

Reassessing segmentation in the Italian Labour Market

di

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Abstract

The aim of this paper is to test for the presence of dualism in a wage regression for the Italian labour market. According to the labour market segmentation theory, in an economy there is a clear division between primary and secondary workers, which is not given by the workers' characteristics, but rather by job characteristics. One standard way to assess this situation is by looking at the wage regression coefficients of comparable people working in different segments. In an attempt to avoid arbitrary choices, we use the tool of mixture regression models for an endogenous determination of the segments. Our results for Italy give evidence of a strong demarcation between homogeneous workers, hence policy strategies should consider these characteristics when implementing labour market measures, such as an improvement in the supply of human capital, or ad hoc measures favouring certain sectors of the economy rather than others.

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I. Introduction

Economists have always debated the presence of dualism in labour market competition both in the theoretical¹ and in the empirical field. During the second half of the last century a current of thinking used dualistic concepts to challenge the standard view of the labour market described by the mainstream economists². Italy has often been seen as an interesting case study for these arguments, but there is little econometric evidence to support them, with some interesting exceptions like the study by Cipollone (2001). Our paper tries to measure the dualism between upper and lower segments of the labour market using the econometric tool of mixture regression. This allows us to avoid ad hoc definitions of the segments (a priori allocation of workers or sectors), which could crucially influence the results. We also try to deal with other additional issues like for example the determination of the number of segments and the problem of endogeneity. The paper is organized as follows: the second section contains a brief review of literature about the concept of segmentation in economic theory, with special focus on labour market segmentation contributions and on the empirical methods used to test its presence, while in the third section there is an analysis of the presence of more than one segment in the wage regression for a group of workers, also when we deal with endogeneity and then we study the characteristics of primary workers and the transition towards the favourite segment of the market; finally, the study ends with some considerations.

II. Theory and empirics of Labour Market Segmentation

According to Ryan (1981), we can speak of segmentation when we have the formation of “...*different groups of participants in the labour market which is evoked by the concepts of non competing groups and balkanisation*”. It is important to stress that differences between workers, whether susceptible of economic evaluation like in the human capital theory³, or given by discrimination⁴, are not a necessary element in Labour market segmentation, hence we can say that the Institutionalist approach explains different job rewards (wage, career and so on) *by* the difference in job characteristics. The Institutionalist approach springs from the works of the American School during the '50s. Kerr (1954) clearly describes the differences between the labour market as seen by economists and in reality: the *wage market* is seen by economists as the place where there is a single wage, fixed by the market; the *job market* is a geographically

¹ Some considerations on this point are made by Pigou (1944), while for example Dunlop (1957) finds that these arguments date back to Mill and Cairnes.

² See the surveys of Leontaridi (1998) and Guidetti (2001).

³ The pioneers are Becker (1962) and Mincer (1962).

⁴ The classic reference for discrimination like a taste for employers' and employees' is Becker (1971), while a recent survey is Altonji and Blanck (1999).

and industrially defined zone where the workers can move about freely, but there is little or no mobility between job markets and a wage can be the same for two job markets but not for the entire labour market. Two decades later, we have the work of Doeringer and Piore (1971) on internal labour markets, which defines an ILM as “..An administrative unit, such as a manufacturing plant, within which the pricing and allocation of labor is governed by a set of administrative rules and procedures.”, while the external labour market is the place where the conventional economic theory still holds. The main factors reinforcing the formation of an ILM are peculiarity of labour, technology and custom. The specificity of labour and of technology causes an increase in the cost of turnover, while custom is an “environmental” factor. The cost of turnover produces a difference between the employed and the unemployed, access to the primary sector is rationed (there is a queue process) through “ports of entry”, and there is also a ladder system of promotion.

The ILM describes a microeconomic environment. The macroeconomics of this way of thinking is highlighted by Piore (1980 nos. 1 and 2) who puts forward the idea that in the primary sector there is less possibility of adapting employment for cyclical fluctuations, not only because relationships are formal and there are more guarantees for workers, but also because training costs are high, hence turnover is very expensive and the stock of labour is rigid⁵. It is the secondary sector, then, which has the function of allowing cyclical fluctuations.

