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The Easterlin paradox and the decline of social capital:

an integrated explanation

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Abstract. During the most recent decades people in industrialised countries have reported both a stagnant or even declining subjective well-being, as Easterlin (1974) originally observed, and deterioration in their social and family bonds, as Putnam (2000) has claimed. The paper proposes an integrated explanation of these two stylised facts by extending the analysis of the relative income explanation of the Easterlin paradox to social relationships as enjoyable ends of choice. Drawing on the evidence-based results of social psychology, the paper constructs a model whose premises are *(i)* that individuals produce social relationships by means of relational ability, *(ii)* that this ability is primarily shaped during infancy and remains largely unpredictable, and *(iii)* that commercial pressure on children to consume in competition with others may displace the enjoyment of social relationships. The model extends microfoundations to encompass new psychological dimensions. It is thus able to merge individuals' idiosyncratic dynamics – which may deteriorate across generations – with improving economic contextual conditions, and to indicate some new priorities in policy options.

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"Economic welfare is a very small part and often a very poor indicator
of human welfare"
(Scitovsky, 1976:145)

"Relationships constitute the single most important factor responsible
for the survival of *homo sapiens*"
(Berscheid, 2003:39)

0. Introduction

During the most recent decades people of industrialised countries have reported a stagnant or even a decline in their well-being, while their social and family ties appear to have deteriorated. This paper proposes an integrated explanation of these two stylised facts.

Stagnant Self-reported Well-Being (SWB) was originally observed by Easterlin (1974) in the case of the US, thus raising the paradox that takes his name. It is in fact surprising that economic growth in the US has not produced substantial improvements in SWB, although the industrialised countries exhibit generally greater levels of SWB than the less wealthy ones. More recent and extensive evidence has heightened the Easterlin paradox, because SWB (or satisfaction with life) now appears to be declining in the US, stagnant in the UK, and maybe declining for Europe as a whole (Blanchflower and Oswald 2004; Stevenson and Wolfers 2007; Di Tella and McCulloch 2008).

The deterioration of social capital, especially if viewed across generations, was first observed by the sociologist Putnam (2000), again in the case of the US, and a lively debate ensued, as concisely reviewed by Stolle and Hooghe (2004). But some deterioration of social capital, especially in regard to a key proxy like trust, now seems to be an established fact. Worrying deterioration is also apparent in the case of familial and close bonds, because the trends of a variety of indicators over the last decades point downwards, and the phenomenon appears widespread in other industrialised countries.

This paper proposes an integrated explanation of both the decline in well-being and the deterioration of social ties by extending the most popular explanation of the Easterlin paradox, namely that of relative income. This explanation states that individuals do not care simply about their absolute level of income; rather, they care about their income relatively to the incomes of significant others. This induces them to engage in a 'rat race' for higher consumption levels, but without changing their relative positions, so that they fail to draw full enjoyment from economic growth (Easterlin 2005; Layard 2005; Clark *et al.* 2007).

Recent findings of econometric studies confirm that the income of others is significantly and negatively correlated with SWB, but they do not provide a complete account of the Easterlin paradox (Blanchflower and Oswald 2004; Di Tella and McCulloch 2008). The psychology literature, for its part, provides ample evidence for the importance of the 'friendly side' of the social dimension in people's lives. Individuals not only compete with others by

striving for more money and consumption, they also seek out others in order to enjoy relationships. Money and relationships are the two most important positive correlates with well-being in self-reported evidence (Diener *et al.* 1999).

Hence the explanation of the Easterlin paradox can be extended thus: deteriorating social relationships, together with competition with others' consumption, run counter to the positive effects of per-capita income on people's well-being. Empirical support for this claim has been found for the US by Bartolini *et al.* (2007), who conclude that around one half of the positive effect of the rise of income on SWB was lost between 1975 and 2004 because of the deterioration of social capital, and two thirds was lost because of the rise of neighbours' income, thus accounting for an actual decline in income.

However, recognising that social relationships are an important end of choice, and that they deteriorate over time, raises intriguing questions for economic theory. First, how can social relationships be modelled as distinctive goods? Second, why do people allow such deterioration to occur?

In the literature one can find models that define social relationships as non-marketable goods which are produced and consumed jointly with others. Since it is also assumed that individuals are identical and symmetrical, a deteriorating sub-optimal solution becomes possible because of lack in coordination, together with some progressive substitution of social relationships with market goods (Antoci *et al.* 2007; Bartolini and Bonatti 2008). However, in the case of close bonds, like those of parents with their children, the relationships are asymmetrical, and the parents' ability to shape the relationship is highly heterogeneous across adults. The evidence confirms that social capital is unevenly distributed (Paxton 1999), that average SWB conceals significant groups of very happy people, and that the deterioration of well-being is significantly a generational phenomenon.

This paper thus attempts to account for this evidence as well, by taking the case of close bonds seriously, and hence by introducing into the analysis important intuitions and results drawn from social psychology. Heterogeneous parenting ability will be thus modelled, in interaction with market and social competitive pressure, and different tastes for relationships ensue across generations. Radical simplifications will be required in this analysis, which thus remains exploratory, though rather powerful because it is able to link new psychological dimensions within conventional microfoundations to aggregate outcomes.

The paper is organised as follows. Section 1 outlines the integrated explanation, furnishing some details on contributions in the psychological and sociological literature which may be unfamiliar to economists. Section 2 sets out the model, distinguishing the static from the dynamic and generational set-ups. Section 3 draws the conclusions, while the Appendix provides the relevant proofs.

1. The integrated explanation outlined, and the supporting literature

The integrated explanation can be outlined in analytical steps, each of which consists of a concise statement, with some words of clarification, and reference to the supporting literature and empirical evidence. These statements will be formalised by the model described in the next section.

