Is the decrease of fertility a consequence of the postponement of the Entrance in the labour market?

Rebelo dos Santos, José, *Escola Superior de Ciências Empresariais do Instituto Politécnico de Setúbal, Departamento de Comportamento Organizacional e Gestão de Recursos Humanos*
Campus do IPS, Estefanilha,2914-503 Setúbal, Portugal, E-mail: jrebelosantos@netvisao.pt
Mendes, Maria Filomena, *Universidade de Évora, Departamento de Sociologia, Largo dos Colegiais, 2*
7000-803 Évora, Portugal, E-mail: mmendes@uevora.pt

Abstract

As the postponement in the age of entrance into the labour market and the fertility decline in Portugal are a primary concern in Society it is important to understand the patterns associated with this issue.
Data from the Portuguese Labour Force Survey (LFS) - data source: National Statistical Institute - from 1998 to 2004 was utilised in order to study the evolution of the entrance age into the labour market and the relationships between entrance age, sex and education level.
The multinomial logit model evidenced that being a woman, being younger or having a higher qualification implied a later entrance age into the labour market, while being a man, being older or having lower qualifications were involved in an earlier entrance into the labour market.

Keywords: age of entrance, labour market, fertility, multinomial logit

Introduction

In this study, it was first analysed the relationship between entrance age into the labour market and sex, age and educational level. Next, it was described the relationship between the late entrance and the fertility decline in Portugal. To estimate the age of entrance in the labour market it was utilised data from the Portuguese Labour Force Survey (National Statistical Institute) from 1998 to 2004 and a multinomial logit model.

1. Evolution of the age of entrance into the labour market

The recent literature concerning the entry of young people into the labour market focuses empirically mainly on the differences between sex and educational level and few studies consider the variations of the age of entrance into the labour market according to the different groups of ages. In Portugal, studies on the relationship between educational levels and rates of participation in the labour market showed that higher qualification implied more chances of participation (Dias and Mata, 1997) although the entrance into the labour market happens mainly when people are aged from 20 to 29 years (Santos and Mendes, 2007). The rate of participation of the female was quite lower than the rate of participation of the male and the female entrance into the labour market happened at older ages (Dias and Mata, *op. cit.*).

1.1. Descriptive statistics

Table 1 provides the descriptive statistics concerning the age of entrance into the labour market.

Table 1 – Mean age, median age and modal age of entrance into the labour market (years)

	Mean	Median	Mode
1998 (4th trimester)	17,03	16	14
2000 (4th trimester)	17,23	16	14
2002 (4th trimester)	17,09	16	14
2004 (4th trimester)	17,54	17	14

Source: INE, data from LFS 1998, 2000, 2002, 2004

In 1998, the median age of the entrance in the labour market was 16 years and the median 17, 03 years. In 2004, the median age was 17 years and the average age 17, 54 years. This analysis showed that the age of entrance slightly increased every year. There was a substantial decrease of the percentage of active population in the group aged from 15 to 19 years, and a lower decrease of that percentage in the group aged from 20 to 24 years, which illustrate a delayed entry of young people into the labour market (table 2).

Table 2 – Active population (%) by group of ages (years)

	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64

1998 (4th trim.)	23,3	60,2	75,3	72,6	67,2	64,7	60,2	49,9	36,3	20,5
2000 (4th trim.)	23,4	59,9	76,4	74,0	71,4	64,9	59,5	50,8	36,9	22,1
2002 (4th trim.)	22,4	63,0	79,0	75,5	71,0	68,1	63,3	53,3	39,4	22,3
2004(4th trim.)	17,8	59,2	79,1	79,7	73,9	70,7	65,4	57,4	42,3	21,8

Source: INE, data from LFS 1998, 2000, 2002, 2004

In all the other groups there was an increase in the percentage of active population. The higher increase was observed in the groups aged from 50 to 54 and from 30 to 34 years. In Table 3 are expressed the percentages of students in each age group. There is evident a substantial increase in that percentages in the groups aged from 15-19 (68,4% to 75,4%) and from 20-24 years (25,5 to 33,6). The increment was quite lower (5,1% to 6,6%) in the group aged 25-29 years. This means that the youngest continued their studies until older ages.
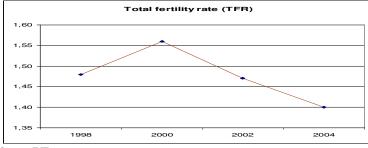
Table 3 - Percentages of students in the different age groups

