



Does Job Security Affect Fertility and Fertility Intentions in Ghana? Examining the Evidence

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Abstract

The tradeoff that women face between work and family depends largely on a country's institutional settings. Provisions like stable employment, maternity benefits, and childcare services can affect women's fertility behaviours. In Ghana, the majority of women work in vulnerable self-employment positions. Among paid female employees, the degree of job security also varies. Largely studied in the developed country context, job insecurity has been found to have important effects on women's reproductive health outcomes. As yet, there is no consensus on the direction of effects. The relationship has been argued to be largely country- and context- specific. This paper examines the nature of the relationship for a developing country, Ghana, where female labour force participation is high, paid employment is scarce, and there are few affordable childcare services. We use 2017 data from the Ghana Living Standards Survey (GLSS) and empirical techniques to control for self-selectivity. Initially, we find evidence consistent with the compensation hypothesis, an uncertain work environment encourages higher fertility. This is because becoming a parent and having more children can be a way to make the future safer and more predictable. This explanation is particularly relevant for settings like Ghana where fertility is valued. The observed strong, negative relationship between job security and fertility is however found to be largely attributable to self-selection of women into particular jobs. Career-oriented women self-select into more secure jobs, and have fewer children, given the higher associated costs; and, characterized by lower pay, family-oriented women self-select into less secure but more flexible jobs, in order to care for their children. In the absence of government or institutional policies, women face a difficult choice between family and work aspirations. Policies and institutions should therefore be put in place to reduce these work-family challenges.

Keywords Job security · Reproductive health · Fertility · Contracts · Employment · Ghana

Introduction

Fertility and female employment are major factors integrated in women's life cycle decisions. Therefore, understanding the nature of the interconnection is fundamental to the successful development of positive economic and social environments in various countries. The connection between fertility and employment has been examined by both demographers and economists as far back as the sixteenth century (Pailhe & Solaz, 2012). Early economists like Adam Smith, David Ricardo, John Stuart Mill, and Thomas R. Malthus argued that higher welfare would have a positive effect on fertility and subsequently, the population growth rate. This

position is however contradicted by developed country experiences, where richer countries have lower fertility and population levels. Becker's (1981) theory on the quantity-quality theory of fertility explained this pattern; richer parents have fewer children but invest more in their 'quality of life'. Employment is therefore one of the requirements for investments in higher quality of life for children.

Job instability may be defined generally as a multidimensional concept which refers essentially to the subjective perception of being at risk of losing one's own job or some of its features, or more restrictively, the perceived stability and continuance of one's employment with an organization (Bernadi et al., 2008). According to the 2017 Ghana Living Standards Survey (GLSS), only 44% of paid employees in Ghana received a written contract or work agreement (an indicator of higher job security) with their present job, with females being in the minority (i.e., 35%).

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Existing literature on developed countries suggests that job insecurity may increase, decrease, or have no effect on a woman's reproductive health outcomes. The present study examined the outcome for Ghana, where job security was proxied by the presence of a written/verbal agreement or contract. We acknowledge the potential for endogeneity with the relationship. On the one hand, work permanence has been associated with higher opportunities for career development and accelerated wage progression (Arulampalam & Booth, 1998; Booth et al., 2002; Pavlopoulos, 2009). Therefore, women in such positions may have fewer children and be more predisposed to delaying future childbirth, given the higher opportunity costs of having children (Gayle & Miller, 2002; Heckman & Walker, 1990; O'Donoghue et al., 2011). On the other hand, secure employment may reduce economic uncertainty by decreasing the probability of transitioning into unemployment in the future and may therefore encourage higher fertility (Ahn & Mira, 2002; de la Rica & Iza, 2005; Prifti & Vuri 2013; Gutierrez-Domenech, 2008). These contrasting results can be explained by country-specific differences; particularly, differences in social welfare and unemployment protection (Pailhe & Solaz, 2012).

An important factor to consider when examining career and family choices is women's self-selection into particular types of jobs. Therefore, using the 2017 round of the Ghana Living Standards Survey (GLSS), we adopted a propensity score matching approach as a solution to this problem. The study findings contribute to the discourse on the effect of job security and work permanence on women's fertility outcomes through its focus on a developing country setting. We found that although jobs with lower security were initially correlated with higher fertility and intentions, this was largely attributable to women's self-selection into particular jobs. Career-oriented women likely self-select into more secure jobs, and have fewer children, given the higher associated costs of childbearing; while more family-oriented women self-select into less secure but more flexible jobs, in order to care for their children.

To the best of our knowledge, despite the plethora of studies conducted in developed countries, these questions have not been explored in a developing country setting. The study findings thus make a major contribution in this direction. Existing socio-demographic theories predict that parenthood is a way of creating biographical certainty and therefore can be perceived as a force that works against the uncertainty produced by precarious job situations (Kohler & Kohler, 2002). Job insecurity is problematic from a moral point of view, but where it encourages higher fertility among women as a means of attaining some degree of stability in their lives, then it is worth addressing through necessary policy. This is particularly the case in a developing country like Ghana, with its already-high fertility rates and harmful implications for maternal and child health.

The policy implications of this study cannot be over-emphasized. Career-oriented women in Ghana appear to self-select into more secure jobs, and have fewer children, given the higher associated costs; and, although these are characterized by lower pay, family-oriented women self-select into less secure but more flexible jobs, in order to care for their children. In the absence of government or institutional policies, women face a difficult choice between family and work aspirations. Policies and institutions should therefore be put in place to reduce these work-family challenges. These may include the extension of the current maternity leave period from three to six months; the introduction of paternity leave for fathers, so that they may assist in caregiving activities; the enforcement of labour laws to provide nurseries and day care centers at various places of work; and the provision of affordable childcare options for parents. The role of cultural and social norms in entrenching traditional gendered roles that place the majority of childcare burdens on only women needs to be revisited, as these are noted to have negative implications for women's earnings and labour market experiences.