(i) People not only consume market goods but also enjoy 'relational goods', which are ends of choice. 'Relational goods' represent close social relationships. They differ from market goods because they cannot be marketed, because they join individuals together, at least temporarily, and because they must be consumed and produced at the same time (Uhlaner 1989; Gui and Sugden 2005; Ng 1975; Lane 2000; Folbre and Nelson 2000). A solid psychologists' result is that close social relationships are extremely important for people's well-being (Diener *et al*. 1999; Myers and Diener 1995; Lyubomirsky *et al*., 2005; Baumeister and Leary 1995). Economists have shown that these relationships and economic conditions are the two most important correlates with SWB (Layard 2005-Annex; Frey and Stutzer 2002; Di Tella *et al*. 2003; Alesina *et al*. 2004; Helliwell 2003).[1] In the case of marital status, the direction of the causal relationship seems to be towards well-being, but feedback also seems to operate (Proulx *et al*. 2007; Frey and Stutzer, 2006).

(ii) Relational goods have deteriorated in the industrialised countries. The decline of social capital in the US during recent decades, as originally claimed by Putnam (2000), has been confirmed for the 'strong ties' component by Costa and Kahn (2003), and by McPherson *et al*. (2006).[2] The deterioration of family cohesion and the diminished well-being derived from family life in the US and other industrialised countries have been also documented by specific studies on marriages (Duane *et al*. 2002; Rogers and Amato 1997; Amato *et al*. 2003; Glenn and Weaver 1998), on cohabitations (Kamp Dush *et al*. 2003; Halli and Zimmer 1991), on infanticides (Pritchard and Butler 2003), and on violence among adolescents (Merrick *et al*. 2003).

(iii) The deterioration of relational goods is correlated with people's increasing orientation to the consumption of market goods in order to compare themselves with others. Placing a high value on consumption for this purpose is a popular definition of materialism (Lane 2000). The rise of materialism in the industrialised countries has been documented by various social scientists. For example, Putnam (2000:260, 272-4) reports that poll-surveys on the values expressed by successive cohorts of college freshmen in the US show a rise from

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[1] Blanchflower and Oswald (2004) tentatively estimate that, in the US, approximately 100,000 extra per annum of 1990$ would be necessary to 'compensate' an individual for a marital separation, while the corresponding figure for an unemployed man is $60,000.

[2] A number of studies have largely confirmed the decline of trust, which is at the basis of good relationships, especially finding a generational effect (Brehm and Rahn 1997; Glaeser *et al*. 2000; Paxton 1999; Robinson and Jackson 2001).

about 40% in the late 1960s to 75% in the late 1990s of those who rated "being very well off financially" as a very important personal objective. Similarly, Schor (1998) finds that Americans who regard it as important to earn much more money than the average rose from 45% in 1975 to 60% in 1991. Evidence on the negative correlation between materialism and the quality of relational goods emerges from a variety of psychological studies. Individuals especially oriented towards materialism are shown to experience more unstable relationships (Kasser and Ryan 2001), to report less empathy (Sheldon and Kasser 1995), to be regarded as less pleasant in relationships by friends and family members (Solberg *et al.* 2004), to place less value on affiliation (Kasser and Ryan 1993), and to behave less cooperatively (Sheldon *et al.* 2000).[3] A negative correlation between the goal of money and satisfaction with family life regardless of household income has also been found (Nickerson *et al.* 2003).

(iv) People oriented more towards the consumption of market goods for comparative purposes and less towards relational goods exhibit lower well-being. Psychology provides a very large body of evidence in this regard which has been reviewed by Kasser (2002), Kasser *et al.* (2004) and Wright and Larsen (1993). In particular, lower well-being has been also found, even if to a lesser extent, among persons who actually achieve financial success (Diener and Biswas-Diener 2002; Nickerson *et al.* 2003). Interestingly, lower levels of well-being have been detected along various dimensions: greater levels of depression and anxiety, lower vitality, and greater propensity for mental illness (Ryan and Deci 2001; Kasser *et al.* 2004; Roberts and Clement 2007). Not only is SWB thus considered an index for well-being, but codified symptoms are increasingly used to define well-being as complete mental health (Huppert 2005).[4]

(v) Well-being in the industrialised countries tends to remain constant, or to lag behind economic growth, or even to decline. The flat trend of SWB is the key component of the Easterlin paradox; yet objective measures suggest that well-being in the industrialised countries instead tends to deteriorate. For example, the *suicide rate* increased for the US, the EU and Japan from the mid-1960s until the 1980s (Levi *et al.* 2003; Chishti *et al.* 2003:111; Lane 2000:23).[5] The suicide rate among adolescents and young adults rose even more dramatically

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[3] Another experimental study finds that activating the concept of money in individuals, although minimising their conscious awareness of the money cues, induces them to prefer solitary activities and less physical intimacy (Vohs *et al.* 2006).

[4] This definition greatly extends the proportion of people affected by ill-being. In the US more than ¼ of the population suffers from clinical and subclinical mental illness (Keyes 2003), whereas about 1/10 rate themselves as "not too happy". Huppert (2005) also argues that mental health is only partially due to a heritable genetic component, and that genes need to be activated by environmental triggers. For a discussion of the limits of the genetic heritability of personal traits see Borghans (2008).

[5] Lester and Yang's (1997) survey of several studies shows that the correlation between income per head and suicide rates has been *positively* significant for the US since WWII, and for a cross-section of the European countries. They also regress suicide rates against the unemployment rate and income per head for European countries, finding that only the latter variable is positively significant. Similar findings have been obtained by Jungeilges and Kirchgaessner (2002), and Huang (1996).

from the 1950s to the 1990s in all the developed nations except Japan (Eckersley and Dear 2002; Putnam 2000:262). According to Cutler *et al*. (2000), it has risen threefold in the US, even as rates for adults and the elderly have declined. Several studies report that also *depression* has significantly increased in the US and other major developed countries since WWII (Klerman 1988; 1993; Lavori *et al*. 1993; Olfson *et al*. 2002; Rutter and Smith 1995; Lane 2000:347-8). Again, the phenomenon is especially worrying in the case of children and adolescents, who also record a rise of anxiety and neuroticism, even if belonging to the more affluent classes (Maughan *et al*. 2005; Twenge 2000; Collishaw *et al*. 2004; Fombonne *et al*. 2003; Luthar 2003; Oswald and Powdthavee 2007).[6] The deterioration of well-being in the US also emerges from econometric studies which use the SWB indicator, and which attempt to explain its decline. In particular, Blanchflower and Oswald (2004) show that this decline can be explained by the relative income effect, but only partially so.[7] Bartolini *et al*. (2007) find that adding various proxies for relational goods significantly improves the explanation.[8] This latter study confirms for the US that SWB is declining, that relational goods tend to deteriorate, and that the two facts are correlated, after controlling for relative income and for sociodemographic variables.

