Job-Search Strategies and the Unemployment of

University Graduates in Morocco [*]

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Abstract: This paper studies the situation in the Moroccan labor market where unemployment is widespread among educated workers, especially among university graduates. The latter crave public jobs, a behavior which may be one of the determinants of their unemployment. To create a better understanding of the workers behavior, we develop a model of endogenous choice of employment sector in an intertemporal context for a dual labor market. We show how unemployment duration while awaiting employment in the high-wage sector is an increasing function of the wage differential between sectors, a decreasing function of the expected unemployment durations differential and a decreasing function of the individual discount rate. We test this argument empirically using data from a sample of 1609 university graduates drawn from the 1998 Moroccan labor force survey. We estimate (1) the decision to work (seek employment) in the public versus private sector, (2) the wage equation in each sector, and (3) the unemployment duration equation per sector. Structural estimates indicate that earnings and unemployment durations significantly influence the choice of employment sector. The other main empirical results are that the individual intertemporal discount rate is 2.3%, and that the wage premium of the Moroccan public sector measured by the starting hourly wages gap exceeds 42.5%. Consequently, workers rationally consider risking long periods of unemployment in their desire to obtain jobs in the public sector.

1 Introduction

Many developing countries have experienced a significant rise in unemployment among educated workers, principally among holders of university degrees (Upadhyay, 1994). A typical example of these countries is Morocco. In 2002, the unemployment rate was 34% among workers with secondary diplomas and 32.2% among university graduates as opposed to only 5.6% among uneducated workers. This deterioration in employment rates is particularly important for workers with Bachelor's degrees, for whom the unemployment rate is currently above 40%. Educated workers typically work in the public sector. However, recruitment in the public sector in Morocco has dropped sharply since 1983 under structural adjustment policies suggested by the International Monetary Fund. New employment positions created in recent years do not exceed more than 15,000 annually, as opposed to between 29,000 and 51,000 in the 1970s. The worsening unemployment problem among university graduates started with these cuts to public sector hiring (Figure 1). Yet, the public sector is still coveted by workers, particularly those holding university degrees, as evidenced by their almost daily demonstrations claiming employment in this sector. In their study on the unemployment of educated workers in Morocco, Bougroum, Ibourk and Trachen (1999) argue that the first concern of these workers is to reach a job in the public sector, and that in this desire, they might consider risking long periods of unemployment. Also, Orivel (1995) notices an extreme preference for employment in the public sector in many African countries, a fact which is explained by, among other, the high wage gap between the public and the private sector.

Hence, the unemployment of educated workers could be equilibrium since some workers may rationally prefer to remain unemployed while awaiting employment in the public sector rather than seek jobs in the private sector. A similar argument was advanced by Harris and Todaro (1970) to explain high urban unemployment in developing countries. Because of a substantial

wage differential between urban and rural areas, some rural workers choose to migrate to urban areas in search of high-wage employment, which in turn results in a positive urban unemployment rate. The continuation of such migration in spite of high risk of unemployment constitutes a rational choice on the part of migrants looking to improve their economic situation. The same logic in explaining the allocation of the labor force between urban and rural areas or, more generally, between a modern/formal sector and a traditional/informal sector is used in different subsequent models (see for instance Stiglitz, 1974 and 1976; Eaton & Neher, 1975; Fields, 1975 and Cole & Sanders, 1985). The principal conclusion of these models concerning the causes of unemployment is well summarized by Eaton and Neher (1975): *"The unemployed have 'only themselves to blame,' so to speak, in the sense that they have made a rational calculation to improve their economic position. They are voluntarily unemployed."* Yet, this conclusion has not been tested formally for developing countries.

The purpose of this paper is to uncover the workers' job search strategies by estimating the weights they put on earnings and unemployment risk. Given the great preference for public jobs by university graduates, the Moroccan labor market for educated workers can be better described as consisting of a primary/public sector and a secondary/private sector, rather than the traditional segmentation of formal versus informal sector. Also, the assumption that a secondary job is always available should be released since employment opportunities for educated workers seem to be limited in both employment sectors. To achieve our objective, we first develop a dynamic model of job search in a general dual labor market framework and by accounting for unemployment risk in each sector (Section 3). Naturally, the high-wage sector is more exposed to unemployment than the low-wage sector. A worker prefers employment in the sector that maximizes her discounted lifetime utility subject to her intertemporal budget constraint. We then show that unemployment while awaiting employment in the high-wage sector is an increasing function of the wage gap between sectors, a decreasing function of the expected differential in

unemployment durations and a decreasing function of the individual discount rate. The main outcome of the model is the conclusion that when the wage differential is substantial and/or the individual discount rate is low, workers rationally choose to remain unemployed instead of seeking or accepting employment in the low-wage sector.

Next, we evaluate the model empirically using micro data from a sample of 1609 university graduates drawn from the 1998 Moroccan labor force survey. The high-wage sector is the public sector and the low-wage sector is the private sector. The econometric model presented in Section 4 estimates (1) the decision to work (or to seek employment) in the public versus private sector, (2) the wage equation in each sector, and (3) the unemployment duration equation in each sector. The estimation allows the identification of the public sector wage premium and the individual subjective discount rate. The main empirical results of this study are that workers put significant weights on earnings and unemployment durations when choosing a sector for employment, the individual intertemporal discount rate is 2.3%, and that the public sector wage premium is 42.5% (Section 6). Results also indicate that the scarcity of employment opportunities does not concern only the public sector but the private sector as well.

The remainder of the paper is organized as follows. Section 2 reviews the main features of the Moroccan labor market. Section 3 presents the theoretical framework for our job search model. Section 4 specifies the empirical approach to estimating the model. Data are presented in Section 5, and empirical results in Section 6. Section 7 concludes the study.

2 Overview of the Moroccan Labor Market

In 2000, the share of the labor force among the Moroccan population aged 15 years and older was 52.9%, and its size was 10.3 million. Of the total labor force, 26.8% were women. The main characteristic of the Moroccan labor force is the preponderance of uneducated workers. Indeed, in

1999 about one out of every two workers (46%) had never attended school and 24% attended only elementary school (the first 5-6 years of schooling). Workers with post-secondary degrees represent less than 7% of the total labor force (see Table 1). This situation is consistent with the high rate of illiteracy, which is close to 50% in the population sector aged 15 years and older.

In the same year, the unemployment rate was 13.6%, which means that 1.4 million people were seeking employment. In urban areas, the unemployment rate was high (21.5%), particularly among educated workers (29.7% for workers who completed at least elementary school versus 13.1% among those who have never attended school or those who did not complete elementary school, see Table 2). In addition, the unemployment rate was higher among women (26.7%) than among men (19.9%). Also, rural areas post a low unemployment rate (only 5%), but are dominated by non-remunerated employment[1] which accounts for 50.9% of total employment versus only 7.3% in urban areas.

