

# The Impact of Unemployment on Fertility Timing<sup>1</sup>

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**Abstract:** We analyze the causal effect of unemployment on fertility timing. Neoclassical theory of fertility has ambiguous (both positive and negative) predictions regarding the effect of unemployment for women. Additionally, existing empirical research shows contradictory results and makes a weak case for exogeneity of unemployment and fertility behavior. We suggest that (unexpected) firm closure constitutes an exogenous source of job loss and adopt it as an instrument to estimate husbands' and wives' fertility response, using a unique administrative panel data from Denmark, which includes *all* residents in Denmark between 1982 and 2006. It contains monthly information about employment status, marital status and child birth of individuals who can be matched with the characteristics of the firm that they work in. We estimate our models separately for husbands' and wives'. Our preliminary results provide evidence against the substitution effect for women and show that women delay childbirth in the event of unemployment.

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## 1. Introduction

Recent research showed an increasing tendency that countries with lower rates of female employment also experience lower rates of fertility (Adsera 2004; Adsera, 2005; Ahn & Mira 2002; Brewster & Rindfuss, 2000; Esping-Andersen, 1999; Esping-Andersen, 2009; Engelhardt & Prskawetz, 2004). This implied a reversal in the well-known negative correlation between these two aggregates [i.e. Total Fertility Rates (TFR) and Female labor force participation rates (FRP)] across the OECD countries. A common explanation for the emerging positive correlation is the extended durations of high (female) unemployment in southern and central European countries especially throughout the 1990s (e.g. Ahn & Mira, 2002; Adsera, 2004; Engelhardt & Prskawetz, 2004). This explanation is also supported by the observation that the downward trends in fertility coincide with increasing unemployment rates of women especially in these countries (e.g. Ahn & Mira 2002; Adsera 2005).

A smaller group of researchers went beyond the analysis of aggregate trends and focused on the underlying mechanisms between unemployment and fertility behavior particularly its timing, using individual-level data (e.g. Kravdal 2002; Kohler and Kohler 2002; Tölke & Diewald 2003; Adsera 2005; Kreyenfeld 2009; Ozcan et al. 2010; Adsera 2011). However, the need for further analyses persists for three major reasons:

First, the findings of this literature is far from being conclusive. For example, some studies find either no association between unemployment and women's fertility timing (e.g. Kreyenfeld 2009; Kravdal 2002; Rindfuss et al. 1988; Kohler & Kohler 2002), or a positive association for women with lower education (Kreyenfeld 2009; Hoem 2000). Yet, others detect a negative association between unemployment and the transition to motherhood (e.g. Hoem 2000; Adsera, 2005; Gonzalez & Jurado-Guerrero, 2006<sup>2</sup>). Moreover, fewer studies analyze the relationship between men's fertility behavior and unemployment and they also report similarly contradictory findings (e.g., Tölke and Diewald, 2002, Sullingham & Falkingham 1991; Kravdal, 2002; Ozcan et al., 2010)

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<sup>2</sup> Only for Italy, Spain and France.

Second, this literature often lacks a proper causal approach. In most cases, researchers use duration models where the dependent variable takes the value one around nine-months to one year before the birth of the child. Lagging the dependent variable nine-months is a common practice in order to avoid potential reverse causation of fertility influencing the likelihood of becoming unemployed (e.g. Adsera, 2005; Ozcan et al., 2010 and others). Although this procedure does break the time order and hence helps to avoid reverse causation, it fails to fully eliminate the endogeneity problems. The likelihood of becoming unemployed and fertility outcomes may well be determined endogenously through a series of choices and preferences interwoven along the life-course (e.g., Angrist and Evans, 1998). For example, for some individuals, planning to become a parent might affect their work performance and attachment and consequently, might increase their probability of becoming unemployed. Alternatively, unobserved characteristics of some women may select them into motherhood, while at the same time reducing their attractiveness in the labor market. Thus, a careful assessment of causal relationship between unemployment and fertility outcomes requires finding an exogenous source of unemployment. Very few studies, which we will discuss below, attempted to find such source, and they also differ in their findings and foci.

