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Is the Over-education a Temporary Phenomenon?

Case of Tunisian Higher Education Graduates

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Abstract:

This work analyzes the phenomenon of normative over-education in the case of Tunisian higher education graduate cohort 2004. This analysis is carried out with higher education graduate survey realized jointly by the Tunisian ministry of vocational training and employment and the World Bank. Two interrogations are presented in the survey. The first is realized 18 months after leaving higher education system and the second 3 years after. The results of the first investigation are used in probit model to study the extent of the phenomenon of over-education at the first recruiting. The second interrogation is used to study the over-education time horizon.

The over-education determinants are conveyed through three axes: biographical data, characteristic of the formation and those of the obtained job. The characteristics of employment present more significant effects on the probability of over-education than those of the formation. Among characteristics one considers the stability of employment, the branch of industry and the nature of employment (public/private).

The obtained results show that there is a diplomas hierarchy vis-a-vis the risk of over-education which confirms Thurow job competition theory. The most abundant diplomas on the market of work are not only victims of unemployment but also the most exposed to the risk of over-education. To complete this analysis we integrate the disciplines effect and shown that graduates of discipline receiving the mass are more exposed to the risk of over-education.

Probit estimation results using the second interrogation show that the certification does not have any effect on the probability of over-education. Only the stability of employment presents a significant effect on the work condition improvement of Tunisian higher education graduates initially over-educated. To bring more precision we chose a multiple components analysis.

Keywords: Higher Education, Over-education, Graduates Labor market, Diplomas effect, Multiple correspondences analyses, Probit model

JEL Code: C2, C3, C4, I2, J4

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Introduction

Tunisian higher education is a dual system. Institutions offering a scientific formation (engineering medicine architect) practice selective admission policy .The scarce accepted elites obtain a diploma with strong employability. Other discipline ((social sciences, law, art) receiving the mass and offer abundant diplomas on the labor market (Bachelor of technology (Bac +3) and Bachelor's Degree (Bac +4)). Under these conditions, these graduates faces professional insertion problem. Nevertheless, unemployment does not represent the single problem. Beyond recruiting, a new obstacle is presented to them: over-education. Defines as a situation where the required skills by a job are less than those obtained during the formation, the over-education situation becomes more and more frequent.

The over-education phenomenon is far from being a recent phenomenon. The problem was the subject of two works, “The Great Training Robbery” of Berg (1970) and “The Over-educated American” of Freeman (1976). Thus research on over-education developed in the years 1970 after the generalization of the access to higher education. Nevertheless the higher education graduates labor market equilibrium prevented the emergence of this phenomenon. Indeed, according to Krueger (1993), technical progress went hand in hand with a high qualified labor force demand. The emergence and the diffusion of new technologies during the 80-90 had considerable effects on the organization of the tasks and the requalification of employment in many sectors, thus contributing to reinforce the mutual adequacy between education level and employment. According to Groot and Van Der Brink (2000), it was only at the beginning of the 90 that these evolutions highlight the question of the over-education.

The economic theories propose several explications to the emergence and the time persistence of over-education. The human capital theory presents the over-education as a temporary phenomenon. The theory of the signal explains the over-education at the first job by the higher education diplomas devaluation in the labor market. The diplomas rank in the hierarchy of certifications represents its value on the labor market. The inflation of the diplomas leads to an irreversible devaluation of the school titles if initial training don’t affect individual aptitudes.

Job competition theory presents initial training as an input card for employment, but it announces the individual employability and not the productivity. The contribution of Thurrow’s theory is the consideration of fields of study in the explanation of the training-employment relationship.

In this paper we proposes through a probit model to identify the determinants of a situation of over-education for the graduates of the year 2004 become paid 18 months after obtaining their diplomas. For this purpose we used the data of investigation of the study "Employment dynamics among university graduates" carried out by Ministry of Vocational Training and Employment and World Bank.

In this paper one proposes through a model probit to identify the **determinants of over-education for the graduates' cohort 2004 obtaining a job 18 months after leaving higher education system (2005)**. For this purpose we used the data survey of the study "Employment dynamics among university graduates" carried out by Tunisian ministry of Vocational Training and Employment and the World Bank.