Literature Review

Job security is a critical employment characteristic, largely due to its relationships with other socio-economic outcomes such as consumption and saving (Benito, 2006; Carroll et al., 2003), health (Burgard et al., 2009; Reichert & Tauchmann, 2011) or individual subjective well-being (Green, 2011; Knabe & Ratzel, 2010). Although less examined, the relationship between job insecurity and fertility represents another important field for economic research, particularly given that labor market outcomes and fertility are mutually connected (Adda et al., 2011; Klemm, 2012).

Theoretical Considerations

Economic research into fertility began with Becker's (1960) seminal paper where children were viewed as consumption and investment goods that provided utility to parents. Parents however faced a trade off in their 'consumption' of children; more children implied a lower likelihood of labour market participation. The existence and strength of this trade-off was however assumed to be dependent on institutional settings that influenced the compatibility between work and family life (e.g., provision of child-care services; social norms and expectations; availability of insurance schemes; among others).

According to Zedeck (1992) and Tolke and Diewald (2003), in a traditional male breadwinner model, the relationship between labor market success and family formation for men could be positive (i.e., the spillover hypothesis),

negative (i.e., the compensation hypothesis), or non-existent with little overlap (i.e., segmentation hypothesis). Given the increasing labour force participation of women in recent periods, these hypotheses may also be applied to women, where the link between economic uncertainty and fertility would be dependent on individual values, life goals, and abilities (Kreyenfeld, 2010). It is assumed that on the one hand, for women who also contribute to household resources, secure employment and economic resources are likely to be a prerequisite for establishing and growing a family. On the other hand, it is important to note that a desire to pursue a successful career may also be a consideration for family formation and may act to depress the desire for children.

According to Zedeck (1992), there are three possible interactions between work life and family formation. In the spillover model, success (failure) in family formation is dependent on success (failure) in the labor market success. This would imply that when women are employed in secure job positions, they should be more willing and able to have children and take care of them. This model is well aligned with the insecurity narrative as presented in the socio-demographic literature, where fertility intentions are secondary to the goal of achieving job and economic security. Because parenthood is a resource-intensive and long-term commitment, it is likely to be postponed or even dismissed when income and working conditions are not perceived to be stable or continuous (Kreyenfeld, 2004; Köppen, 2006; Ranjan, 1999; Vikat, 2004). The spillover hypothesis and insecurity narratives therefore predict that jobs security strengthens the desire for children.

However, the compensation hypothesis reaches a different conclusion; women with labour market success and job security may be disinclined to have (more) children. A couple reasons may account for this: first, the long duration of education required and a demanding work schedule may leave little time for motherhood; second, the costs of motherhood may be too great, given the expected returns on investments in the occupational career. According to the compensation hypothesis theory, the presence of job insecurity in the labor market may alternatively intensify the need for trust and reliability in personal relationships. This implies that women may seek out informal social relationships as a support system in times of labour market unpredictability. The parent–child relationship is the exemplar of such a support-system, as it is the most enduring relationship of all (Tolke & Diewald, 2003). Women in less secure jobs may have nothing to lose but rather, gain something by having children. Again, this model is consistent with the uncertainty narrative in the socio-demographic literature, where life course decisions in periods of economic uncertainty that reduce the level of uncertainty are particularly attractive (Kohler & Kohler 2002). Here, parenthood is a

way of creating biographical certainty and therefore can be perceived as a force that works against the uncertainty produced by precarious job situations. The compensation hypothesis and uncertainty narratives therefore predict that job security weakens the desire for children, while job insecurity strengthens it.

In the segmentation theory, neither work life nor family life affect each other. Here, women feel like they are the architects of their own lives and therefore have the option to choose between work or family life. In this theory, social norms and expectations do not have much importance in determining the transition to motherhood. The segmentation theory therefore predicts that there is no relationship between job security and desire for children.

Empirical Evidence

Recent literature found that women's employment and labour force participation were negatively related with their fertility outcomes. This is as a result of the higher opportunity costs that women face when they have (more) children. According to human capital theory (Becker, 1985), given that mothers spend more time outside the labor market due to childbearing and childrearing responsibilities, labor market experiences explained much of the wage gap between mothers and non-mothers. Reference is often made to the “family gap”, where mothers earn lower incomes than do women without children (Fuchs, 1988; Waldfogel, 1997), primarily because mothers have less labour market experience than non-mothers (Hill, 1979). Mothers may also opt for part-time, flexible, family-friendly but lower-paying jobs (Waldfogel, 1997). Part-time employment could lead to lower incomes since it often entails less accumulation of human capital; employers also do not often increase incomes in part-time positions. Mothers may also earn less after childbirth because they are more exhausted or distracted during work hours (Budig & England, 2001). Finally, given the difficulty in accurately measuring discrimination, other research suggests (Budig & England, 2001) that mothers may even be discriminated against by employers, leading to lower incomes (e.g., placing mothers in less rewarding jobs; promoting them less, or paying them less within jobs; or statistical discrimination).

Indeed, numerous studies in various country settings found evidence of a wage penalty for motherhood, for example, in the United States (Lundberg & Rose, 2000; Neumark & Korenman, 1994; Waldfogel, 1997, 1998a, 1998b); the United Kingdom (Harkness & Waldfogel, 1999; Joshi & Newell, 1989); and in Germany (Harkness & Waldfogel, 1999). Lundborg et al., (2017) analyzed data on women in Denmark and found that having children was associated with sizeable, long-term, negative effects on earnings. The decline in earnings (i.e., the motherhood penalty), was explained by women moving to lower-paid jobs that were closer to their home. Beyond

the motherhood penalty, Herr (2016) found that the “career timing” of fertility also had implications for women’s wages; women who began careers without children experienced greater increases in wages than women who began careers after having a child. Interestingly, men did not appear to suffer any such penalty; their wages were either unaffected (Loh, 1996) or were found to increase after having a child (Lundberg & Rose, 2000).

