Self-Employment and Fertility Intentions in Europe

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Abstract: The relationship between self-employment and fertility is not well understood. Cross-country studies showed a negative association between self–employment rates and fertility rates in advance economies. Micro-level analyses suggested positive association between being self-employed and fertility. We suggest that part of the inconsistency is due to the heterogeneity of the "self-employed". We analyze the relationship between three different types of self-employment (i.e. Entrepreneur, Laborer and Professional) and fertility intentions of individuals using micro data from the European Social Survey (ESS) covering more than 20 European countries. We use mixed-effects models that incorporate individual and country-specific factors to bridge the gap between previous macro and micro-level studies. We run separate analyses by gender and parity (i.e. intentions for the first child versus subsequent children). We find that men who are entrepreneur or laborer type of self-employed have higher likelihood of reporting positive intentions to become a father than similar wage earners. Only laborer type of self-employed women have higher likelihood of reporting positive fertility intentions compared to wage-earner women. Self-employment type is not associated with subsequent births. Our associations are robust to various controls at the individual and country levels (i.e. family policies) and the fixed effects specifications. We provide additional analyses to test various mechanisms related to flexibility and resources using measures of relative earnings and relative hours of work of each partner.

I. Introduction

Existing research on the relationship between employment type and fertility produced inconsistent results between macro- and micro-level findings. Higher rates of self-employment compared to wage employment have been associated with low fertility rates and postponement of parenthood in advance economies in cross-country studies [e.g. Adsera 2004; 2005 and 2011]. This is probably because, in this literature, self-employment is conceptualized as a precarious employment type and an uncertain form of labor leading to affect the individual's capacity to sustain a family (Blanchflower, 2000; Tolke and Diewald, 2003). Yet, micro-level studies argued that there is a positive correlation between individuals' being self-employed and their number of children.

In this paper, we study the relationship between self-employment types and fertility intentions for both men and women. We employ a cross-national analysis using micro data from the European Social Survey (ESS) covering around 22 European countries for the years 2004-2006 and 2010-2012. An advantage of this dataset is that we are able to analyze "fertility intentions". Although "fertility intentions" are more appropriate measures to test the theoretical mechanisms through which labor market arrangements affect individuals' decisions about conception, they are largely neglected in the extant literature on self-employment.

Additionally, exploiting the information on the type of self-employment -whether a person is a professional self-employed (e.g. lawyers, dentists, etc.), an entrepreneurial self-employed (e.g. business owner/employers) or laborer type of self-employed (e.g. autonomous worker) – our analysis takes seriously the heterogeneity of the self-employed in a large representative sample of European population. This is important because previous studies that used self-employment as a proxy for "insecure employment" did not distinguish between the different types of self-employment (e.g., Tolke and Diewald, 2003 and Adsera, 2011)[1]. In theory, not all types of self-employment may be conceptualized as insecure or precarious. Furthermore, we employ mixed effects model specifications and measures of aggregate market conditions in each country to discuss, whether macro-level

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[1] This is in contrast with studies that focused on the reverse relationship – fertility, childbirth affecting self-employment entry- which have carefully distinguished between the types of the self-employed (e.g. Budig, 2006).

associations hold or not when using the fine-grained self-employment measures at the individual level.

Furthermore, we hypothesize that there are asymmetries between men and women are likely due to differences in gender roles (Iacovou & Tavares, 2011). For women, self-employment is often viewed as a flexible labor market arrangement that would allow achieving work and family life balance (e.g. Connely, 1992, Carr 1996, Matsyiak and Mynarska 2013), and for men, as an employment type that allows increasing earnings capacity after childbirth (Hundley, 2000). Moreover, we distinguishing fertility intentions by parity to better understand the mechanisms linking labor market arrangements and decisions about conception and family size. We that one of the principal ways in which people learn about the joys and hardships of parenthood is by becoming parents (known as the "baby shock" hypothesis), so the birth of a child is likely to result in revisions of fertility intentions (Iacovou & Tavares, 2011). We finally explore the role of the partner's labour situation when determining fertility intentions, since both income and time allocation are a responsibility that could be shared between parents when raising a child.

Europe provides a particularly important context for the study because during the last two decades the region has experienced a dramatic fall of total fertility rates to previously unseen levels and still, fertility behavior and labor dynamics varies significantly across countries. Cross-country differences in self-employment rates across Europe are also considerable. While there are some countries with a self-employment rate below 10 percent – like Norway, Russia, Denmark, Luxembourg and Estonia– many others have around 20 percent or more self-employed in their workforce. The disparities are larger in men than in women (see Figure 1.1 and Figure 1.2).

Our findings suggest that only women without children and in the laborer type of self-employed have higher likelihood of reporting positive intentions compared to employees. For men, entrepreneurs or laborer type of self-employed have higher likelihood of reporting positive intentions to become a father than wage earners. The effect sizes are larger for transition to motherhood (~17 percent more likely to report positive intentions) than transition to fatherhood (~10 percent more likely to report positive intentions. Self-employment type is not associated with subsequent birth and our associations are robust to various controls at the country and individual levels and fixed effects. Interestingly, we find

that married entrepreneurs (mostly men) without children have a preference for a larger family than wage earners, consistent with an income effect. For individuals in the single earner model and who already have children, being a laborer type self-employed is negatively associated with fertility intentions. We also find that when one works longer hours than the partner, laborer self-employed are encouraged to have children –probably because of higher earnings and security— while self-employed of the professional type prefer delaying the transition to parenthood –perhaps because the financial burden would fall on only one of them. We finally find that self-employed are less likely to report positive fertility intentions when they work significantly more hours than their partner, which is less favorable to achieve work and family life balance.

Our study makes several broad contributions to the literature on labor markets and fertility. First, this is the first study to analyze the relationship between self-employment and fertility intentions. Understanding this relationship is important because both fertility decisions and entrepreneurship/self-employment are policy-relevant variables, specifically in European countries that have experienced a significant fall in fertility rates with fiscal and social implications. In addition, using fertility intentions as outcome alleviates concerns linked to reverse causality when analyzing how uncertainty in the labor market (i.e. the self-employed are assumed to be inherently bearing their own income and employment risk) affects decision-making about childbirth, parenthood and family size. Second, the expected sign of the association between self-employment and fertility is ambiguous and our paper provides new empirical evidence. Theory predicts both a positive and negative relationship between self-employment and fertility. The empirical evidence that did not distinguish between different types of self-employment has produced mixed results. Thus, there is a need for further evidence using detailed data on self-employment types across different countries where prevalence of each type of self-employment differs considerably. Our paper addresses this need and finds that men in the laborer type of self-employed and entrepreneur are more likely to report positive fertility intentions than wage earners and women in the laborer type of self-employed are more likely to report positive fertility intentions than wage earners. Third, the hierarchical structure of our data (micro and macro level) facilitates us correcting for aggregation bias and clarifying the inconsistent results found in the empirical literature. It also allows us to incorporate variables at the country level, which corresponds to differences in family policies and different levels of labor market flexibility. We provide insights about the role of country differences.

II.   Background

To understand how self-employment might be related to fertility intentions we draw on two complementing theories. First, we draw on the Theory of Planned Behaviour to conceptualize self-employment as a background factor that mainly affects behavioral believes and attitudes towards fertility through income, opportunity costs and time allocation of individuals and couples (Philipov, 2011). Second, we conceptualize fertility intentions as a result of an interaction between individual schemas, consisting on beliefs about attitudes and social norms, and macro schemas, including the social context, public policies and economic conditions, as schematized by the Theory of Conjunctural Action (Morgan & Bachrach, 2011). Both theories make a clear difference between intention and actual behavior and highlight that intention is the most proximate component of the motivational stream that leads to behavior. Intentions are a result of planning and mediation of conscious thought. Yet, they are not commitments to act and do not take into account factors beyond an individual's control (i.e. fecundity, unintended abortion) (Miller, 2011).

There is scarce evidence linking labour market arrangements and fertility intentions. To guide our analysis, we therefore focus on two distinct types of literature. First, we refer to the broad literature that focuses on fertility behaviour under conditions of high labor market uncertainty (e.g. Adsera, 2004, 2005; Tolke and Diewald, 2003). This literature has primarily been interested in unemployment (e.g. Kreyenfed 2009; Ozcan et al 2011) and contract type (e.g. Pailhe and Solaz, 2012) as measures of uncertainty and insecurity in the labor market. However, some scholars in this stream have included the self-employed into the groups of individuals with 'insecure' employment type (e.g. Adsera 2005, 2011; Tolke and Diewald, 2003). This literature construed self-employment as insecure because self-employed individuals assume their own income risks Hence, this literature predicted a negative relationship: due to lack of income security, self-employment would lead to lower fertility or number of children. In addition, for women, self-employment has been conceptualized as a low-earnings labour arrangement to which they recur when facing discrimination in the labour market (Budig, 2006). Yet, studies found that women's employment, irrespective of whether it is a self-employment or wage employment, did not largely affect fertility (e.g. Matysiak 2009, Matysiak and Vignoli 2013).

Second, we draw from the literature interested in understanding individual determinants and consequences of self-employment and entrepreneurship. Studies in this line of research have rarely placed fertility and number of children at the center of their focus, although they often have included them in their models as 'demographic controls'. Empirical evidence is at best mixed in these studies. For example, the US studies predominantly find a positive correlation between presence and number of children and the probability of being self-employed (Fairlie and Meyer, 1996; Blanchflower, 2000; Burke et al., 2002; Dawson et al., 2013). Contrary to these findings, Sena et al. (2012) using data from the UK suggest a negative effect of children on the transitions to self-employment, while Georgellis and Wall (2005) and Demirgüç-Kunt et al. (2009), using data from Germany and Colombia, respectively, obtain a nonsignificant effect of children on self-employment entry. This literature suggests an additional reason for a negative association between fertility and self-employment. Contrary to the arguments about flexibility and autonomy, owning a business may actually require a higher amount of time and resources, and self-employed jobs at average are more demanding than wage-sector jobs, all of which may make self-employment difficult to combine with children (Fairchild, 2009). Self-employed individuals in certain professions may need to spend longer hours at work due to agency problems, making self-employment less conducive for achieving work and family life balance (Goldin and Katz, 2011; Goldin, 2014).

There are however, mechanisms that predict a positive relationship between entrepreneurship and fertility in this literature. For example, for women, self-employment implies more independence and flexibility in managing work hours, and part-time work is often observed among self-employed women. This flexibility can be perceived as an advantage in the presence of children or for childbearing decisions (Matsyiak and Mynarska 2013; Connelly, 1992; Noseleit, 2014). However, self-employed men may also want to increase their expected family size to increase the chances that an inside family member will be talented and interested in running the business. Hence, having larger family sizes increases the self-employed household's expected return to their business and may be associated with self-employment choice (Broussard, Chami, & Hess, 2015). In addition, self-employed entrepreneurs may conceptualize this labour arrangement as an opportunity to attain a higher earning capacity compared to being wage-employed. This increases the sense of income security when deciding to have and raise children. This is mostly seen in men who have assumed the traditional gender role of main bread-winner (Hundley, 2000)

Altogether, it is unclear which of these mechanisms can be predicted to dominate the relationship in practice both in general and also within countries. We aim to test these conjectures with the dataset are described next.

