

DISABILITY AND SELF-EMPLOYMENT: EVIDENCE FROM THE UK LFS

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ABSTRACT

This paper examines the self-employment decision for disabled and non-disabled workers in the UK. Using Labour Force Survey data it is found that for males, self-employment may provide an important means by which those with work-limiting disabilities can accommodate their impairment.

Keywords: Disability; self-employment; decomposition analysis.

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1. Introduction

In what is now an extensive empirical literature, at least for the US, disability is consistently found to have negative effects on labour market outcomes as measured by both employment rates and earnings (see Jones, 2005a for a review). The emphasis of much of this work, and of the small number of UK studies to date, has been the influence of employer discrimination on outcomes (Kidd *et al.*, 2000; Jones *et al.*, 2006a, 2006b; Jones, 2006) and latterly, the impact of the Disability Discrimination Act 1995 (Bell and Heitmueller, 2005; Jones *et al.*, 2006a). In the US studies have recently also considered how disability affects the type of employment undertaken, and find that the disabled as a group are concentrated in non-standard forms of employment, including independent contracting and part-time and temporary employment, with lower pay and fewer benefits on average (Schur, 2002, 2003; Hotchkiss, 2004). An important question is whether this form of ‘crowding’ is the result of employer discrimination, or instead represents a ‘voluntary’ choice for the disabled in that such forms of employment are better suited to the particular needs of disabled persons. The current evidence suggests that part-time employment in particular, is a voluntary choice for the disabled (Schur, 2003; Hotchkiss, 2004; and in the UK context, Jones, 2005b).

Self-employment has also been recognised as an important source of employment for disabled workers (see Blanck *et al.*, 2000 for the US and Boylan and Burchardt, 2002 for the UK). In the UK, the employment rate for those with a work-limiting disability is 43% for disabled men and 38% for females; in each case about half the rate for their non-disabled counterparts. However, 21% of work-limited disabled men who are employed are self-employed, compared to 17% of the non-disabled and those with a non-work-limiting health problem, while the corresponding figures for females are 9% and 6-7% respectively (see Table 1. In a manner similar to that for ethnic minorities (see for example Clark and

Drinkwater, 1998), over-representation of the disabled in self-employment may be a rational response to the presence of employer discrimination in the salaried sector. However, in the absence of enclave effects, it is possible that consumer discrimination will similarly affect the returns to self-employment¹. Whilst the incentives to enter self-employment depend on the relative strengths of these two sources of discrimination, other features of self-employment may provide alternative benefits for the disabled relative to the non-disabled group. In particular, the work-limited disabled may be better able to ‘accommodate’ their disability by being able to choose duties, hours and location². The latter influence can be expected to act as a pull factor that might encourage a disabled individual to be self-employed³. This hypothesis receives *prima facie* support from Figure 1, which reveals that those whose impairment is not work-limiting have self-employment rates among those in work which are very similar to the non-disabled, in contrast to the higher rates among the work-limited disabled. Figure 1 also shows that apart from 1997-1998, following the implementation of employment provisions of the Disability Discrimination Act in the UK (see below) in 1996, self-employment rates have been relatively stable; the differences that are the subject of the present paper are not unique to the specific year examined.

However, while self-employment is an important aspect of the labour market experiences of disabled persons, it is one that has hitherto been almost completely ignored in the disability literature, where the vast majority of studies exclude the self-employed altogether. Similarly,

¹ Using a variation of the model of Coate and Tennyson (1992), Clark and Drinkwater (1998) argue that discrimination in the salaried sector will induce a higher proportion (of ethnic minority individuals) into self-employment. However, the model assumes there is no direct consumer discrimination, which would act on the returns to self-employment in the opposite direction – see Borjas and Bronars (1989). There may also be greater barriers to entry into self employment if, for example, discrimination affects access to finance, etc.

² The flexibility of hours has previously been found to be of importance in the context of female self-employment, a feature that is argued to reflect family responsibilities (see for example, Carr, 1996; Boden, 1999).

³ The ability to accommodate a disability could act to increase the relative return to self employment in two ways: accommodation could increase an individual’s productivity in self-employment relative to employment, or could reduce the costs associated with work differentially by sector.

much of the previous empirical literature on the determinants of self-employment fails to consider the role of health. Relatedly, this literature has also typically ignored the participation (employment) decision and hence the possibility of selectivity effects that may render estimates inconsistent⁴. This issue is likely to apply *a fortiori* in the context of disability, where impairment(s) may influence both participation (employment) and self-employment decisions. The present paper therefore uses data from the UK Labour Force Survey (LFS) in 2003 to investigate the higher incidence of self-employment among the disabled, and to disentangle the relative influence of discrimination and accommodation factors. Predicted conditional self-employment probabilities are calculated from bivariate probit estimates which control for the possibility of selection effects, and probability differentials between disability groups are decomposed to identify the contribution of differences in coefficients – the ‘unexplained’ gap. While traditionally interpreted as a measure of discrimination, this gap also captures differences in preferences for self-employment among disability groups and hence potentially conflates these two effects. However, using the same principles as DeLeire (2001), the unexplained gap can then be apportioned between these two elements by separating the disabled into those who report their disability limits the amount and/or type of work they can perform, and those who state that their impairment/illness is not ‘work-limiting’. Specifically, if it is assumed that the latter have no need to enter self-employment in order to accommodate their disability, then the unexplained component (relative to the non-disabled) reflects only the relative influence of discrimination. For the work-limited disabled however, both effects are present. Making the further assumption, as in DeLeire (2001), that the degree of unequal treatment is the same for the work-limited and non-work-limited disabled, it is then possible to isolate the role of self-employment in accommodating disability.

⁴ An exception to this is Pagán’s (2002) examination of gender differences in participation and self-employment in rural Guatemala, where selectivity effects were found to be of considerable significance for females.

The remainder of the paper is structured as follows. In Section 2 we briefly review the small number of existing studies of disability and self-employment, and also elucidate some theoretical issues surrounding the choice of self-employment. In Section 3 we outline the estimating framework, while Section 4 describes the data and presents the main empirical findings. Section 5 concludes.

2. Background

In the US disabled workers are twice as likely as non-disabled workers to be employed part-time, on a temporary contract or as an independent contractor (Schur, 2002). Schur (2003) highlights three possible reasons for this: employer discrimination, the structure of the benefit regime, and differences in preferences between the disabled groups. She finds the earnings limits imposed by disability benefits and employer discrimination play only a small role, and that non-traditional employment opportunities provide an important mechanism by which the disabled may accommodate their disability. Hotchkiss (2004) provides supporting evidence with reference to part-time employment only, which she similarly finds is largely a voluntary decision. The same would appear to be true in the UK, where in a companion paper to the present study, Jones (2005b: 13) concludes that “[t]he effect of employer marginalisation, albeit a lower bound estimate, is very small, accounting for only 7% and 3% of the unexplained disability gap in part-time employment for work-limited disabled males and females respectively.”