Beyond the initial concentration on unemployment, a more recent focus has been placed on the question of the impact of work (in)stability on fertility outcomes (Ahn & Mira, 2001; de la Rica & Iza, 2005). These studies have mostly covered developed countries and generally advanced the position that fertility is lower or postponed when employment is unstable. For example, Sobotka, Skirbekk, and Philipov (2011) reviewed literature on the effect of recessions on fertility and highlighted job uncertainty as a mechanism through which fertility is negatively influenced by economic downturns. Hondroyannis (2009) also examined macroeconomic panel data for 27 European countries and showed that output volatility and unemployment rates were negatively linked to fertility. Adsera (2011) used microeconomic data from 13 European countries to show that high levels of unemployment were associated with postponed fertility, even when controlling for individual work histories. Meron and Widmer (2002) also found a negative effect of unemployment on French women’s transition to first births. Other researchers have found similar results (Impens, 1989; Meron & Widmer, 2002).

Contradictions to this relationship have been noted. Kreyenfeld (2010) found that while unemployment delayed fertility among highly educated women, it hastened family formation among women with lower education. Huinink and Kreyenfeld (1971) also found a similar relationship using data on women from Eastern Germany. Del Bono, Weber, and Winter-Ebmer (2011, 2012) and Huttunen and Kellokumpu (2012) also found that unemployment did not reduce fertility among Austrian women. Other researchers also found that employment instability encouraged higher fertility, and vice-versa (Anderson 2000; Hoem, 2000; Kravdal, 1994, 2002). The negative effect of job security on fertility has been explained as being driven by women who were probably more career oriented (Bhaumick & Nugent, 2010).

Institutional Background- Employment in the Ghanaian Context

Since Ghana’s independence in the 1950’s, the Government has been heavily involved in the creation of employment opportunities for Ghanaians as a strategic response to both post-independence development and unemployment challenges. However, the inefficiency that characterized

state-owned organizations led to the later privatization of these state-owned institutions and the subsequent loss of employment of millions of Ghanaians in the Economic Recovery Programmes (ERP) of the 1980s. Despite the launch of the Programme of Action to Mitigate the Social Cost of Adjustment (PAMSCAD) to alleviate the negative employment effects of the ERP, particularly for vulnerable groups (e.g., rural households in the northern part of Ghana, low-income workers, unemployed and vulnerable urban households, and for retrenched workers), formal sector employment levels remained low.

Over the last two decades, successive governments of Ghana have implemented a number of national strategies and structural reforms (e.g., Ghana Growth and Poverty Reduction Strategy [GPRS I: 2003–2005], Ghana Poverty Reduction Strategy [GPRS II: 2006–2010], and the Ghana Shared Growth and Development Agenda [GSGDA I: 2010 to 2013]) aimed at employment generation and income creation. Despite these efforts, these strategies have not led to the creation of new and increased employment within the country. On the contrary, formal public and private sector employment declined due to the freeze and reduction of employment in the public sector.

When employment opportunities in the formal sector are scarce, people in many developing countries, including Ghana, are compelled to enter informal employment as a source of livelihood. According to the 2015 Ghana Labour Market Report, 90% of the currently employed population 15 years and older (i.e., legal age of employment in Ghana) are employed in the informal sector, with males constituting 45.1% and females, 54.9%. The informal sector is defined as establishments that do not have professionals managing their accounting records (GSS, 2016). Indeed, the majority of the currently employed are in vulnerable employment (i.e., jobs with few formal work arrangements, characterized by a lack of decent working conditions, such as own account workers [i.e., self-employed workers without employees], and contributing family workers), with a higher percentage of this number being females. More than half of females (68.2% or 3,401,618) who are currently employed are own account workers, with a relatively small number (i.e., 712,423) working as paid employees. In Ghana, of the total number of people in paid employment, 62% are males while 38% are females.

A work contract in the present context signifies a mutual agreement on the terms and conditions of the work between the employer and the employee. Pay and other conditions of work may be specified in letters of appointment (i.e., written contracts) or discussed orally (i.e., verbal contracts). “No contract” indicates the absence of any such agreement on pay and conditions of work between worker and employer. Written contracts among paid workers are not common. In the most recent Living Standards

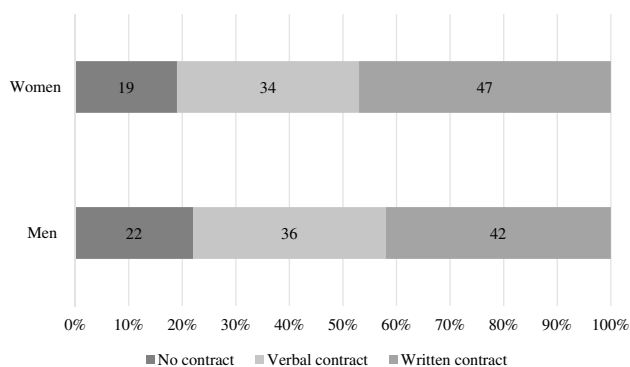


Fig. 1 Work contracts among male and female paid employees, GSS (2017) *Source:* Ghana Living Standards Survey, 2017

Survey, only 44% of paid employees reported that they received a written contract or work agreement with their present job; 35% received verbal contracts; and 21% of workers were employed in jobs with no written or verbal contracts. Again, the distribution of contracted jobs varies between men and women employees. As illustrated in Fig. 1 below, 42% of men have written contracts versus 47% of women; 36% of men have verbal contracts compared to 34% of women; and 22% of men report that they have no contracts, compared to 19% of women.

