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The employment effect**

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FLOWENLA Discussion Paper

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ABSTRACT

Gavosto, Venturini, Villosio (1999) find that the impact of foreign workers on the wage of natives was positive. Such a result was partly to be expected, and therefore the effect of immigrants on native employment is analyzed here. Two aspects of the unemployment experience are taken into account: i) displacement risk, measured by the probability of moving from employment into unemployment; ii) job-search effectiveness measured by the probability of moving from unemployment into employment within one year. The quarterly Labour Force Survey data (ISTAT) from 1993 to 1997 was used. The transition probabilities depend on two sets of independent variables at time t : the individual characteristics and the external conditions of the market. A probit model was applied for repeated-cross-sections on “specific” local areas in order to control for possible autocorrelation and endogeneity. The results show that in the northern part of Italy, where most immigrants are located, the share of immigrants has no effect or a complementary effect on the probability of finding a job *for workers looking for a new job* while for *people looking for a first job* (the young) a negative effect is detected only in 1993 while the effect is positive in the most recent periods. For *native transition from employment to unemployment* a complementary effect prevails, while there is a negative effect only in the manufacturing sector in Northern Italy for 1996. This effect, however, is possibly due to other factors, i.e. the spread of temporary contracts in that area during that year.

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1 Introduction

During the 80s, the Southern European countries, including Italy, were no longer exporters of labour but became importers. During this period, the stock of foreign residents in Italy increased from 300,000 in 1980 to one million and half in 2000, when it reached 2.5% of the population. This increase was almost exclusively made up of immigrants from non-European Union countries, such as Morocco, Tunisia, and the Philippines, then more recently from the former Yugoslavia, Romania and Albania.

The inflows of foreigners into Italy has been strongly affected by subsequent legalisation implemented by different Governments.

The novelty of the immigration phenomenon forced the Government to pass initial law

in 1987 which was designed to legalise the presence of a large number of unexpected and feared immigrants. The difficulties of handling this new phenomenon in a satisfactory manner forced the Italian Government, in 1990, to replace the earlier law with new one which included a regularising provision, which was extended until 1991. The number of illegal immigrants who took advantage of these two provisions in order to regularise their status was lower than expected, amounting to about 120,000 under the first and 200,000 under the second¹. The pressure of public opinion brought the right-wing Government in 1996 to implement a third legalisation² and the left-wing Government in 1998 to pass a new law which introduced a planned number of immigrants and, a so to say, last legalisation which tightened controls and introduced immediate expulsion for immigrants who have been involved in criminal activities or have entered the country illegally. The present right wing Government (2002) has also adopted a legalisation but limited to the family workers.

The debate about the effect immigrants have on the labour market has been heated, on the one hand natives feared the competition of immigrants in the labour markets, while, on the other hand there was an excess demand for labour not matched by natives. The issue of competition is, however, recent, not only because the novelty of the phenomenon has centred attention on access into the country, on the illegal presence of foreigners and on the revision of the law but also because no dataset was available to study this issue. Only recently has the individual data derived from the social security archive (Venturini, Villosio 1999) made it possible to analyse the effect of immigration on the Italian labour market. Gavosto, Venturini, Villosio (1999)

¹ With regards to competition between illegal immigrant and legal native employment see Venturini 1999.

² During the third legalization 230.000 foreigners got the residency permits

tested the effect of the share of foreign workers on the native wages. Their results show that the inflow of immigrants raises the wages of native manual workers (i.e. it has a complementary effect), and this effect is larger in small firms and in the North of the country. This result was to be expected in a country with strong trade unions and centralized bargaining where adjustments probably take place on the quantity side and are in line with the main European evidence. A complementary effect is found with a similar approach by Haisken-De New and Zimmermann (1999) in Germany, by Dolado, Jimeno and Duce (1996) in Spain, by Winter-Ebner and Zweimüller (1996) in Austria, by Carrington and De Lima (1996) in Portugal³ just to cite some researches done in other countries. However the effect of immigration on native employment or unemployment seems less homogeneous: Pischke and Velling (1997) found no evidence of the displacement effect on unemployed natives in Germany, Winter-Ebner and Zimmermann (1999) find that immigration in Austria reduces the employment of natives in high immigration industries while in Germany immigrants seem to be complementary and Dolado, Jimeno and Duce (1996) in Spain found a negative but non- significant coefficient for foreign share variable on the one for employment growth.

There is no analysis of the effect of immigration on Italian unemployment and thus the object of this paper is to investigate if there is competition between natives and immigrants at an occupational level.

The paper is organised as follows: section 2 presents the relationship between the presence of foreign and unemployment rates in the different regions of Italy and the dataset used in the analysis; in section 3 the model is tested. Section 4 reports the results and section 5 offers some conclusions.

2 Immigration and native unemployment

A simple correlation between unemployment rates and foreign workers employed in each region, shows there is a clear distinction between northern and central regions and southern ones. Those regions with higher foreign employment are also those with lower unemployment rates. Moreover, comparing 1992 and 1996, it emerges that there is an increase in the polarization among the two areas of the country. This is the results of two different effects: on the one hand, the unemployment rate which remained unchanged in the northern and central regions but has substantially increased in the south; on the other hand, the increase in foreign employment has been particularly strong in the northern regions.

³ This analysis is methodologically different because the authors do not have individual data.