Given these premises, it is clear that the secondary segment is less stable and remunerative, and there is less return of human capital. At the most it is considered a sector that gives negative skill accumulation (more properly an impoverishment of skills⁶), because the required labour is not expert and duties are usually only menial and unskilled.

A link with this way of thinking, using more standard formalized models in which agents maximize their utility, has been investigated by Bulow and Summers (1986)⁷. They set an efficiency–wage bargaining system *a la* Shapiro–Stiglitz in the primary sector of the economy, with perfect competition in the residual sector, hence there is wage equilibrium in both sectors and identical workers are paid differently.

Ideas of dualism could be useful to describe the Italian labour market because Piore (1980 n.1), for example, sees the Italian situation as the clearest example of dualism in the industrialised countries. According to him, the secondary sector developed after the '70s with new rights being won for unions and workers, because it became an outlet for the impossibility of adapting the size of the primary sector.

⁵ Oi (1962) theorised that a production function could have three factors: capital, rigid labour and flexible labour, and that in the design of the production process, the first two factors were substantially unchangeable. At the most, the short run production function has only secondary labour as a flexible factor.

⁶ Taubman and Wachter (1986).

⁷ A number of scenarios and policy implications of the segmentation are shown by Saint–Paul (1996).

Another element is the presence of a large black economy⁸, especially in Southern Italy, an area which is traditionally poorer and structurally weaker; hence the problem may not only be unemployment, but also the quality of employment.

There are several ways in which the presence of dual markets in an economy can be tested. If we know the segments, it is very simple to test human capital returns for people with the same characteristics working in different segments, through the use of simple Mincerian regressions with controls for all the other characteristics. It is important to remember that problems may emerge with this type of test for the endogeneity of schooling. This problem has been treated with instrumental variables. The point is to find good instruments; typically, proximity to college and parents' education are used. Therefore, it is important to stress that the estimation of schooling returns is strongly influenced by the quality of the instruments, otherwise there is a risk of overvaluing the coefficients of education. The solution is to find a variable strongly related to schooling and unrelated to earnings, in order to "clean" the effect of endogeneity with a first stage regression of the schooling about the instrument.

After a preliminary treatment of these drawbacks, an indication of dualism is given by the evidence of different wage equations with dissimilar human capital–earnings profiles, while an intermediate line is found when we estimate the overall market. Several papers estimate schooling returns in Italy, like for example Flabbi (1999) or Brunello et al. (2000). These authors base their estimates on the Bank of Italy's surveys for men and women, using different approaches. Flabbi uses the 1991 survey, with a slightly larger specification of the wage equation. The results obtained with instrumental variables techniques show an average annual return of about 4% with gender differences, the returns for men being 5%⁹. Slightly higher returns for men are found by Brunello *et al.* (2000). According to Labour market segmentation theory, we expect very different returns between segments.

Unfortunately, when our aim is to test for the presence of dualism, choosing segments¹⁰ by looking at sectorial or earnings demarcations¹¹ is too arbitrary. It is also important to consider the role of voluntary choices; in order to minimize these, we need to choose homogenous groups. Methods that do not require a priori choices to verify the presence of dualism either in the labour market or in the whole economic structure of the economy are:

1. Cluster analysis

⁸ Bovi and Castellucci (2001) show evidence of a structural underground sector, proportionally far more important in the South of the country.

⁹ It is very close to the returns obtained in the OLS regression we show later, but the sample used is not the same, mainly because Flabbi uses people working in all sectors.

¹⁰ Also the choice of the number of segments could be difficult: for example, Rumberger and Carnoy used three segments, while Osberg *et al.* (1987) used a higher number.

¹¹ Taubman and Wachter (1986) stress the risk of bias with these a priori separations.

This methodology enables us to find very homogenous subgroups with respect to a number of variables, hence there is the advantage of not fixing a given number of groups.

2. Factor analysis

In this way a researcher can reduce the size of a population by identifying a smaller number of factors used to represent more complex relations for a set of interrelated variables. In order to confirm the hypothesis of a dual structure, one has to find a common factor to divide individuals into the subgroups.

