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DISCUSSION PAPER SERIES

IZA DP No. 14216

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# ABSTRACT

## Testing the Differential Impact of COVID-19 on Self-Employed Women and Men in the United Kingdom*

This paper investigates whether the female self-employed are more affected by the COVID-19 crisis than the male self-employed using longitudinal data four months following the first 'lockdown' in the UK. We specifically test the role of family/social, economic and psychological factors on gendered differential impact. We find that self-employment exits are not gendered but women are more likely to experience reductions in hours worked and earnings. This greater adverse impact on women's working hours and earnings is despite family responsibilities and home-schooling, industrial gender segregation and women's greater propensity to run a non-employing business and to work part-time. However, lower attitude to risk in women is associated with lower risk of reduction in earnings. Policy needs to look beyond business exits when considering crisis support for the self-employed.

**JEL Classification:** J16, J22, L26

**Keywords:** COVID-19, self-employment, entrepreneurship, gender, labour supply

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## 1. Introduction

A large body of literature has investigated differences in female and male entrepreneurship and small business ownership. A key issue concerns the influence of family and household for female entrepreneurship. Macro studies find little evidence for family and social factors over the state of the economy (Saridakis et al., 2014). Micro studies typically find a greater influence of family (and in particular choices about fertility and the raising of children) on self-employment decisions of women (Boden, 1999; Jayawarna et al., 2020; Noseleit, 2014; Wellington, 2006).

The COVID-19 pandemic has led to an economic crisis of a scale unprecedented in modern times. It is also amplifying gender and social inequalities (Blundell et al., 2020; Hupkau and Petrongolo, 2020), and throwing the differences in male and female entrepreneurship and particularly the role of family responsibilities and care at the micro level of the entrepreneur into sharp relief. The sudden impact of mitigation measures on the availability of schooling and accessibility of childcare and the concentration of female self-employed in 'face-to-face' service sectors (Henley and Reuschke, 2020) are expected to exacerbate gendered aspects of self-employment. Other views, by contrast, have predicted a greater adverse impact on women's businesses in the COVID-19 crisis arising not from family and childcare reasons but from the interplay of economic factors and the business models of women entrepreneurs (Manolova et al., 2020).

There is a growing body of literature that explores the impacts of different types of crises on entrepreneurs (e.g. Davidsson and Gordon, 2016; Kottika et al., 2020; Muñoz et al., 2020; Wattegama and Qing, 2015). Due to its deep and long-lasting economic consequences and its global nature, studies of the effects of the 2008 Global Financial Crisis provide a starting point for considering possible impacts of the COVID-19 crisis. Following the 2008 Global

Financial Crisis, although generally 'male' industries (finance, construction and manufacturing) were more affected (Alon et al., 2020), some studies found women entrepreneurs to be more disadvantaged (Biehl et al., 2014; Contreras, 2019; Thébaud and Sharkey 2016). Proposed explanations, however, are ambiguous and include the greater sensitivity to household context (Biehl et al., 2014) as well as discrimination in access to finance (Thébaud and Sharkey, 2016). Moreover, one study in Italy, found that female-owned microbusinesses recovered better from the recession which followed the Global Financial Crisis because women were more risk-averse and implemented more cautious business strategies (Cesaroni et al., 2015). The greater risk aversion alongside other personality traits of women, however, have usually been regarded as a hindrance to entrepreneurial activity (Caliendo et al., 2009; Dawson and Henley 2015; Obschonka et al., 2014), and are often cited as an explanation for lower performance outcomes and survival rates of women's businesses (Watson, 2020). While these studies are a valuable starting point, the COVID-19 crisis is distinct and more severe in multiple ways and hence demands timely research as well as longer term reflective studies.

This paper addresses the under-researched links between gender, entrepreneurship (proxied through self-employment) and crisis using large-scale, longitudinal survey data for the United Kingdom (UK), collected during the COVID-19 crisis. The UK has been particularly hard hit by the pandemic. Hospital admissions and excess mortality attributed to COVID-19 in the first half of 2020 were one of the highest worldwide (Pillai et al., 2020). Strict public health restrictions were put in place in late March 2020 to contain the spread of the virus. While other European countries put similar restrictions in place at around the same time, the UK was one of the last countries to ease restriction measures during the 'first' wave of the virus in the first half of 2020. This meant substantial restrictions for social institutions and businesses over a prolonged period of time with an unprecedented decline in national

economic output in the first half of 2020 (Office for Budget Responsibility, 2020, 38-39). Early official statistics report a very sharp decrease in self-employment between the first and second quarter of 2020 (Office for National Statistics, 2020), leading to concern about the impact of the crisis on entrepreneurship.

Our first research question concerns whether the impact of the COVID-19 crisis on the self-employed in the UK is gendered, because of family (social) factors. Our second and third questions concern whether self-employed women have been differently impacted by the COVID-19 crisis because of economic or psychological factors. Our data allow us to follow women and men who were self-employed before the pandemic started across each month from April to July 2020 (the first wave of the pandemic). We use multiple related economic outcomes (exit from self-employment, change in hours worked and change in earnings) to estimate whether female and male entrepreneurs were differently affected by the pandemic and the resulting shutdowns of parts of the economy.

For effective design of self-employment and entrepreneurship policy, it is important to understand whether self-employed women are more adversely affected. Without support services and actions to mitigate the factors (family/social, economic or psychological) driving those impacts, women may be forced to abandon entrepreneurial opportunities and may be dissuaded from future business start-up, as experienced in some countries after the 2008 Global Financial Crisis (Biehl et al., 2014; Contreras, 2019;). While our analysis focusses on the differential impact of the COVID-19 crisis on self-employed women and men during the first wave of infection and lockdown restrictions, the identification of factors associated with impact in this economic crisis will contribute to understanding of the resilience of female and male entrepreneurs (Lafuente et al., 2019).

## 2. Literature Review and Hypotheses Development

*a) Entrepreneurship and the ability to respond to crises*

Crises can arise from a range of unexpected events including economic shocks, civil unrest and the associated displacement of people, terrorism and natural disasters. Such breadth of events highlights that the impacts of crises can vary widely. For example, they may be short-live or may manifest over an extended period, may have different loci of impact (local, regional or global) and may have differential impacts across demographic groups, businesses and wider society (Manolova et al., 2020; Martinez Dy and Jayawarna, 2020).