III. Data

Micro-level data

We use the European Social Survey (ESS), a biennial cross-national survey that has been conducted across Europe since 2001 by the European Research Infrastructure Consortium. It provides a representative sample of individuals aged 15 and over, resident within private households in each country, regardless of their nationality, citizenship or language. ESS aims to achieve each round a minimum effective sample size of 1,500 for each country and of 800 in countries with ESS populations of less than 2 million. The ESS collects comparable micro-level household information across European countries. It collects detailed demographic and socio-economic data at the individual level. ESS is particularly suitable for this study because it collects information on employment status –self-employed, wage employee, unemployed or out of labor force—as well as detailed information about work, which allows us to identify different types of self-employment, including supervision of other employees, occupation and industry. A unique feature of the survey is the availability of information on "fertility intentions". In the second (2004-2006) and fifth (2010-2012) rounds, the ESS documents whether respondents below 45 years old are planning to have a child within the next 3 years.

We restrict our sample to the second and fifth rounds of the ESS and individuals aged 15 to 40 years old because they represent the population in reproductive age. Pooling these two rounds provides a sample for analysis of 26,486[2] individuals from 22 European countries for whom we have complete information about their employment status and fertility intentions. While our cross-country descriptive statistics include design weights to correct for different sampling probabilities within countries, our main multilevel analysis is not weighted.

Dependent and Independent Variables

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[2] This sample size results after dropping individuals with item non-response, which corresponds to only 4 percent of the original sample and is uncorrelated with our variables of interest.

The measure of fertility intentions included in the dataset is a categorical indicator constructed from the answer to the question whether respondents below 40 years old are planning to have a child within the next 3 years3. It has the following categories: 1) definitely not; 2) probably not; 3) probably yes; and 4) definitely yes. Our aim is to capture short-term positive fertility intentions, which should have been formed with some awareness of the current circumstances. Our outcome of interest is a binary variable set to one if the answer to fertility intentions is either "probably yes" or "definitely yes" and zero otherwise. In this way, our outcome measure captures the "positive expectations" of fertility in the next 3 years as opposed to "negative expectations". However, in the sensitivity analyses, we try other grouping of the answers to the intentions question. In addition, the ESS reports whether the respondent has children4 living at home at the moment of the interview and whether or not they have children not living at home.

Our explanatory variable of interest is self-employment[5] type, which is also computed as a categorical indicator. The reference category is being a wage earner (e.g. employee). The first category is *laborer self-employed*, which includes all self-employed individuals who are non-professional (categories 4 to 9 of the International Standard Classification of Occupations (ISCO) 2008) and do not employ other people. The second category is *professional self-employed*, which includes all self-employed individuals who are professional (categories 2 to 3 of the ISCO). The last category is *entrepreneur self-employed*, which includes all self-employed individuals who are managers or directors (category 1 of the ISCO) and who employ people. All individuals that declared to be self-employed but did not report their occupation and who do not employ people are allocated to the labor self-employed category. Similarly, all individuals that declared to be self-employed but did not report their occupation and who employ people are allocated to the entrepreneur self-employed category.

We draw closely on the previous literature (Simoes and Crespo 2015; Noseleit 2014) to select the individual-level covariates to analyze the relationship between fertility and self-employment. Table 1.1 described our whole sample of analysis (column 1, 2 and 3) and

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[3] The ESS 2 and ESS 5 ask the following question: "Do you plan to have a child within the next three years? NOTE TO INTERVIEWER: IF RESPONDENT OR RESPONDENT'S PARTNER IS PREGNANT, CODE AS 4. ADOPTION SHOULD BE INCLUDED. OPTIONS: (1) Definitely not; (2) Probably not; (3) Probably yes: (4) Definitely yes.

[4] Children of their own, stepchildren, adopted children, foster children or a partner's children.

[5] Self-employment type is computed from the report of self-employment, number of employees and occupation (coded by ESS from an open-ended question: "In your main job, what kind of work do/did you do most of the time?").

compares self-employment with the reference category wage-employment (column 4). In our sample, 1,524 individuals are self-employed and 14,248 are wage employees. Our sample is young (40 percent in the 15-25 age group), equally distributed across genders, well educated (43 percent has completed upper secondary education and 27 tertiary education), almost entirely have been born in Europe (96 percent) and is well distributed across geographic areas (64 percent live in the urban area). One third of the sample lives with a partner and with another adult member besides the partner and half do not have children (58 percent). On average, the self-employed in Europe are older, more likely to be male, less likely to live in urban areas, more likely to live with a partner, less likely to live with another adult household member (besides the partner), more likely for one of their parents to have been self-employed when they were 14 years old and more likely to have had children when younger than 40 years old. When focusing only on individuals with partners (Table 1.2), on average, self-employed are more likely to have a partner who is self-employed or out of the labor force; less likely to have a wage earner partner and work a larger share of hours than the total supplied by the couple.

Table 1.3 shows the mean of micro-level covariates for different types of self-employed. In our pooled sample of all European countries, 593 individuals are in a labor self-employment type, 401 are professional self-employed and 530 are entrepreneur self-employed. 13 percent of laborer self-employed are in the youngest age group as opposed to 9 and 7 percent of other self-employed types that are in the youngest group. 53 percent of labourer self-employed are between 25-35 years old, as opposed to less than 50 percent in other groups. Although the last age group captures a smaller age interval, individuals between 35 and 40 years old are more prevalent in the professional self-employed and entrepreneur group. Professional self-employed are more likely to be women (42 percent) than other groups. Individuals with upper secondary education are more prevalent in the labour self-employed and entrepreneur group, while individuals with tertiary education are more prevalent among professional self-employed. Labor self-employed are on average more likely to live with another adult member of the household (besides their partner) compared to individuals in other types of self-employment (78 percent as opposed to less than 40 percent in other groups). Professional self-employed are on average more like to be currently living with partners (48 percent) and in their transition to their first child (43 percent) compared to individuals engaged in other types of self-employment.

Macro-level data

The 22 countries included in the final sample are those with fertility intentions and self-employment data available. Table 1.4 shows the number of observations and mean for fertility intentions and employment type by country. Fertility intentions and self-employment rates vary considerably across Europe. Fertility intentions are the highest in France, Hungary, Russia and Sweden, where more than 30 percent of the sample considers having a child during the next 3 years, and the lowest is in Ireland (only 17 percent).

Non-response is a serious issue for some countries, although in total, there is only 8 percent of non-response in the fertility intentions measure. The rate of non-response is more than 15% for Ireland, Russia and Ukraine. The prevalence of types of self-employment also differs dramatically across countries. While the prevalence of laborer type of self-employment is the highest in Poland (9 percent of employment), the prevalence of professional self-employment is the highest in Germany and Spain (4 percent of employment) and the prevalence of entrepreneurial self-employment is the highest in Ukraine (7 percent of employment). Wage employment ranges from 56 percent of employment in France to only 30 percent in Ireland. While Bulgaria has the highest unemployment rate in this age group (34 percent of labor force), Switzerland and Netherlands have the lowest (below 7 per cent). On average, 32 percent of the sample is out of the labor force.

To characterize the labor market opportunities and family-friendly policies that individuals face in European countries, we draw closely on the country level covariates[6] that Adsera (2011) includes to analyze the relationship between fertility and employment status. We obtain all our country-level data from the World Bank's World Development Indicators. To characterize the income level of the country, we use data on log GDP per capita in purchasing power parity (real 1995 dollars) and the percentage of the population living in urban areas. We also use data on unemployment as a percentage of labor force participation and part-time as a percentage of employment (no data available for Ukraine) to measure the existence of different employment contractual agreements and identify its particular relevance in each country. As a proxy for family-friendly governmental policies aimed to boost births, we use data on gross pre-primary school enrolment rate, expressed as a percentage of those of eligible age[7]. Finally, to measure the extent to which individuals have

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[6] We match the resulting macro-level dataset of 22 countries with our micro-level dataset using the year of ESS interview.

[7] No data available for Spain.

access to financial resources that support self-employment and increase household disposable income, we use data on financial depth, measured as the domestic credit to private sector by banks, expressed as a percentage of GDP. We use additional proxies for family-friendly governmental policies[8] obtained from the OECD Social Expenditure Dataset: number of weeks of maternity leave, number of paid weeks reserved for the exclusive use of fathers and total family benefits (financial and in-kind) governments allocate as a percentage of the GDP. These additional covariates, however, are only available for a sub-sample of countries (17), and hence, we exclude them from the main analysis. Table 1.5 presents cross-country descriptive statistics of the macro data, Table 1.6 shows that our macro covariates are not highly correlated and Table 5.2 in the Appendix presents the results of alternative estimations using the additional family-friendly covariates as a robustness check.

IV.   Analytical strategy

The following equation is the basic reduced-form specification used to analyze the relationship between fertility intentions and self-employment:

$$fertility\ intentions_{ic} = \beta selfemp_{ic} + unemp_{ic} + outlf_{ic} + X_{ic} + \epsilon_{ic} \qquad (1),$$

where the dependent variable $fertility\ intentions_{ic}$ indicates whether individual i in country c is planning on having children within the next 3 years. Our explanatory variables of interest are represented by $selfemp$, which corresponds to dummies indicating each type of self-employment –labor, professional or entrepreneur–; the reference category is being a wage employee, as we also control for unemployment ($unemp$) and being out of the labor force ($outlf$). We also control for a broad range of micro-level covariates (X_i) that include age categories (between 15-25, between 26-35 and between 36 and 40 as reference), educational attainment categories (less than lower secondary, as reference, lower secondary, upper secondary, post-secondary and tertiary education), binary variables that indicate whether the individual was born in Europe, lives in the urban area, at least one of the parents was self-employed when 14 years old, is currently living with its partner and the number of other household members (excluding the partner and children) that they live with. In addition, all models include industry dummies (90 industries) to account for unobserved

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[8] Most government employment in Europe secures return to job position after childbirth and maternal leave (Adserà, 2004). As such, we found data from the International Labor Office of the share of public sector employment, but we do not use it in the analysis because it is only available for only 15 countries from our sample and no data is available for 2012.

differences across sectors of activity as well as round dummies to account for any cycle change that affected all individuals in a particular round.