Third, the hypotheses derived from the neoclassical fertility theory have ambiguous predictions regarding the direction of the impact of unemployment on fertility timing, especially for women, where the effect can be both positive and negative. Furthermore, the assumptions about gendered division of labor, due to childrearing and market work in neoclassical fertility theory produces even more complex and ambiguous predictions for the fertility behavior of men and women in different subgroups (e.g., Hotz et al. 1997; Kravdal 2002; Adsera 2004; Ozcan et al 2010 and Adsera 2011). Consequently, we believe that there is still need for a careful empirical analysis of all theoretical predictions in practice.

These three major observations of the extant literature motivated this research, which also focuses on unemployment and its impact on fertility timing (and completed fertility). But we contribute to this literature in the following areas:

First and foremost, we adopt a causal approach using an instrumental variable that provides an exogenous source of being unemployed. We use (unexpected) firm/plant closure to instrument unemployment because firm/plant closures are independent of the characteristics of the workers (see e.g. Heinesen & Browning, 2010; Browning, Møller & Heinesen, 2004; Eliason & Storrie, 2004). Consequently, we test whether this influences individuals' decision for "conception". In this respect, ours is one of the very few papers that has a causal approach.

In fact, we know of only three other studies that also focused on the causal effect of the job loss, as a result of firm closure or other (exogenous) reasons, on the fertility outcomes: timing and numbers (e.g. Del Bono, Weber & Winter-Ebmer 2008; Lindo 2010; Huttunen & Kellokumpu 2010). Our research builds on these recent studies but we depart from them in a number of ways:

For example, Lindo (2010) used the information on PSID data about husbands' job losses<sup>3</sup> to provide an exogenous negative shock to the family income. He estimated fertility responses of women to their husband's job loss. Because his focus was on the income-fertility relationship, his analyses did not take into account wives own unemployment. Although *income* effect is an important component of unemployment experience, for women, their own unemployment also provides a substitution effect, which we discuss in the next section. On the other hand, Del Bono et al (2008) only looks at women's own job loss, instead of focusing on both partners, and finds that women who had a job displacement experience at average have 5-10% lower fertility compared to women that never experienced a job displacement. Huttunen and Kellokumpu (2010) focuses on both partner's job losses, however, to those occurred in 1991 recession in Finland and their study lacks information about work places, which is important considering presence of gender segregation in the labor market across industries and occupations and the heterogeneity of individuals affected by the firm closures (e.g. Del Bono et al 2008 , Heinesen & Browning, 2010). Our study aims to include the most comprehensive set of covariates and controls regarding not only individual's economic

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<sup>3</sup> His study uses job losses due to plant closures as well as due to other factors, such as "being fired". Only as a robustness check, he restricts his sample to job losses that are only due to firm/plant closure.

conditions but also couple's characteristics and the characteristics of the firms, which allow us to capture the existing heterogeneity in the treatment group (i.e. firm closures).

Second, with the help of unique register data, we will also be able to overcome a number of measurement problems present in the broader literature. For example, in the absence of complete fertility history of individuals, some studies derived fertility histories from the variables of household structure (of cohabiting children) (e.g. Kreyenfeld 2009; Kravdal 2002; Gonzalez & Jurado 2006; Adsera 2005; Schmitt 2008)<sup>4</sup>. This strategy results in an incomplete picture of fertility timing that excludes the birth of children who have left home, live with other relatives or with the other partner in broken marriages. Additionally, we believe that an ideal data should also provide information about all types of parenthood transitions, i.e. not only the live births but also miscarriages, adoptions and becoming a step-parent<sup>5</sup>. In the absence of this information, studies rely on a selected sample of birth-events. To our knowledge, no studies take into account such transitions<sup>6</sup> in their analyses.