Over the last few decades, specific world regions have experienced significant health crises. However, the COVID-19 pandemic has been exceptional in multiple ways. It has been a truly global crisis, in part arising from and impacting global social and economic interconnections, limiting aid that can be offered by the non-affected which characterises much crisis response (Muñoz et al., 2019). It has had significant deleterious health, social, employment and economic effects at multiple levels: individual, family, organisational, regional and national. Some of these effects arose from public health mitigation measures on social institutions and businesses that were deemed non-essential, imposed by national governments in attempts to stem the spread of the virus. Furthermore, the crisis has had an extended duration. Whilst the literature recognises that crises may be a process, rather than a sudden acute event, the process view is often associated with a gradual process of intra-organisational degradation such as strategic drift (Williams et al., 2017). The health, social and economic impacts of COVID-19 continue, at the time of writing, to be severe, with subsequent infection waves and repeated national or local lockdowns in many countries. This crisis therefore appears unique in displaying an extended acute phase. In short, the impacts of the crisis have been both ubiquitous and complex.

The ability of any group to respond to and recover from crisis will depend on a range of factors at multiple levels. For entrepreneurs these factors might include resilience as a personal trait, but studies have indicated the contribution of other elements, such as social embeddedness and access to resources (Kossek and Perrigino, 2016). The effects of these individual factors may contribute at other levels, such as organisational, and may not act in simple summation. Organisational resilience, for example, will require effective internal interactions between individuals and external interactions with stakeholders in its wider context (Castro and Zermeno, 2020). Many self-employed are sole traders or own micro-businesses. In such cases, the personal circumstances and traits of the owner will have a significant effect on the survival and recovery of the business (Ratten, 2020a, 2020b). In the case of COVID-19, many national governments have introduced furlough schemes, grants and loans in order to support businesses, with some targeted specifically at small businesses and hard-hit sectors. Such financial support represents a contextual contribution to entrepreneurial resilience.

While the impacts of crises are negative for most organisations and entrepreneurs, they can be beneficial for some. Customer demand may change rapidly in a crisis, or supply chains may be disrupted. Some entrepreneurs may be well-placed to benefit from these with limited changes. For others, resilience may be demonstrated by adapting what they do. However, the ability to respond in a resilient fashion may depend on circumstances and steps taken prior to the onset of crisis (Cowling et al., 2015).

*b) Gender, family responsibilities and crises*

Studies frequently find that crises have the greatest impacts on women, socially and economically. In Spain, the self-employment rate decreased substantially after the 2008 Global Financial Crisis among women but not men (Contreras, 2019). Women's employment level was also found to be less resilient in that crisis across European regions than men's (Doran and

Fingleton, 2016), and business growth intentions and export orientation was significantly lower among women (Giotopoulos et al., 2017).

The differential impact of crisis on women is often due to the expectation of them undertaking caring responsibility for other family members. In non-crisis situations, women with children were found to be the most likely to exit voluntarily from self-employment due to the inability to balance caring responsibilities with generating sufficient returns from self-employment, highlighting the influence of life-course events, notably decisions about fertility and subsequent childcare, for women entrepreneurship (Jayawarna et al., 2020). Such pressures on women are likely to be similar or even exacerbated during and after crises (Cesaroni et al., 2018).

During the COVID-19 pandemic, caring responsibilities became a sudden and significant challenge for many, due to closure of schools and extra-familial childcare provision. Thus, entrepreneurial households were confronted with immediate and stark choices between family responsibilities and business activity. There is little reason, perhaps, to think that in the face of the crisis the gendered nature of household dynamics may have differed in scale from their gendered nature over the life-course (Jayawarna et al., 2020).

Women have been found to choose self-employment, including part-time and home-based forms, as a means to flexible working and spending more time on childcare (Craig et al., 2012). This seems to be related with self-selection into industry sectors and occupations that provide this flexibility (Lim, 2019). In consequence, some authors note that the phenomenon of ‘mumpreneurship’ may reflect an equation of flexible home-based business activity with maternal, feminised forms of entrepreneurship, designed around supporting the needs of women in similar household circumstances (Lewis et al., 2015; Martinez Dy and Jayawarna, 2020).

The gendered nature of childcare responsibilities, reducing the time women can focus on their self-employment, has been shown to lower outcomes such as earnings or turnover (Loscocco and Bird, 2012; Georgellis and Wall 2005; Hundley 2000). Data from the OECD (2020) (in Manolova et al., 2020) identify that female entrepreneurs take on the household and family care in the absence of external care resources. Thus, since schools, nurseries and child-minders were forced to shut during the lockdown, and with women undertaking most of this care (Hupkau and Petrongolo, 2020), this may have led to a reduction in time available for work. Intra-household division of unpaid labour will be a critical driver of the impact on household entrepreneurial activity. Female entrepreneurial activity is therefore more likely to give way in response to school and external childcare closure. This leads to our first hypothesis:

**Hypothesis 1**: Women are more adversely affected by the COVID-19 crisis than men because of childcare responsibilities.

*c) Gender, entrepreneurship and economic factors*

Despite gender equality rights, occupational and industrial gender segregation is characteristic of contemporary labour markets. Women dominate in caring and face-to-face servicing occupations, administrative and secretarial occupations and customer services. Men dominate in skilled trade, manufacturing and plant and machine operation in particular. Managers and senior positions have remained more often male than female. Gender equality is limited to professional and associate professional and elementary jobs where shares of men and women are similar (Grint and Nixon, 2015).

Industrial gender segregation in entrepreneurship is lower in Europe, Central Asia and North America compared to other world regions. However, the Global Entrepreneurship Monitor still reports substantially lower proportions of women to men in information and computer technology sectors and higher proportions of women to men in government, health,

education and social services (Elam et al., 2019). Marlow and McAdam (2012) further highlight that in high income countries women tend to start-up businesses in 'crowded', 'low value-added sectors' and that the majority of women-owned businesses are concentrated in retail and catering. These patterns may reflect gendered occupational choices which are historically embedded in societal norms, even if the individual economic drivers of self-employment choice are as important for women as for men (Saridakis et al., 2014). Multiple studies from before the COVID-19 crisis found that gendered industry segregation is related with lower business performance, survival and growth outcomes in female enterprise (Sappleton, 2018; Zolin et al., 2013).

Emerging data on the economic impacts of COVID-19 have highlighted the differential impacts across industry sectors; because of emergency restrictions these were less severe in sectors deemed 'essential' (Joyce and Xu, 2020). For the same reasons, differential economic impacts on the self-employed may be largely explained by the highly sectoral nature of the impact of social distancing and the need to lockdown 'close contact' business activity at greatest risk of spreading infection. The lifting of restrictions has also had a differential effect, allowing some retailing and other essential services to re-open more quickly than, for example, restaurant, accommodation, leisure and personal services.

