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# ***Great expectations***

## ***The unintended consequences of educational choices***

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### Abstract

Human capital is invariably found to be an important explanatory variable of various proxies of well being (WB), i.e. income, happiness, job and life satisfaction, health status. Nevertheless, to date few systematic efforts have been made to explain its various and interconnected functions. The *U-shaped* age-SWB relation found in many empirical studies suggest that investigating the pattern of different measures of WB over people's life cycle may reveal important information and provide useful insights about the main mechanisms connecting human capital and WB. In this paper I contend that there are four of such links. First, human capital improves the skills in decision making in different life domains. Second, it improves the skills and knowledge in doing things and enjoying life. Third, human capital shapes our identity/personality traits and, fourth, by doing so, it fuels our aspirations in different life domains. The first two effects can be expected to improve people's performance and subjective well being. Building on Ferrante (2009), more ambiguous is the impact of human capital through the joint action of people's identity and aspirations. In this paper, I explore data drawn from the Survey on Household Income and Wealth (SHIW) conducted by the Bank of Italy (2008), containing rich information on people's socioeconomic and educational background, educational and skill mismatch in the workplace and various measures of WB such as income, happiness, job satisfaction and health status. The tentative explanations of my empirical findings are: (a) people experience large mismatches in aspirations/expectations early in adult life; (d) the latter mismatches depend on education and are largely confined to the labour market; (c) the curvature of the U-shaped age-happiness relationship depends on the level of education. The suggested interpretation of these results is that education affects both people's expectations and the way they react to unfulfilled aspirations.

## 1. Introduction

Systematic empirical evidence shows that the age-happiness and age-life satisfaction relationships are *U-shaped* (Easterlin, 2006; Blanchflower et al. 2007) and that the latter curvature may depend on people's education (Ferrante, 2009): happiness/life satisfaction starts to decline early in adult life, more rapidly for more educated people, and it reaches a minimum between 40 and 50 years. Why people experience a substantial drop in their well being right at the beginning of adult life and why the size of this effect depends on education? What determines the recovery process?

Although education is invariably found to be an important explanatory variable of various proxies of well being, i.e. income, health status, happiness, job and life satisfaction, and educational choices the most important source of regret in life (Rose and Summerville, 2005), to date few systematic efforts have been made to explain its various and interconnected functions. From an empirical viewpoint, the connection between education and WB is somewhat vague, and it has manifold facets, of which education is the main one: "the educational tracking of persons leads to persistent differences in well-being" (Easterlin, 2001 p. 481).

A suggested explanation of the initial drop in well being is that (a) people's well being depends strongly on the comparison between *decision and experienced utility* and that (b) people formulate systematically biased predictions about their socioeconomic opportunities (Ferrante, 2009)<sup>1</sup> which materialise as such at the beginning of their adult life. Conjectures about the formation of biased predictions include the idea that people lack information about their unobservable abilities/talents and/or that people are affected by a *self serving bias* (Babcock and Lowenstein 1997; Roese and Summerville, 2007). The gap between predictions and outcomes may persist even if people know their abilities but do not know those of others, and are hence unable to assess the systematic link between abilities and reward. Indeed, these explanations are not mutually exclusive: if socio-economic expectations are based on imperfect information and/or a *self serving* process of information selection, people may form biased expectations about what they deserve, and may experience frustration over unfulfilled expectations.<sup>2</sup> Income expectations provide a good example of how imperfect information or the presence of a *self serving bias* may affect socioeconomic expectations. Although the typical shape of the income distribution is right skewed, it is hard to find people who believe that they deserve to earn an income below the average within the group of people sharing the same observable characteristics. On these grounds, one may take the degree of (right) skewness of the income distribution or income inequality<sup>3</sup> for given characteristics as measures of the likelihood of frustration deriving from unfulfilled socioeconomic expectations in a given population. On this premise, the chance of experiencing frustration over unfulfilled expectations may well increase with educational attainment owing to its impact on the skewness and inequality of the socioeconomic outcomes.

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<sup>1</sup> An alternative explanation for this outcome is that educational choices are influenced by parents, and that the latter do not know their children's true preferences.

<sup>2</sup> Of course, one should find the opposite result for more talented and luckier people. I posit that, when loss aversion obtains, people's hedonic adaptation to positive surprises is very rapid.

<sup>3</sup> On inequality and well being, Becchetti, Massaro and Naticchioni, 2011.

In addition to biased aspirations, the realization of expectations can be delayed or inhibited also by contingent or long lasting mismatches between people’s education/skills and those required in the labour market. The causes of the latter mismatches are quite complex and may stem from both supply and demand factors, i.e. the quality of the educational system, *mistakes* in educational choices, labour market frictions, inefficient recruitment practices, inefficient human resource management practices, insufficient investments in workers’ training (Ferrante, McGuinness and Sloane, 2010).