The agricultural sector (including forestry and fishing) constitutes the most important employment sector in Morocco, providing nearly 50% of total employment. The industrial sector (including the handicraft industry) accounts for only 14% of aggregate employment. Finally, the public sector remains an important employer, particularly in urban areas (21%) and for educated workers.

Two prominent facts have influenced the Moroccan labor market during the last two decades: the worsening of the unemployment rate and the decline of recruitment in the public service. The unemployment rate almost doubled between 1971 and 1994. The number of unemployed workers increased by 84% between 1971 and 1982, and by 117% between 1982 and 2000. This deterioration of employment affected urban areas in particular, where the unemployment rate has been above 20% for many years (Table 3).

The worsening of unemployment in urban areas affected mainly young people, especially educated ones holding a secondary school or university degree. The employment of educated workers started to worsen since early 1980s. For comparison purposes, Figures 1 and 2 depict the evolution of the shares of workers with university education (including some university) and uneducated workers in the urban labor force and the urban unemployed population between 1978 and 2002. The share of university workers in the labor force continuously increased over time, rising from 2.9% in 1978 to 12.7% in 2002, whereas their share in the unemployed population increased more rapidly during the same period, rising from 0.4% to 20.4%. Since 1987, university graduates become increasingly over-represented in the unemployed population. On the other hand, uneducated workers seem to enjoy better employment opportunities, given that their share in the unemployed population is consistently 13 to 19 points lower than their share in the labor force (Figure 2). Among university graduates, those holding Bachelor's degree were the most affected by the unemployment worsening problem as is illustrated in Table 4. In addition, workers experience long spells of unemployment. In 1999, about 72% of unemployed workers remained so for at least 12 months and 26.8% for at least 60 months.

The second phenomenon, which significantly affected the labor market in Morocco and which is often quoted among the factors that precipitated the unemployment of highly educated workers (almost non-existent in the 1960s and 1970s), is the reduction of the number of new employment positions in the public sector. Thus, because of the structural adjustment policies adopted by the Moroccan government in August 1983 under the aegis of the International Monetary Funds, there was a severe reduction in the number of new recruits to public sector. This number has oscillated between 11,000 and 17,000 after 1983, as opposed to 29,000 to 51,000 between 1976 and 1982. In 2000, the forecasts for recruitment represented only 21% of the recruitment undertaken in 1976. Moreover, the new jobs are assigned mainly to the departments of health, education and

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[1] Unpaid family workers

justice. In spite of this significant change in government recruitment, highly educated workers continue to express great desire for employment in the public sector, as is testified by their daily demonstrations claiming employment in the public sector. Data from the 1998 Moroccan urban Labor Force Survey shows that more than half of unemployed workers holding university degrees desire employment exclusively in this sector.

3 Theoretical Framework

In order to ease the exposition, and with application in Section 6 in minds, we assume that there are only two employment sectors: sector 1 denotes the primary / high wage sector, and sector 2 denotes the secondary / low wage sector. We also assume, for the sake of simplicity, that the schooling level of workers is independent of the sector choice and constant during the life cycle (workers do not go back to school).[2] Workers are utility maximizers and have an infinite planning horizon starting when they enter the labor force. At each time period t, a worker consumes $c(t)$ which yields the level of utility $u\big(c(t)\big)$, where $u(.)$ is an increasing concave utility function. The discounted lifetime utility conditional on a given consumption profile is:

$$U = \int_0^\infty u\big(c(t)\big)e^{-\rho t}dt \quad (1)$$

where ρ is the worker's subjective discount rate.

We assume that a worker can borrow or lend freely at a fixed interest rate R.[3] Hence, the intertemporal budget constraint conditional on employment in sector j is:

$$\int_0^\infty c(t)e^{-Rt}dt = W_j \qquad (2)$$

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[2] Our empirical study concerns only university graduates. The latter are relatively less likely to go back to school after entering the labor force as compared to other workers with schooling below university level.
[3] The equivalent of this assumption for some workers in Morocco would be that these workers are sponsored by their families during their unemployment spell. Once employed, workers support their families in return.

where W_j is the discounted lifetime labor income in sector j, $j=1,2$.

Thus, conditional on employment in sector j, the worker's optimal consumption path maximizes:

$$H_j = \int_0^\infty u\big(c(t)\big)e^{-\rho\,t}dt + \lambda\left[W_j - \int_0^\infty c(t)e^{-R\,t}dt\right] \qquad (3)$$

where λ is a Lagrange multiplier. First order conditions imply that:

$$u'\big(c(t)\big)e^{-\rho\,t} = \lambda e^{-R\,t} \text{ and } \int_0^\infty c(t)\,e^{-R\,t}dt = W_j \qquad (3\text{-}1)$$

Assume now that $u\big(c(t)\big)=log\big(c(t)\big)$ and $\rho = R$ like in Card (2000) who uses the same

assumptions for a model of endogenous schooling. It is easy to show that under these

assumptions, first order conditions (3') imply the following optimal consumption profile:

$$c*(t) = RW_j \qquad (3\text{-}2)$$

At each time period t, the worker consumes a constant share of her discounted lifetime labor

income. Next, by substituting (3'') into (1), the optimal discounted lifetime utility simplifies to:

$$U* = \frac{log(R)+log\big(W_j\big)}{R} \qquad (4)$$

Therefore, maximizing the (unconditional) discounted lifetime utility amounts to maximizing the

discounted lifetime income W_j since log is an increasing function and R is constant. Therefore, a

worker will prefer employment in the sector with the highest discounted-lifetime income.

Then, consider a more general case where employment opportunities are limited in each sector in

the sense that job-seekers are exposed to unemployment risks wherever they seek employment.

The assumption that jobs are always available in one of the two sectors used in previous models

is now released. The unemployment duration in each sector is a random variable and its density

function is well known to all workers. For the sake of simplicity, we also assume that there is no

income during the unemployment income,[4] and that the job search process is costless. Furthermore, once hired, a worker keeps her job for the remainder of her life cycle.[5] Under these assumptions, the log of the discounted lifetime income when seeking employment in sector j, $j = 1,2$, is given by:

$$w_j = log\left(W_j\right) = log\left[\int_{T_j}^{\infty} Y_j\left(S, t-T_j\right)e^{-Rt}dt\right] \quad (5)$$

where $T_j \geq 0$ is the length of unemployment episode prior to finding employment in sector j, $Y_j(S,t)$ is the real wage paid by sector j to a worker having completed S units of schooling ($S \geq 0$) and possessing t units of work experience ($t \geq 0$), and R is the worker's discount rate. In each sector, wages increase at a constant rate as follows:

$$Y_j\left(S, t\right) = f_j\left(S\right)e^{g_j t}, \ 0 \leq t < \infty, \ g_j < R^6 \quad (6)$$

where $f_j\left(S\right)$ is the starting wage and g_j is the increase rate. Then, the log discounted lifetime income earnings when seeking employment in sector j simplifies to:

$$w_j = log\left[\int_{T_j}^{\infty} f\left(S\right)e^{t-T_j}e^{-Rt}dt\right] = log\left(\frac{f_j\left(S\right)}{R - g_j}\right) - R.T_j \quad (7)$$

Since the unemployment duration T_j is a random variable, a worker will seek employment in the sector that maximizes her expected lifetime income:

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[4] In Morocco, there is no public support for unemployed or low income people such as welfare system and unemployment insurance.

