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Abstract:
The underrepresentation of women in entrepreneurship is consistent over cultures and countries, and is even higher in Norway than in most other industrialised societies. In spite of a growing literature, the reasons for this pattern are still not well understood. In this paper I explore an area that has been little researched so far, the family and household situation. I study the presence of children and their ages, the role of the partner's characteristics and the household's financial resources. The results show that women are more likely to choose self-employment over wage-work when the children are small, indicating that children are no barrier to entrepreneurship, at least not when defined as self-employment as in this paper. The self-employment propensity of both women and men are negatively related to their partner's working hours and positively related to him (or her) being self-employed himself (herself). The causal direction of these relationships cannot be established in the present analysis and needs to be investigated closer in future research.

Keywords: Entrepreneurship, self-employment, gender, work and family, partner's characteristics

JEL classification: L26, J13, J16, J22

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Sammendrag

Det er vel kjent at kvinner er underrepresentert blant entreprenører og selvstendig næringsdrivende i omtrent alle land og kulturer, og kjønnsforskjellene i Norge er større enn i de fleste andre land. Det kan være flere grunner til dette, men selv etter å ha kontrollert for viktige forskjeller på mange områder, konkluderer tidligere forskning med at det gjenstår et kjønnsgap som vanskelig lar seg forklare. Et område som imidlertid er lite undersøkt hittil, er betydningen av barn og familie og ektefelles/samboers arbeidsmarkedstilknytning og arbeidstid. I dette arbeidet drøfter jeg slike faktorer nærmere. Med utgangspunkt i data fra EU-SILC 2003-2009 analyserer jeg sysselsatte kvinners og menns valg mellom å være selvstendig næringsdrivende eller vanlig lønnsmottaker gitt en rekke personlige kjennetegn og kjennetegn ved deres husholdning. Litt overraskende finner jeg at små barn ikke ser ut til å være noen hindring for selvstendig næringsdrift blant kvinner. Sysselsatte kvinner med barn under 10 år er faktisk mer tilbøyelige til å være selvstendige næringsdrivende enn kvinner uten barn i husholdningen, mens menn er nokså upåvirket av om de har barn eller ikke. Valget av yrkesstatus (selvstendig eller lønnstaker) er imidlertid nært knyttet til ektefelles/samboers yrkesstatus og arbeidstid. Både blant kvinner og menn er det en større sannsynlighet for å være selvstendig næringsdrivende hvis partneren ikke jobber i det hele tatt, eller hvis partneren også er selvstendig næringsdrivende. Den foreliggende analysen kan ikke avdekke om dette er kausale sammenhenger og i hvilken retning disse går, det vil si om det er ektefelles/samboers arbeidstid og yrkesstatus som har påvirket respondentens tilbøyelighet til å være selvstendig næringsdrivende eller om det er omvendt, men dette er problemstillinger som vil bli fulgt opp i fremtidige analyser.

1. Introduction

In recent years there has been a growing international interest in the significant imbalances between women's and men's entrepreneurship activity. One reason for this is the substantial untapped entrepreneurial potential in the female part of the population that, if accessed, could make a significant additional contribution to new business formation, job creation and overall economic growth (OECD 2004). Among a number of suggestions for policies directed at strengthening entrepreneurship among women, OECD lists the ability of women to participate in the labour force by ensuring the availability of affordable child care and equal treatment in the work place, and generally improving the position of women in society. One would therefore expect countries with high female labour force participation and high gender equality to have relatively high female to male entrepreneurship rates. Yet, the case of Norway shows that this is not necessarily so. In 2010, 11.5 per cent of the Norwegian male population 16-64 years was engaged in early-stage entrepreneurial activity (in the process of starting or operating a new business up to three and a half years old), whereas the corresponding proportion among women was 4.5 per cent (Bullvåg, Kolvereid and Åmo, 2011). Relative to countries with comparable economies, this puts Norwegian men fairly high on the scale, while the early-stage entrepreneurial rate among Norwegian women are in the lower part of the scale (Kelley, Singer and Herrington, 2012).

In the literature, several reasons for women's lower entrepreneurial activity have been mentioned. A recent review groups these reasons into four: psychological and motivational factors, educational background and experience, social and cultural factors and access to capital (Goduscheit, 2011). Along with previous authors (Fischer, Reuber and Dyke, 1993; de Bruin, Brush and Welter, 2007), the review concludes that "in spite of a growing body of research, our factual knowledge of the role of gender in entrepreneurship and therefore also its implications for policymaking remains limited" (p. 71). In particular, the evidence related to psychological and motivational factors, and social and cultural factors is much debated.

In Norway, previous research has pointed out the high and persisting sex-segregation in education and in the labour market as one reason for the low number of female entrepreneurs (e.g. Alsos and Ljunggren 2006). Girls tend to choose an education that qualifies for jobs in the public and private service sectors, whereas boys choose fields that more often qualify for jobs in private industry and commerce. Another reason often mentioned is the unequal division of labour between men and women both in the market and in the household (ibid.). Almost 50% of Norwegian mothers with children below age 16 still work part time (Bø et al., 2008), and mothers with small children spend 1.5 hours more per day on housework than fathers (Vaage, 2012). Hence, the prevailing arrangement in Norway has been nick-

named “gender-equality-light” (Skrede, 2004). Combined with the fact that establishing and running a business is a time-consuming task that often requires attention and effort beyond ordinary day-time hours, some have argued that women who want to become entrepreneurs must either break with the traditional female role, risk their health, find an unusual partner, or wait till they are 45-50 years old (Ellingsen and Lilleaas, 2011). A question close at hand is therefore what children and the household situation mean for the choice of being an entrepreneur.

In a recent review of the literature, Goduscheit (2011) concludes that there are indications that the family and household situation influence male and female entrepreneurs differently, but that robust studies based on large, representative datasets that control for other relevant variables are needed to shed further light on the issue. The present study is a contribution in this respect. Using representative panel data from the Norwegian EU-SILC surveys from 2003-2009, I analyse the determinants of women’s entrepreneurship participation with special emphasis on the family situation (union status and the number and ages of children), the partner’s economic situation and his labour market status and working hours. The role of partner characteristics in female entrepreneurial participation has scarcely been investigated before and is therefore a major contribution of the present analysis.

The paper proceeds with a short synopsis of the state of the art on gender differences in entrepreneurship research. Next I discuss some theoretical aspects of female entrepreneurship in a household perspective and present the data and methods used. The subsequent section reports the results, and the paper concludes with a short summary and discussion.

2. Previous literature

It is well established that the underrepresentation of women in entrepreneurship is consistent over cultures and countries (Minetti et al. 2005), but in spite of mounting empirical evidence the reasons for this pattern are not well understood. Studies generally find that female entrepreneurs attract less capital and start businesses with fewer financial resources than their male counterparts, and that high-growth companies more often are run by male than by female entrepreneurs. Early entrepreneurship research suggested that female-owned firms underperform relative to firms owned by men (Boden and Nucci, 2000; Gundry et al., 2002), but recent evidence on the relative performance of female entrepreneurs is more ambiguous. Large-scale studies from both the U.S. and Sweden have, for example, found no support for the so-called underperformance hypothesis (Hisrich et al., 1997; Du Rietz and Henrekson, 2000). In Norway, entrepreneurial ventures have been shown to have equal

chances of surviving the early growth phase, regardless of whether they are started by men or by women, but high-growth companies are primarily started, owned and run by men (Ljunggren, 2008).

Research on female entrepreneurs has since its beginning sought to explain the underrepresentation of women in entrepreneurship by differences in psychological and motivational factors. For example, it has been suggested that women may be more risk averse than men (Masters and Meier, 1988). The empirical evidence for this is mixed. Some studies conclude that there are more similarities than differences in male and female entrepreneurs' pshycological and demographic charcteristics (e.g. Birley 1989; Zapalska 1997), and others sugggest that there may be greater differences among subgroups of female entrepreneurs than between the sexes (Goduscheit, 2011). Many of these analyses only study differences among entrepreneurs, however, and an increasing number of studies of women and men in general conclude that women are both more risk-averse and less competitive than men (Bönte and Piegeler, 2012; Croson and Gneezy, 2009; Verheul et al., 2012, Wagner, 2007). A review of recent literature further lists lack of self-esteem and low self-perception as reasons for less entrepreneurship among women (Eastwood, 2004). In Norway, for example, the proportion of women who think they have the necessary competences to become an entrepreneur is consistently lower than that among men (Bullvåg et al., 2011). Other authors have proposed that women may have different entrepreneurial ambitions. In a study of New Zealand, Great Britain and Norway, Shane et al. (1991) found for instance that men were more motivated by status of oneself and family in society, while women were more motivated by the idea of achieving something and being recognized for it. However, Kolvereid (1992) found no significant differences in the entrepreneurial growth aspirations of male and female entrepreneurs in Norway.