*(vi) People are endowed with a 'relational ability' to produce relational goods which may be frustrated during infancy by the 'relational in*ability*' of caregivers.* This contention is supported by ample evidence from developmental psychology. The so-called 'attachment approach' is particularly clear and authoritative in this regard (Bowlby 1969; Ainsworth *et al*. 1978).[9] This approach defines 'attachment' as an innate system that induces the infant to seek to establish communication with the caregivers on whom s/he is entirely dependent for survival. The infant's non-verbal demand for care and nourishment for her/his physical and psychological development, and the caregivers' ability to feel, understand and respond, shape two main 'attachment styles'. 'Secure' attachment occurs when the caregivers are able to relate, so that also the infant develops ability in relatedness. 'Insecure' attachment occurs when the caregivers

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[6] Suicides and depression can be taken as reliable indicators of the well-being of the entire population because they show a significant inverse correlation with SWB (Di Tella *et al*. 2003:812; van Hemert *et al*. 2002; Abbey and Andrews 1986), because both suicides and SWB appear to be statistically well-explained by the same variables (Helliwell 2003, 2005), and because the diffusion of clinical mental disorder is positively related to the mean number of the related symptoms in the population (Huppert 2005). According to the epidemiologists Eckersley and Dear (2002), the tendencies of objective indicators of well-being like suicides and depression of young people are even more reliable than SWB, which in Europe exhibits a rising trend (Blanchflower and Oswald 2000; Pichler 2006).

[7] For the EU, Di Tella and McCulloch (2007) attempt to explain the decline of life satisfaction between 1975 and 1997 with a variety of variables, such as unemployment, inflation, crime rates and a proxy for environmental degradation, but not social capital. They conclude that the variables introduced worsen the paradox.

[8] Other studies have found a positive correlation of subjective well-being with social capital (Helliwell 2003; 2005), and its 'strong ties' component (Bruni and Stanca 2006) for cross-sections of countries.

[9] The attachment approach has been successfully tested on infants and children on many occasions and in various countries (Berscheid and Reis 1998). It has been controlled in the laboratory as dependent on relationships with the caregiver, not on the infant's personality traits (Siegel 2001).

are hyperprotective or control emotionality, so that the infant is disappointed in her/his need for relatedness, and becomes either anxious or dismissive of new relationships. Therefore, for each attachment style the infant builds an 'internal working model' of relationships which drives her/his behaviours with others, and expectations from others. Psychologists adopting other approaches report convergent evidence on how inadequate parenting deteriorates children's well-being (Cheng and Furnham 2004; Assor *et al*. 2004; Soenensen *et al*. 2005), also mediating with respect to economic conditions (Sobelowski and Amato 2005), and on how this is related to children's materialistic orientation (Cohen and Cohen 1996; William *et al*. 2000; Moore and Moschis 1981; Flouri 2000).

(vii) *Adults inherit 'relational (in)ability' from infancy*. A variety of evidence in psychology and related disciplines supports this statement. Some evidence shows that the materialistic orientation of adults is due to their parents' orientation, or to frustrating experiences with parents (Richins 1994, Rindfleisch *et al*. 1997; Kasser and Ryan 2001; Kasser *et al*. 1995; Kasser *et al*. 2002; Flouri 2003; Ahuvia and Wong 2002). Other evidence shows that 'attachment styles' also characterise adolescents and young adults (Kobak and Sceery 1988; Tidwell *et al*. 1996; Shaver and Mikulincer 2002), as well as adults (Kafetsios and Nezleck 2002). Neuroscience observes that an infant's brain is especially plastic compared with that of an adult, which accounts for a fundamental hysteresis of the attachment style over the life cycle (Siegel 2001). The economists Heckman and colleagues, e.g. Cunha *et al*. (2006) and Borghans *et al*. (2008), argue that the infant age is especially important in shaping the lifelong time path of the accumulation of cognitive and affective abilities, and that these abilities can be regarded as constraints on preferences. In particular, Roberts *et al*.'s (2006) meta-analysis shows that social vitality, which corresponds to traits like sociability, positive affect, gregariousness, and energy level, tends to deteriorate with age, while social dominance tends to increase with age.

(viii) *People have little knowledge about their relational ability*. The difficulty of knowing one's own relational ability is obvious when people are children, but when they are adult this knowledge is still surprisingly limited. Psychologists have demonstrated that individuals usually have poor self-insight: that is, they have inaccurate knowledge of their own qualities, and in particular of their social skills (Schooler *et al*. 2003; Wilson and Dunn 2004; Dunning 2005). Human communication is still to a significant extent non-verbal and unintentional even in adulthood (DePaulo and Friedman 1998), because social relationships mainly involve emotional systems (Berscheid and Reis 1998), which work without awareness of them (Damasio 1994; LeDoux 1996).

(ix) *The commercial urge to sell market goods puts the relational ability of children and adolescents under strain, so that the materialistic orientation prevails, unless preventive action by caregivers impedes it*. The evidence on this is focused on the effects of the media on the behaviours of children and adolescents. A meta-analysis of the recent literature shows that

exposure to media violence has significant effects on aggression by children and adolescents against others (Anderson and Bushman 2002). A more specific analysis points out that these effects impact especially on certain individuals, and that a bidirectional causality may ensue (Slater *et al*. 2003, 2004). The power of advertising in inducing people to consume has been widely investigated and ascertained (Schor 1998; Kasser *et al.* 2004), but even more robust evidence has been found in the case of children and adolescents (Schor 2004; Robinson *et al*. 2001; Chamberlain *et al*. 2006; Buijzen and Valkenburg 2003). More precisely, it seems that advertising is effective if it places people's identities under strain, because this is measured by material and socially compared possession (Dittmar 2007), the result being that youths increasingly declare that they feel themselves under outside control (Twenge 2004).[10] Fortunately, caregivers can prevent these deleterious effects by mediating between media and advertising, on the one hand, and children and adolescents on the other (Buijzen and Valkenburg 2005, 2007; Buijzen *et al*. 2007).

