Essay 1

Education and Early Career Outcomes of Second-Generation Immigrants in France

1.1 Introduction

Continental European labor markets are characterized by a relatively low degree of flexibility, when compared to Anglo-Saxon countries. This is particularly the case for France and Italy (OECD, 1999, Table 2.2). This inflexibility is acute at the firing level. In practice, it implies that individuals holding employment must be paid relatively high severance pay when employment downsizing is necessary.[1] As a consequence, firms may be reluctant to grant permanent contracts to new hires and favor Fixed Term Contracts (FTCs).[2] This theoretical prediction is largely supported by the data. About 70% of newly hired workers in the French labor market get a Fixed Term Contract for their first job, although the share of Fixed Term Contracts in total employment is 14%

[1] A vast literature deals with the impact of employment protection legislation (in particular firing costs) on unemployment and labor mobility (e.g., Bentolila and Bertola, 1990; Bertola, 1990; Garibaldi, 1998; Mortensen and Pissarides, 1999).

[2] Indeed, there is a considerable amount of debate going on between European countries about the optimal level of job and social security that the European economy can stand.

(INSEE, *Enquête emploi*, 2005). For the sake of comparison, the share of FTCs is 15% for all the EU25 countries (5.8% in the UK and 34% in Spain, where this proportion is the largest; European-Commission, 2007).

At the same time, the high incidence of criminal activities and social turmoil in areas densely populated with immigrants has pushed French policy makers to question the level of integration of second-generation immigrants. In 1999, the unemployment rate of second-generation immigrants aged 19-29 was 30% (nearly 40% if the parents came from Algeria or Morocco), whereas it was 20% for children with both parents born in France. This inequality is also noticeable at the level of early career employment contracts. For instance, only 23% of second-generation immigrants with both parents born in an African country get a Permanent Contract (PC) for their first job compared to 32% for young workers with both parents born in France.

Surprisingly, and despite the recent incidence of violent crimes in French suburban regions, very few economists have investigated the relative performance of second-generation immigrants in France. Using population survey data, Aeberhardt et al. (in press) find that (i) one third of the wage gap and (ii) one half of the employment probability difference between individuals born from French parents and individuals having at least one parent of African origin, cannot be explained by observed characteristics. Using matched employer-employee data, Aeberhardt and Pouget (2007) conclude that (endogenous) occupation is an important determinant of the French-natives/second-generation immigrants wage gap, after controlling for education, experience and background, leaving a small support for wage discrimination. Both papers are based on econometric models in which schooling is assumed to be exogenous.

While discrimination is often advanced as a possible explanation for the relatively poor performances of second-generation immigrants, potential differences in pre-market skill investment (such as differences in education) may also be important. As an example, only 19% of African-natives get a university diploma, whereas this proportion is 46% among French-natives. From an economist perspective, differences in early career outcomes between natives and second-generation immigrants, which persist after condi-

tioning on education, are particularly interesting because they are difficult to justify from a standard theoretical perspective. It is those differences that are particularly important to quantify in order to evaluate the incidence of racial discrimination. As of now, no one has investigated whether or not the employment and wage gaps are only the mirror image of a schooling gap that exists between French-natives and second-generation immigrants. Answering this question is fundamental. If differences in labor market outcomes between second-generation immigrants and French-natives are explained solely by differences in human capital, public policies should be mostly targeted at reducing the schooling gap. If not, policies that guarantee equal access to permanent employment would also need to be designed.

This is precisely the question that we address in this paper. In line with (semi) structural modeling, we build a model in which both the causal and the spurious effects of individual educational choices on early labor market outcomes are separately identifiable. We focus on the nature of early career employment contracts and more precisely on whether the term of the contract is fixed (limited) or permanent (unlimited).

We consider two sub-populations that are indexed by the country of origin of the parents: "French-natives" (those born in France for whom both parents were born in France with French citizenship), and "African-natives" (those born in France for whom both parents were born in an African country with a non-French citizenship). Our general objective is to explain schooling and employment outcomes of African and French-natives.

We ask the following questions. First, controlling for parental background, does ethnic origin influence schooling attainments? Second, given observed characteristics and educational attainments, are employment contract outcomes affected by ethnic origin? Third, would French-natives and second-generation immigrants differ in their access rate to permanent employment if both observed characteristics and educational attainments were equalized?

Although our analysis is targeted toward the French labor market, the issues raised in this paper are far from being specific to France. The poor performance of second-

generation immigrants has also attracted attention in European countries, like Denmark (Nielsen et al., 2003) and the Netherlands (Van Ours and Veenman, 2003).[3]

At a more methodological level, our semi-structural approach is also novel in this segment of the literature applied to labor markets of second-generation immigrants. Until now, the literature has been rather descriptive. Unlike fully structural models, our model does not explicitly specify individual preferences and subjective probability distributions that characterize individual beliefs about labor market functioning. Our results can therefore be supported by many potential behavioral assumptions. We choose to interpret our findings within a framework where agents are forward looking and have a full knowledge of the economic environment.

We now summarize the main findings. First, African-natives are slightly under-educated, after conditioning on their observable characteristics. Ethnic origin accounts for a small portion (5%) of the probability of getting a higher education diploma, whereas delay during primary school and parents' occupation account for 40% each.

Second, schooling attainments explain around 60% of the likelihood of permanent employment and parents' occupation is responsible of 20%. Ethnic origin accounts only for 3% to 6%.

Third, after controlling for observed characteristics and schooling attainments, we find no evidence that African-natives experience a lower permanent employment probability. Indeed, point estimates indicate that African-natives have a higher permanent employment probability in their first job when they graduate with an advanced university degree, than their French-natives counterparts. At all other grade levels, equality in access to permanent employment in a first job fails to be rejected. When employment outcomes measured two years after school completion are considered, equality in permanent employment probabilities fails to be rejected at all possible grade level.

In the following section, we discuss the motivation behind our econometric model. In Section 1.3, we introduce the database used in this article. The econometric model is

[3] In the United States, the economic performances of second-generation immigrants appear to have been much better. For instance, Chiswick and DebBurman (2004) and Card (2005) find no gap in schooling attainments and wages between second-generation immigrants and U.S.-natives.

described in Section 1.4. In Section 1.5, we discuss model selection and goodness of fit. We present the results about the determinants of schooling attainments and employment outcomes in Sections 1.6 and 1.7. A formal test of equality of permanent employment probabilities between French and African-natives is presented in Section 1.8. Finally, Section 1.9 is devoted to an interpretation of the results and to concluding remarks.