All our estimates correspond to mixed-models that include country random effects to correct for any other omitted cross-country differences. Using random effects allows us to include variables that vary little across time, however, we acknowledge that the use of random effects rely on the assumption that our explanatory variables are uncorrelated with the micro-level and macro-level errors (Clark & Linzer, 2015). Therefore, we alternatively estimate our micro models using country fixed effects since these allow for correlation between the covariates and the macro-level error (see Table 5.1 in Appendix). In addition, standard errors are clustered at the country level to correct for any correlation across observations within the same country.

In a later stage, we include macro-level covariates to analyse the relationship between fertility intentions and self-employment type considering the hierarchy of the dataset (micro-level variables nested within countries). By doing so, we control for the labor market context where the micro-level interactions develop. We estimate equation (1) adding the following macro-level variables: GDP per capita, unemployment rate, part-time employment rate and pre-primary employment rate, share of urban population and financial depth. We additionally add the macro-level prevalence of each type of self-employment, expressed as a percentage of employment, to understand whether the self-employment context affects fertility intentions beside the individual's own self-employment status.

Multilevel modeling correct standard errors that are otherwise biased by the clustering of observations within countries and also allow us to estimate the influence of macro-level indicators relying on cross-country variance. The first level in the model estimates individual-level relationships and the second level of the model fits the country-level relationships and accounts for the intra-country correlation not captured by contextual indicators. Unobserved factors that are shared within countries are reflected in the random intercept (Rabe-Hesketh & Skrondal, 2012).

The estimation is done separately for women and men because the mechanism behind the association between fertility intentions and self-employment is likely to be gendered. Additionally, we model fertility intentions separately for those in the transition to parenthood and those who already have children.

V.   Results and discussion

5.1. Micro-level analysis

Tables 2.1 and 2.2. show the relationship between fertility intentions and self-employment types for women who are in transition to first births and for those who already have children, respectively, using a linear probability model (LPM) on the binary outcome. Recall that the fertility intentions question is asked only in the round 3 and 5 of the ESS and hence, we pool them to have a decent size working sample of individuals aged between 15 and 40, which span over the years 2004-2006 and 2010-2012.

We report four models in each table. All our models incorporate round dummies and industry dummies. In other words, our coefficients are within industry and within-survey round estimates. In addition, all our models include country random effects, giving us a specification equivalent of a random intercept model without cross level interactions. The first column reports the model specification including only our employment status variables. The next three columns incorporate additional micro-level covariates.

Our coefficients of interests are three self-employment types and the reference category is being an employee (wage-earner). The positive association predicted by the literature on determinants of self-employment is supported by our findings. In Table 2.1, we see that childless women who are laborer type self-employed (i.e. retailers, farmers, crafters, etc.) are more likely to have positive fertility intentions compared to wage-earner employees, after controlling for other individual characteristics. This is predicted by the literature that argues that self-employment is a flexible labor market arrangement for women who want to be a child-care provider as it eliminates agency problems (i.e. specific office space and strict working hours) (Carr, 1996; Connelly, 1992; Joona, 2017). Yet, other childless self-employed women that are categorized as professionals (i.e. doctors, lawyers, consultants, etc.) or entrepreneurs (i.e. directors and managers) are not found to have statistically significant differences than wage-earners regarding having positive fertility intentions. These findings complement those reported in Noseleit (2014) by providing estimates of the relationship between female fertility and self-employment disaggregated by self-employment type.

When we look at the results for women who already have children in Table 2.2. we found that none of the each type of self-employed has statistically significant difference than wage-earners regarding fertility intentions. This is consistent with previous findings that responses to changes in economic variables in fertility vary by birth order (Adsera, 2011; Ermisch, 1988). Women out of the labor force and unemployed are more likely to have positive fertility intentions for a subsequent child compared to wage-earner employees. This result is in line with Adsera's (2011) argument that a lower opportunity cost of maternity (i.e. forgone wages and difficulty to drop out of the labor market) during employment shocks may affect positively fertility compared to more prosperous times. The results are pretty consistent and robust to alternative specifications reported in columns 2-4, where we control for a number of individual covariates that may affect differences in fertility intentions. The coefficients of the control variables are all in expected direction, which is assuring and rather consistent across specifications.

When we look at the results for men in Tables 2.3 and 2.4, we see similar results. Table 2.3 shows that men in transition to fatherhood that are in the labor type self-employment are more likely to have positive fertility intentions compared to wage-earners. This is consistent with the argument that self-employment has been an alternative to standard work for young workers in a period of high unemployment. The effect sizes are larger for transition to motherhood (~17 percent more likely to report positive intentions) than transition to fatherhood (~10 percent more likely to report positive intentions). Interestingly, we further find that men in transition to fatherhood that are in the entrepreneur type self-employment are more likely to have positive fertility intentions compared to wage-earner employees, after controlling for other individual characteristics (~8 percent more likely when adding all covariates). This is consistent with the literature arguing that self-employment is seen by men as an employment type that allows increasing earnings capacity and economic opportunity (i.e. business inherited by a family member), whereas women self-employment is more linked to child-care issues (Hundley, 2000; Saridakis, Marlow, & Storey, 2014). Yet, male self-employed that are categorized as professionals are not found to have statistically significant differences than wage-earners regarding having positive fertility intentions. When we look at the results for men who already have children in Table 2.4. we find that no type of self-employed has statistically significant differences than wage-earners regarding fertility intentions.

We acknowledge, however, that the use of country random effects rely on the assumption that our explanatory variables are uncorrelated with the micro-level and country-level errors, and hence, we alternatively estimate our micro models using country fixed effects. In other words, we wash out all variation between countries and our coefficients of interest are within industry, within-survey round and within country estimates. Table 5.1 in the Appendix shows the country fixed effects results of model 4 for women in transition to motherhood (column 1) and to a subsequent child (column 2) and for men in transition to fatherhood (column 3) and to a subsequent child (column 4). It is assuring that the results remain consistent and of similar magnitude, even after controlling for unobserved differences across countries. For individuals in transition to parenthood (column 1 and column 3), the positive association between fertility intentions and labor self-employment remains robust, as well as the positive association with entrepreneur self-employment for men in transition to fatherhood (column 3). We also find that the differences in fertility intentions for a subsequent child between self-employed and wage earner employees are fairly small and statistically insignificant.

5.2. Multilevel analysis

In Tables 3.1 to 3.4 we report the same specification of model 2 in the micro-analysis section (i.e. including employment status variables, age and educational categories as covariates, round and industry dummies and country random effects), again separately for women and men and those who are in transition to parenthood and who already have children, but incorporating a number of country-level macro indicators in a step-wise fashion in each specification. This gives us a specification equivalent of a random intercept model (i.e. in the multilevel models jargon) without cross level interactions. Modeling fertility intentions in this multilevel modeling fashion means that the coefficients represent within and between-country associations and can be interpreted as the average association of the independent variable as it changes across individuals and between countries.

We report four models in each table. The first column reports the model including log GDP per capita and unemployment rate. The second column reports the same specification, but incorporating additional country-level self-employment type variables expressed as a percentage of employment. The next two columns incorporate additional macro-level covariates.

We find that the estimates of our coefficients of interests remain robust to alternative multi-level specifications and the effect sizes are larger when adding country-level covariates, which suggests that ignoring country-level variables leads to a downward bias. Women in transition to motherhood (Table 3.1) that are in the labor type self-employment are approximately 19 percent more likely to have positive fertility intentions compared to wage-earner employees, even after controlling for the prevalence of labor self-employment in its country. Interestingly, the prevalence of professional and entrepreneur self-employment at the country level is negatively associated with fertility intentions. This result is in line with the argument that women are delaying motherhood when they focus in a competitive professional career and uncertain businesses, as suggested by the class mobility hypothesis (Budig, 2006). It is reassuring that the coefficients of the macro control variables are all in expected direction. Fertility intentions are lower in countries with higher GDP per capita, pre-primary enrolment ratio and financial depth, suggesting that a stable context encourages women to postpone motherhood, and higher in countries with a larger share of urban population. The opportunity cost effect observed in the micro analysis for women that already have children and are out of the labor force and unemployed remains robust when including macro-level variables (Table 3.2).

When we look at the results for men in Tables 3.3 and 3.4, we see that the results from the micro analysis remain consistent and robust. Childless men in the laborer and entrepreneur self-employed type are more likely to have positive fertility intentions compared to wage-earner employees (~9 percent and 10 percent, respectively), even after controlling for the prevalence of each self-employment type in its country. Again, when looking at the results for men who already have children, we find that no type of employment status has statistically significant differences than wage-earners regarding fertility intentions. We find, however, evidence that fertility intentions for a subsequent child increase with the prevalence of the entrepreneur type of self employment. This result suggests that the income effect is dominant at the country level when men already have children.

When adding additional covariates to the multi-level model 4 to measure the availability of family-friendly governmental policies that may ease transition into parenthood and subsequent child, our multi-level results remain consistent across specifications with a lower set of countries (data is only available for 17). Table 5.2. in the Appendix shows the results of

these alternative specifications for women in transition to motherhood (column 1) and to a subsequent child (column 2) and for men in transition to fatherhood (column 3) and to a subsequent child (column 4). The coefficient of the type of laborer self-employment remains positive, qualitatively similar and statistically significant for women and men in transition to parenthood. The coefficient of the type of entrepreneur self-employment for men in transition to fatherhood remains positive, but turns statistically insignificant, likely because of a loss of statistical power due to a reduction the in number of countries included in the specification.

5.3. Mechanisms

Partner's earning status

As an additional exercise to explore the relationship between fertility intentions and self-employment status, we estimate models separately for two types of couples: i) individuals in paid work with a partner out of the labor force, denoted as "single earner" couples and ii) individuals in paid work with a partner in paid work, denoted as "dual earners". Table 4.1 shows the results of these alternative specifications of model 2 in the micro-analysis section (i.e. including employment status variables, age and educational categories as covariates, round and industry dummies and country random effects) separately for individuals without children (column 1 and 3) and with children (columns 2 and 4). For those childless individuals whose partners are out of the labor force, being an entrepreneur type self-employed is associated with a 36 percent increase in the likelihood of reporting a positive fertility intention, compared to similar wage-earners. This result provides additional evidence supporting the income effect and is consistent with the hypothesis that married entrepreneurs (mostly men) have a preference for larger families to raise the likelihood of a family member running the business (Broussard, Chami, & Hess, 2015).

For those individuals in the single earner model and who already have children, being a laborer type self-employed is associated with an 11 percent decrease in the likelihood of reporting a positive fertility intention, compared to wage-earners in the same group. The expected association between fertility intentions and laborer type self-employment is ambiguous and depends on the relative strength of the lower opportunity cost (in terms of forgone wages) and the negative income effect of an insecure type of employment. Whereas there is a stronger opportunity cost effect when transitioning into parenthood, we find a stronger negative income effect when transitioning to subsequent children (i.e. already

higher children-related expenses) and when the partner is out of the labor force (i.e. higher insecurity and lower household income). For individuals in the dual earner couple type, the differences in fertility intentions are not statistically different between self-employed and wage earner employees. Having a wage-earner partner may diversify the risk of having children and decrease the flexibility of making arrangements during childbearing, reducing the difference in fertility intentions between self-employed and wage earner employees. These findings complement those of Billingsley and Ferrarini (2014) who analyze the relationship between fertility intentions and policies supporting more traditional male-breadwinner (single earner) or more egalitarian earner-carer (dual earner) family arrangements.