Industry sector was also an important predictor of business development and growth in the aftermath of the 2008 Global Financial Crisis. However, here businesses in manufacturing and construction in particular faced problems in accessing external finance (Cowling et al., 2016), i.e. businesses in sectors that are male dominated. However, under recessionary conditions lenders are more sensitive to credit ratings and tend to lend to larger businesses which Thébaud and Sharkey (2016) showed to have resulted in disadvantage for women-led small businesses, which ultimately lowers their business survival. Previous studies, not related

to crisis and recession, have revealed that the concentration of women's businesses in lower value-added sectors, their smaller size and part-time operation explain the greater constraints of women's business development (Blanchflower et al., 2003; Saridakis et al., 2014; Weber and Geneste, 2014).

Larger businesses may be more resilient to the economic impacts of COVID-19 due to past resource accumulation (Bullough and Renko, 2013; Corner et al., 2017). Moreover, diversity in knowledge, ideas and personal resilience among staff teams may allow new approaches to be tested and developed. Thus, the self-employed with employees may be better protected against reduction in earnings or turnover than sole-traders. Those with employees would also have had access to government furlough support (Ferguson, 2020). Part-time self-employment may further reduce potential earnings or reduce ability to accrue resources building future earnings resilience. Together, therefore, any greater impact of the COVID-19 crisis on women's self-employment may be explained by economic factors, formally hypothesised as follows:

**Hypothesis 2a**: Self-employed women are more likely to be adversely affected by the COVID-19 crisis than self-employed men because of industrial segregation.

**Hypothesis 2b**: Self-employed women are more likely to be adversely affected by the COVID-19 crisis than self-employed men because of their lower propensity to be employers.

**Hypothesis 2c**: Self-employed women are more adversely affected by the COVID-19 crisis because women were more likely than self-employed men to have worked part-time before the crisis.

*c) Gender, entrepreneurship and psychological factors*

Arguably, industry sector selection, business size and part-time work result from a complex of both individually and socially conditioned decisions, which intersect with life-course and family choices (Jayawarna et al., 2020; Lim, 2019; Marlow and McAdam, 2013). Both part-time self-employment and the smaller business size of women's businesses have also been interpreted in the light of the greater risk aversion of women and been related to limited female business ambitions (Saridakis et al., 2014).

Previous studies have found that risk attitude among the self-employed is gendered (Caliendo et al., 2009; Dawson and Henley 2015). Watson (2020) reviews empirical evidence from multiple studies demonstrating that women's attitude to risk can explain the smaller size of their businesses, slower and lower rates of growth, and lower propensity to apply for external funding. It is generally accepted that risk attitude contributes to gendered business models and strategies which disadvantage women, or impact on their performance and earnings.

Those with lower attitude to risk may have eschewed resource accumulation in the past due to concerns about personal or external equity/debt levels in their business (Henley, 2005). Alternatively, the risk averse may avoid the experimentation necessary to find new or different ways of structuring or operating their business or attracting customers. Even if caution can be advantageous in more moderate periods of turbulence (Cesaroni et al., 2015), this lack of resources or limited ability to experiment may leave women less able to adapt to the exogenous shock of COVID-19 (Manolova et al., 2020).

During the 2008 Global Financial Crisis, Cesaroni et al. (2015) found that women more frequently adopted defensive strategies than men, avoiding new investments or initiatives and consequently applied for less external funding. In contrast, Cowling et al. (2019) suggested that during crisis, higher risk aversion may advantage women' businesses, as they may be

considered by banks as safer investments. Nonetheless, the authors also find that the same risk adverse attitude means that women are less likely to apply for finance in the first place. Ayala and Manzano (2014) provide further explanation with their finding that women are less optimistic than men during a recession and so choose to grow their businesses less. In summary, this leads to our third hypothesis:

**Hypothesis 3:** Self-employed women are more adversely affected by the COVID-19 crisis than self-employed men because of their lower appetite for risk.

## 3. Data and methods

*a) Data*

We use UK data from the Understanding Society COVID-19 Study 2020 to investigate the differential impact of COVID-19 on self-employed women and men. This COVID-19 Study uses a household panel survey, Understanding Society (USoc), which begun in 2009/10 with a nationally representative sample of 40,000 UK households. The same households, and all members aged 16 years or older are re-interviewed annually. All 'active' adult members of the USoc were contacted in April 2020 (n=42,330) and again in subsequent months to join an additional COVID-19 Study rapidly developed and initiated to understand the social and economic impact of the coronavirus outbreak. The survey was live online for seven days towards the end of each month (Institute for Social and Economic Research, 2020).

In the USoc COVID-19 study, participants were asked retrospectively about their employment status in January/February 2020 as follows: employee, self-employed, employee & self-employed. We include in our study all respondents who were self-employed in January/February (pre-COVID-19 1st lockdown in the UK) in any capacity including in

combination with paid employment, a phenomenon termed as 'hybrid' entrepreneurship which constitutes a significant share of the self-employed (Folta et al., 2010).

This dataset has clear advantages over cross-sectional survey data. Repeated measures are available for individuals allowing us to derive at a fuller picture of impact compared to cross-sectional data. Information can be linked to the COVID-19 study from the USoc which allows us to compile a study sample enriched with pre-crisis information. This is important as crisis impacts are conditioned by pre-crisis factors (Cowling et al., 2015; Houston, 2020). Hupkau and Petrongolo (2020) compared respondents' characteristics from wave 9 USoc with the COVID-19 study and found that the COVID-19 study respondents are older, more likely to be female, in work, higher educated and British. Since our study is restricted to those who were self-employed in January/February 2020, we do not expect that our findings are significantly influenced by these sampling differences.

The four study rounds April-July 2020 are used in this study. Our study period thus captures the impact of the first full UK lockdown. The lockdown laws that were enforced on all four UK nations on 26-28 March 2020, included significant restrictions of people's movement and the closure of all but essential businesses. The full lockdown was in place for seven weeks when some relaxations (e.g. outdoor recreation) were introduced in England from the 13th May (but not in Wales, Scotland and Northern Ireland). However, in all nations significant restrictions remained in place until 4th July 2020 (Brown, 2020). From the 4th July 2020 some service and leisure facilities were allowed to reopen with distancing measures in place including pubs, restaurants and hairdressers.

For the January/February 2020 reference point of self-employment pre-COVID-19, information is also available on hours worked, post-tax (net) earnings, total household net earnings and whether people worked from home. We further link to these responses from

January/February 2020 the following pre-COVID-19 information from the participants' annual USoc interview in 2019: industry sector, employer-status, highest qualification and the family/household situation. Risk attitude is taken from wave 1 of the USoc and for part of the study sample from its predecessor, the British Household Panel Survey (wave 18). We therefore assume that people's risk attitude is an enduring trait.