1.2 Motivating the Econometric Analysis

We estimate a reduced-form dynamic model of education and early career outcomes. The model is in the spirit of Cameron and Heckman (1998, 2001). Precisely, we model individual trajectories as a collection of sequential dynamic discrete choices. The model captures three essential features of individual human capital decisions. The first one is the sequential aspect of schooling decisions. The second feature is the dynamic impact of schooling on post-schooling outcomes (the model allows education choices to affect post-schooling choices even after conditioning on unobserved heterogeneity). Finally, the third feature is the degree of heterogeneity that characterizes the effects of schooling on labor market outcomes.

The model may be described as follows. At each grade level, the individuals are allowed to choose within a set that contains 4 options: (i) continue to the next grade, (ii) accept a Permanent Contract (PC), (iii) accept a Fixed Term Contract (FTC), or (iv) withdraw from the labor force (a residual state). So, given a completed grade level, each choice (each element in the set) has its own latent utility equation, which is parameterized as a function of a large set of parental background variables and unobserved heterogeneity. As in a standard Roy model, there exists a different set of equations for each possible grade level. This model allows us to measure separate effects of education levels on the employment outcome probabilities. For instance, the effect of completed education on the likelihood of a particular early career outcome (say obtaining a permanent contract) is not captured by a single parameter, but by a collection of several parameters characterizing individual unobserved abilities, and

other parameters measuring the effect of parents' occupation, location and geographical origin on a given outcome. As a consequence, the model contains a very large number of parameters.

At a more philosophical level, the model may be labeled as semi-structural, since it is not based on a formal utility maximization procedure. It therefore has both the advantages and disadvantages that characterize semi-structural modeling. For instance, it retains the sequential/dynamic nature, but obviates the need to numerically solve value functions. It is important to note that, because the model is explicitly dynamic, it cannot realistically be estimated by popular experimental (IV) techniques (the most popular method of estimation among empirical labor economists).[4] However, because it does not estimate explicit preferences and does not specify individual subjective beliefs about outcomes, results are typically open to a larger set of possible interpretations, than pure structural models.

One natural interpretation is that the latent utility is the reduced-form of some choice-specific Bellman equations of a rational/forward looking agent who behaves within a dynamic environment.[5] In applied labor economics, racial differences in labor market outcomes are practically never analyzed within a structural framework.

Keane and Wolpin (2000) investigate the black/white differential in schooling attainments and show that the schooling/occupation choice model developed in Keane and Wolpin (1997) may also be used to fit the behavior of young black males. The model is fitted on a sample of black and white males taken from the NLSY 79. Basically, the authors find that, by allowing for different skill endowments at age 16 (allowing for different type proportions) and for different skill rental prices for blacks and whites (a racial indicator binary variable in the Mincer wage function), their model is capable of explaining schooling attainments of young blacks. They conclude that differences in initial endowments, along with racial discrimination, can explain the relatively low

[4]This is simply because both schooling and post-schooling outcomes are assumed endogenous. The link between standard static models popular in empirical labor economics, and dynamic life-cycle models is discussed in Belzil (2007), Keane (in press) and Belzil and Hansen (2008).

[5]Obviously, other behavioral assumptions such as myopic choices, non-separable preferences (with respect to time), imperfect information, and others, would also be admissible.

schooling attainments of blacks and that there is no evidence that young blacks fail to behave as forward looking agents. An interesting result is that, when discount rates are estimated separately for blacks and whites, they are quite similar (around 0.93 per year).[6]

The role of discrimination in the black/white wage differential is also analyzed in Bowlus and Eckstein (2002). They build an equilibrium search model in which blacks and whites differ by their unobserved productivity levels and their labor search intensities. Discrimination is specified as a potential disutility factor in employing black workers, introduced in the utility function of employers (a taste for discrimination). Within this theoretical framework, they show that data on wages, employment and unemployment durations allow to separately identify the wage differential due to discrimination and the differential due to productive heterogeneity. They find that 56% of firms have a disutility factor and that this factor is equal to 31% of the white's productivity level. Moreover, they estimate that the productivity level of black workers is 3.3% lower than that of withes'.

1.3 The Data: *Génération 98*

Our work is based on *Génération 98*, a large scale survey conducted in France by Céreq.[7] It provides detailed information on the socio-demographic background and employment characteristics of young individuals who left school in the year 1998 and were interviewed in early 2001. Re-interviews have been conducted for half of the sample in 2003, but we do not use them since we focus on employment conditions during the first two years after school completion. The aim of *Génération 98* is to document many aspects of early labor market transitions. In particular, *Génération 98* provides information on spells of employment, unemployment, and training experienced between school completion (labor market entrance) and the date of the survey. Therefore, information on three

[6] This finding is particularly interesting in light of the common claim that young individuals belonging to minorities (at least in the U.S.) tend to have very high discount rates (see the discussion in Keane and Wolpin, 2000).

[7] French Center for Research on Education, Training and Employment.

years of the generation's working life is available and each period of employment is well documented. The personal labor market history of survey respondents has been reconstructed, month by month, during the period 1998-2001.

Because *Génération 98* is a national survey of those who left the educational system at a particular point in time (1998), all individuals faced the same labor market conditions after 1998.

1.3.1 Parents' Country of Origin

Our sample is composed of 42,674 individuals. The group of French-natives contains 40,525 individuals born in France, whose both parents were also born in France with the French citizenship at birth. The second group is composed of 2,149 African-natives, i.e. individuals born in France whose both parents were born in an African country without the French citizenship at birth. Individuals belonging to this last group are also called second-generation immigrants from Africa.

1.3.2 Education

In order to model education, we use the highest educational level (reached in 1998). The educational level variable falls in 7 categories: (1) no qualification; (2) vocational high school degree; (3) high school degree (*baccalauréat*, A level); (4) some university (without graduating); (5) technical or vocational higher education degree or first degree in university (*baccalauréat* and 2 years); (6) intermediate university degree (*baccalauréat* and 3 or 4 years) and (7) advanced university degree (*baccalauréat* and 5 years), elite business or engineering school degrees.

1.3.3 Employment Contracts

The data contain information on the nature of the employment contract at the beginning of each employment spell, as well as changes in the contract type within the spells. A variety of contract types exist in the French legislation. They can be classified into

two categories, distinguished by their term, defined when the contract is signed by the employer and the employee.

Contracts for which no duration is set when the contract is signed are assigned to the Permanent Contract (PC) category. This category is composed of contracts held by civil servants and of indefinite term contracts (*Contrats à Durée Indéterminée, CDI*) in the private sector.

The second category is called Fixed Term Contract (FTC). It regroups all contracts whose term is defined when the contract is signed: contracts with limited duration (*Contrats à Durée Déterminée, CDD*), subsidized contracts (jobs depending on public youth schemes), apprenticeship contracts and self-employment contracts.