To date however, relatively few studies have considered the effect of disability on self-employment (and none attempts a control along the lines proposed by DeLeire, which is undertaken for the first time in this context in the present paper). One of the exceptions is Blanck *et al.* (2000), who investigate Iowa’s Entrepreneurs with Disabilities Program (EWD)

designed to enhance the access to self-employment for the disabled. These authors highlight the role of discrimination (either perceived or actual), and particularly in relation to hiring and firing, as a major motivation for disabled persons starting their own business, and conclude that self-employment affords increased employment opportunities for the disabled. Discrimination is also found by Schur (2003) to be more important as an explanation of higher self-employment rates among the disabled than for the other non-standard forms of employment that this group may enter. In contrast, an RTC Rural Research Report (2001), summarising the findings of a national survey of disabled entrepreneurs and/or disabled persons seeking help from state Vocational Rehabilitation (VR) agencies, notes that the need to create one's own job and to accommodate a disability were cited by respondents almost as frequently as wanting to work for oneself, owning one's own business, making more money and identification of a market opportunity. Only in a much smaller proportion of cases did respondents state that other jobs were unavailable (of course this may be the reason for the need to create one's own job). The absence of job opportunities is identified as a key factor underpinning the greater use of self-employment as a potential vocational rehabilitation tool by state VR counsellors in Arnold *et al.* (1995), where it is more favourably perceived and extensively used by rural counsellors whose constituencies offer fewer employment opportunities.

In the UK, an early study by Prescott-Clarke (1990) using primary data from her own survey on economically active persons with health problems examines the differences between employees and self-employed disabled workers. Several of Prescott-Clarke's findings point to the role of disability/health as a contributory factor in the self-employment decision, many of them consistent with the current accommodation hypothesis. Thus, 19% of the self-employed reported that they had to work at home due to their condition compared with just

1% of employees. In many instances, the accommodation of the disability related to a greater flexibility of work patterns/schedules. For example, around twice as many of the self-employed (40%) say they are unable to work a standard week compared with those in waged employment (19%), while the corresponding percentages for those reporting having to take breaks regularly due to health are 48 and 23 respectively. Accordingly, a higher average work handicap score was reported for the self-employed (cf. employees). Among those who were currently disabled and self-employed, half suggested their decision to become self-employed was affected by their health problem, leading Prescott-Clarke (1990: 69) to conclude that “There is a clear implication in the data that their self-employment status is at least in part a result of their health problem”.

More recently, in commissioned research undertaken for the Small Business Service, Boylan and Burchardt (2002) identify a number of empirical regularities using nationally representative data from the LFS and the Family Expenditure Survey (FES). Foremost among these is that the disabled⁵ are more likely to be self-employed than their non-disabled counterparts. However, further investigation reveals that for men at least, this is explicable in terms of the differential age profiles of the disabled and non-disabled, the former being older on average than the latter due to the fact that many forms of disability are subject to age-onset. Self-employment also rises with age. Among the self-employed, disabled persons were less likely than the non-disabled to cite positive reasons such as the desire for independence or exploiting a market opportunity as reasons for becoming self-employed. Instead, for some disabled persons (and most notably those with low levels of educational attainment), the

⁵ As defined by the Disability Discrimination Act (see below), i.e. a physical or mental impairment having a substantial and long-term adverse effect on an individual’s ability to carry out normal day-to-day activities, where long-term essentially means 12 months or longer. Note that this differs from the definition used in the present paper which relates to work capacity.

decision to enter self-employment appeared to be a consequence of push factors, and in particular the lack of alternative opportunities.

Of course this raises the issue of employment protection for the disabled. The primary piece of legislation in the UK concerning disability rights is the 1995 Disability Discrimination Act (DDA), subsequently modified by the EU Framework Employment Directive⁶. For those in waged employment, the DDA provides protection against discrimination on the basis of disability including in relation to recruitment and dismissal⁷, and places an obligation on employers to provide reasonable adaptations such as modifications to workplaces and/or work arrangements⁸. As noted by Boylan and Burchardt (2002: 15), the DDA's employment provisions do not impact directly on the self-employment of disabled persons excepting insofar as the reduction in discrimination against disabled persons by employers may reduce the impact of the 'push' into self-employment occasioned by such discrimination. There are however, other sections of the DDA covering and impacting on discrimination in self-employment. Firstly, it is unlawful for service providers to discriminate against buyers of a good or service on the basis of disability, including in the provision of services to those seeking to become self-employed, and secondly, self-employed persons who work under contract are covered by the DDA, potentially including the requirement for 'reasonable adjustments'. They do not however "prohibit discrimination by clients selecting independent (self-employed) suppliers of goods or services" (www.disability.gov.uk).

⁶ Council Directive 2000/78/EC, implemented in the Disability Discrimination Act 1995 (Amendment) Regulations 2003. See Wells (2003) for a discussion of the impact of this directive on UK disability discrimination law.

⁷ Initially covering workplaces of 20 (and from 1998, 15) or more employees, all workers are now covered in response to the 1997 Treaty of Amsterdam.

⁸ See Jones *et al.*, 2006c for a review of the British evidence.

In addition, several of the recent policy initiatives aimed at increasing the employment of the disabled such as Disabled Persons Tax Credit (now replaced by Working Tax Credit) and the Access to Work scheme also apply to self-employment. More generally, because many of the existing enterprise schemes cover both the disabled and the non-disabled, there is little reason to suppose that these schemes are directly responsible for the higher self-employment incidence among the disabled population who work.⁹

3. Methodology

As noted previously, it is important in modelling the self-employment decision to take account of the fact that those in employment do not constitute a random draw from the underlying population. Accordingly a bivariate probit model with selection is estimated separately for each of the $j=3$ disability groups. These three groups are defined following DeLeire (2001) as the work-limiting disabled (D_1), the non-work-limiting disabled (D_2) and the non-disabled (N)¹⁰. Separate estimation is also undertaken for males and females. For each gender group, the employment (participation) equation is given by:

$$E_{ij}^* = \gamma_j Y_{ij} + \mu_{ij} \quad (1)$$

where i indexes individuals and the observed variable binary variable E_{ij} , is related to E_{ij}^* as follows:

$$E_{ij} = \begin{cases} 1 & \text{if } E_{ij}^* > 0 \\ 0 & \text{otherwise} \end{cases}$$

with $E_{ij} = 1$ for the employed and $E_{ij} = 0$ for the unemployed and the inactive. The self-employment equation is given by:

$$S_{ij}^* = \beta_j X_{ij} + \varepsilon_{ij} \quad (2)$$

⁹ The main exception to this is the New Deal for Disabled People (NDPP) pilot schemes (see Boylan and Burchardt, 2002 for an account of these).

¹⁰ Note that individuals self-report their disability status.

where S_{ij} , which has $S_{ij} = 1$ for the self-employed and $S_{ij} = 0$ for employees is observed only when $E_{ij} = 1$ and is related to S_{ij}^* as follows:

$$S_{ij} = \begin{cases} 1 & \text{if } S_{ij}^* > 0 \\ 0 & \text{if } S_{ij}^* \leq 0 \end{cases}$$

As noted above, this relationship is modelled as a bivariate probit with selectivity, where μ_{ij} and ε_{ij} are assumed to be distributed bivariate normal with means equal to zero, unit variances and the correlation between the two errors within each disabled group (and gender) is denoted ρ_j .

