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The Impact of Economic Uncertainty, Precarious Employment, and Risk Attitudes on the Transition to Parenthood

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Abstract:

This study investigates how precarious employment throughout the life course affects the fertility behavior of German men and women, and how risk attitudes moderate exposure to objectively given uncertainty. Analyzing data from the German Socio-Economic Panel Study (SOEP) from 1990 to 2015, I find that men and women have become quite similar in their fertility behavior: stable employment accelerates family formation, whereas discontinuous and precarious employment delays it. With regard to risk attitudes, risk-averse women show the highest likelihood of family formation. Apparently they choose a family and parenthood centered pathway in their life course that provides them with stability and social approval, where an uncertain and instable employment career cannot provide these resources.

Keywords: economic uncertainty, precarious employment, risk attitudes, Germany, parenthood decision, life-course, event-history analysis.

Introduction

This study investigates the impact of economic uncertainty and precarious employment in male and female life courses on first-parenthood decisions. The period of analysis is 1990-2015. This includes the political transformation in the early phase of German reunification, as well as the labor market reforms in the early 2000s that resulted in a liberalization of key labor market institutions. The goal of this study is to delineate the underlying mechanisms shaping fertility within the scope of related uncertainties. More specifically, I aim to unravel how labor market-related uncertainty and precarity in individual employment biographies affect individual fertility behavior in the life course.

This study aims to extend the literature on the employment-fertility nexus by honing in on the role of individual risk attitudes. In particular, the specific contribution of this study is to consider individual risk attitudes as possible moderators in the relation between employment uncertainties and fertility decisions, where previous studies assumed such uncertainties to affect all individuals in a similar way. The theoretical foundation follows an approach of life-course decision-making that relates the pathway of family formation to preceding stages and future prospects of work biographies. Taking into account the multidimensionality of the life course (Buhr & Huinink, 2014), I consider the accumulation of disadvantageous conditions in individual employment biographies and corresponding life course choices with regard to family formation. In this vein, I will investigate how the personality trait of risk aversion moderates different forms of uncertainty that might affect childbearing decisions in the life course.

The empirical analyses rely on data from the German Socio-Economic Panel (SOEP) study, a longitudinal survey capable of capturing extensive parts of individuals' fertile

lifespan over the course of more than 25 years. Applying an event-history approach, the data make it possible to investigate the role of several key factors related to fertility choices, including personality traits, social and economic status, precarious employment contexts, and partnership characteristics.

This article is structured as follows. The subsequent analytical framework elaborates the micro-theoretical perspective on a decision-making framework of family formation within male and female life courses. This is extended with a discussion on how economic uncertainties and precarious employment affect fertility behavior, and a review of the research literature. In the latter context, I also examine how risk attitudes might moderate the uncertainty-fertility nexus. The subsequent discussion of the institutional background and policy context provides information on work-family cultures in Germany, on East-West German differences in culture and institutions, and on changes in welfare state and labor market institutions that are capable of influencing fertility behavior. The database and design of the empirical analysis are outlined in the data and methods chapter, followed by a presentation and discussion of findings.

Analytical framework

A life-course-related decision-making framework

In this study, I focus on parenthood decisions, that is, the transition from childlessness to parenthood. The analytical framework of this study follows the assumption that childbearing decisions are result of rational choice (Leibenstein, 1981, Lindenberg, 1985). One could

challenge the notion that childbirth is the consequence of a decision-making process. However, even future parents confronted with an unplanned pregnancy have to make a decision at some point.¹

In general, the transition to parenthood in western societies is a consequential and irreversible choice in the life course, usually accompanied by an intensive consideration of various factors (Hobcraft & Kiernan, 1995; Hagestad & Call, 2007; Huinink & Kohli, 2014). This includes considering the traits of a suitable partner with whom to start a family and aligning competing biographical plans and options (Mynarska, Matysiak, Rybińska, Tocchioni, & Vignoli, 2015). One could argue that the same applies to decisions revolving around having second or further children. However, first-parenthood decisions crystallize the conflicts involved in reconciling competing life goals, such as career and family paths.

Fertility decisions and precarious employment

When starting a family, gainful employment mainly functions in preparing the economic foundations. Contributions to family income are increasingly provided by both men and women. But while women are gaining ground in the labor market, the exclusiveness of the female caregiver role is rarely challenged. Women in Germany face strong “good mother” norms (Trappe, Pollmann-Schult, & Schmitt, 2015). As a result, the opportunity cost of foregone income due to childcare leads to a motherhood of parenthood among high-income e.

In this study, I investigate labor market precarity in relation to different forms of insecure or uncertain work contexts, including unemployment, working reduced hours or

¹ One might argue that such a delayed choice in the case of an unplanned pregnancy involves a host of ideational and moral aspects that remain hidden in the survey-based investigation of fertility. In this case, the estimates would be biased by an increased number of unobservables associated with such considerations.

on an irregular schedule at or below the poverty level (marginal employment), as well as other work contexts that display a weakened link to the labor market, such as temporary work (Kalleberg, 2009). The threat emanating from such insecurities has been increasing with the reduction in welfare state's efforts to hedge market risks (Breen, 1997). Among men, the increase in insecure and precarious work (Grotti & Scherer, 2014) has significantly undermined their previously undisputed breadwinner status.

It should be noted that – for the sake of this study – the norm of permanent stable full-time employment serves as a frame of reference. Importantly, both standard and non-standard work can be precarious. However, non-standard work is more often uncertain as it is frequently associated with bad working conditions and low wages (ILO, 2016). Regardless of precariousness, non-standard work frequently provides earnings that are insufficient to take the role of a family breadwinner².

The question of how precarious work contexts affect the likelihood to become a parent has spawned a large body of literature. Much of the research goes beyond demographic issues to address the question of how labor-market-induced uncertainty in post-industrial societies affects people's willingness and readiness to make lasting commitments. The standard employment pattern among men implies a norm of permanent full-time work as prerequisite for supporting a future family. In this context, working on fixed-term or short-term contracts and periods of unemployment or labor market inactivity are detrimental to a person's socio-economic status (Green, 2008; Giesecke, 2009) and

² In order to establish distinct groups, the empirical concepts used in this study distinguish permanent full-time employment as standard work, from non-standard or atypical work. The latter group summarizes part-time work, and precarious work (including fixed-term jobs regardless of work hours, and marginal work). For a more detailed definition of groups cf. p. 18f.

threaten their future ability to make investments in children's needs. In such situations, characterized by prevailing uncertainties, childbearing tends to be postponed (Scherer, 2009; Kreyenfeld, 2010).

The social norm of stable full-time employment, however, is less rigid for women. Being in an atypical employment context (such as part-time or marginal work) might tip the scales in favor of motherhood, particularly when this type of employment offers more flexibility in time budgets at a lower price of time. This is the case, for instance, with part-time work or unemployment. Additionally, the social approval gained from parenthood might compensate for the status loss associated with precarious employment or joblessness. But in many countries, women face a higher risk of precarious employment, which makes them more vulnerable to social and economic exclusion in highly commodified welfare systems (Barbieri, 2009). Hence, starting a family from a precarious or unstable employment position remains an uncertain endeavor, even if family formation plans predominate.

Key research findings on the fertility-employment nexus presented in Table 1 appear inconsistent at first glance. However, much of the variation relates to different mechanisms associated with different types of precarious employment. For example, fixed-term contracts may have little impact on current income but may limit the predictability of future income. Unemployment, in contrast, significantly reduces family income, but increases the amount of time available. This observation sheds light on the puzzlement of differing findings across countries: The fertility effects of precarious employment crucially depend on the generosity and universalism of the respective welfare system, employment protection regulations, and work-family cultures. Unemployed women in France have been shown to

postpone parenthood as the French welfare state provides comprehensive childcare services and promotes female labor market attachment, (e.g., Pailhé & Solaz, 2012b). For German women, in contrast, most studies find an increased likelihood to start a family after job loss. This is likely due to a generous unemployment support system and a low coverage and acceptance of public childcare (Özcan, Mayer, & Luedicke, 2010; Schmitt, 2012b; Kreyenfeld & Andersson, 2014; Schneider, 2016).

A further variation in research findings regards the study of first or higher-order births (Table 1). This limits comparability since family *formation* follows different rationales as family *extension*. Importantly, differences across the research literature are also driven by inconsistent measures of employment status. Many studies fail to state which labor market groups are pooled together in the group of economically inactive, unemployed, or non-employed individuals. Moreover, results will differ if analysis of the employment status uses either full-time employment, non-employment, or working hours as a reference category. All these variations appear in the research literature referenced in Table 1. Hence, what is interpreted as a gender effect, a welfare state effect, or a labor market effect, is often related to methodological choices in the studies compared. As a consequence, it would be advisable for future research to interpret findings using standard (full-time) work as reference when compatible with the research focus.

