

**Better in than out: the effect of antidiscrimination laws
on work participation among the disabled in France**

Abstract

The present study assesses the impact of the French 1987 antidiscrimination law on the work participation of the disabled, using a representative sample observed during a two-year period. The paper presents a three-step econometric model: first, we control for selection based on observables by estimating the probability to be observed in both years. Second, we model the probability to be recognized as a disabled person by local administrations (the Commissions Techniques d'Orientation et de Reclassement Professionnel or COTOREP). Finally, we assess the impact of a formal recognition of the disability on the work participation among the disabled. Our results show that the 1987 antidiscrimination law is particularly accurate in reducing the risk of job separation among disabled workers but has no significant impact on the probability of employment for other segments of the disabled population.

JEL Codes: J28, J42, J71

Keywords: Labor force participation; Disability; Job separation; France.

The paper aims at analysing the consequences of the French anti discrimination system on the work participation among the disabled. It seeks to analyse strategies developed by the disabled in terms of disability ascertainment by the local administrations and the way individuals use this instrument to manage their participation to the labor force when facing two causes of asymmetry of information : the question of how the local administrations will cope with the claim of the individuals, and the reaction of the labor market to the signal provided by the ascertainment of the disability.

1. Review of the literature

The economic analysis of discrimination on the labor market towards the disabled received an extensive treatment since the pioneer theoretical works by Becker (1971, chapter 3), and the introduction of the concept of statistical discrimination by Johnson (1989). The first framework, which is not specific to disability, considers the existence of prejudicial behaviors in the supply side of the labor market which leads to non efficient wage rates paid to the non segregated workforce owing to avoid the employment of the segregated one. The latter, which is more specific to the disability, considers that the decision to hire or not the disabled worker is based on instruments that do not take into account the true situation of the disabled worker, which leads to underestimations of the true marginal productivity of the disabled worker.

Although well developed on the theoretical side, the economic analysis of discrimination on the labor market is impaired by measurement problems when assessed in empirical works. The main problem here is the attributability of the existing differences in both wages and work participation to the disability itself, mainly because disability has a direct impact on work productivity. This may explain why a significant part of the empirical works addressing the relationship between disability and the labor market is devoted to qualify the impact of existing disabilities.

Three phases can be defined when trying to have an historical perspective on the last thirty years of economic research. The first phase consisted mainly of highlighting the existence of work-related problems in the presence of chronic illnesses. The existence of a relationship between disability and non participation to the labor market was mostly investigated via the econometric management of selection biases in the estimation of earning functions in the case of arthritis (Mitchell & Butler 1986), epilepsy (Famulari 1992) or general health state indexes (Chirikos & Nestel 1985).

Luft (1975) showed that the consequences of a deterioration of health on earnings differed according to gender and race, with females and black americans more likely to withdraw from the labor market than white males. Bartel & Taubman (1979) defined three groups of diseases differing on their impact on earnings : (i) a group with no significant present or delayed impact on earnings (coronary artery diseases, hypertension, diseases of the nervous system and osteoarticular diseases), (ii) a group having a significant and lagged impact (behavioral diseases), and (iii) a group with immediate consequences on earnings (arthritis, chronic bronchitis, emphysema, asthma and renal failure).

The second phase structured itself around the economic interpretation of the decline in the work participation of older people occurring during the 1980s and early 1990s. Debates and controversies occurred when assessing the role of the Social Security Disability Insurance (SSDI), with authors considering that the existence of pensions was the main contributor to the phenomenon (Parsons *et al*) and others objecting that the existence of strong conditions to the reciprocity did not support this opinion (Bound). A work by Stern (1996) showed that the existence of a negative impact of disability on the work participation was less attributable to discriminant behaviors from the employer side (impact derived from the hourly wage) than to the use of social benefits in the disabled side.

Recent literature focuses on a new phenomenon characterized by an extension of the drop of the work participation among the disabled to all ages of the disabled population. The problem here is that this phenomenon does not seem to be linked to modifications in the nature and conditions of reciprocity of pensions. Stapleton & Burkhauser (2003) correlate this trend to a constant increase in the average severity of the disabilities during the last two decades, while other authors explain it by some side effects of the Americans with Disabilities Act. For instance, Acemoglu & Angrist (2001) consider that the ADA leads either to the stigmatization of the disabled people on the labor force or to an increase in the cost of the management of human resources in the employer side. These arguments are not supported by Kruse & Schur (2003) who show that the ADA has positive effects on the work participation when excluding all functional limitations preventing from work participation, which is, in some extent, a rejoinder of Stapleton & Burkhauser's conclusions.

In 1987, France adopted a law owing to reduce the discrimination against the disabled workers and to facilitate the participation of the disabled in the labor market. This law defines a quota of disabled workers equal to 6 percent of the employed staff among firms hiring 20 persons and over. The benefits of the quota are restricted to persons whose disability is ascertained by local institutions devoted to this purpose (commissions techniques d'orientation et de reclassement professionnels, or COTOREP). Firms that do not reach the quota by the sole direct employment of disabled workers are subject to alternative methods of compliance, consisting of either the payment of fees proportional to the difference between the theoretic and the actual number of disabled workers employed, or the signature of contracts with protected work organizations. In return, the collected fees are used to fund the cost of adapting the work environment to the disability and training of the disabled workers in firms that hire disabled workers.

2. Theoretical model

Let i , a disabled individual who maximises a utility function U , depending on a set of commodities x , the time devoted to leisure L , and his health state H (with $0 < H \leq H^{MAX}$), under a given budget constraint.