Fig. 2.1 Unemployment rates and share of foreign workers by region - 1992

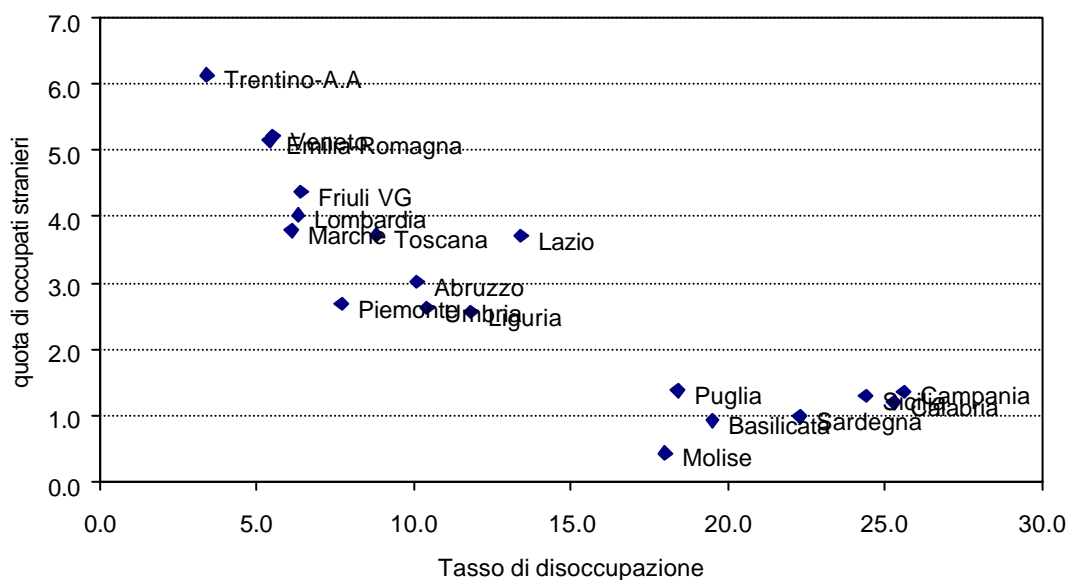
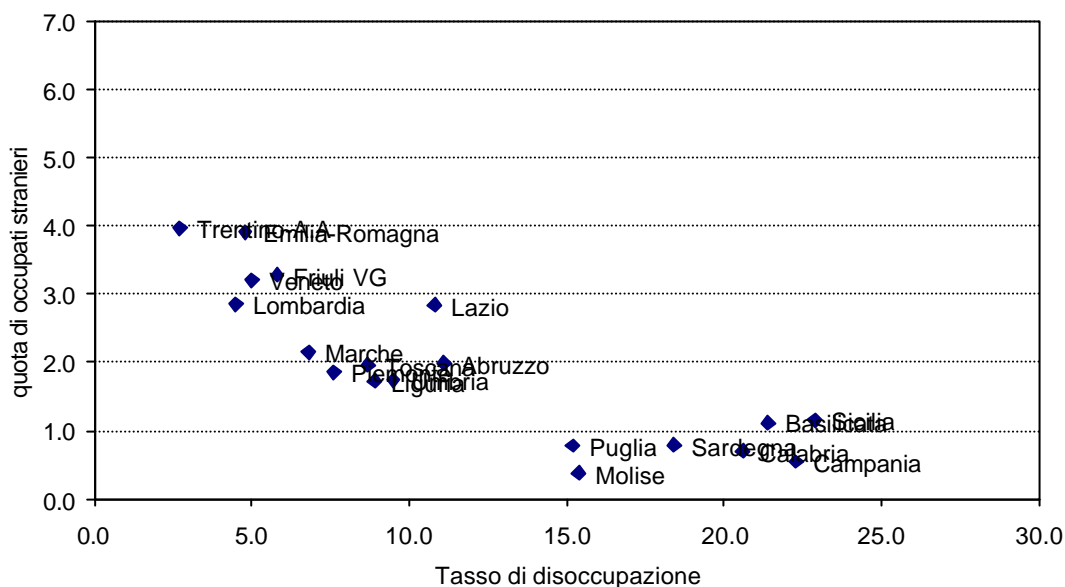


Fig. 2.2 Unemployment rates and share of foreign workers by region - 1996

The only data available to analyse the effect of immigration on native employment, is the micro data available in the Italian Labour Force Survey. This survey collects, quarterly, information regarding the main characteristics of the labour supply from a sample of about 76.000 households. Unfortunately only a small section of the sample has the characteristics of a panel with too few observations for our purpose. Moreover an analysis of the length of unemployment from such data is limited by many unsolvable problems⁴. Thus we can only use the cross-section version of this survey which contains, in the second quarter, a retrospective question on the individuals' professional status in the previous year⁵. The answer to this question is used to qualify natives' movements from unemployment into employment and viceversa in a year. It is impossible, however, to study the effect of immigrants on long term unemployment which has moreover more structural origins, but it is possible to get the effect of immigrants on the short and medium term unemployment which is mainly located where the immigrants are concentrated.

Two aspects of the unemployment experience are examined: *displacement risk* and *job-search effectiveness*. Both aspects can be affected by the presence of immigrants in the labour market.

Displacement risk occurs to employed workers who can be displaced by foreign workers. It is assumed that this competition could be stronger for specific categories of workers: young people, workers with low education. Also *job search* can be affected by the presence of immigrants who may reduce the probability of natives finding a job. The effect of immigrants on the job search for natives can be different for first job seekers or for workers looking for a new job.

In this analysis displacement risk and job search effectiveness are considered separately. As an indicator of displacement risk the probability of moving from employment into unemployment (E-U) is used and as an indicator of job-search effectiveness the probability of moving from unemployment into employment (U-E) within one year is used.

⁴ It is necessary to have a panel in order to have information on the completed spells of unemployment because a cross-section has only information on the current spell. However, because of the way the survey is conducted there are problems regarding length bias and heaping which cannot be solved with the panel section of the survey. These two problems may introduce bias in the estimation of the length of unemployment.

⁵ This cross-sectional approach even if frequently used has been criticised recently, for instance by Borjas (1999), on the assumption that the large internal mobility in the USA spreads the effect of an increase of foreign immigrants i.e. by internal flows of natives from California to New England. In Italy, this criticism is not relevant while the flows of workers between regions is about 6% for males and 3% for females (Leombruni R., Quaranta R. 2002).

The empirical model estimates separately the probability of losing a job⁶ for the employees and the probability of finding a job for the unemployed. In this last case we have been able to consider individuals who are looking for the first job separately from those who are looking for a new job.

Our analysis is carried out for the years 1993-1997⁷ in order to see whether subsequent immigration flows have modified the employment opportunities for natives over time.

Data on individuals are merged with some aggregate data drawn from different statistical sources in order to check for the local condition of the market in which individuals make their choices. One of these variables is the foreign share derived from administrative data (as explained in Venturini, Villosio 1999, Gavosto, Venturini, Villosio 1999)⁸.

The analysis is carried out, for the E-U transition, only for those workers employed in the manufacturing, commerce, and transport sectors. The reason for this choice is that only for this group of workers, can foreigners play a competitive role. In fact immigrants cannot compete in the public sector, in self-employment and in the financial services. The data, unfortunately, do not allow us to analyse the role played by immigrants in agriculture and in the sector of family help where the presence of foreign workers is strong⁹.

For the same reasons only unemployed who search employment as employees are included in the U-E transition¹⁰.

⁶ As we are not able to discriminate between quit and layoffs, in the definition of "losing a job" we also include all the voluntary movements.