The variables that determine employment Y_{ij} are well-understood and will largely be the same as those that determine self-employment X_{ij} . Thus, both vectors include fairly standard controls for age, education, ethnicity, marital status, housing tenure, the presence of another income earner in the household and region. In the self-employment equation, the presence of another income earner in the household and housing tenure are essentially proxies for access to financial capital and hence for capital constraints in this decision, factors for which we have no direct measures¹¹.

One issue that does arise with the above however, concerns identification, which requires at least one variable in the selection (employment) equation (i.e. in Y_{ij}) that does not appear in the final outcome (self-employment) equation (i.e. in X_{ij}). As is true in many contexts however, finding a suitable identifying restriction is far from straightforward, since almost

¹¹ While our set of controls is relatively comprehensive, there are a couple of more obvious omissions such as psychological factors and family background which are unavailable in our data. See Le (1999) for a review of the empirical work in this area. For the disabled, the nature of the impairment might also be important. In fact, estimates controlling for such heterogeneity among the disabled groups revealed a role for the disability type in the participation decision (as in Jones *et al.*, 2006a), but not in the self-employment equation, in contrast with Boylan and Burchardt (2002).

any regressor that determines whether an individual works could conceivably also impact on the decision to be self-employed. The identifying restriction adopted here is the number of dependent children of pre-school age – with the exception of disabled males, this variable is a significant factor in determining whether an individual works, but in no case does it impact on the decision to be self-employed, and as such appears a reasonable choice. In addition, since X_{ij} is observed for the employed, it also contains a set of industry dummies¹².

A useful exercise, and indeed one of the primary *foci* of the paper is to consider the extent to which differences in predicted self-employment probabilities for the (work-limited) disabled relative to the other disability groups reflect differences in characteristics (such as age), or differences in the response to those characteristics. We therefore perform a Oaxaca (1973)-type decomposition analysis for the bivariate probit following Mohanty (2002) in order to disentangle these two influences.

The average predicted conditional probability of self-employment for the j th group, with sample size η_j , is:

$$S_j^C = \frac{1}{\eta_j} \sum_{i=1}^{\eta_j} \frac{\Phi_2(\beta_j X_{ij}, \gamma_j Y_{ij}, \rho_j)}{\Phi(\gamma_j Y_{ij})} \quad (3)$$

where $\Phi_2()$ represents the bivariate normal distribution and $\Phi()$ the standard normal distribution. The complicating feature of the bivariate probit relative to the probit without selectivity concerns the conditioning term in the denominator of (3). Given that the second stage constitutes the primary focus of the present paper, we follow Mohanty in assuming that

¹² Note that we do not include occupational dummies at the second stage due to the danger that these may conflate occupation and self-employment status (e.g. being a manager).

the same employment equation applies as for the comparator (non-disabled) group¹³, thereby isolating the unexplained difference in predicted *conditional* probabilities only, rather than the total difference.

For the work-limited disabled (males or females as required) the unexplained gap is therefore:

$$(S_{D_1}^C - S_N^C)_{\text{unexplained}} = \frac{1}{\eta_N} \sum_{i=1}^{\eta_N} \frac{\Phi_2(\beta_{D_1} X_{iN}, \gamma_N Y_{iN}, \rho_N)}{\Phi(\gamma_N Y_{iN})} - \frac{1}{\eta_N} \sum_{i=1}^{\eta_N} \frac{\Phi_2(\beta_N X_{iN}, \gamma_N Y_{iN}, \rho_N)}{\Phi(\gamma_N Y_{iN})} \quad (4)$$

while for the non-work-limited disabled the corresponding gap is:

$$(S_{D_2}^C - S_N^C)_{\text{unexplained}} = \frac{1}{\eta_N} \sum_{i=1}^{\eta_N} \frac{\Phi_2(\beta_{D_2} X_{iN}, \gamma_N Y_{iN}, \rho_N)}{\Phi(\gamma_N Y_{iN})} - \frac{1}{\eta_N} \sum_{i=1}^{\eta_N} \frac{\Phi_2(\beta_N X_{iN}, \gamma_N Y_{iN}, \rho_N)}{\Phi(\gamma_N Y_{iN})} \quad (5)$$

In general, decompositions of the type above do not permit the researcher to separate the contributions of differences in preferences and unequal treatment in the salaried sector to the unexplained component at the second stage. However, the DeLeire approach permits such a separation, at least within limits, in this context. Equation (4) above, which performs the comparison between the work-limited disabled and the non-disabled, incorporates the influence of both ‘preferences’ (including the need to accommodate) and of differences in discrimination between those self-employment and the salaried sector. In contrast, assuming no difference in the need for accommodation/preferences between the non-work-limited disabled and the non-disabled, (5) relates solely to the influence of discrimination. If discrimination in the salaried sector exceeds that in self-employment, then this will act to increase the probability of self-employment and (5) will be positive. The difference between (4) and (5) is by definition therefore, an upper limit on accommodation as a driver of the self-employment decision of the work-limited disabled.

¹³ The choice of this group reflects their numerical predominance in the population; results are qualitatively invariant when pooling across the three disability categories as the basis for comparison.

4. Results

4.1 Descriptive statistics

Four quarters from the 2003 UK Labour Force Survey are used to construct an annual cross sectional dataset for the analysis. Table 1 provides some background statistical information on a number of facets of the current employment situation for each of the gender-disability groups, and also reports (two-tailed) t-tests of differences between each of the disabled groups and the relevant non-disabled comparator (male/female as appropriate).

A number of interesting features of this table are evident. Firstly, as already noted, those with a work-limiting disability are substantially less likely to be in employment than both the non-disabled and those whose disability does not limit either the amount or type of work they are able to undertake. This lower employment rate is of course, well-documented elsewhere (see for example Jones *et al.*, 2006a). Among those who are in employment, it is also evident that men exhibit a higher incidence of self-employment compared with women, while for both genders, the work-limiting disabled are more likely than the other disability groups to be self-employed.

As might be anticipated, self-employed workers are more likely to work from home¹⁴ by several orders of magnitude than salaried employees for each of the three disability groups and for both men and women, and accordingly more likely to reside and work in the same local authority district (LAD). The difficulties disabled individuals face in getting to work may be an incentive to undertake self-employment, and comparisons across disability groups lend limited support to this, at least for self-employed work-limited disabled men. Members of this group especially are significantly more likely to work from home than their self-

¹⁴ Working from home includes working in your own home itself, from grounds or out-buildings, and when using home as a base but possibly working in other locations.

employed non-disabled disabled counterparts, while the proportion working in the same LAD as their residence is significantly higher for the disabled compared the non-disabled for both men and women, regardless of whether they are self-employed or work for an employer.

When examining other features of self-employment, it emerges that the type of self-employment is fairly similar among the disability groups. However, one feature which stands out in Table 1 is that the work-limited disabled in particular are more likely than the other disability groups to class themselves as ‘working for self’ and, for men, less likely to be a partner in a professional practice or as sole director of a limited company. Consistent with this, the proportion of the work-limited disabled male self-employed employing others is significantly lower, with nearly 80% having no employees compared to 74% of non-disabled and non-work-limited disabled men. For both men and women, individuals with a work-limiting disability are also more likely to report that they are simply working for themselves.