1.3.4 Summary Statistics

Table 1.1 reports summary statistics of the education level and the employment contracts, as well as individual characteristics used in the econometric analysis. It shows that African-natives are much less educated than French-natives: more than one grade level of difference on average. More precisely, 29% of French-natives have at most a vocational high school degree (grade levels 1 and 2) and 46% get a higher education diploma (grade levels 5 to 7), whereas, for African-natives, those proportions are respectively 54% and 19%. French-natives are also more often employed in Permanent Contracts (23% for the first contract vs. 14% for African-natives, and 42% vs. 24% for the contract two years after school completion) and less often unemployed (16% and 17% vs. 27% and 30%).

Concerning individual socio-economic characteristics, fathers born in an African country are more often employed in low-skilled jobs: 53% are blue-collar workers (this proportion is 21% for fathers born in France). This observation also stands for mothers: two thirds of mothers born in Africa are housewives, whereas 52% of mothers born in France are white collars. Children of African immigrants are living almost essentially in

Table 1.1: Summary Statistics by Ethnic Groups

	French-Natives		African-Natives	
	Mean	St. Dev.	Mean	St. Dev.
Education Level				
1: No qualification	0.060	0.237	0.210	0.408
2: Vocational high school degree	0.225	0.418	0.332	0.471
3: High school degree	0.147	0.354	0.097	0.296
4: Some higher education (not graduate)	0.108	0.310	0.174	0.380
5: 2 years higher education degree	0.207	0.405	0.102	0.303
6: Intermediate univeristy degree	0.136	0.343	0.058	0.234
7: Advanced univeristy degree	0.118	0.322	0.026	0.158
Average education level	4.057	1.842	2.903	1.638
First employment contract within the first year after school completion				
Permanent Contract	0.232	0.422	0.139	0.346
Fixed Term Contract	0.605	0.489	0.592	0.492
Out of the labour force / unemployed	0.164	0.370	0.268	0.443
Employment contract two years after school completion				
Permanent Contract	0.420	0.494	0.235	0.424
Fixed Term Contract	0.406	0.491	0.463	0.499
Out of the labour force / unemployed	0.175	0.380	0.302	0.459
Father's occupation in 1998				
Craftsman, tradesman, company director	0.114	0.317	0.059	0.235
Senior executive, ingineer, teacher	0.199	0.399	0.019	0.135
Technician, middle manager	0.097	0.297	0.025	0.155
White collar	0.290	0.454	0.221	0.415
Blue collar	0.206	0.405	0.532	0.499
House-husband, missing or deceased	0.094	0.292	0.145	0.352
Mother's occupation in 1998				
Craftswoman, tradeswoman, company director	0.046	0.210	0.010	0.101
Senior executive, engineer, teacher	0.116	0.321	0.007	0.080
Technician, middle manager	0.053	0.224	0.011	0.103
White collar	0.523	0.499	0.241	0.428
Blue collar	0.101	0.301	0.064	0.244
Housewife, missing or deceased	0.161	0.367	0.668	0.471
Living in an urban area in 1998	0.786	0.410	0.925	0.264
Delay during primary school	0.200	0.400	0.445	0.497
Male	0.509	0.500	0.522	0.500
Age in 1998	21.815	3.150	20.738	2.796
Observations	40,525		2,149	

urban areas and the proportion of individuals delayed during primary school[8] is twice as high for African-natives as it is for French-natives.

1.4 The Econometric Model

We model schooling decisions as a sequential dynamic discrete choice model. At each grade level, individuals are assumed to make a choice between obtaining more schooling and labor market work. We model three different post-schooling outcomes: (i) employed in a Permanent Contract (PC), (ii) employed in a Fixed Term Contract (FTC) and (iii) out of the labor force (Out), a residual state.[9]

Because the model is interpreted as the reduced-form of a more involved structure, the terms "choices" and "outcomes" may be used interchangeably.[10]

To estimate the model, we use several observable factors: parents' occupation, location (represented by a binary variable indicating whether the individual lives in an urban area in 1998), gender and a variable "late at school", indicating grade repetition during primary school, and which acts as a proxy for early cognitive skills. On top of these observable variables, we have to introduce an individual unobserved time invariant heterogeneity term, in order to control for educational selectivity. Indeed, there are unobservable factors, such as motivation or ability, that influence schooling decisions at each grade level. Cameron and Heckman (1998) explain that ignoring these effects creates an omitted variable bias that understates the true effects of family background variables on educational attainments, especially at higher grades. Indeed, ability and family characteristics are negatively correlated at higher grades: individuals with low family background characteristics continue schooling only if they have a high ability.

[8] Individuals delayed during primary school are those who enter secondary school after being 11 years old, which is the "normal" age at which children attain this level without schooling delay.

[9] We do not distinguish here between unemployed workers who choose not to work and unemployed workers who are searching for a job.

[10] For instance, the data does not allow us to distinguish individuals who accept a Fixed Term Contract because they received no Permanent Contract offer from those who actually accept a Fixed Term Contract over a permanent one.

As in Cameron and Heckman (2001), the model is specified as a sequence of multinomial logistic probabilities with unobserved heterogeneity. Let C be the set of choices at the end of each grade level:

$$C = \{s, c_1, c_2, c_3\}.$$

c_1, c_2 and c_3 are the 3 employment outcomes (respectively employed in a permanent job, employed in a fixed term job and out of the labor force), whereas s corresponds to continuing schooling to the next grade level.[11] At the end of grade g, $g = 1, \ldots, 7$, where 1 is the lowest grade, the optimal choice for an individual i is the following:

$$\widehat{c}_{i,g} = \arg\max_{c \in C} \left\{ U^*_{i,g,c} \right\},$$

where $U^*_{i,g,c}$ is the utility from choosing option c, given completion of grade g. The expression of this latent variable is given by:

$$U^*_{i,g,c} = X_i \beta_{g,c} + \nu_{i,g,c},$$

where X_i is a vector of observed variables, $\beta_{g,c}$ is a vector of parameters measuring the effects of these variables, and $\nu_{i,g,c}$ is unobservable by the econometrician.

The structure adopted for $\nu_{i,g,c}$ is

$$\nu_{i,g,c} = \gamma_{g,c}(\theta_i) + \epsilon_{i,g,c},$$

where $\gamma_{g,c}(\theta_i)$ is an individual-grade-outcome specific intercept and θ_i represents the individual specific effect, constant across grades and contractual outcomes, orthogonal to the i.i.d. error term, denoted $\epsilon_{i,g,c}$.