Hours worked

We undertake an additional exercise to test if the relative hours worked per week by the partner helps understanding the relationship between fertility intentions and self-employment. We construct an indicator that captures the difference in weekly hours worked by the respondent and its partner divided by the total weekly hours worked by the couple. We then create four categories: i) from -1 to -0.5 are cases in which the partner works above 50 percent more of the total hours worked by the couple; ii) from -0.5 to 0 are cases in which the partner works up to 50 percent more of the total hours worked by the couple or equal hours; iii) from 0 to 0.5 are cases in which the respondent works above 50 percent more of the total hours worked by the couple; and iv) from 0.5 to 1 are cases in which the respondent works more than 50 percent of the total hours worked by the couple or all the hours worked by the couple (partner does not work).

Figures 4.1, 4.2 and 4.3 show the marginal effects in fertility intentions for the first child of each type of self-employment (wage-earners as the reference category) by the difference in weekly hours between partners, after controlling for micro-level variables (i.e. other self-employment variables, age and educational categories, round and industry dummies and country random effects). Figure 4.1 portrays that laborer type self-employed are more likely to report positive fertility intentions when the difference in hours worked by the couple is 50 percent or more than the hours worked in total, compared to wage employees in the same group. Figure 4.2 shows that professional self-employed are less likely to report positive fertility intentions when the difference in hours worked by the couple is 50 percent or more than the hours worked in total, compared to wage employees in the same group. These

results suggest that when one works longer hours than the partner, laborer self-employed are encouraged to have children –probably because of higher earnings and security— while self-employed of the professional type prefer delaying the transition to parenthood –perhaps because the financial burden would fall on only one of them.

Finally, in Figure 4.3 we can see that entrepreneur self-employed are more likely to report positive fertility intentions when their partner works more than 50 percent of the total hours worked by the couple and are less likely to report positive fertility intentions when they work more than 50 percent of the total hours worked by the couple. Entrepreneurs may see self-employment as an opportunity to keep a work-life balance as long as they have greater schedule flexibility than their partner. However, entrepreneurs that work longer hours that their partner may be so busy with their businesses that prefer delaying the transition to parenthood.

VI.   Conclusions

The relationship between self-employment and fertility is not well understood. Cross-country studies analyzing self–employment rates and fertility rates showed a negative association between the two aggregates in advance economies. Individual-level analyses suggested often a positive association between being self-employed and fertility outcomes. We suggest that part of the inconsistency is due to the heterogeneity of the "self-employed". We analyze the relationship between three different types of self-employment (i.e. Entrepreneur, Laborer and Professional) and fertility intentions of individuals using individual level data from the European Social Survey (ESS) covering more than 20 European countries. We use multilevel models that incorporate country-specific factors as well as individual level controls to bridge the gap between macro and micro level analyses.

We run separate analyses for men and women and by parity (i.e. intentions for the first child versus for subsequent children). We find that men who are entrepreneur or laborer type of self-employed have higher likelihood of reporting positive intentions to become a father than wage earners. Only laborer type of self-employed women have higher likelihood of reporting positive intentions compared to employee women. The effect sizes are larger for transition to motherhood (~17 percent more likely to report positive intentions) than transition to fatherhood (~10 percent more likely to report positive intentions). Self-employment type is not associated with subsequent birth and our associations are robust to

various controls at the country and individual levels and fixed effects. We provide additional analyses to test various mechanisms related to flexibility and resources using measures of relative earnings and relative hours of work of each partner. We find evidence supporting an income effect consistent with the hypothesis that married entrepreneurs (mostly men) have a preference for larger families. For individuals in the single earner model and who already have children, being a laborer type self-employed is negatively associated with fertility intentions. We also find that when one works longer hours than the partner, laborer self-employed are encouraged to have children –probably because of higher earnings and security— while self-employed of the professional type prefer delaying the transition to parenthood –perhaps because the financial burden would fall on only one of them. The results of this analysis further suggest that self-employed are more likely to report positive fertility intentions when their partner works significantly more time than them.

The primary risk to a causal interpretation of our findings is the presence of unobserved confounders across individuals within industries and countries, preferences and ability correlated with both child-bearing and labor market arrangements. Nevertheless, even when controlling for proxies of ability (educational attainment) and preferences (at least one of the parents was self-employed when 14), the result remain robust. Another risk to a causal interpretation of our findings is reverse causality, meaning that higher fertility may affect future labor market arrangements. However, using fertility intentions as the dependent variable and finding that self-employment type is not associated with subsequent birth alleviates concerns linked to childbearing increasing the likelihood of individuals to enter into self-employment.

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Fertility and Self-Employment

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Abstract

Abstract

1 Descriptive statistics

Figure 1.1: *Fertility Intentions and Self-Employment (Females)*
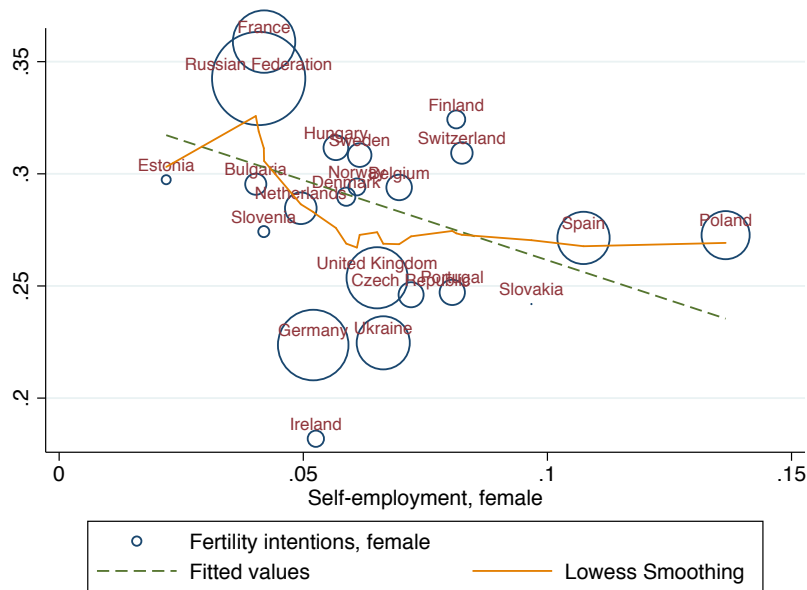
Notes: Sample restricted to females aged between 15 and 40. Pooled ESS round 2 (2004-2006) and round 5 (2010-2012). Female self-employment constructed from collapsed ESS datasets as a percentage of the female labour force. All indicators are constructed including design weights for each country-round. Observations weighted by population size.

Figure 1.2: *Fertility Intentions and Self-Employment (Males)*
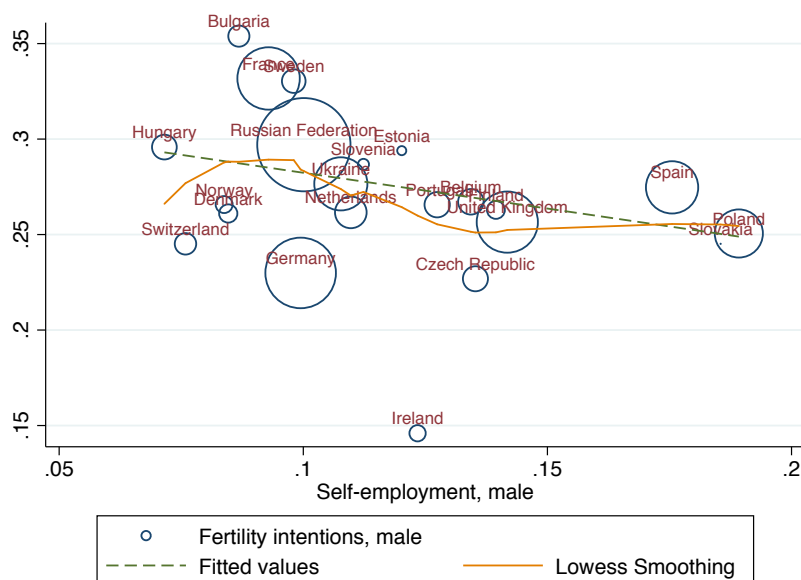
Notes: Sample restricted to males aged between 15 and 40. Pooled ESS round 2 (2004-2006) and round 5 (2010-2012). Male self-employment constructed from collapsed ESS datasets as a percentage of the male labour force. All indicators are constructed including design weights for each country-round. Observations weighted by population size.

Figure 1.3: *Hours worked per week (Females)*
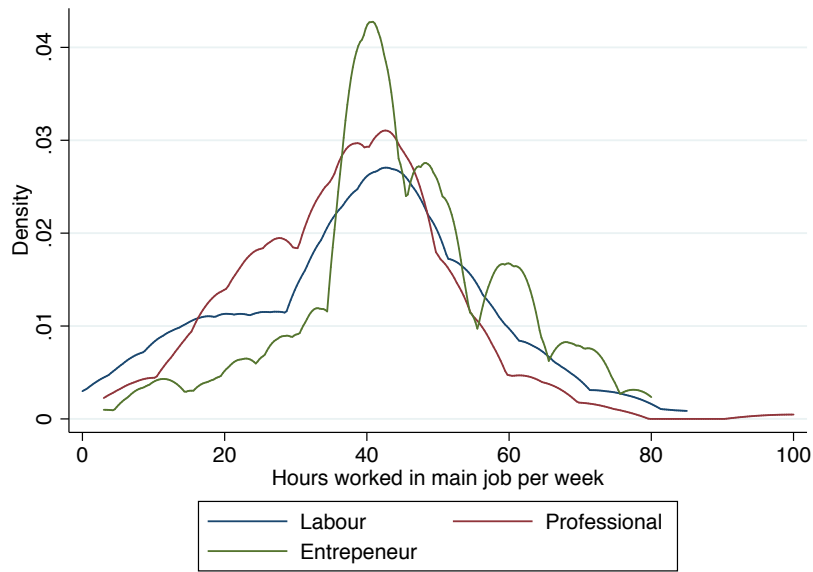
Notes: Sample restricted to females aged between 15 and 40. Pooled ESS round 2 (2004-2006) and round 5 (2010-2012).