A common finding from most countries is that women establish businesses in other and fewer sectors than men. For Norway, Spilling (2005) shows for example that services account for about two-thirds of start-ups by female entrepreneurs, while male entrepreneurs are distributed across other, and a broader range of, sectors. Similar results are reported for Denmark (Nielsen and Kjeldsen, 2000). The reason why women select into other sectors than men is primarily linked to gender traditional choices of fields of education (Alsos and Ljunggren, 2006). Level of education is of no concern, as female entrepreneurs are generally better educated than their male counterparts (Alsos, 2006; Cowling and Taylor, 2001). When men and women choose different educations and sectors of employment, their work experience will be different. In Norway about two thirds of employed women work in the public sector, while a similar proportion of men work in the private sector (Alsos, 2006). Since private sector experience is likely to provide better knowledge of the market and experience in running a commercial

business, this may give men an advantage over women in becoming entrepreneurs. Moreover, men tend to have more leadership and management experience (ibid.). Fischer et al. (1993) conclude for example that female entrepreneurs have the appropriate education, but generally lack experience from the industry in which they hope to set up business and lack hands-on experience in managing employees. There is also growing evidence that women's work experience prior to becoming entrepreneurs may be a disadvantage in mobilising the appropriate resources to fund their ventures, and that this may help explain why women generally start businesses with less capital than their male counterparts (Carter et al., 2001; Goduscheit, 2011).

This raises the question of *why* women select into other sectors and career options than men. According to OECD (2004), shared cultural beliefs about gender may constrain or at least shape their education and career choices and channel women (and men) into certain career paths that are traditionally associated with their gender. OECD argues furthermore that there is substantial evidence indicating that entrepreneurship is stereotyped as a 'masculine task'. Even individuals who do not personally hold this belief, will be aware that this belief exists in society, and this expectation has been shown to modify behaviour and bias judgement.

Working in different sectors also means that men and women operate in different social contexts, and this will influence their networks. Aldrich et al. (1997) found that men have more men in their networks, while women have more gender-mixed networks. However, female entrepreneurs were as active as their male counterparts in using their professional networks to access advice and help. Women have also been found to have more homogeneous networks containing a greater proportion of kin, and this may be a disadvantage facing potential small business owners (Moore, 1990; Renzuilli et al., 2000).

Finally, several researchers have pointed to the family and household situation as a possible barrier to entrepreneurial activity among women (Eastwood 2004; Ljunggren 2008; OECD 2004; Stoner et al., 1990). This is based on the fact that the woman is still the main caregiver in most families and carries the primary responsibility for children and household tasks. Orser and Hogarth-Scott (2002) conclude for example that female entrepreneurs are more inhibited by personal demands (e.g. family time, personal work-life balance, additional stress) than their male counterparts, and Nielsen and Kjeldsen (2000) argue that female business owners experience a conflict between the values of the enterprise and those of the family to a greater extent than their male counterparts. Interestingly, Stoner et al. (1990) find that marital status, number of children and hours worked are not significantly related to the

perceived conflict between job and family, but business-related variables (job satisfaction and financial health) on the other hand are clearly associated with life satisfaction and work-family conflict. This suggests that there is considerable overlap between the business and personal dimensions of life for female small business owners.

OECD (2004) argues that such factors combine to make female entrepreneurs more prone to start home-based businesses and part-time businesses. Empirical evidence in support of this hypothesis is for example Eastwood (2004) who found that more than half of British female entrepreneurs work less than 30 hours per week and are more likely than men to use the home as their business base. A couple of studies from the US further report that women are more likely to switch to self-employment if they have at least one child under the age of six, more often than men state that family considerations and job flexibility are important reasons for being self-employed, and that a switch from wage-employment to self-employment substantially reduces the number of weeks and hours women work (Boden 1999, 2001). This seems at odds with the situation in Norway where self-employment generally involves longer working hours for both women and men (Statistics Norway 2012). Moreover other research on female employment indicates that self-employed women are more likely to work at least as much or more than their partner (Kitterød and Rønsen, 2012), more likely to switch from part-time to full-time work (Kitterød, Rønsen and Seierstad, 2011), and after the birth of a child, they return faster to work than other employed mothers (Rønsen and Kitterød, 2012).

One area of the family and household situation that is vastly under-researched is the role of the partner. Usually, the presence of a spouse is just represented by a dummy variable for marital status in the empirical model (e.g. Hundley, 2000; Moore, 1990; Renzulli et al., 2000; Stoner et al. 1990) or his (or her) income or wealth is included as a covariate (e.g. Boden, 2001; Berglann, Moen, Røed and Skogstrøm, 2011). An exception is Bruce (1999) who found that women who were married to a self-employed man were about twice as likely as other women to become an entrepreneur themselves. This could be due to assortative mating or jointly run family businesses, but robustness checks showed that these factors only partially explained the relatively large effect. Hence, Bruce suggests that intra-household transfers of human capital (husband's knowledge, supply channels, network etc.) and, to a lesser degree, financial capital (husband's economic resources) also play a role.

If lack of time is a barrier for female entrepreneurship as suggested by several authors (e.g. OECD 2004; Orser and Hogarth-Scott, 2002), the partner's working hours is a potential restricting factor, but this has received little attention in existing research. Recent analyses of Norwegian couples show for

example that the female partner almost always works shorter hours in the labour market than the male partner. Men who work long hours almost always have a partner who works less, whereas this is not the case for women (Kitterød 2007). This suggests that employed men and women have unequal support at home and that the partner's labour market activity is an important area for further investigation. The present analysis seeks to fill in this gap in the household picture by considering both the structural constraints represented by children and their ages, the presence of a spouse and his employment status and working hours as well as economic constraints represented by the partner's income and household wealth.

3. Theoretical perspectives

As is common in much of the entrepreneurship literature, entrepreneurship will be defined as self-employment in the following. This is not ideal, as there appears to be a consensus from a theoretical point of view that entrepreneurship embodies an ambition besides mere self-employment. According to Schumpeter, the entrepreneur is responsible for "the doing of new things or the doing of things that are already being done in a new way" (Schumpeter 1947, p. 151, as cited in Berglann et al., 2011). Self-employment on the other hand may often be a close substitute for employment, and have little to do with entrepreneurship in the classical, Schumpeterian sense. The reason for the widespread use of self-employment as an indicator of entrepreneurship in international research is of course that the "true entrepreneur" is not easily observed, whereas self-employment is both observed and reported in most labour market surveys, and hopefully also fairly closely correlated with "genuine entrepreneurship".

The focus of the analysis is on the choice of being self-employed rather than being a wage-worker. That is, I assume that the decision to participate in the labour market has already been taken, and that the individual has a choice between being self-employed or working for wage as an employee. Both options bring monetary and non-monetary returns. Non-monetary returns reflect the individual's appreciation of the relevant characteristics of self-employment versus wage work such as personal autonomy (freedom, control, and flexibility in the use of one's time), status and recognition, self-realisation (pursuing own goals), role expectations (e.g. continuing a family tradition) and insecurity in other dimensions than income (Shane et al., 1991; Benz and Frey, 2008; Hamilton, 2000; Parker and Van Praag, 2010). In fact, the existing empirical literature tends to indicate that entrepreneurship is primarily motivated by non-pecuniary factors (Hamilton, 2000; Van Praag and Versloot, 2007), but there is also evidence that self-employment does pay off economically. For Norway, Berglann et al.

(2011) have for example found that entrepreneurship is usually associated with a significant income premium, but it comes at the cost of higher income variability.

Given his or her budget restriction and time constraint, the individual will choose self-employment over wage-work if the expected utility from self-employment exceeds that of wage-work. If there are children in the household, the time available for children is an important element in these considerations. If we assume, along with some authors (e.g. Wellington, 2006), that it is possible to combine some childcare with self-employment, whereas an hour spent on wage-work is an hour lost on childcare, childcare costs will be greater for mothers in paid employment than for mothers in self-employment. Mothers may also value their own time with children higher than formal childcare, which will increase the attractiveness of self-employment as a means of balancing work and family.

As we have seen, OECD (2004) argues that such factors may make women more prone to set up their own business and empirical evidence from the US support this notion (Boden 1999, 2001; Connelly, 1992; Wellington, 2006). In countries with a well-established provision of state-sponsored, formal childcare, such considerations may carry less weight, but the empirical evidence so far is scant and mixed. For Norway, recent findings do suggest that women with young children are more inclined to switch from wage-work to entrepreneurship than women without children (Berglann et al., 2011), whereas a study from Sweden reports that women with young children less often become self-employed than women without young children (Joona and Wadensjö, 2008). Moreover, from Germany - a country where formal day-care has been in very short supply – there is no evidence that the presence of children in the household affect women's propensity to start their own business (Furdas and Kohn, 2010).