If we denote l , the instantaneous probability to work, w , the hourly wage rate, $(T - L)$, the amount of time devoted to market activities, $A(H)$, the social benefits related to the compensation of the actual level of disability of the individual, and p , a price index, we can express the maximisation programme as :

$Max_{x,L,H} U(x,L,H)uc l(H,S)w(H,S).(T - L) + A(H) - p.x$, where S is the stock of human capital.

The individual will decide to be recognized as a disabled worker if he considers that the probability to be recognized as a disabled by the local administration (α) combined with the expected effect of that recognition on both his work probability (β_l) and hourly wage rate (β_w) exceeds the cost associated to the social recognition (c).

At this point, we consider that the marginal effect of the social recognition on the work probability and hourly wage rate is decreasing with the level of disability, that is the difference between a 'perfect' health state (H^{MAX}) and the actual health status of the

individual : $\left(\frac{\delta\beta_{i,l}}{\delta(H^{MAX} - H_i)} < 0 \right)$ and $\left(\frac{\delta\beta_{i,w}}{\delta(H^{MAX} - H_i)} < 0 \right)$, with

$\left(\lim_{H \Rightarrow H^{MAX}} l_i(H,S).(1 + \beta_{i,l}) = l_i(H^{MAX}, S) \right)$ and $\left(\lim_{H \Rightarrow H^{MAX}} w_i(H,S).(1 + \beta_{i,w}) = w_i(H^{MAX}, S) \right)$.

We consider that the probability to be recognized as a disabled worker by the local administration is increasing with the level of disability, in the sense that more the disability is obvious or harmful and more the administration is likely to ascertain the individual as disabled, because the imperfect tagging and the corollary moral hazard is reduced. In the

following, we assume that an individual i will be recognized as a disabled worker if and only if his level of disability $(H^{MAX} - H)$ equals or exceeds a given level of disability $(H^{MAX} - H^{MIN})$, where H^{MIN} is the best health status allowing a social recognition of the disability by the local administration :

$$\left(\begin{array}{l} \alpha(H) = 1 \text{ if } H \leq H^{MIN} \\ \alpha(H) = 0 \text{ else} \end{array} \right).$$

As a consequence, the maximisation programme of the individual is altered in the following way :

$$\begin{aligned} \text{Max}_{x,L,H} U(x,L,H) & uc \left(l_i(H) \times \left(1 + \alpha(H^{MIN} - H_i) \times \beta_l(H^{MAX} - H_i) \right) \right) \times \\ & \left(w(H_i, S) \times \left(1 + \alpha(H^{MIN} - H_i) \times \beta_w(H^{MAX} - H_i) \right) \right) \times (T - L) + A(H_i) - p.x - c.H_i \end{aligned}$$

As a result, the optimal level of time devoted to productive activities is given by :

$$\begin{aligned} -\frac{U'_H}{U'_L} &= (T - L) \times \left(\frac{l'_H}{l} \times (1 + S'_H) + \frac{(\alpha'_{H^{MIN}} + \alpha'_H) \times \beta_l + \alpha \times \beta'_l}{(1 + \alpha \times \beta_l)} + \frac{w'_H}{w} \times (1 + S'_H) + \frac{\alpha'_H \times \beta_w + \alpha \times \beta'_w}{(1 + \alpha \times \beta_w)} \right) \\ &+ \frac{A'_H - c}{l \times w} \end{aligned}$$

Assuming that the social ascertainment of the disability by the local administration has no impact on the hourly wage rate ($\beta_w = 0$), we finally obtain :

$$-\frac{U'_H}{U'_L} = (T - L) \times \left(\frac{l'_H}{l} \times (1 + S'_H) + \frac{(\alpha'_{H^{MIN}} + \alpha'_H) \times \beta_l + \alpha \times \beta'_l}{(1 + \alpha \times \beta_l)} + \frac{w'_H}{w} \times (1 + S'_H) \right) + \frac{A'_H - c}{l \times w}$$

As it can be seen from this simple model, the question of whether or not the disabled individual will engage in a process of ascertainment of his disability is somewhat difficult to answer, because health status has two contradictory effects on the work participation of the individual.

First, a decrease in the health status will result in a negative effect on both the probability to work ($l'_H > 0$) and the hourly wage rate ($w'_H > 0$), amplified by the negative effect of the disability on the individual's accumulation of human capital ($S'_H > 0$).

However, this will also induce an increase in the probability to be ascertained by the local administrations ($\alpha_H' < 0$), although it will reduce the marginal impact of the social recognition of the disability on the work probability of the individual ($\frac{\delta\beta_i}{\delta H} > 0$).

These results are also conditioned to uncertainty on what the local administrations consider to be a disability that is compatible with a social ascertainment and in what extent the definition of the disability used by the local administrations is impacted by both the activity of the administrations (queues, etc.) and the level of social matters the disability incorporates, in reference to the social model of disability developed in the World Health Organization.

3. Data

We used the French Handicaps – Incapacités – Dépendance (HID) panel from the Institut National de la Statistique et des Etudes Economiques (INSEE). This panel, composed of 16,000 individuals, is representative of the French population according to both age, gender and self-rated level of disability.

This panel was first interviewed during 1999 to assess the socio-demographic characteristics, the level of incapacity according to the activities of daily living, the diseases, scholarship, work participation, income, and social recognition of a disability by local authorities.

The sample was then interviewed during 2001 to assess the evolution of the medical, social and economic status of the individuals (25% lost to follow-up).

Data on the activity of the local administrations (% of first claims, duration of instruction of the claims, number of claims per million inhabitants) are derived from the 2000 activity report of the Commissions Techniques d'Orientation et de Reclassement Professionnels (Chanut & Paviot 2002).

The extent of social management in the disability ascertainment process is captured by using the 1999 data on the unemployment rate per département (INSEE data).

