the predicted probability of expecting later parenthood for men (pred. prob. = 0.24). Similarly, increasing worries about having a job in the future does not significantly increase the predicted probability for women, but it does for men (pred. prob. = 0.04). These findings support H3, our Breadwinner Vulnerability Hypothesis, providing evidence that men's expectations about the timing of childbearing are more sensitive to economic circumstances than women's.

Turning to race differences, we found evidence that the relationship between economic context and the expected timing of childbearing may vary by race. For non-Hispanic Whites being unemployed, as opposed to being employed or being a student, lowered the predicted probability of expecting a late transition to parenthood. But there was no significant effect[7] for non-Hispanic non-Whites. This is in contrast to H1 and H4. Not only are non-Hispanic non-Whites not more sensitive to becoming unemployed than non-Hispanic Whites, but for non-Hispanic Whites unemployment does not seem to influence expectations of the timing of childbearing due to financial strain. Rather, they appear to see unemployment as an opportune time to have children. This may be because their relative social privilege allows them to be generally more confident about their future economic situation than non-Hispanic non-Whites.

[7] By "effect" we mean the change in predicted probability associated with a change in the independent variable. We do not mean to imply that we are establishing overall causality in our regression models.

We also found significant differences in the relationship between gender and the expected timing of childbearing by race when we estimated predicted probabilities. Counter to H3 and H4, we found that non-Hispanic White women had a significantly lower predicted probability of expecting to become a parent after age 30, but that gender did not significantly influence the predicted probabilities of non-Hispanic non-Whites. This may be because for this dependent variable respondents with children were coded on the basis of the age they became parents, and non-Hispanic non-Whites were more likely to be parents at younger ages.

Discussion and Conclusion

This paper explores the important, but not widely investigated relationship between economic circumstances and childbearing expectations. Childbearing expectations are an important predictor of behavior, yet we know little about what determines them and even less about the expectations of young people. Our main findings provide distinct contributions to the literature and extend our knowledge about the link between economics and fertility. We found that both objective economic circumstances and their subjective assessment are important for the two dimensions of childbearing expectations we examined and that this relationship varies by both gender and race. We found clear support for both economic strain hypotheses H1 and H2, but we found mixed support for the Breadwinner Vulnerability and Racial Disadvantage hypotheses H3 and H4.

Our approach to measuring childbearing expectations differs from much of the existing literature and, therefore, provides a unique insight in two ways. First, our measures are not measures of respondents' idealized plans. Instead, they attempt to capture the realistic expectations respondents have. As such, they are very well suited to reflect young adults' visions for their own futures and the degree of uncertainty they experience, rather than any (possibly unrealistic) dreams they may have had. The measures were also distanced from the pervasive social norms regarding family size, allowing us to see evidence of the effect of economic context on childbearing expectations. Second, we adopt a multi-dimensional approach. By investigating two separate measures of childbearing expectations, we see evidence that economic context is related to a range of expectations and in different ways. The inclusion of a tempo or timing measure of expected childbearing (however crude) is particularly important. In fact, we learned that women and non-Hispanic non-Whites were less certain that they would have children at all; but if they thought there was a possibility they would be parents, they expected to do so earlier than men or non-Hispanic Whites. Without the tempo expectation, we would not have seen the extent of the gender and race differences

in the relationship between economic circumstances and childbearing expectations.

Overall, our evidence suggests that economic strain suppresses childbearing expectations as it increases uncertainty about expecting to be a parent and increases the likelihood of expecting to make the transition to parenthood late in life. Our findings regarding the subjective measure of economic context constitute a particularly important contribution to the literature, as subjective measures, which are often missing from demographic studies, may better reveal how young people feel about or interpret their economic situation. We found that, regardless of actual employment status or earnings, those who worried more frequently about their future job prospects were more likely to have doubts about having children and, if they did expect to have children, expected to have them later in life.

That we found wide-ranging support for our financial strain-motivated hypotheses suggests that the costs of childbearing and rearing are likely real barriers to young people. Those who found themselves in better financial situations were more optimistic about their future parenthood. Given the current economic situation and the job market young people face today, it is likely that an increasing number have doubts about whether they will have children and are planning to delay any childbearing. These findings highlight the deep impact economic circumstances have on young men's and women's thinking about their future. Although later life experiences, including changes in economic context, will also influence those behaviors, these early expectations are the starting point; and this research provides evidence that this starting point may be lower than in previous times.