⁷ The analysis is made on repeated cross-sections; due to a question of availability of data we have analysed the transition of the following years:

-U-E transitions: 1992-93, 1993-94, 1994-95, 1995-96, 1996-97.

- E-U transitions: 1992-93, 1993-94, 1994-95, 1995-96.

⁸ The information on foreign workers that is used in this paper has been derived from the Social Security Archives (*INPS*) on private employment. This archive represents about 70% of the relevant total employment for foreigners because family workers and employees in the agricultural sector are registered in two other archives. For a more detailed description of how these data were constructed see Venturini, Villosio 1999, Gavosto, Venturini, Villosio 1999.

⁹ In fact data on foreign workers in agriculture are available only at the aggregate level, while there are not enough data on family workers in the Labour force survey to replicate the analysis for this sector.

¹⁰ Data do not allow us to use more detailed information (for instance, sector of activity or occupation) about the job searched

2 The model

In our model the transition probabilities¹¹ Y^* of the individual i in area¹² r depends on two sets of independent variables, X_i related to individual characteristics at time t and W_r related to external conditions of the labour market of area r at time t , (including the foreign employment share) written as follows:

$$Y_{ir}^* = X_i \mathbf{b} + W_r \mathbf{d} + u_{ir} \quad i=\text{individuals } r=\text{areas} \quad (1)$$

$$Pr(Y_{ir}^* > 0) = Pr\{Y_{ir} = 1 / X_i, W_r\}$$

Equation (1) is estimated using a probit model

In this model the fact that we jointly consider individual characteristics and aggregate information, as well as the introduction of the foreign share raise a number of problems related to the existence of omitted or unobservable variables.

Equation (1) can be rewritten as follows:

$$Y_{ir}^* = X_i \mathbf{b} + W_{1r} \mathbf{d}_1 + W_{2r} \mathbf{d}_2 + a_r + \mathbf{e}_i \quad \mathbf{J} = (\mathbf{b}, \mathbf{d}_1, \mathbf{d}_2) \quad (2)$$

where

W_{1r} = foreign employment share; $a_r + \mathbf{e}_i = u_{ir}$

W_{2r} = other variables in the same area.

If a_r are omitted variables related to the relevant labour market that affects the transition probabilities; with: $E(a_r)=0$ $Var(a_r)=\sigma_r^2$ $E(a_r \epsilon_i)=0$

¹¹ We have two distinct transitions:

1. Transition from employment into unemployment (E-U)

where:

$Y_i = 1$ if $z_{i,t-1} = \text{"employed"}$ and $z_{i,t} = \text{"unemployed"}$

if $z_{i,t-1} = \text{"employed"}$ and $z_{i,t} = \text{"employed"}$

Transition from unemployment into employment (U-E)

where:

$Y_i = 1$ if $z_{i,t-1} = \text{"unemployed"}$ and $z_{i,t} = \text{"employed"}$

0 if $z_{i,t-1} = \text{"unemployed"}$ and $z_{i,t} = \text{"unemployed"}$

where z_i represents the employment status reported by the individual.

¹² Area is defined by region (20) in the U-E transition, and by region (20) and branch (5) in the E-U transition

then $E(u_{ir}) = 0$ and $E(u_{ir} u_{jr}) = \sigma_r^2$ that is to say that errors of two different individuals i, j are *correlated*.

This is the well known problem posed first by Moulton (1990) who showed that in models where aggregate information is considered jointly with characteristics of individuals disturbance terms might be correlated within the aggregation groups. In such a case the estimated coefficients are consistent but not efficient, in particular the estimated standard errors are biased downwards.

The second problem rests in the possible endogenous nature of the immigrant share. It is reasonable to assume that the supply of foreign labour is itself driven by labour market conditions.

From equation (1) we have:

$$W_{1r} = S_r \mathbf{g} + v_r \quad (3)$$

where S_r is a vector of instruments $S_r = (W_{2r}, W_{3r})$

If also in eq. (3) there are omitted variables then:

$$W_{1r} = S_r \mathbf{g} + a_r^* + \mathbf{h}_r \quad \text{where } v_r = a_r^* + \eta_r \quad (4)$$

a_r^* are omitted variables related to the local labour market

if $a_r^* \neq 0$ then $E(u_{ir} v_r) \neq 0$; $E(W_{1r} u_{ir}) \neq 0$

the error terms in eq. (3) and eq (1) are correlated and so are the variable W_1 and the errors u_i in eq. (1) giving endogeneity.

The solution to these two problems rests in the elimination of a_r and a_r^* ; in fact only if the local labour market is correctly characterised thus $a_r = 0$ and $a_r^* = 0$ the errors are not autocorrelated and W_{ir} , the foreign employment share, is not endogenous.

This goal has been pursued by estimating conditioning to a_r : we have proceed by defining a local area, sufficiently homogeneous in itself, that we can correctly characterise and control for. Then we have conducted two tests in order to verify the absence of omitted variables and endogeneity in each area.

3 The empirical strategy

3.1 Definition of the local area

As explained in the above section, the solution of the econometric problems that arise from our model rests in the estimation made within homogeneous local areas.

Empirical analysis shows that immigrants are in low wage sectors but they are in high wage regions thus cross regional analyses could be biased in favour of complementarity while cross sector analysis could be biased in favour of competition¹³. To avoid this possible bias, when possible, the branch-region dimension was chosen.

A sort of compromise has to be accepted between a finer definition of the area and the data available.

In the estimation of the job search effectiveness discrimination is only between the geographical area because it is not known in which sector the individual is searching for job. Given the polarisation between northern and southern regions as shown in Fig.2 the more obvious definition of the local market rests in discriminating between northern and central regions, on one hand, and southern regions, on the other.

In the estimation of displacement risk, as there are more observations and moreover as the branch in which the individual is employed is known, it is also possible to discriminate, within a smaller geographical area, and also by sector.

Thus, the local areas are defined as follows:

Job search effectiveness (U-E transition)	
Unemployed looking for a first job	(1) North and Centre ¹⁴
Unemployed looking for a new job	(1) North and Centre (2) South
Displacement risk (E-U transition)	(1) North manufacturing (excluding Construction) (2) North construction (3) North services

¹³ See for instance Winter-Ebner and Zweimuller (1999).

¹⁴ For the analysis of the U-E transition for individuals looking for a first job not enough information is available for the southern regions to perform the probit estimation. Thus in this case the analysis is restricted to individuals in the northern and central regions.

