MYTHS AND FACTS REGARDING THE PORTUGUESE LABOUR MARKET THE TRAGIC FATE OF COLLEGE GRADUATES*

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"As with all things that seem to be right and gain common currency,
this is simply wrong; if it weren't, they wouldn't have become common currency.

Notas para a Recordação do meu Mestre Caeiro
Álvaro de Campos

1. INTRODUCTION

There seems to be a general perception in Portugal that those with higher educational qualifications find it much more difficult to enter a profession. This idea is fed periodically by news of unemployment among graduates and is frequently exaggerated by the associations that represent the professions. Whether either generalisation is extrapolated from a neutral standpoint is open to question. Unemployment among graduates is a relatively unusual situation and the phenomenon tends to attract disproportionate attention in the media (in this case it obeys the law that what makes the news is "man bites dog" and not the opposite). It is also in the interest of graduates represented by corporate organisations to cut back on the numbers of new graduates in order to protect their salary levels.

This article will attempt to show that investment in higher education, counter to the idea spread about by what seems to be common sense, offers an exceptional rate of return in the Portuguese labour market. The aim is to make an accurate assessment of the conditions which govern the decision faced by thousands of families — whether to make an investment in human capital by financing (or not) the opportunity to obtain a higher education qualification.

2. HOW MUCH IS A DEGREE WORTH?

It is very simple to present the basic arithmetic of investment in a higher education course. Once secondary education is over, the youngster (and his or her family) will have to balance the cost of doing a higher education course with the hoped-for benefit that will ensue. Put in other words, the young student will have to compare two distinct professional careers: one that can be started with the existing academic training and one that will be ensured by getting a degree.

In money terms, the decisive element in the cost of this investment corresponds to the total salary which will be foregone during the period of training. In addition, there will be the costs (books and other materials), fees and fares for transport

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Table 1

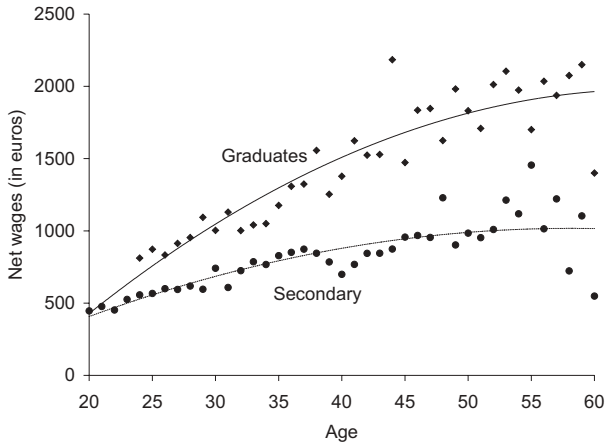
NET WAGES PER AGE GROUP AND LEVEL OF SCHOOLING

	Primary (4 years)	Up to mandatory minimum schooling (9 years)	Secondary completed (12 years)	College degree (16-18 years)
15-19	368	389	406	
20-29	462	484	554	893
30-39	476	645	778	1187
40-49	511	732	902	1684
50-59	563	809	1100	1915
60-69	543	917	967	1450

Source: "Employment Survey 2003", 2nd quarter. Net wages in euros.

Chart 1

EARNINGS PROFILE OVER THE WORKING LIFE CYCLE



when this is justified by the need to get an academic qualification.

The desired return in financial terms corresponds to the accumulation of earned income provided by higher education over the normal span of a professional working life.

This study is based on a simulation of the conditions underlying a decision made by someone finishing secondary education in the summer of 2003 and thinking of going on to further education. Material for this work was used from the information contained in the individual records of the household employment survey made during the second quarter of 2003.

Table 1 summarises the information from the sample relating to the average value of net salaries per age group and level of schooling for workers in salaried employment interviewed by the National Statistics Institute (around 10,000 workers). This Table illustrates clearly the normal pattern of wage growth over the working life cycle. Economists who specialise in the labour market associate this with the investment in human capital in the workplace (professional experience), along with the return on investment in formal education[(1)].

(1) In a regression equation where there is control over the observed characteristics of workers, it is estimated that a graduate receives on average a salary 80.2% higher than a worker with only secondary education.