Data from the 2017 GLSS indicates that female employees without contracts are likely to work as early childhood educators, cooks and bakers, hairdressers, domestic housekeepers, stall and market salespersons, street food salespersons, shopkeepers, shop sales assistants, local food preparers, tailors and dressmakers, cleaners and kitchen helpers, among others. Employees with contracts typically comprise primary school teachers, accountants, bank workers, secretaries, health workers, among others.

The rarity of contracted jobs and the subsequent greater competition for these positions likely raises the opportunity costs of childbirth for women who are already employed in these positions (e.g., foregone income in the case of work interruption for childrearing or lost income in the case of work discontinuity). As already documented by Amankwah and Anku-Tsede (2013), female paid employees do experience some pecuniary penalties as a result of time taken away from employment for childcare reasons. Our proposed hypothesis is therefore that, consistent with the compensation theory, there is a negative correlation between more secure employment positions and women's fertility outcomes and intentions.

Data and Methods

Data

We used the 2017 wave of the Ghana Living Standards Survey (GLSS) in the analysis of the relationship between job security and reproductive health outcomes and intentions. This is a nationally representative household survey which provides reliable, disaggregated, and internationally comparable welfare and living condition statistics in Ghana. Information was collected on about 15,000 households in 1000 Enumeration Areas (EAs) across the country. Ghana has conducted six rounds of living standards surveys since 1987. The second, third, fourth, fifth, and sixth rounds were conducted in 1988, 1991/1992, 1998/1999, 2005/2006 and 2012/2013, respectively. In addition to other information, the seventh wave collected detailed information on demographic characteristics of the population; education, health, employment, migration, housing conditions, household incomes, expenditure, agriculture and data protection. For present research purposes, we restricted the fertility analyses to paid employees and excluded other labour market conditions, such as self-employment, unemployment, or inactivity.

Empirical Specification

The study examined the effect of job security on fertility outcomes of paid female employees in Ghana. Fertility outcomes were represented by two measures: (1) women's number of children ever born, and (2) proclivity to postpone future births. The count nature of the first dependent variable (i.e., the number of children ever born) generally necessitates the use of count models such as the Poisson or negative binomial regression model. The selection of one or the other depends on whether or not overdispersion (i.e., variance exceeds mean) is present in the data. Where overdispersion is present, then estimates are typically inefficient and standard errors are biased downward. However, appropriate testing did not support the presence of overdispersion in this case and therefore, a Poisson model was selected. For the second dependent variable, which is binary, we employed a probit regression model. We estimated the following general regression model:

$$\text{Fert}_i = \alpha + \beta \text{Contract}_i + \delta X_i + \epsilon_i \quad (1)$$

where Fert_i represented the two measures of women's fertility outcomes- First, the number of children ever born. Second, a dummy variable that equaled one if a woman intended to postpone childbirth in the future, and zero otherwise. Contract_i is a dummy variable for whether woman i had a written, verbal or no work contract or agreement and represented the measure of job security. X_i contained the set of other explanatory variables including the age (and

quadratic term) of women, marital status, education, current contraceptive use, household wealth, women's salary/wages, agricultural occupation, religion, ethnicity, rural/urban and regional residence. ϵ_i is the error term.

In the regression models, the coefficient of interest, β , denoted the effect of having a work contract on women's fertility outcomes and intentions. Estimation may however lead to biased results given that employees may self-select themselves into more secure jobs due to unobserved characteristics that also affect childbearing. We addressed this by the use of a propensity score matching approach.

It is acknowledged that job security must be exogenous to fertility. This is because omitted variable bias may be present if work and family choices are jointly determined at an (unobserved) earlier stage. Given that education and work choices are, in many cases, made before children arrive, an important factor to address is the potential self-selection of family-oriented women into flexible jobs, and career-oriented women into less family-friendly jobs. We therefore approximated causal inference through the use of a quasi-experimental technique, propensity score matching. We considered women who had written contracts as belonging to a "treatment group" while women who did not have written contracts were assigned to a "comparison/control group". Propensity scores were generated from observable characteristics of women, which were then used to produce a pseudo "control" group of women that were similar to the treatment group. In this way, the selection of women into the treatment group more closely resembled a random assignment. We then used these propensity scores, combined with appropriate matching techniques, to further reduce selection bias and estimated the average treatment of job security on the treated (i.e., ATT).

Assume $F_{i,T}$ is the fertility status of woman i in the treatment group and $F_{i,C}$ is the fertility status for a woman in the control group. The difference in having written contracts may be given as $F_{i,T} - F_{i,C}$. We are interested in the average effect of the treatment for those who received the treatment (i.e., $E[F_{i,T} - F_{i,C} | T_i = 1]$). However, this is impossible to estimate, given the difficulty in observing the counterfactuals (i.e., $F_{i,T}$ for $T_i = 0$ and $F_{i,C}$ for $T_i = 1$ are not observed).

To address this problem and generate appropriate counterfactuals, we assumed that conditional on observed characteristics X_i , women's possession of written contracts was independent of their fertility status. Propensity scores were then constructed using a probit model and used to match treatment units with observationally similar control units (i.e., $P(X_i) = \Pr(T_i = 1 | X_i)$). Balancing on the propensity scores eliminated selection bias based on the observable characteristics, X_i . Nearest neighbour matching estimators were used.

By definition, only employed women were included in the empirical analyses because our research interest focused

on the relationship between job security and fertility. Therefore, the sample represented only a subset of the full population. Estimated coefficients should therefore be interpreted as conditional on being employed.