[5] This is truer in the public sector. The few observed job transitions are often done within the same sector with no unemployment spells. Besides, a distinguishing characteristic of the Moroccan labor market in comparison with the American is that transitions between employment and unemployment states are less frequent.

[6] In the empirical model, we consider a finite horizon as well as the non-linearity of earnings toward the end of the life cycle. The consequences of ignoring these empirical facts at this point are, however, lightly weighted for non-negligible values of the discount rate (See Willis and Rosen, 1979, for a similar approach).

$$E\left(w_j\right) = log\left(\frac{f_j(S)}{R - g_j}\right) - R.E\left(T_j\right) \qquad (8)$$

Notice that the quantity $log\left(\frac{f_j(S)}{R - g_j}\right) = log \int_0^\infty y_j(S,t)e^{-Rt}dt$ is the log of the discounted

lifetime income in sector j when the worker does not experience unemployment, i.e. when

employment in this sector is available ($T_j = 0$). Therefore, the quantity $R.E\left(T_j\right) \geq 0$ represents

the expected loss in the log of the discounted income due to unemployment. This loss is an

increasing function of the expected unemployment duration and the discount rate. The latter

represents the weight put on unemployment factor. Hence, when the discount rate is high, the log

of discounted lifetime income drops quickly as the unemployment duration increases. To

minimize this loss, the worker will make haste to find employment. On the other hand, when the

discount rate is low, unemployment duration only slightly reduces the log of discounted lifetime

income unless workers face human capital depreciation which pulls starting wages downward. In

the same way, by regarding R as the interest rate, the above results imply that workers with easy

access to credit or those from affluent families can endure long periods of job search and can hold

out for high-paying employment. Conversely, workers who cannot get financial support have no

choice but accepting any job, regardless of remuneration.

Sector choice as presented so far is done at the time workers enter the labor force. A dynamic

model requires that rational workers update their job search time period of their unemployment

episode. For instance, an employment sector may give priority to recent graduates when hiring,

which makes it difficult for long-term unemployed workers to find employment in this sector.

Thus, if at time t ($t \geq 0$) a worker is still unemployed, her expected log of the discounted lifetime income when seeking employment in sector j, $j=1,2$, up-dated at time $t=0$ [7], is:

$$E\left(w_j \mid T_j > t\right) = log\left(\frac{f_j(S)}{R-g_j}\right) - R.E\left(T_j \mid T_j > t\right) \qquad (9)$$

with $E\left(w_j\right) = E\left(w_j \mid T_j > 0\right)$. For the sake of easiness, we assume that unemployment has no effect on starting wages or wage increase rate.

Next, let $V(t)$ be the expected log discounted lifetime income gap between employment in sector 1 and employment in sector 2 for a worker seeking employment at time t:

$$\begin{aligned}
V(t) &= E\left(w_1 \mid T_1 > t\right) - E\left(w_2 \mid T_2 > t\right) \\
&= log\left(\frac{f_1(S)}{R-g_1}\right) - log\left(\frac{f_2(S)}{R-g_2}\right) - R\left[E\left(T_1 \mid T_1 > t\right) - E\left(T_2 \mid T_2 > t\right)\right] \qquad (10)
\end{aligned}$$

This function expresses the dynamics of the job search. At any time t, the worker's decision is to seek employment in sector 1 if $V(t) > 0$, and in sector 2 otherwise. She will be indifferent if $V(t) = 0$. By assuming that the sector 1 is the high wage / high unemployment risk sector, the quantities $log\left(\frac{f_1(S)}{R-g_1}\right) - log\left(\frac{f_2(S)}{R-g_2}\right)$ and $\left[E(T_1 \mid T_1 > t) - E(T_2 \mid T_2 > t)\right]$ are both positive; so, the sign of $V(t)$ is undetermined. The evolution of $V(t)$ is determined by the path of $\left[E(T_1 \mid T_1 > t) - E(T_2 \mid T_2 > t)\right]$. Therefore, the sign of $V(t)$ may change over time making the sector choice changeable. Once again, the discount rate weighs the expected unemployment durations differential against the log earnings gap. Workers with lower discount rates are less influenced by unemployment when choosing their sector of employment, and therefore can bear longer unemployment durations in order to reach well paid jobs in sector 1. Similarly, a

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[7] The expected log lifetime income discounted at time t is

$E\left(w_j \mid T_j > t\right) = log\left(\frac{f_j(S)}{R-g_j}\right) - R\left[E\left(T_j \mid T_j > t\right) - t\right]$. The log income gap between the two sectors is the

substantial wage differential between sectors attracts more workers to sector 1 and incite them to consider risking long periods of unemployment, a behavior that increases the aggregate unemployment rate.

As an essential point, we think it is relevant to discuss the relationship between sectoral preferences and job search strategy. Naturally, all workers like better employment in the high-wage sector. Since we assume that the job search process is costless, it is reasonable that all workers seek employment in this sector. However, due to unemployment risk, some of them will also seek employment in the low-wage sector. The preference for a low-wage sector job ($V(t) <$ 0) is better interpreted as readiness to accept a job in this sector when there is no offer from the high-wage sector. In fact, nothing prevents workers from simultaneous search in the two sectors if the two sectors are located in same areas and if they will consider offers from any sector. In Harris-Todaro's model (Harris and Todaro, 1970) rural and urban areas are geographically separated, so workers can seek employment in one and only one sector at a same time depending on their physical location. In subsequent models (Eaton and Neher, 1975, for instance), workers are unemployed because they seek employment only in the high wage sector rather than take available jobs in the opposite sector. The latter situation applies to many university graduates in Morocco who clearly manifest their exclusive preference for public jobs and decline jobs sponsored by the government in the private sector.

In our model, allowing workers to seek employment in two sectors simultaneously results in some workers ending in the high-wage sector while they were able to accept employment in the low-wage sector ($V(t) <$ 0). On the other hand, a worker who seeks employment in the high-wage sector ($V(t) >$ 0) may find it rational to seek and accept employment in the low-wage sector while awaiting employment in sector 1. This situation assumes that workers, who do so, do not

same as when the expected log of the lifetime income is discounted at time 0.