4. Econometric analysis and results

Table I displays descriptive statistics of the HID sample. Our econometric analysis was organized as a three-steps model: we first estimated the probability for a disabled person to be present in both 1999 and 2001 samples, using a probit model. The results of this estimations are presented in Table II: they point out that the presence at the two dates of the survey is significantly lower for persons with behavioral disorders, for single males, and in areas with high unemployment rates. The estimates of the probability to be present at both interviews are introduced in the second step of our analysis, as a way to correct for selection biases (regions are used as an instrument in the first regression).

Our second estimation concerns the evolution of the social recognition of the disability. The social recognition of the disability considers four different cases: (i) an isolated recognition as a disabled worker, (ii) a decision pooling the recognition as a disabled worker and the benefit of a disability-related allowance, (iii) an isolated attribution of a disability-related allowance, and (iv) other decisions not related to the recognition as a disabled worker and/or the benefit of a disability-specific allowance. These cases are then divided in incident (or new decisions between 1999 and 2001) or prevalent (no new decision between 1999 and 2001 but with prior ascertainment of a disability) cases, which, in addition to the absence of social ascertainment, define a total of 9 alternatives. We identify the determinants of the change in the situation between 199 and 2001 by estimating a multinomial Logit model.

Results (Cf. Table III) clearly show that the pattern of social ascertainment of a disability is linked to specific health states, in the sense that both the incident and prevalent isolated attribution of a disability-specific allowance is favored in the case of behavioral, intellectual and psychiatric disorders, which indicates that these disorders are hardly tractable by the labor market. Another interesting point concerns the significant impact of hearing impairment and intellectual disorders on the probability of incident joint decision of recognition as a disabled

worker and attribution of a pension. Compared to a decision featuring an isolated attribution of pension, a joint decision is likely to indicate a greater tractability of the disability (recognition as a disabled worker) but with great uncertainty as regards entering the labor market. In some extent, this particular ascertainment may be viewed as a measure of the social part of the management of the disability, which is reinforced by the significant impact of the unemployment rate on the probability to obtain an incident joint decision.

Both isolated attribution of pension and combined disabled worker and pension decisions are strongly correlated to the level of individual accumulation of human capital. A decision involving an isolated recognition as a disabled worker is less influenced by the level of accumulation of human capital, except in the case of higher education, which suggests that individuals achieving such a level of education are either “protected” from disablement or are able to reach forms of work that reduce the impact of the disability, like computer work.

Finally, we see that the local administrations make a significant use of disability ascertainment by other institutions like the Social Security or private insurance in their decision to cope with potential imperfect tagging.

The third step of our analysis consists in estimating a multinomial Logit function to identify the determinant of the evolution of work participation during the 1999 – 2001 period, by distinguishing between: (i) full time worker during the whole period, (ii) part-time worker during the whole period, (iii) in a protected work organization during the whole period, (iv) into work between 1999 and 2001, (v) from activity to unemployment between 1999 and 2001, (vi) from inactivity to job seeking, (vii) withdrawal from the labor market, and (viii) without professional activity during the whole period (reference category). Again, the probabilities estimated in the second step (probabilities associated to each level of social recognition of a disability) are introduced as covariates in order to control for selection effects (several variables are used as instruments, including an indicator of the activity of local

administrations, an indicator of self-reported invalidity (does the person consider himself/herself as disabled, exemption from medical fees, and an indicator of homeownership).

Results (Cf. table IV) show no significant impact of the social ascertainment of a disability on the ability of an individual to enter into a professional activity, except in the case of an isolated attribution of a disability-related pension or decisions involving the protected sector who have a significant negative impact on work participation. However, an important point erasing from the results is the existence of a significant reduction of the risk of unemployment among 1999 workers associated with the isolated recognition of the status of disabled worker.

5. Discussion

Our results point out that the 1987 antidiscrimination law has a contrasting impact according the segment of the disabled population, with no significant effect among disabled job seekers, which contrasts with results from the Bamba *et al* (2005) study on the UK Welfare-to-Work programme, and significantly reducing the risk of job separation among working disabled. Such a discrepancy in the range of effects has to be carefully studied and two explanations may be considered.

First, unobservable differences between the two subpopulations in terms of severity of the disability may explain such differences, in the sense that disabled that are already employed would suffer less disablement than the disabled job seekers. A second and more consistent explanation considers that those two subpopulations do not face the same level of discrimination on the labor market, in the sense that the current disabled workers either went through the barriers to employment or refer to people sustaining work-related disabilities, all characteristics that lower the suspicion towards their level of productivity, when the subpopulation of disabled job seekers face both statistical discrimination and/or discrimination in the sense of Becker.

However, as stated by Magee (2004), the process of job separation following disability or chronic illness does not refer to the sole mechanism of employer discrimination towards the disabled worker and it may be interesting to analyze the potential mechanisms by which the 1987 antidiscrimination law may impact the job separation of disabled workers. Indeed, two employee-related factors may be affected by the framework defined by the 1987 law. First, it may be pointed out that the availability of public funding of the adaptation of the work place from the collection of fees among firms that do not reach the quota of disabled worker may reduce the stress associated with the presence of the disability for the disabled worker, and decrease the necessity to use stress-avoidance behaviors like job separation. Second, the public provision of funding to adapt the work place combined with a potential low level of statistical discrimination on previously working disabled may reduce the impact of the disability on both actual and expected productivity of the disabled worker, thus reducing the risk of adjustments on the hourly wage rate.