Finally, people may experience aspirations biases because educational and career choices are guided by an *excessive* concern for specific life domains, e.g. ones’ income or social status rather than for well being as a whole: indeed, when choosing how much or what we want to study, we should consider the full impact of such choices on all domains of our life. Cultural models transmitted by families or conveyed by society through education (Bowles, Gintis and Osborne, 2001) can be responsible for the generation of extrinsic motivations of young people which ultimately lead to such biased outcomes. Assume for instance, that an *all inclusive* measure of subjective WB depends on people’s socioeconomic outcomes in two life domains, i.e. L (leisure) and W (work) and that the latter outcomes depend only on people’s educational attainment (or type of education<sup>4</sup>) E; in addition, education exerts a direct and independent effect on WB such that  $SW(E)=U(L(E),W(E), E)$ . There is no doubt that rational agents will be able to make efficient educational choices *without regrets* if they are aware of the three channels and of the two domains.

The actual complexity of the latter decision making process and the riskiness of the investment in education is revealed by the empirical evidence on what we regret most in life showing that educational and career choices are the most important source of regret<sup>5</sup> (tab.1).

Table 1. What we regret most in life  
(Roese and Summerville, 2005).

Area	%
<b>Education</b>	<b>32.2</b>
<b>Career</b>	<b>22.3</b>
Romance	14.8
Being parents	10.2
Self	5.5
Leisure	2.5
Finance	2.5
Family	2.3
Health	1.5
Friends	1.5

It is noteworthy that the *locus* of connection between the two main sources of regret, i.e. educational and carrier choices, is the labour market.

In this paper which builds on Ferrante (2009), I address these issues and to test my main predictions on the education-well being nexus, I explore data drawn from the Survey

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<sup>4</sup> For instance, education curricula differ for the social skills they provide and that are required to enjoy social relationships (Scitovsky, 1992, Pugno, 2009, Becchetti et al. 2008).

<sup>5</sup> E.g., should have stayed in school, should have studied harder, should have got another degree.

on Household Income and Wealth (SHIW) conducted by the Bank of Italy (2006), containing rich information on people's socioeconomic and educational background, educational and skill mismatch in the workplace and various measures of subjective well being (SWB) such as happiness, job satisfaction and the health status.

Owing to the difficulties to disentangle the direct affect of education on the most inclusive measure of WB, i.e. happiness from its effect generated through different life domains, the conjectures proposed here are not based on robust econometric analysis showing casual links but on the interpretation of the combined evidence coming out of the descriptive statistical analysis and of some econometric exercises. The latter is the main weakness of this paper.

First, I analyse the impact of human capital on WB within a life cycle perspective. Second, I estimate and discuss the effects of educational and skill mismatches on happiness, not just on job satisfaction. Third, I provide an empirical explanation for the *U-shaped* age-happiness relationship based on the role of education in aspirations/expectations building.

The main conclusions of this paper are as follows: (a) people experience large mismatches in aspirations/expectations early in adult life; (b) the latter mismatches are largely confined to the socioeconomic outcomes in the labour market (c) the curvature of the *U-shaped* age-happiness relationship depends on the level of education and reflects how people adjust to the latter mismatches. The suggested interpretation of this result is that education affects both people's expectations and the way people can respond to unfulfilled expectations.

The paper is organized as follows. Section 2 discusses the main links connecting human capital and well being. Section 3 illustrates the descriptive statistical evidence, the econometric results and their interpretation. Section 4 draws the main conclusions.

## 2. Education, human capital and well being

How does human capital, i.e. education and experience, enter this picture? Indeed, the socio-economic performance of individuals depends, over and above the effects of their innate abilities and socioeconomic backgrounds, on the cognitive and non cognitive skills acquired early in life<sup>6</sup> through education and experience: "Cognitive and non cognitive skills can affect the endowment of persons, their preferences, their technology of skill formation...or all three. Thus, they might affect risk preference, time preference, and efficiency of human capital productivity without necessarily being direct determinants of market wages. Cognitive and noncognitive skills might also raise the productivity of workers and directly affect wages. Our empirical analysis shows that both cognitive and noncognitive skills play multiple roles" (Heckman, Stixrud and Urzua, 2006, p. 8).

Education and its interactions with experience are the most important inputs in the technology of human capital generation and the main drivers of WB in different life domains. The level and type of education matter for our meta skills (transversal, general and specific), personal identity and, therefore, also socioeconomic aspirations. Personality traits are often invoked as important innate characteristics affecting people's accumulation of cognitive and non cognitive skills and, therefore, also their WB.

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<sup>6</sup> The supporting empirical evidence on the impact of cognitive and non-cognitive skills on an individual's life is impressive (e.g. Kuncel, Hezzlet and Ones, 2004; Ree and Carretta, 2002; Schmidt, 2002; p.200).