However, one may also argue that self-employment is not the best way to reconcile work and family as it is often more time-consuming and requires a greater effort than ordinary wage-work. Current labour market statistics support this notion. The regular Norwegian Labour Force Survey shows for example that self-employed women, as well as men, generally have longer working hours than employees. In 2011, self-employed women worked 34.4 hours per week, whereas female employees worked about four hours less (Statistics Norway, 2012). All else equal, one would therefore expect small children in the household to be more of a barrier to self-employment than for ordinary wage-work.

There are thus arguments that children may be both a motivation and a hindrance for female entrepreneurship, and existing evidence renders support in both directions. Considering the good supply of state-sponsored formal childcare in Norway, the extra time and effort associated with self-employment may play a greater role than the flexibility of deciding ones own working hours and place of work. Hence, small children in the household may be more of a hindrance than a motivation for self-employment when compared to wage-work in Norway, but a priori we cannot rule out that there may also be influences in the opposite direction.

The husband's personal and labour market characteristics may impact his wife's employment situation in several ways. According to New Household Economics (Becker 1991), the spouses specialize in the fields in which they have a comparative advantage in order to maximize the joint utility of the household. Consequently, it is expected that higher income and longer working hours for the husband would reduce the wife's labour market engagement. When the time uses of the partners are more complementary and less substitutable, the degree of specialization will be lower. This does not preclude a gendered-biased division of labour, however, as the crucial factor is the partners' relative marginal productivity in market work and domestic work.

In sociological theories the partners' labour market resources are regarded more as a type of social capital. It is assumed that the spouses provide each other with skills, network resources and knowledge, thereby assisting each other in finding good jobs and enhancing each others labour supply (Bernardi, 1999). A more specialised version of this theory stresses the role of the husband's educational attainment in supporting his wife's employment. Education is here seen as a proxy for norms and values, and since highly educated men usually have more modern views on women's role in the labour market and at home than less educated men, they are assumed to be more supportive of the wife's employment.

Another strand of thought puts more emphasis on the persistence of male breadwinner norms and the central role employed work continues to have for men's identity. Even if men may be supportive of their wives' employment, they are less likely to encourage their partners to work more than themselves. This is in line with the "doing gender" theory, which postulates that both men and women continuously construct and reconstruct their gender identity (Berk 1985). Hence, men tend to undertake activities that are seen as typically masculine and avoid activities with feminine connotations. The "doing gender" notion entails more of a conflict perspective on the partners'

adjustments than what is implied by other theories, but has received considerable support in studies on couples' division of household work (Bittman et al., 2003).

The conflict perspective is also present in other theories of the household division of labour. Based on game-theoretic approaches in economics, for example, it is assumed that the partners seek to maximise their individual utility and bargain over the division of tasks, overall labour time and leisure, and the distribution of consumption goods and services (see e.g. Seiz 1995). The bargaining power of each spouse is a crucial element in this model, and depends on the spouses' relative resources and their alternative options. A relative resources or resource bargaining approach is also common within sociological research on gender-based inequalities in task allocation, particularly housework. Resources are here defined more broadly and may both comprise money, personal services, love, prestige, admiration and other emotional and psychological elements, but in empirical research the most analysed factors are socio-economic resources like income, education and occupational position (e.g. Coltrane, 1996; Greenstein, 2000).

The theories above render no clear predictions about the relationship between the male partner's characteristics and the female's choice of being self-employed rather than an employee. However, since self-employment usually involves longer working hours than other employment in Norway, I would expect women to be less inclined to choose self-employment if the partner works very long hours. Higher financial resources should on the other hand make it less risky to set up a business, so my hypothesis is that there is a positive relationship between the male partner's income and wealth and the woman's propensity to choose self-employment. After controlling for the partner's working hours and income, I assume that educational level primarily reflects differences in social capital and norms and values. Given that highly educated men are more supportive of their partner's employment and have more social capital (network resources, skills) than men with lower education, I would anticipate a positive association between the male partner's educational level and women's likelihood of being self-employed. Since self-employment often requires specific skills, the knowledge and experience of a self-employed partner may be of particular value. Hence, I expect women with a self-employed partner to be more inclined to be self-employed herself, as has been found in previous research from the US (Bruce, 1999).

4. Data, methods and descriptive statistics

The analysis is based on data from the Norwegian EU-SILC survey (European Union Statistics on Income and Living Conditions). [1] The survey has been conducted every year since 2003 and includes cross-sectional as well as panel information. Topics such as housing, economy, child care, health and employment are covered every year, and information on income, property, education and place of work is linked to the survey data from various registers. Individual people are sampled for the survey, but information is collected for all household members 16 years and older. Each individual is asked to participate in eight waves, and one eighth of the sample is replaced by new respondents every year. The annual gross sample comprises about 8 500 persons, and the response rate is about 70 per cent. The information on children regards children presently living in the household, which in addition to biological children also include stepchildren and/or adopted children.

The survey has a personal part on health and employment activity, which can only be answered by the respondent him/herself, and a part on housing, economy and childcare, which may be answered by the respondent or another household member. Finally, all household members 16 years and older are asked about their employment activity. This information may be provided by the respondent if the household members are not present and cannot be easily contacted. The questions on employment follow the formulation in the regular Labour Force Survey, where the respondents are first asked whether they performed any paid work lasting at least one hour or more last week. If so, they are asked whether they work as an employee, as self-employed or as a family worker without a fixed wage. Then follow a series of questions about usual working hours, occupation, the number of employees, main activity and so forth.

Although my main interest is in women's self-employment participation, I also perform separate analysis for men to see if personal and household characteristics impact women and men differently. Men thus serve as a kind of reference group. I start by analysing all women and men aged 16-67 who were employed as either an employee or as self-employed at the time of interview, and next I investigate the role of the partner based on a subsample of employed women and men who were married or cohabiting. Self-employment participation is modelled by means of logistic regression, running first a conventional logit model specified as

$$(1) \quad \log\left(\frac{p_{it}}{1-p_{it}}\right) = \mu_t + \beta X_{it} + \gamma Z_i ,$$

[1] For documentation of EU-SILC, see http://epp.eurostat.ec.europa.eu/portal/page/portal/income_social_inclusion_living_conditions/quality/national_quality_reports

where p_{it} is the probability that individual *i* is self-employed at time *t*, μ_t is a time-varying intercept, X_{it} is a vector of time-varying covariates and Z_i is a vector of time-constant covariates. In fact, all but one of the variables included are time-varying as described in table 4. Next, I utilise the panel structure of the data and run a random effects model as follows:

$$(2) \quad \log\left(\frac{p_{it}}{1-p_{it}}\right) = \mu_t + \beta X_{it} + \gamma Z_i + \alpha_i ,$$

where α_i is a random variable representing all differences between individuals that are fixed over time and not otherwise accounted for by γZ_i. It is further assumed that α_i has a normal distribution, is uncorrelated with X_{it} and $Z_{i,}$ and with $E(\alpha_i) = 0$ and Var $(\alpha_i) = \tau$.

To get an impression of gender differences in self-employment in Norway and some of its characteristics, we shall briefly look at some descriptive statistics based on the EU-SILC data. Table 1 shows the employment status of all Norwegian women and men aged 16-67 over the period 2003-2009. As is well known, a high proportion of Norwegian women is employed. The proportion rose from 75 to 78 per cent over the period studied and is now almost as high as among men. The self-employment proportion is much lower, 3-4 per cent, compared to about 9-10 per cent among men. In Table 2 I have computed the proportion that is self-employed based on all *employed* women and men (columns 2 and 3) and all *employed married and cohabiting* women and men (columns 3 and 4). This yields a self-employment proportion among women of about 4 and 5 per cent in the two groups, respectively, compared to about 12 and 13 per cent among men.

Table 1. Proportion employees, self-employed and non-employed Norwegian women and men 16-67 years[1] EU-SILC panel data 2003-2009. Weighted sample.

	Employee	Self-employed	Non-employed
Women:			
2003	72.1	3.3	24.6
2004	71.2	3.2	25.7
2005	69.8	3.1	27.2
2006	71.2	3.7	25.1
2007	72.7	3.2	24.1
2008	75.3	2.7	22.0
2009	74.4	3.3	22.3
Men:			
2003	71.5	10.3	18.3
2004	69.3	10.0	20.7
2005	70.1	9.1	20.8
2006	71.2	9.4	19.4
2007	73.4	9.3	17.3
2008	75.8	8.4	15.8
2009	73.2	9.0	17.8

[1] Family workers and people with missing information on employment status have been excluded. Family workers constitute less than 0.5 per cent of the population and very few have missing information.

Table 2. Proportion self-employed among Norwegian *employed* women and men 16-67 years[1] EU-SILC panel data 2003-2009. Weighted sample.