2. The model

The model attempts to give rigorous consistency to the set of statements *(i)-(ix)*, which consist of typical psychological concerns, in order to to identify, among the assumptions necessary for the results, the crucial assumption leading to sub-optimality, and the parameters eligible for policy action. Besides explaining the possible decline of both well-being and social capital while income is rising, the model will also explain why this pattern may emerge as a later stage of the rise in income.

The model introduces relational goods and relational ability into the conventional economic framework, while also taking social comparison of consumption into account. The dynamic of the model is partly endogenous, through intergenerational externalities, and partly exogenous, since the rise in income per time unit is assumed to be exogenous. The model is built in three steps: (2.1) the individuals' static set-up, where the population of a same generation is heterogeneous because of fixed expected quality of relational goods (2.2) the individuals' dynamic, where the expected quality of relational goods is endogenised through changing relational ability, and (2.3) the aggregate dynamics, where also the heterogeneity of the population across generations is endogenised and interacts with economic growth.

2.1 The individuals' static set-up
Let us assume that the population of the economy is constant, and that at the beginning of each period, births and deaths are the same in number. The life cycle of each individual is

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[10] Consistent evidence for this is found by Kashdan and Breen (2007), who show that relatedness ceases to be significantly and negatively correlated with materialism if controlled by a variable capturing the internal tendency to avoid feelings and sensations.

divided into two periods: 'youth', when the individual does not work, and 'adulthood', when s/he works for a labour income. Hence, if the size of population is n, on moving from one period to the next, the number of births, of passages from youth to adulthood, and of deaths is $0.5n$. Each household consists of an adult and a youth, so that each adult transfers income to one youth.

Both the youth and the adult consume an undifferentiated market good which is used for the purpose of comparison with others, and a relational good which is enjoyed for its own sake. The relational good is produced by the instrinsic human contribution when two or more individuals form a close relationship, and by the material contribution, which can be represented by the consumption of market goods undertaken for this specific purpose, e.g. to communicate better and have more opportunities for social experience. Hence the market good can be consumed either to compete with other consumers or to enjoy better social relations.

Therefore, when social relationships are the end of individuals' choices, they can be improved in two complementary ways: by consumption devoted to this purpose, and by the human contribution made by the parties to the relationship. This subsection will concentrate on the former aspect, while the next subsection will also consider the latter one, so that the influence of the human contribution can be temporarily assumed to be fixed.

The adult's utility function (U), which interchangeably also refers to well-being, can be thus specified:

(1) $U_a^e = U\,[\,c_a/z_a\,,\,R_a^e,\,H_a\,]$

where the subscript a attaches the variable to the adult; $c\,(\geq 0)$ denotes consumption for social comparison purposes, which is in fact related to $z\,(\geq 0)$, i.e. consumption by others, in the usual way (e.g. Clark *et al.* 2007). $R\,(\geq 0)$ denotes the relational good as characterised by a quality level, e.g. clear communication, empathy, romantic feeling; H denotes leisure time. All variables should be considered at their expected level, but the analysis in the following subsections will take the gap between the expected and the actual level to be relevant only for the case of R (and one of its determinants), and hence of U, so that they are marked by the superscript e. The function is concave in the three arguments, and it is characterised by close, though imperfect, substitutability between c/z and R^e, i.e. $1 < \sigma_{c/z,R^e} < \infty$. This is due to the fact that the undifferentiated market good enters U_a directly, i.e. c, and indirectly through R^e (see below). The elasticity of substitution between c/z and H (or R^e and H) may take a value different from one, so as to capture the US case, where working time has recently been on the rise, or the case of continental Europe, where working time is still diminishing. The simplest benchmark case where working time does not change will be selected.

The production function for R^e is the following:

(2) $R_a^e = R\,[\,h_a^e\,,\,C_a\,]$

where $h^e(\geq 0)$ denotes the human contribution to the quality of relational goods, and $C(\geq 0)$ denotes consumption instrumental to social relations. Both h^e and C contribute positively and essentially to R^e.

The constraints are the budget- and the time-constraint:

(3) $2(C_a + c_a) \leq wL_a$

(4) $L_a + H_a \leq 1$

where w is the labour income per time unit, which is taken as exogenous, and L is labour time.

Note that the budget constraint includes consumption by the youth, which is assumed to be the same in quantity as consumption by the adult. More generally, the assumptions on the economic relationship between the adult and the youth within the household will be kept as simple as possible, because the focus will be not on the change of utility between youth and adulthood, but on the change of utility across generations of young and adult individuals.

The youth's utility function, inclusive of the production function for R^e, is the same as the adult's, except for the distinct aspect of not working, so that leisure time is not a matter of choice. Thus:

(5) $U_y^e = U[\, c_y/z_y\,,\, R^e(\, h_y^e,\, C_y\,)]$

where the subscript y attaches the variable to the youth. The youth's constraint is the amount of transfer from the adult, i.e.:

(6) $C_y + c_y \leq wL_a/2.$

In order to maximise U_a^e, the adult must decide on L_a (or H_a) and on C_a (or c_a), but s/he takes z_a and h_a^e as given. Analogously, the youth must decide on C_y (or c_y), but s/he takes z_y and h_y^e, besides L_a, as given. The variables z_a and z_y will be endogenised below, when adult individuals and young individuals are respectively aggregated. The variables h_a^e and h_y^e will be endogenised in the following subsections.

The solution for the adult is obtained by introducing (2) into (1), and then by maximising (1) under the constraints (3)-(4). The solution for the youth is obtained by maximising (5) under the constraint (6), given that the solution for L_a has become known. Since the functions are the same for all adults, it is straightforward to predict that if also z were the same for all adults, those with relatively little h^e would exhibit less optimised C and U than the other adults. This reasoning can be applied to youths as well, since optimised L_a emerges as equal for all of them.