Whatever the underlying mechanisms, the 1987 antidiscrimination law is an effective tool in reducing the risk of unemployment among the disabled but has no impact on the barriers facing the disabled job seeker. In fact, the 1987 antidiscrimination law may not be effective in compensating the average prejudicial fee applied by the discriminant employer, in the sense that employers seem to prefer sustaining an increase in the non disabled wage rate (the fee per missing disabled worker) instead of employing disabled manpower. In that case, a substantial increase in the amount of the fee per missing disabled worker should be indicated.

However, it should also be considered that the mechanisms involved in the 1987 antidiscrimination law may not be accurate in the purpose of reducing the level of discrimination facing the disabled job seekers. As we previously stated, the mechanisms of the law seem to be particularly adapted to meet a certain level of effectiveness on the disabled workers, who are less likely to sustain discriminant behaviors. In the contrary, our results

point out a negative, although non significant, correlation between the social ascertainment of a disability and the probability of entering the labor market among the disabled. For that particular segment of the disabled population, the social ascertainment of a disability could be a factor of stigmatization that increases rather than reduces the barriers to entrance on the labor market. In that case, a second round of legislative measures involving more accurate mechanisms should be considered.

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Table I : Summary statistics

Variables	Subcategories	Mean (SD)	
Deficiencies ⁽¹⁾	Lower limbs	0.19	(0.39)
	Upper limbs	0.08	(0.27)
	Other motricity	0.40	(0.49)
	Blindness, sight loss	0.08	(0.28)
	Other visual diseases	0.05	(0.21)
	Hearing impairment	0.17	(0.37)
	Speech, language	0.03	(0.16)
	Behavioral disorders	0.12	(0.32)
	Other psychiatric and intellectual disorders	0.14	(0.34)
	Other diseases	0.47	(0.50)
Region	Ile-de-France	0.16	(0.36)
	Champagne-Ardennes	0.03	(0.17)
	Picardie	0.03	(0.17)
	Haute-Normandie	0.03	(0.17)
	Centre	0.03	(0.18)
	Basse-Normandie	0.02	(0.14)
	Bourgogne	0.04	(0.20)
	Nord-Pas de Calais	0.05	(0.21)
	Lorraine	0.04	(0.20)
	Alsace	0.04	(0.19)
	Franche-Comté	0.04	(0.19)
	Pays de la Loire	0.05	(0.23)
	Bretagne	0.06	(0.24)
	Poitou-Charentes	0.03	(0.18)
	Aquitaine	0.04	(0.19)
	Midi-Pyrénées	0.03	(0.18)
	Limousin	0.03	(0.16)
Rhône-Alpes	0.08	(0.27)	
Auvergne	0.03	(0.18)	
	Languedoc-Roussillon	0.10	(0.30)
	Provence-Alpes-Côte d'Azur	0.03	(0.18)
Age (years)		46,46	(11,59)
Birth location	France	0.85	(0.36)
	European Union	0.06	(0.23)
	Other	0.10	(0.26)
Sociodemographic status	Single male	0.09	(0.29)
	Male living with other people	0.08	(0.27)
	Male in couple	0.34	(0.47)
	Single female	0.08	(0.27)
	Female living with people	0.10	(0.30)
	Female in couple	0.32	(0.47)
Father's social position	Farmer	0.13	(0.34)
	Self-employer, upper white collar	0.23	(0.32)
	White collar	0.10	(0.30)
	Employee	0.10	(0.30)
	Blue collar	0.40	(0.49)
	With no professional activity	0.04	(0.20)
Invalidity	Pension by the Social Security	0.16	(0.36)
	Work-related disability	0.05	(0.23)
	From private insurance	0.20	(0.40)
	Other or no	0.59	(0.49)
Education	Elementary school	0.41	(0.49)
	Junior high school	0.31	(0.46)
	A level diploma	0.10	(0.30)
	Higher education	0.14	(0.35)
With self-reported invalidity		0.74	(0.44)

Owner of the housing		0.55	(0.50)
Exemption from the third party payment	For all care	0.15	(0.36)
	For specific care	0.29	(0.45)
Recognized disabled when child or adolescent		0.02	(0,14)
Activity of the local administrations	Time (months) of instruction by the local administration	3.58	(1.61)
	Percent of first claims in the activity of the local administrations	0.53	(0.05)
	Number of claims per million inhabitants	43.65	(9.05)
	Unemployment rate in 1999	0.13	(0.03)
Present at the two dates		0.76	(0.43)
Modifications in the level of social recognition of the disability between 1999 and 2001	Recognized as a disabled worker alone	0.03	(0.17)
	Disabled worker + pension	0.02	(0.13)
	Attribution of pension alone	0.12	(0.32)
	Other claims	0.04	(0.20)
	No new claim, prior recognition as disabled worker alone	0.06	(0.23)
	No new claim, prior recognition as disabled worker + pension	0.01	(0.09)
	No new claim, prior attribution of pension	0.01	(0.12)
	No new claim, prior other claim	0.12	(0.32)
No recognition at all		0.60	(0.50)
Modifications in the work participation between 1999 and 2001	Full time worker during the whole period	0.28	(0.45)
	Part-time worker during the whole period	0.06	(0.24)
	In a protected work organization during the whole period	0.04	(0.20)
	Into work	0.04	(0.20)
	From activity to unemployment	0.02	(0.14)
	From inactivity to job seeking	0.01	(0.09)
	Withdrawal from the labor market	0.08	(0.27)
	Out of the labor force during the whole period	0.47	(0.50)

⁽¹⁾ Note that an individual may be subjected to several deficiencies, which explains why the cumulated percentage according to deficiencies exceeds 100%.