3. Switching regressions

This tool makes separate inferences for the segments without predetermining membership, so that people are treated as unknown in relation to the segment they belong to. The structure of a switching regression model can be described by the following set of equations (in compact structure):

$$Y_i^* = \beta_i X_i + \varepsilon_i$$

Assume that i is equal to three so that the first two equations are segment equations (for example, earnings equations of a worker if he is a union member), and the third is the participation equation with Y_3^* being the latent variable which determines the threshold of participation. By using Y_3^* as a threshold we will observe:

$$Y_1 = Y_1^* \text{ if } Y_3^* > 0 \quad \text{and} \quad Y_2 = Y_2^* \text{ if } Y_3^* \leq 0$$

We can therefore estimate the model, starting with a probit for the threshold and then by regressing the equations, respectively for a value lower or greater than the threshold for each individual. This methodology was applied to test dual labour markets in a series of works by Dickens and Lang from 1985 on. Their test has two objectives. First, they show that two wage equations could explain the real world better than one, and that in the secondary equation there are very low schooling and on-the-job training returns. Secondly, they set out to verify whether non economic barriers could prevent secondary workers from achieving a primary job. Studies which apply this technique found different evidence of segmentation for specific countries (see for example Roig (1999), Pailh  (2003) and Sousa-Poza (2004)). The method adopted here is a mixture of regressions, a tool often used to find segmentation in populations, in disciplines like medicine or market research¹², for example.

The idea of a general class of mixture densities is that the true density function of a phenomenon is given by the mixture of several functions for each segment, weighted by the probability of belonging to different parts of the population. If we have a mixture of linear normal regressions with s segments, j regressors and i individuals¹³, the normal density function of a worker's wage conditional to belonging to group s is:

¹² General references are McLachlan and Peel (2000), Wedel and Kamakura (1999), and Titterton *et al.* (1985).

¹³ See De Sarbo and Cron (1988).

$$f(w_i | s = k; \theta_i) = \left(2\pi\sigma^2\right)^{-\frac{1}{2}} \exp - \frac{\left(w_i - \sum_j \beta_j x_{ij}\right)^2}{2\sigma^2}$$

Where w_i are the individual's wages, and x_j are regressors of the Mincerian equation. The mean is substituted with a linear predictor and the link between these two terms is the identity in the case of a normal density function¹⁴. Given Bayes' rule, we can extract the probability of y for s equal to a given segment as a joint probability, i.e. the ratio between conditioned probability and the probability of belonging to a segment; if we sum all the values of s , the result is the unconditional density of w_i .

$$f(w_i; \theta_i) = \sum \mu_s \left(2\pi\sigma_s^2 \right)^{-\frac{1}{2}} \exp - \frac{\left(w_i - \sum_j \beta_{js} x_{ij} \right)^2}{2\sigma_s^2}$$

The unknown is the vector θ (which also contains the weights μ_s). A solution is to find an initial value for the parameters, compute their density and recompute the final θ , by maximizing loglikelihood (EM algorithm) or alternatively via numerical optimization routines. In the case of two components, the loglikelihood takes the form:

$$\text{LnL} = \sum_{i=1}^n \ln \left(\mu_1 \frac{1}{\sqrt{2\pi}\sigma_1} \exp \left(-\frac{(w_i - \sum_j \beta_{1j} x_{ij})^2}{2\sigma_1^2} \right) + \mu_2 \frac{1}{\sqrt{2\pi}\sigma_2} \exp \left(-\frac{(w_i - \sum_j \beta_{2j} x_{ij})^2}{2\sigma_2^2} \right) \right)$$

After estimating f we compute the posterior probability that observation $-i$ comes from s , by Bayes' theorem:

$$p_{is} = \frac{\mu_s f_s(w_i | x_{ij}, \hat{\sigma}_s^2, \hat{\beta}_{js})}{\sum_{s=1}^S \mu_s f_{is}(w_i | x_{ij}, \hat{\sigma}_s^2, \hat{\beta}_{js})}$$

And observation $-i$ is assigned to a segment s^* when $p_{is^*} \geq p_{is}$ for all $s \neq s^*$.