Figure 1.4: *Hours worked per week (Males)*
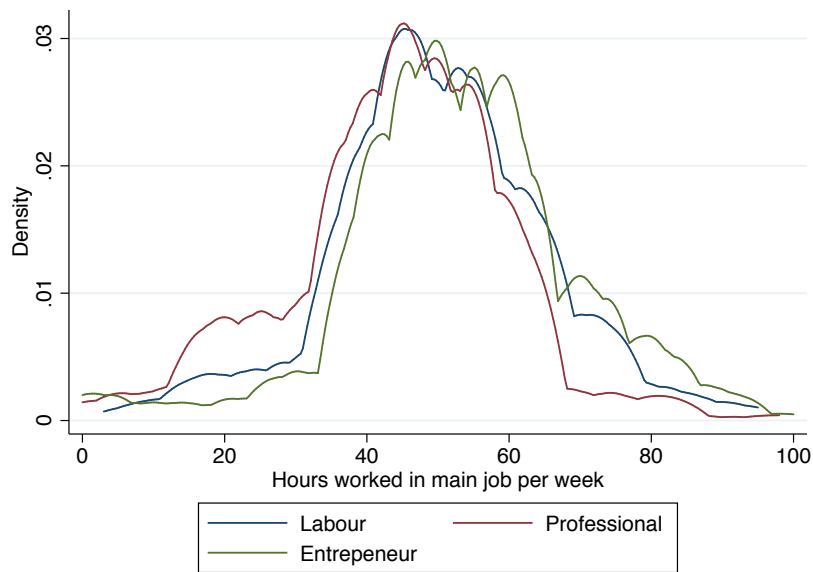
Notes: Sample restricted to males aged between 15 and 40. Pooled ESS round 2 (2004-2006) and round 5 (2010-2012).

Table 1.1: *Summary Statistics: Self-Employed vs Wage Employed*

	(1) Whole Sample mean	(2) Self-employed mean	(3) Wage employed mean	(4) Diff. b
Age between 15-25	0.41	0.10	0.23	0.12***
Age between 26-35	0.37	0.50	0.48	-0.01
Age between 36-40	0.22	0.40	0.29	-0.11***
Gender: Female	0.52	0.34	0.49	0.15***
Less than lower secondary	0.06	0.04	0.03	-0.01
Lower secondary education	0.21	0.10	0.11	0.00
Upper secondary education	0.43	0.49	0.45	-0.03*
Post-secondary non-tertiary	0.04	0.04	0.05	0.00
Tertiary education completed	0.27	0.32	0.37	0.04**
Born in EU	0.96	0.96	0.96	0.00
Urban area	0.64	0.58	0.64	0.07***
Currently living with partner/husband/wife	0.31	0.42	0.39	-0.03*
Number of other HH members (exc. partner)	1.20	0.54	0.74	0.15***
At least 1 of the parents self-employed when 14	0.19	0.34	0.18	-0.16***
First child	0.58	0.36	0.49	0.12***
Observations	26486	1524	14248	15772

Notes: *Sample restricted to individuals aged between 15 and 40. Pooled ESS round 2 (2004-2006) and round 5 (2010-2012). Paid work corresponds to 90 industries.*

Table 1.2: *Summary Statistics: Self-Employed vs Wage Employed (Partner)*

	(1) Whole Sample mean	(2) Self-employed mean	(3) Wage employed mean	(4) Diff. b
Paid work: Employee, partner	0.69	0.52	0.73	0.22***
Paid work: Self-employed, parner	0.09	0.23	0.07	-0.16***
Out of the labour force, partner	0.14	0.20	0.14	-0.07***
Unemployed, partner	0.07	0.04	0.05	0.01
Weekly hours worked, partner	41.09	40.81	40.13	-0.69
Weekly hours worked	40.25	46.65	40.04	-6.47***
Diff. in weekly hours worked (pctg. hours worked by couple)	-0.02	0.04	-0.01	-0.05***
Observations	12779	1070	8587	

Notes: *Sample restricted to individuals aged between 15 and 40 with partner. Pooled ESS round 2 (2004-2006) and round 5 (2010-2012). Paid work corresponds to 90 industries.*

2 Results: Fertility intentions (Micro)

Table 2.1: *Fertility Intention and Self-Employment: First child (Female)*

	(1)	(2)	(3)	(4)
Self-employment (ref. Wage employment):				
Self-employment: Labour	0.216**	0.166**	0.173**	0.162*
	[0.0662]	[0.0595]	[0.0605]	[0.0645]
Self-employment: Professional	0.121*	0.0577	0.0584	0.0658
	[0.0549]	[0.0563]	[0.0566]	[0.0610]
Self-employment: Entrepeneur	0.0990	0.0293	0.0330	0.0201
	[0.0868]	[0.0875]	[0.0876]	[0.0883]
Out of the labour force	-0.244*	-0.119	-0.118	-0.131
	[0.115]	[0.114]	[0.116]	[0.116]
Unemployed	0.0395	0.0631	0.0630	0.0256
	[0.109]	[0.107]	[0.109]	[0.108]
Age (ref. Age between 36-40):				
Age between 15-25		-0.0119	-0.0102	0.0564
		[0.0336]	[0.0339]	[0.0316]
Age between 26-35		0.240***	0.239***	0.236***
		[0.0349]	[0.0352]	[0.0308]
Educational attainment (ref. Less than lower secondary):				
Lower secondary education		0.00572	0.00695	0.00526
		[0.0212]	[0.0215]	[0.0201]
Upper secondary education		0.101**	0.101**	0.0595*
		[0.0307]	[0.0307]	[0.0290]
Post-secondary non-tertiary		0.159***	0.160***	0.117**
		[0.0478]	[0.0478]	[0.0412]
Tertiary education completed		0.197***	0.198***	0.151***
		[0.0419]	[0.0418]	[0.0395]
Born in EU			-0.0725**	-0.0693**
			[0.0267]	[0.0267]
Urban area			0.00919	-0.0129
			[0.0127]	[0.0122]
At least 1 of the parents self-employed when 14			-0.0162	-0.0222*
			[0.0113]	[0.0100]
Currently living with partner/husband/wife				0.231***
				[0.0198]
Number of other HH members (exc. partner)				-0.0289***
				[0.00602]
Constant	0.427***	0.208	0.282*	0.278*
	[0.104]	[0.108]	[0.110]	[0.128]
Countries	22	22	22	22
Observations	6730	6730	6724	6724

Notes: All models include round dummy, industry dummies and country random effects.

Table 2.2: *Fertility Intention and Self-Employment: Not first child (Female)*

	(1)	(2)	(3)	(4)
Self-employment (ref. Wage employment):				
Self-employment: Labour	-0.0236	-0.0107	-0.0173	-0.0140
	[0.0232]	[0.0218]	[0.0222]	[0.0248]
Self-employment: Professional	0.0277	0.0474	0.0353	0.0309
	[0.0428]	[0.0380]	[0.0374]	[0.0366]
Self-employment: Entrepeneur	-0.0689	-0.0407	-0.0444	-0.0470
	[0.0412]	[0.0383]	[0.0376]	[0.0386]
Out of the labour force	0.197*	0.210**	0.206**	0.223**
	[0.0841]	[0.0753]	[0.0736]	[0.0745]
Unemployed	0.144	0.181*	0.178*	0.200**
	[0.0810]	[0.0761]	[0.0747]	[0.0749]
Age (ref. Age between 36-40):				
Age between 15-25		0.299***	0.300***	0.321***
		[0.0273]	[0.0266]	[0.0250]
Age between 26-35		0.243***	0.244***	0.241***
		[0.0134]	[0.0133]	[0.0134]
Educational attainment (ref. Less than lower secondary):				
Lower secondary education		-0.0135	-0.0129	-0.0151
		[0.0255]	[0.0254]	[0.0240]
Upper secondary education		0.0197	0.0212	0.0155
		[0.0312]	[0.0308]	[0.0296]
Post-secondary non-tertiary		0.0267	0.0268	0.0199
		[0.0385]	[0.0376]	[0.0376]
Tertiary education completed		0.109**	0.108**	0.0983**
		[0.0360]	[0.0346]	[0.0324]
Born in EU			-0.00971	-0.0140
			[0.0333]	[0.0323]
Urban area			0.00623	0.0114
			[0.0134]	[0.0139]
At least 1 of the parents self-employed when 14			0.0325	0.0314
			[0.0183]	[0.0171]
Currently living with partner/husband/wife				0.129***
				[0.0112]
Number of other HH members (exc. partner)				-0.0241*
				[0.0107]
Constant	0.171**	-0.0119	-0.0143	-0.0979
	[0.0554]	[0.0748]	[0.0785]	[0.0789]
Countries	22	22	22	22
Observations	6785	6785	6777	6777

Notes: All models include round dummy, industry dummies and country random effects.

Table 2.3: *Fertility Intention and Self-Employment: First child (Male)*

	(1)	(2)	(3)	(4)
Self-employment (ref. Wage employment):				
Self-employment: Labour	0.123***	0.101**	0.101**	0.0961**
	[0.0356]	[0.0370]	[0.0371]	[0.0359]
Self-employment: Professional	0.0578	0.0287	0.0330	0.0204
	[0.0450]	[0.0480]	[0.0488]	[0.0446]
Self-employment: Entrepeneur	0.145***	0.0921**	0.0990**	0.0755*
	[0.0401]	[0.0350]	[0.0361]	[0.0332]
Out of the labour force	-0.237*	-0.110	-0.111	-0.0856
	[0.0930]	[0.0947]	[0.0958]	[0.0973]
Unemployed	-0.0739	-0.0312	-0.0362	-0.0195
	[0.0846]	[0.0875]	[0.0878]	[0.0924]
Age (ref. Age between 36-40):				
Age between 15-25		-0.144***	-0.143***	-0.0882***
		[0.0288]	[0.0285]	[0.0260]
Age between 26-35		0.0840**	0.0842**	0.0884**
		[0.0325]	[0.0323]	[0.0271]
Educational attainment (ref. Less than lower secondary):				
Lower secondary education		0.00347	0.00677	0.00141
		[0.0117]	[0.0117]	[0.0112]
Upper secondary education		0.0378**	0.0420**	0.0204
		[0.0136]	[0.0136]	[0.0152]
Post-secondary non-tertiary		0.0397	0.0472	0.0160
		[0.0401]	[0.0404]	[0.0405]
Tertiary education completed		0.0920**	0.0968***	0.0657*
		[0.0294]	[0.0291]	[0.0298]
Born in EU			-0.0769**	-0.0758**
			[0.0280]	[0.0286]
Urban area			-0.00383	-0.0144
			[0.0106]	[0.0110]
At least 1 of the parents self-employed when 14			-0.0220	-0.0214*
			[0.0115]	[0.0109]
Currently living with partner/husband/wife				0.314***
				[0.0190]
Number of other HH members (exc. partner)				-0.00793
				[0.00545]
Constant	0.356***	0.320***	0.399***	0.353***
	[0.0674]	[0.0580]	[0.0636]	[0.0629]
Countries	22	22	22	22
Observations	7780	7780	7767	7767

Notes: All models include round dummy, industry dummies and country random effects.