Results

Descriptive

It is relevant to examine whether employees with varying job security (i.e., written, verbal, or no contracts) are different in observed characteristics that may explain differences in their fertility intentions and behaviors. Statistics from the analytic sample were therefore disaggregated by job security status (written or verbal vs. none) and p -values reported of tests comparing the means of workers with and without contracts under the null hypothesis of the two being equal. About 84% of women in the sample reported that they had either a written or a verbal contract.

On average, workers with neither written nor verbal contracts had a higher number of children ever born, with a smaller proportion reporting an intention to delay childbirth in the future. The average age of the women was 30 years; and women with written or verbal contracts were almost 2 years older than women with no contracts. A potential explanation may be that older women are more confident and therefore are better able to have the necessary discussions with employers about their pay and other conditions of work (Table 1).

Forty-eight percent of women were married with about 42% of women reporting that they had never been married. "Special single" women made up almost 10% of the sample and included women who were separated, divorced, or widowed. Twenty-five percent of women reported that they were currently using a modern contraceptive method; a smaller proportion of women employed in jobs with lower security were currently using contraceptives to limit their births (i.e., 17%), compared to women in jobs with higher job security (26%), representing an almost 10% difference.

On average, close to 88% of women in the sample had at least a secondary school education. Ninety-one percent of women in job positions with contracts had completed at least a senior secondary school education, compared to 71% for women with no contracts. Additionally, women in jobs with lower security were, on average, from larger and poorer households, and likely to be engaged in agricultural work. Statistics are provided for average compensations that women received from their jobs. These included salaries, in-kind payments, in addition to bonuses and commissions. Women's compensation in the aggregate sample ranged from Ghc16 a month to Gh8,850, with the average women receiving Ghc613 a month. Women with work contracts received

Table 1 Descriptive statistics, GSS, 2017

	Full sample		No contract		Written/verbal		Difference	T-test
	Mean	SD	Mean	SD	Mean	SD		
Children ever born	1.589	1.72	1.902	2.08	1.529	1.63	0.373***	2.77
Delay future birth	0.297	0.46	0.200	0.40	0.313	0.46	-0.113**	-2.30
Woman age	30.154	7.99	26.648	8.38	30.445	7.89	-1.797***	2.87
Has contract	0.838	0.37	-	-	-	-	-	-
Never married	0.418	0.49	0.435	0.5	0.415	0.49	0.020	0.52
Currently married	0.485	0.5	0.472	0.5	0.488	0.5	-0.017	-0.42
Special single	0.096	0.3	0.093	0.29	0.097	0.3	-0.004	-0.16
Current contrac. use	0.246	0.43	0.171	0.38	0.261	0.44	-0.090**	-2.66
At least secondary education	0.877	0.33	0.71	0.46	0.909	0.29	-0.199***	-7.90
Household is poor	0.091	0.29	0.176	0.38	0.075	0.26	0.101***	4.50
Pay (Ghc monthly)	612.85	628.87	370.99	456.79	657.01	645.90	-286.00***	-5.65
Agricultural worker	0.029	0.17	0.078	0.27	0.02	0.14	0.058***	4.38
Household size	4.508	2.75	5.057	3.36	4.402	2.6	0.655***	3.04
Christian	0.873	0.33	0.772	0.42	0.892	0.31	-0.120***	4.61
Muslim	0.104	0.31	0.197	0.40	0.086	0.28	0.111***	4.66
Traditionalist	0.01	0.1	0.01	0.1	0.01	0.1	0.000	0.05
Akan	0.498	0.5	0.435	0.5	0.51	0.5	-0.075*	-1.90
Ewe	0.158	0.37	0.119	0.32	0.166	0.37	-0.047	-1.63
Ga	0.088	0.28	0.078	0.27	0.09	0.29	-0.012	-0.55
Northerner	0.256	0.44	0.368	0.48	0.234	0.42	0.134***	3.93
Urban residence	0.676	0.47	0.648	0.48	0.682	0.47	-0.034	-0.93
Western region	0.101	0.3	0.067	0.25	0.108	0.31	-0.041*	-1.71
Central region	0.111	0.31	0.124	0.33	0.108	0.31	0.016	0.66
Greater Accra region	0.215	0.41	0.14	0.35	0.229	0.42	-0.089***	-2.77
Volta region	0.093	0.29	0.083	0.28	0.095	0.29	-0.012	-0.53
Eastern region	0.087	0.28	0.057	0.23	0.093	0.29	-0.036	-1.62
Ashanti region	0.151	0.36	0.238	0.43	0.134	0.34	0.104***	3.73
Brong Ahafo region	0.080	0.27	0.078	0.27	0.081	0.27	-0.003	-0.15
Northern region	0.042	0.2	0.098	0.3	0.031	0.17	0.067***	4.31
Upper East region	0.065	0.25	0.052	0.22	0.068	0.25	-0.016	-0.83
Upper West region	0.054	0.23	0.062	0.24	0.053	0.22	0.009	0.51
Observations	1193		193		1000		1193	

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

about Ghc300 more compensation per month, compared to their counterparts without contracts. A higher proportion of women with no contracts were Muslims and from the northern tribes of Ghana. A likely explanation for this may be the level of education of women in the northern regions is lower and this might prevent their selection into higher security jobs.

With regards to each of the ten regions in Ghana, the smallest proportion of women with paid employment was observed in the Northern region (4.2%), followed by the Upper West (5.4%) and Upper East regions (6.5%), indicating a north–south divide in the distribution of paid employment.¹ Not surprisingly, the region with the largest proportion of women with paid employment was the Greater Accra region (21.5%), followed by the Ashanti region (15.1%).

There are significant differences in regional residence between women with and without contracts; more women with contracts lived in Western and Greater Accra regions, while fewer women with contracts resided in Ashanti and Northern regions.