A second critical contribution of our study is the finding that although economic circumstances are related to young people's childbearing expectations in ways that suggest financial strain, this relationship varies by gender and race in complex ways. Regarding gender, our findings are telling. Theoretical models of gendered differences in the relationship between economics and fertility derive from long-standing ideas about male breadwinners and women as childcare providers. These models argue that men's childbearing expectations will be positively related to economic circumstances since they are the breadwinners in the family. We did find some evidence to support this view with respect to expectations concerning the timing of childbearing. However, we found that women's expectations were just as often, if not more often, positively related to their economic circumstances, especially if we consider the certainty with which young people expect to have children at all. This suggests that discussions and theories based on the idea that women will be largely influenced by opportunity costs and men by financial strain should be carefully revisited. That financial strain matters for women is not surprising if we consider the economic reality of dual-earner households, the recent recession, and generally high unemployment rates these young people are experiencing. Our theoretical frameworks for understanding the relationship between economics and childbearing must move beyond these historic divisions of labor and adopt more nuanced gendered frameworks.

Our findings from the analyses by race similarly point to the need to carefully theorize about race and fertility. As predicted, on the basis of theories on racial disadvantage in regard to the certainty of having children, non-Hispanic non-Whites appeared to adjust their expectations in response to their economic circumstances, but non-Hispanic Whites did not. The predicted probability of being uncertain they would have children decreased significantly for non-Hispanic non-Whites when they had some college education or when their earnings increased. This may be because the more privileged and secure social and economic positions non-Hispanic Whites hold buffer their expectations from the pinch of financial strain. On the other hand, the predicted probability of expecting to have children late was only significantly effected by economic circumstances for non-Hispanic Whites. So, it may simply be that Whites and non-Whites adjusted their childbearing expectations in the face of poor economic conditions, but they did so differently—with whites assuming they would ultimately be able to support children and non-Whites questioning whether having children is an option at all. These findings suggest that race clearly and differently shapes the ways individuals perceive their economic context and their future. Additional research is necessary to identify the specific mechanisms and explanations for these differences.

Of course, this study is not without limitations. As with many studies based on observational data, there were issues related to measurement. We were not able to account for all the individual characteristics that might have shaped individuals' family plans. For example, we did not have measures of health status or contraceptive use beliefs and patterns. The childbearing expectations of young men and women with certain health conditions or who were opposed to contraception may not have been as sensitive to economic conditions. We also were not able to control for natal family size, another factor related to one's own family size. If natal family size were also related to economic circumstances, then our models could be overestimating the effect of economic circumstances. However, we did control for childhood SES (with parental education) and religious affiliation, which was likely picking up some of the sibling effect, and doing so increased our faith in our models.

Additionally, our measure of the expected timing of childbearing might not have been fully operationalizing the concept we intended. We used this measure to capture late transition to parenthood, but we did not know whether the individuals considered the age they gave to be late. Future research should explore other measures that

capture childbearing relative to other experiences to reveal more about the life course shifts young men and women anticipate.

A final limitation is that our models assume that young people tie their future childbearing plans to their current economic conditions. We argue that they use their current situation as a proxy of their future economic situation. Our finding that those with more education had higher odds of expecting late parenthood supports this idea, but other mechanisms might also have been at play. Future research might examine variations in these future projections across race, social class, or other factors.

Despite these limitations, this study provides critical new information regarding how childbearing intentions are shaped. In contrast to previous research, we focused on the formation, as opposed to the consequences, of childbearing expectations and found that both objective and subjective dimensions of economic context are important. Furthermore, we demonstrated that these relationships vary by race and gender.

The findings presented here have important policy implications, particularly when coupled with other literature on the expectations-behavior link. A long history of research has provided evidence that unintended births were higher among those in worse economic conditions (Henshaw 1997). Our findings reveal that some of the observed relationship between economics and fertility behavior may have been because those individuals actually desired fewer children to begin with or would have preferred to have children later. Of course, there was also likely some direct effect of economics on pregnancies due to access to family planning, but our findings demonstrate that was not the entire story and policy makers need to think about the initial formation of intentions in addition to enabling individuals to act on those intentions.

Our results also have policy implications for long term-fertility trends. Very late childbearing and the often-resulting low fertility have serious consequences for population size, labor markets, and pension systems (Lee and Mason 2014; Bongaarts 2004). Concern over very late and low fertility in the US has not reached the levels seen in European or Asian countries, yet our findings are evidence that these phenomena may become increasingly prevalent as today's young people age. Because of their experiences with the Great Recession and general economic strain, this generation may be less certain they will have children and expect to do so later. Although economic situations may change, early intentions predict one's behavior in later life (Hayford 2009); so it is likely that, regardless of the job conditions these young people experience as they age, their childbearing intentions will be lower than if they had experienced better conditions in their youth.

Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical Approval This article does not contain any studies with human participants performed by any of the authors. The PSID data is in the public domain.

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