	(4) Centre Italy manufacturing
	(5) Centre Italy services
	(6) South

In order to check correctly for all the factors that can affect the transition within each area special attention was given to the choice and the definition of the variables W_{2r} in eq. (2) that aim to represent the external conditions of the market in which individuals make their choices.

The variables chosen were those that turned out to have a better performance, both in terms of significance and fit of the model.

Effects from the demand side are captured by the growth in the added value between time t-1 and t, and the unemployment rate. Labour demand in the dependent employment is measured by net firms' creation rate at time t-1.

The effect of immigration -variable W_{1r} in eq. (2)- on the employment prospects of natives is measured by foreign employment share (foreign employment divided by native employment)¹⁵.

The level of aggregation in the variables W_{1r} and W_{2r} is region (20) for job search effectiveness (U-E transitions); while it is branch (5) by region (20) for displacement risk (E-U transitions)¹⁶.

The individual variables X_i included in the model are: age (linear and squared term), gender, marital status number of components in the household separately for individuals married¹⁷ and not married and education.

Moreover, industry and area dummies are included to control for area or industry fixed effects.

3.2 Testing the definition of the local area

As explained in par 3.1, if the local dimension of the labour market is correctly characterised, then a_r in eq. (2) is equal to zero and errors are not autocorrelated. For this reason, to test whether our specification correctly characterises the local dimension of the labour market, it is appropriate to perform a simple test of omitted variable testing for the inclusion in the

¹⁵ Analogous studies for other countries use as a measure for immigration either the foreign share (Winter-Ebmer and Zweimuller 1999) or the changes in the share of foreign employment in a giver region or industry (Card 1990; DeNew e Zimmermann 1994).

¹⁶ The unemployment rate was at regional level.

¹⁷ This variable (the number of components linked with the marital status) is used as a proxy for the number of children, information which is not available in the survey.

specification of other variables which can contribute to the characterisation of the labour market.

The supplementary variables tested are job creation, job destruction, activity rate, share of imports and exports. These variables were never significant and, moreover contributed very little to the overall significance of the model.

A test was conducted on the joint significance of these supplementary variables and it never rejected the null hypothesis that the supplementary variables are jointly zero (See the appendix for more details on this test Table 7.3).

The second test conducted is related to the endogeneity of the immigrant share and the Blundell and Smith (1986) exogeneity test was chosen. The test consists in a two stage procedure. At the first stage, a linear equation was used to estimate the immigrant share as a function of the appropriate instruments, at the second stage the probit equation was estimated using among the independent variables, the error term estimated at the first stage. If the error term comes out to be significantly different from zero, then the exogeneity of the variable is rejected and instrumentation has to be done.

The variables W_{3r} chosen to instrument the foreign share were the lagged foreign share, the share of women and blue collars in a certain region or industry (as measures of the structure of employment) and the average wage among immigrants as a measure of the attractiveness for a foreign worker to enter in that sector of the market¹⁸.

For the chosen local area there is no evidence of endogeneity for unemployed looking for a job and a first job and for employed. (See the appendix for more details Table 7.4) .

4 Results

4.1 Job search effectiveness

A) Search of the first job

In this section the analysis concentrates on those who are looking for their first job. In order to focus only on the young unemployed, and to exclude those who have had some previous unrecorded experience, as would be the case of someone who had worked in the black economy, the sample was

¹⁸ These are standard instrumental variables, see for instance Winter-Ebmer et al. (1999)

restricted to individuals under the age of 30¹⁹. The full set of results is reported in the appendix.

Before discussing the effect of immigration on native employment, it is first necessary to have a look at the results for the other variables in the specification. The probability of finding a job is lower for women, it falls with age up to a certain level and then rises (the linear coefficient is negative and its square is positive). The likelihood of finding a job has no significant correlation with education or with marital status and the number of household components does not appear to have any significant effect.

Among the variables at the macroeconomic level, it is found that the unemployment rate, when it is significant, has the (expected) negative sign: when unemployment decreases, the probability of finding a job increases. Variations in the added values increase the probability of finding a job, while the net firms' creation rate, when significant, has the expected positive sign.

Finally, the effect of immigration can be seen in table 4.1 section A.

Results from the probit equation for the North and Central Italy suggest that the presence of immigrants reduced the probability of finding a job only in 1993, soon after the end of the legalisation procedure, while no significant effect emerges in the following years and in 1997 a complementary effect seems to prevail.

To understand the target group of the possible competition from immigrants better, a subdivision by level of education of natives is used. Surprisingly immigrants complement natives with low education in the recent period while the only group to show displacement by immigrants is made up of medium educated natives in the North-Central Italy, and this happened in 1993.

Too few observations means that it is impossible to replicate the analyses for the South.

Tab. 4.1 The effect of foreign workers on the probability of the unemployed finding a job.

	1993	1994	1995	1996	1997
Section A					
	Unemployed looking for their first job				
North and Central Italy					
All	-0.35 (-2.5)	-0.03 (-0.3)	0.01 (0.1)	0.20 (1.3)	0.27 (1.9)
High education	-0.37 (-1.3)	-0.44 (-1.6)	0.06 (0.2)	0.22 (0.8)	0.19 (0.8)
Medium education	-0.48 (-2.9)	0.13 (1.0)	0.10 (0.6)	0.18 (1.1)	0.19 (1.2)
Low education	-0.25 (-1.6)	-0.14 (-1.1)	-0.11 (-0.6)	0.21 (1.2)	0.36 (2.3)

¹⁹ Anyway they are the majority of those searching the first job.

Section B		Unemployed looking for a new job							
North and Central Italy									
	All	0.25 (2.1)	0.07 (0.9)	-0.07 (-0.7)	-0.04 (-0.3)	0.31 (3.0)			
	High education	-0.02 (-0.1)	0.19 (0.8)	0.30 (1.2)	-0.09 (-0.4)	0.43 (2.1)			
	Medium education	0.19 (1.3)	0.06 (0.5)	0.02 (0.2)	-0.06 (-0.5)	0.35 (3.1)			
	Low education	0.28 (2.2)	0.07 (0.8)	-0.13 (-1.2)	-0.03 (-0.2)	0.28 (2.6)			
South									
	All	0.10 (0.7)	0.05 (0.4)	-0.08 (-0.6)	-0.07 (-0.4)	0.30 (2.6)			
	High education	0.23 (0.3)	-1.13 (-1.5)	-0.35 (-0.7)	-0.29 (-0.4)	0.16 (0.5)			
	Medium education	-0.32 (-1.2)	0.03 (0.1)	-0.51 (-2.3)	-0.09 (-0.3)	0.26 (1.7)			
	Low education	0.25 (1.5)	0.10 (0.7)	0.04 (0.3)	-0.06 (-0.3)	0.34 (2.6)			

Probit stage regression. *t*-statistics in parenthesis
High education: University degree, *Medium education*: secondary level of education, *Low education*: first or lower level of education

B) Search for a new job

Similarly the probit analysis was replicated for those searching for a new job and, as before the full set of results is reported in the appendix.