Then, assuming that $\epsilon_{i,g,c}$ is an i.i.d. extreme value variable, we can write the probability that an individual i exits to the outcome c once he achieved grade g as an extension

[11] At the highest grade, s is excluded from the choice set since continuing schooling is impossible.

of McFadden's (1974) conditional logit model:

$$\Pr\left(D_{i,g,c}=1|X_i,\theta_i\right)=\begin{cases}\dfrac{\exp\left(X_i\beta_{g,c}+\gamma_{g,c}(\theta_i)\right)}{1+\sum_{a=c_1}^{c_3}\exp\left(X_i\beta_{g,a}+\gamma_{g,a}(\theta_i)\right)} & \text{for } c=c_1,\ldots,c_3\\ \\ \dfrac{1}{1+\sum_{a=c_1}^{c_3}\exp\left(X_i\beta_{g,a}+\gamma_{g,a}(\theta_i)\right)} & \text{for } c=s\end{cases},$$

where $D_{i,g,c}=1$ if individual i's outcome after grade g is $c\in C$, i.e. if $\widehat{c}_{i,g}=c$.

The probability that individual i exits to the optimal outcome $\hat{c}$, after having completed the optimal grade level $\hat{g}$, defines the contribution to the likelihood for an individual i. Precisely, the individual likelihood is

$$L_i(X_i,\theta_i)=\left[\prod_{b=1}^{\hat{g}-1}\Pr\left(D_{i,b,s}=1|X_i,\theta_i\right)\right]\cdot\Pr\left(D_{i,\hat{g},\hat{c}}=1|X_i,\theta_i\right),$$

where $D_{i,b,s}$ is an indicator that is equal to 1 when an individual i, who has already completed grade level b, chooses to continue in school (chooses option s).

Unobserved Heterogeneity

In the spirit of Heckman and Singer (1984), we adopt a discrete distribution for unobserved heterogeneity. Assuming that there are K types in the population,[12] the probabilities associated to the K types are specified as logistic transforms:

$$p_k=\frac{\exp q_k}{\sum_{s=1}^{K}\exp q_s}\qquad k=1,\ldots,K,$$

where q_ks are parameters to be estimated, with the restriction that $q_K=0$.

Given we use an individual-grade-outcome specific intercept term in our model specification, $\gamma_{g,c}(\theta_i)$, the K types distribution induces the estimation of K type specific intercepts for each outcome equation at each schooling level, which implies the

[12] In what follows, we estimate the model with different values of K, and determine the optimal number of types using a Bayesian Information Criterion.

following:

$$p_k = \Pr(\gamma_{1,s}(\theta_i) = \gamma_{1,s}^k, \gamma_{2,s}(\theta_i) = \gamma_{2,s}^k, \ldots, \gamma_{7,c_3}(\theta_i) = \gamma_{7,c_3}^k) \qquad k = 1, \ldots, K.$$

Therefore, unobserved heterogeneity in our model has to be interpreted as a vector of schooling and labor market unobserved skills, ability or motivation, whose dimension is K times the number of latent equations modeled.[13]

As a consequence, the mixed likelihood, for an individual i, is simply:

$$L_i(X_i) = \sum_{k=1}^{K} p_k \cdot L_i^k(X_i),$$

where $L_i^k(X_i)$ is the contribution of the likelihood for an individual of type k.

The model is estimated by maximization of the sum of all individual (mixed) log likelihoods.

1.5 Model Selection and Goodness of Fit

Two versions of the model are estimated. In the first one, the contractual outcomes correspond to the contract types at the beginning of the first job spell that follows school completion, up to 1 year. As a consequence, the "out of the labor force" outcome concerns individuals who have no job during the year that follows their exit from schooling. In the second version, the outcomes correspond to the employment status exactly two years after school completion.

For each version, the model is estimated separately for French and African-natives. Therefore, each ethnic group has its own unobserved heterogeneity distribution and parameters. In both ethnic groups, a relatively small number of individuals choose to stop schooling at the end of the first education level (no qualification). Thus, we do not

[13] "School continuation" is the outcome of reference at the end of each grade level. Therefore, there are 3 latent utility equations modeled at the end of each of the 7 grade levels, corresponding to the 3 employment outcomes.

model employment contract outcomes at this level. As a consequence, the choice set at the end of the first education level is either continuing or stopping schooling.

The estimation output of one set of employment outcomes for one sub-sample consists of a huge set of estimated parameters. A 2 type unobserved heterogeneity distribution requires the estimation of 271 parameters (290 for a 3 type distribution and 309 for a 4 type distribution). The calculation of the effects of interest, such as the impact of attaining a schooling level on the probability of a particular employment outcome, is not summarized by a single parameter. Instead, it involves the combination of parameters associated to unobserved heterogeneity and parameters measuring the effect of observable characteristics.

Before analyzing the main results, we discuss a few technical points such as unobserved heterogeneity and goodness of fit.

1.5.1 Model Selection

In line with what is the most common practice, we use an information criterion in order to determine the optimal number of types.[14] We do so because standard test statistics are not formally applicable in a context where some parameters are at the boundary of the parameter space under the null hypothesis. Although Andrews (2001) has developed a set of non-standard tests that may be applied in a context where the econometrician is testing for a degenerate heterogeneity factor (testing if the variance of the cross-sectional dispersion factor is null), this is not really applicable here because we choose to disregard a model specification without unobserved heterogeneity (without educational selectivity).

Table 1.2 reports the likelihood and the Bayesian Information Criterion values when the model is estimated with 2, 3 and 4 types for each origin group and each set of employment outcomes (first outcome within the first year and outcome at two years). The lowest value of the Bayesian Information Criterion is obtained with a 2 type distribution for each specification; we therefore adopt this distribution to analyze the results.

[14] This is also achieved in Cameron and Heckman (2001).

Table 1.2: Log-Likelihood and Bayesian Information Criterion Values for Model Selection

	French-natives		African-natives	
	$\log(L)$	BIC	$\log(L)$	BIC
First employment outcome within the first year				
4 types	-101,682.95	206,644.29	-4,840.78	12,030.97
3 types	-101,725.66	206,528.13	-4,861.49*	11,948.08
2 types	-101,725.79	206,326.80	-4,859.55	11,798.42
Employment outcome at two years				
4 types	-105,442.53	214,163.45	-5,070.14	12,511.16
3 types	-105,453.55	213,983.91	-5,077.89	12,380.89
2 types	-105,481.34	213,837.91	-5,101.28	12,281.88

* This log-likelihood value is lower than the corresponding one for the 2 type specification since one of the 3 type probabilities is equal to 0.

Note: The number of estimated parameters of each specification is 309 for the model with 4 types, 290 for the model with 3 types and 271 for the model with 2 types.

1.5.2 Goodness of Fit

From the parameter estimates, we compute the simulated schooling grade attainments and employment outcomes in each sub-sample. Tables 1.3 and 1.4 report the simulated distributions for each type. For both ethnic groups, the actual and average simulated distributions are very close to each other. Indeed, our model is capable of explaining both schooling attainments and employment outcomes almost perfectly. The evident capacity of the model to fit the data is most likely a by-product of its flexibility.