In summary, the EM algorithm has two alternated steps: in the expectation step we compute the densities, and in the maximization step we estimate the parameters of different regression (De Sarbo and Cron showed how this second step is equivalent to running separated least square regressions, weighted for the square roots of the probabilities of belonging to a segment). A problem is that maximization of likelihood could

¹⁴ More generally, Wedel and De Sarbo (1995) show that a similar framework could be easily extended to all the densities belonging to the exponential family, simply by changing the link form. These type of general models are termed as Generalized Linear Mixed Models.

converge in a local optimum, hence many attempts are required when choosing the highest value of likelihood. Thus, the algorithm computes the probabilities through functions and parameters and we go back to weighted regressions, with the stop criterion decided according to the convergence of loglikelihood. Probably, one of the most attractive features of this method is the possibility of easily extending the number of segments without the constraint of entirely entering a given segment (there is not a threshold but a worker could stay proportionally in different segments).

III. Testing dualism in Italy through mixture regressions

In this test we used Bank of Italy data of household budgets. From 1989 to 2004 the survey has a biennial frequency (from 1977 there is a historical survey with less information). The analysis uses hourly earnings (annual earnings divided by the annual number of hours, given by weekly hours, weeks and months worked in a year).

The choice of sample answers to two different, contrasting requirements: there is a trade-off between the possibility of finding diversification among workers and the possibility that the results will be affected by voluntary choices. For example, it is plausible that women work part-time more than men, giving up the chance of furthering their careers to spend more time with their children. Hence a lower return of education may only be a voluntary choice, not a constraint.

This second question is probably far more serious, so the other is left behind through a conservative selection of the sample. The initial sample extracted from the 2002 survey uses male dependant workers aged between 20 and 65, with families, employed in private non-agricultural sectors and working at least 20 hours a week¹⁵. The criteria chosen are a number of iterations between 20 and 1000 and exit from maximization when the increase in loglikelihood is less than 0.00001, but usually the algorithm converges after 200 iterations and the results are very stable. We compute this routine with 200 random starting value probabilities, to avoid the possibility of the algorithm stopping itself when loglikelihood reaches a local optimum, but the results are very similar for all the repetitions, having chosen the maximum level of likelihood (which has a monotonic pattern). In Table no. 1 we look at the results obtained with the mixture regression model, compared with the OLS regression for the whole sample (1156 observations)¹⁶.

¹⁵ This sample adopts the same criteria as the study by Cipollone (2001), but there the 1995 survey was used whereas here we have eliminated few observations with the hourly wage logarithm lower than 0 and greater than 5, in order to have a well-balanced set and avoid outliers.

¹⁶ Experience is proxied with actual age less first-job age, while schooling is computed as the number of years required to obtain a given qualification (unfortunately we cannot know the real time needed by every individual to complete each step). Similar results are obtained if we use payroll years as a proxy for experience, but in this case some observations are lost.

Looking at the OLS results, we can appreciate that the regression has a good fit; the explanatory variables (R^2 equal to 0.28) are all significant¹⁷ and have the expected signs of the coefficients (except for the city dimension which is not significant). Firm size is due either to economic or legislative reasons. Economic reasons could be compatible with dual market theory, because large, innovative firms are in the primary sector; the institutional argument could be highlighted, for example, by the fact that above a certain number of workers it is easier to organize a union in order to bargain with the firm.

The mixture model describes a completely different situation among groups of workers because schooling returns are about 7.5 – 8% in the first segment, four times the secondary segment returns and there is a similar spread for experience.

Here other variables also have a greater weight in the coefficient except as regards the constant¹⁸; the size of this group is about 36% of the workers. It is fairly usual for experience not to have a linear profile compared to wage, as we know from the basic Mincerian function, because an optimal investment must give returns until the marginal contribution is close to zero. It also seems that Southern Italian secondary workers are less penalized compared to the national average, while for primary workers the place where they work seems more important, hence the simple dummy South is a good indicator of local market conditions. It is interesting to simulate earnings profiles on the basis of qualifications and potential experience for all three models. The better fit given by the mixture of regression is shown by the great improvement in the loglikelihood.