## 2. Theoretical Background

The mechanisms linking unemployment to fertility decisions are derived from the neoclassical (economic) model of fertility developed by Willis (1973) and Becker (1981) and its extensions. In a synthesized way, many of the following arguments are based on the discussions regarding those extensions outlined in Kravdal (2002), Kohler and Kohler (2002), Adsera (2004 and 2011) and Lindo (2010).

In a nutshell, the standard (static) microeconomic model of fertility, in line with the trade-off perspective between quality and quantity of children, predicts a negative effect of unemployment on men's fertility decisions due to the associated loss of income, which is called *the income effect*. However, in addition to the income effect, the same

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<sup>4</sup> Gonzalez & Jurado (2006) and especially Adsera (2005) attempted, although imperfectly, to address this non-random selection problem in their studies. Adsera sets the age of women to 40 and mentions that the percent of women below this age who do not live with their children is very small.

<sup>5</sup> Here, especially information on miscarriages is important as such events may potentially correlate with stress produced by unemployment. In addition information on adoptions and step parenthood is particularly important in comparative studies as countries might vary in the prevalence of these transitions.

<sup>6</sup> For example, Ozcan et al. 2010 reports that in East Germany transitions to fatherhood via adoptions and step-fatherhood is about twice more often than those in West Germany.

model suggests a *substitution effect* of unemployment for women, which means that unemployment may be positively associated with their fertility decisions because it reduces the opportunity cost of childbirth, conveniently providing time for childbearing and child caring. Thus, according to this model, unemployment is expected to influence fertility decisions of men negatively. However, for women the overall impact is ambiguous because which effects (i.e. income versus substitution) dominate women's behavior is contingent on a number of factors (see Del Bono et al., 2008; Ozcan et. al. 2010; Adsera 2011).

But in addition, the ambiguity about the direction of the impact for women is exacerbated by the lack of clarity about the nature and duration of unemployment in question. To our knowledge, only three papers discuss this point explicitly and make a distinction between “a temporary unemployment spell” versus “long-term and persistent unemployment”: Kravdal (2002), Adsera (2011) and Ozcan et al (2010). These studies suggest very different theoretical mechanisms about the effects of “long-term” and “short-term” unemployment on fertility timing because they place emphasis differently on income or substitution effects.

For example Adsera (2004 and more explicitly, in 2011) focuses on the substitution effect and claims that only a *temporary* period of unemployment can be perceived as “a cheap time to have children”. Yet, if unemployment becomes persistent, then pregnancy might imply “a weaker commitment to labor market” especially “if it happens early in the life course where human capital accumulation is crucial” (2011:p.6). As a result, childbearing at younger ages combined with longer periods of unemployment might turn into “an unemployment trap” and lead to a considerable loss of lifetime income (2004:p.22).

Focusing on the income effect, Kravdal (2002) argues the opposite. A temporary decline in income might influence fertility decisions because individuals prefer to delay fertility if they believe the decline will prove temporary. If the lower income proves persistent, however, individuals lower their aspiration levels and weaken their convictions concerning a “quality child”. Hence, because individuals adjust to the new

lower levels, a long-term decline in income becomes irrelevant to parenthood decisions. Whereas, Adsera (2011) notes that a reduction in permanent income might also discourage childbearing altogether either directly or indirectly via delaying family formation (Aassve et. al. 2001).

From a theoretical point of view, it is unclear how a temporary spell of unemployment can provide a “good/cheap time” for women, without making certain assumptions about women’s future expectations; especially on “how temporary” they perceive their current unemployment (Ozcan et al 2010 and Kravdal 2002). Because the time span between a conception decision and the childbirth is about a year, although the decision for conception might be not affected by a temporary unemployment spell (say around three months); it should not provide “a cheap time” for childbirth.