The monthly surveys April-July 2020 include information on hours worked including zero if participants did not have any work to do, 'usual' net earnings, demographics, household circumstance including whether child/ren between 0-4 and 5-15-years-old live in the household and hours spent on childcare or home-schooling, alongside employment status. Those who reported to be self-employed including in combination with paid employment were asked in the May and June survey rounds whether they were told by the HM Revenue and Customs they were eligible for the Self-Employment Income Support Scheme (SEISS). However, the lump sum paid to eligible respondents is not captured in the data. It was further not specified in the online questionnaire whether respondents should include any SEISS payments in their 'usual' take-home pay in the respective survey month.

*b) Methods*

We use three measures of economic impact as outcome variables. First is an exit from self-employment. Second is percentage change in weekly hours worked and, third, percentage change in weekly net earnings, relative to the reported baseline in each case in January/February 2020, conditional on still being self-employed. Whereas exit captures complete withdrawal from self-employment activity, hours and earnings reductions provide indicators of partial loss of activity.

All three measures capture whether the self-employed were affected by the restrictions arising from COVID-19 at an early stage of the crisis (four months post lockdown: April-July

2020) rather than longer term recovery or adaptability (Smallbone et al., 2012). We include in all models wave dummies to control for any changes in this early stage of the crisis.

c) *Exit from self-employment*

We define an exit as termination of self-employment, including switches into paid employment. We acknowledge that an exit from self-employment can relate to different reasons and could be a positive choice (e.g. retirement or moving into a more secure job in paid employment). For the purpose of this paper, however, we consider impact on self-employment as the loss of entrepreneurial talent or capacity.

We use a discrete time proportional hazard model by including observations from respondents when we observe that they exited self-employment or when they are still at risk of exiting self-employment (Jenkins, 1995). We run a series of models to test our hypotheses. A baseline model includes gender and, as controls, other personal characteristics generally found to influence self-employment outcomes: age, ethnicity, educational attainment, marital/cohabitation status (Parker, 2018). We add to these a homeworking dummy as the possibility of homeworking has emerged as a new resilience factor in the COVID-19 crisis (Adams-Prassl et al., 2020). In order to be eligible for the first Self-Employment Income Support Scheme payment (which closed mid-July 2020), the self-employed had to trade in the tax year 2018-2019 (Seely and Hirst, 2020). We therefore add to our baseline exit model a variable indicating whether the self-employed were already self-employed in 2019 (from the respondents' 2019 USoc interview).

We add incrementally to this baseline model independent variables to test whether women are more adversely affected than men and which variables (family/social, economic and psychological factors) mediate the relationship between gender and our outcome variables. We examine the influence of family responsibilities and its mediating effect on gender

(Hypothesis 1) using the presence of dependent child/ren. Using the respondents' earnings and the household earnings pre-COVID-19, we further derive a variable for the breadwinner status of the respondent following Jayawarna et al. (2020) who found that women who are secondary household earners are less likely to exit self-employment. Our breadwinner variable is coded 1 if the respondents earned more than half of the household earnings and 0 if they earned half or less.

We add separately our set of 'economic' variables to our baseline model to test the role of gender industry segregation (Hypothesis 2a), being an employer (Hypothesis 2b) and part-time work (<30 hours/week) (Hypothesis 2c). In a last step we add attitude to risk as a scale variable whereby 0 means 'will not take risk' and 10 'ready to take risk' (Hypothesis 3).

In order to provide a fuller picture of the gendered impact of the COVID-19 crisis, we further test, in all models, interaction terms between gender and our family, economic and psychological factors. All independent variables are measured pre-COVID, thus accounting for the influence of the pre-recession business status on business development during the recession.

*d) Change in hours worked and earnings*

We derive dummy variables that indicate whether the self-employed experienced reductions in hours worked or earnings in each survey month (April-July 2020) compared to January/February 2020 respectively. These outcome variables are coded 1 if the respondents experienced a reduction in hours worked (earnings) and 0 if they experienced no change or an increase in hours worked (earnings) and hence were not affected or resistant to the economic shock.

We fit random effects probit models and follow the set of models as described above. We again use information about the business preceding the recession. In order to explore the

impact of family responsibilities and home-schooling during the crisis, we use here for each survey month corresponding information on whether respondents lived with pre-school-aged child/ren (0-4-years-old) or with school-aged child/ren (5-15-years-old). As an alternative, we measure family responsibility through hours spent on childcare including home-schooling. In addition, we use our derived breadwinner variable for respondents' pre-COVID-19 household situation.

*e) Study samples*

Our baseline sample for self-employment exits contains 4,893 observations from 1,688 respondents who were self-employed in January/February 2020. This sample includes n=289 exits from self-employment. By gender, this sample gives us 2,530 observations of men with n=149 exits and 2,363 observations of women with n=140 exits. Summary statistics based on this sub-sample are presented in Table 1.

For our baseline model of changes in hours worked, we use 4,630 observations from 1,581 respondents who were self-employed in January/February 2020 and remained in self-employment over our study period. Included are observations with zero hours worked during the crisis months. The majority of observations (69%) are reductions in hours worked to our baseline measure in January/February 2020. This sample gives us 2,404 observations of men and 2,226 observations of women. The proportion of reductions in hours worked is higher among women than men (73% versus 66%).

For the baseline model of changes in net earnings, we use a sample of 3,755 observations of 1,366 respondents who, like in the sub-sample of changes in hours worked, were self-employed in January/February 2020 and remained in self-employment during the crisis. Of these, 1,985 observations are from men and n=1,770 observations from women. The

proportion of observations with a reduction in net earnings is slightly higher among women than men (59% versus 54%).

—Table 1—

The summary sample statistics (Table 1) are in line with gender differences in entrepreneurship and the general working population highlighted in previous research. Women more often than men lived with dependent children pre-crisis. This is associated with a distinct age profile of women in our sample who are less often than men in our oldest age group 60-years-old or above. The proportion of women who were the secondary breadwinner pre-crisis is also substantially higher than among men. Industrial gender segregation is pronounced, as expected from the literature. Large shares of women worked in education, human health, social work, public administration, arts, entertainment, recreation and other personal services pre-crisis. The proportion of men is high who worked in manufacturing, electricity, gas, water, construction, transport and storage. Men were also more often than women employers although the share of non-employing self-employed is large in our data among both women and men. The proportion of part-time work is high among women. Psychological gender differences are reflected in our sample with women having reported on average lower risk scores than men.