One obvious question could concern the existence of specific requirements for people who stay in the primary sector, for example a degree as opposed to a diploma, and so on. The data contained in Tables nos. 2 and 3 try to compare the general characteristics and sectoral membership of the population chosen, selecting those workers who have more than a 50% probability of staying in the favoured sector. Table no. 2 shows that there are no great systematic differences between individuals belonging to different groups, including when we consider, for example, the number of wage-earners divided by members of the household (a measurement which could affect an individual's work-leisure trade-off)¹⁹. This bears out the

¹⁷ The EM algorithm does not need to compute standard errors to iterate, hence at the convergence these are computed by the inverse of the Fisher information matrix (De Sarbo and Cron, 1988). The procedure used to build this information matrix is a difference between two matrices and is given by $I = \left(\partial^2 L / \partial^2 \theta \right) - \left\{ \left(\partial L / \partial \theta \right) \left(\partial L / \partial \theta^T \right) \right\}$, where θ is the number of parameters of the mixture $\beta_k, \sigma_k^2, \lambda_k$, minus one because one weight is the linear difference between 1 and the sum of the others. For example in the regression for 3 segments and 7 regressors we have to compute two matrices (26x26). Details can be found in Louise (1982) and Turner (2000).

¹⁸ There are at least two potentially complementary explanations: first, there may be omitted regressors which better explain the secondary segment equation; second, that the intercept is lower for primary workers because they paid for part of their training at the beginning of the job period with a lower wage, whereas secondary workers have a flat profile, as we expected.

¹⁹ The firm size is a discrete variable between 1 and 7. The value of 4 indicates firms between 50 and 99 employees, while 5 indicates firms between 100 and 499 employees.

predictions of dual theory. Table no. 3 highlights one slight but interesting difference, i.e. that favoured people work proportionally more in industry. This is a foreseen result and it helps to explain the role of variable “firm size”, because broadly speaking industry is larger compared to other sectors and it is generally more innovative.

In general we can maintain that a single wage equation is an excessively restrictive assumption even for this homogeneous group. If we use different surveys for the 1991–2002 period for two segments, the average weight of the favoured sector is over 30%; even so, the proportions between the coefficients of human capital returns still show a huge spread.

The next step now is the problem of endogeneity, which is usually not considered in this type of work (with few exceptions, such as Cipollone, 2001). We have already mentioned that the main drawback of this procedure could lie in the schooling coefficients, because this variable may not be exogenous with respect to the error term, in which case we are unable to identify the parameters. We adopt a classic solution to deal with endogeneity, using an instrument to describe the schooling variable. A classic instrumental variable estimation is implemented with a first stage regression, with schooling as a dependant variable and parents’ education as an independent one (in addition to a constant).

In this way we obtain a fitted variable for schooling (in the first stage regression we have an R^2 equal to 0.22, and an F statistic of 267, hence there is no problem of a weak instrument²⁰) and we use this variable in the mixture regression framework²¹. Table no. 4 compares results in the segments of the regressions when we have a fitted schooling variable (the sample is now 974 observations, slightly smaller as there are no data of parents’ education for all the workers) and we observe as the results are near unchanged.

The I.V. coefficient for the entire sample could be a good investment considered overall, but if we believe that markets are segmented and that the return depends on the job place and the segment one belongs to, then the investment may not always be good. A 2.2% return in the secondary market segment would not justify the schooling investment.

The other point is whether other factors (in addition to theoretical predictions) could justify the choice of two segments rather than more. If we use three segments (Table no. 5), we find that there is another sensible improvement in loglikelihood but the increase in the number of components consists only in a further division of the secondary sector. In fact the second segment has a small weight and human capital returns similar to the third, hence the only effect is to reinforce the distance between favoured and

²⁰ See Bound *et al* (1995).