It would be useful to hold on to this idea, i.e. that there would seem to be a significant boost to salary if you are a graduate, compared with workers who have only completed their secondary education. The contrast between the earnings of these two classes of worker will be the basis for the calculation of the costs of and the benefits to be gained from getting a degree. It is implicit that graduates if they didn't have a degree would be earning the salaries of workers with only their secondary education and *vice versa*. But it is postulated that the current age profile for salaries can be extrapolated for the future pattern of earnings.

Chart 1 shows the salary profile of the two groups of workers over an active working life cycle that runs from age 20 to age 60. Taken that workers receive 14 salary payments per year and that a graduate course lasts 4 years, the salary loss over that period will be € 26,625. Over and against this, the accumulated value (between age 24 and age 60) deriving from the extra salary they receive (salary differential) is around € 330,300. What matters also to the worker, of course, is whether this income is received in the present or in the future. Calculating the net value of the investment means that we have to find a discount rate for this. For a real discount rate of 2 per cent, the up-dated value of the cost (C) and the benefit (B) from getting a degree can be calculated as follows:

$$C = \sum_{age=20}^{23} \frac{W_{age}^{S}}{(1+0.02)^{age-20}}$$

$$B = \sum_{age=24}^{60} \frac{\left(W_{age}^{L} - W_{age}^{S}\right)}{(1+0.02)^{age-20}}$$

where W^S is the net salary of a worker with secondary education and W^L is the net salary of a graduate.

We can thus obtain a present-day value for an investment cost of € 25,823 and this is a return of € 201,286, with a net benefit of € 175,462. Another way of expressing this result is to state that the investment in a degree guarantees a real rate of return of 15%, which is truly exceptional.

3. COULD THIS VALUE BE EXAGGERATED?

There are a number of reasons for thinking that a simple arithmetic exercise could exaggerate the monetary value of a degree out of all proportion. For a start, we have left out of the equation the expenditure related to academic materials and fees. These expenses are a cost, but they are in fact only a small fraction of the investment cost and an even less significant slice of the benefit stemming from the investment. Moreover, no account was made of the accommodation expenses run up by the families of students in higher education. These costs should only be included, however, if workers with no more than secondary education do not generate such costs, which is far from guaranteed. Costs with food and drink should not, logically, be considered unless they are seen as a benefit, given the circumstances of students in higher education benefiting from the lower prices in canteens subsidised by the state. There are also the psychological effects incurred by getting a degree. These costs, nevertheless, would have to be contrasted with the psychological wear and tear on workers who enter the labour market earlier.

There are in fact three lines of arguments that tend to counter the validity of the exercise. In the first case there is the fact that part of the differential in wages can be attributed to the individual's inherent skills (or those acquired outside of the school environment) and these are associated with a higher academic attainment (ease in learning, self-discipline, motivation etc.). Research based on monitoring siblings and twins (even perfectly alike) who have different schooling have not validated this hypothesis(2).

In the second case, the conjecture is that getting a higher education diploma does not add anything to the productive skills of the students. The education system simply indicates for employers those workers who have greater skills, those that learn more easily and that therefore will be more productive. In this case it will still be worth while from a private viewpoint to invest in acquiring signs ("sheepskin") that will be recognised in the labour market.

In the third case, maybe it is not legitimate to presume that workers with a degree would get the salaries associated with non-graduates, should they have started their working lives earlier. It is not clear, however, what exact bias would be visible since there is not enough comparable information. Would a skilled worker become successful if he or she was a lawyer? Would a surgeon do an administrative assistant's job competently? Maybe workers determine their professional options (if they choose for themselves) as a function of the performance expected in their profession(3). Luckily, those empirical studies that have sought to determine the impact of auto-selection in the choice of profession have concluded that this effect is very slight.

4. IS THE VALUE TOO LOW?

It is also possible to postulate that the estimate of monetary benefits from getting a degree is too low. In the first place, we have only considered the income difference up to age 60. Graduates, however, are likely to benefit from earnings above those of workers with secondary education beyond the age of 60 (both in terms of income and pension)(4). In the second place, the calculations

(2) An identical conclusion has been reached on the basis of study of the changes exogenous to levels of schooling (for example, in compulsory schooling) and also from estimates using instrumental variables (Card, 1999).

(3) It might even be that the earnings profile of graduates reflects in part the greater investment in human capital over the span of a professional career. There is, in fact, some empirical evidence to support the notion of a greater mesh between schooling and in-company professional training. This possibility change the view of what makes up the investment in human capital but it does not run counter to the overall idea of benefit to be gained from an investment in academic training.

did not include other forms of income, only salary. It is also likely that graduates will keep a greater income differential through other ways of being paid. In the third place, we must bear in mind that the comparison was only made with between salaried workers. The self-employed did not come into the frame, through lack of information about their income. It could well be that graduates who are self-employed earn more than those who are salaried.