The results are in line with the above findings: the probability of finding a new job is lower for women, it falls with age, and is not affected by marital status or by the number of cohabitants and, finally, it is higher for those with higher education.

Among the macroeconomic variables, the unemployment rate negatively affect the probability of finding a new job, while there is almost no significant effect due to the value added and the net firm's creation rate.

What is more important for this analysis, however, is the effect that immigrants have (Tab.4.1section B). In this case, different from the results obtained before, the impact of foreign workers in Northern and Central Italy was positive in 1993, not significant up to 1995, and the effect was significant and positive for the last year analysed. For the South the variable is positive and significant only for 1997, especially for the low education group. Thus, a complementary effect seems to dominate the relationship between foreign workers and natives with previous work experience especially for low educated natives, the group which was expected to be more at risk.

Summarising the analysis of the relationship between probability of finding a job and the presence of immigrants, different effects are detected for people looking for the first job and people looking for a new job. In the former case, for individuals without any job experience the negative effect is restricted to the first year and to medium educated natives, while the effect is positive in the most recent periods. For older and more experienced workers, who are looking for a new job, the presence of immigrants has either no effect or a complementary effect, especially for those who have a lower level of education.

4.2 Displacement risk

In the test of the transition from employment into unemployment we included the share of foreign workers at time t (see Tab. 4.2) and as data after 1996 is not available it is possible analyse transition only up to 1995-96.

Again, most of the findings for this transition are in line with the previous results: the probability of losing one's job is higher for women, it falls with age, and is higher for the unmarried or divorced. It is lower for more educated individuals, especially if they have a secondary level qualification. The likelihood of becoming unemployed is higher in those regions where unemployment is higher, is lower when the net number of new firms increases and, when value added increases²⁰.

Tab. 4.2 The effect of foreign workers on the probability of losing a job for domestic workers.

	1993	1994	1995	1996
(1) North Manufact. (Excl. Constr.)	-0.20 (-1.5)	-0.06 (-1.1)	0.06 (0.7)	0.15 (4.2)
(2) North construction	0.06 (2.1)	-0.05 (-0.8)	0.08 (1.2)	0.11 (1.4)
(3) North services	0.02 (0.7)	-0.10 (-3.5)	0.05 (1.6)	0.02 (1.1)
(4) Centre Italy manufacturing	0.19 (1.7)	-0.12 (-0.7)	-0.00 (-0.01)	-0.14 (-2.0)
(5) Centre Italy services	-0.01 (-0.2)	-0.01 (-0.1)	-0.02 (-0.3)	-0.12 (-3.2)
(6) South	-0.02 (-0.7)	-0.03 (-0.9)	-0.11 (-2.3)	0.01 (0.4)

The share of immigrants employed (Tab.4.2) seems, in general, to have no effect on domestic workers up to 1995, with the exception of a complementary effect found in 1994 in the services in the North and in 1995 in the South. A competitive effect is detected in the North in the construction.

²⁰ In the appendix only the regression for the North manufacturing is reported. The other complete sets of results are available from the authors upon request.

In 1996 there is a competitive effect in the North in manufacturing, while a complementary effect emerges in central Italy in both manufacturing and services.

Unfortunately, as data after 1996 is not available, it is not possible to see if the competition effect that emerges for 1996, continues in the subsequent years.

Moreover it is important to remember that it is not possible to distinguish between quits and layoffs and also no information is available regarding the nature of the job contract. This could be particularly important for the last few years of our analysis when there was a strong increase in the number of temporary contracts. The introduction in the test of the change in the number of temporary contracts does not change the effect of the foreign share coefficient. The data does not allow a separate test for workers with temporary contracts and open-end contract workers thus some doubts remain.

As different sub-groups may react differently to the presence of immigrants, in Table 4.3 a more detailed analysis of the foreign share effect by education and age is point out.

Tab 4.3 The effect of foreign workers on the probability of domestic workers losing their job in North Manufact. Sector for different workers characteristics.

	1993		1994		1995		1996	
All								
High education	0.13	(0.5)	-0.14	-(1.0)	0.02	(0.2)	0.10	(0.0)
Medium education	-0.23	-(1.6)	-0.07	-(1.1)	0.04	(0.5)	0.24	(5.6)
Low education	-0.21	-(1.5)	-0.04	-(0.8)	0.07	(0.9)	0.12	(3.3)
Young								
high education	0.13	(0.5)	-0.15	-(1.1)	0.02	(0.2)	0.08	(0.0)
medium education	-0.23	-(1.6)	-0.07	-(1.2)	0.05	(0.6)	0.24	(5.6)
low education	-0.21	-(1.5)	-0.03	-(0.6)	0.09	(1.2)	0.12	(3.4)
Old								
high education	-2.07	(0.0)	-0.03	-(0.2)	0.03	(0.2)	0.11	(0.0)
medium education	-0.09	-(0.6)	-0.01	-(0.2)	0.07	(0.8)	0.23	(4.6)
low education	-0.20	-(1.5)	-0.06	-(1.1)	0.04	(0.6)	0.11	(3.0)
Probit regression. t-statistics in parenthesis. <i>High education</i> : University degree, <i>Medium education</i> : secondary level of education, <i>Low education</i> : first or lower level of education. <i>Young</i> : less than 41 years old; <i>Old</i> : more than 40 years old								

A general nil effect of foreign workers on natives of whatever level of education emerges until 1995. The effect persists for the highly educated natives while competition is detected versus the medium and low educated

natives of whatever age group. If we look more closely at the results, competition is stronger against the medium educated natives i.e. the coefficient is always double than that for low educated natives.

5 Conclusion

Immigration in Italy is no longer a recent phenomenon. However, the debate about the effect of immigration on the domestic labour market is often dominated by aprioristic beliefs and because data is scarce there is little empirical evidence to sustain the different hypothesis proposed.