11

jeopardize their chances of finding a job as the job-search intensity will be split over two sectors. Moreover, accepting a job in sector 2 may not leave enough time for seeking employment in sector 1. In short, detailed data on workers decisions (and intentions) is needed to estimate to model empirically. Moroccan data used in this study informs on the employment sectors preferred by unemployed workers. However, data raises an identification problem for employed workers since only current employment sectors are observed instead of preferences when unemployed. Nonetheless, in the Moroccan labor market, there is an institutional constraint for workers seeking employment in the public sector, which refers to sector 1 in the empirical application. Since employment in the public sector (i.e. high-wage sector) mainly aims at fighting against unemployment among educated workers, unemployed workers looking for their first jobs are more likely to be hired as compared to workers who already have accepted jobs in the private sector. [8] So, workers who accept employment in the private sector likely are willing to keep their jobs in this sector for the remainder of their lives. The typical example is the recruitment of doctors. Those who take jobs in the private sector have little chance to be hired in the public sector as compared to doctors who are still looking for their first jobs. In addition, work experience in the private sector generally has little effect, if there is any, on starting wages in the public sector. Besides, a distinguishing characteristic of the Moroccan labor market in comparison with the American is that transitions between employments and between employment and unemployment states are less frequent compared to North American labor markets. For instance, 81% of unemployed workers with secondary diplomas or university degrees in 2002 were still seeking their first jobs. Also, a follow-up of vocational training graduates shows that five years after graduation, more than 81% of graduates either never found employment or are occupying their first jobs (Department of Vocational Training, Morocco, 1998). Consequently,

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[8] Employment in the public sector is primarily seen as a social action instead of an investment in human capital.

we evaluate the model empirically under the assumption that current employment sector is that one preferred while unemployed.

4. Econometric Specifications

Let V_j^* be an unobserved reduced form utility index corresponding to employment in sector j, expressed as a linear function of the log of the discounted lifetime income in this sector w_j, the conditional expected unemployment duration $E\left(T_j \mid T_j > t\right)$ when seeking employment in sector j, a vector of observed individual characteristics Z (including a constant) and an unobserved random component τ_j that captures unobserved variables and heterogeneity:

$$V_j^* = \alpha w_j + \delta E\left(T_j \mid T_j > t\right) + \theta_j Z + \tau_j \quad ^9 \qquad (11)$$

For unemployed workers, t is the duration of time spent unemployed until the day of the survey, whereas for employed workers, t corresponds to the duration of unemployment before finding employment. The coefficients α and δ are assumed to be the same for both sectors. We expect a positive sign for α and a negative sign for δ.

Like in Berger (1988), we use a finite discrete time horizon to calculate the log of the discounted lifetime income:

$$w_j = ln\left[\sum_{t=0}^{L} \frac{Y_{jt} H}{\left(1+R\right)^t}\right] \qquad (12)$$

where $L + 1$ is the duration of employment in years, Y_{jt} is the hourly wage in sector j at time t, H is the number of hours worked per year, and R is the discount rate. For the sake of simplicity, L and H are assumed to be constant over time and across sectors.

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[9] See Dolton, Makepeace and Klaauw (1989) for a similar approach for estimating occupational choices.

We specify earnings equations of the form:

$$y_{jt} = X_t\beta_j + \varepsilon_j, \; j=1,2 \qquad (13)$$

where $y_{jt} = ln(Y_{jt})$ is the log of the hourly wage in sector j, X_t is a vector of observed characteristics, and ε_j is a random component. The subscript t refers to years of experience. Other variables in X_t are time invariant.

For empirical purposes, the discounted lifetime income is computed over the beginning 35 years of career.[10] Consequently, the log of the discounted lifetime income is given by:

$$w_j = ln\left[\sum_{t=1}^{35}\frac{exp(y_{jt})H}{(1+R)^t}\right] = ln\left[\sum_{t=1}^{35}\frac{exp(X_t\beta_j)}{(1+R)^t}\right] + ln(H) + \varepsilon_j = s_j + ln(H) + \varepsilon_j \qquad (14)$$

where $s_j = ln\left[\sum_{t=1}^{35}\frac{exp(X_t\beta_j)}{(1+R)^t}\right]$

We also assume that T_j, the unemployment duration in sector j, has a Weibull distribution. The hazard function for this distribution is:

$$\lambda_j p_j\left(\lambda_j t\right)^{p_j-1}, \; t > 0, \; j=1,2 \qquad (15)$$

We control for heterogeneity through the parameterization:

$$\lambda_j = e^{-(\mu_j + Z\psi_j)} \qquad (16)$$

where Z is a vector of observed characteristics, and μ_j is a random variable representing unobserved random factors. Following this parameterization, variables with a negative coefficient increase the hazard rate and vice-versa. We adopt a bivariate discrete distribution with unrestricted points of support for random variables μ_1 and μ_2 (see Heckman and Singer, 1984).

We also assume that μ_1 and μ_2 have two points of support each: μ_{11} and μ_{12} for μ_1 and μ_{21} and μ_{22} for μ_2). The associated probabilities are as follows:

$$q_{km} = Pr\left(\mu_1 = \mu_{1k}, \ \mu_2 = \mu_{2m}\right), \text{ with } k,m \in \{1,2\} \text{ and } \sum q_{km} = 1 \qquad (17)$$

We can show that μ_1 and μ_2 are independent if and only if $Cov\left(\mu_1, \mu_2\right) = 0$. Therefore, conditional on $\mu_{11} \neq \mu_{12}$ and $\mu_{21} \neq \mu_{22}$, testing for independence amounts to testing for

$$q_{11}q_{22} = q_{12}q_{21}.$$

Given the fact that most of Moroccan workers desire employment in the public sector, we will assume that workers who are seeking (have accepted) employment in the private sector are (were) also seeking employment in the public sector. Doing so, observed (censored or not) unemployment durations for the private sector (sector 2) also concern the public sector (sector 1), and then the correlation between unobserved heterogeneity components can be estimated. For workers who accept employment in the private sector, unemployment durations are uncensored for the private sector but censored for the public sector since they did not succeed in finding jobs in the latter sector.

Combining Equations (11) and (14), the indirect utility differential between sectors 1 and 2 is:

$$\begin{aligned} I^* &= V_1^* - V_2^* \\ &= \alpha\left(s_1 - s_2\right) + \delta\left[E\left(T_1 \mid T_1 > t\right) - E\left(T_2 \mid T_2 > t\right)\right] + \theta^* Z + \alpha\left(\varepsilon_1 - \varepsilon_2\right) + \eta \end{aligned} \qquad (18)$$

where $\theta^* = \theta_1 - \theta_2$ and $\eta = \tau_1 - \tau_2$.

The structural model is given by Equations (13), (15), (16) and (18). For the sake of simplicity, we will assume that T_1 and T_2 are independent of ε_1, ε_2 and η. This assumption, though counterintuitive as one would expect wages in a given sector to be negatively correlated with

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[10] Increasing this horizon doesn't affect our results. In addition, 98.7% of employed workers in our sample

unemployment duration in that sector, simplifies largely the estimation of the model. In this case, unemployment equations are estimated separately from selection and earnings equations, then estimated expected unemployment durations per sector are plagued into Equation (18). We mention that unemployment has no effect on starting wages in the public sector since these wages are determined institutionally in connection with the level of education. Thus, the assumption in question mainly concerns unemployment and wages in the private sector.