Moreover, women also worked more often than men in any capacity from home pre-crisis which is in line with literature that argues that childcare needs and part-time work often go together with home-based self-employment among women (Craig et al., 2012; Saridakis et al., 2014). Despite this, a larger proportion of women than men in our sample has a degree.

## 4. Results

*a) Exit from self-employment*

Estimates of exits from self-employment (Table 2) show that women were not more or less likely than men to exit self-employment including when the presence of children as proxy of family responsibility (Model 2); industrial gender segregation and the greater likelihood of women not to employ anybody in their business and to work part-time (Model 5) and gendered risk attitudes (Model 6) are controlled for.

—Table 2—

Dependent child/ren decrease the risk of an exit from self-employment (Model 2). However, women were not significantly less likely to exit self-employment when they had a dependent child than men (Model 3). In addition to the presence of children we include whether the self-employed were the primary or secondary breadwinner based on the previous finding in Jayawarna et al. (2020) that women who are the secondary breadwinner in their household are less likely to exit self-employment. However, we do not find evidence that the breadwinner status significantly influences exits from self-employment during our study period (Model 2). The interaction between gender and our breadwinner dummy variable is also not significant (Model 4).

From the included economic factors, only running a business with or without employees is significantly related with an exit from self-employment (Model 5). However, when adding these economic factors to our baseline model, the gender coefficient is almost zero, and we also do not find significant gender interactions (not shown).

Risk attitude itself is not related with an exit from self-employment (Model 6) and further analysis of an interaction with gender (not shown) does not reveal a significant

relationship. Instead, a robust indicator of an exit from self-employment is whether those who were self-employed in January/February 2020, shortly before the coronavirus outbreak in the UK, were already self-employed in 2019. Those who were not self-employed in the tax year 2018/19 were not eligible for SEISS and as indicated in Table 2 were more likely to leave self-employment.

*b) Changes in hours worked*

Estimates of changes in weekly hours worked of those who remained in self-employment (Table 3), confirm that self-employed women have been significantly more affected by the COVID-19 crisis than self-employed men. A greater adverse impact on women is observed despite childcare responsibilities (Models 2 and 3), industry sectors (Model 5), employer status pre-COVID-19 (Model 7), part-time work pre-COVID-19 (Model 8) and gender differences in risk attitude (Model 9).

—Table 3—

We find evidence of family responsibilities impacting negatively on self-employment when the hours spent on childcare or home-schooling are considered (Model 3). However, it is men whose risk of reductions in working hours is significantly increased compared to women (Model 4).

The female self-employed are more likely than male self-employed to work in 'other' services which comprise personal services as well as the arts and entertainment sector (Table 1). These are sectors that are hard hit by COVID-19 mitigation measure, as evidenced in Model 5 showing the greatest risk of reductions in hours worked in these sectors compared to advanced business services. However, self-employed men in other services are more likely

than self-employed women to have experienced reductions in working hours in these sectors (Model 6).

Non-employer self-employed are not only more likely to exit self-employment (Table 2, Model 5) but if they remained in self-employment, they also experienced a greater risk of reductions in hours worked (Table 3, Model 7). Although women are more likely to have no employees (Table 1), this does not explain the greater adverse impact on their hours worked (Model 7, Table 3). The interaction term between gender and the employer dummy variable is also not significant (not shown).

*c) Changes in earnings*

Estimates in Table 4 show that women are also at significantly higher risk of having experienced reduced net earnings to no change in net earnings when compared to men (Table 4). Adding childcare-related variables to the model (Models 2 and 4) marginally changes the gender coefficient suggesting that the higher risk of self-employed women having experienced a reduction in net earnings is not related to childcare responsibilities. We further do not find that women with pre-school children or school-age children have a greater risk of earnings losses compared to men with pre-school children or school-age children (Model 3).

—Table 4—

The risk of self-employed women of having experienced earnings losses is still significantly increased when industry controls are included (Model 5) indicating that the differential impact of the COVID-19 crisis on the reduction in earnings of women and men

cannot be entirely explained through women being over-represented in industries in which the self-employed were at higher risk of earnings loss. Women's greater likelihood of not having employees does also not explain their greater risk of reduced net earnings although, as expected, we find that employers were less likely to have experienced reductions in earnings (Model 6). The gender differences in the risk of having experienced earnings losses is still significant after women's greater involvement in part-time work pre-COVID-19 is controlled for (Model 7). We also do not find significant interactions between gender and these economic variables (not shown).

The only variable that makes the gender dummy variable insignificant in our earnings models is attitude to risk (Model 8) underlining the importance of personality traits for the different experiences of women and men in entrepreneurship internationally (Obschonka et al., 2014). However, in contrast to the previous literature that relates the greater risk aversion of women to a lower entrepreneurial performance, the interaction terms between risk and gender indicate that a lower risk attitude among women tends to be associated with a *lower* risk of reduction in net earnings (Model 9).

For testing the robustness of our earnings results, we use a dummy variable for the respondents' eligibility for the Self-Employment Income Support Scheme. Published administrative data of applications made in May and June 2020 do not show a gender difference in take-up but men made claims for larger turnover recovery (HM Revenue & Customs, 2020). In line with these administrative data, there is no difference in our sample by eligibility and gender. The SEISS eligibility dummy is not significant in the earnings models and does not change our gender estimates (not reported).

## 5. Discussion

In summary, we find little evidence of a greater impact of the COVID-19 crisis on self-employed women due to family responsibilities (Hypothesis 1). Economic factors as measured in our study through industry sectors, an employer versus non-employing business and part-time work also do not explain differential impact of the crisis on self-employed women and men (Hypotheses 2a-2c). We find partial support for the role of psychological factors in explaining gendered impact of the COVID-19 crisis (Hypothesis 3).

According to one of our three measures of the economic impact of the COVID-19 crisis, our study appears to deliver caveated good news. Over the four-month period studied (April-July 2020), self-employed women in the UK do not appear, other things equal, to have been at greater risk of exiting self-employment than men. We stress that this is caveated, since the period has seen a sharp rise in net exits from self-employment by both men and women (ONS, 2020).

While we find that business exits are not gendered, we find that reduced earnings and hours worked are both gendered impacts of the early phase of the COVID-19 crisis. Overall, women are at greater risk of reduced earnings and reduced working hours. These differences cannot be explained by industrial segregation, propensity to be an employer and part-time work before the crisis – all factors identified in the literature with female self-employment (Georgellis and Wall, 2005). Our study shows that the attitude to risk provides some explanation of the gendered nature of reduced income. Contrary to much of the literature that views lower tolerance to risk by women as a business limitation (Caliendo et al., 2009; Dawson and Henley 2015; Obschonka et al., 2014), we find that a lower attitude to risk in women tends to be associated with *lower* risk of reduction in earnings. This finding appears consistent with women tending to take a more cautious approach to the 'pivoting' of business activity, and as

result being less exposed to income risk. It also appears consistent with the findings of improved recovery of female owned micro-businesses in Italy after the 2008 Global Financial Crisis due to adopting more cautious business strategies (Cesaroni et al., 2015).