To **analyze the temporary character** of this phenomenon two methods are used. A **probit model and multiple correspondences analyses** with the help of the results of the second survey carried out with the same sample of graduates 3 years after obtaining the diploma (2007).

This analysis thus presents four sections. Section 1 presents theatrical approaches of over-education. Section 2 presents the data and methodology used. Section 3 highlight the probit estimations results and identifies the principal determinants of the over-education 18 months after obtaining the diploma. The last section analyzes the temporary character of this phenomenon.

Theoretical approaches

According to the job competition theory employment is rationed, the employer chooses the candidate who will quickly join the standard of productivity. Initial training is the principal assets for employment. Nevertheless it does not announce the individual productivity but rather the employability. So there no direct relationship between the education level and the productivity in employment. Higher education levels ensure the capacities of adaptation confirming the formation-skills correlation for a specific employment.

The job competition theory implies the construction of a queue at the head of there is the most graduate individuals. Such hypothesis can explain the development of over-education (Founder (1999)). Given diploma and the length of queue, individuals are brought to extend their waiting until obtaining an adequate employment or to change queue i.e. to postulate for employment less qualified. This change of queue could be the source of the over-education.

The interest of considering the field of study is the identification of hierarchy of the fields of study for each higher educational degree. Job requiring the same skills relatively to distinct level of the ISCED (comparing the artisanal workmen with industrial workmen

(Cahuzac, Lemistre and Ourtau 2000)). According to the formation point of view, the fields of study with higher costs permit to reach more qualified job. The training level and fields of study plays a key role in the classification of an individual in the queue. Dauty, Lemistre and Vincens (2006) confirmed this approach through the analysis of the French education system. The standard of correspondence diploma-socio-professional category cannot neglect the taking into account the fields of study.

Data and methodology

This empirical analysis tries to explain two phenomena. On the one hand identify the individual characteristics influencing the probability of over-education 18 months after obtaining the diploma. In order to analyze the temporary character of over-education, we analyze, in the other hand, the phenomenon persistence and determinants 3 years and half after obtaining the diploma.

The study considers Tunisian higher education graduates cohort 2004. It is realized jointly by the Tunisian Ministry of Vocational Training and Employment and World Bank within. This study presents two surveys. The first is realized at the end of year 2005 beginning 2006 with a sample of 4763 graduates of various levels and fields of study. The second survey is realized at the end of 2007, i.e. 3 years and half after obtaining the diploma, with the same sample of graduates.

In this analysis we consider only graduates with “paid employment" jobs having answered the two interrogations. The sample thus counts 1125 graduates.

The endogenous variable is a binary variable which takes value 1 if the individual is over-educated and 0 if not. It is measured in a normative way by applying professional correspondence diploma-group relationship established by the Tunisian Ministry of Vocational Training and Employment following the example of correspondence suggested by Affichard (1981).

Table N°1: Table of diploma-socio-professional category correspondence

	Legislators and senior officials	Scientific and intellectual profession Professionals	Technicians and associate professionals	Clerks	Service workers and shop and market sales workers	Skilled agricultural and fishery workers	Craft and related trade workers	Plant and machine operators and assemblers	Elementary occupations
Bachelor of technology				over-educated	over-educated	over-educated	over-educated	over-educated	over-educated
Bachelor's Degree			over-educated	over-educated	over-educated	over-educated	over-educated	over-educated	over-educated
Engineer			over-educated	over-educated	over-educated	over-educated	over-educated	over-educated	over-educated
Architect			over-educated	over-educated	over-educated	over-educated	over-educated	over-educated	over-educated
Doctor			over-educated	over-educated	over-educated	over-educated	over-educated	over-educated	over-educated
Primary education teacher			over-educated	over-educated	over-educated	over-educated	over-educated	over-educated	over-educated

Source : « Employment dynamics among university graduates »P93 Ministry of Vocational Training and Employment and World Bank (2009)

Principal over-education determinant are grouped through four axes. The first includes the biographical characteristics (the sex, the marital status, the professional situation of the parents and the way of financing of the studies as an approximation of the familial financial situation). The second axis presents the tertiary education through the diploma, the fields of study, in-company training and the university institution size (as a proxy of the massification phenomenon). It should be noted that we don't consider the architects and the primary education teachers in the econometric analysis.