	15-19	**20-24**	**25-29**	**30-34**
1998 (4th trim.)	68,4	25,5	5,1	0,5
2000 (4th trim.)	67,6	29,0	6,0	0,5
2002 (4th trim.)	69,6	27,1	5,3	0,7
2004 (4th trim.)	75,4	33,6	6,6	0,5

Source: INE, data from LFS 1998, 2000, 2002, 2004

Comparing data from Tables 1 and 2 and Graphic 1 we verified that in the years where the mean age of entrance increased - resulting in a less significant level of participation in the labour market - there was a decrease in the total fertility rate (with exception for the case of 2000). This year has been very atypical in the Portuguese fertility context. The increment in the TFR observed in 2000 could be related with the attraction experienced by parents relatively to the number 2000 (and the beginning of the new century) when they decided the timing of childbearing.

Graphic 1 – Evolution of the total fertility rate (TFR) in Portugal from 1998 till 2004

Source: INE

1.2. Multinomial logit

In order to study the relationships between the evolution of the age of entrance into the labour market and the age groups, sex and educational level, we utilised a logit multinomial analysis. In Table 4 are presented the variables utilised.

Table 4 – Means of the selected variables used in Multinomial logit

variables	Description	Categories
Ieq3	Sex	1. Male 2. Female
Grupinser	Age Group of Entrance in the Labour Market	1. inst up to 14 2. inst 15-19 3. inst 20-24 4. inst 25-29 5. inst 30 to 34 6. inst 35 to 39 7. inst 40 and over

			1. 15-19 years old
Grupoetario	Age Group		1. 15-19 years old 2. 20 - 24 3. 25 - 29 4. 30 - 34 5. 35 - 39 6. 40 - 44 7. 45 - 49 8. 50 - 54 9. 55 - 59 10. 60 - 64
Instrnivel	Level of Education		1. less than elementary 2. elementary education 3. secondary education 4. tertiary education
dependent variable	**Description**	**Categories**	
Grupinser	Age Group of entrance	7 categories	
independent variables	**Description**	**Categories**	
Female	Female	Female=1 if ieq=2, female=0 others	
Male	Male	Male =1 if ieq3=1,male =0 others	
age15-19	15-19 years old	Age 15 to19 =1 if grupoetario =1, age 15 to 19 = 0 others	
age20-24	20-24 years old	Age 20 to 24 =1 if grupoetario =2, age 20 to 24 = 0 others	
age25-29	25-29 years old	Age 25 to 29 =1 if grupoetario =3, age 25 to 29 = 0 others	
age30-34	30-34 years old	Age 30 to 34 =1 se grupoetario =4, age 30 to 34 = 0 others	
age35-39	35-39 years old	Age 35 to 39 =1 se grupoetario =5, age 35 to 39 = 0 others	
age40-44	40-44 years old	Age 40 to 44 =1 se grupoetario =6, age 40 to 44 = 0 others	
age45-49	45-49 years old	Age 45 to 49 =1 se grupoetario =7, age 45 to 49 = 0 others	
age50-54	50-54 years old	Age 50 to 54 =1 se grupoetario =8, age 50 to 54 = 0 others	
age55-59	55-59 years old	Age 55 to 59 =1 se grupoetario =9, age 55 to 59 = 0 others	
age60-64	60-64 years old	Age 60 to 64 =1 se grupoetario =10, age 60 to 64 = 0 others	
Seminstr	Less than elementary	seminstr=1 if instrnivel=1 seminstr=0 others	
Instrbas	Elementary	instrbas=1 se instrnivel=2, instrbas=0 others	
Instrsec	Secondary	instrsec=1 se instrnivel=3, instrsec =0 others	
Instrsup	Tertiary	instrsup=1 se instrnivel=4, instrsup=0 others	

The categories used as base outcomes were: concerning the dependent variable, the category 1 (up to the age of 14). In the case of the independent variables: in what concerns the variable "age group", the category 10 (the 60-64 years old); and the category 4 (persons without any educational level) for "educational level" and the category male for "sex". The models showed significance (Table 5), presenting not significant values only in the cases of the variables that were excluded in Table 6.

Table 5 – Estimated Results (1998-2004)

	1998	**2000**	**2002**	**2004**
observations	31477	18901	18566	21269
Log Likelihood ratio	-29492,234	-21250.642	-20216,802	-23702,755
LR chi2	(78) 13031,91	(78) 9678,64	(78) 9548,27	(78) 11088,11
Prob > chi2	0,0000	0,0000	0,0000	0,0000
Pseudo R2	0,1810	0,1855	0,1910	0,1896

Source: INE, data from LFS 1998, 2000, 2002, 2004; Note: All variables are dummies, except "Grupinser"

The results can be summarized as follows: the age of entrance was, in general, later for females; persons with secondary and higher education levels entered, mainly, when aged from 25-35 years. The entrances more early occurred especially in male's case that, in the moment of the inquiry, had between 35 and 49 years old.