The basic cognitive and non cognitive skills needed in any life domain are acquired early in life through compulsory education. Therefore, it is above the latter threshold that educational choices would affect the balance between leisure and work-related skills and thereby, peoples' WB. This is consistent with the idea that, whereas primary education is intended to provide the basic cognitive and non-cognitive skills necessary in every life domain the main scope of secondary and tertiary education is to develop those specific skills and incentive-enhancing preferences required in the labour market (Bowles, Gintis and Osborne, 2001) but which also fuel socioeconomic aspirations, i.e. material aspirations (Easterlin, 2001; 2003; 2005). It is not surprising, therefore, that in Ferrante (2009), the ambiguous effect of education on life satisfaction appears beyond compulsory schooling.

In this context, the distinction between vocational and general education should matter for well being over the entire life cycle, too. Hanushek, Woessman and Zhang (2011), for instance, provide evidence that there is a trade-off regarding the impact of the type of education on employability over the life cycle: in comparison to general education, vocational education increases people's employability when young at the cost of reducing it later in life. A similar trade-off may be expected to emerge for other life domains. The suggested explanation is that general education increases people's ability to adjust to life events in different domains and over the entire life-cycle.

The central idea of this paper is that there are four major links connecting human capital to subjective well being. First, human capital improves the skills in decision making in different life domains<sup>7</sup>. Second, it improves the skills and knowledge in doing things and enjoying life. Third, human capital shapes our identity/personality traits and, fourth, by doing so, it shapes our aspirations in different life domains. The first two effects are expected to improve people's performance and subjective well being in different life domains. More ambiguous is the joint impact of human capital through people's identity and aspirations. Ferrante (2009) contends that people's aspirations constitute a major systematic endogenous source of errors in predictions which may adversely affect WB, at least early in adult life: insofar as people fail to anticipate endogenous change in their aspirations correctly (Easterlin, 2001; Frey et al., 2002; Stutzer, 2003; Clark et al. 2008), they may experience systematic frustration of their expectations, i.e. they experience aspiration biases. There is clear-cut evidence that educational choices are the most important potential source of regret in life (Roese and Summerville, 2005). Hence, there could be a trade-off in acquiring education: the well being advantage of enjoying the fruits of more effective skills could be counterbalanced by the negative effects stemming from excessive expectations.

The recognition of aspiration biases takes time: indeed, empirical evidence suggests that people's age matters a lot for WB. The *U-shaped* age-happiness relationship is the most intriguing of such evidence. The latter pattern may depend on the impact of aspirations over time (Ferrante, 2009) but also on the mechanisms governing the net accumulation of human

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<sup>7</sup> To this regard Scitovsky's words on the conventional view about rational agents' ability to choose are illuminating: "The economist's traditional picture of the economy resembles nothing so much as a Chinese restaurant with its long menu. Customers choose from what is on the menu and are assumed always to have chosen what most pleases them. That assumption is unrealistic, not only of an economy, but of Chinese restaurants. Most of us are unfamiliar with nine-tenths of the *entrées* listed; I seem invariably to order either the wrong dishes or the same old ones. Only on occasions when an expert does the ordering do we realize how badly we do on our own and what good things we miss." (Scitovsky, 1992, p. 149-150).

capital. Most of human capital is generated early in life through education and experience. However, human capital is also accumulated in adulthood through training and experience although the productivity of the latter processes depends a lot on the early investments in education (Cuhna and Heckman, 2007). Of course, over life the stock of human capital depletes and the net accumulation may become even negative.

On these premises and in order to simplify the analysis, I posit that the endowment of human capital depends on education, learning and hedonic experience, i.e.  $HC = HC(\text{education, learning by doing, hedonic experience})$  and I distinguish different socioeconomic domains contributing to WB and the impact of HC on each of them. The first and most important domain is the employment condition yielding WB through income (I) and job satisfaction (JS). The second important life domain affected by HC is people's health status (HS). Finally, I posit that the most inclusive measure of WB is given by happiness  $H=H(HC)$ . If one assumes that HC affects happiness both directly, through I, JS and HS, and indirectly, the empirical relation one should investigate is:

$$H = H(I, JS, HS, HC, E, AGE) \quad (1)$$

where the post-schooling accumulation of human capital through learning by doing (E) is assumed to be captured by age.

### 3. Education, human capital and WB: the starting empirical evidence

The Survey on Household Income and Wealth (SHIW) of the Bank of Italy began in the 1960s with the aim of gathering data on the incomes and savings of Italian households. Over the years, the scope of the survey has grown and now includes wealth and other aspects of households' economic and financial behaviour such as, for example, which payment methods are used<sup>8</sup>.

The sample in the most recent surveys comprises about 8,000 households ( $\approx 24.000$  individuals) distributed over 300 Italian municipalities and 103 provinces. The 2006 survey contains rich information on people's socioeconomic and educational backgrounds, educational and skill mismatches in the workplace, and various measures of SWB such as happiness, job satisfaction and health status. The sample containing information on I, H includes 3801 individuals; the sample with information on HS 8394 individuals and the sample containing information on JS only 1316 individuals. Since we are interested to the entire set of labour market outcomes, i.e. wages, job satisfaction and educational and skill mismatches, unemployed are not included in the sample.