The type specific patterns are very different within each sub-sample, which confirms the importance of controlling for unobserved heterogeneity. For French-natives, type 2 individuals tend to reach higher schooling attainments: their average grade is around grade level 5 (first 2 years in higher education), whereas it is only 3.6 for type 1s, and their distribution is more oriented towards high education levels. Type 2 individuals are also less often employed in Fixed Term Contracts (53% vs. 65% for the first contract, and 30% vs. 48% for the contract at two years).

For African-natives, the correlation between unobserved heterogeneity and schooling is less clear: the difference between type 1s and 2s' average grades is only 0.3 and the mode of the distribution is grade level 2 for type 1s and grade level 1 for type 2s.

Table 1.3: Simulated Grade Distribution by Ethnic Groups

Grade	French-natives			African-natives		
	Average	Type 1	Type 2	Average	Type 1	Type 2
1	0.059	0.088	0.000	0.203	0.104	0.304
2	0.227	0.315	0.051	0.335	0.514	0.153
3	0.147	0.142	0.157	0.098	0.135	0.060
4	0.106	0.109	0.101	0.185	0.104	0.267
5	0.207	0.152	0.314	0.101	0.081	0.122
6	0.137	0.122	0.169	0.054	0.058	0.049
7	0.118	0.073	0.207	0.025	0.004	0.046
Average Grade	4.060	3.579	5.013	2.906	2.735	3.079

Table 1.4: Simulated Employment Outcomes Distribution by Ethnic Groups

Outcome	French-natives			African-natives		
	Average	Type 1	Type 2	Average	Type 1	Type 2
First employment outcome within the first year						
PC	0.240	0.207	0.302	0.158	0.217	0.081
FTC	0.610	0.655	0.527	0.610	0.645	0.565
Out	0.150	0.138	0.171	0.232	0.138	0.354
Employment outcome at two years						
PC	0.435	0.382	0.509	0.269	0.178	0.352
FTC	0.404	0.477	0.300	0.477	0.600	0.365
Out	0.161	0.141	0.191	0.254	0.222	0.283

Concerning the employment outcomes, it turns out that type 2 individuals are much less often firstly employed in PCs (8% vs. 22%), and more often unemployed (35% vs. 14%), whereas at two years, they are more concerned by permanent employment (35% vs. 18%).

1.6 Explaining Schooling Decisions

In this section, we study the determinants of schooling attainments. As a first step, we focus on the determinants within ethnic groups. This allows us to quantify the importance of each factor. Subsequently, we focus on differences between ethnic groups and, in particular, we investigate if second-generation immigrants tend to obtain more

or less schooling than their French-natives counterparts, after conditioning on observed characteristics.

Throughout this section, we focus on the attainment of three potential grade levels: high school completion (which corresponds to reaching level 3 or more), higher education graduation (level 5 or more) and advanced university degree (level 7).

1.6.1 Determinants Within Ethnic Groups

At each grade level, the decision of continuing schooling to the next grade is explained by observable characteristics (parents' occupation, location, gender and "late at school") as well as unobserved heterogeneity. In order to assess the relative impact of those different factors, we perform a variance decomposition of schooling attainments. Thus, we regress the simulated grade attainment dummies on each group of explanatory factors separately and compute the relative share of each group in explaining the grade attainment as the ratio of the corresponding R^2 over the sum of R^2s of each regression.

Table 1.5 contains the results of this variance decomposition for French and African-natives separately. Parents' occupation is a key determinant of the schooling attainments, especially at high grades: it explains 52 and 55% of the variance of reaching an advanced university degree for French and African-natives respectively, whereas it accounts for 21% and 8% of the variance of reaching high school completion. This pattern illustrates the fact that parents' skills and income play a minor role in obtaining low grades, and their importance increases at higher grades, where educational investment becomes more costly.[15]

The results confirm the importance of unobserved heterogeneity in explaining schooling attainments for French-natives, where its relative share ranges from 23% to 33%. This share is lower for African-natives (8% to 25%).

[15] Unfortunately, *Génération 98* does not include any information about parental income level, nor the precise educational level or the parents. Also, the language (French) proficiency of the parents is unknown. Nevertheless, our results and the good fit of our model make us confident about the ability of parents' occupation to account for the parents' income and skill levels.

Table 1.5: Variance Decomposition of Schooling Attainments by Ethnic Groups

	French-natives (%)	African-natives (%)
Reaching level 3 or more (high school completion)		
Parents' occupation	21	8
Living in an urban area	5	5
Gender	6	14
Late at school	35	59
Unobserved heterogeneity	33	14
Reaching level 5 or more (higher education degree)		
Parents' occupation	30	13
Living in an urban area	8	10
Gender	4	5
Late at school	31	64
Unobserved heterogeneity	27	8
Reaching level 7 or more (advanced university degree)		
Parents' occupation	52	55
Living in an urban area	9	3
Gender	0	0
Late at school	16	17
Unobserved heterogeneity	23	25

Early cognitive skills, proxied by the variable "late at school", are also an important determinant of schooling attainments (16 to 35% for French-natives, 17 to 64% for African-natives). Interestingly, the pattern across grades is the opposite of parents' occupation: the importance of "late at school" is higher at low grades. Early cognitive skills play therefore a slightly lower role in higher education attainments than high school attainments, but the impact remains significant.

Gender and location have a low explanatory power, compared to other factors. Nevertheless, gender has a slightly greater impact at low grades (6% and 14% concerning high school completion for French and African-natives respectively), and no impact at all for advanced university graduation.

Overall, these results are consistent with the huge impact of long run factors in explaining schooling attainments, as documented by Cameron and Heckman (1998), Eckstein and Wolpin (1999), and many others.

1.6.2 Determinants of the Schooling Gap Between Ethnic Groups

As seen earlier, African-natives are much less educated than French-natives. To analyze the schooling gap between ethnic groups, we merge the simulated education outcomes of French and African-natives. Our objective is to evaluate if second-generation immigrants tend to obtain more or less schooling than their French-natives counterparts, after conditioning on observed characteristics. Obviously, the answer to this question lies in the difference between the set of all parameter estimates (including the group specific distributions of unobserved heterogeneity). Because this entails comparing two large vectors of parameters with each other, it is not sufficient to examine these parameters.

One way to answer the question is to estimate the impact of racial origin on predicted schooling attainments after conditioning on all observed characteristics. This estimation is obtained by calculating the share of the variance in the schooling attainments likelihood attributable to ethnic origin. The estimate of the difference between groups will therefore capture differences in the slope parameters across groups, as well as differences in unobserved heterogeneity.