	All		Married and cohabiting	
	Women	Men	Women	Men
2003	4.3	12.6	4.8	14.3
2004	4.2	12.6	4.9	14.1
2005	4.2	11.5	4.4	12.8
2006	4.9	11.6	5.4	12.8
2007	4.3	11.3	4.4	12.0
2008	3.5	10.0	3.2	11.3
2009	4.2	10.9	4.0	13.4

[1] People with missing information on employment status have been excluded. See Table 1.

Table 3. Characteristics of self-employment versus paid employment. Norwegian *employed* women and men 16-67 years EU-SILC panel data 2003-2009. Weighted sample.

	Self-employed		Employees	
	Women	Men	Women	Men
Usual weekly working hours				
1-19	12.3	3.9	17.0	7.0
20-36	24.0	9.9	30.5	9.1
37-44	33.4	27.0	45.6	58.3
45+	30.2	59.0	6.8	25.6
Average	37.8	47.4	32.0	39.4
Occupation				
Senior officials and managers	11.2	9.6	6.2	13.2
Professionals	20.1	15.9	13.8	14.4
Technicians and associate professionals	9.2	13.8	27.4	20.9
Clerks	1.4	0.5	9.9	5.1
Service, shop and market sales workers	30.7	5.6	32.3	12.6
Agriculture forestry and fishery workers	13.3	25.8	0.3	1.6
Craft and related trades workers	5.6	18.9	1.2	16.2
Plant and machine operators	4.0	9.4	2.0	11.3
Elementary occupations	3.9	0.3	6.3	3.1
Number of employees				
None	68.6	68.2	0.0	0.0
1-10	29.0	26.6	20.9	20.8
10+	2.5	5.2	79.1	79.2

Next we shall look at some characteristics of self-employed persons in Norway compared to ordinary employees (Table 3). As is well known from the regular Labour Force Survey, self-employment involves longer working hours than wage-earner employment. On average self-employed women work 37.8 hours per week, which is almost 6 hours more than the average female employee. Self-employed men work 47.4 hours per week, 8 hours more than male employees, and almost 10 hours more than self-employed women. Almost one third (30 per cent) of self-employed women work 45 hours or more compared to only about 7 per cent among employees. The largest shares of both self-employed women and women employees work in occupations related to service, shop and market sales, such as hair dressers, beauticians and flower decorators. The most common occupational group among self-employed men, on the other hand, is agriculture, forestry and fishing,

while the largest proportion of male employees are technicians and associate professionals. Occupations that are more common among self-employed women than among employees are professional work such as doctors, dentists, architects, lawyers and accountants, as well as agricultural, forestry and fishery work. It is also somewhat more common to be a senior official and manager, crafts and trades worker, and plant and machine operator for self-employed women than for employees. Finally we find that more than two thirds of self-employed women have no employees, but this is also typical of self-employed men. Employees, on the other hand, usually work in companies with more than ten employees, as shown in Table 3.

Table 4. Definition of variables.

Variable	Definition
Age	Age at time of interview based on registry information on date of birth. Continuous variable with a square term to capture possible non-linearities. Time varying.
Health restrictions	Survey information. Dummy variable indicating whether the respondent is limited in her/his daily activities by health problems or not. Time varying.
Children in household	Survey information on biological and stepchildren aged 0-17 living in the household. Combines number of children and age of youngest child, two continuous variables that have been collapsed into categories as displayed in tables 5a and b. Time varying.
Union status	Survey information. Categorical variable distinguishing between married, cohabiting or single. Time varying.
Level of education	Register information. Categorical variable based on Norwegian Standard Classification of Education. Time varying.
Field of education	Register information. Categorical variable based on Norwegian Standard Classification of Education. Time varying.
Region	Categorical variable based on Norwegian Standard Classification of Municipalities. Time varying.
Country of birth	Register information. Categorical variable distinguishing between Norway, Western countries (EU/EEA region plus USA, Canada, Australia and New Zealand) and Non-Western countries (European countries outside EU/EEA plus Asia, Africa, Latin-America and remaining countries in Oceania). Time constant.
Partner's education	Register information. Categorical variable based on Norwegian Standard Classification of Education. Time varying.
Partner's weekly working hours	Survey information. Continuous variable that has been collapsed into broader categories. Time varying.
Partner's income	Register information. Natural logarithm of partner's net real income after tax (2009 NOK). Time varying.
Partner self-employed	Survey information. Dummy variable=1 if partner is self-employed. Time varying.
Household's wealth	Register information. Household's total gross financial assets (2009 NOK). Continuous variable that has been collapsed into broader categories. Time varying.
Calendar year	Year of survey. Categorical variable. Time varying.

Table 5a. Descriptive statistics. Norwegian *employed* women and men 16-67 years. EU-SILC panel data 2003-2009

	All		Women		Men	
	N	%	N	%	N	%
Dependent variable:						
Employee	25 726	91.9	12 602	95.7	13 124	88.5
Self-employed	2 263	8.1	561	4.3	1 702	11.5
Covariates:						
Gender:						
Woman	13 163	47.0				
Man	14 826	53.0				
Age	27 989	40.8	13 163	40.8	14 826	40.8
Age squared/10	27 989	182.0	13 163	181.6	14 826	182.4
Health restrictions:						
Yes	3 364	12.0	1 866	14.2	1 498	10.1
No	24 625	88.0	11 297	85.8	13 328	89.9
Children in household:						
None	16 120	57.6	7 276	55.3	8 844	59.7
Youngest child 0 years	1 003	3.6	443	3.4	560	3.8
Youngest child 1-2 years	2 035	7.3	937	7.1	1 098	7.4
Youngest child 3-6 years	2 802	10.0	1 394	10.6	1 408	9.5
Youngest child 7-10 years	2 486	8.9	1 304	9.9	1 182	8.0
Youngest child 11-17 years	3 543	12.7	1 809	13.7	1 734	11.7
Union status:						
Married	13.938	49.8	6 661	50.6	7 277	49.1
Cohabiting	5.614	20.1	2 680	20.4	2 934	19.8
Single	8 437	30.1	3 822	29.0	4 615	31.1
Level of education:						
Primary school	4 986	17.8	2 183	16.6	2 803	18.9
Secondary school	12 637	45.2	5 711	43.4	6 926	46.7
University, short	7 408	26.5	4 264	32.4	3 144	21.2
University, long	2 483	8.9	818	6.2	1 665	11.2
Missing	416	1.5	165	1.3	251	1.7
Field of education:						
General programmes	8 094	29.4	3 988	30.7	4 106	28.2
Humanities and arts	1 383	5.0	874	6.7	509	3.5
Education	2 098	7.6	1 484	11.4	614	4.2
Social sciences and law	814	3.0	338	2.6	476	3.3
Business and administration	3 555	12.9	2 062	15.9	1 493	10.3
Science, engineering, manufacturing	6 161	22.4	743	5.7	5 418	37.2
Health, welfare and sports	3 687	13.4	2 951	22.7	736	5.1
Agriculture, fishing and forestry	507	1.8	77	0.6	430	3.0
Communication, safety and services	1 022	3.7	363	2.8	659	4.5
Missing	668	2.4	283	2.1	129	2.6
Region:						
Oslo/Akershus	6 775	24.2	3 317	25.2	3 458	23.3
Hedmark/Oppland	2 172	7.8	1 055	8.0	1 117	7.5
South-Eastern Norway	5 033	18.0	2 291	17.4	2 742	18.5
Agder and Rogaland	3 914	14.0	1 826	13.9	2 088	14.1
Western Norway	4 848	17.3	2 243	17.0	2 605	17.6
Trøndelag	2 604	9.3	1 248	9.5	1 356	9.2
Northern Norway	2 642	9.4	1 183	9.0	1 459	9.8
Country of birth:						
Norway	25 905	92.6	12 238	93.0	13 667	92.2
Western	1 095	3.9	491	3.7	604	4.1
Non-Western	989	3.5	434	3.3	555	3.7

	All		Women		Men	
	N	%	N	%	N	%
Calendar year:						
2003	4 009	14.3	1 947	14.8	2 062	13.9
2004	4 118	14.7	1 978	15.0	2 140	14.4
2005	4 035	14.4	1 906	14.5	2 129	14.4
2006	3 974	14.2	1 871	14.2	2 103	14.2
2007	4 162	14.9	1 923	14.6	2 239	15.1
2008	3 907	14.0	1 776	13.5	2 131	14.4
2009	3 784	13.5	1 762	13.4	2 022	13.6

Table 5b. Descriptive statistics. Norwegian *employed married and cohabiting* women and men 16-67 years[1]. EU-SILC panel data 2003-2009