Within this general framework, the level of educational attainment moderates the role of job insecurities by moderating whether acquiring a stable job takes priority over starting a family. Placing family formation in phases of precarious employment bears the risk of consolidating labor market exclusion and the devaluation of human capital. Among the few studies that have investigated interactions between unemployment and starting

a family, results for men do not show a clear pattern across countries (Kreyenfeld, Andersson, & Pailhé, 2012; Schmitt, 2012a; Schmitt, 2012b; Kreyenfeld & Andersson, 2014). For women, some of the findings are either insignificant (Pailhé & Solaz, 2012a, and Schmitt, 2012a for France; de Lange, Wolbers, Gesthuizen, & Ultee, 2014 for the Netherlands), or inconclusive (Özcan, et al., 2010). In the countries for which positive effects of unemployment on first motherhood have been reported, a clear pattern emerges in Denmark, Germany, the UK, and Finland, separating tertiary education (neutral or negative) from medium and lower education (neutral or positive; Schmitt, 2012a; Schmitt, 2012b; Kreyenfeld & Andersson, 2014; Huttunen & Kellokumpu, 2016).

Table 1: Fertility effects of uncertain and atypical employment contexts

Study	Country/Data	Focus	Fixed-term contract		Unemployed		Working part-time		Inactivity/Other	
			M	W	M	W	M	W	M	W
Liefbroer & Corijn, 1999	Netherlands Flanders	Young adults			0	0				
Hoem, 2000	Sweden - REG				-	0				
Andersson, 2000	Sweden - REG	Age 20-30				+				
Hank, 2001	Sweden - REG	First birth				+				
		Higher parities				0				
Santow & Bracher, 2001	Sweden - FFS	First birth				0				
Kravdal, 2002	Norway - REG	First birth			-	+				
		Higher parities			+	-				
Meron & Widmer, 2002	France - YCS	First birth		-		-				+
Baizán, Aassve, & Billari, 2003	Spain - FFS	First birth								+
Tölke & Diewald, 2003	Germany - FS	First birth	0		-		-		Self empl.	-
Kreyenfeld, 2004	Germany - FFS	First birth				+			East West	- +
Vikat, 2004	Finland, age<31 - REG age>30	First birth				+				- -
Kurz, Steinhage, & Golsch, 2005	Germany - SOEP	First birth	0	0	-	0	0	+	-	0
Mencarini & Tanturri, 2006	Italy	Multinomial logit of parity		-		-				

Andersson & Scott, 2008	Sweden - REG	Second birth			-	-	Low earnings:	-	-
Mencarini & Tanturri, 2006	Italy	Multinomial logit of parity			-	-			
Gutiérrez-Domènech, 2008	Spain - FFS	First birth	0	0	-	-			
		Second birth		0		-			
Özcan, et al., 2010	Germany - GLHS	First birth		East	0	+		East	0
				West	0	0		West	+
Kreyenfeld, 2010	Germany - SOEP	First birth				0		East	0
						0		West	+
Gerster & Lappegård, 2010	Norway - REG	Second birth							-
		Third birth							+
Lindo, 2010	US - PSID	Any parity	job displcm.		+				
Del Bono, Weber, & Winter-Ebmer, 2012	Austria - REG	Any parity	job displcm.		-	-			
Lundström & Andersson, 2012	Sweden - LFS & REG	First birth		-	-	-	-		-
Pailhé & Solaz, 2012b	France - FES	First birth		-	-	-	0		+
Schmitt, 2012b	West Germany, UK, France - ECHP	First birth				0	+	0	0
						0	+	0	0
						0	-	0	0
Schmitt, 2012b	Germany - SOEP	First birth	0	-	+	+	-	0	
	UK - BHPS		0	0	+	+	-	+	
Vignoli, Drefahl, & De Santis, 2012	Italy - EU-SILC			-	-				
Berninger, 2013	Denmark	First birth							+
	Finland- ECHP								-
Matysiak & Vignoli, 2013	Italy - FSS								0
	Poland -EFES								+
de Lange, et al., 2014	Netherlands - FSDP	First birth (low case n)		0		0			
Kreyenfeld & Andersson, 2014	Denmark - REG	First birth			0/-	+/			
	Germany - SOEP	20-28/29-44			-/-	0/-		0/0	+/0
Ciganda, 2015	France - GGS	First birth			-	+			
Inanc, 2015	UK - BHPS	First birth			+	+		+	+
Huttunen & Kellokumpu, 2016	Finland	Any parity	job dis-place ment		0	-			
Schneider, 2016	Germany - SOEP	First birth	planned			+			
			unplanned			0			
Schneider, 2016	Russia -. RLMS	First birth				-		0	-
Dupray and Pailhé (2017)	France	First birth		-	-	-	-	Long-term UE	-
									0

Abbreviations (in order of appearance): REG: Population or social security register data; FS: German Family Survey; FFS: Fertility and Family Surveys; GLHS: German Life-History Study; PSID: Panel Study of Income Dy-

namics; YCS: Youth and Career Survey, INSEE; ASSD: Austrian Social Security Database; FES: Familles et Employeurs survey, INED; FSS: Family and Social Subjects; EFES: Employment, Family and Education Survey; FSDP: Family Survey Dutch Population; GGS: Generations and Gender Survey; M: Men; W: Women; RLMS: Russian Longitudinal Monitoring Survey.

Note: ○ represents insignificant results; no entry was made if a specific employment status or gender focus was no part of the respective study.

Beyond such individual level contexts, macro-level conditions that imply a bleak or uncertain future might also play a role in fertility behavior. Such uncertainties have been predominant during the political transformation process after reunification, the flexibilization of the German labor market since 2003, or more generally during phases of economic downturn. There is a broad body of literature investigating whether recession and high unemployment rates result in decreased aggregate fertility (see e.g. Butz & Ward, 1979; Ahn & Mira, 2002; Rindfuss, Guzzo, & Morgan, 2003; Sobotka, Skirbekk, & Philipov, 2011; Cazzola, Pasquini, & Angeli, 2016; Comolli, 2017; Hiilamo, 2017). Empirical investigations in recent years have substantiated the hypothesis of negative impact of high unemployment rates on fertility behavior (Hondroyiannis, 2010; Adsera, 2011; Neels, Theunynck, & Wood, 2013). The findings, however, show less straightforward associations between other macro-level uncertainties (e.g., economic growth or business cycle) and fertility behavior, broadly rejecting the connections hypothesized by the Butz and Ward model (1979). This suggests that the mechanisms linking aggregate uncertainties and fertility are more complex than suggested by pure macro-level studies, which are prone to ecological fallacies (Kravdal, 2002).

Risk attitudes and the assessment of economic uncertainty

This study makes a key extension to previous research by accounting for individual risk tolerance³ in the analytical framework. This is based on the idea that the mechanism linking economic uncertainty (as indicated by precarious or discontinuous employment patterns) to fertility decisions is not only affected by the objectively given level of uncertainty. Instead, the individual interpretation of whether such uncertainties pose a threat to the well-being of a future family may be moderated by the individual's perception of risk.

This raises the question of how fertility-related planning processes unfold in the context of occupational uncertainty when taking into account risk attitudes as a personality trait. Despite the frequently used term "*risk attitude*," this characteristic is an aspect of personality associated with the Big Five personality traits (McCrae & Costa Jr, 1997; Borghans, Duckworth, Heckman, & ter Weel, 2008). Nicholson, Soane, Fenton-O'Creevy, & Willman, (2005): note that a "...clear Big Five pattern emerges for overall risk propensity, combining high extraversion and openness with low neuroticism, agreeableness and conscientiousness" (p. 157). Individual risk tolerance is considered to emerge during adolescence (Steinberg, 2004), and to be widely stable across the rest of the life course (Donkers, 1999; Dohmen, et al., 2005; Claudia R. Sahm, 2007). Moreover, women are on average more risk-averse than men (Borghans, et al., 2008; Eckel & Grossman, 2008). This may be of particular interest for the focus of this study: Women are increasingly treated equally to men in terms of employment related responsibilities and welfare eligibility under the scheme of an adult worker model, while care obligations create greater challenges for them

³ The terminology describing concepts of risk attitudes is used inconsistently across the literature. In this study the following concepts will be used: "risk attitudes" refer to the general concept of risk as a personality trait. "Risk tolerance" describes risk attitudes as an ordered sequence, with "risk aversion" referring to the lower end of the scale (0), and "risk prone" to the upper end of the scale (10).

women (Gottschall & Schröder, 2013). Accordingly, women are likely to respond more strongly to employment uncertainties in the context of family formation. Previous research on the role of risk attitudes in work and occupations has been focused primarily on self-employment and entrepreneurship (e.g., Ekelund, Johansson, Järvelin, & Lichtermann, 2005, Fairlie & Holleran, 2012. With regard to demographically relevant choices, Schmidt, (2008) and Spivey, (2010) investigate the impact of risk attitudes on marriage timing in the US. Additionally, Schmidt explores the link between risk attitudes and contraceptive use, finding that risk proneness is associated with higher rates of teenage pregnancy.