Looking at the possibility of there being an under-estimate or an over-estimate of the return on the investment in higher education, it seems clear that the figure put forward is closer to the lower end of the variation interval than the higher.

5. OTHER ADVANTAGES

Other advantages from getting a degree could be mentioned here. The workplace for graduates is usually more pleasant and amenable and graduates are less likely to be subject to changes in work-flow stemming from production technology. Apart from this, they can be more flexible in terms of their working day.

Better academic training also increases the productivity associated with the household. In particular, there is the effect of human capital quality on the investment in children. There is no shortage of information on the importance of knowledge transfer between generations in the accumulation of human capital.

Graduates are also favoured by more job security. This observation is clear from looking at Table 2, which shows that it is unlikely to find a graduate out of work.

It is in fact 1.74 times more frequent to see a worker with secondary schooling out of work than a worker with further education. When the comparison is made with young people who go out to work at the minimum school leaving age, they are three times as likely to be out of the labour force [at some time in their working life] as the graduate.

In terms of fixed-term contracts and part-time work, the differences between graduates and those who only have secondary education are not significant. For both groups, the incidence is clearly lower than for those workers with even fewer academic qualifications.

Table 2

EMPLOYMENT STABILITY

Table of relative risks

	Primary (4 years)	Up to mandatory minimum schooling (9 years)	Secondary completed (12 years)	College degree (16-18 years)
Unemployment	3.02	3.00	1.74	1.00
Fixed-term contract	2.24	1.43	0.98	1.00
Part-time	3.76	1.30	1.05	1.00

Source: "Employment Survey 2003", 2nd quarter.

Note: Values were obtained on the basis of a logit regression which also includes binary variables for age, nationality, professional training and gender. A total of 15470 variations was used.

Once formal education is considered as an investment in human capital, it is not surprising that there are considerably more offers of work for graduates than for non-graduates. Being inactive is clearly less frequent among graduates and it is much more common to find a graduate with a second income (see Table 3). There is a high level of graduates in public administration and this helps to explain the lower job rotation and the fewer number of hours worked among those with further education (Table 4).

6. HIGHER EDUCATION COURSE ARE NOT HOMOGENEOUS

The Portuguese education system offers a wide range of training at higher education level. The labour market, of course, does not give equal value to different educational areas. Table 5 shows the average (gross) earnings of 100,000 workers, divided according to type of further education, based on the individual records of the October 1999 Staffing Levels.

The technology areas account for 7 out of the 10 best paid groups, and graduates from these groups get a better reception in the private sector. They outperform the courses in humanities and

(4) There is also the point that graduates can expect to live longer.

Table 3

LABOUR SUPPLY

Table of relative risks

	Primary (4 years)	Up to mandatory minimum schooling (9 years)	Secondary completed (12 years)	College degree (16-18 years)
Inactivity	5.71	4.07	3.67	1.00
Second job	0.66	0.30	0.32	1.00
Public Administration	0.07	0.16	0.21	1.00

Source: "Employment Survey 2003", 2nd quarter.

Note: Values were obtained on the basis of a logit regression which also includes binary variables for age, nationality, professional training and gender. A total of 15470 variations was used.

Table 4

JOB TURNOVER AND HOURS OF WORK

	Primary (4 years)	Up to mandatory minimum schooling (9 years)	Secondary completed (12 years)	College degree (16-18 years)
Jobs (number)	3.17	2.85	2.64	2.35
Hours worked (weekly)	40.17	40.38	39.53	37.19
Hours spent in second job (weekly)	13.70	13.80	15.70	10.60

Source: "Employment Survey 2003", 2nd quarter. Net wages in euros.

social sciences (with the exception of economics and the law)[5].

It is important, however, to underline the fact that this list does not cover workers in public administration. This area takes in a significant number of graduates, amounting to nearly 50%.

There is also no distinction which can be drawn between along the lines of state and private education establishments. There is, however, a well-known link between the growth of graduates from private institutions and an increase in the variation in earnings.