These considerations should lead us to think more carefully about long –term and persistent unemployment too because both the distribution of long term unemployment and the responses to it might be highly gendered.

First, the perceived degree of persistency (or temporariness) of unemployment may be a function of a number of factors: For example, highly educated men or women might worry less about an unemployment shock and may take their unemployment experience more temporary than individuals with low education. Not only highly educated but also highly career oriented individuals with strong commitment to labor market may behave similarly.

However, men and women with a history of frequent unemployment spells might respond differently. While men may perceive parenthood as unattractive and not feasible if their career is frequently interrupted with spells of unemployment and permanent income is reduced, unemployment might cause women to lower their career aspirations—in line with sociological arguments about the erosion of self-confidence during unemployment—and be willing to accept lower quality jobs from unemployment. For these women, the alternate track—motherhood—might allow them to adopt a role that is highly valued among peers and within the marital dyad (Friedman, Hechter, and Kanazawa, 1994).

It is important to note here that the standard microeconomic theory is built on a number of assumptions which are based on the traditional division of labor within the couple between domestic and market work. For example, only women's time is considered as relevant for childbearing and rearing and as a result, no substitution effect is envisioned for men. However, highly educated women may be more similar to men in terms of career commitment. In general, as societies move toward more egalitarian sex roles and as gender symmetry in childcare increases; the positive influence of substitution effect may also erode (Brodmann et al. 2007). In fact, Del Bono (2008) and Huttunen and Kellokumpu (2010) female job displacement decreases fertility but only for more educated workers.

Not only education but also external factors might affect the relative importance of income and substitution effects. The strength of these factors may be specific to each society and the level of gender symmetry reached. For example; availability of paid parental leave and generous unemployment insurances may help with the income loss associated with the unemployment experience, and hence positively contribute fertility decisions under unemployment (Adsera 2011). We aim to include more nuanced findings by adding the insurance dimension of unemployment in our analyses as a next step.

### **3. Data and Method**

In Denmark all residents have a unique personal number which identifies the resident in great many transactions, such as tax forms, visits to the doctor, interactions with the welfare system, schooling, work status, work place, registration of residence, etc. The registers record some variables on a daily basis, others at weekly or monthly basis, and a few – like e.g. yearly income – is registered at a yearly basis. Statistics Denmark conducts a yearly collection of the information registered by this personal number, and makes these data available for statistical and research purposes. The available data is then a panel which starts in 1982 and currently ends in 2006, containing all Danish residents, and which allows for a linkage of partners – married or cohabiting - and parents and children. From this data we know exactly when people have children and which months



they are unemployed, and this makes the data useful for the analysis on unemployment and the probability of conceiving a child.

For this analysis we use a sample of all Danes born in 1966 – whom we can follow in the registers from their 16<sup>th</sup> year (in 1982) until they turn 40 (in 2006), i.e. the years during which childbirths are most likely. This cohort has 87,333 individuals. We follow these individuals on a monthly basis until they conceive their first child and right censor them afterwards. In addition we right censor those who do not conceive before age 40, at age 40. These restrictions leave us with 16,444,050 individual pr. month observations, whereby we have 188 months pr. individual on average.

### **3.1. Variables**

Our outcome variable is a monthly indicator of the individual's first child conception that results in a live-born baby. We calculate this as the ninth month prior to child's birth date, and months of this first child conception take the value 1 and all other months take the value 0. Obviously this is a rough indicator that does not take early deliveries into account, and it also does not contain any information on intention to conceive – both are factors that the unemployment may potentially influence. In our sample, 56,440 individuals (64.63 percent) conceive their first live-born child during our observation period.