Focusing on the general impact of risk attitudes on fertility choices two different arguments become prominent: Among more risk averse individuals family formation might signal a transition into a new and unknown life stage. In the same vein, more risk prone individuals should be likely to start a family earlier in their life-course, as they perceive these uncertainties as less unsettling.

H1: Family formation as uncertain endeavor: Since the transition to parenthood constitutes a confrontation with new and unfamiliar tasks, role expectations, and challenges, a pronounced risk aversion should lead to a delay of family formation.

Friedman, Hechter, & Kanazawa, (1994) argue in favor of an opposing mechanism: Family formation should reduce turbulence and contingency in a broadly unpredictable world. Economic and employment insecurity can be interpreted as prime examples of this. Starting a family functions as retreat into a safe haven and makes the life course more predictable (Buhr & Huinink, 2014). Taking the role of a parent establishes and strengthens social ties and provides social approval (see Lindenberg, 1985, 1991 on social production

functions) This might also compensate for a lack of occupational prestige in the case of precarious employment contexts. The mechanism (H2) operates in exactly the opposite way as the one outlined in (H1):

H2: Family as safe haven: Starting a family establishes social ties and provides social approval. Risk-averse individuals should favor family formation to contain contingency in their life-courses. This effect should be stronger among women, first because they tend to be more risk-averse (Steinberg, 2004), second because they should gain greater social approval from conformity with a caregiver role.

Linking the general hypotheses of the linkage between risk attitudes and fertility choices, this raises the question, what mechanisms might be at work in risk attitudes capable of moderating the link between economic uncertainty and fertility decisions. In the study at hand, the empirical investigation of economic uncertainty and precarious employment confronts objectively given employment uncertainties in Germany with the individual's risk attitude. In line with McDonald (2002), we argue that the combined consideration of objective uncertainties and their subjective assessment is crucial in understanding the extent to which an individual perceives family formation as a risky endeavor, when facing uncertain or bleak employment prospects, or when working in a job providing insufficient economic resources. In this vein, more risk-averse individuals will perceive uncertain conditions as threatening, which applies to both the transition to parenthood and uncertainty in employment contexts. Hence, a pronounced risk aversion should lead to a delay of family formation as the transition to parenthood signals a step into unknown terrain (H1)

while employment uncertainties are also perceived as more threatening by the more risk averse.

H3: Uncertainty reinforcement: A high risk aversion should reinforce the effect of delaying family formation as the transition into an unknown life-stage is potentiated by the threat perceived when facing uncertain, unpredictable, or discontinuous employment patterns.

Recent labor market reforms and the reproduction of gender inequality

The following section aims to outline key aspects of German welfare state and labor market settings that define on one hand, which employment contexts are likely to signal economic uncertainty or precarity on the individual level, and that – on the other hand - tend to reproduce gender inequalities in earner models.

Already during the 1990s, employment protection legislation underwent a series of changes that lowered barriers for dismissals and undermined job security. The Agenda 2010 reforms initiated between 2003 and 2005 were a key turning point in German labor market and social policies. These reforms aimed to provide a more sustainable social security system and a more competitive labor market. In effect, this led to a deregulation of labor market institutions. The key elements included curtailing the eligibility period for unemployment benefits to one year and replacing subsequent unemployment assistance with a more restrictive, less generous system. The share of temporary jobs also increased as a consequence of this reform among both men and women. This transition to less comprehensive employment protection legislation (EPL) signaled a break with old certainties. It became increasingly important for families to have a second income to supplement

male earners' low or unstable income in the context of precarious and discontinuous employment patterns. However, in combination with spousal tax splitting and subsidiarity on the household level, many of the changes fostered the emergence of jobs with limited working hours and pay (mini and midi jobs), which couples often used to supplement the income of a full-time earner. The consequence was an increase in marginal and part-time work among women who had previously held the role of full-time homemaker (Gottschall & Schröder, 2013).

Agenda 2010 also embedded the adult worker model in German social policy as a means of implementing one of the 2001 Lisbon Strategy goals. According to this model, men and women were to be treated equally as part of the workforce, subject to all the same obligations and sanctions in the case of benefit dependency. However, the labor market reforms neglected to provide institutional support enabling parents to fulfill the care responsibilities for which women have traditionally been responsible. This gendered division of labor has been reproduced for decades particularly in West Germany. Under this scheme, women were encouraged to retreat from the labor market or work part-time by seemingly generous leave policies, a spousal tax-splitting that (still) favors a single-earner model, and a limited childcare supply. This perspective has – in part – been changed since 2007 with a series of family policy reforms. These policies mark a shift towards increased gender equity and the promotion of work-family balance closely oriented toward Scandinavian policies. (Spiess & Wrohlich, 2008). The 2007 parental leave benefit reform (*Elterngeld*) encourages paternal contributions to childcare (through “daddy

months”) and a net income replacement of two-thirds with a comparatively short payment period (12 months). This encourages a swift return to the labor market⁴. This policy reform has been flanked by an expansion of public childcare services since 2009, and a legal entitlement to a daycare slot for children under the age of three since 2014 (Schober & Schmitt, 2017).

Data and Methods

The analyses use data from the German Socio-Economic Panel (SOEP) study (Wagner et al., 2007). Since 1984, this nationwide household panel has surveyed between 6,000 and 18,000 households across Germany each year. The SOEP data enable analysis of various objective and subjective factors affecting fertility. They include household composition, employment histories, health, education, and fertility histories.

The empirical models are based on a continuous time event-history analysis of the transition from childlessness to parenthood, that is, the decision to become a parent. The population at risk consists of childless men and women in the 1965-1989 birth cohorts observed during the period 1990-2015. This choice essentially encompasses the respondents who were born after the baby boom and before German reunification⁵. The analysis is restricted to the 16-45 age range, since transitions to parenthood above and below this age span are rare exceptions in Germany. The selection criteria result in a sample of about 10,000 men and women with about 2,800 parenthood decisions observed during the time

⁴ Previous studies have not found comprehensive evidence of the leave reforms resulting in changes in fertility behavior to date. The exception are short-term bandwagon effects around the time of implementation (Tamm, 2013; Cygan-Rehm, 2016).

⁵ We focus our sample selection on the representative core-samples A-F & H (Germans, foreigners, East Germans, migrants, and refresher samples 1998, 2000 & 2006), excluding the snowball-sampled population within the migrant sample D.

of analysis. The SOEP data comprise both annual and monthly data (chronological age, age at childbirth, employment status, changes in partnership status). Each month during the observation period depicts a temporal unit of analysis. Annual data is assigned to each monthly variable on the basis of the month of interview closest to a monthly record.

Key variables

The dependent variable is the **timing of the decision to have a first child**. This time-dependent process is modeled using an event-history approach. The SOEP provides detailed fertility histories of men and women, including the year and month of birth of both the parents and child. We approximated the time of the decision to have a first child by backdating 10 months⁶ from a respondent's age at the time of childbirth. Since parenthood decisions are restricted to observed births, there is a potential bias against parenthood decisions that do not end in delivery. This may lead to slightly inflated standard errors.

The time-constant covariates include a **period control** with four-year-segments, which aims to capture macro-level heterogeneity, and specifically political and economic changes as institutional shifts are closely linked to life-course outcomes (Mayer, 2009), the transition parenthood in particular. Moreover, I consider a basic **cohort** distinction with the goal of controlling for changes in attitudes and socialization (e.g., regarding care) across birth cohort. This indicator, however, only distinguishes between older and younger cohorts (1965-1975 and 1976-1989) to avoid an overspecification bias. It should also be noted that age, period, and cohort aspects still intersect with a persistent identification problem

⁶ It is key in this context to consider a covariance matrix that represents the individual status *preceding* (and not following) the point of parenthood decision. Schmitt (2012a) conducts sensitivity tests that yield robust results when backdating between 9-12 months. This procedure is also in line with medical evidence showing that about 70% of couples are able to conceive within 1-3 cycles (see, e.g., Gnoth, Godehardt, Godehardt, Frank-Herrmann, & Freundl, 2003).

in linear dependency of these factors (Yang & Land, 2008). The analyses also consider **migration background**⁷ and whether a person grew up in **East or West Germany**⁸ (thus covering different cultural imprints with respect to (female) employment, and work-family balance). Moreover, I control for growing up with **siblings** or as an only child, since this might shape perspectives on family life and having children.