Table 6 – Logit - Age of entrance into the labour market, by age group, sex and educational level

Grupinser (Age Group of Entrance)	Independent variables	RRR1998	RRR2000	RRR2002	RRR2004
2 (15-19)	age15-19	11.20404	24.56862	31.27961	35.58731
2 (15-19)	age20-24	1.884252	10.32792	14.45849	22.42344
2 (15-19)	age30-34	.6932585	3.894915	4.089633	5.021401
2 (15-19)	age35-39	.6488141	3.454199	3.500308	3.495164
2 (15-19)	age40-44	.4396577	2.179998	2.858849	3.342867
2 (15-19)	age45-49	.4335054	1.946375	1.824333	1.879027
2 (15-19)	age50-54	.5110925	1.37777	1.768742	1.600284

2 (15-19)	**age55-59**	.6943375	1.447779	1.233261	1.288531
2 (15-19)	**Female**	2.450243	1.220336	1.163481	1.194644
2 (15-19)	**tertiary education**	6.63244	19.49405	15.37659	16.11067
2 (15-19)	**secondary education**	10.4339	15.75912	10.90878	12.2597
3 (20-24)	**age20-24**	8.320729	13.42397	20.54334	23.7503
3 (20-24)	**age25-29**	5.909937	6.058392	8.262119	8.64275
3 (20-24)	**age30-34**	5.357311	4.094558	3.70186	3.874705
3 (20-24)	**age35-39**	4.475555	3.118894	3.764042	3.368265
3 (20-24)	**age40-44**	2.941589	2.399196	3.377368	3.187563
3 (20-24)	**age45-49**	3.171572	1.993571	2.372549	2.132731
3 (20-24)	**age50-54**	2.443857	2.018817	2.287049	1.868291
3 (20-24)	**age55-59**	1.907461	1.959879	2.023049	1.483726
3 (20-24)	**Female**	2.288624	2.048803	1.876107	1.71808
3 (20-24)	**tertiary education**	260.0046	290.5693	274.0443	148.4128
3 (20-24)	**secondary education**	114.2221	74.72818	67.6913	33.84669
3 (20-24)	**elementary education**	3.948603	3.350007	2.948226	1.679475
4 (25-29)	**age25-29**	3.361504	3.523101	3.25679	3.901113
4 (25-29)	**age30-34**	3.016863	2.926989	2.162893	2.640775
4 (25-29)	**age35-39**	2.801518	2.619103	1.862497	1.77352
4 (25-29)	**age40-44**	1.489127	1.494082	1.608889	2.114201
4 (25-29)	**Female**	2.576331	2.25102	2.436635	1.800653
4 (25-29)	**tertiary education**	364.4852	534.3868	448.094	212.9646
4 (25-29)	**secondary education**	83.26218	58.97752	46.09533	18.15018
5 (30-34)	**Female**	7.059765	6.726109	6.407277	4.322743
5 (30-34)	**tertiary education**	83.00601	216.6682	114.8431	91.7766
5 (30-34)	**secondary education**	33.92508	37.88794	22.66319	13.84554
5 (30-34)	**elementary education**	3.228649	5.354673	2.517049	2.418828
6 (35-39)	**Female**	24.28451	11.67763	16.67852	9.74077
6 (35-39)	**tertiary education**	41.3503	34.15193	16.13819	14.58973
6 (35-39)	**secondary education**	17.51219	7.114673	20.26054	4.331104
7 (40+)	**age40-44**	.2051166	.0815604	.3400376	.4699622
7 (40+)	**Female**	51.91474	86.99355	41.72085	73.7059
7 (40+)	**elementary education**	3.0648	2.887524	2.045342	2.323472

Source: INE, data from LFS 1998, 2000, 2002, 2004

The logit model showed that being a woman, being younger or having a higher qualification implied a later entrance into the labour market. On the other hand, being a man, being older or having lower education implied an earlier entrance into the labour market.

Conclusions
The results revealed the postponement of the age of entry in the labour market due to the enlargement of the lifetime period of education and probably, to the difficulty of getting a job. However there is no scientific information to support the later statement. The decrease of the total fertility rate that has been simultaneously verified, placing in risk the future replacement of the generations, can be associated to the referred postponement. This research is still in progress, so we expect to have soon some consistent findings that can tell us more about that association, specifically between the postponement of motherhood and first job participation.

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