	Women		Men	
	N	%	N	%
Dependent variable:				
Employee	8 227	95.5	8 136	86.8
Self-employed	389	4.5	1 238	13.2
Covariates:				
Age	8 616	43.1	9 374	44.5
Age squared/10	8 616	197.3	9 374	210.2
Health restrictions:				
Yes	1 212	14.1	928	9.9
No	7 404	85.9	8 446	90.1
Children in household:				
None	3 863	44.8	3 958	42.2
Youngest child 0-2 years	1 234	14.3	1 550	16.5
Youngest child 3-6 years	1 147	13.3	1 292	13.8
Youngest child 7-10 years	1 005	11.7	1 057	11.3
Youngest child 11-17 years	1 367	15.9	1 517	16.2
Union status:				
Married	6 431	74.6	6 992	74.6
Cohabiting	2 185	25.4	2 382	25.4
Level of education:				
Primary school	1 210	14.0	1 352	14.4
Secondary school	3 838	44.6	4 425	47.2
University, short	2 851	33.1	2 155	23.0
University, long	593	6.9	1 275	13.6
Missing	124	1.4	167	1.8
Field of education:				
General programmes	2 317	27.3	2 055	22.3
Humanities and arts	464	5.5	320	3.5
Education	1 077	12.7	478	5.2
Social sciences and law	211	2.5	295	3.2
Business and administration	1 450	17.1	980	10.6
Science, engineering, manufacturing	509	6.0	3 759	40.7
Health, welfare and sports	2 072	24.4	498	5.4
Agriculture, fishing and forestry	56	0.7	303	3.3
Communication, safety and services	258	3.0	462	5.0
Missing	202	0.9	224	2.4
Region:				
Oslo/Akershus	1 911	22.2	2 071	22.1
Hedmark/Oppland	740	8.6	735	7.8
South-Eastern Norway	1 609	18.7	1 829	19.5
Agder and Rogaland	1 237	14.4	1 339	14.3
Western Norway	1 521	17.7	1 583	16.9
Trøndelag	829	9.6	873	9.3
Northern Norway	769	8.9	943	10.1
Country of birth:				
Norway	8 004	92.9	8 672	92.5

	Women		Men	
	N	%	N	%
Western	357	4.1	408	4.4
Non-Western	255	3.0	294	3.1
Partner's level of education:				
Primary school	1 312	15.2	1 575	16.8
Secondary school	4 161	48.3	3 950	42.1
University, short	1 941	22.5	2 956	31.5
University, long	1 037	12.0	654	7.0
Missing	165	1.9	239	2.6
Partner's weekly working hours:				
0 (not working)	891	10.3	1 593	17.0
1-37 hours	904	10.5	3 761	40.1
38-44 hours	5 020	58.3	3 474	37.1
45 hours +	1 801	20.9	546	5.8
Partner's employment status:				
Self-employed	918	10.7	471	5.0
Not self-employed	7 698	89.4	8 903	95.0
Partner's log income	8 616	12.5	9 374	12.1
Household's wealth:				
< 250 000	5 043	58.5	5 405	57.7
250 000 – 749 000	2 229	25.9	2 390	25.5
≥ 750 000	1 344	15.6	1 579	16.8
Calendar year:				
2003	1 324	15.4	1 367	14.6
2004	1 394	16.2	1 424	15.2
2005	1 282	14.9	1 360	14.5
2006	1 141	13.2	1 225	13.1
2007	1 257	14.6	1 454	15.5
2008	1 100	12.8	1 271	13.6
2009	1 118	13.0	1 273	13.6

[1] Respondents with partner < 16 years old or with missing information on partner's characteristics are excluded.

More information on the definition and construction of variables included in the models are given in Table 4. All variables except country of birth are updated annually, and are thus time-varying. However, some variables do not change much, for example level and field of education which most respondents have completed before taking part in the survey. The analysis comprising all employed persons 16-67 years is based on 27 989 person-years (13 163 for women and 14 826 for men). Employed married and cohabiting people contribute with a total of 19 554 persons-years (9 342 for women and 10 212), but about 8 per cent have missing information on some or all partner characteristics. The analysis sample of married and cohabiting women and men thus comprise 8 616 and 9 374 person-years, respectively[2]. Descriptive statistics for the dependent variable and covariates included in the models are displayed in table 5a for all employed women and men and table 5b for employed, married and cohabiting women and men.

[2] Robustness checks indicate that the loss of observations has no major bearing on the results. The robustness checks were performed by comparing the results for variables with non-missing values from the reduced group to the corresponding results from the full group of married and cohabiting respondents, and these results did not differ significantly.

5. Results

Table 6 displays the estimates from an ordinary binomial logit model based on the full sample of all employed respondents where the standard errors have been corrected for dependence among repeated observations for the same individual[3]. In the second column I report results from a pooled sample of women and men, while columns three and four report separate estimates for the two groups. From column two we see that the dummy representing the respondent's sex (here: woman) is negative and strongly significant, indicating that women's propensity to be self-employed (here expressed as odds ratio) is only about a third of that of men's (exp(-1.1127)=0.33) even after controlling for a number of other observable characteristics, e.g. field of education. This means that a large part of the gender differences in self-employment remains, even when we hold other things equal, which corroborates other analyses based on Norwegian register data (Berglann et al. 2012). The results show further that self-employment increases with age, but at a declining rate (age squared is negative) and mainly among men. Somewhat surprising, the self-employment propensity seems to be higher among people with than without health restrictions. The latter is true for both men and women, but it is hard to know the direction of any causality. Health restrictions could induce people to choose self-employment over wage-work, but it could also be that self-employment has contributed to worsening health conditions because of a heavy work load or other pressures. There may also be some unobserved underlying factors that are related to both self-employment and health restrictions.

When studying all employed women and men regardless of union status, the only family-related variables that can be observed for all individuals besides union status are the number and age of children in the household. Union status is not significant in any model and will not be commented on further. Small children, on the other hand, have a significant effect on women's self-employment propensity, but no effect on men, as could be expected. More surprising are the positive coefficients for women, indicating that mothers with young children up to the age of ten are more likely to be self-employed than women with no children in the household. This is at odds with the hypothesis that self-employment requires too much work and is too time-consuming to be combined with the care of small children. Rather it seems to corroborate the alternative hypothesis that being one's own boss and deciding on one's own working hours arrangements yield an added flexibility that makes self-employment an attractive alternative for employed women.

[3] This model was estimated using the Surveylogistic procedure in the SAS statistical software package.

Table 6. The likelihood of being self-employed versus being an employee. Norwegian *employed* women and men 16-67 years. Binomial logit model with robust standard errors. EU-SILC panel data 2003-2009

Covariate	Mod. I: Robust standard errors		
	All	Women	Men
Intercept	**-5.1566**	**-5.1526**	**-5.7247**
Woman (ref: man)	**-1.1127**		
Age	**0.1225**	0.0526	**0.1535**
Age squared	**-0.0101**	-0.0017	**-0.0136**
Health restriction (ref: no)			
Yes	**0.3177**	**0.3823**	**0.2838**
Children (ref: no children in household)			
Youngest child 0 years	0.2266	0.4266	0.1042
Youngest child 1-2 years	0.0664	**0.5741**	-0.1449
Youngest child 3-6 years	0.1084	**0.6731**	-0.1450
Youngest child 7-10 years	0.1182	**0.7717**	-0.1869
Youngest child 11-17 years	-0.0784	0.3280	*-0.2533*
Union status (ref: married)			
Single	-0.0516	0.1717	-0.1968
Cohabiting	0.0549	0.2238	-0.0238
Level of education[1] (ref: primary)			
Secondary school	*-0.2856*	*-0.5414*	-0.1715
University, short	**-0.8440**	**-1.2718**	-0.6562
University, long	**-0.7476**	**-1.1556**	-0.7202
Field of education[1] (ref: general prog.)			
Humanities and arts	**0.9271**	**1.6523**	0.3216
Education	-0.3013	-0.1969	-0.3337
Social sciences and law	**1.0524**	**1.4405**	**0.9798**
Business and administration	0.1387	0.2720	0.0640
Science, engineering, manufacturing	0.0009	0.4222	-0.1027
Health, welfare and sports	**0.4711**	0.1936	**1.0082**
Agriculture, fishing and forestry	**1.7617**	**2.5501**	**1.6078**
Communication, safety and services	1.1558	**1.6411**	*-0.6514*
Region (ref: Oslo/Akershus)			
Hedmark/Oppland	0.1705	-0.1805	0.3102
South-Eastern Norway	0.0532	0.1137	0.0788
Agder and Rogaland	0.2135	0.3193	0.2237
Western Norway	-0.0261	-0.0928	0.0532
Trøndelag	0.0032	-0.1849	0.0915
Northern Norway	0.0834	-0.3842	0.2373
Country background (ref: Norway)			
Western	0.1886	-0.2450	0.2824
Non-western	-0.4301	-1.0639	-0.2891
Calendar year (ref: 2003)			
2004	0.0253	-0.0204	0.0339
2005	-0.0701	-0.0110	-0.0900
2006	-0.0186	0.1512	-0.0828
2007	-0.0942	-0.0229	-0.1178
2008	**-0.2493**	-0.2057	**-0.2606**
2009	*-0.1457*	-0.0002	**-0.1984**
Number of obs. (person-years)	27 989	13 163	14 826