It is reasonable to regard z as referring to the socially competitive type of consumption, and distinctly for adults and youths, so that:

(7) $z = \phi(\bar{c})$ with $\phi' > 0$

where $\bar{c}$ is an average over c for each of the two sections of the population.

If individuals' solutions are averaged, i.e. $\bar{c}, \bar{C}, \bar{U}$, it is possible to endogenise z, thus assuming that the individuals take z as given but already adjusted. Therefore, the solutions for each section of the population are:

(8) $\quad \bar{c} = \bar{c}\,(h^e, w) \qquad$ with $\bar{c}_{h^e}{}'{<}0,\ \bar{c}_w{}'{>}0 \qquad$ and $\ 0 \leq \bar{c} \leq w\alpha/2$

(9) $\quad \overline{C} = \overline{C}\,(h^e, w) \qquad$ with $\overline{C}_{h^e}{}'{>}0,\ \overline{C}_w{}'{>}0 \quad$ and $\ 0 \leq \overline{C} \leq w\alpha/2$

(10) $\quad \overline{U}^e = \overline{U}\,(h^e, w) \qquad$ with $\overline{U}_{h^e}{}'{>}0,\ \overline{U}_w{}'{>}0$.

These results are intuitive, but an analytical solution of the model is given in the Appendix. The following conclusions can be drawn.

First, smaller levels of h^e yield higher levels of optimised $\bar{c}$, and lower levels of optimised $\overline{C}$ and $\overline{U}^e$. In particular, $h^e{=}0$ yields optimised $\overline{C}{=}0$. This result is due to the fact that consuming in order to enjoy social relationships is less rewarding, the smaller the human contribution. Substitution with consumption for comparative purposes is not sufficient to obtain greater utility. This result suggests that the deterioration of social relationships in the industrialised countries helps explain people's obstinate pursuit of the 'rat race' with their neighbours.

Secondly, higher levels of w yield higher levels of optimised $\bar{c}, \overline{C}$ and $\overline{U}^e$. However, the endogenisation of z introduces a bias here. In fact, the reward from consuming for comparative purposes is frustrated by the negative externalities from others, so that higher levels of w yield smaller proportions of optimised $\bar{c}/\overline{C}$. Therefore, greater quantities of wealth appear conducive to relationships, insofar as people are frustrated in competing for more consumption.

The two previous results combined lead to the conclusion that higher levels of w when $h^e{=}0$ yield higher levels of optimised $\bar{c}$, but the same level of maximised $\overline{U}^e$. This case lies at the basis of the traditional explanation for the Easterlin paradox, since only the relative consumption mechanism is at work here.

2.2 The individuals' endogenous dynamics over the life-cycle

The second step of the integrated explanation of the Easterlin paradox and of the deterioration of social relationships concentrates on the endogenisation of the human contribution to the production of relational goods, and on its dynamic over the individual's life-cycle. Since this is unexplored terrain for economists, the analysis will rely heavily on the social psychology literature, as briefly reviewed in Section 1.

The model draws on the results of this literature in an attempt to account for the following story. Regardless of genetic differences among individuals, the first part of their lives, when they are engaged in relationships with their caregivers, is crucial in shaping their ability to relate with others in subsequent years. Children expect everything from their caregivers, also psychological nurture, and the caregivers may fulfil or disappoint these expectations. Based on this experience, children build an internal working model of relations where either they are well-disposed to relating with others, and maintain high expectations about the quality of future social experiences, or they are insecure and dismissive of others, and reduce their expectations

about relations. These reactions mark their attitudes when they are adult and remain partly unpredictable.

Let us first distinguish between the *expected* human contribution to the relational goods (h^e), which starts at some fixed and uniform level for all individuals at the beginning of their lives, i.e. h_0^e, and the *actual* or experienced contribution (h).[11] The actual contribution is generally determined by the individual's ability to relate with others, called A, and by her/his partners' relational ability, whose average is at $\widetilde{A}$, so that:

(11) $h = f(A, \widetilde{A})$ with $f_A' > 0$, $f_{\widetilde{A}}' > 0$.

To simplify, the adult's relational ability will take only two values: a minimum level, A_a^m, and a maximum one, A_a^M, depending on what has happened during her/his youth, as explained below. S/he will relate with a number of individuals which forms a random sample of the adult population, since only adults influence h_a, so that the sample's average relational ability is $\widetilde{A}_a$. The adults have the most influential role in their relationships with the youth, so that the latter's contribution can be assumed to be neutral, as follows:[12]

(12) $A_y = \widetilde{A}_y$

where $\widetilde{A}_y$ is the average relational ability of the youth's caregivers, i.e. parents and other relatives, teachers, neighbours, who are $N(<n/2)$ in number.

Since f is continuous, h can take any real value between a minimum level, say 0, which occurred when the abilities of all individuals were at the minimum, and a maximum level, say h^M, when all individuals were at the maximum, so that:

(13) $0 = f(A^m, \widetilde{A}^m)$

(14) $h^M = f(A^M, \widetilde{A}^M)$.

The high expectations of the individual when a child suggest that we should assume that the initial *expected* human contribution to the relational goods is at the maximum level, i.e. $h_0^e = h^M$.[13] Consequently, the child's expectations may be fulfilled or disappointed to different degrees depending on the abilities of the caregivers. That is:

$h_y = f(A_y, \widetilde{A}_y) \le h_0^e$.

Developmental psychology tells us that children build an internal working model where they are well-disposed to relationships if their expectations are fulfilled or disappointed to a lesser extent. Alternatively, their internal working model is one that dismisses others if their expectations are disappointed to a greater extent. However, the pressure applied by the commercial and industrial system tends to push children towards a materialistic orientation and

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[11] The distinction between expected and actual quality of market goods is less relevant, since information is more easily acquired in this case.

[12] This assumption is not specific, and it can be replaced by an innate and uniform A_y without significantly changing the conclusions.