In this paper, data from the Italian Labour Force Survey has merged with information about foreign employment. The analysis considers the 1993-1997 period. In this period the second important procedure of legalisation of the 1991 ended, and the subsequent one 1996, started. The analysis is restricted to foreign workers legally employed in the private sector as dependent workers in some selected sectors of activities (manufacturing, construction, commerce and transports).

To allow for the problems related to the possible existence of autocorrelation between errors, and endogeneity in the foreign employment share, the analysis is conducted by creating subareas in which we can be sufficiently sure that the local labour market has been correctly represented.

The analysis considers displacement risk and job search effectiveness by using a probit model on transition probabilities. Regarding job search effectiveness in the northern and central region of Italy, small differences emerge in the reactions to the presence of foreign workers between the unemployed looking for their first job and the unemployed looking for a new job. In the first case of young unemployed people with no job experience, the presence of foreign workers could have had a negative effect, limited in effect and restricted to the first year of our analyses (1993), while the effect is positive in the most recent periods. Looking at the specific effect for native education, the only group affected is the medium educated.

For the unemployed looking for a *new* job there was no effect, or a complementary effect, between immigrants and natives in the Northern and in the Central regions, while complementarity always prevails in the South.

Among the employed, the analysis of the displacement risk, seems to point to a complementary or nil effect. An exception is the competition between foreign and domestic workers in 1996 in manufacturing in the North of Italy. This effect could be traced to the legalization of 1996 but as in our test we are not able to fully control for the increase in the temporary jobs which

spread in that area in the same year or the (in)voluntary nature of quits other could be the causes. The analyses by educational levels and age groups show that the groups most at risk are the medium educated workers and later the lower educated ones at whatever age group. This is confirmed by the unemployment rate, which in the North is 6.6% for the medium educated while it is only 6.2% for the low educated²¹

Thus, taking into account all the differences underlined above a complementary effect dominates the role played by foreigners in the Italian labour market, thus if foreigners seem to have a positive effect on wages (prices) (Gavosto, Venturini, Villosio 1999), the probability of transition from unemployment and into unemployment (quantities) does not seem to have got worse because of immigration.

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²¹ For the other group, the high educated unemployment rate in the North is 5%, source Labour Force Survey.

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7 Appendix

7.1 Transition matrices

The second quarter of the LFS survey contains a question on the professional **state** of the individuals in the previous year. This question allows the construction of transition matrices at a one year interval.

Tab. 7.1 Transitions between t and t-1 for years 1992-1995

a. Unemployed looking for a first job (aged less than 31)

Unemployed looking for the first job in t-1		Status in year t		
		Unemployed	Employed	% employed on unemployed in t-1
1992	4789	3849	940	19.6
1993	4912	4055	857	17.4
1994	5268	4264	1004	19.1
1995	5478	4422	1056	19.3
1996	5615	4570	1045	18.6

b. Unemployed looking for a new job

Unemployed looking for a new job in year t-1		Status in year t		
		Unemployed	Employed	% employed on unemployed in t-1
1992	3630	2506	1124	31.0
1993	4581	3221	1360	29.7
1994	5268	3649	1619	30.7
1995	5452	3646	1806	33.1
1996	5478	3673	1805	32.9

c. Employed

Employed at year t-1		Status in year t		
		Employed	Unemployed	% unemployed on employed in t-1
1992	26776	25690	1086	4.1
1993	25692	24600	1092	4.3
1994	25078	24178	900	3.6
1995	24843	23994	849	3.4

7.2 Details of the variables used

Tab. 7.2a Individual variables used (X_i)

DFEM	Dummy=1 if gender=female
ETA	Age of the individual
ETA2	Age squared
SINGLE	Dummy=1 if never married
CONIUG	Dummy=1 if married (<i>Benchmark</i>)
SEPAR	Dummy=1 if separated, divorced or widowed
FAM_SIN	Number of household component when not married
FAM_CON	Number of household component when married
FAM_SEP	Number of household component when separated, divorced or widowed
DEDU_UNI	Dummy=1 if education = university degree or higher
DEDU_SUP	Dummy=1 if education = secondary level education
DEDU_MED	Dummy=1 if education = first level education
DEDU_EL	Dummy=1 if education = less than first stage of education or nothing (<i>Benchmark</i>)

Tab. 7.2b Variables related to macroeconomic conditions (W_r)

Source	Variable		Employment-unemployment transition		Unemployment-employment transition	
			Period	Level of aggregation	Period	Level of aggregation
ISTAT "regional account"	DVA	Change in the added value	Between t-1 and t	Region by branch	Between t-1 and t	Region
ISTAT LFS	DISOC	Unemployment rate	t-1	Region	t-1	Region
INPS Social security archives	IMP_NE	Net firms' creation rate	t-1	Region by branch	t-1	Region
INPS Social security archives	PERC	Foreign employment share	t	Region by branch	t-1	Region

7.3 Test for autocorrelaton

A test on the joint significance of the supplementary variables has been conducted as follows.

ω_1 is defined as the model with the chosen specification and ω_2 is the larger model (the one with the supplementary variables), so that $\omega_2 \subset \omega_1$; under certain regularity conditions, minus twice the log of the ratio between the two maximised likelihood has approximately, in a large sample, a chi-squared distribution with degrees of freedom equal to the difference in the number of parameters between the two models. Thus,

$$-2\log \mathbf{I} = -2\log L(\hat{\mathbf{q}}_{w2}, y) - 2\log L(\hat{\mathbf{q}}_{w1}, y) \rightarrow \mathbf{c}^2_v$$

where the degrees of freedom are $v = \dim(\omega_2) - \dim(\omega_1)$, the number of parameters in the larger model ω_2 minus the number of parameters in the smaller model ω_1 .

The table shows that in every subarea analysed, the null hypothesis that the supplementary variables are jointly zero is never rejected.