Table II : Selection model (probability to be observed in both samples)

Variables	Subcategories	Coeff. (SD)
Deficiencies	Lower limbs	0.060 (0.092)
	Upper limbs	-0.153 (0.126)
	Other motricity	0.082 (0.072)
	Blindness, sight loss	-0.037 (0.122)
	Other visual diseases	-0.078 (0.164)
	Hearing impairment	0.003 (0.094)
	Speech, language	-0.079 (0.213)
	Behavioral disorders	-0.217 (0.107)*
	Other psychiatric and intellectual disorders	-0.112 (0.103)
	Other diseases	-0.151 (0.073)*
Region (Ile-de-France = 1)	Champagne-Ardennes	0.952 (0.253)**
	Picardie	0.580 (0.245)*
	Haute-Normandie	0.542 (0.262)*
	Centre	0.452 (0.215)*
	Basse-Normandie	0.947 (0.368)*
	Bourgogne	0.102 (0.193)
	Nord-Pas de Calais	0.857 (0.228)**
	Lorraine	0.698 (0.207)**
	Alsace	0.586 (0.252)*
	Franche-Comté	0.393 (0.213)
	Pays de la Loire	0.969 (0.245)**
	Bretagne	0.404 (0.182)*
	Poitou-Charentes	0.779 (0.232)**
	Aquitaine	0.342 (0.196)
	Midi-Pyrénées	1.118 (0.353)**
	Limousin	0.430 (0.243)
	Rhône-Alpes	0.234 (0.149)
Auvergne	0.288 (0.227)	
Languedoc-Roussillon	-1.324 (0.197)**	
	Provence-Alpes-Côte d'Azur	0.523 (0.252)*
Age (years)		0.077 (0.023)**
Age squared		-0.001 (0.000)**
Birthplace (reference : France)	European Union	0.078 (0.154)
	Other	-0.062 (0.117)
Sociodemographic status (reference: male in a couple)	Single male	-0.378 (0.119)**
	Male living with other people	-0.237 (0.152)
	Single female	-0.083 (0.128)
	Female living with people	-0.129 (0.127)
	Female in couple	0.021 (0.090)
Father's background (reference: Blue collar)	Farmer	0.193 (0.111)
	Self-employer, upper white collar	0.155 (0.101)
	White collar	0.086 (0.126)
	Employee	0.022 (0.120)
	With no professional activity	-0.267 (0.189)
Disability (reference: other or none)	Pension by the Social Security	0.119 (0.106)
	Work-related disability	0.175 (0.147)
	From private insurance	0.122 (0.091)
Education (reference : primary school)	Junior high school	0.070 (0.085)
	A level diploma	-0.054 (0.129)
	Higher education	-0.151 (0.119)
With self-reported disability (reference: no)		-0.065 (0.129)
Homeowner (reference: no)		0.107 (0.078)
Exemption from the third party payment (ref.: no)	For all care	-0.036 (0.102)
	For specific care	-0.015 (0.084)
Recognized disabled when child or adolescent (No = 1)		0.322 (0.265)
Activity of the local administrations	Time (months) of instruction by the	-0.054 (0.032)

	local administration	
	Percent of first claims in the activity of the local administrations	0.703 (1.034)
	Number of claims per million inhabitants	0.004 (0.007)
	Unemployment rate in 1999	-4.824 (2.273)*
Constant		-0.440 (0.898)
N observations		5,576

N = 5,576 ; Log likelihood = -2694.3031 ; pseudo-R2 = 0.1016.

Nota : * significant at a 5% level, ** significant at a 1% level.

Table III : Evolution of the social recognition of the disability by the local administrations between 1999 and 2001 (Reference: no ascertainment)

Variables	Subcategories	Recognized as a disabled worker alone in between	Disabled worker + pension in between	Attribution of pension alone in between	Other claims in between	No new claim, prior recognition as disabled worker alone	No new claim, prior recognition as disabled worker + pension	No new claim, prior attribution of pension	No new claim, prior other claim	
Deficiencies	Lower limbs	0.141 (0.225)	-0.587 (0.378)	-0.360 (0.185)	0.198 (0.191)	0.279 (0.169)	-0.114 (0.408)	-0.099 (0.317)	0.241 (0.138)	
	Upper limbs	0.736 (0.270)**	-0.348 (0.569)	-0.057 (0.261)	0.270 (0.268)	0.187 (0.231)	0.528 (0.460)	-0.193 (0.503)	0.038 (0.193)	
	Other motricity	0.233 (0.188)	-0.071 (0.269)	-0.247 (0.142)	0.576 (0.158)**	0.561 (0.143)**	-0.049 (0.341)	0.550 (0.260)*	0.212 (0.114)	
	Blindness, sight loss	-0.077 (0.377)	0.534 (0.374)	0.390 (0.227)	0.276 (0.261)	-0.135 (0.276)	0.600 (0.489)	0.280 (0.370)	0.059 (0.202)	
	Other visual diseases	0.598 (0.373)	0.138 (0.651)	0.306 (0.325)	0.464 (0.337)	0.240 (0.312)	0.141 (0.780)	0.322 (0.571)	0.152 (0.258)	
	Hearing impairment	0.249 (0.250)	0.927 (0.315)**	-0.127 (0.201)	0.062 (0.213)	0.584 (0.175)**	-0.399 (0.509)	0.317 (0.317)	-0.041 (0.152)	
	Speech, language	0.386 (0.650)	-0.353 (0.726)	1.177 (0.390)**	1.451 (0.390)**	0.438 (0.480)	0.229 (1.095)	0.340 (0.697)	0.171 (0.420)	
	Behavioral disorders	-0.425 (0.344)	0.297 (0.362)	0.438 (0.193)*	0.088 (0.240)	-0.078 (0.229)	-0.238 (0.565)	0.731 (0.330)*	-0.101 (0.181)	
	Other psychiatric and intellectual disorders	-0.069 (0.314)	0.693 (0.312)*	0.814 (0.183)**	0.478 (0.222)*	-0.376 (0.253)	-0.196 (0.562)	0.682 (0.322)*	0.247 (0.175)	
	Other diseases	-0.033 (0.194)	-0.189 (0.268)	-0.126 (0.144)	0.072 (0.161)	-0.075 (0.146)	-0.483 (0.349)	-0.021 (0.266)	-0.104 (0.118)	
	Age (years)		0.344 (0.084)**	0.183 (0.096)	0.167 (0.051)**	0.139 (0.060)*	0.136 (0.053)*	-0.056 (0.129)	0.282 (0.132)*	0.018 (0.043)
	Age squared		-0.005 (0.001)**	-0.003 (0.001)**	-0.003 (0.001)**	-0.002 (0.001)**	-0.002 (0.001)**	0.001 (0.001)	-0.003 (0.001)*	-0.000 (0.000)
	Birthplace (reference : France)	European Union	0.402 (0.376)	-0.922 (0.785)	-1.097 (0.388)**	-0.135 (0.337)	-0.353 (0.336)	0.349 (0.596)	-0.744 (0.576)	-0.330 (0.246)
		Other	0.030 (0.340)	-0.020 (0.489)	0.103 (0.245)	-0.396 (0.306)	-0.428 (0.288)	0.294 (0.585)	-0.387 (0.516)	-0.534 (0.218)*
Sociodemographic	Single male	0.313	1.182	1.308	0.171	-0.214	0.725	-0.075	-0.101	