We also assume that $(\varepsilon_1, \varepsilon_2, \eta)'$ is a normal vector with mean 0 and variance Σ:

$$\Sigma = \begin{bmatrix} \sigma_1^2 & \sigma_{12} & \sigma_{13} \\ & \sigma_2^2 & \sigma_{23} \\ & & 1 \end{bmatrix} \qquad (18\text{-}1)$$

The selection criteria are:

$$Pr(choose\ sector\ 1) = Pr(V_1^* \geq V_2^*) = Pr(I^* \geq 0)$$
$$Pr(choose\ sector\ 2) = Pr(V_1^* < V_2^*) = Pr(I^* < 0) \qquad (19)$$

The model is estimated in two steps. First, we estimate unemployment duration equations and obtain $\hat{q}_{km}, \hat{\mu}_{1k}$ and $\hat{\mu}_{2m}$ estimates of q_{km}, μ_{1k} and μ_{2m}. The individual contribution to the maximized likelihood function is:

$$\sum_{k,m=1}^{2} q_{km} \left\{ f_1(t)^{pe} S_1(t)^{p(1-e)} \left[f_2(t) S_1(t) \right]^{(1-p)e} \left[S_2(t) S_1(t) \right]^{(1-p)(1-e)} \mid \mu_1 = \mu_{1k},\ \mu_2 = \mu_{2m} \right\}$$

$$(20)$$

where p is a dummy variable which takes value 1 if the worker seeks employment (works in) sector 1 and value 0 otherwise, and e is a dummy variable which takes value 1 if the worker is employed and value 0 otherwise.

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have less than 35 years of work experience.

Second, selection and earnings equations are estimated simultaneously by maximum likelihood to obtain consistent estimates of the parameters α, δ, θ^* and Σ. The individual contribution to the likelihood function depends on the worker's status (employed or unemployed) and her employment/preferred sector. For instance, the contribution to the likelihood function of worker who is currently employed in the public sector is:

$$\sum_{k,m=1}^{2} \hat{q}_{km} \, Pr\left(I^* \geq 0 \,|\, \varepsilon_1 = y_1 - X\beta_1, \mu_1 = \hat{\mu}_{1k}, \mu_2 = \hat{\mu}_{1m}\right) \, \phi\!\left(\frac{y_1 - X\beta_1}{\sigma_1}\right) \qquad (21)$$

where $\phi(.)$ is the density function of the univariate standard normal. The whole likelihood function is available upon request.

Following the theoretical model, the individual discount rate is given by the weight put on unemployment duration relative to log earnings. Hence, this can be identified in the empirical model by the ratio $R = -\delta / \alpha$. The same ratio is used to calculate s_j in Equation (14).

5 Data

Data used in this study is drawn from the Moroccan Labor Force Survey (LFS) conducted in urban areas in 1998. The LFS is an annual cross-section survey aiming at collecting principal information on labor force participation, employment and unemployment. One distinctive feature of the survey is that it provides information on the employment sectors preferred by unemployed workers (either public or private). We are fully aware that panel data or even multiple cross-sections are more suitable for identifying the dynamic of the workers preferences. Unfortunately, there is no panel data related to labor market in Morocco, and the access to cross-section data files is very restricted especially with regard wages. Angrist and Lavy (1997) faced the same problem in their study on the effects of the switch of the language of instruction on the returns to education in Morocco. The authors carried out their study by using cross-section data.

We limited our sample to workers with university degrees including for many reasons, both related to our theoretical model. First, these workers have the possibilities to be hired in both public and private sectors. New public positions are still mainly directed toward university graduates, though in smaller number compared to prior 1983. Examining data file from the 1998 LFS, university graduates were also the ones who expressed clear preferences for one of the two employment sectors. Second, having invested a long time in getting an education, university graduates are likely to have closer discount rate values (Card, 2000). This allows us to estimate our model, assuming that the same discount rate applies for this group of workers. Besides, education increases job stability and then reduces transitions between employment and unemployment states. In 2002, 81% of unemployed workers with secondary diplomas or university degrees were seeking their first jobs, versus 27% among uneducated unemployed and 54% among unemployed with education below secondary.

The Moroccan LFS provides earning only for paid workers. Self-employed are not asked about their earnings. Nonetheless, only 7.4% of employed workers with university degrees, and 5.5% with technical schools degrees (see below) were reported self-employed in 1998 versus 34.5% of uneducated workers.

With regard to the durations of unemployment, the survey provides information only for unemployed workers, whereas the estimation of the model requires also unemployment durations prior to employment for workers who are currently employed. Fortunately, the survey gives the durations of search for first jobs by employed workers who started working within the five years before the survey was taken. Given the above-mentioned limited mobility of university graduates, current jobs are likely to be the first ones. Consequently, we use unemployment durations before first jobs in the estimation of the model. Concerning employed workers who started working more than five years before the survey was taken, we estimate the durations of unemployment by the difference between the estimated age at graduation (based upon the highest degree) and the

18

age at the start of employment. The latter is provided by the survey. Finally, we kept only workers aged 64 years or younger, with a duration of unemployment, censored or not, less than ten years.

Table 5 presents a summary of the main information contained in the selected sample. The sample includes 1,607 workers among which 34.5% are women. The four types of university degrees represented are:

- University degree below Bachelor's: obtained after two successful years of university studies, 8.7%.

- Bachelor's: requires four successful years of university studies, 47.4%.

- University degree above Bachelor's such as Master's and Doctorate, 7.2%.

- Technical School degree: generally obtained after five years of post-secondary studies in a technical/professional school (for instance engineering or professional schools), 36.7%.

The unemployed constitute 23.8% of the sample and the average duration of unemployment (censored or not) is 2.4 years, and is slightly higher among people working or preferring to work in the public sector. The average hourly wage is 50.9 Moroccan Dirhams (MAD),[11] and it is 20% higher in the public sector as compared to the private sector. In addition, the public sector workers accumulated more years of work experience on average than did their peers in the private sector (about four years of difference). This can be explained by the fact that in the past, the public sector constituted virtually the sole employer of university graduates. The structural adjustment policies launched in 1983 have largely reduced the role of the aforesaid sector in the employment of university graduates. Yet, the passion for employment in the public sector remains persistent. Indeed, more than four out of five unemployed in our sample expressed the desire to obtain employment in the public sector.

6 Empirical Results

All estimates are reported in Tables 6 through 8. Coefficients from Table 6 are estimated separately in a first step, then coefficients from tables 7 and 8 are simultaneously estimated in a second step.

Unemployment duration equations

Estimated unemployment duration equations are presented in Table 6. We point out that in order to identify the direction of the effect of the covariates on the hazard rate one must consider the opposite sign of the estimated coefficients of these variables. Subjacent logic is that variables with negative coefficients increase the instantaneous probability of finding employment at each time period (c.f. Equation 16). On the other hand, the parameter p determines the shape of the hazard rate function (hazard rate decreasing if $p<1$, constant if $p=1$, and increasing otherwise).