Tab. 7.3 Results from the test on omitted variables (p>Chi squared in parenthesis)

	1993	1994	1995	1996	1997
Transition unemployment-employment for people looking for the first job					
North and Centre Italy					
-2logλ	-3.769 (0.44)	-4.664 (0.32)	-1.556 (0.82)	-3.829 (0.43)	-4.304 (0.37)
Transition unemployment-employment for people looking for a new job					
North and Centre Italy					
-2logλ	-4.285 (0.37)	-4.452 (0.35)	-4.178 (0.38)	-3.590 (0.46)	-3.891 (0.42)
South					
-2logλ	2.075 (0.72)	0.779 (0.94)	3.735 (0.44)	1.922 (0.75)	0.093 (1.00)
Transition employment-unemployment					
North in manufacturing (excl. Construction)					
-2logλ	4.455 (0.35)	3.310 (0.51)	2.268 (0.69)	2.066 (0.72)	
North in construction					
-2logλ	1.072 (0.90)	1.132 (0.89)	1.732 (0.78)	0.519 (0.97)	
North in services					
-2logλ	3.651 (0.46)	3.775 (0.44)	0.038 (1.00)	3.554 (0.47)	
Centre Italy in manufacturing					
-2logλ	4.804 (0.31)	2.337 (0.67)	0.301 (0.99)	3.508 (0.48)	
Centre Italy in services					
-2logλ	2.227 (0.69)	1.580 (0.81)	0.911 (0.92)	1.979 (0.74)	
South Italy					
-2logλ	0.430 (0.98)	1.098 (0.89)	0.392 (0.98)	2.302 (0.68)	
Likelihood ratio test. λ is the ratio between the maximised likelihood in the smaller model and the larger model. The supplementary variables included in the larger model are: job net creation, activity rate, share of imports and exports.					

7.4 Test for endogeneity

Following Blundell and Smith (1986) at a first stage a regression of the foreign employment share function of appropriate instruments (eq. 5) was performed, then the error terms from this estimation are included in the probit equation (eq. 6)

$$\hat{w}_{ir} = S_r \hat{g} + \hat{v}_r \quad S_r = (W_{2r}, W_{3r}) \quad (5)$$

$$Y^*_{ir} = X_i \mathbf{b} + W_{1r} \mathbf{d}_1 + W_{2r} \mathbf{d}_2 + \Phi v_r + e_{ir} \quad (6)$$

where Φv_r are the estimated error terms from (5).

We test $\Phi_{MV}=0$ under the null hypothesis $H_0 : E(u_{ir} v_r)=0$

The table 4.4 reports the result for the endogeneity test for the definition of the local market chosen.

As can be seen from the table, for the chosen dimension there is no evidence of endogeneity for unemployed looking for a job and a first job and for employed

Tab. 7.4 Results from the endogeneity test (t statistics in parenthesis)

	1993	1994	1995	1996	1997
Transition unemployment-employment for people looking for the first job					
North and Central Italy					
Φ_{MV}	0.92 (0.64)	0.26 (0.73)	0.24 (0.65)	-0.056 (-0.13)	-0.14 (-0.27)
Transition unemployment-employment for people looking for a new job					
North and Central Italy					
Φ_{MV}	1.85 (1.36)	0.11 (0.48)	0.20 (0.70)	-0.38 (-1.35)	0.64 (1.76)
South					
Φ_{MV}	0.64 (0.8)	-1.01 (-0.5)	0.61 (-0.58)	0.91 (1.78)	-6.27 (-1.38)
Transition employment-unemployment					
North in manufacturing (excl. Construction)					
Φ_{MV}	-7.65 (-0.02)	-6.70 (-0.06)	-0.20 (-0.01)	-8.85 (-0.01)	
North in construction					
Φ_{MV}	-1.83 (-0.01)	-1.18 (-0.01)	-3.62 (-0.01)	-3.23 (-0.02)	
North in services					
Φ_{MV}	0.36 (1.48)	-0.04 (-0.38)	0.18 (1.33)	0.16 (0.62)	
Central Italy in manufacturing					
Φ_{MV}	0.44 (0.01)	-9.55 (-0.71)	-1.50 (-0.41)	-0.095 (-0.48)	
Central Italy in services					
Φ_{MV}	-0.16 (-0.35)	-0.05 (-0.14)	2.76 (0.06)	9.46 (0.01)	
South Italy					
Φ_{MV}	0.09 (0.86)	0.02 (0.83)	-0.14 (-1.17)	-0.002 (-0.03)	

Two-stage procedure. Φ_{MV} is the estimated coefficient in the probit equation of the error terms from the first stage. At the first stage, the dependent variable is the foreign share, right hand side variables are: lagged for foreign share, share of women and blue collars and the average wage among immigrants.

7.5 Results from the probit regression on the probability of the transition from unemployment into employment for people looking for a first job (t-statistics in parenthesis) -

North and Central Italy

Variable	1993		1994		1995		1996		1997	
Intercep	5.97	(3.6)	1.81	(1.2)	3.37	(1.9)	4.02	(2.0)	5.10	(3.1)
Dfem	-0.28	-(3.2)	-0.20	-(2.3)	-0.23	-(2.9)	-0.29	-(3.7)	-0.28	-(3.4)
Eta	-0.30	-(2.4)	-0.19	-(1.4)	-0.17	-(1.3)	-0.30	-(2.4)	-0.31	-(2.4)
eta2	0.01	(2.0)	0.00	(1.3)	0.00	(1.3)	0.01	(2.2)	0.01	(2.2)
Single	-0.15	-(0.3)	0.91	(1.5)	-0.52	-(1.0)	-0.80	-(1.4)	-1.20	-(2.3)
Separ	5.03	(0.0)	1.36	(1.2)	-	(0.0)	-2.77	-(0.6)	-	(0.0)
					25.16				23.70	
fam_sin	-0.13	-(2.6)	-0.02	-(0.5)	0.04	(0.8)	-0.04	-(1.0)	-0.03	-(0.7)
fam_con	-0.13	-(1.1)	0.23	(1.3)	-0.07	-(0.4)	-0.34	-(2.0)	-0.34	-(2.2)
fam_sep	-1.93	(0.0)	0.09	(0.3)	5.22	(0.0)	0.22	(0.2)	5.50	(0.0)
dedu_uni	0.03	(0.1)	0.08	(0.3)	-0.25	-(0.9)	0.47	(1.6)	0.35	(1.2)
dedu_supe	-0.08	-(0.3)	0.37	(1.4)	0.05	(0.2)	0.24	(0.9)	0.40	(1.6)
dedu_medi	-0.40	-(1.8)	0.04	(0.2)	-0.22	-(0.9)	0.03	(0.1)	0.09	(0.3)
Dva	0.00	(0.0)	0.17	(2.3)	0.03	(0.4)	0.03	(0.3)	-0.24	-(2.0)
Disoc	-0.12	-(3.0)	0.00	(0.0)	-0.18	-(3.2)	-0.07	-(1.3)	0.00	-(0.1)
imp_ne	0.22	(0.6)	0.35	(2.1)	-0.05	-(0.3)	0.32	(2.3)	0.47	(2.1)
perc_rs	-0.35	-(2.5)	-0.04	-(0.3)	0.01	(0.1)	0.20	(1.2)	0.27	(1.9)
d_ne	0.37	(1.4)	-0.29	-(1.2)	0.16	(0.8)	-0.07	-(0.3)	0.43	(2.3)
d_ce	0.14	(0.6)	-0.25	-(1.4)	0.12	(0.5)	0.18	(1.4)	0.17	(1.2)
-2 Log L.	1209.96		1250.99		1401.23		1428.59		1284.90	
Wald Chi-sq	68.28	(17 DF)	83.36	(17 DF)	105.0	(17 DF)	139.5	(17 DF)	128.3	(17 DF)
N. obs. Y=1	1330	417	1369	433	1513	517	1484	534	1426	503