status (reference: male in a couple)		(0.319)	(0.400)**	(0.244)**	(0.290)	(0.259)	(0.516)	(0.458)	(0.209)
	Male living with other people	0.787	0.607	2.201	0.736	0.465	1.420	1.344	0.421
		(0.396)*	(0.516)	(0.292)**	(0.361)*	(0.332)	(0.637)*	(0.490)**	(0.289)
	Single female	0.233	-0.358	1.377	0.461	-0.117	0.474	-0.218	0.083
		(0.381)	(0.611)	(0.256)**	(0.281)	(0.280)	(0.564)	(0.459)	(0.206)
	Female living with other people	0.286	0.593	1.737	0.180	-0.091	-0.609	-0.406	-0.093
		(0.322)	(0.428)	(0.241)**	(0.306)	(0.276)	(1.066)	(0.580)	(0.232)
	Female in couple	-0.483	0.205	0.633	0.157	-0.182	0.218	-0.309	0.045
		(0.246)	(0.355)	(0.199)**	(0.191)	(0.174)	(0.432)	(0.332)	(0.137)
Father's background (reference: Blue collar)	Farmer	-0.553	0.200	-0.127	0.431	-0.654	0.443	-0.204	-0.011
		(0.337)	(0.393)	(0.219)	(0.223)	(0.243)**	(0.446)	(0.398)	(0.163)
	Self-employer, upper white collar	0.073	-0.335	0.074	0.187	-0.239	0.299	0.551	-0.081
		(0.259)	(0.414)	(0.202)	(0.226)	(0.204)	(0.472)	(0.342)	(0.165)
	White collar	-0.158	-0.502	-0.493	0.037	-0.349	-0.204	-0.389	-0.362
		(0.318)	(0.435)	(0.256)	(0.273)	(0.241)	(0.660)	(0.521)	(0.216)
	Employee	-0.006	-0.515	-0.485	0.158	-0.256	0.157	-0.096	0.004
		(0.306)	(0.439)	(0.244)*	(0.270)	(0.244)	(0.544)	(0.454)	(0.193)
	No professional activity	-0.676	-1.066	0.036	-0.149	-0.903	-0.444	-1.346	-0.332
		(0.768)	(1.087)	(0.394)	(0.512)	(0.573)	(1.100)	(1.078)	(0.361)
Disability (reference: other or none)	Pension by the Social Security	3.095	6.241	5.912	3.813	3.757	5.710	6.338	3.974
		(0.329)**	(0.456)**	(0.268)**	(0.265)**	(0.270)**	(0.798)**	(0.639)**	(0.219)**
	Work-related disability	2.920	4.326	5.231	4.027	3.648	5.541	6.053	4.341
		(0.440)**	(0.693)**	(0.346)**	(0.329)**	(0.344)**	(0.894)**	(0.699)**	(0.280)**
	From private insurance	1.112	1.961	2.492	1.015	1.915	3.570	2.944	1.630
		(0.216)**	(0.465)**	(0.204)**	(0.206)**	(0.169)**	(0.755)**	(0.631)**	(0.135)**
Education (reference : primary school)	Junior high school	0.014	-0.921	-1.047	-0.171	-0.122	0.325	-0.501	-0.140
		(0.213)	(0.303)**	(0.166)**	(0.181)	(0.162)	(0.363)	(0.289)	(0.128)
	A level	-0.537	-1.332	-0.990	-0.516	-0.206	-0.743	-1.146	-0.497
		(0.372)	(0.554)*	(0.270)**	(0.320)	(0.259)	(0.795)	(0.645)	(0.222)*
	Higher education	-0.720	-2.190	-1.788	-0.534	-0.514	-1.288	-1.722	-1.287
		(0.343)*	(0.667)**	(0.287)**	(0.271)*	(0.249)*	(0.810)	(0.589)**	(0.238)**
With self-reported disability (reference: no)		1.225	1.094	0.202	0.333	0.832	-0.243	-0.249	0.496
		(0.481)*	(0.768)	(0.285)	(0.355)	(0.338)*	(0.597)	(0.575)	(0.244)*
Homeowner (reference: no)		-0.287	-0.901	-0.645	-0.107	-0.336	-0.363	-0.406	-0.138
		(0.201)	(0.288)**	(0.153)**	(0.171)	(0.152)*	(0.358)	(0.276)	(0.124)
Exemption from the third party payment	For all care	0.436	-0.217	0.351	0.888	0.552	0.809	0.620	0.923
		(0.274)	(0.399)	(0.196)	(0.225)**	(0.206)**	(0.472)	(0.383)	(0.158)**