[1] The model also includes categories for people with missing values on these variables. None are significant and are therefore not reported here. Coefficients in bold: p≤0.05; coefficients in italics: p≤0.10

Other variables of significant importance for self-employment participation are level and field of education. A higher level of education is negatively related to being self-employed, but this effect is more predominant among women than among men. Field of education tells us something of the type

of work a person is educated for and is likely to be closely correlated to his or her occupation[4]. Compared to the reference group of people who have completed general programmes only, we find higher self-employment propensities for both sexes educated for agriculture, fishing and forestry and also for women and men educated for the social sciences and law. The latter field comprises for example psychologists, lawyers, accountants and management and administration workers. Women are also more inclined to be self-employed if they are educated for humanities and arts, and communication, safety and services. The former include amongst others music and performing arts, design and craft skills, whereas the latter include such as hair-dressers and beauticians, domestic service and catering. Men, on the other hand, are more likely to be self-employed if they are educated for health, welfare and sports. Here we find doctors, dentists, physiotherapists, pharmacists and veterinaries.

I find no regional differences in self-employment propensities among either women or men, nor are there any significant differences between people born in Norway and immigrants, which is somewhat surprising. However, the coefficient is negative throughout for non-Western immigrants, and the estimate is close to being significant at the 10% level for women alone and for both sexes analysed together. Finally, we observe a significant negative coefficient in 2008 and partly also in 2009 for men and for both groups together. This may be a reflection of the financial crisis and its aftermaths, which presumably made it more difficult to secure the necessary financial means to establish and run a business, as well as lower demand for goods and services in the economy as a whole.

Table 7 reports the results for employed, married and cohabiting women and men. Here we get a better picture of the whole household situation, not only caring obligations represented by the number and age of children, but also the importance of the partner's individual and labour market characteristics. Moreover, for this subgroup I also report results from a random effects model (Model II), to see if the results hold when we control for all unobserved differences between individuals that are stable over time (see equation 2).[5]

[4] Occupation is also reported in the survey, but it is likely to be an endogenous variable as it is usually dependent on the type of business established.

[5] The random effects model was estimated using the Glimmix procedure in the SAS statistical software package.

Table 7. The likelihood of being self-employed versus being an employee. Norwegian employed married or cohabiting women and men 16-67 years[1]. EU-SILC panel data 2003-2009

Covariate	Women		Men	
	Model I: Robust std. errors	Model II: Random effects	Model I: Robust std. errors	Model II: Random effects
Intercept	**-4.0723**	**-4.0888**	**-3.4487**	**-3.1951**
Age	*0.0215*	0.0180	0.0639	0.0265
Age squared			-0.0057	-0.0011
Health restriction (ref: no)				
Yes	*0.3594*	0.3340	**0.3709**	**0.3355**
Children (ref: no children in househ.)				
Youngest child 0-2 years	*0.5912*	**0.7480**	-0.0781	0.0389
Youngest child 3-6 years	**0.6817**	**0.6840**	-0.0737	0.0649
Youngest child 7-10 years	**0.7186**	**0.7839**	-0.1019	-0.0245
Youngest child 11-17 years	0.3854	0.3982	-0.0686	-0.1178
Union status (ref: married)				
Cohabiting	0.2259	0.1848	0.0026	0.0489
Level of education[2] (ref: primary)				
Secondary school	-0.3890	-0.4056	*-0.4139*	**-0.5963**
University, short	**-1.3554**	**-1.5546**	**-1.0814**	**-1.2351**
University, long	-0.7088	-0.9467	**-1.1978**	**-1.4124**
Field of education[2] (ref: general prog.)				
Humanities and arts	**1.3181**	**1.3973**	0.2357	0.5529
Education	-0.2837	-0.1585	0.0586	0.0638
Social sciences and law	**1.5121**	**1.4245**	**1.2256**	**1.5705**
Business and administration	0.2443	0.0391	-0.0559	0.0661
Science, engineering, manufacturing	-0.0066	-0.0227	-0.0969	0.0655
Health, welfare and sports	0.0718	0.0813	**1.3499**	**1.6949**
Agriculture, fishing and forestry	**1.6054**	*1.5338*	**1.4922**	**1.9665**
Communication, safety and services	**1.5005**	**1.5730**	-0.4740	-0.4597
Region (ref: Oslo/Akershus)				
Hedmark/Oppland	-0.1181	-0.0438	*0.3790*	*0.4356*
South-Eastern Norway	0.2981	0.3231	0.1332	0.1466
Agder and Rogaland	**0.7485**	**0.6178**	0.3025	*0.3966*
Western Norway	0.0824	-0.0546	0.1346	0.1276
Trøndelag	-0.1260	-0.2357	-0.0591	-0.1236
Northern Norway	-0.1653	-0.1933	0.2947	0.2374
Country of birth:				
Western	-0.7181	-0.2938	0.4739	0.4582
Non-western	**-1.9655**	-1.5145	-0.2296	-0.3374
Partner's level of education[2] (ref: primary)				
Secondary school	0.3512	0.1557	0.1136	0.0434
University, short	0.4098	0.4509	0.1335	0.0429
University, long	-0.1165	-0.2940	-0.2613	-0.4034
Partner's weekly working hours (ref: not working)				
1-37 hours	-0.3462	-0.5658	**-0.3467**	**-0.3850**
38-44 hours	*-0.5512*	*-0.5132*	**-0.4856**	**-0.4776**
≥ 45 hours	-0.0805	-0.1120	0.2264	0.1627
Partner self-employed (ref: no)				
Yes	**1.5650**	**1.7443**	**1.2964**	**1.3581**
Partner's log income	-0.0422	-0.0589	-0.0108	-0.0122
Household's wealth (ref: < 250 000 NOK)				
250 000 – 749 000 NOK	-0.1787	-0.1066	**0.8183**	**0.8770**
≥ 750 000 NOK	**0.6015**	**0.6355**	**1.2402**	**1.3502**

Covariate	Women		Men	
	Model I: Robust std. errors	Model II: Random effects	Model I: Robust std. errors	Model II: Random effects
Calendar year (ref: 2003)				
2004	0.0441	-0.0303	-0.0399	-0.0668
2005	-0.0021	-0.1722	-0.1463	-0.1117
2006	0.2088	0.0773	-0.1476	-0.1684
2007	-0.0650	-0.1394	**-0.2798**	**-0.3228**
2008	-0.2799	-0.3820	**-0.3221**	**-0.3993**
2009	0.0313	0.0632	**-0.2378**	-0.2101
Number of obs. (person-years)	8 616	8 616	9 374	9 374

[1] Respondents with partner < 16 years old or missing information on partner's characteristics and household's wealth are excluded. [2] The model also includes categories for people with missing values on these variables. None turn out significant and are therefore not reported here. Coefficients in bold: $p \leq 0.05$; coefficients in italics: $p \leq 0.10$.

Turning first to the estimates for children in the household, we find that small children below the age of 11 clearly induce married and cohabiting mothers to choose self-employment over wage-work. The estimates are very similar to those obtained when analysing all women regardless of union status (table 6), and the random effects model does not change this picture. In fact, the estimate for 0-2 year children becomes even more positive and significant when we control for unobserved heterogeneity (Model II). Concerning the partner, I investigate both his or her level of education, working hours, employment status (self-employed or not) and net income. In addition I examine the importance of the household's gross financial assets. When controlling for the partner's working hours and income, I find no significant effect of his or her educational level. One reason for including the partner's education in this case is that it may also reflect social capital and norms and values, including the degree to which the partner is supportive of his wife's employment, but there are no traces of such effects in the results reported in table 7.

The respondent's employment situation is clearly associated with the partner's self-employment propensity, however. The main picture for both women and men is that self-employment is less likely if the partner works at all. The estimates are of about the same magnitude for both women and men, but are more significant for men due to the larger sample. It is problematic to interpret this as a causal relationship, though, as we do not know which of the partners in the couple that have adapted to the other's working hours. As argued initially, it could be that the partner's employment activity is a barrier to self-employment among married and cohabiting women and men, but it could also be that the partner of a self-employed woman or man works less or not at all because of the long hours usually involved in self-employment. Moreover, when the partner works very long hours, more than 45 hours per week, self-employment seems more or less unrelated to the partner's working hours.

If the partner is self-employed there is a high likelihood that the respondent will also be self-employed. The positive association is highly significant for both women and men, but it is strongest

for women. This is in line with previous findings of Bruce (1999) for the US, who concluded that the higher self-employment propensity of women who were married to a self-employed man could only partly be explained by assortative mating or jointly run family businesses, and that intra-household transfer of human and social capital also play a role. I expect that these explanations are also appropriate for the positive relationship we observe here, but this cannot be investigated closer with the information available in our data.