Taken as a whole, Table 1 thus provides an important clue to the relationship between disability status and self-employment status. In particular, those whose disability is not work-limiting appear more similar in almost all respects (including in particular, employment and self-employment rates, as noted previously) to those without any form of disability than to those whose disability is work-limiting. This suggests that among the key factors that drives the decision to engage in self-employment (and in particular among men) is the potential advantage for those whose disability is work-limiting that this type of employment confers in terms of flexibility of work schedules etc. and hence the ability to accommodate their impairment (*inter alia*, Boylan and Burchardt, 2002)¹⁵. The econometric evidence below

¹⁵ Somewhat more direct evidence on the factors promoting self-employment is considered in the 2001 LFS and reported by Boylan and Burchardt (2002). Among the more interesting results are that when considering the reported reasons for self-employment, only small differences are evident across disability groups *within* gender, with larger differences being evident *between* genders. In particular, men were substantially more likely than

seeks to determine this more formally using the methods set out above. The sample is restricted to those of working age excluding government trainees, unpaid family workers and full-time students. Means of the variables for each of the six sub-groups (three disability groups each for males and females) appear in Table 2. Although not reported, each specification also includes both quarter dummies.

As Table 2 indicates, several interesting differences emerge among the various sub-groups in terms of the explanatory variables. First, as noted by Boylan and Burchardt, the disabled are, on average, older than the non-disabled. This difference is especially pronounced in the case of males, at around seven years, both for those whose disability limits the amount or type of work they can undertake as well as those for whom their disability is not work-limiting. This is especially noteworthy in light of the earlier observation that the self-employment rate is higher only for the work-limiting disabled, suggesting that at least part of the difference between the work-limited and non-work-limited disabled is due to factors other than age, and potentially the greater opportunity self-employment affords the former to accommodate their disability.

Secondly, as has been identified elsewhere, the work-limiting disabled (in particular) are less well-qualified than both the non-work-limited disabled and especially the non-disabled. This is most pronounced in respect of university or higher degrees. The work-limited disabled are also much more likely to have no formal qualifications (around 30% for both males and females) compared with the non-work-limited disabled (13% for men and 17% for women) and the non-disabled (12% and 14% for men and women respectively).

women to cite push factors such as the absence of jobs locally or being made redundant, while a significantly higher proportion of women stated that their reason for becoming self-employed was due to family commitments.

A further feature of interest in Table 2 is that (presumably reflecting in part their greater age), the disabled groups have, on average, fewer dependent children and fewer dependent children of pre-school age. In terms of housing tenure, whereas both disabled groups are more likely to own their home outright, the work-limited disabled are also substantially more likely to be in social housing than either of the other disability groups and accordingly less likely to have a mortgage. The former likely reflects age differences between the disabled and non-disabled, and especially for those with age-onset disability. There are also substantial regional variations in disability incidence (Jones *et al.* 2006b)

4.2 Estimation results

The results of estimating the bivariate probit models for each of the six sub-groups are presented in Tables 3 and 4, the former presenting the estimates for males and the latter the corresponding results for females. Rather than presenting a blow-by-blow account of the results, we instead focus on the main patterns in the data, highlighting differences where these exist.

The first feature to note concerns the sign and significance of ρ in several of the models in Tables 3 and 4. As is evident, this parameter is consistently negative for males and, as indicated by a Likelihood Ratio test, significant at the 10% level for both the work-limited disabled and the non-disabled. In contrast, ρ is positive throughout for females, albeit it fails to attain statistical significance for any group (it is on the margin of significance at the 10% level for the non-disabled). These findings therefore suggest that for men, unobservables that exert a positive effect on employment impact negatively on self-employment, which might be interpreted as evidence that for males in the sample, the choice of self-employment is occasioned at least in part by a lack of other employment opportunities. For females in

contrast, selection effects appear less important, although the positive sign on ρ suggests that self-employment is a more positive choice, with the same unobservables impacting positively on both decisions.

The focus of the analysis and therefore the discussion here is on the self-employment decision. In fact the parameters in the employment equation are relatively standard, and largely conform to results reported elsewhere (for example Kidd *et al.*, 2000; Jones *et al.*, 2006a)¹⁶. For the self-employment decision, several important features are apparent. First, notwithstanding Boylan and Burchardt's use of earlier data, the alternative DDA definition of disability, a rather different specification including interactions between age and qualifications, and the omission of selectivity effects, our results similarly support the prior of a monotonically positive (with one trivial exception) relationship between age and self-employment for both sexes and each disability group. For females the profile is altogether flatter.

In terms of qualifications, an especially interesting pattern emerges when considering the results by gender. For males, the general relationship for each of the disability groups is one in which the probability of being in employment is generally higher for individuals with qualifications, while the converse applies when considering the dichotomy between self- and waged employment. In contrast, for females, qualifications (and in particular higher qualifications such as degrees) increase both the probability of being in work and of being self-employed. This would appear to suggest that there are important differences in the

¹⁶ The impact of children on employment participation is generally weak for males; for females however, the number of children, and in particular the number of pre-school age, both significantly and consistently reduce the probability that an individual will be in work. As such, and in the absence of more plausible identifying restrictions, we are effectively forced to rely on weak identification for the male disabled equations.

factors that lie behind the decision to be(come) self-employed by gender¹⁷. For males, for whom unemployment rates are higher than for women, this further suggests a greater role for ‘push’ factors, and in particular, a lack of waged employment alternatives, in conformity with footnote 13 and the sign on ρ .

Household characteristics such as the presence of another income earner (intended as a very crude proxy for access to capital and for risk) and the presence of children also appear to exhibit differential patterns by gender. While the presence of another income earner in the household appears to be associated with a higher probability of being in work for all sub-groups (reflecting the increasing polarisation of households into those with dual earners and those with no income earners as identified by for example, Dickens, *et al.* (2000)), gender differences are apparent in terms of the self-employment equation. Thus, the presence of another income earner is associated with a decreased probability of being self-employed conditional on being in work for males, while for women in contrast, there is little evidence of a significant relationship with the exception of the work-limited disabled group, where a positive coefficient is found.

Marriage too appears to have differing effects on self-employment status. In particular, although not significant for each disability group, the coefficient on the marriage dummy is negative for all male groups, but positive for females. The reasons for these differing relationships are far from immediately evident. For both men and women however, having dependent children in the household is consistently and positively related to the probability of being in self-employment for each of the disability sub-groups. While the precise mechanism underlying this result for men is unclear, for women it presumably derives from the fact that

¹⁷ This pattern is robust to the inclusion of occupational controls, which also have little impact on the relative accommodation and discrimination components of the decompositions reported.

self-employment offers the greater flexibility some women require in order to combine work and child-rearing responsibilities (see the references at footnote 2).

A further interesting feature of the results concerns the roles of ethnicity and immigrant status. For males, the data indicate that non-whites and immigrants are less likely to be in work, but where they are, they are more likely to be in self-employment. For females in contrast, the pattern which emerges is one in which those from ethnic minorities are less likely both to work and (conditionally) to be self-employed, while for immigrants, participation and self-employment are both more likely outcome. Thus the results for men are entirely in accordance with those previous studies both for the UK and elsewhere which suggest that among ethnic minorities, self-employment is, at least in part, a response to discrimination in the labour market (e.g. Clark and Drinkwater, 1998). For females a more subtle picture emerges, possibly reflecting cultural values and norms.