Unsurprisingly, we find that time spent on childcare and home-schooling is associated with a reduction in hours worked for both self-employed women and men. One of the ways the economic impacts of the COVID-19 crisis have been distinct from the 2008 Global Financial Crisis, is that institutions such as schools and nurseries were closed. This resulted in many of the employed and self-employed unable to work due to having to undertake childcare or home-schooling. While our overall finding is unsurprising, what is contrary to expectations is that we find that men are more at risk of a reduction in working hours due to increased childcare, compared to women. While it might be heartening to ascribe this as evidence of a more balanced approach to childcare between the genders, it might be evidence of quite the opposite. Hupkau and Petrongolo (2020) found that the bulk of childcare during the lockdown was still provided by women. A possible mechanism for our finding is that women are used to coping with childcare and the unpredictability inherent with this, such as minor illnesses, school closure days and after-school clubs, and would have already designed and adapted their self-employed activity to absorb these interruptions. In contrast, it is likely that men with partners have been less exposed to such unplanned demands and have therefore needed to make more significant changes to their working hours during the COVID-19 crisis.

## 6. Conclusion

The economic after-shocks from the health crisis have had a significant impact on the self-employed, mitigated to some extent by a range of governmental steps. If the reduction in self-employment is sustained as seen at the beginning of the COVID-19 crisis, this will

represent significant damage to the economy's entrepreneurial capacity. Against our expectation, this has not resulted in a gendered pattern of exits four months following the first lockdown in the UK. Research exploring outcomes from the 2008 Global Financial Crisis found that females tended to be disadvantaged (Contreras, 2019; Thébaud and Sharkey, 2016; Biehl et al., 2014). As we have suggested, the COVID-19 crisis is distinct in a number of ways, including the closing of schools and other social institutions, resulting in more impacts on gendered caring roles and household dynamics and which our social feminist method was able to explore. However, we find that women were at more risk of reduced hours and earnings, and suggest that rather than exit their business, they reduced their hours, and hence earnings, as a coping strategy that provided some resilience. The 2008 Global Financial Crisis was followed by a growth in self-employment in the UK, and this growth was more pronounced in localities where the economy recovered better (Henley, 2017) and was characterised by growth in female self-employment (Deller et al., 2017). With recessionary pressures expected over the coming years and significant rises in joblessness predicted, a rise in necessity self-employment might be anticipated. Future research needs to explore if this is associated with gendered pattern of business start-ups, and whether past gains in opportunity-motivated female entrepreneurial activity will be lost.

Rather than a simple comparison of males and females that characterises many of the gender-based explorations of entrepreneurship, we used multiple regressions with a wide range of social and economic factors and individual traits in order to model the inter-related nature of these forces on the impacts of the COVID-19 crisis. The factors included, reflect issues such as life-course, including having and raising children, and household relations, such as household/spousal earnings. Our method and choice of variables therefore complements the small but growing number of studies that have explored differences between female and male entrepreneurs in the light of gendered roles, deeply ascribed at a societal level, such as

'caregiver' or 'breadwinner' (Jayawarna et al., 2020). The dataset we used, the USoc COVID-19 2020 study, although strong in its coverage of individual variables, is somewhat limited for the analysis of intra-household dynamics. The breadwinner status has proved to have an influence on one of our outcome variables (hours worked), and further exploration of household dynamics may have been fruitful for understanding underlying mechanisms of gender difference.

Our findings are relevant to policy and practice. Supporting women's self-employment has been associated with benefits ranging from generating personal self-fulfilment and family income to increasing regional resilience (Ahl and Marlow, 2012, Deller et al., 2017; Liu et al., 2019; Nadin et al., 2020). The differential gendering of earnings and hours worked show it is vital for policy makers to look beyond business exits when considering crisis support for the self-employed. Both short-term and longer-term interventions that address these gendered reductions should be developed. The importance of childcare has been identified as important to supporting women's entry into and continuance of self-employment (Jayawarna et al., 2020). As we have shown, this is also a necessity to supporting women's and men's self-employment during crises such as COVID-19. Our finding of the inverse relation between attitude to risk and resilience (in the form of lower reduction in earnings), lower risk appetite should not be viewed as a limitation of self-employed women. Rather approaches and interventions that understand and respect lower attitude to risk, whilst also allowing growth, should be developed and encouraged, to increase resilience of both women and men, and to the benefit of society and the economy more widely.

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**Table 1: Summary statistics and sample information**

| Variables in models | All | Men | Women |
|---|---|---|---|
| Worked from home in any capacity (%) | 0.60 | 0.55 | 0.65 |
| | *(n=1,688*) | *(n=889)* | *(n=799)* |
| Highest qualification (%) | | | |
| Degree | 0.46 | 0.42 | 0.50 |
| Other higher degree | 0.12 | 0.10 | 0.14 |
| A-level | 0.18 | 0.22 | 0.15 |
| GCSE | 0.15 | 0.16 | 0.15 |
| Other qualification | 0.06 | 0.07 | 0.05 |
| No qualification | 0.03 | 0.03 | 0.02 |
| | *(n=1,688*) | *(n=889)* | *(n=799)* |
| Age (%) | | | |
| 16-29 | 0.06 | 0.04 | 0.07 |
| 30-39 | 0.12 | 0.10 | 0.15 |
| 40-49 | 0.23 | 0.24 | 0.23 |
| 50-59 | 0.33 | 0.32 | 0.35 |
| 60+ | 0.26 | 0.30 | 0.21 |
| | *(n=1,688*) | *(n=889)* | *(n=799)* |
| Ethnic group (%)[1] | | | |
| White British | 0.80 | 0.80 | 0.80 |
| White, other | 0.06 | 0.05 | 0.08 |
| Mixed | 0.02 | 0.02 | 0.02 |
| Asian/Asian British | 0.09 | 0.11 | 0.07 |
| Black/Black British | 0.02 | 0.01 | 0.03 |
| | *(n=1,688*) | *(n=889)* | *(n=799)* |
| Lived with spouse (%) | 0.66 | 0.68 | 0.63 |
| | *(n=1,688*) | *(n=889)* | *(n=799)* |
| Was self-employed in 2019 (%) | 0.63 | 0.66 | 0.59 |
| | *(n=1,688*) | *(n=889)* | *(n=799)* |
| Was primary breadwinner (%) | 0.58 | 0.69 | 0.45 |
| | *(n= 1,329)* | *(n=707)* | *(n=622)* |
| Had dep. child/ren in household (%) | 0.35 | 0.33 | 0.38 |
| | *(n=1,688*) | *(n=889)* | *(n=799)* |
| Industry sector (%)[2] | | | |
| AB | 0.02 | 0.03 | 0.01 |
| CDEFH | 0.22 | 0.33 | 0.09 |
| GI | 0.10 | 0.10 | 0.11 |
| JKLMN | 0.29 | 0.32 | 0.26 |
| OPQ | 0.23 | 0.15 | 0.32 |
| RSTU | 0.13 | 0.07 | 0.21 |
| | *(n=1,077)* | *(n=593)* | *(n=484)* |
| Had no employees (%) | 0.86 | 0.83 | 0.89 |
| | *(n=1,077)* | *(n=593)* | *(n=484)* |
| Worked part-time including all jobs (<30 hrs./week) (%) | 0.35 | 0.23 | 0.50 |
| | *(n=1,077)* | *(n=593)* | *(n=484)* |
| Risk attitude (0-10) (mean) | 5.96 | 6.31 | 5.61 |
| | *(n= 1,217)* | *(n=619)* | *(n=598)* |