As far as economic constraints are concerned, I find that self-employment is not related to the partner's net income neither for women nor men, but the household's wealth plays a significant role. Among women the self-employment propensity is considerably higher if the household's gross financial assets are very high (NOK 750 000 or more) [6], and among men the propensity is also higher if the household's wealth is in the medium range (NOK 250 000 – 749 000). Again it may be problematic to give this a causal interpretation, as the impact may run in both directions. That is, the self-employment propensity may be higher because the household has more financial assets, or the household's wealth may be higher because the respondent is self-employed, or both. I cannot disentangle these effects here, but a similar positive relationship between access to wealth and self-employment has also been established in previous analyses of Norwegian register data (Berglann et al., 2011. They distinguish between a person's own and the spouse's wealth and find that the entrepreneurship decisions of married women are much more sensitive to own wealth than to that of the spouse, while married men respond more strongly to the spouse's wealth.

The results for the remaining covariates in table 7 are largely the same as in table 6 (which include all employed women and men regardless of union status). The only exception is country of birth, where I find a significant negative effect of being non-Western on the self-employment propensity of married and cohabiting women. However, this effect turns non-significant in the random effects model. Moreover, the self-employment propensity among men is estimated to be somewhat higher in the Hedmark and Oppland region than in Oslo and Akershus, the capital region. The general picture when comparing the results from the ordinary logit model with the results from the random effects model are that they are not that different. The sign of the coefficients and the significance level are more or less the same, and the size does not differ very much. Hence, controlling for unobserved heterogeneity as specified in the random effects model does not seem to alter the conclusions.

[6] Approximately 100 000 EUR (1 EUR ≈ 7.5 NOK)

6. Summary and conclusion

The almost universal gender gap in entrepreneurship has received a lot of scholarly attention over the last decades, but is still not well understood. Among a number of suggestions for policies directed at strengthening entrepreneurship among women, OECD lists the ability of women to participate in the labour force by ensuring the access to affordable child care and equal treatment in the work place and in the society. One would therefore expect a country like Norway, with high female employment and high gender equality, to have a relatively high female to male entrepreneurship rate. Yet, according to Kelly et al. (2011), women constituted only about 25 per cent of early-stage entrepreneurs in Norway in 2010, which is lower than in most other industrialised countries.

The reasons mentioned for women's lower entrepreneurial activity are manifold. Psychological and motivational factors have received a lot of attention from the very beginning of female entrepreneurship research, but their importance is still debated. There is more consensus that dissimilar educational background and experience may explain part of the gender gap, and also differential access to capital, but even after controlling for such factors, most of the gender gap remains (Berglann et al. 2012). Recently, social and cultural factors have been identified as an area in need of more research (Goduscheit, 2011). Here the family and the household situation constitute an important part, and this has received limited attention so far. In particular, we know little of the role of the partner. Taking into account that self-employment usually involves longer working hours than ordinary wage-work in Norway, a premise for establishing a business may be that the partner is willing and able to work less, or at least not very long hours. Moreover, his (or her) economic resources may be an important safety-valve when considering risky investments and uncertain incomes, and the partner's skills and network may be valuable assets in the day-to-day running of the firm.

The major contribution of this paper is a detailed analysis of the household situation, including both the presence of children and their ages, and the partner's personal and labour market characteristics. I concentrate on employed married and cohabiting women and men 16-67 years old and model their propensity to be self-employed or a paid employee based on data from the Norwegian EU-SILC surveys 2003-2009. In line with previous studies from the US (Boden 1999, 2001; Connelly, 1992; Wellington, 2006), I find that young children are no barrier to self-employment among women. Instead mothers seem to be more inclined to be self-employed than an employee when the children are small. Since family policies in Norway facilitate the combination of work and family to a much larger extent than in the US, it is far from obvious that we should find a similar effect of children on the self-

employment propensity of Norwegian women. Yet, the results suggests that the extra autonomy and flexibility obtained by running one's own business outweighs the longer hours usually required by self-employment also in a social-democratic welfare state like Norway. Among men, there are no significant effects of children or their ages.

Somewhat surprisingly, the partner's education and income seem more or less unrelated to the respondent's self-employment propensity, but there is a clear negative relationship between the partner's working hours and self-employment. Both women and men are more likely to be self-employed if the partner does not work at all than if he (or she) is working up to 44 hours per week, but if the partner works even longer, the negative association disappears. It is hard to know the causal direction of this relationship, as we do not know which of the partners that have adopted their hours to the other in the first place. Another characteristic that is strongly related to the self-employment propensity of the respondent is whether or not the partner is self-employed himself (herself). This association is somewhat stronger for women than for men and could reflect both assortative mating (like marries like) and jointly run family businesses, but also the advantage of having close access to specific skills and the experience of running a business. Last, but not least, access to capital seems important. Both women and men are much more likely to be self-employed if the household's gross financial assets are high. For women the relationship is only significant if household wealth is very high (≥750 000 NOK), but for men it is also significant for household wealth in the medium range (250 000 – 749 000 NOK).

The main conclusion from this analysis is thus that children are no barrier for self-employment among women relative to ordinary paid employment, nor can we conclude that the characteristics of the partner is decisive for women's propensity to be self-employed. Some relationships should be explored further, however, to try to establish the causal direction of the positive association with partner's self-employment status and the negative association with partner's working hours. This will be an ambition for future research, which will address women's propensity to *become* self-employed rather than *being* self-employed. It would also have been an advantage to use a definition of entrepreneurship that is closer to the true meaning of the word than self-employment as reported in sample surveys. This is possible by using register data (see Fjærli and Iancu, 2012; Golombek and Raknerud, 2012), but the disadvantage is that these data contain less information on the partner and the household situation.

References

Aldrich, H. E., A. B. Elam and P. R. Reese (1997): Strong ties, weak ties, and strangers: Do women business owners differ from men in their use of networking to obtain assistance? In S. Birley and I. C. MacMillan (Eds): *Entrepreneurship in a Global Context*. London: Routledge.

Alsos, G. A. (2006): Barrierer for kvinners entreprenørskap: Diskusjonsnotat. Arbeidsnotat nr. 1009/2006. Bodø: Nordlandsforskning.

Alsos, G. A. and E. Ljunggren (1998). Does the business start-up process differ by gender? A longitudinal study of nascent entrepreneurs. *Journal of Enterprising Culture*, 6: 347-367.

Alsos, G. A. and E. Ljunggren (2006). Kjønn og entreprenørskap. In O. R. Spilling (Ed.): *Entreprenørskap på norsk*, 217-238. Bergen: Fagbokforlaget.

Becker, G.S. (1991): *A treatise on the family,* enlarged edition. Cambridge, Mass.: Harvard University Press.

Benz, M. and B. Frey (2008): Being independent is a great thing: Subjective evaluations of self-employment and hierarchy. *Economica* 75(298): 362-383.

Berglann, H., E. R. Moen, K. Røed and J. S. Skogstrøm (2011): Entrepreneurship: Origins and returns. *Labour Economics* 18: 180-193.

Berglann, H., R. Golombek and K. Røed (2012): Entreprenørskap i Norge – mest for menn? Unpublished paper presented at the MER Meeting, Oslo, 7 November 2012.

Berk, S. F. (1985): *The Gender Factory: The Apportionment of Work in American Households*. New York: Plenum Press.

Bernardi, F. (1999): Does the husband matter? Married women and employment in Italy. *European Sociological Review* 15 (3): 285-300.

Birley, S. (1989): Female entrepreneurs: Are they really any different? *Journal of Small Business Management* 27(1): 7-31.

Bittman, M., P. England, N. Folbre, L. Sayer, G. Matheson (2003): When does gender trumph money? *American Journal of Sociology*, 109(1): 186-214.

Boden, R. J. (1999): Flexible working hours, family responsibilities, and female self-employment. Gender differences in self-employment selection. *American Journal of Economics and Sociology* 58(1) : 71-83.

Boden, R. J. (2001): Gender and self-employment selection: An empirical assessment. *Journal of Socio-Economics* 25(6): 671-682.

Boden, R. J. and A. R. Nucci (2000): On the survival prospects of men's and women's new business ventures. *Journal of Business Venturing* 15(4): 347-362.

Bruce, D. (1999): Do husbands matter? Married women entering self-employment. *Small Business Economics* 13: 317-329.

Bullvåg, E., L. Kolvereid and B. W. Åmo (2011). *Entreprenørskap i Norge 2010, Global Entrepreneurship Monitor*. Bodø: Bodø Graduate School of Business.