The last axis joined on one hand the characteristics of obtained job: company size and its nature public or private, type of the obtained contract and sector of activity. We do not consider the sectors "private education" and fishing. In addition we should consider regional unemployment rate to take into account circumstances of the job market.

The comparative analysis of the data investigations (2005 and 2007) (Table N°2) shows that the percentage of graduates touched by the normative over-education dropped by 30.40% to 20.62%. Even after 3 years of experience, the fifth of the graduates are still touched by this phenomenon. This result does not coincide with the over-education temporary character supported by the human capital theory.

The exploration of this change per characteristic shows that this phenomena was reduced in the public sector, thanks to the stability of employment and if a company have more than 200 employees. The characteristics of the university training show that, all things being equal, the over-education persists for all the types of diplomas and of fields of studies.

The next section presents an econometric analysis (probit model) of the over-education probability with both surveys (2005 and 2007). The objective is to confirm the statistical results previously presented.

Table 2: Over-education evolution between 2005 and 2007 according to the studied characteristics

	2005	2007		2005	2007
Normative over-education	**30.40%**	**20.62%**	Construction	0,39%	20,59%
Biographical data			Commerce	0,60%	41,10%
Man	24,37%	19,63%	Hotels and Restoration	0,62%	46,15%
Women	37,17%	21,74%	Transport and Communication	35,71%	28,40%
Not married	30,77%	20,35%	Financial activities	31,25%	36,36%
Father working as legislators or senior officials	27,34%	19,10%	Real estate activities	51,47%	25%
Working mother	25,25%	16,16%	Public Administration	30,43%	21,15%
Public Financial support	31,62%	21,12%	Public education	10,42%	6,84%
Job characteristics			Health and Social work	27,08%	25%
Public sector	**17,20%**	**9,84%**	Social and private collective services	53,70%	44,44%
Contract of adaptation and professional insertion (SIVP1)	37,89%	50,91%	Private education	12%	25%
contract of a undetermined time (CDI)	**13,48%**	**8,30%**	Accommodation and food service activities	NA	26,09%
contract of a predetermined time (CDD)	**30,31%**	**22,94%**	Tertiary education characteristics		
Other contracts	44,06%	50,66%	In-company training	29,96%	20,10%
Less than 10 employees	45,70%	48,75%	Doctor	0%	35,71%
10-49 employees	22,26%	26,90%	Primary education teacher	0%	0%
50_199 employees	24,51%	15,85%	**Bachelor of technology (Baccalauréat+3)**	**32,61%**	**20,22%**
200 employees and more	**30,98%**	**13,57%**	**Bachelor's Degree (Baccalauréat+4)**	**38,30%**	**23,17%**
Not classifiable by economic activity	0%	NA	**Engineer**	**11,64%**	**19,86%**
Agriculture	38,46%	28,13%	**Architect**	**0%**	**0%**
Fishing	100%	0%	**Bachelor of Arts**	**54,55%**	**30%**
Mining and quarrying	0%	33,33%	Education	3,16%	21,05%
Construction materials industries	42,86%	0%	**Humanities and arts**	**38,73%**	**20,42%**
Electricity and mechanical industries	26,87%	16,67%	**Social sciences business and law**	**49,26%**	**19,76%**
Chemical industries	13,33%	0%	Sciences	20%	17,84%
textile clothing and leather	45,24%	31,91%	Industrial engineering & Construction	19,33	25,28%
Another Manufacturing industries	39,44%	29,55%	**Agriculture**	**30%**	**10%**
Electricity production, Gas and Water	0%	0%	Health and welfare	22,22%	14,29%
			Services	42,11%	26,32%

Source : Author calculations

Determinants of Over-education

Three models are estimated using the results of 2005 surveys. The first model (Model A) includes the biographical data to which we add the characteristics of employment for the second model (Model B). The last model (Model C) introduces the various characteristics of the university formation and in particular the diploma and disciplines effect.

The results of estimates are exclusively presented in terms of marginal effects and values between brackets are robust student error.