In 2001, INOFOR (The Institute for Training Innovation) carried out a survey of the graduate employment situation for 1994/95, five years after they graduated. The information fits well with what comes from the Staffing Levels (see Table 6). Above all, there is confirmation of a significantly larger salary for those in technology (especially those with a degree in Computer Studies). When assessing salaries, it is interesting to note that there is an increase according to the final grades awarded (almost 3.8% for each additional point). This indicates a greater investment in human capital (or a clear indication that employers see greater potential productivity) and there is a beneficial effect stemming from the academic level of the parents on the salaries of their children, suggesting the transmission of human capital through the generations[6].

7. THE COLLEGE WAGE PREMIUM IN AN INTERNATIONAL CONTEXT

Technological changes over the past 20 years have led to an increasing demand for skilled workers. This caught the Portuguese labour market by surprise and there has been a shortage of available skilled manpower. It was probably this shortage that led to a significant increase in the extra income for workers with a higher education course up to the mid-90s (Cardoso, 1998 and Machado and Mata, 2001). There would seem to have been a persistently wide gap during that period between workers with and without a degree.

A number of studies have established comparisons between salary differentials at international level. They are not substantially different from the conclusion that the Portuguese market unusually

(5) Looking only at young workers does not invalidate the findings presented in the list.

(6) There is a penalty attached to course supplied by Polytechnics over Universities (almost 23% in salary terms), though this may be partially explained by the fact that Polytechnic courses tend to be shorter.

(7) See OECD, 2003 and Martins and Pereira, 2003.

Table 5

AVERAGE EARNINGS BY TYPE OF DEGREE

Subject	Numbers	Income average (escudos	Numbers	Income average (escudos
	Total sample		Under 35 years of age	
Engineering (energy); power systems; energy; production technology and energy	4 042	529 386	1 515	395 265
Electronic engineering and telecommunications; aeronautics; aerospace	1 913	518 926	982	411 980
Dentistry/medicine	1 108	505 903	172	404 481
Mechanical engineering; electro-mechanics; transport engineering; naval engineering	4 007	473 143	1 649	334 340
Chemical engineering; physics; applied physics (technology); biotechnology; biophysics; polymer biology; engineering for ceramics and glass; biophysical planning	2 234	452 786	1 082	326 073
Civil engineering; project engineering and project management; environmental engineering; water resources engineering; geological engineering; materials engineering; natural resources engineering	5 352	446 707	2 437	312 073
Economics, finance, economics for business and applied mathematics for economics and management	10 426	437 734	5 833	319 210
Mine engineering; metallurgy and metalo-mechanics	351	429 751	176	295 959
Law	3 893	412 929	1 753	279 046
Computer technology; systems engineering and IT; automation and control; computation; information systems	2 070	401 481	1 734	377 069
Physics; ;chemistry; physical chemistry; industrial chemistry; Physics and technology; biochemistry	511	386 108	287	284 562
Mathematics and statistics	1 479	383 381	1 067	342 136
Psychology	1 288	380 930	725	253 941
Accountancy, company organisation and management	13 760	366 704	9 790	299 806
Pharmaceutical science	1 963	366 248	1 111	321 282
Production engineering and industrial maintenance; industrial management and engineering	533	354 861	383	301 863
Veterinary science	199	354 598	89	296 689
Biology	402	344 172	245	288 692
Agricultural engineering for food production; agrarian science; nutrition; engineering for foodstuff; horticultural engineering; oenology; animal studies; zoology	1 374	340 873	749	264 615
History and philosophy	1 508	339 361	542	256 097
IT of management; technologies for management	1 402	338 912	1 237	324 427
Management of agricultural enterprises; agro-industrial engineering	59	334 508	41	317 077
Art (,painting, ,sculpture, drawing)	98	325 887	52	231 600
Forestry; forest production; tree science	46	325 600	29	234 662
Architecture and town planning	785	324 861	395	235 888
Other non-specific degrees	29 023	323 956	18 845	258 554
Others (paper; ;textiles; garments; geographical engineering)	386	323 676	263	284 019
Geophysics	216	319 440	129	264 378
Public administration; human resource management; management of works of art	552	312 200	408	273 377
Dramatic arts (dancing, singing, theatre, cinema, photography, video, music)	85	311 278	47	236 406
Modern languages and literature/classical languages and literature and Portuguese culture; translation and interpreting; translation techniques and comparative culture; comparative literature; literary sciences	2 112	310 398	1 024	233 725
Sport, physical education/ergonomics	250	299 504	160	253 851
Teaching (languages, science, etc)	451	288 920	267	228 908
Marketing, publicity	677	285 320	601	264 052
Social communication, information, journalism and media studies	1 148	284 881	965	260 518
Social sciences; sociology; anthropology; politics; political science; social service; applied social research religion; theology; humanities	2 230	283 631	1 268	229 978
Urban and regional planning; hotel management and tourism; social management and development	258	267 633	204	232 762
Public relation; secretarial and administrative studies	658	255 912	534	241 313
International relations; cooperation and European studies	879	247 548	800	233 904
Decorative art and design	260	241 196	207	219 949
Special education and rehabilitation	67	180 625	45	162 402

Source: *Quadros de Pessoal*, 1999. full time dependent workers.