Our key explanatory variable is of course labor market status, i.e. whether the individual is unemployed in a given month or not. We create such indicator using the registers' information on benefit recipience and do not distinguish between insured and uninsured unemployed. 56,173 individuals (64.32 percent) experience unemployment during our observation period, and the total number of months of unemployment in our sample is 2,113,004.<sup>7</sup>

To control for other events that may affect the probability of conceiving a child, we also control for age/time, cohabitation (whether cohabiting or not), marital status (whether married or not), whether the individual is in education in any given month, and

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<sup>7</sup> This may seem quite extensive, however it reflects that our population entered the labor market in the 80'es where youth unemployment was unprecedentedly high in Denmark.

educational level. We also control for partners education and whether the partner is in education in any given month. All these variables are time-varying. The average age in our sample is 25 years, 34.42 percent cohabit in any given month, 6.65 percent are married<sup>8</sup> in any given month and 22.17 percent are in education. The average educational level is 2.25, corresponding to approximately 13 years of schooling. In any given month, 12.88 of the partners are unemployed, 18.07 percent of the partners are in education and partner's average educational level is 2.84, corresponding to approximately 14 years of schooling.

### **3.2. Method**

We analyze the effect of unemployment on conception using a standard discrete time duration model (see Yamaguchi, 1991, chapter. 2). However, due to the potential endogenous relationship between unemployment and child conception discussed earlier – unemployment may affect the decision to conceive a child, but having a child may also increase the probability of unemployment – we apply a two-step procedure, where we instrument unemployment. We present results from a model with both men and women and separate results for men and women.

#### *3.2.1 Exogenous variation: Firm closure*

While it has proven tricky to find useful exogenous variation for unemployment, firm closure has recently been established as a valid instrument (see e.g. Heinesen & Browning, 2010; Browning, Møller & Heinesen, 2004; Eliason & Storrie, 2004); it is the assumption that most employees fail to foresee that their work place is about to close down and that unemployment occurring as a result of such firm closure is uncorrelated with employee characteristics. And even if one can dispute this assumption of lack of anticipation, there are good examples of firms closing down from one day to another in Denmark in recent years (a recent prominent example is the closing down of the company IT Factory in December 2008<sup>9</sup>)

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<sup>8</sup> Note that the small share of married people reflect large variations in marital status across ages – very few marries before age 20 and more than half of the sample are married at age 40.

<sup>9</sup> For a Danish reference on this, see [http://da.wikipedia.org/wiki/IT\\_Factory](http://da.wikipedia.org/wiki/IT_Factory)

We identify firm closures following the definition that is now standard in the Danish firm closure literature: From the registers we have yearly information on all Danish firms, which means that we know whether a firm (identified with a unique number) exists in November each year. If a firm – or the firm number - disappears from the data from one year to the next, it then means that the firm has closed down. The registers take into account that specific firms may cease to exist when new owners take over, when they move to a new address or change industry, and in the registers, such organizational changes do not equal firm closure. Consequently the register do not record the following changes as firm closures: If the firm 1) changes address, but has the same owner and works in the same industry, 2) changes address, but has the same owner and the same employees, 3) changes owner, but has the same employees and the same address, or 4) changes owner, but has the same employees and works in the same industry. The registers define the criterion “same employees” as the continued engagement of at least 30 percent of the employees from one year to the next.

However, for our study we need information on more than just the year of the firm closure; since we analyze the effect of unemployment on child conception in any given month, we need information on whether unemployment in a specific month is the result of the firm closure. Without that information we cannot be sure to identify the causal effect of the unemployment on child conception. Consequently we use information on the monthly unemployment rate of employees of each firm (as determined the year before the year of the closure), and determine the month of closure as the month in which the unemployment rate of these employees has increased by 50 percent or more compared to the preceding month.

Firm closures occur 108,217 times in our sample.