Further, to determine if young African-natives are under-educated after controlling for observed characteristics, we evaluate the schooling attainment probabilities at the observed characteristics of second-generation immigrants, for two different sets of parameters (those of French-natives and those of second-generation immigrants). Then, we compute the difference between those two schooling attainment probabilities:

$$\Delta \Pr(schooling) = E_{X_A}[\Pr(schooling|X_A'\widehat{\beta}_F) - \Pr(schooling|X_A'\widehat{\beta}_A)], \qquad (1.1)$$

where $\widehat{\beta}_A$ and $\widehat{\beta}_F$ are the vector of estimated parameters of French and African-natives respectively (including unobserved heterogeneity parameters), and X_A is the vector of covariates of African-natives. Thus, $\Delta \Pr(schooling)$ measures the gap in schooling attainments between French and African-natives, when the French-natives' covariates distribution is fixed to the African-natives' one. Hence, it measures the gap due to differ-

Table 1.6: Variance Decomposition of Schooling Attainments for the Full Sample

Reaching level 3 or more (high school completion)	
Origin	5%
Parents' occupation	31%
Living in an urban area	5%
Gender	8%
Late at school	51%
Reaching level 5 or more (higher education degree)	
Origin	5%
Parents' occupation	40%
Living in an urban area	9%
Gender	5%
Late at school	41%
Reaching level 7 or more (advanced university degree)	
Origin	3%
Parents' occupation	65%
Living in an urban area	10%
Gender	1%
Late at school	21%

ences in the parameters' distributions. A positive gap is associated to a higher schooling attainment probability for French-natives after controlling for observed covariates.

Table 1.6 reports the results of the variance decompositions conducted on the full sample. The relative shares of parents' occupation, location, gender and "late at school", and their evolution across grade levels, are close to the ones already seen in the separate-sample decompositions. Conditioning on these observed characteristics, ethnic origin accounts for a small part of the variance of schooling attainments (3 to 5%). Table 1.7 reports the difference in schooling attainments between the two groups computed at the covariates of second-generation immigrants. The positive differences reported indicate that, after controlling for observed characteristics, African-natives are still under-educated (when compared with French-natives).

1.7 Explaining Employment Outcomes

We now examine the determinants of the employment outcomes. As we did for education, we first analyze outcomes within each ethnic group, and analyze the differences

Table 1.7: Difference in Schooling Attainments Between Ethnic Groups After Controlling for Observed Factors

$\Delta \Pr(s \geq 3)$ (high school completion)	0.083	(0.095)
$\Delta \Pr(s \geq 5)$ (higher education diploma)	0.100	(0.053)
$\Delta \Pr(s \geq 7)$ (high level college degree)	0.030	(0.014)

Note 1: $\Delta \Pr(schooling)$ is the averaged difference in schooling probabilities between French and African-natives, computed at the African-natives' covariates (equation (1.1)).

Note 2: In parenthesis: Standard errors computed using parametric bootstrap.

across groups as a second step. For the within group analysis, we focus on the impact of schooling, which is treated as endogenous in our model.

The between group analysis is targeted toward answering the following question: given parents' background and education, what is the role of ethnic origin in explaining the access to secure employment?

1.7.1 Within Ethnic Groups

1.7.1.1 Impact of Schooling

We compute the type specific predicted probabilities of being employed in a Permanent Contract, employed in a Fixed Term Contract, and being unemployed. Those probabilities are computed at the sample modes, for the following three education levels hold at the time of school completion: high school degree (grade level 2 or 3), higher education drop-out or 2 years higher education degree (grade level 4 or 5), intermediate or advanced university degree (grade level 6 or 7). Then, we compute the differences in the employment outcome probabilities between consecutive education levels and their standard errors. For each employment outcome, the difference measures the impact of attaining the next education level on the likelihood of the corresponding outcome, other factors remaining fixed. The impacts on the probability of being employed in a PC can be interpreted as "returns to schooling" on the incidence of permanent employment. This expression usually refers to earnings returns to an investment in education. As an illustration, Aeberhardt et al. (in press) report higher marginal returns to schooling on

Table 1.8: Schooling Returns: French-Natives

	Type 1		Type 2	
First employment outcome within the first year				
$\Pr(\text{PC}\|s=4,5)-\Pr(\text{PC}\|s=2,3)$	0.050	(0.013)	-0.376	(0.017)
$\Pr(\text{FTC}\|s=4,5)-\Pr(\text{FTC}\|s=2,3)$	-0.076	(0.017)	0.258	(0.019)
$\Pr(\text{OUT}\|s=4,5)-\Pr(\text{OUT}\|s=2,3)$	0.026	(0.011)	0.118	(0.014)
$\Pr(\text{PC}\|s=6,7)-\Pr(\text{PC}\|s=4,5)$	-0.034	(0.026)	0.398	(0.014)
$\Pr(\text{FTC}\|s=6,7)-\Pr(\text{FTC}\|s=4,5)$	0.026	(0.021)	-0.428	(0.016)
$\Pr(\text{OUT}\|s=6,7)-\Pr(\text{OUT}\|s=4,5)$	0.008	(0.016)	0.030	(0.011)
Employment outcome at two years				
$\Pr(\text{PC}\|s=4,5)-\Pr(\text{PC}\|s=2,3)$	0.166	(0.038)	-0.330	(0.013)
$\Pr(\text{FTC}\|s=4,5)-\Pr(\text{FTC}\|s=2,3)$	-0.069	(0.023)	0.228	(0.013)
$\Pr(\text{OUT}\|s=4,5)-\Pr(\text{OUT}\|s=2,3)$	-0.097	(0.018)	0.101	(0.009)
$\Pr(\text{PC}\|s=6,7)-\Pr(\text{PC}\|s=4,5)$	-0.106	(0.013)	0.344	(0.011)
$\Pr(\text{FTC}\|s=6,7)-\Pr(\text{FTC}\|s=4,5)$	0.011	(0.012)	-0.201	(0.010)
$\Pr(\text{OUT}\|s=6,7)-\Pr(\text{OUT}\|s=4,5)$	0.095	(0.006)	-0.143	(0.008)

Note 1: Predicted probabilities are computed for a man having a white collar father, a white collar mother, living in an urban area and not having been delayed at school.
Note 2: In parenthesis: Standard errors computed using parametric bootstrap.

wages for French-natives than for second-generation immigrants from Africa, except at the highest grade (university graduation). Here, we do not focus on returns on earnings, but we study whether or not investing in education increases the likelihood of being employed in a PC. This issue is of particular interest if workers on the labor market attach more value to jobs offering a stable employment situation.

Table 1.8 contains results for French-natives and Table 1.9 results for African-natives. The next subsection discusses the impact of the education level on employment in a PC and unemployment.