We control for unobserved heterogeneity by assuming that each worker may be of one of two types in each sector for a potential total of four combinations of two types. Surprisingly, results show that there are only two combined types of workers, each type representing around 50% of the population. A worker of type 1 is exposed to higher risk of unemployment in the sector where a worker of type 2 is not, and vice versa. Therefore, each type is largely favored in one and only one sector with respect to access to employment, and largely disfavored in the opposite sector. The probabilities of being favored (disfavored) in both sectors at the same time are not statistically significant. Therefore, public and private sectors do not appear to be competing on the labor market.

Concerning observed characteristics, there is no significant difference between the two genders with regard employment in the two sectors. On the other hand, workers holding degrees from

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[11] 1 $US is worth about 9 MAD.

technical schools and those with university degrees above Bachelor's experience lower
unemployment durations particularly in the public sector as compared to other workers. Workers
with Bachelor's degrees do not have any advantage at this point over workers with below
Bachelor's degrees (reference group) since the coefficient on Bachelor's degree is not significant.
To approach the evolution of employment after 1983, year of implementation of adjustment
policies, we include in the set of covariates a dummy variable (Year 1983) that takes value 1 for
workers who entered the labor force in 1983 or later. Results indicate that the probability of being
employed in the public sector decreased after 1983, whereas the probability of being employed in
the private sector was not affected.

Finally, with regard to the shape of the hazard rate functions, results indicate that hazard rates are
increasing over time in both sectors. Results from public sector may be explained, among other
things, by the fact that employment in the public sector primarily aims at fighting unemployment
in the sense that old unemployed are favored over recent ones. Results from the private sector are
some what surprising if we consider that employers from the private sector would favor recent
graduates when hiring.

Wage equations

Estimates are reported in Table 7. The public sector pays notably higher starting wages as
compared to the private sector. The wage differential is 42.5% for the reference group (i.e.
workers with degrees below Bachelor's) and this premium is even higher for other groups of
workers, particularly workers holding Bachelor's degrees or above Bachelor's degrees. Agénor
and El Aynaoui (2003) estimate the public wage premium in Morocco at between 150% and
200% when taking into account non-wage compensation such as working conditions and pension
plans.

Starting wages are certainly lower in the private sector, but are increasing at a higher rate in this sector (11.51% per year of experience versus 6.03% in the public sector) causing the gap between the sectors to narrow over time. Lifetime income is even higher in the private sector for some workers. For instance, the total income over the first 35 years of work discounted using a discount rate of 2.3% (see results below from selection equation) is 13% (9% when considering a 45-year horizon[12]) higher in the private sector for males holding degrees from technical schools, whereas it is 20% (24% when considering a 45-year horizon) lower for males with Bachelor's degrees. Incidentally, the unemployment rate is the lowest among the former group and the highest among the later one.

A significant issue that emerges from the results in Table 7 concerns the gap males-females. This gap is not significant in the private sector in opposition to about 12% in favor of males in the public sector. Since wage levels in the public sector are fixed institutionally, regardless of gender, the apparent wage discrimination against women may mirror the fact that promotions are more often given to men in the public sector.

Table 7 also depicts estimates obtained by using ordinary least squares and ignoring the selection issue. Starting wages are over-estimated in the two sectors when the selection bias is ignored. An intuitive explanation that is consistent with workers' behavior is that workers flee the sector where they anticipate low wages. As a result, observed wages for workers employed in each sector are higher than what one would observe if workers were assigned randomly to employment sectors.

Finally, we notice that estimated standard error of the random component is higher in the private sector as compared to that obtained for the public sector (0.82 versus 0.67) and that the correlation between the two random components of the earnings equations is small though

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[12] The decrease in the gap when enlarging the horizon is due to the quadratic term. The estimated

significant (0.32). This may reflect the weight put by each sector on productivity in wage

determination. This weight is manifestly higher in the private sector, while earnings in the public

sector are mainly based on the education level.

Selection equation

The most novel empirical results are the structural probit estimates in Table 8. The weights put on

earnings and unemployment duration when choosing an employment sector are significantly

different from zero, a fact which supports the view that the sector choice is consistent with an

earnings maximization problem. In addition, the signs of these parameters correspond to those

anticipated ($\alpha > 0$ and $\delta < 0$). The effect of earnings on sector choice is also reflected by the

significant correlation between the error component in the selection equation and the error

component in each of the two earnings equations (σ_{j3} in Table 7). The constant in the selection

equation is positive and statistically significant. It might represent non-pecuniary factors as well

as factors unrelated to unemployment that make workers appreciate employment in the public

sector such as job stability and the prestige of being a civil servant in a developing society. There

is no difference at this point between men and women. On the other hand, workers with

Bachelor's degrees are more inclined to prefer employment in the public sector compared to

workers with other degrees. Therefore, in their desire to obtain civil servant employment those

workers might consider risking long periods of unemployment, which is actually the case since

the unemployment rate is the highest among workers with Bachelor's degrees (see Table 4). The

high fixed value allocated to employment in the public sector implies that even at equal wages

and equal unemployment durations workers are likely to prefer employment in the public sector.

This agrees with the results of Bellante and Link study (1981), which stipulate that public sector

workers are more risk-averse than private sector's workers and that same wages in public and

private sectors will involve an excess of labor supply for the public sector.

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coefficient on that term is -0.0012 in the public sector versus -0.0022 in the private sector.

On the other hand, the estimated personal discount rate, given by the ratio of the estimated coefficients on the log-wage differential and the expected unemployment durations gap, is about 2.3%. This petite value of the personal discount rate makes workers able to bear long unemployment durations in their search of well paid employment.

As a final point, one may wonder how results on the parameters that drive workers' behavior could be used in setting a policy aiming at easing unemployment among university graduates in Morocco. The answer is not evident since the model is merely a partial equilibrium model. In particular, wages and unemployment durations in the private sector are most likely to react to any induced change in the sector choices of unemployed workers. In addition, the situation in the Moroccan labor market is somewhat tricky due to the great fixed value allocated by workers to employment in the public sector and to serious difficulties in finding employment even in the private sector. Nonetheless, the government needs to adjust its remuneration policies in order to lessen the substantial gap with the private sector, especially given that the workers' discount rate is far small. Concerning the difficulties that educated workers experience in finding employment in the private sector, it is worth to emphasize that the illiteracy rate in Morocco is extremely high (48% in 1998) and that many school-age children are deprived of formal education or drop out of school prematurely. This situation results in a high share of the informal sector in the Moroccan economy, which is unfavorable to educated workers with regard wages and working conditions. Allocating more resources to elementary education (even to the detriment of university education) will help to improve the overall level of education of the labor force and, in return, stimulate economic growth. Furthermore, an improvement in the labor force education level will result in the tightening of the informal sector, inciting educated workers to seek employment in the private sector.