*Note: Understanding Society COVID-19 Study waves April-July 2020. Unweighted data.*
*[1]The category "other ethnic group" is not shown.*
*[2] SIC 2010.*

**Table 2: Exit from self-employment April-July 2020, proportional hazard estimation**

| Co-variates measured pre-COVID | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 |
|---|---|---|---|---|---|---|
| Woman (Ref. Man) | 0.036 | 0.083 | 0.114 | 0.116 | -0.006 | 0.059 |
| | (0.121) | (0.139) | (0.163) | (0.224) | (0.227) | (0.151) |
| Was self-employed in 2019 | -1.336*** | -1.293*** | -1.291*** | -1.293*** | -0.846*** | -1.410*** |
| | (0.127) | (0.142) | (0.142) | (0.142) | (0.231) | (0.152) |
| Had dep. child/ren in household | - | -0.490** | -0.436* | -0.492** | - | - |
| | | (0.175) | (0.227) | (0.176) | | |
| Woman × Had dep child/ren in household | - | - | -0.108 | - | - | - |
| | | | (0.291) | | | |
| Was breadwinner | - | 0.228 | 0.221 | 0.256 | - | - |
| | | (0.145) | (0.147) | (0.205) | | |
| Woman × Was breadwinner | - | - | - | -0.055 | - | - |
| | | | | (0.286) | | |
| Industry sector (Ref. JKLMN)[1] | | | | | | |
| AB | - | - | - | - | -0.307 | - |
| | | | | | (1.032) | |
| CDEFH | - | - | - | - | 0.316 | - |
| | | | | | (0.287) | |
| GI | - | - | - | - | -0.127 | - |
| | | | | | (0.361) | |
| OPQ | - | - | - | - | -0.195 | - |
| | | | | | (0.290) | |
| RSTU | - | - | - | - | -0.281 | - |
| | | | | | (0.392) | |
| No employees (Ref. employer) | - | - | - | - | 1.144** | - |
| | | | | | (0.433) | |
| Worked part-time (<30 hrs./week) | - | - | - | - | 0.081 | - |
| | | | | | (0.225) | |
| Risk attitude | - | - | - | - | - | -0.050 |
| | | | | | | (0.033) |
| Constant | -1.815*** | -2.086*** | -2.099*** | -2.104*** | -4.846*** | -1.405* |
| | (0.293) | (0.355) | (0.357) | (0.368) | (1.124) | (.629) |
| N observations | 4,893 | 3,895 | 3,895 | 3,895 | 3,287 | 3,635 |
| Wald Chi$^2$ (df) | 250.60(21) | 215.33(23) | 215.49(24) | 215.26(24) | 91.25(29) | 195.67(22) |

*Note: Understanding Society COVID-19 Study. Coefficients with standard errors in brackets. Dependent variable is coded 1 if respondents were self-employed in Jan/Feb 2020 and not self-employed in either April, May, June or July 2020, and 0 if they were still in self-employment during the crisis months. Co-variates not shown: lived with spouse, educational attainment, age, ethnic group, worked from home, wave dummies.*
*Significance level: ***p<0.001, **p<0.01, *p<0.05.*
*[1]SIC 2010*

**Table 3: Reduction in weekly hours worked, random effects probit estimation**

| Co-variates | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 | Model 7 | Model 8 | Model 9 |
|---|---|---|---|---|---|---|---|---|---|
| Woman (Ref. Man) | 0.430*** | 0.421*** | 0.410** | 0.488*** | 0.353** | 0.540** | 0.388** | 0.422*** | 0.399** |
| | (0.096) | (0.113) | (0.118) | (0.123) | (0.106) | (0.183) | (0.116) | (0.100) | (0.115) |
| Lives with child/ren 0-4 years old | - | -0.203 | - | - | - | - | - | - | - |
| | | (0.184) | | | | | | | |
| Lives with child/ren 5-15 years old | - | 0.240 | - | - | - | - | - | - | - |
| | | (0.129) | | | | | | | |
| Breadwinner pre-COVID (Yes) | - | -0.271* | -0.265* | -0.273* | - | - | - | - | - |
| | | (0.113) | (0.118) | (0.118) | | | | | |
| Time spent on childcare/home-schooling (hours a week) | - | - | 0.006* | 0.023** | - | - | - | - | - |
| | | | (0.032) | (0.008) | | | | | |
| Woman × Time spent on childcare/home-schooling | - | - | - | -0.020* | - | - | - | - | - |
| | | | | (0.009) | | | | | |
| Industry sector (Ref. JKLMN)[12] | | | | | | | | | |
| AB | - | - | - | - | -1.264*** | -0.993* | - | - | - |
| | | | | | (0.355) | (0.390) | | | |
| CDEFH | - | - | - | - | 0.439** | 0.517** | - | - | - |
| | | | | | (0.153) | (0.178) | | | |
| GI | - | - | - | - | 0.546** | 0.416 | - | - | - |
| | | | | | (0.177) | (0.234) | | | |
| OPQ | - | - | - | - | 0.466*** | 0.575** | - | - | - |
| | | | | | (0.133) | (0.195) | | | |
| RSTU | - | - | - | - | 0.826*** | 1.383*** | - | - | - |
| | | | | | (0.179) | (0.300) | | | |
| Woman × AB | - | - | - | - | - | -1.366 | - | - | - |
| | | | | | | (0.941) | | | |
| Woman × CDEFH | - | - | - | - | - | -0.259 | - | - | - |
| | | | | | | (0.330) | | | |
| Woman × GI | - | - | - | - | - | 0.251 | - | - | - |
| | | | | | | (0.353) | | | |
| Woman × OPQ | - | - | - | - | - | -0.239 | - | - | - |
| | | | | | | (0.268) | | | |
| Woman × RSTU | - | - | - | - | - | -0.891* | - | - | - |
| | | | | | | (0.376) | | | |