Table 2.4: *Fertility Intention and Self-Employment: Not first child (Male)*

	(1)	(2)	(3)	(4)
Self-employment (ref. Wage employment):				
Self-employment: Labour	-0.0488	-0.0316	-0.0439	-0.0410
	[0.0307]	[0.0291]	[0.0310]	[0.0308]
Self-employment: Professional	0.0348	0.0469	0.0435	0.0485
	[0.0462]	[0.0432]	[0.0431]	[0.0436]
Self-employment: Entrepeneur	-0.0525	-0.0297	-0.0364	-0.0302
	[0.0309]	[0.0299]	[0.0308]	[0.0306]
Out of the labour force	0.0107	0.0341	0.0297	0.0228
	[0.0866]	[0.0931]	[0.0969]	[0.101]
Unemployed	0.0123	0.0397	0.0341	0.0174
	[0.0854]	[0.0928]	[0.0961]	[0.0995]
Age (ref. Age between 36-40):				
Age between 26-35		0.212***	0.210***	0.206***
		[0.0148]	[0.0145]	[0.0144]
Educational attainment (ref. Less than lower secondary):				
Lower secondary education		-0.0503	-0.0407	-0.0443
		[0.0286]	[0.0288]	[0.0290]
Upper secondary education		-0.0332	-0.0148	-0.0190
		[0.0298]	[0.0303]	[0.0300]
Post-secondary non-tertiary		0.0363	0.0531	0.0460
		[0.0424]	[0.0429]	[0.0426]
Tertiary education completed		0.0770*	0.0895**	0.0828**
		[0.0306]	[0.0306]	[0.0311]
Born in EU			-0.132***	-0.133***
			[0.0306]	[0.0308]
Urban area			0.0127	0.0143
			[0.0158]	[0.0163]
At least 1 of the parents self-employed when 14			0.0526**	0.0500**
			[0.0201]	[0.0180]
Currently living with partner/husband/wife				0.131***
				[0.0238]
Number of other HH members (exc. partner)				-0.00599
				[0.00987]
Constant	0.393***	0.261***	0.357***	0.260***
	[0.0503]	[0.0520]	[0.0550]	[0.0608]
Countries	22	22	22	22
Observations	4413	4413	4410	4410

Notes: All models include round dummy, industry dummies and country random effects.

3 Results: Fertility intentions (Micro-Macro)

Table 3.1: *Fertility Intention and Self-Employment: First child (Female)*

	(1)	(2)	(3)	(4)
Micro:				
Self-employment (ref. Wage employment):				
Self-employment: Labour	0.167**	0.165**	0.195**	0.195**
	[0.0575]	[0.0566]	[0.0638]	[0.0653]
Self-employment: Professional	0.0589	0.0614	0.00982	0.0113
	[0.0574]	[0.0567]	[0.0737]	[0.0737]
Self-employment: Entrepeneur	0.0257	0.0327	0.146	0.137
	[0.0901]	[0.0900]	[0.119]	[0.120]
Out of the labour force	-0.0939	-0.0960	-0.202	-0.206
	[0.114]	[0.116]	[0.154]	[0.154]
Unemployed	0.0887	0.0859	-0.00217	-0.00304
	[0.108]	[0.111]	[0.152]	[0.152]
Macro:				
Log GDP pc/ppp	-0.106***	-0.101*	-0.0880*	-0.126***
	[0.0322]	[0.0478]	[0.0369]	[0.0290]
Unemployment, (pctg. labor force)	-0.509*	-0.341	-0.194	-0.115
	[0.217]	[0.255]	[0.339]	[0.266]
Self-employment: Labour (pctg. employment)		0.193	0.0903	-0.214
		[0.347]	[0.351]	[0.277]
Self-employment: Professional (pctg. employment)		-0.921	-2.057**	-2.075***
		[1.326]	[0.641]	[0.615]
Self-employment: Entrepeneur (pctg. employment)		-0.822*	-0.867	-0.694
		[0.387]	[0.603]	[0.605]
Part time (pctg. employment)			0.0788	0.180
			[0.107]	[0.108]
Gross enrolment ratio, pre-primary, both sexes			0.00944	-0.0312
			[0.0368]	[0.0371]
Urban population (pctg. pop)				0.223***
				[0.0598]
Private credit by domestic banks (pctg. GDP)				-0.0280
				[0.0172]
Constant	1.363**	1.337*	1.180**	1.472***
	[0.437]	[0.554]	[0.448]	[0.335]
Countries	22	22	20	20
Observations	6730	6730	5371	5371

Notes: Estimates include the micro-level covariates of model 2 of the micro analysis section (age and education categories, round dummy and industry dummies) and country random effects.

Table 3.2: *Fertility Intention and Self-Employment: Not first child (Female)*

	(1)	(2)	(3)	(4)
Micro:				
Self-employment (ref. Wage employment):				
Self-employment: Labour	-0.0124	-0.0157	-0.00966	-0.0104
	[0.0217]	[0.0209]	[0.0258]	[0.0257]
Self-employment: Professional	0.0372	0.0369	0.0234	0.0221
	[0.0376]	[0.0369]	[0.0408]	[0.0398]
Self-employment: Entrepeneur	-0.0438	-0.0468	-0.0628	-0.0632
	[0.0409]	[0.0399]	[0.0468]	[0.0474]
Out of the labour force	0.190*	0.189**	0.194**	0.195**
	[0.0754]	[0.0730]	[0.0722]	[0.0719]
Unemployed	0.170*	0.169*	0.173*	0.173*
	[0.0768]	[0.0747]	[0.0727]	[0.0725]
Macro:				
Log GDP pc/ppp	0.0712**	0.0639*	0.0842	0.0801
	[0.0224]	[0.0286]	[0.0595]	[0.0557]
Unemployment, (pctg. labor force)	-0.105	-0.278	-0.0863	-0.0671
	[0.225]	[0.375]	[0.433]	[0.464]
Self-employment: Labour (pctg. employment)		0.374	0.00901	0.0641
		[0.444]	[0.438]	[0.463]
Self-employment: Professional (pctg. employment)		0.360	0.202	0.242
		[1.135]	[1.035]	[0.951]
Self-employment: Entrepeneur (pctg. employment)		-0.0702	-0.299	-0.0396
		[0.603]	[0.880]	[0.968]
Part time (pctg. employment)			-0.176	-0.254
			[0.135]	[0.159]
Gross enrolment ratio, pre-primary, both sexes			-0.0385	-0.0301
			[0.0538]	[0.0636]
Urban population (pctg. pop)				0.0279
				[0.0929]
Private credit by domestic banks (pctg. GDP)				0.0252
				[0.0169]
Constant	-0.742**	-0.672*	-0.876	-0.893
	[0.241]	[0.309]	[0.629]	[0.620]
Countries	22	22	20	20
Observations	6785	6785	5431	5431

Notes: Estimates include the micro-level covariates of model 2 of the micro analysis section (age and education categories, round dummy and industry dummies) and country random effects.

Table 3.3: *Fertility Intention and Self-Employment: First child (Male)*

	(1)	(2)	(3)	(4)
Micro:				
Self-employment (ref. Wage employment):				
Self-employment: Labour	0.0979**	0.0973**	0.0888*	0.0897*
	[0.0358]	[0.0359]	[0.0432]	[0.0430]
Self-employment: Professional	0.0330	0.0308	0.0182	0.0187
	[0.0461]	[0.0457]	[0.0559]	[0.0559]
Self-employment: Entrepeneur	0.0779*	0.0790*	0.106**	0.107**
	[0.0377]	[0.0377]	[0.0403]	[0.0394]
Out of the labour force	-0.0969	-0.0983	-0.136	-0.138
	[0.0893]	[0.0879]	[0.0980]	[0.0978]
Unemployed	-0.0195	-0.0205	-0.0520	-0.0537
	[0.0839]	[0.0831]	[0.0926]	[0.0924]
Macro:				
Log GDP pc/ppp	-0.109***	-0.118*	-0.0610	-0.0723*
	[0.0306]	[0.0469]	[0.0367]	[0.0366]
Unemployment, (pctg. labor force)	-0.480*	-0.554	-0.0850	-0.0463
	[0.190]	[0.361]	[0.408]	[0.380]
Self-employment: Labour (pctg. employment)		0.119	-0.155	-0.265
		[0.318]	[0.375]	[0.365]
Self-employment: Professional (pctg. employment)		0.374	-0.989	-0.988
		[1.308]	[0.740]	[0.718]
Self-employment: Entrepeneur (pctg. employment)		-0.176	-0.592	-0.495
		[0.346]	[0.591]	[0.599]
Part time (pctg. employment)			-0.0690	-0.0399
			[0.176]	[0.200]
Gross enrolment ratio, pre-primary, both sexes			-0.0280	-0.0420
			[0.0481]	[0.0479]
Urban population (pctg. pop)				0.0783
				[0.0550]
Private credit by domestic banks (pctg. GDP)				-0.00868
				[0.0140]
Constant	1.521***	1.608***	1.148**	1.225**
	[0.324]	[0.469]	[0.406]	[0.390]
Countries	22	22	20	20
Observations	7780	7780	6244	6244

Notes: Estimates include the micro-level covariates of model 2 of the micro analysis section (age and education categories, round dummy and industry dummies) and country random effects.