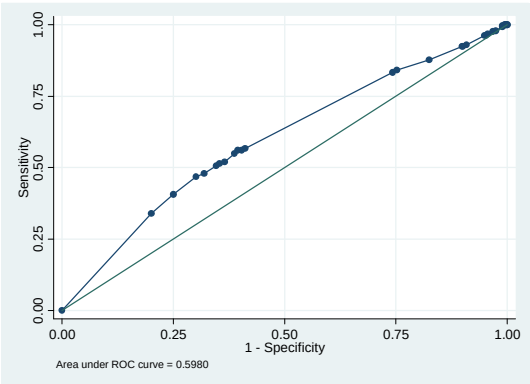
Biographical characteristics

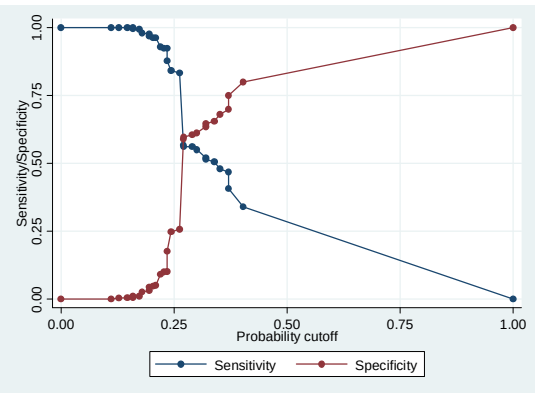
Table 3: **Over-education and biographical characteristics: results of the probit model**

observations	1125
log likelihood	-679.806
Wald Chi2	20.95
Prob	0.0008
Pseudo R^2	0.0187
Sensitivity	0%
Specificity	100%
Correctly classified	69.60%
Roc curve	0.5980
man	**- 12.35%#**
	(0.000)
married	**- 11.61%##**
	(0.021)
Father working as legislators or senior officials	-2.53%
	(0.479)
Working mother	- 6.42%
	(0.205)
Studying State Financial Support	1.92%
	(0.587)
# : significant at 1% level	
## : significant at 5% level	
###: significant at 10% level	

Source : Author calculations

Graph1**: Discriminate power of probit model with biographical data**





Source : Author calculations

The model correctly predicts 69.60% of the cases. But by considering exclusively biographical variables the power of the model's predicted values to discriminate between positive and negative cases is too weak (sensitivity= 0% and specificity =100%).

The estimations results shows that, among the biographical variables, only the sex and the marital status affect negatively and significantly the probability of over-education. Indeed a woman has 12.35% of chance in addition to being over-educated compared to a man. Moreover a married person presents 11.61% of chance in less to be over-educated.

Job characteristics

The characteristics of the first employment are represented by the nature of employment (public or private sector), the job stability (the type of contract) and, finally, the sector of activity. To consider the job market situation, we also introduced regional rate of unemployment. Estimation results are presented in (table 4). Job characteristics analysis shows that regional unemployment rate and the nature of the establishment (public or private) do not have any significant effect on the probability of over-education. Stability of employment on the other hand presents a significant effect. Indeed, obtaining a job with a contract of a predetermined time (CDD) presents 10.59% of chance to being over-educated compared to a contract in (CDI). So the career path presents over-education principal determinants comparing to the other job characteristics.

These two resulted are mainly explained by the fact that 27% of employees with Contract of a predetermined time (CDD) in general public sector and 40% in public education.

In Tunisia the State is the principal employer of the higher education graduates. The entry in the public sector passes imperatively by the national exams based on the qualification what reduces considerably the risk of over-education and guarantee the skills-job adequacy.

Size of the recruiting institution shows that working in an establishment with more than 200 employees represents 8.06% of chance in less to be over-educated. This result confirms the economic theory according to which large companies generally having a better definite qualification structure what lead to weaker risk of over-education.