| Co-variates | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 | Model 7 | Model 8 | Model 9 |
|---|---|---|---|---|---|---|---|---|---|
| Had no employees pre-COVID (Ref. Employer)[1] | - | - | - | - | - | - | 0.443** (0.157) | - | - |
| Worked part-time pre-COVID (<30 hrs./week)[1] | - | - | - | - | - | - | - | 0.029 (0.102) | - |
| Risk attitude (Ref. low risk 0-3) | | | | | | | | | |
| medium risk (4-7) | - | - | - | - | - | - | - | - | 0.110 (0.157) |
| high risk (8-10) | - | - | - | - | - | - | - | - | -0.027 (0.176) |
| Constant | 0.792** (0.249) | 0.879** (0.281) | 0.852** (0.286) | 0.800** (0.287) | 0.102 (0.271) | -0.025 (0.278) | -0.139 (0.358) | 0.786** (0.250) | 0.525 (0.476) |
| N(observations) | 4,630 | 3,749 | 3,450 | 3,450 | 4,020 | 4,020 | 3,372 | 4,630 | 3,453 |
| Wald Chi2(df) | 95.44(20) | 85.30(23) | 78.30(22) | 81.91(23) | 130.25(25) | 137.28(30) | 89.96(21) | 95.50(21) | 70.73(22) |

*Note: Understanding Society COVID-19 Study. Coefficients with standard errors in brackets. Dependent variable is coded 1 if respondents experienced a reduction in hours worked April-July 2020 compared to Jan/Feb 2020, and 0 if otherwise. Only respondents are included who remained in self-employment. Co-variates not shown: lives with partner/spouse, educational attainment, age, ethnic group, worked from home, wave dummies.*

*Significance level: ***<0.001, **<0.01, *<0.05*

*[1]Measured in 2019 or January/February 2020*

*[2]SIC 2010*

**Table 4: Reduction in weekly net earnings, random effects probit estimation**

| Co-variates | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 | Model 7 | Model 8 | Model 9 |
|---|---|---|---|---|---|---|---|---|---|
| Woman (Ref. Man) | 0.222** | 0.252** | 0.230* | 0.276** | 0.218* | 0.212* | 0.213* | 0.151 | -0.298 |
| | (0.083) | (0.088) | (0.102) | (0.092) | (0.096) | (0.099) | (0.087) | (0.098) | (0.244) |
| Lives with child/ren 0-4 years old | - | -0.193 | -0.301 | - | - | - | - | - | - |
| | | (0.152) | (0.194) | | | | | | |
| Lives with child/ren 5-15 years old | - | 0.144 | 0.141 | - | - | - | - | - | - |
| | | (0.104) | (0.142) | | | | | | |
| Breadwinner pre-COVID (Yes) | | 0.152 | 0.160 | 0.155 | | | | | |
| | | (0.089) | (0.089) | (0.093) | | | | | |
| Woman × Child/ren 0-4 yrs. old | - | - | 0.247 | - | - | - | - | - | - |
| | | | (0.278) | | | | | | |
| Woman × Child/ren 5-15 yrs. old | - | - | 0.002 | - | - | - | - | - | - |
| | | | (0.183) | | | | | | |
| Time spent on childcare/ home-schooling (hours a week) | - | - | - | 0.002 | - | - | - | - | - |
| | | | | (0.002) | | | | | |
| Industry sector (Ref. JKLMN)[12] | | | | | | | | | |
| AB | - | - | - | - | -1.208** | - | - | - | - |
| | | | | | (0.383) | | | | |
| CDEFH | - | - | - | - | -0.014 | - | - | - | - |
| | | | | | (0.139) | | | | |
| GI | - | - | - | - | -0.074 | - | - | - | - |
| | | | | | (0.155) | | | | |
| OPQ | - | - | - | - | 0.035 | - | - | - | - |
| | | | | | (0.120) | | | | |
| RSTU | - | - | - | - | 0.268 | - | - | - | - |
| | | | | | (0.159) | | | | |
| Had no employees pre-COVID (Ref. Employer)[1] | - | - | - | - | - | 0.447** | - | - | - |
| | | | | | | (0.144) | | | |
| Worked part-time pre-COVID (<30 hrs./week)[1] | - | - | - | - | - | - | 0.057 | - | - |
| | | | | | | | (0.089) | | |
| medium risk (4-7) | - | - | - | - | - | - | - | 0.062 | -0.223 |
| | | | | | | | | (0.136) | (0.204) |
| high risk (8-10) | - | - | - | - | - | - | - | -0.010 | -0.309 |
| | | | | | | | | (0.151) | (0.215) |

| Co-variates | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 | Model 7 | Model 8 | Model 9 |
|---|---|---|---|---|---|---|---|---|---|
| Woman × medium risk (4-7) | - | - | - | - | - | - | - | - | 0.510† |
| | | | | | | | | | (0.272) |
| Woman × high risk (8-10) | - | - | - | - | - | - | - | - | 0.572† |
| | | | | | | | | | (0.305) |
| Constant | 0.176 | 0.057 | 0.060 | 0.039 | -0.001 | -0.223 | 0.193 | 0.497 | 1.046* |
| | (0.206) | (0.221) | (0.222) | (0.227) | (0.238) | (0.301) | (0.206) | (0.408) | (0.444) |
| N(observations) | 3,755 | 3,509 | 3,509 | 3,238 | 3,238 | 2,655 | 3,704 | 2,797 | 2,797 |
| Wald Chi2(df) | 42.95(20) | 48.02(23) | 48.82(25) | 46.38(22) | 56.68(25) | 60.69(21) | 39.24(21) | 26.73(22) | 30.59(24) |

*Note: Understanding Society COVID-19 Study, April-July 2020. Coefficients with standard errors in brackets. Only respondents are included who remained in self-employment. Co-variates not shown: lives with partner/spouse, educational attainment, age, ethnic group, worked from home, wave dummies. Significance level: ***<0.001, **<0.01, *<0.05,* †<0.01

[1]*Measured in 2019 or January/February 2020*

[2]*SIC 2010.*