On the premise that the decisions to invest in human capital through the acquisition of education are risky and that this should matter for people's educational choices and well being, in the descriptive analysis I will consider both the mean and the standard deviation of the four well being measures: income (I), happiness (H), job satisfaction (JS) and health status (HS). Tables 2-4 show the mean and the standard deviation of the four measures of well being conditional on education (table 2; CE= compulsory education; SE=secondary education; TE= tertiary education) and age cohort.

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<sup>8</sup> See also Scoppa and Ponzo (2008) for an empirical analysis of the determinants of WB based on SHIW data. Descriptive statistics are shown in appendix.

The mean of the four indicators increases monotonically with one's educational attainment whereas the standard deviation decreases monotonically with education for the three measures of SW whereas it is sharply increasing only for income. Therefore, education appears to be a risky investment in the labour market but not so in other socioeconomic domains. It is noteworthy that the mean-variance approach, suggesting that the two measures of socioeconomic performance should be positively related, holds for income but not for the other measures of WB, for which the opposite holds.

Further exploration of data reveals useful information. First of all, the standard deviation of income shows an interesting time pattern: it is increasing and very large between 30 and 40 years, reaching a maximum around the age of 40 years and it declines sharply thereafter (fig. 1). The opposite holds for SWB: the standard deviation of the three measures of SWB are quite stable until the age of 50 years; thereafter HS and H increase whereas JS decreases. The latter patterns may be due to different factors those specific contribution is hard to disentangle. Notably, earlier retirement, i.e. retirement below canonical age, should both increase the mean level of JS and reduce its standard deviation because the less satisfied workers should be expected more likely to anticipate retirement.

Table 2. The means of I, H, JS and HS by educational level  
(Source: elaboration based on the Bank of Italy SHIW database, 2006; total=100)

Schooling	Income	Happiness	Job satisfaction	Health status
Tertiary degree	183	110	107	114
Secondary school degree	123	108	102	112
Secondary school (short vocational degree)	104	103	100	111
Compulsory schooling	94	102	97	105
Elementary school	69	90	92	83
Total	100	100	100	100

The exploration of the standard deviation of income by educational level provides other interesting insights: over the entire life the variability of income is larger for more educated people and most of the variability, for less (CE) and most educated people (TE), is concentrated between the age of 30 and 40 years and, for people holding secondary education, between the age of 40 and 50 years. It is reasonable to suppose that the explanation of the latter different patterns depends mainly on two factors: the age of entry in the labour market and the age of retirement, both affected by the schooling level.



Table 3. The means of I, H, JS and HS by age cohort  
 (Source: elaboration based on the Bank of Italy SHIW database, 2006; total =100)

	Income	Happiness	Job satisfaction	Health status
<b>less than 30 years</b>	80	112	95	125
<b>31-40</b>	101	109	99	119
<b>41-50</b>	115	105	101	115
<b>51-65</b>	116	101	101	102
<b>over 65</b>	<b>78</b>	92	<b>112</b>	81
<b>Total</b>	100	100	100	100

Figure 1. The standard deviation of income by age cohort and educational level  
 (Source: elaboration based on the Bank of Italy SHIW database, 2006; less than thirty years=100)

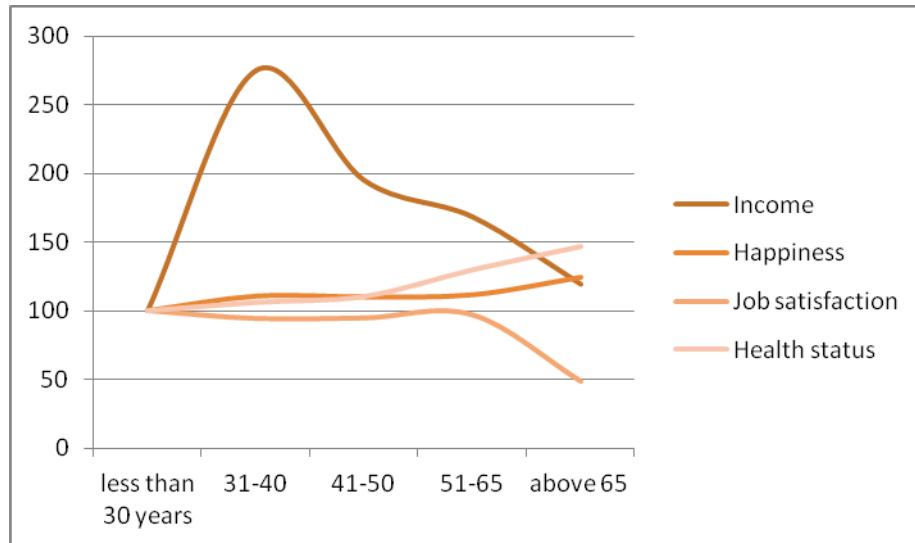


Table 4. The standard deviation of income by age cohort and educational level  
(Source: elaboration based on the Bank of Italy SHIW database, 2006; total=100)

	CE	SE	TE
<b>less than 30 years</b>	80	64	27
<b>31-40</b>	219	75	148
<b>41-50</b>	90	133	84
<b>51-65</b>	91	90	90
<b>above 65</b>	66	68	86
<b>Total</b>	100	100	100

According to a wide and strong empirical evidence, the contribution of education to income and job satisfaction depends also on the actual match between workers' education/skills and those required in their occupations (Allen and van der Velden, 2001). The SHIW data on the impacts of educational and skill mismatches on WB by educational attainment and age cohort offer further information about the time profile of the latter impacts and confirm previous evidence on who gains and who loses from educational and skill mismatches in Italy (Ferrante, McGuinness and Sloane, 2010; Di Pietro and Urwin, 2006) and.