Sectors of activity shows that sector of commerce and hotel and restoration presents over-education probabilities higher than 50% (respectively 54.45% and 54.67%) compared to the sector of reference i.e. public education. Sectors which present more than 30% of chance to be over-educated compared to public education engage mainly Bachelor of technology and Bachelor’s degree. We can thus advance that more the diploma are abundant on the labor

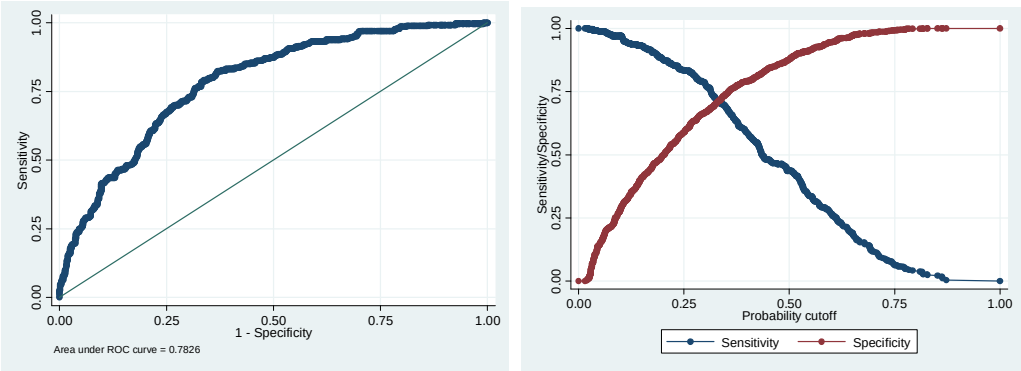
market more the over-education risk is important. This thesis according to which the inflation of the school titles generates their devaluation and increasing consequently the risk of over-education is confirmed in the case of Tunisia. Is the analysis of the diploma effect and discipline of study will be able to affirm this conclusion?

Table 4: **Over-education and job characteristics**

observations		**1107**	
log likelihood	***-543.703***	***Pseudo R²***	***0.2074***
Wald Chi2	***225.97***	***Correctly classified(lstat)***	***74.16%***
Prob	***0.0000***	***Roc curve***	***0.7826***
Sensitivity	***43.70%***	Specificity	***87.73%***
Regional unemployment rate	0.59%	Public sector	-4.29%
	(0.185)		(0.411)
Type of contract		***Company size***	
Contract of adaptation and professional insertion (SIVP1)	4.87%	Less than 10 employees	0.92%
	(0.051)		(0.046)
Contract of a predetermined time (CDD)	**10.59% ##**	**10-49 employees**	**8.06% ##**
	(0.051)		(0.040)
Contract of a undetermined time (CDI)	**Reference**	50_199 employees	5.13%
			(0.043)
Other types	**20.99%#**	200 employees and more	reference
	(0.050)		
sectors of activities: reference public education			
Mining and quarrying	29.76%	**Building**	**37.54% #**
	(0.219)		(0.104)
Construction materials industries	22.21%	**Agriculture**	**38.97% #**
	(0.346)		(0119)
Chemical industries	11.95%	**Transport and Communication**	**39.50% #**
	(0.516)		(0.084)
Electricity production, Gas and Water	22.13%	**Another Manufacturing industries**	**40.33% #**
	(0.236)		(0.095)
Public administration	19.65%	**textile clothing and leather**	**43.98% #**
	(0.123)		(0.104)
Health and Social work	10.41%	**Real estate activities**	**45.45% #**
	(0.076)		(0.083)
Private education	- 8.96%	**Social and private collective services**	**49.94% #**
	(0.100)		(0.079)
Electricity and mechanical industries	**20.22% ##**	**Commerce**	**54.45% #**
	(0.105)		(0.072)
Financial activities	**22.33% ##**	**Hotels and Restoration**	**54.67% #**
	(0.108)		(0.099)
# : significant at 1% level , ## : significant at 5% level, ###: significant at 10% level			