#### **4. Results**

In this section we report our preliminary results from the first analyses without the partner effects and detailed household conditions. We report our first results both with pooled sample and separately for each gender (fully interacted model). Tables 1 and 2 below show the result from our 2SLS model. From table 1 we learn that our exclusion

restriction – firm closures - increases the probability of unemployment, and that the effect is significant at a 0.01 percent level, corresponding to a fairly acceptable t-value of 10.75. In addition, we learn that married people, people who do not cohabit and people under education are less likely to experience unemployment. Also the higher the age and the educational level, the lower is the probability of unemployment. In addition we learn that having an unemployed partner increases the likelihood of own unemployment and that this likelihood decreases by partner’s level of education.

Table 1: Results from the first stage regression: Outcome: the likelihood of unemployment

Parameter	Coefficient
Married	-0.039 (0.000)***
Cohabiting	0.048 (0.000)***
In education	-0.012 (0.000)***
Level of education	0.013 (0.000) ***
Age	0.000 (0.000)***
<i>Partner characteristics</i>	
Unemployed	0.065 (0.000) ***
In education	-0.004 (0.000)***
Level of education	-0.007 (0.000) ***
Ex. Res: Plant closure	0.023 (0.001)*** (z=20.85)
Intercept	0.066 (0.000)***
Wald chi2	174,347***

\*\*\*=p<0.001; \*\*=p<0.01; \*=p<0.05

Table 2 shows the results from the second stage model. Here, the parameter of interest is unemployment, as we see that experiencing unemployment in any given month significantly decreases the probability of conceiving a child.

Table 2: Results from the second stage regression: Outcome: the likelihood of conceiving a child

Parameter	Coefficient
Unemployed	-0.035 (0.011)**
Married	0.015 (0.000)***
Cohabiting	0.012 (0.001)**
In education	-0.002 (0.000)*
Level of education	0.001 (0.000)***
Age	0.000 (0.000)***
<i>Partner characteristics</i>	
Unemployed	0.008 (0.001) ***
In education	-0.008 (0.000)*
Level of education	0.000 (0.000) ***
Intercept	0.003 (0.001)**
Sigma_u	0.027
Sigma_e	0.064
Rho	0.148
Wald chi2	216589.86***

\*\*\*=p<0.001; \*\*=p<0.01; \*=p<0.05

Table 2 also shows that marriage and cohabitation significantly increases the probability of conceiving, and that this probability increases by age and level of education, including partner's education. In contrast, being enrolled in education has a negative effect. Note that having an unemployed partner increases the probability of conceiving, however, this variable is endogenous and should be interpreted with caution.<sup>10</sup>

#### 4.1. Results by gender

However, as discussed in the theory section, the effect of unemployment on the probability of conceiving a child is likely to vary significantly by gender. For women the theory predicts both a positive (e.g. substitution effect) and a negative effect (e.g. income effect), whereas for men the theory predicts only a negative effect. To test this prediction, we run the analysis separately for men and women. Tables 3 and 4 show the first and second stage regressions for men. We find that while the exclusion restriction has reasonable power (table 3), however there is no effect of unemployment on the probability of conceiving a child.

Table 3: 1. stage: Outcome: the likelihood of unemployment

Parameter	Coefficient
Married	-0.038 (0.000)***
Cohabiting	-0.028 (0.001)***
In education	-0.012 (0.000)***
Level of education	0.017 (0.000)***
Age	-0.000 (0.005)*
<i>Partner characteristics</i>	
Unemployed	0.056 (0.001)***
In education	-0.004 (0.000)***
Level of education	-0.008 (0.000)***
Ex. Res: Plant closure	0.024 (0.001)*** (z=16.61)
Intercept	0.065 (0.005)***
Wald chi2	73,599***

\*\*\*=p<0.001; \*\*=p<0.01; \*=p<0.05

<sup>10</sup> In future analyses we plan to instrument this variable.