The time-varying controls include **partnership status** (single or cohabiting) and educational attainment. The latter is included as a variable with three stages: basic education (i.e., lower secondary), intermediate education (i.e., upper secondary) and higher education (i.e., college degree /other tertiary).

The key aspect of this study is the empirical investigation of objectively given (work-related) hardships and uncertainties and their subjective assessment (on the basis of personal risk attitudes). In this endeavor, I distinguish between past experiences that may also affect future work prospects (e.g., unemployment histories) present labor market statuses that indicate economic or job-related hardships (e.g., marginal work or current unemployment), and present conditions, which indicate future uncertainties (like fixed-term contracts) that might threaten the ability to support a family. In order to differentiate between these aspects, a number of indicators have been integrated into the model estimates. The

⁷ This combines first and second-generation migrants, but due to the combination of the age ranges considered in this study and prime years of collecting migrant samples in the SOEP (1984 & 1994), second-generation migrants constitute the majority (SOEP_Group, 2018).

⁸ Variable: loc1989 (SOEP_Group, 2018).

employment status indicator differentiates full-time employment with permanent contract (reference), full-time with a temporary or fixed-term contract⁹, part-time employment, marginal employment (working fewer than ten hours per week or on an irregular basis), as well as *registered* unemployment, economic inactivity (including homemakers), and attending school or university. The differentiation between full-time work with a permanent contract (as reference category) and full-time employment with a temporary or fixed-term contract (as one of the additional categories) is specifically introduced to control for looming uncertainties in fixed-term jobs (in particular, potential job loss), which are not necessarily associated with other occupational disadvantages such as reduced work hours or low pay. Furthermore, fixed-term employment is considered only for full-time jobs in order to highlight this element of uncertainty in what otherwise constitutes a standard employment relationship. While part-time work (particularly among men) and marginal work are frequently associated with fixed-term contracts, I argue that precarity already dominates these forms of atypical work¹⁰.

Additional controls associated with earner capability and occupational uncertainty include a **couple's joint available (i.e., net) income** in a given month, and a continuous indicator of accumulated **unemployment experience** (indicating the fraction of time spent

⁹ Whether a respondent was working on basis of a fixed term employment was collected in the SOEP from 1990-1994 among persons entering a new job or for first-time respondents. When an *existing* work contract was changed from fixed-term to permanent, this change was not recorded between 1990-1994. As a consequence, there might be an overreporting of fixed-term contracts 1990-1994. This situation has been remedied in 1995 and subsequent waves, by asking any employed individual for permanency of work contract.

¹⁰ Other forms of parallel activities are considered in the hierarchy presented in the models (Tables A2-A3). An unemployed person in a training program, for instance, would be considered unemployed; a college student working part-time would be considered a part-time worker according to this status hierarchy.

in unemployment since age 25 on a continuum from zero to one, where one equals permanent unemployment).

As outlined above, I aim to consider how objectively given uncertainty is moderated by **individual risk perception**. The SOEP surveyed risk attitudes on an 11-point Likert scale in 2004, 2006, and annually since 2008. The question is “How do you see yourself: Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks?” The scale of answers runs from 0 (“unwilling to take risks”) to 10 (“completely willing to take risks”). This abstract phrasing implies limitations in the validity of such a complex and multidimensional characteristic¹¹. However, various studies have confirmed the high construct validity of the item and even recommend an abstract measure, since this way of phrasing questions is not biased by domain-specific risk behavior (Schmidt, 2008; Reynaud & Couture, 2010; Dohmen, et al., 2011)¹².

As risk attitudes have only been collected in the SOEP since 2004, the question whether risk propensities are stable over the life course is important. Previous research has found that – aside from a gradual increase at a very low rate with age – risk attitudes are a stable characteristic of individual personality (Donkers, 1999; Borghans, et al., 2008; Claudia R Sahm, 2012). More support for this finding is provided by a series of studies on the stability of the Big Five personality traits, with which risk attitudes are closely associated. The findings suggest that the Big Five are stable against most life events including

¹¹ That is, a person may be highly risk-prone in their health behavior and at the same time highly risk-averse in their financial matters (Hanoch, Johnson, & Wilke, 2006).

¹² In survey wave 2004, respondents were asked to rate their specific willingness to take risks in their leisure time, when driving a car, in their health behavior, in saving money, in career decisions, and in trusting other people. These items all yield correlations $>.8$ with the abstract risk item (results available on request).

childbirth (see Donnellan, Conger, & Burzette, 2007; Cobb-Clark & Schurer, 2012). An investigation by Specht, Egloff, & Schmukle, (2011) did not find significant changes in personality triggered by events addressed in the study at hand, including childbirth and becoming unemployed. The risk indicator used in this study consists of an individual mean value across all survey points and ranges from 0 (highly risk-averse) to 10 (highly risk-prone). To account for age-related changes, individual mean risk is discounted at the rate empirically specified by Dohmen, et al., 2011¹³.

Empirical Design

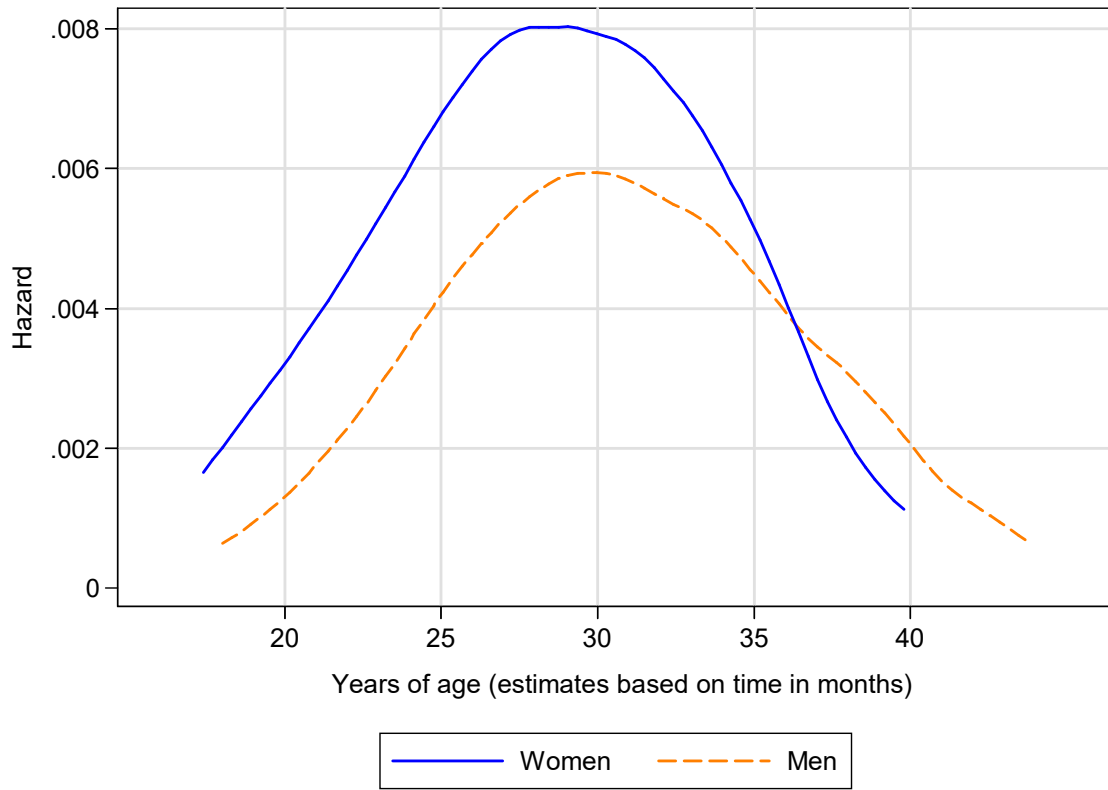
The empirical models investigate parenthood decisions among childless individuals using an event-history approach. The time at risk starts at age 16. Figure 2 displays the hazard rate of the first-parenthood decisions across age among childless men and women. In order to minimize a bias to the population at risk due to left-truncation, individuals who enter the survey beyond age 25 are excluded from analysis. The baseline hazard of parenthood decisions has an approximately normal distribution, peaking at around age 28 for women and age 30 for men. We capture this distribution by applying a flexible, semi-parametric Cox proportional hazards model¹⁴ (Efron method for ties, Box-Steffensmeier & Jones, 2004) with the following specification:

$$h_j(t) = h_0(t) \exp(x_j \beta_j + x_{ra} \beta_{ra}(t) + x_k \beta_k(t)) \quad (1)$$

¹³ According to Dohmen, et al., 2011, adults become more risk-averse by 0.02 points (on an 11-point scale) with each year of age. If the averaged risk aversion of an individual over a course of 10 years lies at 5.7, the applied discounting would result in a value of 5.6 at the beginning of the 10-year period and 5.8 at the end.