²¹ In this case, the coefficient is still consistently estimated but is not the same for the standard errors, due to the presence of a generated regressor (see Pagan, 1984). However, we are only interested in coefficient changes, hence given that an I.V. estimation produces correct results and we have only slight changes for the full sample, we do not deal with the issue of standard errors of the mixture model with generated regressors.

unfavoured workers. Looking at the results, the choice between two or three segments is not a crucial point in judging the quality of human capital investments. Anyway, if we use tests based on likelihood penalization between 1 and 5 segments (Hawkins *et al.*, (2001) simulate the power of 22 different tests in various situations of separation between segments), there is often a choice of three components in the mixture, but the only alternative is two segments²² improvements. The problem is that with a high number of components the centroids of segments are scarcely separated. A measure of separation is given by the entropy index, that for K segments and N individuals has the form²³:

$$E_s = 1 - \sum_{i=1}^N \sum_{s=1}^K p_{is} \ln p_{is} / N$$

This index is closer to 1 when segments are well separated and to 0 in the opposite case. With 2 and 3 segments the value is about 0.5, but it declines dramatically with 4 components in the mixture. Furthermore, dualism theories often tend to divide the primary segment into an upper and a lower tier, so that two or three segments seem to be the best choices, in a tendentially dualistic market.

Also if we showed that market is divided this evidence is still not sufficient to talk about segmentation, because also if we chose workers with comparable characteristics, it is possible that staying in the secondary segment is a voluntary choice. We need to prove that people working in the secondary segment are locked in this part of the market, and that given the chance they would try to enter the first segment. As regards this situation, we can only observe indirect evidence, which is another reason for choosing a small homogeneous group of workers. Our forecast is that people working in the primary segment stay there, and a proportion of people working elsewhere enter the primary segment if the queue process is not restrictive (this is consistent with the hypothesis of ports of entry in primary segments). The strategy used here is to take the panel components of each survey and to measure changes of segments survey after survey, from 1995 to 2004 for the people classified through mixture model. The panel percentage of the surveys is comprised between 15 and 22% and there is a net transfer of workers towards the first segment close to 8%, with the expectation of the transition 1998 – 2000²⁴.

When we compare this mobility with data of the general mobility of Italian dependent workers, we find that this latter data is much higher²⁵, hence a movement towards the first segment is far more difficult than a

²² The loglikelihoods of 4 and 5 segments are respectively -205 and -199 so that the marginal improvements are lower and lower. Tests more penalizing than AIC, like BIC give a slight preference for 3 over 2 segments.

²³ See Wedel and Kamakura (1998)

²⁴ We use a three segment specification, for which we have a proportion of the first segment ranging from 19 to 27% with a schooling return of 8-9%, except than for the survey 2000 where the weight of the favoured segment is 11%.

²⁵ Many contributions in Contini and Trivellato (2005) show that roughly 25–30% of workers move at least once a year.

general movement between jobs. Generally speaking, the primary segment seems to be the preferred situation because people tend to stay in it and there is a net transfer of workers towards this segment.

IV. Conclusions

This work tried to verify the presence of several segments in the wage regression for the Italian labour market, starting from an homogeneous group of dependant workers. We found some evidence to sustain the idea that using only one regression is a strong limitation not supported by the data, hence the use of different equations for at least two groups of workers seems to be a better strategy. The use of mixture regression models is a serviceable tool to avoid arbitrary assumptions about the allocation of workers. The main result is the presence of a favoured part of the market which has a weight of about one third of the market. The coefficients of human capital variable returns for primary workers are four times greater than those of the secondary segment.

The prediction of Labour Market Segmentation theory is strongly confirmed, with the unfavoured part of the market having a flat profile in terms of human capital variables. The problem of having endogenous schooling decisions is corrected by using an instrument, but there are no relevant changes in the distance between returns in the segments. As opposed to the alternative of human capital theory, there are no specific differences in characteristics that could justify competitive reasons for this phenomenon. More precisely, the average characteristics of workers with an over 50% probability of staying in the best part of the market are very similar to the others, as regards experience or education or other requirements, while industry workers are proportionally more numerous.