First of all, the incidence of educational and skill mismatches over the entire life are both larger for less educated individuals. Second, they decline over time and they do so at a faster rate for more educated individuals (table 5). Third, undereducated individuals are better off in terms of income and job satisfaction, with respect to perfectly matched ones, and all the others are unaffected or worse off.

Table 5. The incidence of educational and skill mismatches of by age cohort and educational level  
(Source: elaborations based on the Bank of Italy SHIW database, 2006)

	TE		
	Overeducation	Undereducation	Skill mismatch
<b>less than 30 years</b>	40,0%	0,0%	15,0%
<b>31-40</b>	15,4%	3,1%	6,2%
<b>41-50</b>	8,0%	1,3%	4,0%
<b>51-65</b>	2,5%	4,2%	4,2%
<b>Total</b>	8,1%	2,3%	4,4%
	SE		
	Overeducation	Undereducation	Skill mismatch
<b>less than 30 years</b>	28,0%	8,0%	26,0%
<b>31-40</b>	16,1%	11,5%	25,7%
<b>41-50</b>	14,6%	10,6%	22,7%
<b>51-65</b>	5,7%	7,5%	10,9%
<b>Total</b>	10,4%	8,2%	16,4%
	CE		
	Overeducation	Undereducation	Skill mismatch
<b>less than 30 years</b>	12,5%	3,1%	31,3%
<b>31-40</b>	8,4%	9,6%	48,9%
<b>41-50</b>	9,5%	11,6%	40,7%
<b>51-65</b>	2,9%	9,4%	21,0%
<b>Total</b>	5,2%	8,1%	26,7%

In conclusion, the preliminary descriptive analysis illustrated here suggests that human capital and education matters for WB. More educated individuals appear to be happier, more satisfied with their jobs and to enjoy a better health status over the entire life. Of course, this evidence is not new. The novel finding is that the mean and the standard deviation of H, I, HS, JS all show clear age patterns deserving to be better investigated and explained.

Fig. 2 Educational and skill mismatches and WB.  
(Source: elaboration based on the Bank of Italy SHIW database, 2006; total by WB measure =100)

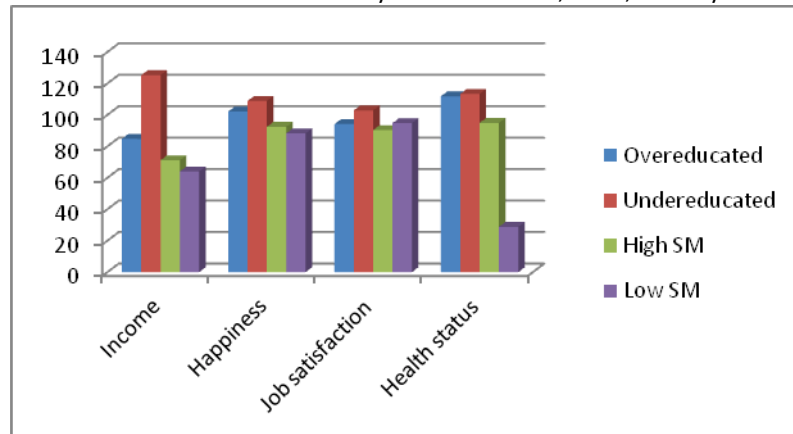
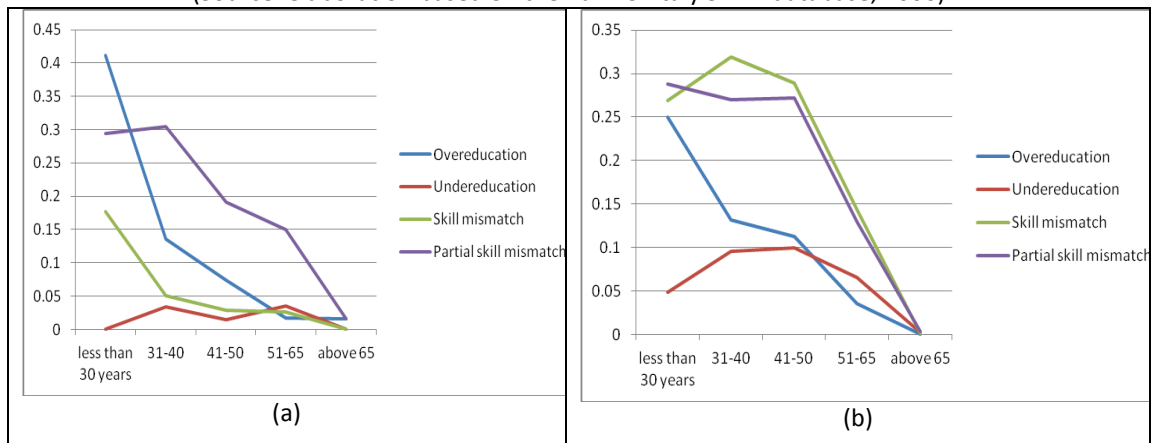