Table 3.4: *Fertility Intention and Self-Employment: Not first child (Male)*

	(1)	(2)	(3)	(4)
Micro:				
Self-employment (ref. Wage employment):				
Self-employment: Labour	-0.0264	-0.0209	-0.0102	-0.00987
	[0.0313]	[0.0312]	[0.0334]	[0.0337]
Self-employment: Professional	0.0494	0.0539	0.0719	0.0715
	[0.0432]	[0.0437]	[0.0472]	[0.0471]
Self-employment: Entrepeneur	-0.0277	-0.0281	0.000297	0.00116
	[0.0292]	[0.0291]	[0.0293]	[0.0296]
Out of the labour force	0.0300	0.0291	0.0930	0.0991
	[0.0946]	[0.0924]	[0.106]	[0.107]
Unemployed	0.0429	0.0374	0.0875	0.0957
	[0.0928]	[0.0919]	[0.0997]	[0.100]
Macro:				
Log GDP pc/ppp	0.0277	0.0505	-0.0128	-0.0446
	[0.0273]	[0.0336]	[0.0862]	[0.0670]
Unemployment, (pctg. labor force)	-0.216	0.170	0.0167	0.0570
	[0.178]	[0.213]	[0.524]	[0.466]
Self-employment: Labour (pctg. employment)		-0.582	-0.755	-0.790
		[0.444]	[0.593]	[0.510]
Self-employment: Professional (pctg. employment)		-1.345	-1.168	-1.094
		[0.894]	[1.157]	[1.055]
Self-employment: Entrepeneur (pctg. employment)		0.0116	1.354	1.896*
		[0.699]	[0.861]	[0.781]
Part time (pctg. employment)			0.274	0.162
			[0.221]	[0.238]
Gross enrolment ratio, pre-primary, both sexes			0.0652	0.0522
			[0.0577]	[0.0578]
Urban population (pctg. pop)				0.189
				[0.120]
Private credit by domestic banks (pctg. GDP)				0.0360
				[0.0354]
Constant	-0.00380	-0.218	0.271	0.429
	[0.273]	[0.338]	[0.844]	[0.671]
Countries	22	22	20	20
Observations	4413	4413	3716	3716

Notes: *Estimates include the micro-level covariates of model 2 of the micro analysis section (age and education categories, round dummy and industry dummies) and country random effects.*

4 Results: Mechanisms

Table 4.1: *Couple's Earning Model (First child)*

	(1) Single earner	(2) Single earner	(3) Dual earner	(4) Dual earner
Self-employment (ref. Wage employment):				
Self-employment: Labour	0.128	-0.115*	0.0975	-0.000645
	[0.172]	[0.0505]	[0.0605]	[0.0265]
Self-employment: Professional	0.00158	0.153	-0.0679	0.0328
	[0.262]	[0.0950]	[0.0572]	[0.0351]
Self-employment: Entrepeneur	0.365*	-0.0239	0.0405	-0.0218
	[0.179]	[0.0735]	[0.0768]	[0.0237]
Age (ref. Age between 35-40):				
Age between 15-25	0.216	0.293***	0.0694	0.400***
	[0.166]	[0.0635]	[0.0525]	[0.0559]
Age between 25-35	0.248*	0.228***	0.226***	0.269***
	[0.103]	[0.0220]	[0.0352]	[0.0136]
Educational attainment (ref. Less lower sec.):				
Lower secondary education	-0.196	-0.0676	-0.0134	-0.0288
	[0.198]	[0.0661]	[0.0644]	[0.0280]
Upper secondary education	-0.462*	-0.102	0.0460	-0.00228
	[0.180]	[0.0591]	[0.0524]	[0.0308]
Post-secondary non-tertiary	-0.649*	-0.145*	0.0386	0.0543
	[0.271]	[0.0700]	[0.0565]	[0.0364]
Tertiary education completed	-0.471**	0.0343	0.125**	0.0807**
	[0.166]	[0.0533]	[0.0464]	[0.0300]
Constant	1.230***	0.374***	0.458**	0.0616
	[0.285]	[0.101]	[0.173]	[0.0631]
First child	Yes	No	Yes	No
Countries	22	22	22	22
Observations	231	1091	2140	5265

Notes: Estimates correspond to model 2 of the micro analysis section. Sample restricted to individuals without children, with partners and in paid work. Single earner refers to individuals who are in paid work and whose partners are out of the labour force. Dual earner refers to individuals who are in paid work and whose partners are in paid work as well.

Figure 4.1: *Fertility Intentions for First Child and Labour Self-Employed, by Difference in Hours Worked between Partners*
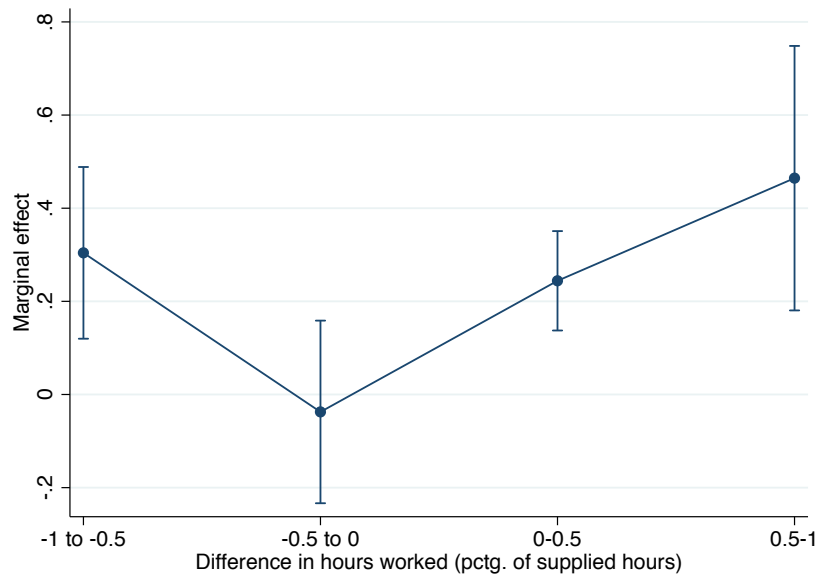
Notes: Sample restricted to individuals with partner in paid work and without children. Results correspond to model 2 from the micro analysis section, but with each self-employment category interacted with difference in hours worked.

Figure 4.2: *Fertility Intentions for First Child and Professional Self-Employed, by Difference in Hours Worked between Partners*
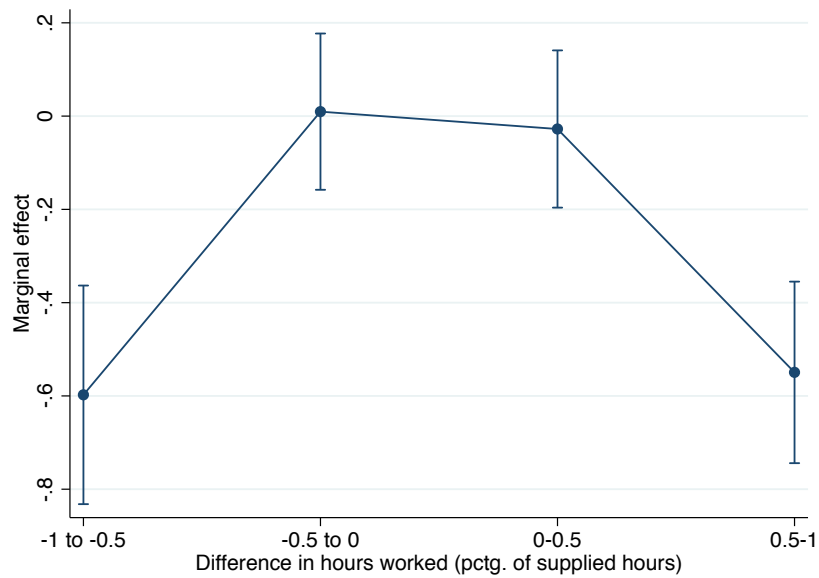
Notes: Sample restricted to individuals with partner in paid work and without children. Results correspond to model 2 from the micro analysis section, but with each self-employment category interacted with difference in hours worked.

Figure 4.3: *Fertility Intentions for First Child and Entrepeneur Self-Employed, by Difference in Hours Worked between Partners*

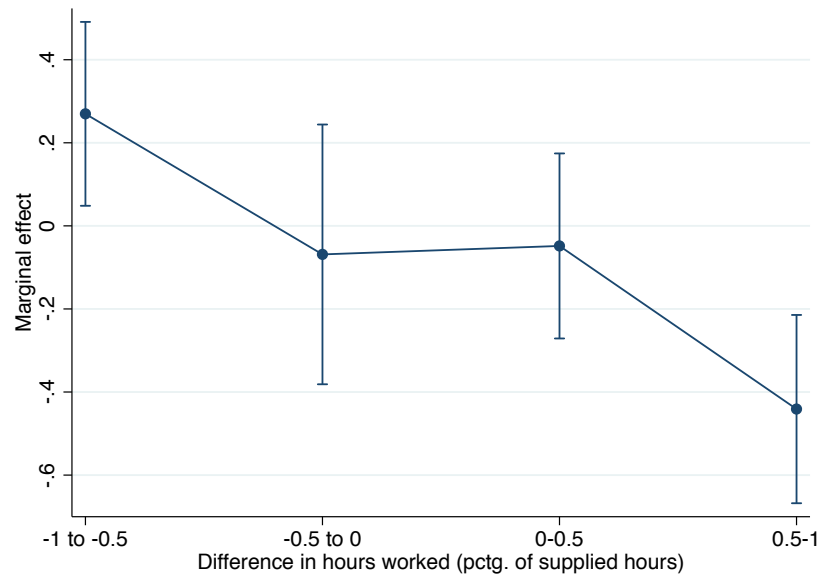*Notes: Sample restricted to individuals with partner in paid work and without children. Results correspond to model 2 from the micro analysis section, but with each self-employment category interacted with difference in hours worked.*

5 Appendix

Table 5.1: *Robustness check: Fertility Intention and Self-Employment Micro Estimates with Country Fixed Effects*

	(1)	(2)	(3)	(4)
Self-employment (ref. Wage employment):				
Self-employment: Labour	0.156*	-0.0191	0.0905*	-0.0333
	[0.0640]	[0.0247]	[0.0350]	[0.0315]
Self-employment: Professional	0.0727	0.0193	0.0167	0.0457
	[0.0608]	[0.0349]	[0.0430]	[0.0455]
Self-employment: Entrepeneur	0.0201	-0.0509	0.0619	-0.0303
	[0.0882]	[0.0411]	[0.0371]	[0.0303]
Out of the labour force	-0.119	0.211**	-0.101	0.0349
	[0.114]	[0.0710]	[0.0864]	[0.0971]
Unemployed (pctg. labor force)	0.0389	0.191*	-0.0328	0.0267
	[0.109]	[0.0727]	[0.0839]	[0.0934]
Age (ref. Age between 35-40):				
Age between 15-25	0.0505	0.326***	-0.0915***	0.179**
	[0.0296]	[0.0263]	[0.0236]	[0.0481]
Age between 25-35	0.238***	0.242***	0.0851**	0.209***
	[0.0306]	[0.0139]	[0.0266]	[0.0148]
Educational attainment (ref. Less than lower secondary):				
Lower secondary education	-0.0124	-0.0140	-0.0152	-0.0310
	[0.0202]	[0.0249]	[0.0139]	[0.0318]
Upper secondary education	0.0282	0.0252	-0.00635	0.00608
	[0.0265]	[0.0293]	[0.0148]	[0.0329]
Post-secondary non-tertiary	0.101*	0.0433	0.0166	0.0723
	[0.0431]	[0.0369]	[0.0317]	[0.0431]
Tertiary education completed	0.118**	0.117***	0.0453*	0.114**
	[0.0316]	[0.0273]	[0.0214]	[0.0348]
Born in EU	-0.0960**	-0.00278	-0.0945**	-0.129***
	[0.0261]	[0.0293]	[0.0274]	[0.0307]
Urban area	-0.0207	0.0178	-0.0176	0.0111
	[0.0123]	[0.0144]	[0.0102]	[0.0171]
At least 1 of the parents self-employed when 14	-0.00644	0.0166	-0.00795	0.0416*
	[0.00971]	[0.0162]	[0.0117]	[0.0150]
Currently living with partner/husband/wife	0.234***	0.121***	0.312***	0.122***
	[0.0184]	[0.0124]	[0.0175]	[0.0259]
Number of other HH members (exc. partner)	-0.0305***	-0.0180	-0.0142**	-0.000673
	[0.00571]	[0.0104]	[0.00429]	[0.00960]
Constant	0.323*	-0.119	0.406***	0.243***
	[0.130]	[0.0706]	[0.0530]	[0.0636]
Gender	Females	Females	Males	Males
First child	Yes	No	Yes	No
Countries	22	22	22	22
Observations	6724	6777	7767	4410