Table 6

WAGE DETERMINANTS

Variables	Coefficient	Deviation from the norm
Gender (male=1)	0.166	0.009
Age (in years)	0.010	0.001
Average final mark at graduation	0.037	0.003
Father's education (degree=1)	0.110	0.012
Education system		
University	0.117	0.019
Polytechnic	-0.090	0.019
Other		
Category of work (part-time=1)	-0.508	0.029
Type of contract		
With tenure	0.130	0.032
Term contract	0.022	0.033
Free-lance	-0.032	0.044
Occasional	0.125	0.133
Other		
Public sector	0.142	0.011
Region		
North	0.026	0.036
Centre	-0.014	0.037
Lisbon and Tagus Valley	0.119	0.036
Alentejo	0.046	0.041
Algarve	0.020	0.043
Azores	-0.037	0.048
Madeira		
Course area		
Computers	0.187	0.062
Engineering	0.149	0.059
Architecture and construction	0.092	0.065
Mathematic and Statistics	0.092	0.061
Management	0.059	0.059
Health	0.051	0.063
Veterinary studies	0.046	0.092
Law	0.045	0.062
Social services	0.039	0.076
Teaching	0.023	0.060
Social sciences	0.021	0.060
Manufacturing industries	0.011	0.067
Physical sciences	-0.037	0.064
Humanities	-0.077	0.060
Life sciences	-0.095	0.066
Agriculture, forestry and fishing	-0.096	0.065
Media and journalism	-0.102	0.072
Art	-0.111	0.062
Personal services	-0.172	0.062
Transport		
Numbers	8012	
Likelihood log	-14621.38	

Not: Grouped regression model (generalized gamma distribution).
The model also includes 17 sector dummies.

Table 7

COLLEGE WAGE PREMIUM

Country	As a percentage
Portugal	63.1
Luxemburg	40.6
Austria	31.7
Ireland	31.5
Finland	26.0
Spain	25.4
Belgium	24.5
Greece	24.5
France	24.4
Italy	22.9
The Netherlands	21.7
Germany	20.7
United Kingdom	20.3
Denmark	19.2

Source: European panel of households (2000).
These estimates were obtained from the regression equation logarithms for salaries for the countries mentioned.

high differentials (see Table 7)[7]. The figure is in fact the highest in the EU. There is a huge imbalance between skills sought after by employers and those available in the labour market. This is because there is such a big difference between the number of graduates in Portugal and the remainder of the EU and it will take several decades for this skill shortage to be corrected.

8. CONCLUSIONS

An attempt was made in this work to analyse more deeply the private decision-making process that leads to an investment in higher education. The conclusion is that there is an exceptionally high monetary benefit to be expected. An investment of around € 25,000 can lead to accumulated earning gains of € 200,000. The estimate of the real rate of return (15%) is clearly greater than any other form of financial investment. Given that it is not possible to use human capital as collateral for the necessary finance, this market is incomplete. This would justify state intervention to create mechanisms allowing for loans to be made available to students on higher education courses.

Investment in education also generates significant social benefits through the positive external effects generated. An economy with a better-trained workforce is more productive. According to a recent survey carried out by the OECD, the academic qualification deficit in Portugal probably accounts for an annual shortfall amounting to 1.2% of GDP. If there are skilled people at your

workplace, the productivity tends to rise (along with your salary) given that there are social benefits to in-company training (Acemoglu and Angrist, 2000; Martins 2003).

All this is not to say that new graduates are not at this point in time facing difficulties in getting work in an economic recession with budget constraints. But this is a temporary phase which does not disprove the structural advantages associated with having a higher education course. The advantages remain even in an unfavourable economic climate. Above all, graduates still have a better chance of getting a suitable job when compared with those young people who detain fewer academic qualifications.

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