[13] This assumption is reasonable but not necessary. It may be sufficient that: $M < h_0^e < h_y^M$, where M is defined in the text.

away from the appreciation of relationships, and it is especially effective if children are disappointed by caregivers (points *(vii)* and *(ix)* above).

These facts can be formally represented by defining an exogenous variable which captures the pressure of the commercial and industrial system. Let us define this variable $M \in [0, h^M]$, so that children perceive fulfilments or disappointments as minor if $h_y \geq M$, and perceive disappointments as major if $h_y < M$.

More precisely, two groups of people are defined. People in group (I) experience the following condition when they are young:

(15) $h_{yI} = f(A_{yI}, \tilde{A}_{yI}) \geq M$

so that they are well-disposed towards others and develop relational ability at $A_a{}^M$. People in group (II) experience the following condition:

(16) $h_{yII} = f(A_{yII}, \tilde{A}_{yII}) < M$

so that they lose the ability to relate with others, thus approaching $A_a{}^m$.[14] Figure 1 illustrates these conditions, and the other conditions that follow.

Consequently, the adult experiences of the two groups in relating to others are characterised thus:

(17) $h_{aI} = f(A_a{}^M, \tilde{A}_a)$

(18) $h_{aII} = f(A_a{}^m, \tilde{A}_a)$.

There are two main results of this analysis. First, if two individuals exhibit the inequality $h_{yII} < h_{yI}$, then, in general, these individuals also exhibit the same inequality when adults, i.e. $h_{aII} < h_{aI}$, for a given common M.[15] This result derives from the fact that, for both individuals, $\tilde{A}_a$ is the average ability of a sample drawn from the same population, so that $\tilde{A}_a$ is concentrated around the average ability of the whole adult population, say $\bar{A}_a$. Therefore, exceptions to our first main result will be those adults endowed with $A_a{}^M$ who pick a particularly unfortunate sample of partners with low average ability with respect to those adults endowed with $A_a{}^m$, who pick a particularly fortunate sample of partners with great average ability. If the sample of partners were intentionally selected in adulthood, the number of these exceptions would diminish, since everybody would prefer good, though differently endowed, partners.

The second main result is that, for a given distribution of $\tilde{A}_y$ over the open interval $(\tilde{A}_y{}^m, \tilde{A}_y{}^M)$, the greater is M, the smaller group I is with respect to group II of both youths and adults.

Since people learn from experience, they can adjust h^e to h at the end of each period. The lack to perfectly foresee h from the start of each period is the crucial assumption made by the model in order to generate changes of A in the subsequent period from the gap $h^e - h$. But this

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[14] Roberts *et al.*'s (2006) evidence on declining sociability confirms this case, if it becomes prevailing.

[15] Less interesting is the evolution of h over the life-cycle, since h_y may be smaller or larger than h_a for the same individual in both groups.

assumption is also justified on recognising that knowledge of A is limited (see point *(viii)* above). Therefore, this two-period model may be extended to several periods without changing the main conclusions.[16]

On applying these results to the static model of subsection 2.1, the conclusions are straightforward. People in group II generally engage, at the end of each period, in less consumption in order to improve relationships with respect to people in group I, and greater consumption to compete with others, so that they enjoy less utility. Secondly, higher levels of M yield lower average levels of utility, since group II becomes more numerous with respect to group I. Hence, higher levels of materialistic pressure induce more people to substitute consumption to enjoy relations (C) with consumption to compete (c), given the same distribution in the degree of disappointment of their expectations on relational goods, and they thus reduce average utility in the population. Therefore, both caregivers' ability ($\widetilde{A}_y$) and materialistic pressure (M) are relevant to the youth's experience of disappointment, and hence to his/her levels of utility when adult, but the model makes clear that the effectiveness of M is conditional on $\widetilde{A}_y$. In fact, high levels of M can hurt youths only if $\widetilde{A}_y$ are not at high levels (i.e. h_y is close to h_0^e), thus capturing the possible ability of caregivers to mediate commercial pressure. Low levels of $\widetilde{A}_y$ can hurt youths even if M lies at low levels, since it is sufficient that $0<h_y<M$.

2.3 Aggregate dynamics across generations

This subsection considers a growing economy with the population formed by the two groups of people defined above, and it studies the dynamic of average aggregate utility across generations.

The average aggregate utility of a generation depends on the proportion of group I with respect to group II. The dynamic of this utility across generations is endogenous, because this proportion depends on individuals' h_y with respect to the common threshold M, and hence on the proportion of A^M/A^m within the set of the N close relationships of each youth. But this is a sample of the whole population of the preceding generation. Therefore, the composition of each generation is linked to the composition of the preceding generation. The smaller the proportion of individuals from group I with respect to group II within the set of caregivers, the greater the probability that the next generation will experience sufficient disappointment to fall within group II.

This cumulative dynamic of the composition of the population converges towards a uniform population characterised by $\widetilde{A}_{yII}$ and A_a^m, thus inducing both the young and adult population to reduce their average utility towards the level of individuals in group II. But there

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[16] A multiperiod model would account for the reverse causation found in some evidence on the social relationships-well-being link, since relationships are influenced by the underlying reasons for well-being in the preceding period.

is another worsening endogenous mechanism at work besides the externality across generations: the externality among people in the same generation. The reduction of abilities at $A_a{}^m$ also reduces $\widetilde{A}_a$ towards $\widetilde{A}_a{}^m$, so that the steady state is characterised by a population with $h_y=h_a=0$. The population thus tends to consume only for comparison purposes, with no further rise in utility.

These dynamics can alternatively be cumulative in the upward direction, i.e. towards a population consisting of only group I with maximum h and high levels of utility. The type of dynamic – whether downward or upward – depends in particular on M (see the Appendix for proof). If M is sufficiently great with respect to the initial composition of the population, the downward dynamic ensue; the opposite dynamic occurs for a sufficiently small M. Therefore, a once-and-for-all rise in M may be sufficient to reverse the dynamic from upwards to downwards.