Source : Author calculations

Graph2**: Discriminate power of probit model with job characteristics**



Source: Author calculations

Tertiary education characteristics

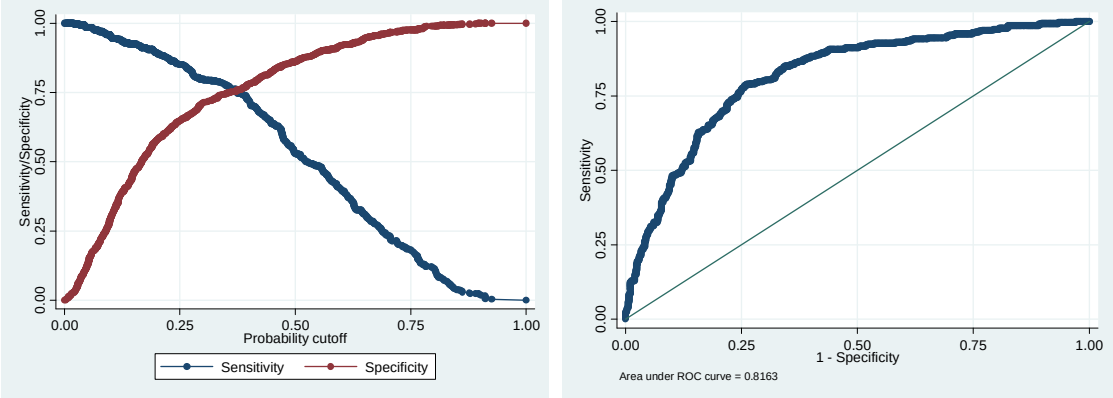
We note that primary education teachers, doctors and architect are dropped.

Table 5: **Over-education and training characteristics**

Observations	1027
Log pseudo likelihood	-502.716
Wald Chi2	248.90
Prob>Chi2	0.0000
Pseudo R²	0.2407
Sensitivity	53.08%
Specificity	86.30%
Correctly classified (lstat)	75.27%
Roc curve	0.8163
In-company training	-0.09%
	(0.942)
Kinds of graduates: reference Bachelor's Degree (Baccalauréat+4)	
Doctor	***NA***
Bachelor of technology (Baccalauréat + 3)	**-15.63% #**
	(0.043)
Engineer	**-27.57% #**
	(0.030)
Bachelor of arts	**-12.06%**
	(0.137)
Fields of study :reference Social sciences, business and law	
Education	**-18.70% ##**
	(0.079)
Humanities and arts	2.08%
	(0.058)
Sciences	**-10.91%##**
	(0.047)
Industrial engineering & Construction	**-12.32% ##**
	(0.048)
Agriculture	5.01%
	(0.217)
Health and welfare	**- 15.04%##**
	(0.64)
Services	5.69%
	(0.130)
# : significant at 1% level? ## : significant at 5% level? ###: significant at 10% level	

Source : Author calculations

Graph3**: Discriminate power of probit model with training characteristics**



Source : Author calculations

The power of the model's predicted values to discriminate between positive and negative cases is quantified by the sensitivity, specificity and the Area under the ROC curve.

The comparison of the three estimated models watches that the explanatory capacity and discriminate capacity improve as we add the explanatory variables relating to the characteristics of employment and the university course. Indeed the compromise between specificity and sensitivity is reached when all the explanatory variables are introduced in the estimation (model C) (model has: sensitivity= 0%, specificity=100%, model C: sensitivity= 53.08%, specificity=86.03%). This improvement is confirmed with the area under the ROC curve witch pass from 0.598 (model A) to 0.8631 (model C) reflecting an excellent discriminatory capacity.

Table 6: **Comparative analysis of explanatory capacity**

	df	AIC	BIC	LR chi2	Prob>Chi2
model A	6	1365.393	1395.546		
model B	30	1185.446	1336.212	227.95 *	0.0000
model C	40	1106.506	1307.528	98.94**	0.0000

*: Assumption : A nested in B **: *: Assumption : B nested in C

Source : Author calculations

The Pseudo R ² of Mc Fadden posts a continual increase as one adds explanatory variables passing from 1.87% for the model A to 24.07% for model C. The logarithm of probability presents the same evolution affirming improvement of the explanatory capacity of the model. LR test consists in considering the model constrained and the not-constrained model to obtain statistics corresponding to the variation of the logarithms of probability which makes it possible to highlight the improvement of the explanatory capacity of the model. In our estimation the log likelihood passed from -679.806 with model A to -502.716 with model C affirming the improvement of the explanatory capacity of the over-education probability.