7 Conclusion

The models developed early 1970s (for example Harris and Todaro, 1970; Stiglitz, 1974 & 1976; and Eaton and Neher, 1975) have all stressed the role of wage differentials on employment sector choice. "Migration" from the low-wage sector to the high-wage sector will continue as long as the expected wage in the second sector is higher than the ongoing wage in the first sector. The unemployment rate will then continue to increase until workers expect the same wage level in both sectors, thus causing the migration to stop. The unemployed are voluntarily since they refuse to take available jobs in the low-wage sector: *"the unemployed have only themselves to blame"* for their condition (Eaton and Neher, 1975). The model developed in this paper fits within the same framework without, however, "putting all the blame on the unemployed" since the latter face unemployment risk in all sectors. The risk is higher in the high-wage sector. Workers' expectations about wages and unemployment duration determine their behavior regarding sector choice. Workers face a loss of income due to unemployment as well as an opportunity cost by forgoing employment opportunities in the low-wage sector. This loss of income, which depends on unemployment duration, is weighted by the discount rate. A worker with a low discount rate can withstand longer duration of unemployment in order to obtain employment in the high-wage sector. A substantial wage differential between sectors also supports this "waiting for employment" process which increases the aggregate unemployment rate.

The econometric model we estimated using Moroccan data yields estimates of parameters that drive workers' choices. The empirical application to the choice between the public and the private sector as occupational possibilities in Morocco is motivated by the fact that in this country highly educated workers strongly prefer employment in the public sector. Structural estimates in Table 8 support the hypothesis that earnings and unemployment durations significantly influence the choice of employment sector. The estimated personal discount rate is 2.3%, a value which makes

workers much more sensitive to earnings (and other benefits) than unemployment durations. The

self-selection adjusted starting hourly wage gap between the private and the public sector is

42.5%. Thus, an adjustment of the remuneration policy in the public sector seems necessary

especially that higher the earnings gap higher the unemployment rate (workers with Bachelor's

degrees versus workers with technical schools degrees). Lack of job opportunities in the private

sector is to be blamed too. Therefore, the government should also aim at improving employment

opportunities and working conditions in this sector. In this way, more weight should be put on

investment in human capital in order to eradicate illiteracy, which presently affects about half of

the adult population. The provision of elementary education to all children will improve the level

of education of the labor force, stimulate the economic growth and reduce the share of the

informal sector in the economy. Then, educated workers would be incited to seek employment in

the private sector, where they will be able to find a large number of good jobs.

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Table 1: Labor Force (Aged 15 Years and Older) by Education Level in 1999

Education Level	%
None or religious school	46.36
Elementary, 1st stage (grades 1-6)	23.83
Elementary, 2nd stage (grades 7-9)	13.45
Secondary	9.51
University	6.77
Other level	0.09
Labor Force Size (in millions)	10.3

Table 2: Unemployment in Morocco in 2000 by Areas

	Urban	Rural	Total
Labor Force Size $(x10^3)$	5 345	4 940	10 285
Unemployment Rate	21.5%	5.0%	13.6%
. Male	19.9%	6.5%	13.8%
. Female	26.7%	1.7%	13.0%
. Uneducated or 1st stage of elementary school (1-6 grades) uncompleted	13.1%	3.5%	7.1%
Elementary and up [13]	29.7%	17.0%	27.5%

Table 3: Evolution of Unemployment between 1971 and 2000 by Areas

	Urban				Rural				Total			
	1971	1982	1994	2000	1971	1982	1994	2000	1971	1982	1994	2000
Number of unemployed workers ('000)	216	322	920	1,146	133	320	412	248	349	642	1,332	1,394
Unemployment rate (%)	15.0	12.3	20.3	21.5	5.2	9.5	10.8	5.0	8.8	10.7	16.0	13.6

Table 4: Urban Unemployment Rate among Highly Educated Workers in 1998

Degree	Total	Female
University, Below Bachelor's	36.4	43.4
University, Bachelor's	48.2	60.8
University, Above Bachelor's	5.3	19.0
Technical Schools	5.6	9.7

Note: These rates were calculated by the author based on the 1998 Moroccan Labor Force Survey data file.

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[13] Having completed at least the first stage of elementary education (1-6 years)

Table 5: Descriptive Statistics

Variables	Mean
# observations	1,607
Age (in years)	36 (8.3)
Female	0.345
Degree :	
. Technical School	0.367
. University, Below Bachelor's	0.087
. University, Bachelor's	0.474
. University, Above Bachelor's	0.072
Labor Force Statute :	
. Employed	0.762
. Unemployed	0.238
Employed x Sector :	
. Public	0.780
. Private	0.220
Unemployed x Preferred Sector :	
. Public	0.841
. Private	0.159
Hourly Wage (in Moroccan Dirham[14]) :	50.94 (60.43)
. Public	52.93 (58.80)
. Private	43.91 (65.52)
Years of Experience :	13.6 (8.9)
. Public	14.5 (8.6)
. Private	10.8 (9.4)
Unemployment Duration (years) :	2.4 (2.3)
. Public	2.5 (2.3)
. Private	2.1 (2.2)

Notes: The sample is from the 1998 Moroccan Labor Force Survey, and includes workers aged 64 years or younger and for whom unemployment duration is less than 10 years. Missing unemployment durations are estimated by age at starting first job minus age at graduation. Figures in parentheses are standard-deviations.

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[14] 10 Moroccan Dirham ≈ 1$US

Table 6: Estimated Unemployment Duration Equations

	Public Sector (1)		Private Sector (2)	
	Coefficient	Standard-Error	Coefficient	Standard-Error
Constant 1	0.6560 [a]	0.1374	-0.4572 [b]	0.2136
Constant 2	2.0123 [a]	0.1620	1.5853 [a]	0.2090
Male	-0.0651	0.0716	-0.0648	0.1175
Technical School	-1.1581 [a]	0.1290	-0.5354 [a]	0.1716
University, Bachelor's	-0.1693	0.1244	-0.1764	0.1647
University, Above Bachelor's	-1.2735 [a]	0.1670	-0.4773 [b]	0.2202
Year 1983	0.8539 [a]	0.0670	0.1734	0.1440
p_j	1.2492 [a]	0.0440	1.3312 [a]	0.0899
q_{11}	0.0000	0.0001		
q_{12}	0.4914 [a]	0.0370		
q_{21}	0.5086 [a]	0.0370		
q_{22}	0.0000	0.0000		

Notes: The reference group for education is "University, Below Bachelor's."
Year 1983 is a dummy variable that takes value 1 if a worker entered the labor force in 1983 or later.

q_{ij} = *Prob(Constant i in public sector and Constant j in private sector)*. (a), (b) and (c): significant at the level 1, 5 and 10 percent.