Fortunately, economic growth induces w to rise with positive effects on c, C, and hence on U. As shown in subsection 2.1, these effects can off-set the negative effects of diminishing h. Each generation starts with a higher level of w and thus enjoys these favourable effects. However, these effects diminish insofar as reductions in h force people tendentially to consume only c.

3. Conclusions

This paper has sought to introduce, within the economic framework, an original link between the dynamics of well-being across generations of the population, and change in the quality of their social relationships, and especially of their closest bonds. An integrated explanation thus emerges of both the Easterlin paradox – even its version in which well-being is declining – and the deterioration of social relations which has unfortunately characterised the industrialised countries in recent decades.

The explanation thus suggested has been based on intuitions and evidence drawn from sociology, and especially from social psychology. These can be synthesised into the following facts: relationships are crucial for human well-being; they cannot be marketed though they can be imperfectly substituted with consumption goods; the quality of relationships is due to the heterogeneous relational ability of individuals; this ability is shaped by close relations during infancy and adolescence; during adulthood, the ability is less plastic, and it is inherited from infancy and adolescence to an unpredictable extent; finally, commercial pressure induces children and adolescents to purchase goods in order to compete with others, if parents' ability to have them enjoy relations per se is not sufficient.

The model thus starts from the sufficient susceptibility of children to commercial pressure, with respect to their parent's preventive action, and then their ability to relate with

others when adults, until the downward involvement of the whole population's well-being. Individuals attempt to resist this decline in well-being by consuming more market goods in competition with others, rather than enjoying relations with them. The decline in well-being takes place primarily through the composition effect, since people with reduced well-being diffuse from one generation to the next. People of this kind also exert a secondary depressive effect through externalities on the others of the same generation. This dynamic is explained as a generational transition towards a steady state where social life disappears from people's enjoyment, and social competiton becomes the only pattern of consumption, with zero-sum benefits.

Income growth displays positive off-setting effects on the well-being of all, but for the ironic reason that it dampens the tendency to engage in the most frustrating type of consumption. Sufficient income growth may even improve the intergenerational well-being of a group, or even of the whole population. However, this effect is not permanent, because the eventual steady state is one of constant well-being. This pattern can explain why the industrialised countries enjoy more well-being than the less wealthy countries but fail to substantially improve it any further.

The model is less mechanistic for the specific individual than may appear. In fact, that individual can improve her/his well-being over the life-cycle even if s/he has been unlucky in having inadequate parenting. Attempting to improve partnerships may have successful effects on relations and well-being, obtaining even greater success than some luckyier individuals for their happy infancy. However, this does not preclude the possibility that inadequate parenting will be reproduced for the next generation, because the pressure by the commercial system may be set at a sufficiently great level.

The good news from this model is that it provides more straightforward policy options than the simple relative income approach to the Easterlin paradox. In fact, the model shows, firstly, that the ability of caregivers to relate with children may prevent any deleterious long-term consequences for their well-being due to the commercial pressure to consume more than others. Therefore, policy to support caregiver action starting at the pre-primary age should be seen as a high-return investment for the entire population.[17] Secondly, if either the caregivers' ability is great or the commercial pressure is weak, the model states that income growth may induce individuals to increase their consumption to improve the quality of their relationships and well-being, so that they thus escape from the paradox. Therefore, policy should consider shaping the direction of economic growth by promoting a more social-friendly pattern of consumption.

Policy intervention is fully justified because of the distortion in the competition between caregivers and industrial/commercial organisations to influence the orientations of children.

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[17] See, e.g., the Australian Positive Parenting Program (Sanders *et al.* 2003; Mihalopoulos *et al.* 2007).

Whereas the failures of these organisations are sanctioned by the market, the failures of caregivers are not self-correcting; rather, they cumulate across generations.

Each statement underlying the model, as pointed out in Section 1, is supported by a body of empirical evidence in the literature, but no overall test has yet been conducted. Future research will attempt to fill this gap, although, very recent studies in economics already obtain encouraging results (Borghans *et al*. 2008; Bartolini *et al*. 2007).

Appendix

A solution of the static model of subsection 2.1

Let us specify the general functions (1) and (2) as follows:

(A.1) $U_a^e = [\, m(c_a/z_a)^\gamma + (1-m)(R_a^e)^\gamma]^{\,\alpha/\gamma}\, H_a^{\,1-\alpha}$ with $0<m,\alpha,\gamma<1$, and $c_a, z_a, R_a^e, H_a \geq 0$

(A.2) $R_a^e = qC_a h_a^{e\eta}$ with $q, \eta \geq 0$, and $C_a, h_a^e \geq 0$.

Introducing (A.2) into (A.1), and maximising (A.1) under the constraints (3)-(4) yield:

(A.3) $c = w\alpha\Lambda/[2(1+\Lambda)]$

(A.4) $C = w\alpha/[2(1+\Lambda)]$

(A.5) $H = 1-\alpha$

where $\Lambda=[(m/n)(zqh^e)^{-\gamma}]^{1/(1-\gamma)}$, so that, in particular, $\partial c/\partial z <0$, being $0 \leq z \leq w\alpha/2$.

The average of c over each section of the population is:

(A.6) $\bar{c} = 1/n \int c\, dh^e$.

Substituting z from (7) in Λ, then Λ in (A.3), and finally c in (A.6) yields a function as follows:

(A.7) $\bar{c} = F(h^e, w, \bar{c})$ with $F_{h^e}' <0$, $F_w' >0$, $F_{\bar{c}}' <0$

which warrants the solution (8). Given the budget constraint, also (9) can be obtained.

Note that, whereas $\partial^2 c/\partial w^2 =0$ in (A.3), $\partial^2 \bar{c}/\partial w^2 <0$ in (8), as is evident from inspection of (A.7). Therefore, a rise in w reduces optimised $\bar{c}/\bar{C}$.

If $h^e=0$, then heterogeneity disappears, and $z=c$, so that optimised $\bar{c} =c=\alpha w/2$, and $U_a^e=m^\alpha (1-\alpha)^{1-\alpha}$ for the adults, $U_y^e=m$ for the youths.

Proof that M can discriminate between cumulative dynamics as in subsection 2.3

The proof depends on the following proposition.