Table 4: 2. stage: Outcome: the likelihood of conceiving a child

Parameter	Coefficient
Unemployed	0.007 (0.013)
Married	0.015 (0.000)***
Cohabiting	0.010 (0.000)***
In education	-0.001 (0.000)***
Level of education	0.001 (0.000)***
Age	0.000 (0.000)***
<i>Partner characteristics</i>	
Unemployed	0.010 (0.001)***
In education	-0.009 (0.000)***
Level of education	0.001 (0.000)***
Intercept	-0.000 (0.001)
Sigma_u	0.220
Sigma_e	0.057
rho	0.936
Wald chi2	133,366.17***

\*\*\*=p<0.001; \*\*=p<0.01; \*=p<0.05

Tables 5 and 6 show the first and second stage regression for women. Again the exclusion restriction is reasonable powerful, but in contrast to what we saw for men, unemployment decreases the probability that women conceive a child.

Table 5: 1. stage: Outcome: the likelihood of unemployment

Parameter	Coefficient
Married	-0.037 (0.001)***
Cohabiting	0.069 (0.001)***
In education	-0.011 (0.000)***
Level of education	0.008 (0.000)***
Age	0.000 (0.000)***
<i>Partner characteristics</i>	
Unemployed	0.089 (0.001)***
In education	-0.004 (0.001)***
Level of education	-0.006 (0.000)***
Ex. Res: Plant closure	0.021 (0.002)*** (z=12.33)
Intercept	0.061 (0.001)***
Wald chi2	131,145***

\*\*\*=p<0.001; \*\*=p<0.01; \*=p<0.05

Table 6: 2. stage: Outcome: the likelihood of conceiving a child

Parameter	Coefficient
Unemployed	-0.078 (0.021)***
Married	0.014 (0.001)***
Cohabiting	0.016 (0.001)***
In education	-0.003 (0.000)***
Level of education	0.001 (0.000)***
Age	0.000 (0.000)***
<i>Partner characteristics</i>	
Unemployed	0.009 (0.002)***
In education	-0.007 (0.000)***
Level of education	0.000 (0.000)
Intercept	
Sigma_u	0.029
Sigma_e	0.074
rho	0.134
Wald chi2	86,211.34

\*\*\*=p<0.001; \*\*=p<0.01; \*=p<0.05

## 5. Conclusion and Future Steps

The results from the preliminary analyses presented in this draft show that experiencing unemployment has a negative causal effect on the probability of conceiving a child. However when dividing the sample by gender, we see that the causal effect only applies to women. This finding follows the prediction of the neoclassical fertility theory that the income effect of unemployment surpasses the substitution effect of unemployment and suggests that women may prefer to delay childbirth in the event of unemployment. Thus, while unemployment may reduce the time cost of childbearing and rearing, the negative shock to the current income is more important for the women. These findings are in line with the findings of the previous studies. Del Bono et al (2008) and Huttunen and Kellokumpu (2010) found that job losses may decrease fertility of the highly educated women, possibly due to uncertainty about the future employment (Ahn and Mira 2002) or higher levels of opportunity cost both monetary and in non-monetary terms (Hotz et al. 1997). Although, at this stage we are not able to distinguish these two reasons, our preliminary results suggest that uncertainty about future employment might be an important factor in Danish context. In fact, previous research has also found that Danish women do not suffer significant income loss due to childbirth when observed characteristics are controlled for (Datta Gupta and Smith, 2002).

However this is a first draft of our analysis, and it is our ambition to extend the analysis in the near future with the following elements. First, we wish to include information on early deliveries, abortions etc. This information is available from the Danish Birth Register which we plan to get access to in due time.

In addition, we would like to expand the analysis, to also include sub-analyses of different types of unemployed; from the literature we know that insured and uninsured unemployed display significantly different types of behavior – as the two groups consist in very different types of individuals, with very different labor market ambitions. This then also suggests that their responses to the unemployment may differ.

Last, our causal estimate of unemployment relies strongly on the specification of our instrument – e.g. that we define the month of the firm closure as the month where the total unemployment of the employed doubles. To ensure that our results are robust, we need to conduct sensitivity analyses, where we test different specifications of the instrument.



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