¹⁴ I apply a *continuous* model to *discrete* data. However, a monthly measurement of an event that occurs once per lifetime is – although intrinsically discrete – approximately continuous. This also applies to the set of time-varying covariates that are unlikely to change on a shorter-than-monthly time frame.

where, $x_j\beta_j$ refers to the time invariant set of covariates, $x_k\beta_k$ refers to the time variant covariates and $x_{ra}\beta_{ra}(t)$ refers to individual risk tolerance, which is considered to be time varying due to temporal discounting across a the life-course.



n of events = 3,168

n of cases = 11,072

Figure 2: Hazards of first-parenthood decisions among childless men and women, cohorts 1960-1989. Source: SOEP v33, 1990-2015; own estimates.

Model design

The event history models presented in Tables A1-A3 are all estimated separately for men and women, as well as in a joint model. The theoretical reasoning behind distinguishing between men and women is outlined the analytical framework. Men and women face highly differing social expectations, constraints, and costs when considering the transition to parenthood, particularly in the context of employment choices. Table 1 summarizes re-

search findings, many of which distinguish between men and women, with differing effects along gender lines. Recent research (e.g., Kreyenfeld & Anderson, 2015) shows that men and women have become more similar in the linkage between employment and fertility behavior. The joint model, which combines fertility choices of both men and women, is specifically meant to address this. In cases where male and female fertility behavior is similar against a backdrop of employment uncertainties and individual risk attitudes, the joint model should produce similar patterns to the gender-focused models, while being able to rely on greater statistical power due to higher case numbers.

The initial models (Table A1) investigate the unconstrained impact of risk attitudes on fertility decisions (Model 1.1) as well as the impact of various controls (Model 1.2). Model 2 (Table A2) additionally investigates the role of employment status. That is, all background controls from Model 1.2. are included, but omitted from display. Model 3 (Table A3) also controls for couples' joint (net) income to consider the economic resources they have available to support a family (while maintaining the focus on the individual level). Since this indicator is confounded with employment status, it is introduced in a separate model. In addition to these models, interaction effects between risk attitudes and key variables of interest are explored. The results of these models have been visualized in Figures 3-6 (detailed estimates available on request).

Results

This section presents the key findings from the regression estimates and the results of interaction effects (graphs provided in the addendum). Individuals with a migration background and a low level of education show an increased likelihood to start a family (Model

1.2). The propensity of first-parenthood decisions is also higher among individuals who grew up with siblings, individuals in the 1965-1975 cohort, and East Germans.

The estimates in Tables A2 and A3 specifically investigate the impact of economic uncertainty and different forms of precarious employment. Surprisingly, the results show women having become quite similar to men with regard to employment patterns that suggest a postponement of parenthood due to employment-related uncertainties. The findings suggest that men and women tend to decide to start a family from a position of stable, full-time employment. Still being in education or in atypical or precarious work contexts is linked to a postponement of family formation, with similar patterns being found for men and women. This could be related to a life-course effect, where the completion of education is followed by an establishing-phase in the labor market, and family formation, subsequently. Gender differences in the employment and fertility nexus remain in place in older German cohorts, including those born in the 1950s (Gash & McGinnity, 2007; Kreyenfeld, 2010; Schmitt, 2012b) and have also been reported for several other countries (e.g., Andersson & Scott, 2008 for Sweden). Apparently, many of these gender differences have declined in recent years and among younger cohorts (see also Kreyenfeld & Andersson, 2014).

Fixed-term contracts

One of the few employment contexts without clear gender convergence is full-time work on a temporary contract. The results are insignificant for men, while women show a 23% reduced rate to start a family compared to full-time working women with a permanent contract. Given the persistent male breadwinner norm in Germany, we would rather have expected a negative link among men rather than among women. However, the findings

are likely related to the comprehensive employment protection for mothers in Germany. Prior to the 2007 parental leave reform (the majority of the period under observation in this study lies before this point), mothers could rely on a three-year reinstatement right to return to the job position they held before starting their leave¹⁵. In principle this also applies to fixed-term jobs but does not cover occasional work or employment with a brief duration. Consequently, women in such jobs tend to postpone family formation until they find more stable employment that grants them the right to return to the job they held before birth childbirth.

Part-time work

The category of part-time work arguably creates different contexts for men and women. For men, part-time work can be considered – not necessarily precarious – but a non-standard type of employment, which is only common in phases of labor market entry or prior to retirement. Among women, the high prevalence of part-time work in Germany is a consequence of the limited availability of public and private childcare. The results show, however, that part-time work *prior to family formation* is associated with a delay of the decision to become a parent in *both* men and women. The effect is more pronounced among men. For them, working part-time clearly signals limited breadwinner, since it deviates from the norm of being able to fully support a family. Moreover, it fails to comply with the norm of a male standard employment scheme that approves part-time work only during phases of initially entering and finally exiting the labor market. However, women

¹⁵ Fathers basically shared the same rights, but since take-up among fathers was negligible before the 2007 leave reform, the outlined regulation impacted mothers almost exclusively.

also tend to postpone parenthood until they can rely on an employment context with standard working conditions.

Marginal employment¹⁶

Individuals in marginal employment are usually considered to work less than 10 hours per week or on irregular schedules. Quite often, these individuals work in low-paying jobs and do not have regular work contracts, which often excludes them from employment protection and welfare state support, linked to commodification. This type of precarious employment shows the most pronounced impact on the postponement of parenthood. The propensity to start a family is reduced by half among both men and women in marginal work (Table A3). This finding remains robust when controlling for context variables, most importantly income, suggesting that the negative impact of marginal employment on fertility is associated with bleak financial and occupational prospects and not just current hardships resulting from low income.

The relationship between the duration of marginal employment and family formation shows a clear pattern of decreasing propensities for family formation the longer a person remains in marginal employment (Figure 5). This is in line with the idea that disadvantageous conditions – - employment contexts in particular – accumulate over the life

¹⁶ It should be noted that the categories of marginal employment, unemployment, and economic inactivity are being affected by settings of the German benefit system, in particular the changes introduced with the Agenda 2010's reform of the unemployment benefit system. Under this scheme eligibility for unemployment-support ends after 12 months. Subsequently, unemployed persons receive a reduced level of pay through unemployment assistance. Under this scheme, unemployed may be assigned to low-pay-jobs (1-Euro-Jobs), in which case they drop out of official (and survey based) unemployment statistics, being considered as marginally employed. If they fail to comply with taking over such jobs or neglect other duties, benefit payments may be canceled altogether, in which case they are considered economically inactive. Accordingly, it is unsurprising that marginally employed, unemployed, or inactive individuals comprise different analytical categories, but share many traits of economic uncertainty and precariousness.

course (O'Rand, 2009). The increasingly negative impact on parenthood decisions with an increasing duration in marginal employment is identical for men and women (results available on request). This is probably associated with men's inability to meet breadwinner norms and women's lack of job reinstatement rights in marginal employment, but generally reflects the tendency to delay family formation when continuously facing adverse employment contexts.

Unemployment and inactivity

Among both men and women, unemployment is not significantly related to family formation choices (Tables A2-A3). Previous studies have reported positive fertility effects among unemployed women in Germany (Kreyenfeld, 2004; Schmitt, 2012b), Sweden (Andersson, 2000; Hank, 2001), and the UK (Schmitt, 2012a; Inanc, 2015). The lack of a positive unemployment associations in studies that focus on more recent years and younger cohorts (see similarly Kreyenfeld & Andersson, 2014) might be related to a changing relevance of the two antagonal mechanisms linking unemployment to fertility: First, unemployment reduces present and future income, undermining the economic fundamentals of family formation. Second, it reduces the opportunity cost due to forgone income related to childcare (i.e., a parent's own childcare contributions become "cheap"). If the first gains or the second loses relevance, this could explain why the unemployment-fertility association is no longer positively related to fertility transitions in studies with a more recent focus.

Indeed, one reason might be the expansion of public childcare for children below the age of three since 2006. Starting a family during episodes of unemployment when

there is no competition between time spent on childcare and work becomes less attractive if there is improved access to public childcare. Moreover, with the income replacement schemes of the 2007 parental leave reform, starting a family during unemployment means forfeiting a considerable amount of benefit payments.

A further reason for the lack of a positive unemployment association could be linked to structural changes in the group of the unemployed in the wake of the 2003 labor market reforms: The reform abandoned the former system of unemployment assistance for the long-term unemployed. The new regulations require long-term unemployed persons to work in public services at a wage as low as one euro in order to remain eligible for minimum benefit payments and housing support. Importantly, this induces a status change from unemployment to marginal work in case of the one-euro jobs, and from unemployment to inactivity if individuals do not qualify for benefit payments but instead rely on savings or family support. Hence, the category of the economically inactive comprises – in addition to the classic female homemaker pattern – long-term unemployed individuals who are no longer eligible for unemployment support (collected as “inactive” in terms of categories used here)¹⁷, and others who are not seeking work for a variety of reasons. A characteristic they have in common is that they receive either considerably reduced benefit payments or none at all.