Table 7: Estimated Wage Equations

	Structural Model (STM)				OLS			
	Public Sector (1)		Private Sector (2)		Public Sector (3)		Private Sector (4)	
	Coefficient	Standard-Error	Coefficient	Standard-Error	Coefficient	Standard-Error	Coefficient	Standard-Error
Constant	2.1584 [a]	0.0905	1.7333 [a]	0.2404	2.3933 [a]	0.0938	1.8747 [a]	0.1645
Male	0.1169 [a]	0.0431	0.0570	0.1069	0.1333 [a]	0.0458	0.0558	0.1141
Technical School	0.8114 [a]	0.0768	0.7837 [a]	0.1530	0.7397 [a]	0.0810	0.8276 [a]	0.1665
University, Bachelor's	0.5738 [a]	0.0753	0.2191	0.1400	0.5287 [a]	0.0818	0.2412	0.1546
University, Above Bachelor's	1.5074 [a]	0.0973	1.1509 [a]	0.2143	1.4568 [a]	0.1010	1.2045 [a]	0.2358
Experience	0.0603 [a]	0.0069	0.1151 [a]	0.0072	0.0571 [a]	0.0079	0.1166 [a]	0.0171
Experience squared	-0.0012 [a]	0.0002	-0.0022 [a]	0.0002	-0.0011 [a]	0.0002	-0.0022 [a]	0.0005
σ_j (*)	0.6701 [a]	0.0251	0.8219 [a]	0.0411	0.6021		0.8208	
σ_{j3} (*)	0.5786 [a]	0.0497	0.7481 [a]	0.0866	-		-	
σ_{12} (*)	0.3184 [a]	0.1014			-		-	
Adjusted R-squared	-	-	-	-	0.30		0.42	

Notes: (*) See variance matrix given in (18-1). The reference group for education is "University, Below Bachelor's." (a), (b) and (c): significant at the level 1, 5 and 10 percent.

Table 8: Estimated Selection Equations

	Coefficient	Standard-Error
Constant (ω)	1.4633 [a]	0.2589
Log wage differential (α)	2.8625 [a]	0.3448
Expected unemployment duration gap, in years (δ)	-0.0651 [a]	0.0349
Male	-0.0374	0.1433
Technical School	0.2770	0.2602
University, Bachelor's	0.3824 [b]	0.1653
University, Above Bachelor's	0.4196	0.3375
Discount Rate ($-\delta/\alpha$)	0.0227 [a]	0.0120
Mean Log-Likelihood	-1.2405	
# observations	1,607	

Notes: The reference group for education is "University, Below Bachelor's." (a), (b) and (c): significant at the level 1, 5 and 10 percent. Tests for the significance of α, δ and the discount rate ($-\delta/\alpha$) are one-tailed.

Figure 1: Evolution of the Share of Workers with University Education in the Labor Force and the Unemployed Population, Urban Areas
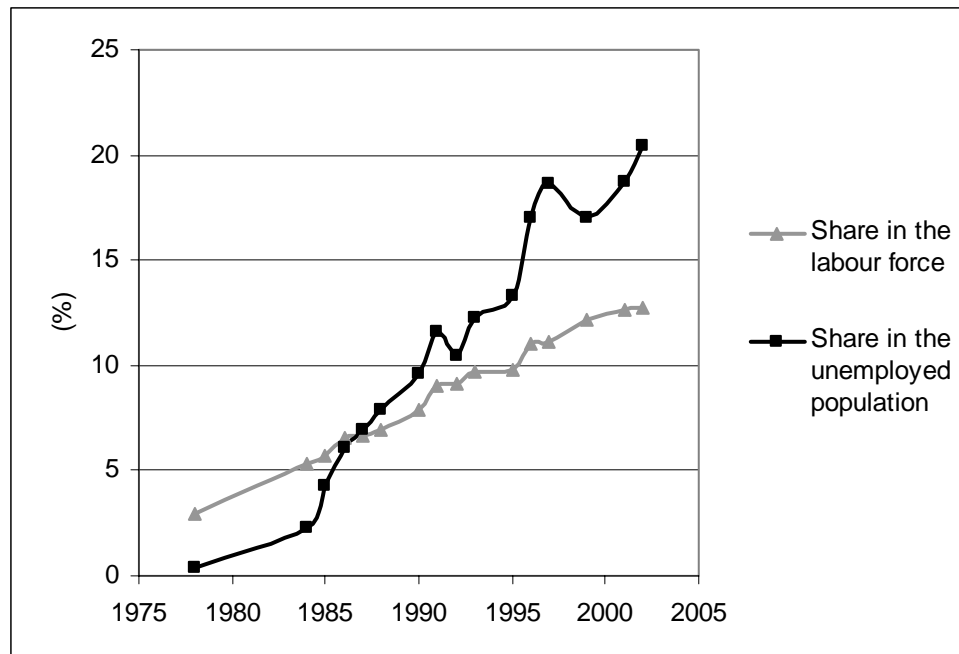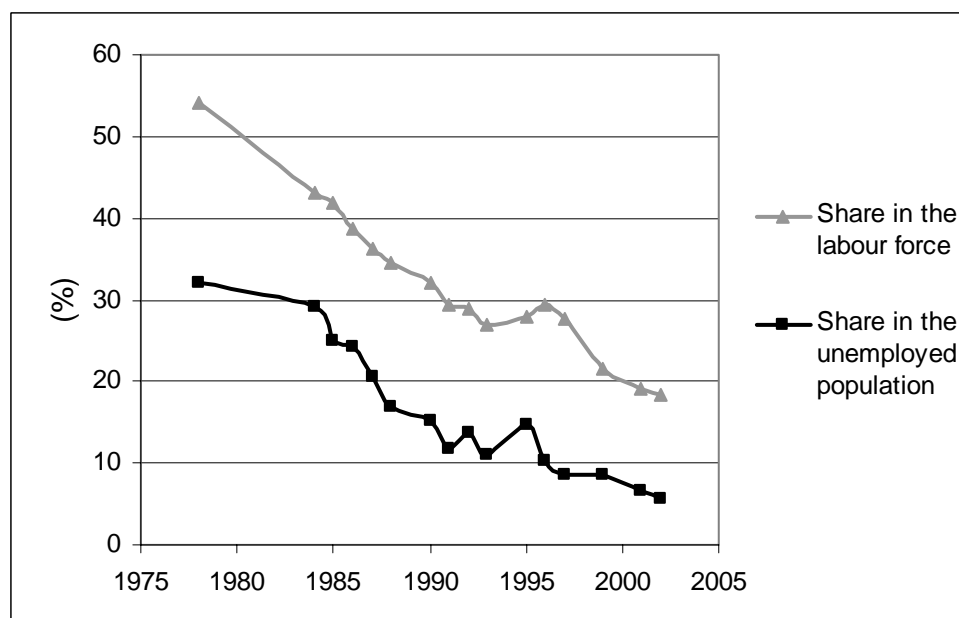

Figure 2: Evolution of the Share of Uneducated Workers in the Labor Force and the Unemployed Population, Urban Areas

Sources: Department of Statistics, Morocco.