Fig. 3 The incidence of educational and skill mismatches over the life cycle:  
(a) tertiary vs. (b) secondary education  
(Source: elaboration based on the Bank of Italy SHIW database, 2006)



#### 4. Some econometric insights

The scope of the econometric analysis is to draw more robust conclusions about the contribution of human capital and education to WB over the life cycle and to explain the *U-shaped* age-happiness relationship by means of the age patterns of I, H, JS, HS. The first step consists of assessing the impact of human capital, i.e. education and experience, on the different WB measures.

In the estimations (OLS for income and ordinal probit for the other WB measures), in addition to people's educational attainment, four measures of educational and skill mismatch, and a dummy for vocational studies and the standard controls (gender, marital status), I include a fixed regional effect plus age and age squared that should capture the non linear effects of the accumulation of human capital through learning and hedonic experience. I also include nine variables that in my intention should capture individual fixed effects, i.e. unobservable people's characteristics: the latter are based on the answers provided to two sets of questions reflecting people's cultural propensities and values on some basic issues<sup>9</sup>.

The results are shown in table 5: I discuss only those regarding the estimates at least statistically significant at 5%. First, more educated people are happier, earn more, are more satisfied with their jobs and they experience a better health status compared to their less educated ones. Second, undereducated people appear to earn more and to be more satisfied with their job compared to perfectly matched individuals. Conversely, individuals experiencing skill mismatches earn less, are both less happy and satisfied with their job and experience a worse health status. Overeducated individuals earn less than completely matched individuals. Indeed, these results are quite in line with the literature on the subject, in particular, on the effects of educational and skill mismatches (Ferrante, McGuinness and Sloane, 2010).

The coefficients measuring the impact of experience, e.g. age and age squared, are both significant at 1%, 5% and 10% in the estimations of I, H and JS, whereas in the estimation of HS only the coefficient of age is significant.

Therefore, education seems to affect various measures of WB differently over the life cycle. If one considers happiness the most synthetic index of WB, i.e. a measure of WB which absorbs the effects of the others, the age-happiness relationship should be the result of the latter interconnected dynamics.

Building on the previous descriptive statistical evidence, my central hypothesis is that, leaving aside learning by doing, human capital affects WB over the life cycle through hedonic learning and behavioral adaptations to the experienced mismatches between socioeconomic expectations and outcomes. If this conjecture is right, one should find that JS, I, HS absorb most of the effects of education on happiness, including those coming from educational and skills mismatches, that income absorbs most of the effects of experience on productivity and

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<sup>9</sup> Please say how much, on a scale from 1 to 10, you agree with the following statements, 1 meaning "Disagree completely" and 10 meaning "Agree completely".

1. Success comes from hard work - Poor people are lazy
2. Luck is important in life
3. Your family background is crucial
4. Men and women have the same chances of success
5. Competition encourages people to work harder

Again on a scale from 1 to 10, how much do you agree with the following statements describing what should happen in a perfect world?

1. Those who work hardest should be wealthier than the rest
2. Everyone should have at least enough to live on
3. The state should make sure there is virtually no inequality
4. Death duties should be high
5. Tasks should be shared equally by men and women
6. Immigrant workers should have the same rights as Italian workers

wages and that, after controlling for I, HS, JS, experience i.e. age and age squared, remains statistically significant.

Table 5. Econometric results: WB

	Income OLS	Happiness Ordinal probit	Job satisfaction Ordinal probit	Health status Ordinal probit
<b>-HC: Education</b>				
.compulsory	.2365444***	.1968226***	.1474568	.3705921***
.secondary	.523426***	.3157372***	.4379734***	.6394425***
.tertiary	.8063223***	.4761195***	.6205544***	.7687899***
.vocational	-.0821879**	.0286663	-.0970696	-.0392438
.overeducation	-.1321809***	-.0409359	-.68841	-.1705011*
.undereducation	.1005935***	.0736979	.184299**	-.0051176
.skills mismatch	-.0407067**	-1053671***	-.1609878***	-.0841281**
<b>-HC: Experience</b>				
.age	.0462336***	-0.0455676***	.0582888**	-.0436418***
.age <sup>2</sup>	-.0003923***	.00003226***	-.000595*	.0000917
Female	-.0767191***	-.0541883	-.0674238	-.1297851***
Marital status	Yes	Yes	Yes	Yes
Regional fixed effects	Yes	Yes	Yes	Yes
Individual fixed effects	Yes	Yes	Yes	Yes
Number of obs.	3798	3801	1316	3801
F(.) / LR chi2(.)	74.93	1211.72	257.31	1541.41
Prob F>0 / Prob > chi <sup>2</sup>	0.0000	0.0000	0.0000	0.0000
R-squared/Pseudo Rsq	0.40037	0.0807	0.0522	0.1644
Adj R-squared	0.3983			
Root MSE	0.51606			