Finally, it should be noted that there is a powerful role for industry group in the self-employment equation. As might be expected, self-employment is more likely, *ceteris paribus*, among workers in agriculture and fishing, and for males, also in construction relative to the base group ('Other' industries including other services and energy/water), and generally less likely in other sectors such as banking etc.

4.3 Decomposition results

As described in Section 3, predicted conditional self-employment probabilities are calculated on the basis of the bivariate probit models for each gender and disability group. These are reported in Table 5. Elements on the leading diagonal are the conditional self-employment predictions for each group on the basis of their own coefficients. Thus, the estimated self-

employment rate for work-limited disabled males in employment is 21.2%, while it is approximately 17% for both the non-work-limited disabled and the non-disabled. Among females the corresponding rates are 9.3%, 6.3% and 7.3% respectively.

The remaining elements of Table 5 indicate how these probabilities would change were alternative coefficient vectors applied to the self-employment equation holding all other components constant, and in particular, the employment probabilities. For example, a non-disabled male has a self-employment probability of 24.3% evaluated at their own employment probability but applying the work-limited disabled self-employment coefficients (β_{D_1}). For the same employment probability, the conditional self-employment probability evaluated at the non-work-limited disabled self-employment coefficients (β_{D_2}) is almost half at just 15.1%.

These predicted conditional probabilities can, as described above, be used to isolate the contributions of discrimination and accommodation to the unexplained gap between the conditional self-employment probabilities. For males, the (lower bound of the) impact of discrimination is found to be negative suggesting that discrimination is actually greater in the self-employment sector or that the entire disabled group have preferences favouring waged employment (for example, due to the security of sickness pay); self-employment rates for the non-disabled evaluated at the non-work-limiting disabled self-employment coefficients would actually be approximately 2.3 percentage points lower. More importantly however, there is clear evidence of a substantial increase in the probability of self-employment (nearly 7 percentage points) if the non-disabled behaved like the work-limited disabled when entering employment type, thereby supporting the accommodation arguments. In the case of females,

the unexplained gaps are similarly signed, but both are very small (around 1 percentage point), and suggest discrimination and accommodation factors are largely absent¹⁸.

5. Conclusions

The present paper has considered an important empirical feature of the labour market, namely that among those in work, self-employment rates are higher for those with work-limiting disabilities than for the non-disabled. This was argued potentially to reflect the opportunities self-employment might afford for the former to accommodate their disability by choosing times, hours and locations of work.

Self-employment was modelled using a bivariate probit model allowing for the possibility of selection effects into employment for each of three disability groups by gender along the lines suggested by DeLeire (2001), namely the non-disabled, the work-limited disabled and the non-work-limited disabled. In general results are highly intuitive, and predicted employment and conditional self-employment probabilities mirror closely those observed in the data. The DeLeire technique allows for the separation of the effect of accommodation from the influence of discrimination on conditional self-employment probabilities. After controlling for characteristics, the non-work limited disabled are less likely to be in self-employment than the non-disabled, which suggests *consumer* discrimination may be important. However, for men we find strong evidence of the work-limiting nature of disability being an important positive influence on self-employment, consistent with the greater ability to accommodate a disability in self-employment.

¹⁸ When pooling across disability groups as the basis for comparison, $(S_{D_1}^C - S_N^C)_{\text{unexplained}} = 0.051$ and $(S_{D_2}^C - S_N^C)_{\text{unexplained}} = -0.042$ for males, while for females, they are both again effectively zero.

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Table 1. The anatomy of self-employment: summary statistics

	Male			Female		
	Work-limited disabled	Non-work-limited disabled	Non-disabled	Work-limited disabled	Non-work-limited disabled	Non-disabled
Employment rate (%)	43.16 ^{***}	89.08 ^{***}	90.41	38.29 ^{***}	78.42	78.51
Self-employment rate (as % of all employed)	21.28 ^{***}	16.56	17.41	9.29 ^{***}	6.28 ^{***}	7.33
<i>Employed:</i>						
Work from home (%)	5.73	6.39 [*]	5.80	4.47 ^{**}	3.52	3.61
Work in same LAD as residence (%)	57.41 ^{***}	51.31	50.47	68.17 ^{***}	66.04 ^{***}	63.61
<i>Self employed:</i>						
Work from home (%)	65.24 ^{***}	58.52	56.35	62.93	60.70	60.00
Work in same LAD as residence (%)	88.18 ^{***}	82.36	80.70	88.64 ^{**}	85.16	84.23
<i>Type of self-employment (%)</i>						
Paid by agency	1.25 ^{**}	1.78	2.44	1.57	2.26	2.97
Sole director of limited liability business	5.33 [*]	5.63	6.82	2.52	1.94	3.72
Running professional practice	23.04	25.27	24.20	21.70	27.10	24.63
Partner in professional practice	8.97 ^{***}	10.46 ^{**}	12.96	16.04	18.71	16.23
Working for self	53.01 ^{***}	48.08 ^{**}	44.31	52.52 ^{**}	43.87	45.93
Sub contractor	6.02	5.82	7.02	1.89	1.29	1.97
Freelance work	2.38	2.96	2.25	3.77	4.84	4.55
Without employees	79.14 ^{***}	73.81	73.56	79.57	77.32	76.64

Notes: Sample excludes unpaid family workers and government trainees. LAD denotes local authority district. ^{***}, ^{**} and ^{*} denote differences from the relevant non-disabled comparator group at the 1%, 5% and 10% significance level respectively.

Table 2: Means of explanatory variables

Variable	Males			Females		
	Work-limited disabled	Non-work-limited disabled	Non-disabled	Work-limited disabled	Non-work-limited disabled	Non-disabled
Aged 25-34	0.118	0.131	0.231	0.142	0.174	0.262
Aged 35-44	0.190	0.209	0.279	0.251	0.262	0.304
Aged 45-54	0.260	0.276	0.215	0.316	0.292	0.221
Aged 55+	0.375	0.322	0.145	0.229	0.188	0.091
Single	0.271	0.228	0.474	0.225	0.237	0.296
Married	0.597	0.687	0.592	0.582	0.635	0.604
North	0.070	0.054	0.050	0.067	0.054	0.052
Yorkshire and Humberside	0.096	0.099	0.091	0.092	0.101	0.090
East Midlands	0.071	0.075	0.071	0.070	0.071	0.069
East Anglia	0.035	0.037	0.037	0.032	0.032	0.038
South West	0.078	0.087	0.082	0.078	0.091	0.082
West Midlands	0.089	0.084	0.090	0.094	0.082	0.088
North West	0.114	0.102	0.096	0.106	0.100	0.098
Wales	0.066	0.046	0.046	0.064	0.046	0.047
Scotland	0.094	0.084	0.087	0.092	0.091	0.088
Northern Ireland	0.045	0.024	0.039	0.048	0.022	0.039
Degree or higher degree	0.083	0.175	0.208	0.074	0.137	0.178
Other degree	0.058	0.091	0.084	0.083	0.108	0.106
A levels	0.281	0.325	0.290	0.127	0.161	0.164
O levels	0.128	0.148	0.173	0.218	0.264	0.272
Other qualification	0.158	0.135	0.130	0.158	0.158	0.138
Home owned	0.256	0.251	0.186	0.207	0.203	0.162
Home mortgaged	0.363	0.581	0.620	0.389	0.555	0.606
Social housing	0.295	0.100	0.097	0.321	0.160	0.134
No. dep. children	0.477	0.542	0.714	0.660	0.707	0.915
No. dep. children < 5	0.095	0.120	0.193	0.123	0.158	0.247
White	0.934	0.955	0.929	0.921	0.948	0.920
Immigrant	0.083	0.063	0.093	0.095	0.080	0.106
Other earner	0.439	0.634	0.668	0.519	0.685	0.723
Agriculture & fishing	0.026	0.018	0.020	0.007	0.005	0.005
Manufacturing	0.199	0.223	0.209	0.078	0.077	0.084
Construction	0.128	0.121	0.139	0.012	0.019	0.016
Distribution, hotels etc	0.175	0.153	0.159	0.237	0.201	0.201
Transport, communication etc	0.110	0.102	0.098	0.031	0.036	0.038
Banking & finance	0.127	0.156	0.159	0.130	0.142	0.155
Public administration	0.158	0.158	0.155	0.429	0.456	0.429