To analyze the contribution of each characteristic we proceeded to the comparison of the three models in term of explanatory capacity. The econometric tools used with this fact are the likelihood-ratio tests (LRtest) and the AIC and BIC information criteria.

LR test is computed by comparing the log likelihood from each model to that of a precedent model. Similarly for AIC and BIC criteria which refers to difference in model information with and without the variable and coefficient in question.

The hypothesis that job characteristics are simultaneously equal to zero can be rejected at the .01 level (LRX2 = 227.95, $p < 0.01$). Similarly he hypothesis that training characteristics are simultaneously equal to zero can be rejected at the .01 level (LRX2 =98.94, $p < 0.01$).

The LRtest results shows also that job characteristics bring a more important explanatory capacity of the probability of downgrading than training characteristics. All else being equal, the model with the smaller AIC is considered the better fitting model. Moreover the more negative the BIC the better the fit. The difference in the BICs from three models indicates considering all the characteristics are more likely to have generated the observed data.

Table 7: **Wald test of training characteristics**

Polytomique variables	Chi2 (N)	Prob>Chi2
Diploma	29.31	0.0000
Fields of study	15.55	0.0296

Source : Author calculations

According to Wald test results, we can reject the hypothesis that the effects of diploma and fields of study are simultaneously zero.

The analysis of the diploma effect vis-a-vis the over-education risk highlights a certain hierarchy. Become an engineer present 27.57% of chance in less to be over-educated compared to a Bachelor's Degree. A diploma of Bachelor of Arts presents 12.06% of chance in less to be over-educated (knowing that this category accounts for only 0.98% of the graduates)

What draws our attention it is the fact that the Bachelor of technology represent less than 15.63% of probability of to be over-educated compared to a Bachelor's Degree. Two arguments can explain this result. The training of Bachelor of technology in Tunisia it's distinguished mainly by its professionalization. During the university formation, this course imposes in-company trainings what improves its employability and reinforces its adequacy with the labor market needs. Moreover the title of Bachelor of technology is less abundant than the Bachelor's Degree (they represent in our sample of the respective rate of 32.98% and 45.96%).**We can thus advance that the over-education risk is closely dependant on the abundance of the school title on the labor market and on its professionalization.**

These results are confirmed by the over-education probabilities relatively to the fields of reference, social science business and low. The latter is considered by its massification and training into total discordance with the labor market needs.

Unfortunately we cannot conclude about the humanities and arts, agriculture or services fields given they non significant coefficients.

Over-education determinants 3 years after

The analysis of the over-education transitory character is realizable through two stages. The first consists in studying the over-education principal determinants three years after obtaining the diploma. We consider only determinants which changed between the two surveys (2005 and 2007). These determinants are exclusively the job characteristics (Table 6).