Moreover, building on the idea that education is the main driver of aspirations (Ferrante, 2009) and on the evidence that early in life the variance of income increases sharply with education, one should find that the age-happiness relationship is more convex for more educated people. In order to test the latter predictions, the estimations were carried out for the total sample as well as for different educational attainments. Owing to the small number of observations, the separate estimation for tertiary education should be considered with caution. The results of the ordinal probit estimations are shown in table 6.

Indeed, the results confirm my expectations. The actual shape of age-happiness relationship appears to depend on the level of education: more educated individuals experience a faster reduction in happiness early in adult life (fig. 4). Individuals holding a tertiary degree reach their working life minimum around 48 (against 54 years for the complete sample). On the other hand, more educated individuals experience also a faster recovery of happiness after they reach their adult life minimum<sup>10</sup>.

Hence, what is going on here? The tentative interpretation of the joint evidence of descriptive and econometric analyses here provided is that education generates socioeconomic aspirations and the mismatch between aspirations and real life chances

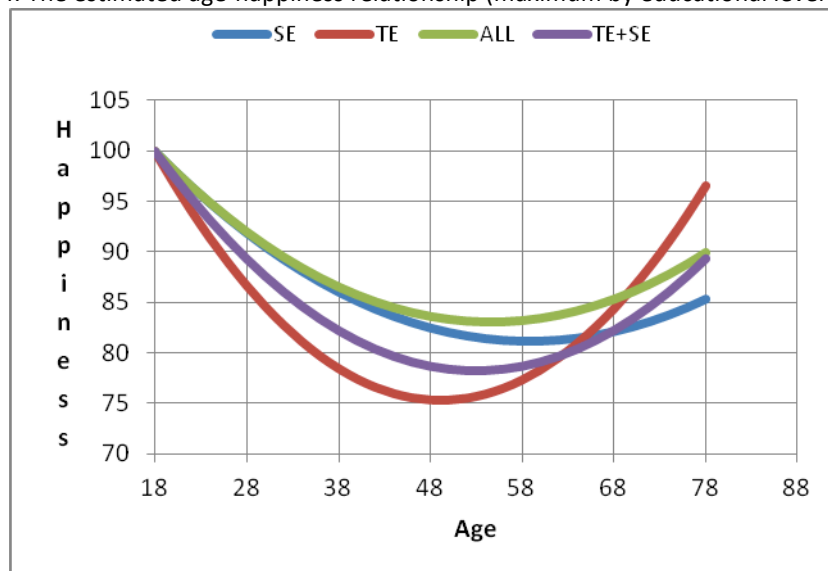
<sup>10</sup> In order to stress the different curvatures of the age-happiness relationship I have imposed that the level of happiness at age 18 is the same for different levels of education.

increases with education, is larger early in one's adult and working life and it affects mainly people's realization in the labour market (JS, I).

Table 6. Econometric results: Happiness by educational attainment

	All	Tertiary education	Secondary education	Tertiary + secondary	Vocational education	General education
Log(income)	.2842686***	.2863255***	.4518989***	.2947817***	.48071522***	.250042***
Log(wealth)	.0150744	0.017987	0.02789	0.0189876	.029876	.016987
Job satisfaction	.204033***	2333793***	.1974079***	.2057332***	.1710853***	.2206259***
Health status	.2373983***	.4067152***	.195078**	.2250092***	.2273314***	.2410888***
-HC: Education						
. compulsory	.2186595					
. secondary	.2755581					
. tertiary	.2992526					
. vocational	.1477352					
. overeducation	.1201247					
. undereducation	.0861728					
. skillmismatch	-.0334011					
-HC: Experience						
.age	-.1034594***	-.1648778***	-.0997655**	-.1325546***	-.1279472***	-.1094391***
.age <sup>2</sup>	.0009521***	.0016784***	.0008484*	.0012508***	.0010826***	.0010327***
Sex (female)	-.0146879	.0488821	.0467591	.0786933	.0466989	-.0678258
Marital status	Yes	Yes	Yes	Yes	Yes	Yes
Regional effects	Yes	Yes	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of obs.	1316	180	599	779	463	853
F(.) / LR chi <sup>2</sup> (.)	632.38	107.07	261.41	318.76	225.66	433.05
Prob F>0 / Prob > chi <sup>2</sup>	.0000	.0000	.0000	.0000	.0000	.0000
R-squared/Pseudo Rsq	.1306	.1698	.1264	.1175	.1407	.1346

Fig. 4. The estimated age-happiness relationship (maximum by educational level =100)



At the beginning of adult life, when the variance of income is very high, the precision of people's expectations is low and the probability of more educated individuals experiencing unfilled aspirations is very high: this would explain why happiness decreases sharply early in life and why the slope of the age-happiness function is increasing in education, i.e. more convex. Over time, people would adjust aspirations but they also would face decreasing mismatches in different life domains, noteworthy, in the labour market; the improvement in personality traits, i.e. the BIG Five in adulthood (Heckman, 2006) may play a role in this context by contributing to the latter behavioral adjustment process. Therefore, more educated people would face larger mismatches early in life but would adjust their aspirations more quickly and enjoy most of the rewards of their investment in education late in adult life.