Permanent Contracts For French-natives of type 2, dropping-out from higher education or holding a 2 years higher education degree (grade level 4 or 5) has a negative impact on the PC employment probability (38 percentage points for the first contract, 33 for the contract at two years), compared to holding a high school degree (grade levels 2 and 3). However, continuing educational investment to hold an intermediate or advanced university degree (grade level 6 or 7) has a positive impact (40 and 34 percentage

Table 1.9: Schooling Returns: African-Natives

	Type 1		Type 2	
First employment outcome within the first year				
$\Pr(\text{PC}\|s=4,5)-\Pr(\text{PC}\|s=2,3)$	0.305	(0.358)	-0.013	(0.035)
$\Pr(\text{FTC}\|s=4,5)-\Pr(\text{FTC}\|s=2,3)$	-0.643	(0.785)	0.771	(0.145)
$\Pr(\text{OUT}\|s=4,5)-\Pr(\text{OUT}\|s=2,3)$	0.338	(0.612)	-0.757	(0.144)
$\Pr(\text{PC}\|s=6,7)-\Pr(\text{PC}\|s=4,5)$	-0.471	(0.280)	0.851	(0.094)
$\Pr(\text{FTC}\|s=6,7)-\Pr(\text{FTC}\|s=4,5)$	0.579	(0.636)	-0.763	(0.086)
$\Pr(\text{OUT}\|s=6,7)-\Pr(\text{OUT}\|s=4,5)$	-0.107	(0.523)	-0.088	(0.087)
Employment outcome at two years				
$\Pr(\text{PC}\|s=4,5)-\Pr(\text{PC}\|s=2,3)$	-0.240	(0.649)	-0.064	(0.317)
$\Pr(\text{FTC}\|s=4,5)-\Pr(\text{FTC}\|s=2,3)$	0.336	(0.407)	0.106	(0.168)
$\Pr(\text{OUT}\|s=4,5)-\Pr(\text{OUT}\|s=2,3)$	-0.096	(0.481)	-0.041	(0.232)
$\Pr(\text{PC}\|s=6,7)-\Pr(\text{PC}\|s=4,5)$	0.399	(0.370)	0.133	(0.141)
$\Pr(\text{FTC}\|s=6,7)-\Pr(\text{FTC}\|s=4,5)$	-0.537	(0.356)	-0.056	(0.125)
$\Pr(\text{OUT}\|s=6,7)-\Pr(\text{OUT}\|s=4,5)$	0.137	(0.194)	-0.077	(0.101)

Note 1: Predicted probabilities are computed for a man having a white collar father, an unemployed mother, living in an urban area and not having been delayed at school.
Note 2: In parenthesis: Standard errors computed using parametric bootstrap.

points). Those numerical effects have to be interpreted as upper bounds for the whole French-natives sample, since the differences for type 1s have most of the time a reverse sign with a much lower magnitude, which makes them sometimes insignificant.

Concerning African-natives, the high values of the standard errors make the estimates imprecise. Only the difference in the likelihood of obtaining a PC as a first contract between drop-out or 2 years's degree in higher education and 3 years and more higher education degree for type 2s is significant and high (85 percentage points).

Unemployment/Out of the Labor Force Increasing the education level has a positive impact on the French-natives probability of being unemployed during the first year after schooling. Indeed, dropping-out from higher education or holding a 2 years higher education degree increases the probability by 3 percentage points for type 1s and 12 percentage points for type 2s, whereas the impact of holding an intermediate or advanced university degree is small (non significant for type 1s, 3 percentage points for type 2s). This moderate positive impact can be explained by the fact that more educated

workers search longer for a permanent position and have a lower propensity to accept FTCs early after school completion. This explanation is also supported by the impact of schooling two years after school completion: the impact of dropping-out or holding a 2 years degree in higher education is negative for type 1s and positive for type 2s (10 percentage points in both cases) and the impact of holding a 3 year or more higher education degree has the opposite sign for both types (increase of 10 percentage points for type 1s and decrease of 14 percentage points for type 2s).

Again, for African-natives, results are barely significant. We can only note that there is a huge negative impact of dropping-out or holding a 2 years degree in higher education on the probability of remaining unemployed during the first year after schooling for type 2s (76 percentage points).

1.7.1.2 Importance of Schooling versus Permanent Factors

We now determine the importance of schooling, relative to other factors, in explaining the employment outcomes. We conduct a variance decomposition of the permanent employment likelihood. We regress the simulated PC outcome dummy on each group of explanatory factors separately and compute the share of each factor as the ratio between the corresponding R^2 and the sum of R^2s of each regression. "Simulated schooling" is added as a new group of explanatory factors, on top of the groups already introduced in the variance decomposition of the schooling attainments: parents' occupation, location, gender, "late at school" and unobserved heterogeneity.

Table 1.10 contains the results of this variance decomposition for French and African-natives separately. Schooling explains a large portion of the permanent employment likelihood compared to other explanatory factors (more than 50% for French-natives, and more than 30% for African-natives). However, unobserved heterogeneity is also an important determinant: it explains 16 to 20% of the permanent employment probability variance for French-natives and 30 to 40% for African-natives (as high as schooling). The variable "late at school" has a very small impact on the contractual outcomes (6% and less). This confirms that this variable has to be interpreted mostly as a measure of

Table 1.10: Variance Decomposition of Obtaining a Permanent Contract by Ethnic Groups

	French-natives (%)	African-natives (%)
First employment outcome within the first year		
Parents' occupation	18	35
Living in an urban area	5	2
Gender	1	0
Late at school	2	1
Unobserved heterogeneity	16	30
Simulated schooling	58	32
Employment outcome at two years		
Parents' occupation	14	15
Living in an urban area	2	3
Gender	4	2
Late at school	6	0
Unobserved heterogeneity	20	40
Simulated schooling	54	40

cognitive skills (as opposed to some sort of labor market skill), since we already noticed in Part 1.6.1 that its impact on schooling attainments was important. Gender and urban location are explaining a marginal part of employment outcomes (less than 5%).

1.7.2 Between Ethnic Groups

We now determine the role of ethnic origin in explaining the probability of permanent employment once observed characteristics and schooling attainments are controlled for. To this end, we proceed as we did for schooling. We first merge the simulated employment outcomes of French and African-natives and estimate the impact of racial origin on the predicted permanent employment outcome, after conditioning on schooling (simulated) and on all observed characteristics (parents' occupation, location, gender and the "late at school" indicator). The impact attributed to ethnic origin therefore measures differences in slope parameters and unobserved heterogeneity distributions.