(ref.: no)	For specific care	0.571 (0.216)**	0.931 (0.288)**	0.959 (0.164)**	1.074 (0.188)**	0.761 (0.164)**	1.034 (0.412)*	1.016 (0.338)**	0.906 (0.135)**
Activity of the local administrations	Time (months) of instruction by the local administration	0.026 (0.065)	0.122 (0.085)	0.048 (0.048)	-0.011 (0.054)	-0.058 (0.051)	0.238 (0.111)*	-0.108 (0.092)	-0.019 (0.039)
	Percent of first claims in the activity of the local administrations	-0.274 (1.877)	-2.043 (2.578)	-0.141 (1.403)	0.754 (1.578)	-3.207 (1.388)*	-8.898 (3.021)**	-4.202 (2.487)	-2.055 (1.106)
	Number of claims per million inhabitants	0.007 (0.014)	-0.015 (0.020)	0.027 (0.010)**	0.020 (0.011)	0.016 (0.010)	0.007 (0.022)	0.008 (0.018)	0.001 (0.008)
	Unemployment rate in 1999	3.804 (3.812)	11.132 (5.226)*	-0.357 (2.819)	0.806 (3.202)	-5.289 (2.906)	-8.632 (7.011)	-0.373 (5.209)	-3.303 (2.344)
Probability of being present at both dates		2.332 (1.247)	4.378 (1.800)*	2.056 (0.803)*	0.782 (0.899)	0.062 (0.839)	0.201 (1.831)	-0.354 (1.388)	-1.414 (0.605)*
Constant		-11.919 (2.461)**	-10.486 (3.166)**	-8.393 (1.662)**	-7.969 (1.921)**	-3.072 (1.689)	-1.142 (3.959)	-9.993 (3.882)*	-0.612 (1.393)

N = 4,299 ; Log likelihood = -4644.5293 ; pseudo-R2 = 0.2969.

Nota : * significant at a 5% level, ** significant at a 1% level.

Table IV : Modifications in the work participation between 1999 and 2001 (reference = out of the labor market during the whole period)

Variables	Subcategories	Full time worker during the whole period	Part-time worker during the whole period	In a protected work organization during the whole period	Into work	From activity to unemployment	From inactivity to job seeking	Withdrawal from the labor market
Probabilities	Recognized as a disabled worker alone in between	-7.308 (2.513)**	-10.445 (4.039)**	-0.433 (4.357)	-6.508 (4.228)	-11.254 (5.478)*	-11.667 (9.271)	-9.069 (3.745)*
	Recognized as a disabled worker with attribution of pension in between	-7.122 (1.744)**	-6.164 (3.399)	-1.286 (1.785)	-2.424 (2.346)	0.717 (3.349)	-1.431 (6.562)	-2.788 (2.760)
	Attribution of pension alone in between	-10.197 (0.972)**	-3.645 (1.221)**	-1.639 (1.328)	-2.864 (1.380)*	-1.642 (1.814)	0.850 (2.612)	-2.590 (1.000)**
	Other decision in between	-11.321 (2.311)**	-1.353 (2.695)	-6.352 (3.146)*	-10.220 (3.911)**	-0.849 (4.700)	-4.797 (7.102)	1.185 (2.033)
	No new claim with prior recognition as a disabled worker alone	-2.632 (1.484)	0.304 (2.203)	-3.098 (2.552)	0.419 (2.323)	4.874 (3.064)	4.234 (4.962)	-0.330 (1.906)
	No new claim with prior recognition as a disabled worker and attribution of pension	3.598 (4.281)	-1.305 (7.273)	3.598 (7.260)	-8.915 (9.035)	7.420 (8.758)	-3.023 (18.961)	3.493 (3.820)
	No new claim with prior attribution of pension	-19.772 (5.346)**	3.645 (5.113)	-3.694 (5.105)	0.603 (6.587)	-26.754 (15.778)	-14.146 (19.558)	-2.022 (3.121)
	No new claim with prior other claim	-7.206 (1.290)**	-4.078 (1.772)*	-0.173 (1.859)	2.250 (1.959)	-3.333 (3.039)	1.347 (4.318)	0.175 (0.971)
	Deficiencies	Lower limbs	0.371 (0.141)**	-0.141 (0.219)	-0.030 (0.257)	-0.005 (0.247)	-0.191 (0.340)	-0.074 (0.539)