Notes: Means relate to regression samples. Industry sector means relate to individuals in employment only.

Table 3: Bivariate probit estimates of employment and self-employment - males

Variable	Work-limited disabled				Non-work-limited disabled				Non-disabled			
	Self-employment		Working		Self-employment		Working		Self-employment		Working	
	Coeff.	St. err.	Coeff.	St. err.	Coeff.	St. err.	Coeff.	St. err.	Coeff.	St. err.	Coeff.	St. err.
Aged 25-34	0.248	(0.162)	0.201***	(0.074)	0.258*	(0.156)	0.517***	(0.106)	0.389***	(0.059)	0.549***	(0.033)
Aged 35-44	0.432***	(0.166)	0.157**	(0.074)	0.504***	(0.163)	0.587***	(0.109)	0.610***	(0.064)	0.603***	(0.037)
Aged 45-54	0.703***	(0.157)	-0.067	(0.074)	0.684***	(0.170)	0.660***	(0.111)	0.763***	(0.065)	0.514***	(0.040)
Aged 55+	0.976***	(0.149)	-0.511***	(0.077)	0.948***	(0.149)	-0.071	(0.109)	1.056***	(0.054)	-0.084**	(0.042)
Single	-0.234**	(0.111)	-0.109*	(0.056)	-0.038	(0.089)	-0.178*	(0.095)	0.012	(0.038)	-0.126***	(0.042)
Married	-0.166**	(0.080)	0.098**	(0.048)	-0.118	(0.072)	0.005	(0.081)	-0.017	(0.034)	0.060	(0.038)
North	-0.040	(0.146)	-0.407***	(0.063)	-0.117	(0.102)	-0.266***	(0.101)	-0.110**	(0.044)	-0.224***	(0.043)
Yorkshire and Humberside	0.014	(0.095)	-0.181***	(0.054)	-0.153**	(0.075)	-0.031	(0.085)	-0.160***	(0.033)	-0.049	(0.036)
East Midlands	-0.078	(0.108)	-0.157***	(0.061)	-0.036	(0.080)	0.018	(0.095)	-0.133***	(0.035)	-0.027	(0.041)
East Anglia	-0.019	(0.124)	-0.089	(0.081)	-0.321***	(0.122)	-0.043	(0.126)	-0.070	(0.045)	-0.021	(0.054)
South West	-0.069	(0.087)	-0.019	(0.059)	0.042	(0.074)	-0.002	(0.089)	0.010	(0.032)	0.019	(0.040)
West Midlands	-0.065	(0.094)	-0.123**	(0.056)	-0.094	(0.079)	-0.111	(0.086)	-0.086***	(0.032)	0.036	(0.037)
North West	0.051	(0.107)	-0.296***	(0.053)	-0.093	(0.075)	-0.163**	(0.080)	-0.130***	(0.032)	-0.088**	(0.035)
Wales	-0.058	(0.155)	-0.422***	(0.064)	-0.219**	(0.106)	-0.067	(0.112)	-0.053	(0.043)	-0.153***	(0.046)
Scotland	-0.190	(0.136)	-0.297***	(0.057)	-0.118	(0.084)	-0.190**	(0.085)	-0.175***	(0.033)	-0.056	(0.037)
Northern Ireland	0.192	(0.156)	-0.472***	(0.076)	0.018	(0.139)	-0.383***	(0.140)	0.044	(0.044)	-0.157***	(0.050)
Degree or higher degree	-0.071	(0.210)	0.841***	(0.058)	-0.022	(0.077)	0.140*	(0.081)	-0.122***	(0.034)	0.302***	(0.033)
Other degree	-0.345**	(0.172)	0.718***	(0.066)	-0.108	(0.091)	-0.084	(0.089)	-0.209***	(0.040)	0.296***	(0.043)
A levels	-0.172	(0.133)	0.524***	(0.039)	-0.125*	(0.068)	0.315***	(0.069)	-0.123***	(0.032)	0.378***	(0.030)
O levels	-0.205	(0.139)	0.516***	(0.049)	-0.164**	(0.078)	0.171**	(0.082)	-0.131***	(0.034)	0.281***	(0.033)
Other qualification	-0.191*	(0.112)	0.365***	(0.046)	-0.207***	(0.078)	0.240***	(0.082)	-0.201***	(0.035)	0.281***	(0.034)

Home owned	0.111	(0.098)	0.080	(0.056)	0.225**	(0.092)	-0.347***	(0.095)	0.186***	(0.035)	-0.185***	(0.037)
Home mortgaged	-0.141	(0.114)	0.398***	(0.054)	-0.072	(0.087)	0.267***	(0.093)	-0.042	(0.032)	0.240***	(0.033)
Social housing	0.021	(0.184)	-0.552***	(0.056)	-0.112	(0.124)	-0.487***	(0.102)	-0.114*	(0.059)	-0.588***	(0.038)
White	-0.111	(0.131)	0.239***	(0.076)	-0.219*	(0.118)	0.373***	(0.120)	-0.150***	(0.041)	0.279***	(0.040)
Immigrant	0.249**	(0.108)	-0.127**	(0.070)	0.028	(0.098)	0.001	(0.111)	0.146***	(0.035)	-0.112***	(0.038)
Other earner	-0.218**	(0.110)	0.513***	(0.032)	-0.148**	(0.058)	0.523***	(0.048)	-0.090***	(0.024)	0.391***	(0.021)
Agriculture & fishing	0.907***	(0.168)			0.856***	(0.141)			0.931***	(0.059)		
Manufacturing	-0.856***	(0.136)			-0.740***	(0.097)			-0.713**	(0.041)		
Construction	0.560***	(0.108)			0.520***	(0.086)			0.637***	(0.037)		
Distribution, hotels etc	-0.207**	(0.090)			-0.016	(0.083)			-0.041	(0.036)		
Transport, communication etc	-0.132	(0.096)			-0.123	(0.091)			-0.232***	(0.040)		
Banking & finance	-0.078	(0.093)			0.140*	(0.081)			0.024	(0.036)		
Public administration	-1.023***	(0.156)			-0.730***	(0.103)			-0.780***	(0.044)		
No. dep. children	0.012	(0.029)	0.031	(0.020)	0.086***	(0.024)	0.015	(0.039)	0.090***	(0.009)	0.003	(0.013)
No. dep. children < 5			0.060	(0.049)			0.027	(0.085)			0.054**	(0.027)
Constant	-0.224	(0.532)	-0.773***	(0.126)	-0.898***	(0.283)	0.328	(0.199)	-1.075***	(0.128)	0.303***	(0.075)
ρ	-0.482				-0.304				-0.492			
	LR($\rho=0$): $\chi^2(1) = 1.77$ (p=0.184)				LR($\rho=0$): $\chi^2(1) = 4.68$ (p=0.031)				LR($\rho=0$): $\chi^2(1) = 11.37$ (p=0.001)			
Quarterly dummies	Yes		Yes		Yes		Yes		Yes		Yes	
Year dummy	Yes		Yes		Yes		Yes		Yes		Yes	
No. of obs.	9558				6891				39554			
Censored obs.	5445				751				3795			
Log likelihood	-6860.12				-4290.35				-24412.92			
Wald $\chi^2(38)$	733.75				725.89				4177.46			