Table 6: **Over-education determinants 3 years after obtaining diploma**

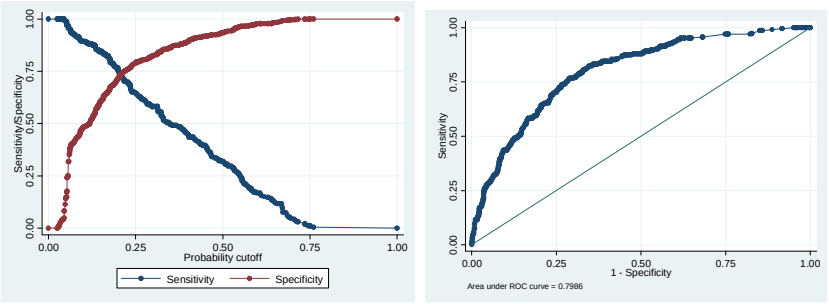
observations	1092	Construction materials industries	NA
log likelihood	-452.142		NA
Wald Chi2	185.41	Electricity and mechanical industries	-5.07%
Prob	0.0000		(0.050)
Pseudo R^2	0.1895	Chemical industries	NA
Sensitivity	31.90%		NA
Specificity	93.60%	textile clothing and leather	10.72%
Correctly classified (lstat)	74.16%		(0.089)
Roc curve	0.7986	Another Manufacturing industries	11.21%
marital situation	-3.74%		(0.090)
	(0.411)	Electricity production, Gas and Water	NA
public sector	-5.05%		NA
	(0.042)	Building	-4.93
Regional unemployment rate	0.045%		(0.059)
	(0.004)	Commerce	8.02%
Type of contract			(0.073)
Contract of adaptation and professional insertion (SIVP1)	**36.87%#**	Hotels and Restoration	10.86%
	(0.084)		(0.103)
contract of a undetermined time (CDI)	Reference	**Transport and Communication**	**17.73% ###**
			(0.076)
contract of a predetermined time (CDD)	**15.08% #**	**Financial activities**	**16.50% ###**
	(0.037)		(0.089)
Other contracts	**32.82%#**	Real estate activities	- 5.92%
	(0.062)		(0.069)
Company size	Reference	Public Administration	9.25%
Less than 10 employees	**14.63% #**		(0.083)
	(0.055)	Health and Social work	0.265%
10-49 employees	4.85%		(0.055)
	(0.049)	Social and private collective services	9.12%
50_199 employees	-4.47%		(0.081)
	(0.032)	**Private education**	**-9.32% ###**
200 employees and more	Reference		(0.055)
		Agribusiness industries	NA
branches of activity	Reference public education		NA
Agriculture	-0.46%	Industries extractives	39.73%
	(0.068)		-355

: significant at 1% level ## : significant at 5% level ###: significant at 10% level

Source : Author calculations

We note that Construction materials industries, Chemical industries, Electricity production, Gas and Water and Agribusiness industries are dropped.

Graph3**: Discriminate power of probit model relative to the second survey data**



Source : Author calculations

Table 7: **Explanatory capacity of polytomique variables**

Polytomic variables	Chi2 (N)	Prob>Chi2
contract type	43.83	0.0000
Company size	14.72	0.0000
Activity sectors	29.98	0.0120

Source : Author calculations

3 years after obtaining the diploma the principal over-education determinant is the job stability. This is confirmed by Wald test (table 7). Indeed between the two surveys majority of the employees with contract of a predetermined time stabilized their employment situation by obtaining a contract of a undetermined time and, simultaneously, change of socio-professional category.

Table N°8**: Correlation transformed variables**

	Over-education 2005	Over-education 2007	Public sector	Type of contract	Sector of activity	Diploma	Company size
Over-education 2005	1	0.036	0.047	0.044	0.043	-0.001	0.024
Over-education 2007	0.036	1	0.26	0.391	0.265	0.044	0.278
Public sector	0.047	0.26	1	0.463	0.782	0.035	0.464
Type of contract	0.044	0.391	0.463	1	0.485	0.048	0.523
Sector of activity	0.043	0.265	0.782	0.485	1	0.05	0.462
Diploma	-0.001	0.044	0.035	0.048	0.05	1	0.072
Company size	0.024	0.278	0.464	0.523	0.462	0.072	1
Dimension	1	2	3	4	5	6	7
Eigenvalue	2.805	1.004	0.991	0.879	0.648	0.457	0.217

Source : Author calculations

The multiple components analysis confirms the results found through the over-education probability estimation 3 years after obtaining the diploma. Indeed the matrix of correlation shows that the stability of employment, the sector of activities and the company size are the principal's over-education determinants 2007. Tertiary education training characteristics formations do not present any significant effect on the over-education probability.

Conclusion

30% of Tunisian higher education graduates can reach an employment only at the price of an over-education situation. This phenomenon takes all its extensity since the graduate leave the higher educational system. He is particularly current among the most abundant graduates (i.e. bachelor degrees and bachelor of technologies). And who's which the fields of study is characterized by a laxest admission policy from explaining its massification. The over-education probabilities define a diplomas hierarchy explained by their abundance and professionalization. Within the framework of Tunisian higher education graduates the theory of competition for employment is checked. Indeed the "Bac +4" is obliged to change queue and become competitors with the "Bac +3" explaining their over-education.

After 3 years of the date of obtaining the diploma over-education touches only the fifth of the graduates. This improvement is explained mainly by the path career. The university formation represented exclusively by the diploma does not present any effect.

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