Empirical Results

This section presents results from the regression models on the two measures of women's fertility, the number of children ever born, and intentions to delay future births. Results

¹ The data was collected before the 2018 creation of six additional regions in Ghana.

from base Poisson and probit regressions of women's fertility and fertility intentions are provided in columns 1 and 3. Standard errors were clustered by region and birth cohorts. To correct for potential self-selection into jobs with high security, we ran a propensity score matching model (see models 2 and 4).

Poisson/Probit Regressions PSM Analyses

Results from Poisson estimations in Table 2 (i.e., specification I) indicated that women who worked in positions with job security had about 0.22 fewer children ever born. Examining women's intention to delay future births, marginal effects from probit regressions in specification 4 showed that there was a 13% higher likelihood of delaying births when women had secure jobs.²

It is worth mentioning that women's fertility increased with age, although the relationship was non-linear. Compared to women who had never been married, women who were married and special single (i.e., widowed, separated or divorced) had more children ever born. Currently married women were less likely to indicate a desire to delay future births. Interestingly, women who were currently using contraceptives had more children and were more likely to want to delay future births, indicating some possibility of endogeneity with this relationship (i.e., more fertile women could be opting to use contraceptives as a means of limiting the total number of births). Women with at least a secondary education had lower fertility. Although the effect was small, higher wages appeared to reduce women's fertility. Larger household sizes were also associated with women's higher fertility.

With respect to religion, Muslim women, compared to their Christian counterparts, were less likely to want to delay their births in the future. Akans were also less likely to want to delay future births, compared to women from Mole-Dagbani and other northern tribes (see Agyei-Mensah & Owoo, 2015). Geographical variations in women's fertility were observed. Women in urban areas had lower fertility than women who resided in rural areas; and, compared to women who lived in the Greater Accra region, women in other regions in southern Ghana had a higher level of fertility.

Self-Selectivity and Propensity Score Matching Technique

We also employed a propensity score matching technique to correct for potential selectivity of women into particular types of jobs. First, we calculated the propensity scores,

Table 2 Results from poisson/probit and propensity score matching specifications

	Poisson 1	PSM 2	Probit 3	PSM 4
Written contract	−0.22*** (−3.26)	–	0.13** (2.24)	–
Verbal contract	−0.01 (−0.09)	–	0.05 (0.83)	–
Written/verbal	–	−0.28 (−0.81)	–	0.167 (1.27)
Woman age	0.21*** (7.12)	–	0.01 (0.76)	–
Woman age (squared)	−0.00*** (−5.68)	–	0.00 (−1.57)	–
Married	1.00*** (9.57)	–	−0.14*** (−3.33)	–
Special single	0.92*** (7.40)	–	−0.03 (−0.38)	–
Current contr. use	0.11** (2.56)	–	0.31*** (4.26)	–
At least sec. educ	−0.23*** (−3.56)	–	0.00 (0.01)	–
Poor	0.03 (0.36)	–	−0.12* (−1.80)	–
Salary/wages	−0.00*** (−2.94)	–	0.00 (1.23)	–
Agriculture	0.18 (1.59)	–	−0.12 (−1.25)	–
Household size	0.08*** (7.88)	–	0.00 (−0.18)	–
Muslim	−0.07 (−0.94)	–	−0.12* (−1.86)	–
Traditionalist	−0.28* (−1.87)	–	0.15 (0.86)	–
Akan	−0.08 (−1.28)	–	−0.12*** (−2.21)	–
Ewe	−0.16* (−1.92)	–	−0.11 (−1.64)	–
Ga	−0.01 (−0.07)	–	−0.09 (−1.21)	–
Urban	−0.13** (−2.50)	–	−0.03 (−0.67)	–
Western region	0.21** (2.28)	–	–	–
Central region	0.21*** (2.62)	–	–	–
Volta region	0.28*** (3.00)	–	–	–
Eastern region	0.14* (1.73)	–	–	–
Ashanti region	0.09 (1.22)	–	–	–

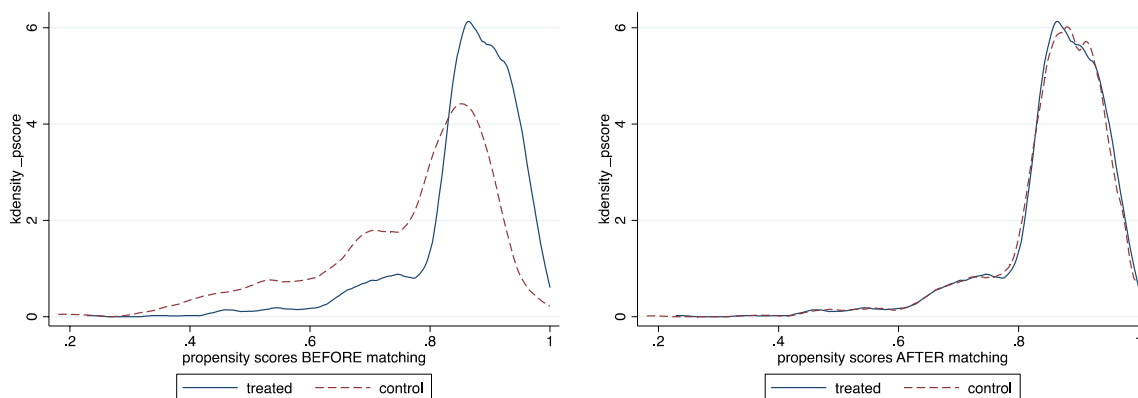
² Results are consistent with the inclusion of unemployed women in the regression specification (see Appendix 1).