Notes: Specifications include year and quarter dummies (not reported). ***, ** and * denote significance at the 1%, 5% and 10% level respectively.

Table 4: Bivariate probit estimates of employment and self-employment - females

Variable	Work-limited disabled				Non-work-limited disabled				Non-disabled			
	Self-employment		Working		Self-employment		Working		Self-employment		Working	
	Coeff.	St. err.	Coeff.	St. err.	Coeff.	St. err.	Coeff.	St. err.	Coeff.	St. err.	Coeff.	St. err.
Aged 25-34	1.063 ***	(0.254)	0.072	(0.075)	0.450	(0.232)	0.561 ***	(0.087)	0.462 ***	(0.062)	0.444 ***	(0.030)
Aged 35-44	1.050 ***	(0.256)	-0.033	(0.075)	0.831 ***	(0.260)	0.702 ***	(0.091)	0.703 ***	(0.066)	0.539 ***	(0.033)
Aged 45-54	1.303 ***	(0.263)	-0.211 ***	(0.077)	0.883 ***	(0.253)	0.566 ***	(0.094)	0.822 ***	(0.067)	0.397 ***	(0.035)
Aged 55+	1.459 ***	(0.299)	-0.495 ***	(0.083)	1.035 ***	(0.234)	0.164	(0.100)	0.897 ***	(0.074)	-0.006	(0.041)
Single	0.096	(0.135)	-0.122 **	(0.055)	0.133	(0.129)	-0.030	(0.078)	0.032	(0.048)	-0.148 ***	(0.033)
Married	0.103	(0.115)	-0.175 ***	(0.043)	0.192 *	(0.112)	-0.213 ***	(0.063)	0.129 ***	(0.042)	-0.282 ***	(0.029)
North	-0.042	(0.155)	-0.244 ***	(0.066)	-0.248	(0.168)	-0.093	(0.089)	-0.380 ***	(0.065)	-0.002	(0.037)
Yorkshire and Humberside	-0.241 *	(0.132)	-0.149 ***	(0.057)	-0.091	(0.113)	0.088	(0.072)	-0.209 ***	(0.046)	0.049	(0.030)
East Midlands	-0.170	(0.144)	-0.166 ***	(0.063)	-0.023	(0.124)	-0.027	(0.081)	-0.083 *	(0.047)	0.103 ***	(0.034)
East Anglia	-0.322	(0.209)	-0.104	(0.086)	-0.281	(0.207)	0.110	(0.117)	-0.044	(0.059)	0.113 ***	(0.043)
South West	-0.173	(0.123)	-0.044	(0.059)	0.130	(0.104)	0.034	(0.074)	0.072 *	(0.040)	0.074 **	(0.031)
West Midlands	-0.065	(0.126)	-0.154 ***	(0.057)	-0.094	(0.123)	0.026	(0.075)	-0.211 ***	(0.047)	0.036	(0.030)
North West	-0.187	(0.133)	-0.226 ***	(0.055)	-0.089	(0.116)	0.113	(0.072)	-0.163 ***	(0.044)	0.104 ***	(0.029)
Wales	0.114	(0.163)	-0.308 ***	(0.067)	0.174	(0.135)	0.003	(0.097)	-0.112 **	(0.057)	0.120 ***	(0.040)
Scotland	-0.136	(0.141)	-0.258 ***	(0.058)	-0.199 *	(0.121)	0.002	(0.074)	-0.282 ***	(0.047)	0.131 ***	(0.031)
Northern Ireland	-0.247	(0.235)	-0.451 ***	(0.078)	0.162	(0.192)	0.215	(0.139)	-0.199 ***	(0.068)	-0.047	(0.041)
Degree or higher degree	0.629 **	(0.265)	1.048 ***	(0.062)	0.299	(0.183)	0.713 ***	(0.076)	0.467 ***	(0.052)	0.776 ***	(0.029)
Other degree	0.676 ***	(0.248)	0.942 ***	(0.057)	-0.079	(0.191)	0.682 ***	(0.077)	0.333 ***	(0.058)	0.828 ***	(0.033)
A levels	0.522 **	(0.214)	0.756 ***	(0.049)	0.087	(0.164)	0.585 ***	(0.068)	0.338 ***	(0.051)	0.592 ***	(0.028)
O levels	0.248	(0.199)	0.630 ***	(0.043)	-0.082	(0.154)	0.535 ***	(0.059)	0.114 **	(0.049)	0.496 ***	(0.024)
Other qualification	0.208	(0.187)	0.542 ***	(0.046)	-0.102	(0.140)	0.366 ***	(0.063)	0.113 **	(0.052)	0.394 ***	(0.027)