7.6 Results from the probit regression on the probability of the transition from unemployment into employment for people looking for a new job (t-statistics in parenthesis) -

North and Central Italy

Variable	1993		1994		1995		1996		1997	
Intercep	2.15	(2.8)	1.43	(2.8)	0.89	(1.3)	2.31	(2.4)	0.28	(0.5)
Dfem	-0.38	-(4.9)	-0.25	-(3.6)	-0.51	-(8.0)	-0.46	-(7.2)	-0.41	-(6.4)
Eta	-0.03	-(1.0)	-0.05	-(2.5)	-0.06	-(2.8)	-0.05	-(2.6)	-0.03	-(1.6)
eta2	0.00	-(0.2)	0.00	(1.6)	0.00	(1.2)	0.00	(1.4)	0.00	(0.1)
Single	0.14	(0.6)	0.25	(1.3)	-0.03	-(0.2)	0.10	(0.5)	-0.21	-(1.1)
Separ	0.15	(0.3)	0.28	(0.7)	0.13	(0.4)	0.31	(0.9)	0.21	(0.6)
fam_sin	-0.05	-(1.2)	-0.08	-(2.1)	-0.03	-(0.8)	-0.04	-(1.0)	-0.05	-(1.3)
fam_con	0.09	(1.6)	0.06	(1.3)	0.03	(0.6)	0.06	(1.5)	0.00	(0.0)
fam_sep	-0.01	(0.0)	-0.15	-(1.0)	-0.02	-(0.2)	-0.24	-(1.7)	-0.18	-(1.3)
dedu_uni	0.73	(3.3)	0.50	(2.8)	0.44	(2.5)	0.38	(2.5)	0.36	(2.3)
dedu_supe	0.32	(2.6)	0.31	(2.8)	0.21	(2.1)	0.18	(1.8)	0.28	(2.7)
dedu_medi	0.13	(1.1)	0.05	(0.5)	0.12	(1.2)	-0.08	-(0.8)	0.09	(0.9)
Dva	-0.25	-(1.3)	-0.01	-(0.1)	0.21	(3.4)	-0.02	-(0.3)	-0.12	-(1.3)
Disoc	-0.02	-(0.5)	-0.15	-(2.3)	-0.09	-(2.1)	-0.12	-(3.2)	0.05	(1.4)
imp_ne	0.79	(3.0)	-0.06	-(0.4)	-0.25	-(1.3)	-0.02	-(0.2)	0.38	(2.6)
perc_rs	0.25	(2.1)	0.07	(0.9)	-0.07	-(0.7)	-0.04	-(0.3)	0.31	(3.0)
d_ne	0.17	(0.8)	-0.02	-(0.1)	0.33	(2.3)	0.06	(0.3)	0.07	(0.6)
d_ce	-0.23	-(1.3)	0.19	(1.2)	0.43	(2.4)	0.02	(0.2)	0.00	(0.0)
-2 Log L.	1658.70		2122.08		2389.18		2389.91		2500.09	
Wald Chi-sq	106.56	(17 DF)	84.73	(17 DF)	174.21	(17 DF)	172.79	(17 DF)	156.36	(17 DF)
N. obs. Y=1	1674		2115		2401		2390		2487	
	589		759		948		947		1006	

Tab. 7.7 Results from the probit regression on the probability of the transition from employment into unemployment (t-statistics in parenthesis) -

North Manufacturing (excluding construction)

Variable	1993		1994		1995		1996	
intercep	-0.64	-(1.0)	-1.48	-(4.0)	-2.74	-(3.8)	-2.31	-(5.9)
dfem	0.32	(9.5)	0.22	(6.6)	0.29	(8.3)	0.27	(8.2)
eta	-0.04	-(4.0)	-0.03	-(2.4)	-0.01	-(0.5)	-0.06	-(5.3)
eta2	0.00	(3.1)	0.00	(1.6)	0.00	(0.1)	0.00	(4.8)
single	0.30	(2.6)	-0.18	-(1.7)	0.49	(4.4)	0.63	(5.7)
separ	0.78	(4.0)	0.91	(3.2)	-0.03	-(0.1)	-0.52	-(1.8)
fam_sin	0.03	(1.5)	0.05	(2.1)	-0.07	-(3.1)	-0.04	-(1.7)
fam_con	0.03	(1.0)	-0.04	-(1.9)	0.03	(1.3)	0.10	(3.8)
fam_sep	-0.12	-(1.6)	-0.57	-(3.5)	0.08	(0.9)	0.32	(3.9)
dedu_uni	-0.21	-(1.8)	-0.28	-(2.3)	0.05	(0.5)	-3.50	-(0.1)
dedu_sup	-0.28	-(4.9)	-0.29	-(5.3)	-0.33	-(5.7)	-0.28	-(5.0)
dedu_med	-0.13	-(2.6)	-0.13	-(2.6)	-0.12	-(2.4)	-0.07	-(1.3)
dva	-0.02	-(2.0)	0.01	(1.1)	0.00	(0.1)	-0.03	-(2.3)
disoc	-0.04	-(0.8)	0.05	(1.5)	0.06	(1.5)	0.08	(3.2)
imp_ne	-0.08	-(2.3)	-0.02	-(0.6)	-0.02	-(1.0)	0.01	(0.2)
perc_t	-0.20	-(1.5)	-0.06	-(1.1)	0.06	(0.7)	0.15	(4.2)
D_no	-0.27	-(2.0)	0.04	(0.5)	0.03	(0.4)	0.07	(1.1)
-2 Log L.	6434.78		6473.64		5743.25		6302.13	
Wald Chi-sq	379.4	(16 DF)	190.9	(16 DF)	149.4	(16 DF)	284.3	(16 DF)
N. obs. Y=1	8655 208		8459 175		8404 137		8396 117	