Table 2 (continued)

	Poisson 1	PSM 2	Probit 3	PSM 4
Brong Ahafo region	0.25*** (3.31)	–	–	–
Northern region	–0.43*** (–2.81)	–	–	–
Upper East region	–0.11 (–1.10)	–	–	–
Upper West	0.09 (0.84)	–	–	–
# of living children	–	–	0.01 (0.58)	–
Northern Ghana	–	–	0.00 (–0.08)	–
Constant	–4.60*** (–8.64)	–	–0.30 (–0.33)	–
N	1153	1153	655	655

Note: *t* statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

**Fig. 2** Nearest Neighbour matching

based on the likelihood that women were employed as paid employees in jobs that had written or verbal contracts, and then matched women with similar propensity scores with and without work contracts together. Matching was done using nearest neighbours with replacement for each observation. Here, a woman from the comparison group was chosen as a matching partner for a woman in the treatment group that was closest in terms of their propensity score. As shown in Fig. 2 below, treatment and control groups were well-matched; similarities in their properties indicated that the effect of being in a treatment or control group was arbitrary.

Columns 2 and 4 in Table 2 show results of the treatment effect (ATT) on both women's number of children ever born and on the likelihood of delaying future births.³ Initial

results from the unmatched sample were consistent with earlier results. In column 2, the coefficient for the unmatched sample was -0.373 , significant at the 5% level. This indicated that women who worked in paid positions with contracts had lower fertility levels. Controlling for self-selection into these jobs however, the effect of job security on fertility remained negative but non-significant. This implies that the observed relationship between job security and fertility was the result of women self-selecting into these jobs. These results suggest that the negative correlation between job security and fertility may be partly due to the selection of career-oriented women into secure jobs, rather than due to a causal effect. The same effects are observed in column 4, where although the coefficient for the unmatched sample was 0.113 , significant at the 5% level, controlling for self-selection, the effect remained positive, but was no longer significant.

Results are robust to the use of other matching techniques such as the radius matching technique. Here, women from the comparison group were chosen as matching partners for women in the treatment group that lay within the propen-

sity range specified and were closest in terms of propensity score. The radius matching technique is useful because it uses only as many comparison units as are available within the propensity range and therefore allows for usage of extra (fewer) units when good matches are (not) available. Hence, it shares the attractive feature of oversampling, but avoids risks of bad matches (Dehejia & Wahba 2002; Caliendo & Kopeinig 2008).

Some caution is needed in the interpretation of these results. First, although we controlled for several measurable covariates, other unobserved factors which might

³ First stage probit regressions reported in Appendix 2.

influence both fertility and labour market status may have been excluded. Second, while the selection of the propensity score matching technique is appropriate as a solution to self-selection, again, the difficulty of matching on women's unobservable factors may pose a challenge to the conclusions of this research.

Discussions and Conclusions

The paper examines the impact of job security, proxied by the presence of written and/or verbal contracts, on female employees' fertility and intentions to delay future child-births. As mentioned above, employees without contracts are likely to work as early childhood educators, cooks and bakers, hairdressers, domestic housekeepers, stall and market salespersons, street food salespersons, shopkeepers, shop sales assistants, local food preparers, tailors and dressmakers, cleaners and kitchen helpers, among others. Employees with contracts and better job security typically comprise primary school teachers, accountants, bank workers, secretaries, health workers, among others.

Initial results suggest a negative correlation between job security and women's fertility outcomes and intentions. This conclusion differs from what has been observed in a number of developed country contexts, where fertility was higher when employment was more stable (Ahn & Mira, 2001; de la Rica & Iza, 2005). We argue that this seeming contradiction is well-explained by the country-specific environment. First, in Ghana, paid employment positions are not very common and subsequent competition for them is intense. Positions that include contracts and work agreements are even more attractive and sought-after as they confer a substantial degree of job security and work permanence as job security and work permanence have been associated with higher opportunities for career development and with an accelerated wage progression (Arulampalam & Booth, 1998; Booth et al., 2002; Pavlopoulos, 2009).

According to Kreyenfeld (2010), the effect of labor market insecurity on childbirth is dependent on whether a woman is expected to be a caregiver or household provider after childbirth. In a country like Ghana, there are traditional gendered roles with social and cultural expectations of women being the primary caretaker of children. Such gender conservative views have been associated with negative implications for women's earnings and their labour market experiences (Kleven et al., 2019). In countries that lack safety nets and family policies aimed at reconciling motherhood and paid work, women's job security may constitute a stronger barrier to childbearing. In Ghana, the lack of public-provided childcare services and daycare provisions at the workplace implies that working mothers in Ghana may have to make informal arrangements

for their young children, such as hiring young girls they barely know to take care of children while mothers are at work. Whereas in the past, grandparents would have been a viable source of childcare, this option is less available in recent periods. In the GLSS, fewer than 2% of households reported the presence of grandparents in the household. The gradual shift from the traditional extended family to the modern nuclear or conjugal form of family in Ghana has been noted by numerous scholars (Kpoor, 2014; Nukunya, 2003). This lack of assistance with childcare can lead to issues with productivity if mothers are worried and distracted at work (Budig & England, 2001). Women in secure, paid positions in Ghana may therefore be choosing to have fewer children, and also demonstrating predispositions to delaying future childbirth, likely as a result of the higher associated costs of childbearing and childrearing (Gayle & Miller, 2002; Heckman & Walker, 1990; O'Donoghue et al., 2011). Consistent with the compensation theory, therefore, job security weakens the desire for children, while job insecurity strengthens it.