The results support this interpretation: Among the labor market groups not working at all (economically inactive) or working minimum hours (marginal workers), employment is associated with considerably lowered propensities to start a family compared to

¹⁷ I.e. individuals, who are considered economically inactive by classic survey or in terms of welfare benefits, but who have turned into this state from being unemployed. In that regard, I argue, that the seemingly definitive category of the inactive considers a certain fraction of long-term unemployed individuals.

full-time work. This applies to both men and women (Table A2). Interestingly, controlling for couple income cancels (among women) and even reverses (among men) the association for the economically inactive (Tables A3). The role of inactivity reverting to a positive association after controlling for income provides distinct evidence that being able to provide for a family is still a norm that men are expected to meet. In line with this interpretation, the positive association of a higher income is particularly salient among men (Tables A3).

In contrast to the reversal of the role of inactivity after controlling for income, the negative association of marginal employment persists. As is the case with unemployment, marginal employment suggests bleak economic prospects beyond mere income loss, but the increased time available for childcare is associated only with unemployment. Approaching the role unemployment from a perspective that enables us to exclude positive associations of joblessness on time budgets reveals a negative association with family formation: Prevalent unemployment incidence in one's work-biography persistently undermines earner qualities and reduces the propensity to opt for first parenthood by about 7% among both men and women (effects per one SD change; Tables A2-A3).

Risk attitudes

As hypothesized, risk attitudes might affect fertility behavior directly, or they could moderate the extent to which employment uncertainties impact parenthood decisions. All models in Tables A1-A3 control for risk attitudes, with Model 1.1 focusing on risk attitudes alone. The results show a negative impact of risk proneness on family formation decisions among women. Among men, the results are not significant. Among women, in

contrast, the finding of a negative impact of being highly risk-prone is stable across all models and highly significant. An increase in risk tolerance by one point on a 0-10 scale reduces the likelihood to opt for first parenthood in a given month by 5-6%.

Figure 3 shows the slope of the relative hazard (of opting for parenthood) across different levels of risk tolerance. The findings show: women with pronounced risk aversion (i.e., those at the lower end of the 0-10 scale) have a distinctively elevated propensity to decide for first parenthood (again, the results for men are not significant). This corresponds to the mechanism suggested by Friedman, Hechter, and Kanazawa (1994): the family is a safe haven that functions as a means of reducing uncertainty in an otherwise contingent world¹⁸. On the contrary, women who are highly risk-prone show a lower likelihood to opt for a first child.

Turning to the interactions between activity status and risk attitudes (Figure 4), the negative impact of decreased fertility propensities with higher risk tolerance remains in place among both women in full-time work, and among those working part-time or in marginal employment (summarized as atypical work contexts in Table A4). Recalling the pattern that both women in such atypical jobs and risk averse women show a considerably lower likelihood to opt for parenthood, it is remarkable that it among those in atypical work, it is highly risk-prone women that show the lowest birth-decision transition rates. This contradicts the compensation hypotheses (H1) that higher risk proneness might compensate employment related uncertainties. The finding that risk aversion is in general related to the highest birth decision hazards, again provides support for the “family as safe

¹⁸ A related findings is presented by Lutz, 2014, who indicates that individuals compensate adverse working conditions by starting a family.

haven” hypothesis. Alternatively, being in atypical work and being highly risk prone might be linked to the accumulation of aspects that inhibit the transition to parenthood (namely incomplete labor market integration and openness for new experiences and sensation seeking as personality traits).

A closer focus on individuals, persistently remaining in marginal work over extended periods (Figures 5 & 6) shows that this hampers the realization of family formation plans significantly, and this association is most pronounced among the more risk-averse (i.e., risk attitudes < 4 on a 0-10 scale). This is also visualized by a considerably steeper slope, indicating a strong decline in birth propensities in the risk averse group with long duration in marginal employment (Figure 5). Apparently, the discouragement of being trapped in marginal work contexts is perceived as more threatening by women with pronounced risk aversion.

Conclusion

Marginal employment, an extensive history of unemployment, temporary work, but also part-time work, and low income – basically any employment context that deviates from the template of permanent full-time work – results in a delay of family formation in the life course. Moreover, women have become quite similar to men in their labor market behavior prior to parenthood. The underlying causes are the increase in female educational attainment, but also the need to have a dual-earner model in place prior to family formation due to less stable and predictable employment careers. This unpredictability is also related to a decrease in legal employment protections that emerged during the observation period. Labor market institutions and welfare state policies increasingly subject

women to the expectations of the adult worker model rather than a female homemaker model. This change in welfare state orientation is reflected in labor market deregulation and more limited social support, particularly since the early 2000s. These developments have given way to a perception of increasing economic uncertainties, and a new family formation model that relies on dual earners.

In line with these developments, the findings show a delay in family formation in precarious and otherwise atypical employment contexts. A key issue is the extent to which the German welfare state alleviates the uncertainty associated with unstable employment contexts or work biographies dominated by precarity. The findings suggest that a sequential model of family formation is becoming more prevalent: most family formation occurs from a position of stable, sound employment and only after such a position has been attained.

A distinct focus of this study was on the relationship between perceived employment uncertainties and risk attitudes as a personality trait. I find robust results that risk-averse women have a higher likelihood to start a family than their risk-prone peers. One explanation offered in this study is the “family as safe haven” principle (Hypothesis 2), according to which becoming a parent serves as an anchor of stability and a source of social approval under conditions where employment does not provide these resources. Risk-averse individuals in particular should pursue this behavior. Personality psychology provides another perspective on this association: Individuals who are more risk-prone show higher levels of openness and extroversion. They might delay family formation in order to avoid limiting social contacts, losing the opportunity for new partnerships, and possibly missing other options beyond family life early in the life course.

In contrast, risk-prone individuals may be considered to be better suited to endure the strain of economic or societal uncertainty (Hypothesis 1: “family formation as uncertain endeavor”, with risk prone individuals being less likely to be constricted by such concerns). They should feel more comfortable with entering the novel and unpredictable life stage of parenthood. The findings – at least for women – clearly point towards Hypothesis 2 (“family as safe haven”): Highly risk averse women show the highest transition rates to parenthood, highly risk prone women the lowest.

This picture is exaggerated if atypical work contexts (summary of part-time and marginal employment) are added to the equation. Risk prone women in such jobs show the lowest birth decision rates. This stands in contradiction to the “uncertainty reinforcement” hypothesis (3) that suggest high risk aversion should amplify the perception of uncertainties, thus, reinforcing the delay in family formation. A closer look on the duration in marginal employment exclusively, however, shows that risk attitudes do indeed moderate the role of precarious employment primarily in a context of lasting marginal work. Being trapped in such a highly precarious employment over a longer time reduces the likelihood to opt for parenthood among risk averse women, but not so among risk prone ones.

Precarious employment is considered to hamper parenthood transitions as it undermines the ability to provide for a family. The findings show that repeated or excessively long unemployment periods go hand in hand with severe discouragement and weakened attachment to the labor market. The same results are found for individuals who remain in marginal employment over extended periods. Individuals in marginal employment face bleak prospects of not being able to provide for a family, as these irregular

jobs commonly yield low salaries, while often demanding extensive flexibility in daily routines. Both extended histories of unemployment episodes and extended periods of marginal employment yield a pronounced negative impact on the likelihood to opt for parenthood. In summary this means, while risk proneness leads to a delay in family formation, it also cushions the delaying effect of employment uncertainty in the form extended periods of marginal work.

In contrast to previous studies focused on older cohorts, the empirical analyses did *not* show a positive impact of *current* unemployment on family formation. Although unemployment hampers earner abilities, a positive association with fertility has been attributed to reduced opportunity costs of childcare during unemployment in a welfare state that limits the ability to reconcile work and caregiver roles (Schmitt, 2012a; Kreyenfeld & Andersson, 2014; Schneider, 2016). A reason for the absence of such a positive relationship might be differing patterns of work-fertility behavior among younger cohorts, which are the focus of this study. However, the analyses show a positive fertility impact of inactivity among men – after controlling for income. The latter effectively accounts for the loss of earner capabilities while not holding a job. The positive impact of joblessness among men on fertility appears counterintuitive, but has also been reported in previous studies (Kravdal, 2002; Lindo, 2010; Schmitt, 2012b; Inanc, 2015). The mechanism could be associated with a loss of male bargaining power, where being the breadwinner might enable women to promote their fertility intentions. The increased social acceptance of paternal childcare may also be contributing to this development: when fathers are able to take on a significant share of care responsibilities, family formation be-

comes a more feasible option, particularly in a welfare state context that makes the reconciliation of work and family difficult. A study on Sweden found that couples in which the man is unemployed tended to display a more equal division of labor (Ström, 2002).