Table 1.11 reports the share of each explanatory factor in explaining the variance in the permanent employment probability. Schooling attainments explain 66% of the cross-sectional variance in employment under a Permanent Contract for the first job after schooling. Its impact decreases to 61% for the job two years after the exit from

Table 1.11: Variance Decomposition of Obtaining a Permanent Contract for the Full Sample

First employment outcome within the first year	
Origin	3%
Parents' occupation	22%
Living in an urban area	5%
Gender	1%
Late at school	3%
Simulated schooling	66%
Employment outcome at two years	
Origin	6%
Parents' occupation	19%
Living in an urban area	2%
Gender	4%
Late at school	8%
Simulated schooling	61%

school. Other observed factors' impacts are close to the ones found in the variance decomposition conducted on the two samples separately. Ethnic origin accounts for 3% of the differences in permanent employment access for the first job, and 6% for the job at two years.

1.8 Testing Equality in Access to Permanent Employment

As a natural consequence of the analysis presented earlier, it is interesting to investigate the statistical significance of the racial differences in access to permanent employment. After all, the point estimates reported earlier seem to imply relatively modest racial differences, after conditioning on schooling and observed covariates. In this section, we ask a precise question. Assuming similar observed characteristics across groups, and for a fixed level of schooling, do differences in parameters between groups entail a significant difference in access to permanent employment?

In order to do so, we compute differences in permanent employment probabilities between two distinct groups that share African-natives' covariates. One group is characterized by the parameters estimated for French-natives, while the other is characterized by the parameters of African-natives. The probabilities are computed at three different

Table 1.12: Difference in Permanent Employment Probabilities Between Ethnic Groups After Controlling for Observed Factors

First employment outcome within the first year		
$\Delta \Pr(PC\|g=3)$ (high school completion)	0.034	(0.215)
$\Delta \Pr(PC\|g=5)$ (higher education diploma)	-0.043	(0.089)
$\Delta \Pr(PC\|g=7)$ (high level college graduate)	-0.431	(0.054)
Employment outcome at two years		
$\Delta \Pr(PC\|g=3)$ (high school completion)	0.016	(0.270)
$\Delta \Pr(PC\|g=5)$ (higher education diploma)	0.288	(0.209)
$\Delta \Pr(PC\|g=7)$ (high level college graduate)	-0.092	(0.223)

Note 1: $\Delta \Pr(PC|g)$ is the averaged difference in permanent employment probabilities at grade g between French and African-natives, computed at the African-natives' covariates (equation (1.2)).
Note 2: In parenthesis: Standard errors computed using parametric bootstrap.

schooling levels: high school completion (which corresponds to level 3), first degree in higher education (level 5) and advanced university degree (level 7). More precisely, the PC employment difference given stopping schooling investment at grade g takes the following expression:

$$\Delta \Pr(PC|g) = E_{X_A}[\Pr(PC|X_A'\widehat{\beta}_F, g) - \Pr(PC|X_A'\widehat{\beta}_A, g)]. \tag{1.2}$$

As for education outcomes, a positive (negative) value for this expression will imply that second-generation immigrants are under (over) represented in jobs that offer permanent contracts.

Table 1.12 shows that the conditional gap between French-natives and second-generation immigrants is never significant, except at the highest educational level (advanced university degree), for the first employment contract within the first year that follows school completion. In that situation, the difference is negative and high (43 percentage points with a standard error of 0.054), which means that African-natives have a better access to permanent employment. At all other levels, the value of the standard error is roughly as high as the one of the difference, which signifies that French and African-natives's permanent employment probabilities are not statistically different, once observed factors are controlled for. Obviously, those results have to be put in

perspectives with the fact that a very low proportion (2.5%) of African-natives attains the highest education level.

1.9 Interpretation and Conclusion

As stated in the introduction, two policy questions are particularly interesting. First, given parents' background, do second-generation immigrants obtain more or less schooling than their French-natives counterparts? Second, given parents' background and education, do second-generation immigrants have more or less access to secure employment than their French-natives counterparts?

In order to answer the first question, we use the predicted level of schooling and the predicted Permanent Contract outcome for each group obtained from the model estimated separately for each group (summary found in Tables 1.3 and 1.4). Then, the first question is answered by calculating the impact of racial origin on predicted schooling after conditioning on parents' occupation, location, gender and the "late at school" indicator (Tables 1.6 and 1.7).

To answer the second question, we calculated the impact of racial origin on the predicted Permanent Contract outcome after controlling for schooling and the same observed factors (Tables 1.11 and 1.12). In both cases, the estimate of the difference between groups therefore captures differences in model parameters across groups, as well as differences in unobserved heterogeneity.

When comparing French-natives to second-generation immigrants, three results are striking:

1. Second-generation immigrants are slightly under-educated, after conditioning on their observable characteristics. Racial origin accounts for a small portion (5% or less) of differences in the probability of accessing higher education.

2. Controlling for observed characteristics and schooling attainments, ethnic origin explains between 3% and 6% of the cross-sectional variance in the permanent employment probability.

3. Given their observed characteristics, second-generation immigrants who obtain the highest level of education possible, have a faster access to permanent employment than French-natives. At all other grade levels, we can not reject the equality of permanent employment probabilities between French-natives and second-generation immigrants.

How should these results be interpreted? As stated earlier, we believe that it is informative to interpret our results within a theoretical framework where second-generation immigrants are rationale, and forward looking.

- One possible explanation has to do with discrimination or, put differently, a racial difference in returns to skills. Young individuals who face a discriminatory environment (lower returns to skills) may decide to under-invest in education. This type of behavior has indeed been advanced as a possible explanation for the racial education gap observed in the U.S. (Keane and Wolpin, 2000). However, the very small differences in counterfactual employment probabilities between groups raise serious doubts about the incidence of unequal treatment across groups, after conditioning on human capital.

- A second explanation has to do with racial differences in pre-market factors and parental inputs. To the extent that differences in unobserved heterogeneity measure differences in parental investment behavior and/or differences in non-cognitive skills, young individuals from African origins respond to their pre-market endowments by accumulating less schooling than French-natives. Subsequently, if labor market outcomes are affected by those skills and factors, even after conditioning on schooling, it is natural to expect a lower access to stable employment.

While these two hypotheses cannot be distinguished without access to more data on parental inputs and the like, it is nevertheless interesting to note that the gap in permanent employment between French-natives and African-natives is mostly dominated by differences in schooling, and to a lesser extent, by differences in parental background.

Overall, these results point out to the fact that the racial gap in employment outcomes is the mirror image of the racial schooling gap. At a policy level, we draw the following conclusions. While policies targeted toward reducing discrimination should be maintained, the bulk of effort should largely be concentrated at policies targeting schooling attainments of non-French-natives. As is already recognized in the economic literature devoted to children skill accumulation (Todd and Wolpin, 2007), those policies have to focus on improving both the family and the social environments of those young individuals.