An important derivation of this research, then, is that for women with little control over their economic situation (i.e., without contracts and work agreements), having more children could be a strategy to reduce uncertainty, at least in their private lives. Indeed, summary statistics in Table 1 indicate that fertility is higher among women with insecure job positions. Therefore, it may be deduced that when the work environment is uncertain, becoming a parent and having more children can be a way to make the future safer and more predictable. Parenthood is therefore a means of creating biographical certainty and therefore can be perceived as a force that works against the uncertainty produced by precarious job situations. This explanation is particularly relevant for settings like Ghana where fertility is valued and when, more often than not, the time requirements of work are in conflict with family creation, particularly because of the aforementioned shortage of public childcare services. Furthermore, according to Cleland et al., (1994), the presence of more children may further garner some economic security through assistance during old age.

In addition to correlations between women's job security and fertility, we also find some evidence of self-selection of women into particular jobs. The initially observed negative correlation between job security and fertility is found to be largely attributable to the selection of career-oriented women into more-secure jobs; and family-oriented women into less secure jobs that may be presumed to be more flexible, given the lack of clearly spelt-out contractual agreements. Findings are similar to conclusions drawn by Schröder and Brüderl (2008) who use data on West Germany to show that although initially, female employment is observed to be negatively correlated with future fertility, this relationship is rather due

to occupational self-selection than a direct effect of unemployment on fertility.

The findings from this research have important policy implications. The results tell a plausible story of the work-family incompatibility that women face in the labour market in Ghana. Working women often have to leave their children with informal caretakers when they return to work, given as the majority of workplaces do not have nurseries, even for breastfeeding purposes. There were attempts in the past to increase the duration of maternity leave from three (3) to six (6) months, but these were unsuccessful. Women are therefore often unable to adhere to the directive of six months exclusive breastfeeding, with implications for children's wellbeing. Women who are family-oriented therefore appear to be opting for less secure, lower-paid positions as a result of these constraints so that their children are better supervised, but this move comes with likely adverse implications for their income-earning potential and general wellbeing (Lundborg et al., 2017). This tradeoff suggests that additional efforts may be necessary to ease work-family incompatibilities that women face in the country. The policy to increase mother's leave periods from three (3) to six (6) months may need to be revisited and implemented. Additionally, laws to provide nurseries and day care centers at various workplaces in Ghana should be enforced to reduce the work-family incompatibilities that women face. The provision of publicly provided childcare services would also be beneficial as it would be expected to reduce the costs of having children. Family-oriented policies such as access to paternity leave for fathers would help to reduce the stress of childcare on mothers, particularly given the declining role of grandparents as caregivers in the Ghanaian context. Finally, social and cultural norms that prescribe childcare as the exclusive domain of women also need to be revisited as these childcare burdens may lead to adverse earnings and labour market experiences of women.

Appendix 1 Results from poisson and probit model specifications (unemployed women included in sample)

	Children ever born	Delayed fertility
Written contract	–0.30*** (–7.22)	0.29*** (3.18)
Verbal contract	–0.05 (–1.12)	–0.01 (–0.08)
No contract	–0.03 (–0.49)	–0.19 (–1.22)

	Children ever born	Delayed fertility
Woman age	0.18*** (8.22)	0.10*** (3.36)
Woman age (squared)	–0.00*** (–6.00)	–0.00*** (–4.53)
Married	1.05*** (12.59)	–0.26*** (–2.68)
Special Single	0.99*** (10.43)	0.13 (0.87)
Current contr. use	0.11*** (3.92)	1.17*** (7.07)
At least sec. educ	–0.21*** (–5.67)	0.06 (0.58)
Poor	0.16*** (3.44)	–0.01 (–0.11)
Household size	0.06*** (8.88)	–0.01 (–0.52)
Muslim	–0.08 (–1.58)	–0.28** (–2.11)
Traditionalist	0.01 (0.11)	0.29 (1.01)
Akan	–0.05 (–1.01)	–0.15 (–1.18)
Ewe	–0.18** (–2.31)	–0.06 (–0.39)
Ga	–0.09 (–0.97)	0.07 (0.38)
Urban	–0.11*** (–3.11)	–0.05 (–0.50)
Western region	0.25*** (3.95)	
Central region	0.15** (2.37)	
Volta region	0.29*** (3.38)	
Eastern region	0.20*** (3.37)	
Ashanti region	0.11** (2.16)	
Brong Ahafo region	0.19*** (3.39)	
Northern region	–0.15 (–1.52)	
Upper East region	–0.07 (–0.90)	
Upper West	–0.06 (–0.62)	
# of Living children		0.04 (1.32)
Northern Ghana		–0.06 (–0.44)

	Children ever born	Delayed fertility
Constant	–3.96*** (–10.44)	–1.41*** (–3.09)
N	2610	1532

Note: *t* statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Appendix 2 First stage probit regressions of contracts (written or verbal)

Variables	
Woman age	0.05*** (4.15)
Woman age (squared)	–0.00*** (–3.73)
Married	0.02 (0.38)
Special Single	–0.09 (–0.83)
At least sec. educ	0.29*** (4.29)
Poor	–0.06 (–0.77)
Salary/wages	0.00** (2.54)
Total hours worked	0.00*** (4.25)
Legislators/managers	1.06*** (5.85)
Professionals	1.27*** (10.13)
Technicians and associate professionals	1.05*** (6.54)
Clerical support workers	0.76*** (5.02)
Sales/Service workers	0.48*** (4.13)
Craft and related trades workers	0.08 (0.72)
Plant machine operators	0.29** (2.46)
Elementary occupations	0.30** (2.47)
Muslim	–0.29*** (–3.67)
Traditionalist	0.16 (0.82)
Akan	–0.02 (–0.27)

Variables	
Ewe	0.08 (0.82)
Ga	0.20* (1.75)
Urban	–0.07 (–1.28)
Northern regions	0.02 (0.23)
Constant	–1.00*** (–4.31)
N	4476.00

Note: *t* statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

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