This study aimed to extend the literature on the employment-fertility nexus by honing in on the role of individual risk attitudes. In particular, the specific contribution of this study is to consider individual risk attitudes as possible moderators in the relation between employment uncertainties and fertility decisions. While there is a growing body of literature that links fertility behavior to personality traits, the investigation of risk attitudes, particularly in work contexts has been a blind spot. The findings suggest that risk aversion primarily speeds up the transition to parenthood. However, risk proneness also cushions the delaying effect of being long-term-trapped in uncertain employment contexts, as was shown in the case of marginal work.

Whether the findings for are generalizable beyond Germany remains a question for future research. Concluding from this study, the German context poses a highly specific amalgam of a traditional gender ideology and an encompassing welfare state orientation. Recent policy changes in Germany include a shift in family policies that encourages female employment, while simultaneously dismantling welfare support with a more restrictive employment protection legislation and benefit system. In sum, this aggravates the threat emanating from employment uncertainties. This specific background makes it difficult to generalize the findings beyond a national context. A fruitful endeavor for future research might be a cross-national comparison of the impact of risk attitudes across different welfare- and employment protection regimes. Do risk prone individuals – *ceteris*

paribus - tend to make the same fertility choices in both protected and unprotected employment regimes? Do individuals get accustomed to looming uncertainties in de-regulated labor markets? Honing in on these questions from a comparative perspective offers promising paths to promote the understanding on the relation between employment uncertainties and fertility behavior in what has become an intensely investigated field.

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Appendix: Tables and Figures

Table A1: *Cox proportional hazards estimates of first-parenthood decisions
– base models & risk attitudes*

	Hazard Men	Hazard Women	Hazard Joint model
Model 1.1: Risk attitudes, no controls			
Risk tolerance (0-10)	1.003	0.939***	0.968***
Female (ref. male)			1.656***
Model 1.2: Risk attitudes & base controls			
Risk tolerance (0-10)	0.976	0.943***	0.957***
Female (ref. male)			1.458***
Cohort			
1965-1975	1	1	1
1976-1989	0.700***	0.775***	0.741***
Migration background	1.632***	1.456***	1.535***
West German origin (ref. East)	0.721***	0.685***	0.695***
Has siblings?	1.172**	1.121***	1.119***
Partner & cohabiting?	7.648***	5.208***	6.361***
Education			
(1) Lower secondary	1.563***	1.954***	1.752*
(2) Intermediate (upper secondary)	1	1	1
(3) College degree / tertiary	1.026	1.173	1.111
n-observations	397 870	347 361	745 235
n-cases/events	5 022/1 135	4 906/1 619	9 928/2 754
LR chi ²	797.43***	755.13***	1754.99***
+ p<0.1, * p<0.05, ** p<0.01, *** p<0.001			

Note: Cox proportional hazard method; estimates display monthly hazards.

Period control (calendar year) included in the estimate for Model 1.2 but omitted from display.

Source: SOEP v33, 1990-2015, cohorts 1965-1989; own estimates.

Table A2: *Cox proportional hazards estimates of first-parenthood decisions*
– extended models including employment status

Model 2	Hazard Men	Hazard Women	Hazard Joint model
Risk tolerance (0-10)	0.973	0.947**	0.959**
Female (ref. male)			1.414**
Employment			
(1) Full-time	1	1	1
(1) Full-time & fixed-term contract	1.017	0.766**	0.870 ⁺
(2) Part-time	0.529***	0.785**	0.707***
(3) Marginal employment	0.376**	0.397***	0.399***
(4) Unemployed	0.959	0.892	0.916
(5) In education	0.611**	0.452***	0.489***
(6) Inactive	0.485***	0.450***	0.473***
Accumulated unemployment exp. %	0.931**	0.929*	0.932**
n-observations	397 870	347 361	745 229
n-cases/events	5 022/1 135	4 906/1 619	9 928/2 754
LR chi ²	880.96***	906.42***	1.963.71***
⁺ p<0.1, * p<0.05, ** p<0.01, *** p<0.001			

Note: Cox proportional hazard method; estimates display monthly hazards.
Omitted controls as displayed in Model 1.1 (Table A1).

Source: SOEP v33, 1990-2015, cohorts 1965-1989; own estimates.

Table A3: *Cox proportional hazards estimates of first-parenthood decisions
– extended models including couple income*

Model 3	Hazard Men	Hazard Women	Hazard Joint model
Risk tolerance (0-10)	0.974	0.949**	0.961**
Female (ref. male)			1.390***
Employment			
(1) Full-time	1	1	1
(1) Full-time & fixed-term contract	1.027	0.766**	0.875 ⁺
(2) Part-time	0.646**	0.847 ⁺	0.787**
(3) Marginal employment	0.527*	0.490**	0.513***
(4) Unemployed	1.120	1.049	1.10
(5) In education	0.774	0.492***	0.557***
(6) Inactive	1.743**	1.132	1.343**
Accumulated unemployment exp. %	0.935*	0.935*	0.939**
Couple joint income (z standardized log net)	2.310***	1.739***	1.902***
n-observations	397 870	347 361	745 229
n-cases/events	5 022/1 135	4 906/1 619	9 928/2 754
LR chi ²	961.57***	971.99***	2.103.20***
⁺ p<0.1, * p<0.05, ** p<0.01, *** p<0.001			

Note: Cox proportional hazard method; estimates display monthly hazards.
Omitted controls as displayed in Model 1.1 (Table A1).

Source: SOEP v33, 1990-2015, cohorts 1965-1989; own estimates.

Table A4: *Cox proportional hazards estimates of first-parenthood decisions – interaction models*

	Hazard Men & Women	Hazard Women	Hazard Women
Gender - risk IA (Figure 3)			
Male (ref.)	1		
Female	2.171***		
Risk tolerance (0-10)	0.985		
Female # risk tolerance (0-10)	0.942*		
Work type - risk IA (Figure 4)			
Full-time work (ref.)		1	
Atypical work (=part-time & marginal)		1.288	
Not working (control)		1.138	
Risk tolerance (0-10)		0.960*	
Atypical work # risk tolerance (0-10) (=part-time & marginal)		0.881**	
Not working # risk tolerance (0-10)		1.039	
Couple joint income (z standardized log net)		2.418***	
Duration in marginal work – risk IA (Figure 5)			
Duration in marginal work (in months)			1.361***
Risk tolerance (0-10)			0.997+
Duration in marginal wk. # risk tolerance			0.994*
n-observations	745 235	347 361	347 365
n-cases/events	9 928/2 754	4 906/1 619	4 906/1 619
LR chi ²	745.24***	337.75***	347.37***
* p<0.1, * p<0.05, ** p<0.01, *** p<0.001			

Note: Cox proportional hazard method; estimates display monthly hazards.
Parting lines display separate models.

Source: SOEP v33, 1990-2015, cohorts 1965-1989; own estimates.

Table A5: Descriptive Statistics

	Men %	Women %		
Sex	54.3	45.7		
<i>Cohort</i>				
1960-1969s	24.3	17.7		
1970-1971	41.2	44.0		
1980-1989	34.5	38.3		
Migration background	24.0	22.7		
West German origin	72.3	72.8		
Has siblings?	59.7	60.4		
Partner & cohabiting?	44.5	58.6		
<i>Education</i>				
(1) Lower secondary	22.6	13.8		
(2) Intermediate (upper secondary)	72.3	80.4		
(3) College degree / tertiary	4.6	5.0		
<i>Employment</i>				
(1) Full-time	45.2	40.9		
(1) FT fixed-term	5.6	5.8		
(2) Part-time	5.3	8.5		
(3) Marginal emp.	1.9	2.6		
(4) UE (1-4 months)	5.5	3.8		
(5) Inactive	21.5	25.1		
(6) In education	14.7	11.7		
	Mean	SD	Mean	SD
Risk tolerance (0-10)	5.46	1.51	4.66	1.52
Accumulated unemployment exp.(0-1)% (unstandardized)	0.05	0.18	0.04	0.15
Couple joint net income (unstandardized)	5.37	2.94	5.25	3.06
Couple joint net income (log) (unstandardized)	1036.83	1034.94	1078.45	1137.85
person-months	397 870		347 365	
n-cases/events	5 022/1 135		4 906/1 619	