Given the conditions in subsection 2.2, a level of M exists, i.e. **M***, such that the proportion of the two groups remains unchanged across periods, n and N having been kept constant and sufficiently great. If M>***M***, then the size of group I of adults tends to zero in the subsequent periods. If M<***M***, then the size of group I of adults in the subsequent periods tends to the size of the adult population (0.5n). The larger the initial size of group I, the greater is* **M***.*

Let us mark time periods with the subscripts $t=1$, $t=2$, etc. Adults belong to group I if endowed with $A_a{}^M$, or to group II if endowed with $A_a{}^m$, where the sum of the two groups amounts to $0.5n$. Let us call $p_{t=1} \in\,]0,1[$ the initial share of the adult population with $A_a{}^M$.

The probability of a youth entering group I of adults in $t=2$ depends on the share of adults with $A_a{}^M$ in the sample with whom s/he has a relationship. Let us use P to denote this share, and $N>30$ the sample size, equal for each youth. Sampling is with repetition, since an adult can engage in relationships with a number of youths, so that the population can be virtually regarded as infinity for sampling. Sample distribution of P is a binomial one with $(\mu_P=p,\ \sigma_P=\sqrt{p(1-p)/n}\,)$.

Let us call P_M the share that determines h_y, according to (15)-(16), so that a youth enters group I if $P \geq P_M$; s/he enters group II if $P<P_M$. The sample is sufficiently large to allow use of the standardised normal distribution of P, i.e. $z=(P-p)/\sigma_P$. For a given P_M, two other parameters can be obtained: $z_M=(P_M-p)/\sigma_P$, and the cumulated probability Π, i.e. the region on the right of z_M under the curve of the distribution where $P \geq P_M$.

Since z_M is a positive function of P_M and a negative function of p, and Π is a negative function of z_M, the following function can be defined:
$\Pi_{t=1}=\Pi\,(P_M,\ p_{t=1})$ with $\Pi_{P_M}{}'<0$, $\Pi_{p_{t=1}}{}'>0$, $\Pi_{t=1} \to 0$ for $P_M \to 1$ and $\Pi_{t=1} \to 1$ for $P_M \to 0$ $\forall\ p_{t=1}$.

Let us assume that n is sufficiently great for Π to be considered as the limit of the actual share of youths in the population of youths in $t=1$ who enter group I of the adult population in $t=2$, i.e. $p_{t=2}=\Pi_{t=1}$. Hence:

$\qquad p_{t=2}=\Pi\,(P_M,\ p_{t=1})$.

For $P_M \to 0$, then $p_{t=2} \to 1$, meaning that the requirement to have some caregivers with $A_a{}^M$ in order to enter group I is very loose. Therefore, in this case $p_{t=1}<p_{t=2}$. For $P_M \to 1$, then $p_{t=2} \to 0$, meaning that the requirement to enter group I is very tight. Therefore, in this case $p_{t=1}>p_{t=2}$.

A level of P_M, and hence of M called **M**, must exist, such that $p_{t=1}=p_{t=2}$. Since this reasoning holds for every period, the parameter **M** discriminates between two cumulative dynamics of the composition of the adult population, which involves the young population in the same type of dynamic.

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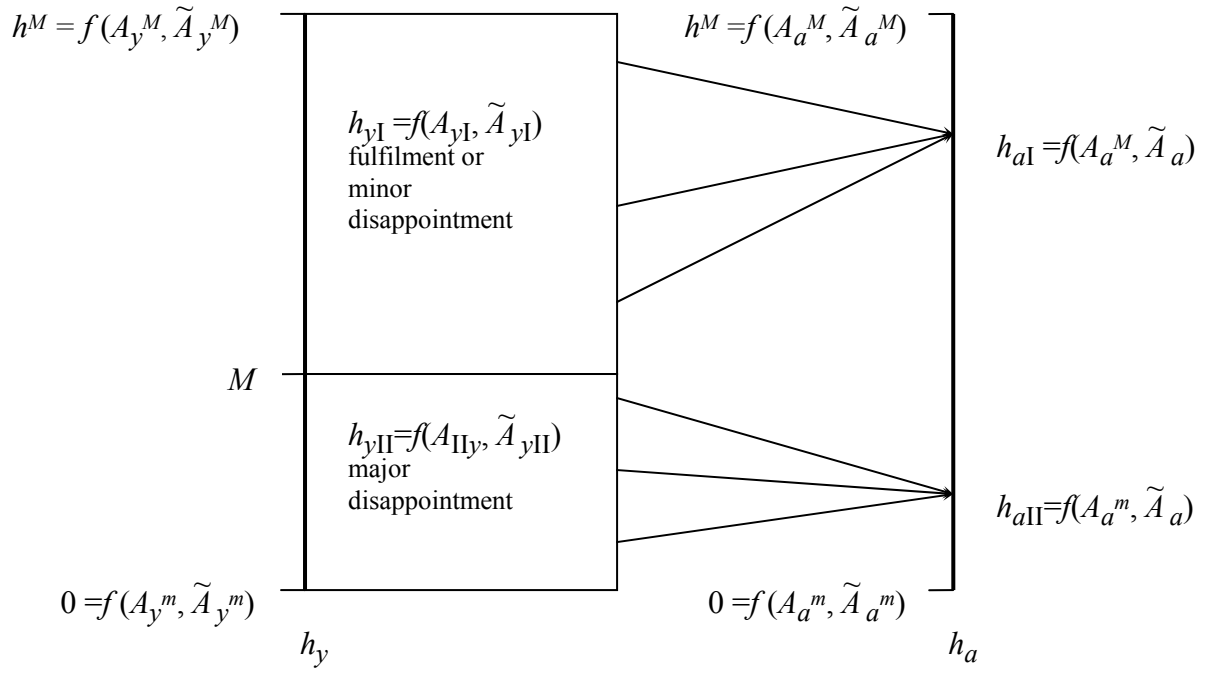
Fig. 1: Representation of fulfilment or minor disappointment, and of major disappointment on the h_y-axis. Representation of the reaction on the h_a-axis.