Bø, T. P., R. H. Kitterød, T. Køber, S. M. Nerland and T. Skoglund (2008): Arbeidstiden – mønstre og utviklingstrekk. Reports 2008/12. Oslo-Kongsvinger: Statistics Norway.

Bönte, W. and M. Piegeler (2012): Gender differences in competitiveness, risk tolerance, and other personality traits: Do they contribute to the gender gap in entrepreneurship? Paper presented at IZA Workshop: New Directions in the Economics of Entrepreneurship, Potsdam, June 2012.

Carter, S., S. Anderson and E. Shaw (2001): Women's Business Ownership: A Review of the Academic, Popular and Internet Literature. 2001. Report to the U.K. Small Business Service. Glasgow: University of Strathclyde.

Coltrane, S. (1996): *Family Man. Fatherhood, Housework and Gender Equite.* New York – Oxford: Oxford University Press.

Connelly, R. (1992): Self-employment and providing child care. *Demography* 29(1): 17-29.

Cowling M. and M. Taylor (2001): Entrepreneurial women and men: Two different species? *Small Business Economics* 16(3): 167-175.

Croson, R. and U. Gneezy (2009): Gender differences in preferences. *Journal of Economic Literature* 47(2): 448-474.

de Bruin, A., C. G. Brush and F. Welter (2007): Advancing a framework for coherent research on women's entrepreneurship. *Entrepreneurship Theory and Practice* 31(3): 323-339.

Du Rietz A. and M. Henrekson (2000): Testing the female underperformance hypothesis. *Small Business Economics* 14(1): 1-10.

Eastwood, T. (2004): *Women Entrepreneurs: Issues and Barriers. A Regional, National and International Perspective.* St Albans: Exemplas Ltd.

Ellingsen, D. and U.-B. Lilleaas (2011): Kvinnerolle i gründerklemme. *Dagens Næringsliv* 7 January, 2011

Fischer, E. M., A. R. Reuber and L. S. Dyke (1993): A theoretical overview and extensions of research on sex, gender, and entrepreneurhsip. *Journal of Business Venturing* 8: 151-168.

Fjærli, E. and D. Iancu (2012): The financing of young firms: How persistent are borrowing constraints? Discussion Papers 707, Statistics Norway.

Furdas and Kohn (2010): What's the difference?! Gender, personality and the propensity to start a business. IZA Discussion Paper No. 4778. Bonn: The Institute for the Study of Labor.

Goduscheit, R. C. (2011): State of the art in entrepreneurship research. A policy-oriented review with particular emphasis on the gender perspective and the Norwegian context. DAMWAD and University of Southern Denmark. Available at http://www.damvad.com/media/11159/21778-mer_program_-_policyoriented_review_february_2011.pdf

Golombek, R. and A. Raknerud (2012): Exit dynamics of start-up firms: Does profit matter? Discussion Papers 706, Statistics Norway.

Greenstein, T. N. (2000): Economic dependence, gender and the division of labor in the home: A replication and extension. *Journal of Marriage and the Family* 62 (May): 322-335.

Gundry L. K., M. Ben-Yoseph and M. Posig (2002): Contemporary perspectives on women's entrepreneurship: a review and strategic recommendations. *Journal of Enterprising Culture* 10(1): 67.

Hamilton, B. (2000): Does entrepreneurship pay? An empirical analysis of the returns to self-employment. *Journal of Political Economy* 108(3): 604-631.

Hisrich, R. D., C. G. Brush, D. Good and G. DeSouza (1997): *Performance in Entrepreneurial Ventures: Does Gender matter?* Frontiers of Entrepreneurship Research. Wellesley, MA: Babson College.

Hundley, G. (2000): Male/female earnings differences in self-employment: The effects of marriage, children, and the household division of labor. *Industrial and Labor Relations Review* 54(1): 95-114.

Joona, P. A. and E. Wadensjö (2008): A gender perspective on self-employment entry and performance as self-employed. IZA Discussion Paper No. 3581, Bonn: The Institute for the Study of Labor.

Kelly, D. J., C. G. Brush, P. G. Greene and Y. Litovsky (2011): *Global Entrepreneurship Monitor – 2010 Women's Report.* Babson Park, MA: Babson College.

Kelly, D. J., S. Singer and M. Herrington (2012): *The Global Entrepreneurship Monitor (GEM) 2011 Report*. Babson Park, MA: Babson College.

Kitterød, R. H. (2007). Far jobber nesten alltid mest. Arbeidstid blant par av foreldre. In E. Kvande and B. Rasmussen (eds.): *Arbeidslivets klemmer. Paradokser i det nye arbeidslivet*. Bergen: Fagbokforlaget.

Kitterød, R. H., M. Rønsen and A. Seierstad (2011): Mobilising female labour market reserves: What promotes women's transitions from part-time to full-time work? Discussions Papers No. 658, Statistics Norway.

Kitterød, R. H. and M. Rønsen (2012): Untraditional dual-earners in Norway: when does she work at least as much as he? *Work, Employment and Society* 26(4) 657 – 675.

Kolvereid, L. (1992): Growth aspiration among Norwegian entrepreneurs. *Journal of Business Venturing* 7: 209-222.

Ljunggren, E. (2008): Kunnskapsbehov om entreprenørskap og kjønn i Norge. Arbeidsnotat nr. 1031/2008. Bodø: Nordlandsforskning.

Masters, R. and R. Meier (1988): Sex differences and risk-taking propensity of entrepreneurs. *Journal of Small Business Management* 26(1): 31-35.

Minetti, M., P. Arenius and N. Langowitz (2005): *Global entrepreneurship monitor (GEM) 2004 Report on Women and Entrepreneurship*. Babson Park, MA: Babson College.

Moore, G. (1990): Structural determinants of men's and women's personal networks. *American Sociological Review* 55: 726-735.

Nielsen, K. and J. Kjeldsen (2000): Woman Entrepreneurs Now and in the Future. Notat Series, Copenhagen: Danish Agency for Trade and Industry.

OECD (2004): *Women's entrepreneurship: Issues and policies*. Paris: OECD.

Orser, B. and S. Hogarth-Scott (2002): Opting for growth: Gender dimensions of choosing enterprise development. *Canadian Journal of Administrative Sciences* 19: 284-300.

Parker, S. C. and M. van Praag (2010): Group status and entrepreneurship. *Journal of Economics and Management Strategy* 19(4): 919-945.

Renzulli, L. A., H. Aldrich and J. Moody (2000): Family matters: Gender, networks, and entrepreneurial outcomes. *Social Forces* 79(2): 523-546.

Rønsen, M. and R. H. Kitterød (2012): Entry into work following childbirth among mothers in Norway. Recent trends and variation. Discussion Papers No. 702, Statistics Norway.

Schumpeter, J. A. (1947): The creative response in economic history. *Journal of Economic History* 7: 149-159.

Seiz, J. A. (1995): Bargaining models, feminism, and institutionalism. *Journal of Economic Issues* XXIX (2): 609-618.

Shane S., L. Kolvereid and P. Westhead (1991): An exploratory examination of the reasons leading to new firm formation across country and gender. *Journal of Business Venturing* 6(6): 431-446.

Skrede, K. (2004): Familiepolitikkens grense – ved 'likestilling light'? In A. L. Ellingsæer and A. Leira (eds): *Velferdsstaten og familien – Utfordringer og dilemmaer.* Oslo: Gyldendal Akademisk, pp 160-196.

Spilling, O. R. (2005): *Women entrepreneurship, management and ownership in Norway 2004: A statistical update.* Arbeidsnotat 2/2005, Oslo: NIFU STEP.

Statistics Norway (2012): Labour Force Survey Q2 2012, Table 13. Available at: http://www.ssb.no/english/subjects/06/01/aku_en/tab-2012-08-02-13-en.html

Stoner, C. R., R. I. Hartman and R. Arora (1990): Work-home role conflict in female owners of small businesses: An exploratory study. *Journal of Small Business Management* 29(1): 30-38.

Vaage, O. F. (2012): *Tidene skifter. Tidsbruk 1971-2010*. Statistiske Analyser 125, Statistics Norway.

Van Praag, M. C. and P. H. Versloot (20007): What is the value of entrepreneurship? A review of recent research. *Small Business Economics* 29: 351-382.

Verheul, I., Thurik, R., Grilo, I. and van der Zwan, P. (2012): Explaining preferences and actual involvement in self-employment: Gender and the entrepreneurial personality. *Journal of Economic Pshychology* 33: 325-341

Wagner, J. (2007): What a difference a Y makes – Female and male nascent entrepreneurs in Germany. *Small Business Economics* 28: 1-21.

Wellington, A. J. (2006): Self-employment: the new solution for balancing family and career? *Labour Economics* 13: 357-386.

Zapalska, A. (1997): A profile of women entrepreneurs and enterprises in Poland. *Journal of Small Business Management* 35(4): 76-82.

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