Table 5.2: *Robustness check: Fertility Intention and Self-Employment Micro-Macro Estimates with Additional Covariates*

	(1)	(2)	(3)	(4)
Micro:				
Self-employment: Labour	0.258***	-0.0209	0.105*	-0.0222
	[0.0607]	[0.0294]	[0.0425]	[0.0339]
Self-employment: Professional	0.0152	0.0214	0.0430	0.0600
	[0.0761]	[0.0395]	[0.0567]	[0.0472]
Self-employment: Entrepeneur	0.173	-0.0398	0.0666	-0.0212
	[0.123]	[0.0470]	[0.0408]	[0.0302]
Out of the labour force	-0.198	0.212**	-0.120	0.0407
	[0.157]	[0.0746]	[0.0975]	[0.109]
Unemployed	-0.00195	0.186*	-0.0449	0.0245
	[0.157]	[0.0724]	[0.0930]	[0.0966]
Macro:				
Self-employment: Labour (pctg. employment)	0.168	0.414	0.0569	-1.028*
	[0.359]	[0.473]	[0.366]	[0.505]
Self-employment: Professional (pctg. employment)	-1.789*	0.486	-0.249	-1.739
	[0.776]	[1.112]	[1.295]	[1.640]
Self-employment: Entrepeneur (pctg. employment)	-1.053*	0.475	-0.661	2.136
	[0.480]	[0.907]	[0.831]	[1.395]
Log GDP pc/ppp	-0.113**	0.0351	-0.0917	0.0297
	[0.0402]	[0.106]	[0.0527]	[0.0818]
Unemployment, (pctg. labor force)	-0.238	-0.572	-0.299	0.238
	[0.293]	[0.552]	[0.473]	[0.451]
Part time (pctg. employment)	0.160	-0.293	-0.00613	-0.0402
	[0.103]	[0.156]	[0.207]	[0.137]
Weeks of maternity leave	-0.000964	-0.00259**		
	[0.000630]	[0.000903]		
Gross enrolment ratio, pre-primary, both sexes	-0.0266	-0.0877	-0.00793	-0.0583
	[0.0276]	[0.0619]	[0.0607]	[0.0360]
Urban population (pctg. pop)	0.179*	0.0243	-0.0119	0.151
	[0.0908]	[0.0878]	[0.147]	[0.172]
Private credit by domestic banks (pctg. GDP)	-0.0223	0.0362	-0.0114	0.0381
	[0.0181]	[0.0231]	[0.0153]	[0.0241]
Family benefits cash and inkind, pctg. GDP	0.0706	1.791	1.471	-1.442
	[1.241]	[2.585]	[2.116]	[2.542]
Weeks of father only paid leave			0.00141	0.00311
			[0.00161]	[0.00238]
Constant	1.276**	-0.359	1.421*	-0.149
	[0.413]	[1.092]	[0.552]	[0.784]
Countries	16	16	16	16
Observations	4580	4567	5354	3166

Notes: Estimates include the micro-level covariates of model 2 of the micro analysis section (age and education categories, round dummy and industry dummies) and country random effects.

Figure 1.5: *Completed Fertility, Fertility Intentions, Wage Employment and Self-Employment*

	Fertility intention (aged 15-40)						Self-employment (% employment)			Wage emp. (% emp.)	Unemp.	Out of Lab. Force
	Obs	Non-response	Def. No	Prob. No	Prob. Yes	Def. Yes	Labour	Professional	Entrep.			
			Mean				Mean			Mean		
Belgium	1,358	81	0.49	0.23	0.16	0.12	0.04	0.03	0.03	0.52	0.13	0.31
Bulgaria	544	107	0.50	0.18	0.19	0.13	0.02	0.00	0.03	0.52	0.34	0.26
Czech Republic	1,773	224	0.54	0.22	0.15	0.09	0.06	0.01	0.03	0.42	0.13	0.38
Denmark	1,065	36	0.54	0.18	0.14	0.14	0.02	0.02	0.03	0.53	0.11	0.31
Estonia	693	90	0.45	0.25	0.20	0.09	0.02	0.01	0.04	0.43	0.09	0.38
Finland	1,420	34	0.34	0.37	0.20	0.09	0.05	0.03	0.03	0.49	0.10	0.37
France	571	29	0.47	0.20	0.16	0.17	0.04	0.01	0.02	0.56	0.16	0.29
Germany	1,974	135	0.55	0.22	0.13	0.10	0.02	0.04	0.01	0.39	0.12	0.39
Hungary	591	31	0.57	0.10	0.17	0.16	0.04	0.01	0.02	0.39	0.16	0.30
Ireland	1,667	272	0.67	0.17	0.10	0.06	0.03	0.02	0.03	0.30	0.22	0.39
Netherlands	1,134	69	0.56	0.17	0.16	0.12	0.02	0.02	0.03	0.54	0.06	0.24
Norway	1,313	23	0.44	0.29	0.16	0.11	0.03	0.02	0.02	0.51	0.10	0.27
Poland	1,437	207	0.46	0.28	0.15	0.11	0.09	0.03	0.05	0.40	0.18	0.34
Portugal	1,257	120	0.52	0.23	0.16	0.09	0.05	0.02	0.03	0.46	0.18	0.32
Russian Federation	925	170	0.45	0.23	0.20	0.12	0.02	0.01	0.04	0.41	0.11	0.34
Slovakia	1,140	121	0.53	0.23	0.13	0.10	0.08	0.03	0.04	0.39	0.20	0.33
Slovenia	1,062	72	0.43	0.30	0.18	0.09	0.02	0.01	0.05	0.47	0.12	0.34
Spain	1,437	121	0.47	0.25	0.18	0.09	0.05	0.04	0.05	0.35	0.18	0.28
Sweden	1,287	33	0.41	0.27	0.19	0.13	0.02	0.03	0.03	0.53	0.11	0.32
Switzerland	1,310	84	0.54	0.19	0.16	0.12	0.02	0.03	0.03	0.46	0.07	0.31
Ukraine	1,062	262	0.47	0.28	0.15	0.09	0.03	0.01	0.07	0.42	0.20	0.37
United Kingdom	1,466	77	0.57	0.18	0.14	0.12	0.05	0.03	0.02	0.45	0.13	0.31

Source: Sample restricted to individuals aged between 15 and 40 with data for all variables of interest. Pooled ESS round 2 (2004-2006) and round 5 (2010-2012).

Figure 1.6: *Summary Statistics: Macro Covariates*

	Log GDP per capita (PPP)	Unemployment (% labour force)	Part-time (% empl.)	Weeks of maternity leave	Weeks of father leave	Pre-primary gross enrolment ratio	Urban (% pop)	Private credit deposit to banks (% GDP)	Family benefits (% GDP)
Belgium	10.48	0.08	0.17	15	15	1.19	0.97	0.58	0.03
Bulgaria	9.65	0.11	0.02	-	-	0.84	0.73	0.65	-
Czech Republic	10.10	0.08	0.03	28	0	1.10	0.73	0.37	0.02
Denmark	10.53	0.06	0.18	18	2	0.96	0.86	1.71	0.04
Estonia	9.64	0.09	0.08	-	-	1.16	0.69	0.51	0.02
Finland	10.44	0.09	0.12	18	7	0.64	0.83	0.73	0.03
France	10.49	0.09	0.18	16	2	1.09	0.78	0.94	0.03
Germany	10.47	0.09	0.21	14	4	1.05	0.74	0.97	0.02
Hungary	9.98	0.11	0.04	24	1	0.85	0.69	0.60	0.03
Ireland	10.68	0.10	0.16	36	0	1.02	0.61	1.17	0.03
Netherlands	10.59	0.05	0.47	16	12	0.92	0.84	1.14	0.02
Norway	10.82	0.04	0.21	9	7	0.92	0.78	0.88	0.03
Poland	9.70	0.15	0.10	19	0	0.61	0.61	0.37	0.01
Portugal	10.07	0.10	0.10	13	11	0.85	0.59	1.36	0.01
Russian Federation	10.09	0.07	0.04	-	-	0.75	0.74	0.40	-
Slovakia	9.83	0.16	0.03	29	0	0.93	0.55	0.36	0.02
Slovenia	-	0.07	0.08	-	-	0.71	0.50	0.60	0.02
Spain	10.30	0.17	0.10	16	1	-	0.78	1.40	0.01
Sweden	10.53	0.07	0.14	16	10	0.93	0.85	1.05	0.03
Switzerland	10.67	0.04	0.25	10	0	0.97	0.74	1.49	0.01
Ukraine	8.89	0.08	-	-	-	0.94	0.68	0.39	-
United Kingdom	10.45	0.06	0.24	52	2	0.73	0.81	1.65	0.04

Source: World Bank World Development Indicators (GDP pc, unemployment rates, part-time employment rates, gross pre-primary enrolment rates, urban population, financial depth) and OECD Social Expenditure Dataset (weeks of maternity and father leave and family benefits).

Figure 1.7: *Summary Statistics: Macro Covariates Correlations*

	Log GDP per capita (PPP)	Unemp. (% labour force)	Part-time (% empl.)	Weeks of maternity leave	Weeks of father leave	Pre-primary gross enrolment ratio	Urban (% pop)	Private credit deposit to banks (% GDP)	Family benefits (% GDP)
Log GDP per capita (PPP)	1								
Unemployment (% labour force)	-0.5763	1							
Part-time (% empl.)	0.6838	-0.4185	1						
Weeks of maternity leave	-0.1344	0.0876	-0.0807	1					
Weeks of father leave	0.3839	-0.1144	0.3829	-0.3889	1				
Pre-primary gross enrolment ratio	0.5847	-0.2241	0.2311	-0.0778	0.2692	1			
Urban (% pop)	0.5976	-0.4573	0.4938	-0.1176	0.4548	0.3144	1		
Private credit deposit to banks (% GDP)	0.6074	-0.3449	0.5875	0.086	0.1548	0.2376	0.3031	1	
Family benefits (% GDP)	0.519	-0.3063	0.1291	0.315	0.0843	0.4547	0.5444	0.3763	1