	Upper limbs	0.584 (0.205)**	0.831 (0.287)**	-0.084 (0.403)	0.952 (0.352)**	0.464 (0.472)	1.078 (0.722)	0.288 (0.226)
	Other motricity	0.161 (0.124)	-0.098 (0.177)	0.019 (0.219)	0.032 (0.217)	-0.189 (0.276)	0.718 (0.426)	0.059 (0.131)
	Blindness, sight loss	-0.124 (0.217)	-0.504 (0.342)	-0.210 (0.311)	0.207 (0.327)	-0.332 (0.496)	0.230 (0.676)	-0.005 (0.207)
	Other visual diseases	0.967 (0.241)**	-0.178 (0.427)	0.157 (0.467)	0.482 (0.443)	0.134 (0.628)	0.900 (0.810)	-0.212 (0.321)
	Hearing impairment	0.158 (0.152)	0.155 (0.229)	0.553 (0.267)*	0.319 (0.272)	-0.447 (0.388)	-0.767 (0.797)	0.077 (0.163)
	Speech, language	0.572 (0.434)	-0.417 (0.617)	0.008 (0.467)	-0.945 (1.068)	0.566 (0.717)	0.315 (1.239)	0.164 (0.434)
	Behavioral disorders	-0.802 (0.207)**	-0.351 (0.239)	-0.561 (0.291)	-0.856 (0.338)*	-0.848 (0.447)	0.093 (0.583)	0.027 (0.190)
	Other psychiatric and intellectual disorders	-0.067 (0.219)	-0.091 (0.283)	0.544 (0.258)*	0.089 (0.314)	-1.218 (0.582)*	-0.206 (0.638)	-0.033 (0.211)
	Other diseases	-0.359 (0.111)**	-0.290 (0.156)	-0.465 (0.185)*	-0.244 (0.184)	-0.172 (0.242)	0.328 (0.380)	-0.170 (0.121)
Age (years)		0.733 (0.050)**	0.548 (0.071)**	0.544 (0.084)**	0.531 (0.088)**	0.594 (0.113)**	0.343 (0.167)*	0.168 (0.050)**
Square of age		-0.010 (0.001)**	-0.008 (0.001)**	-0.008 (0.001)**	-0.008 (0.001)**	-0.008 (0.001)**	-0.006 (0.002)**	-0.002 (0.001)**
Birth location (France = 1)	European Union	0.087 (0.247)	0.844 (0.322)**	-0.340 (0.577)	0.445 (0.489)	1.080 (0.482)*	0.971 (1.104)	0.073 (0.264)
	Other	-1.128 (0.200)**	-0.656 (0.283)*	-1.725 (0.532)**	-0.153 (0.302)	-0.133 (0.382)	1.700 (0.445)**	-0.277 (0.217)
Sociodemographic status (Male in couple = 1)	Single male	-0.537 (0.203)**	-0.145 (0.396)	-0.204 (0.320)	-0.122 (0.348)	-0.067 (0.443)	-0.307 (0.740)	-0.207 (0.235)
	Male living with other people	-0.461 (0.289)	-0.302 (0.495)	-0.137 (0.377)	-0.840 (0.474)	0.030 (0.563)	-1.624 (1.205)	-0.640 (0.388)
	Single female	-0.705 (0.230)**	0.464 (0.347)	-0.229 (0.370)	0.173 (0.384)	-0.351 (0.548)	0.090 (0.751)	-0.139 (0.215)
	Female living with other people	-1.144 (0.229)**	0.902 (0.313)**	-1.079 (0.388)**	-0.555 (0.383)	-0.328 (0.467)	-0.301 (0.669)	-0.178 (0.255)
	Female in couple	-2.013 (0.151)**	0.583 (0.225)**	-1.072 (0.285)**	-0.445 (0.256)	-0.767 (0.322)*	-1.027 (0.556)	-0.479 (0.151)**
Father's background (Blue collar = 1)	Farmer	0.610 (0.180)**	0.468 (0.255)	0.532 (0.312)	0.341 (0.358)	-0.581 (0.496)	0.304 (0.760)	-0.113 (0.188)

	Self-employer, upper white collar	0.420 (0.162)**	0.084 (0.228)	0.434 (0.265)	0.327 (0.263)	0.064 (0.363)	0.511 (0.596)	0.062 (0.178)
	White collar	-0.056 (0.195)	0.235 (0.262)	0.188 (0.311)	-0.130 (0.338)	-0.079 (0.427)	1.709 (0.538)**	0.236 (0.215)
	Employee	-0.031 (0.186)	-0.172 (0.283)	0.098 (0.288)	0.004 (0.304)	0.069 (0.378)	0.851 (0.588)	-0.198 (0.220)
	No professional activity	-0.870 (0.428)*	-0.049 (0.469)	-0.388 (0.581)	-0.189 (0.538)	-0.639 (0.781)	-0.369 (1.131)	-0.032 (0.356)
Disability (reference: other or none)	Pension by the Social Security	3.368 (0.557)**	0.393 (0.755)	0.955 (0.782)	0.064 (0.842)	-0.779 (1.135)	-2.070 (1.692)	-0.381 (0.598)
	Work-related disability	3.700 (0.571)**	0.826 (0.759)	1.219 (0.804)	0.349 (0.858)	0.310 (1.153)	-0.320 (1.647)	-0.017 (0.598)
	Private insurance	1.273 (0.289)**	0.429 (0.419)	0.495 (0.506)	0.083 (0.507)	-0.431 (0.665)	-0.820 (1.085)	-0.182 (0.313)
Education (Elementary school = 1)	Junior high school	-0.097 (0.138)	0.329 (0.203)	-0.340 (0.262)	0.158 (0.240)	0.286 (0.298)	0.349 (0.482)	0.169 (0.144)
	A level diploma	-0.007 (0.205)	0.296 (0.296)	0.282 (0.342)	-0.130 (0.353)	-0.094 (0.476)	-0.602 (0.829)	-0.199 (0.260)
	Higher education	0.317 (0.222)	0.738 (0.305)*	0.721 (0.393)	0.570 (0.377)	0.097 (0.506)	0.129 (0.779)	-0.015 (0.265)
Constant		-8.677 (1.018)**	-9.528 (1.455)**	-9.208 (1.622)**	-7.512 (1.638)**	-10.962 (2.319)**	-7.745 (3.101)*	-3.214 (1.165)**

N = 4,300 ; Log likelihood = -4578.5497 ; pseudo-R2 = 0.2552.

Nota : * significant at a 5% level, ** significant at a 1% level.