## 5. Summary and conclusions

I have shown that people's human capital, i.e. education and experience, embody a great deal of information about the determinants of socioeconomic well being and that, early in adult life, the positive contribution of education to well being may be counterbalanced by its negative contribution due to the mismatch between aspirations and actual socioeconomic outcomes. In particular, early in adult life people seems to experience two main types of mismatches deriving from the labour market experience. The first regards the gap between the education/skills possessed and those required at work. The second, the gap between actual and expected rewards of education investment, in terms of income, career and job satisfaction. Indeed, the two gaps appear to be connected.

More educated individuals, i.e. individuals holding tertiary education, seem to experience larger biases in aspirations early in life but they appear either more capable to adjust smoothly to labour market opportunity or to be faster in revising aspirations than less educated individuals. Hence, most of the rewards of higher education accrue late in life thanks to some sort of behavioral flexibility. The *U-shaped* age-happiness relationship, whose shape has been shown to depend on people's education, may reflect also the existence of education-based adjustment mechanisms working through real-life experiences (Di Tella et al., 2010; Fujita and Diener, 2005).

The vast majority of tertiary education in Italy is of general type whereas, among workers holding secondary education, vocational studies prevail. Hence, this evidence provides support to the idea that there is a trade-off between early and late rewards from investing in general vs. vocational education which goes beyond the labour market outcomes (Hanushek, Woessmann and Zhang, 2011).

The conclusion that educational and skill mismatches are inefficient is based on the observation of just one, although very important domain of people's life, the labour market. But the latter mismatches could be the result of an optimizing behaviour aiming to allocate human capital over the entire life and to different market and non market activities. For instance, overeducation and overskilling at early stages in workers' career could be an efficient response to skills obsolescence and to the need to retrain over life. Moreover, people may choose to get a tertiary degree in subjects characterized by higher probabilities of skills mismatch as workers, such as arts and humanities, because they expect to use these skills in other domains of their life. My empirical analysis cannot provide support to this conclusions but it suggests that the latter is a crucial issue.

Nevertheless, the evidence that educational and career choices are the most important sources of regret in life suggests that educational and skill mismatches may be not the result of an optimal behavior. Uncertainty on one's skills and one's preferences and lack of information may be part of the problem. A better match between expectations and outcomes can be achieved by improving the quality of the decision making process in education through the provision of information on job opportunities. But of course, individuals and societies have a hard job in trying to fully anticipate skills needs in different life domains, even in the near future. So, probably there is a physiological level of educational and skill mismatch that one should accept without regrets!

Projections based on past trends as well as on technological forecast on skills demand suggest that, due to the more rapid introduction of innovations and to the process of globalization, the speed at which skills will become obsolescent will increase in the future: "A generation ago, teachers could expect that what they taught would last their students a lifetime. Today, because of rapid economic and social change, schools have to prepare students for jobs that have not yet been created, technologies that have not yet been invented and problems that we don't yet know will arise." (Andreas Schleicher, OECD Education Directorate)

On the other hand, in aging societies, the need to maintain skills effective, in various domains, also at later stages in people's life, is becoming crucial. In such a scenario, education programs should aim to provide an appropriate mix of general and specific skills and knowledge necessary to adapt to rapidly changing technological, socioeconomic and cultural environments. This goal should be pursued also by investing more money and efforts in life-long learning programs.

A very general conclusion that one may derive from this analysis is that the effectiveness of education programs and institutions should be assessed by looking at their overall contribution to well being during life and in different life domains, not just by monitoring people's employability early in their working life.



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## Appendix

### Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
sex	3801	1.368324	.4824134	1	2
marital_st~s	3801	1.821363	1.188731	1	4
happy	3801	6.611681	1.875664	1	10
jobsatisfac~n	1316	7.139058	1.735681	1	10
health	3801	2.199684	.869882	1	5
income	3801	32047.63	30070.37	-8642.963	810218.6
age	3801	57.76506	15.64372	19	97
eduover	3801	.0560379	.2300251	0	1
eduunder	3801	.0536701	.2253952	0	1
skillnomatch	3801	.1478558	.3550037	0	1
compulsory	3801	.2854512	.4516885	0	1
secondary	3801	.2999211	.4582834	0	1
tertiary	3801	.0905025	.2869381	0	1