Home owned	-0.119	(0.133)	0.070	(0.061)	-0.127	(0.144)	-0.034	(0.081)	0.072	(0.050)	-0.051	(0.032)
Home mortgaged	-0.150	(0.139)	0.309 ***	(0.057)	-0.025	(0.147)	0.445 ***	(0.074)	-0.032	(0.044)	0.376 ***	(0.027)
Social housing	-0.333 *	(0.192)	-0.477 ***	(0.059)	-0.011	(0.161)	-0.143 *	(0.079)	-0.320 ***	(0.064)	-0.299 ***	(0.031)
White	-0.057	(0.182)	0.254 ***	(0.077)	0.486 **	(0.223)	0.277 ***	(0.097)	0.130 **	(0.056)	0.285 ***	(0.032)
Immigrant	0.111	(0.153)	-0.191 ***	(0.071)	0.281 **	(0.138)	-0.281 ***	(0.082)	0.226 ***	(0.044)	-0.211 ***	(0.030)
Other earner	0.269 **	(0.132)	0.459 ***	(0.035)	0.089	(0.109)	0.379 ***	(0.046)	0.028	(0.032)	0.295 ***	(0.019)
Agriculture & fishing	0.630 **	(0.273)			0.332	(0.293)			0.507 ***	(0.106)		
Manufacturing	-0.702 ***	(0.144)			-0.590 ***	(0.134)			-1.023 ***	(0.054)		
Construction	-0.793 ***	(0.293)			-0.467 **	(0.206)			-0.662 ***	(0.086)		
Distribution, hotels etc	-0.605 ***	(0.109)			-0.597 ***	(0.108)			-0.749 ***	(0.040)		
Transport, communication etc	-0.829 ***	(0.212)			-0.675 ***	(0.185)			-0.889 ***	(0.068)		
Banking & finance	-0.493 ***	(0.118)			-0.501 ***	(0.111)			-0.683 ***	(0.040)		
Public administration	-1.374 ***	(0.118)			-1.036 ***	(0.102)			-1.232 ***	(0.038)		
No. dep. children	0.109 **	(0.051)	-0.086 ***	(0.019)	0.111	(0.075)	-0.286 ***	(0.025)	0.098 ***	(0.017)	-0.248 ***	(0.009)
No. dep. children < 5			-0.331 ***	(0.048)			-0.399 ***	(0.048)			-0.485 ***	(0.016)
Constant	-2.151 ***	(0.574)	-0.703	(0.127)	-2.430 ***	(0.575)	-0.350 **	(0.164)	-1.770 ***	(0.125)	-0.041	(0.060)
ρ	0.134				0.026				0.157			
	LR($\rho=0$): $\chi^2(1) = 0.12$ (p=0.727)				LR($\rho=0$): $\chi^2(1) = 0.00$ (p=0.961)				LR($\rho=0$): $\chi^2(1) = 2.69$ (p=0.101)			
Quarterly dummies	Yes		Yes		Yes		Yes		Yes		Yes	
Year dummy	Yes		Yes		Yes		Yes		Yes		Yes	
No. of obs.	8988				6277				39866			
Censored obs.	5553				1363				8580			
Log likelihood	-5706.42				-3752.76				-23789.18			
Wald $\chi^2(38)$	273.75				205.08				1831.42			

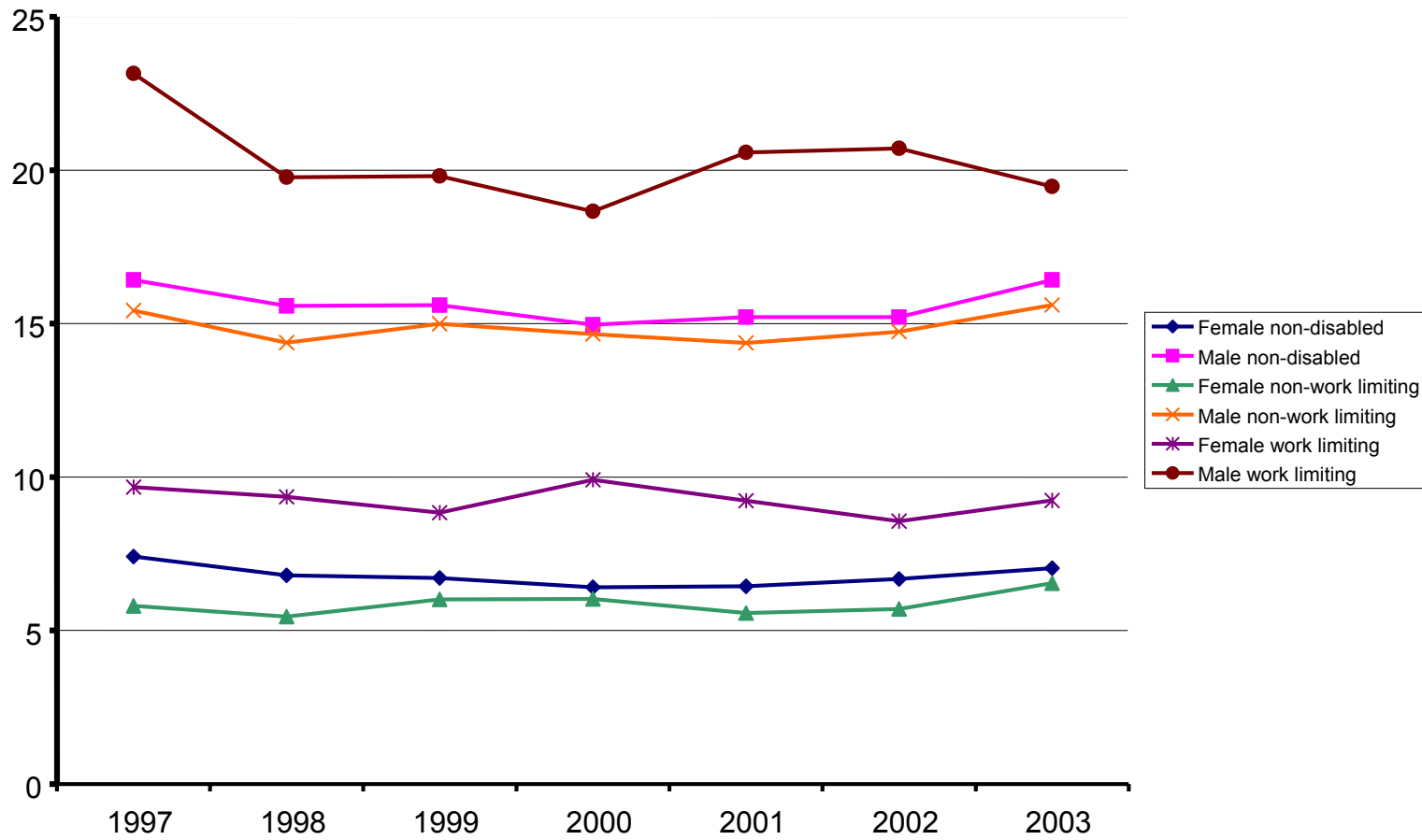
Notes: Specifications include year and quarter dummies (not reported). ***, ** and * denote significance at the 1%, 5% and 10% level respectively.

Table 5: Conditional predictions of self-employment

	Coefficient vector on self-employment equation		
<i>Males</i>	β_{D_1}	β_{D_2}	β_N
Disabled work-limited	0.212	-	0.137
Disabled non-work limited	-	0.165	0.189
Non-disabled	0.243	0.151	0.174
$(S_{D_1}^C - S_N^C)_{\text{unexplained}}$	0.069		
$(S_{D_2}^C - S_N^C)_{\text{unexplained}}$	-0.023		
<i>Females</i>	β_{D_1}	β_{D_2}	β_N
Disabled work-limited	0.093	-	0.083
Disabled non-work limited	-	0.063	0.070
Non-disabled	0.085	0.065	0.073
$(S_{D_1}^C - S_N^C)_{\text{unexplained}}$	0.012		
$(S_{D_2}^C - S_N^C)_{\text{unexplained}}$	-0.008		

Notes: Calculated from equations (4) and (5) and estimates in Tables 3 and 4.

Figure 1: Self-employment as a percentage of total employment by disability status 1997-2003



Source: QLFS, Summer quarters.