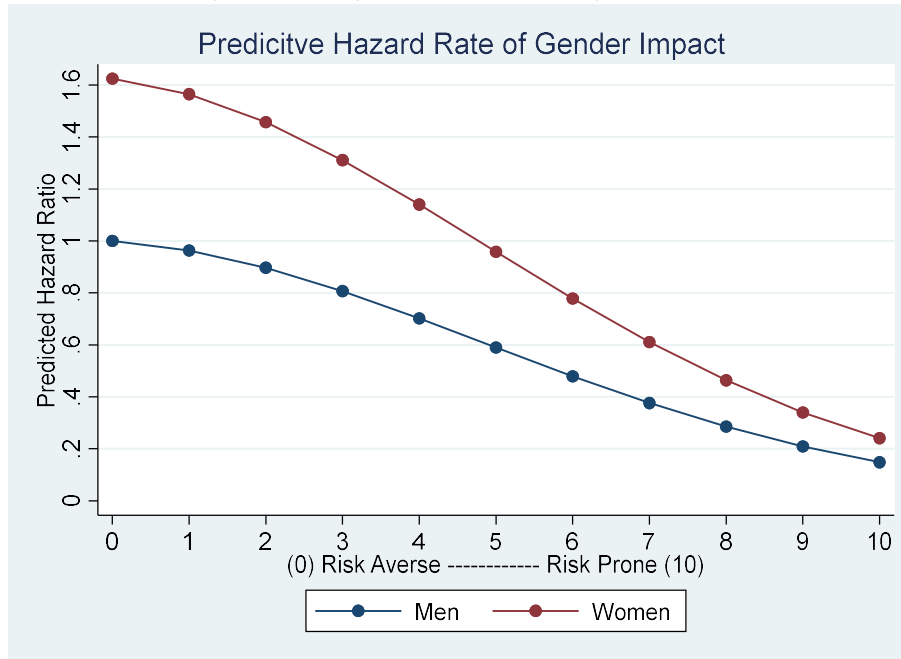
Values based on person-months;

Missing values account to cumulated within group-values < 100%.

Figures 3–6: Relative hazards – selected interaction plots

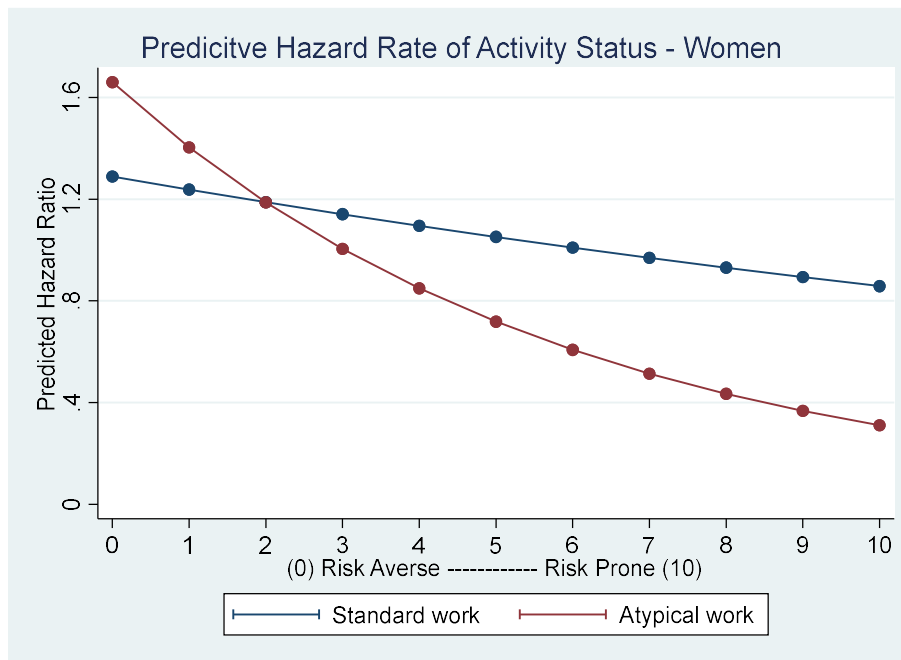
Note: Estimation method for all hazard plots: Cox proportional hazard.

Source: SOEP v33, 1990-2015, cohorts 1965-1989; own estimates.



n=9 928

Figure 3: Relative hazards of first parenthood decisions.
Risk attitudes by gender.

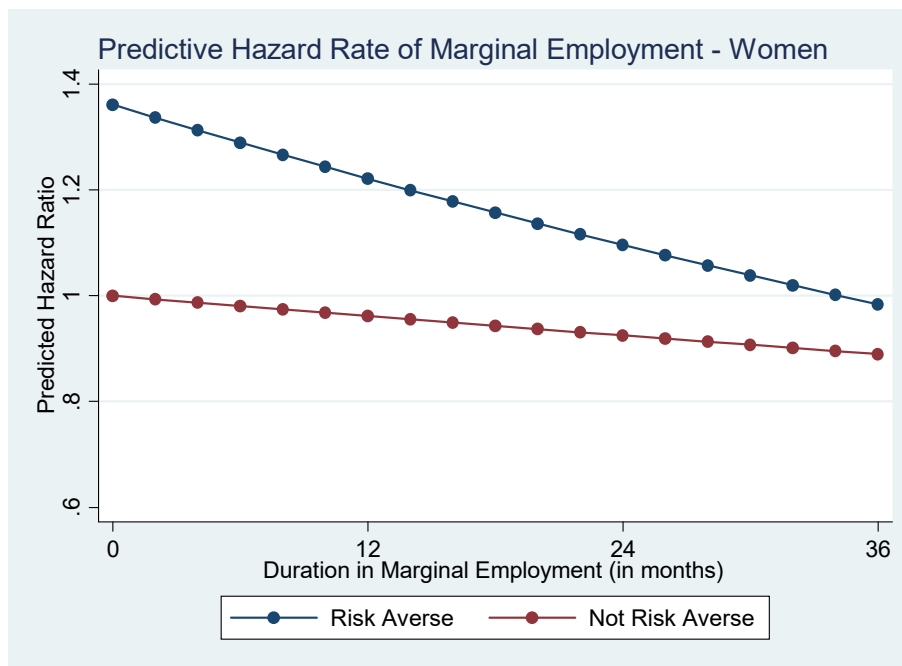


n=4 732

Figure 4: Relative hazards of first parenthood decisions.
Interaction between type of employment and risk attitudes

Note: Atypical work summarizes employment in part-time and in marginal work.

Omitted controls: Couple joint (log)net income, not working (as part of activity control set).

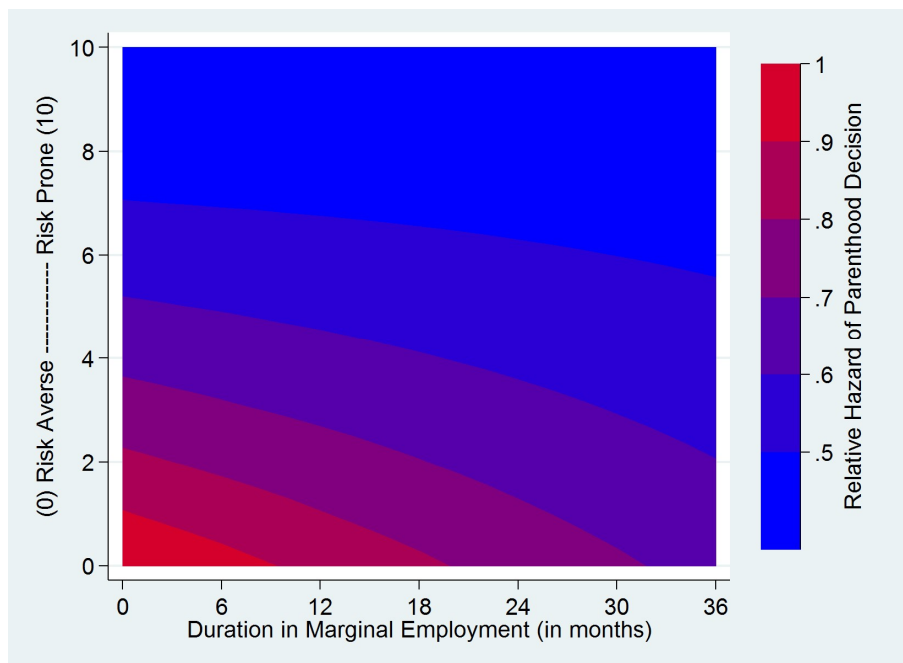


n=4.906

Figure 5: Relative hazards of first parenthood decisions.

Interaction between risk aversion and duration in marginal employment

Note: The risk-aversion dummy distinguishes between the more risk-averse (11-point scale values below 4) and neutral to more risk-prone individuals.



n=4.906

Figure 6: Relative hazards of first parenthood decisions – women.

Contour plots of risk tolerance and duration in marginal employment

Legend: A risk tolerance of 5 points (on a 0 to 10 scale, with 0 being highly risk-averse), and a duration of 6 months in marginal employment exert the same relative hazard on the propensity to opt for parenthood as a risk tolerance of 2 points and a duration of 30 months in marginal employment.