When we use three components in the mixture regression framework, which is the only acceptable alternative according to the loglikelihood criteria, there are not appreciable differences; hence there is a only further division of the secondary group. Southern Italian workers are more disadvantaged in the primary market, and firm size is also an important factor in explaining earnings. This result is not so surprising in the light of a dualism between core and peripheric industries, and also because, for example, Italian legislation on firings is more restrictive for big firms.

Finally, the results show that the primary segment is the preferred location for workers since there is always a positive net transition towards this segment for the same individuals followed for many years. The policy implications of a segmented labour market are highly relevant. When we look at schooling, for example, we cannot fail to note that only a small part of the market has good returns from education, while for the majority of workers educational requirements have little relevance in explaining wage level.

An annual average return of 2 or 3% is probably lower than expected when parents decide to invest in order to finance human capital improvement for their children. A possible situation is that there is a net profit only for workers in the primary group, hence the investment is not positive overall.

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Table 1. OLS and mixture regressions results *

Dependent variable: Hourly Wage			
	OLS	Segment 1	Segment 2
Constant	1.164 (0.060)	0.640 (0.228)	1.530 (0.088)
Schooling	0.044 (0.0032)	0.076 (0.010)	0.019 (0.005)
Potential Experience	0.022 (0.0039)	0.044 (0.015)	0.009 (0.005)
Potential experience²	-0.0003 (0.00008)	-0.0006 (0.0003)	-0.00001 (0.0001)

Dummy South	-0.079 (0.022)	-0.224 (0.078)	0.015 (0.035)
City size	-0.003 (0.0099)	0.0023 (0.027)	-0.012 (0.011)
Firm size	0.044 (0.0058)	0.046 (0.016)	0.044 (0.003)
Weight %		35.9	64.1
Variances	0.105	0.166	0.043
Loglikelihood	-334.13	-263.9	
Number of observations	1156		

* Standard errors in brackets

Table 2. Characteristics of the primary workers

Variable	Mean full sample	Mean 1st segment
Schooling (years)	10.9	12.1
Experience (years)	24.7	25.7
N° earners per family	0.6	0.6
%Southern workers	28.0	33.9
Firm size	4.7	4.8

Table 3. Sectorial membership

Sector	Weight% full sample	Weight% 1st segment
Industry	40.3	49.3
Building	12.5	14.1
Commerce	12.4	12.8
Transport	9.0	9.9
Intermediation	18.9	7.0
Estate agencies and others	3.4	3.2
Domestic services	3.5	3.7

Table 4. Dealing with schooling decisions' endogeneity

Dependent variable: Hourly Wage			
	OLS	Segment 1	Segment 2
Constant	1.193	0.710	1.551
Schooling fitted	0.045	0.077	0.021
Potential Experience	0.023	0.051	0.009
Potential experience ²	-0.0004	-0.0009	-0.0001
Dummy South	-0.067	-0.203	-0.006
City size	-0.005	0.009	-0.018
Firm size	0.063	0.064	0.059
Weight %		32.1	67.9
Loglikelihood	-295.60	-234.59	
Number of observations	974		

Table 5. Results three segment mixture regression model*

Dependent variable: Hourly Wage			
	Segment 1	Segment 2	Segment 3
Constant	0.522 (0.199)	1.092 (0.069)	1.480 (0.034)
Schooling	0.089 (0.011)	0.027 (0.004)	0.020 (0.002)
Potential Experience	0.054 (0.013)	0.004 (0.004)	0.012 (0.003)
Potential experience²	-0.0008 (0.0003)	0.0002 (0.0001)	-0.0001 (0.0001)
Dummy South	-0.416 (0.103)	0.320 (0.027)	0.016 (0.015)
City size	-0.002 (0.030)	0.054 (0.010)	-0.014 (0.007)
Firm size	0.017 (0.020)	0.157 (0.01)	0.045 (0.006)
Weight %	27.4	5.7	66.9
Variances	0.154	0.001	0.045
Loglikelihood	-226.9		
Number of observations	1156		

*Standard errors in brackets