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Young Households' Saving and the Life Cycle of Opportunities. Evidence from Japan and Italy.

by Albert Ando (*), Luigi Guiso (**)
and Daniele Terlizzese (**)

Abstract

The tendency of both young and old households to save, or to dissave a very small fraction of their total resources, is inconsistent with a strict life cycle model. We concentrate on young households and document their behaviour, drawing on Italian and Japanese data. We also propose a theoretical structure that is broadly consistent with the spirit of the life cycle theory while at the same time capable of accounting for the observed facts without relying on assumptions concerning the working of credit markets or the degree of foresight of consumers.

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I. Introduction[1]

The earnings profile appears to rise steeply with age in most countries, especially those with rapid growth such as Italy and Japan. It is therefore natural to expect that, because of the consumption smoothing principle, young people will dissave.

Using microdata for Japan and Italy, we show that families and singles both save and accumulate net worth throughout their working lives, even while they are quite young and their current incomes are lower than future incomes.

We are thus faced with the question as to why young people do not dissave. This is a shift in emphasis from recent literature, in which much effort has been devoted to devising modifications to the life cycle theory that could accommodate the relatively low propensity to dissave by older, retired families.

The mere lack of dissaving by very young households may be explained by the presence of liquidity constraints or myopia. The ingenious interaction of liquidity constraints with uncertainty recently proposed by Deaton (1991) can, within a buffer stock context, explain a limited amount of saving; it is, nonetheless, probably inadequate to explain the significant saving by very young households with relatively low incomes.

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1. A previous version of this paper was presented at the Conference on "Saving Behaviour: Theory, International Evidence and Policy Implications", Helsinki, May 1991. Basic computations using Japanese data and the construction of the cohort means were completed in 1986-87 at the University of Osaka, when Ando was given access to data from the 1979 and 1984 national surveys of family income and expenditure. We wish to thank Agar Brugiavini, Chris Carroll and Angus Deaton for helpful suggestions and the participants in the Helsinki conference for their comments. We are also grateful to Luigi Sciamplicotti for very valuable research assistance.

We propose instead an explanation based on the hypothesis that, for very young households, due to the expectation of (future) consumption opportunities not available today, higher future income might be accompanied by larger needs. This creates a situation in which, at a later period, the marginal utility of income is higher even though the expected income is higher than the current income.

The increase in current consumption induced by an expected increase in future income might then be small (or even negative). According to this interpretation, consumption will then be concentrated in those periods in which the opportunities are better. In contrast with the smoothing of consumption, we obtain what might be called a "consumption lumping" principle.

Consumption lumping can also be obtained if the marginal utility is higher in the middle age because of the evolution of the family size. Attanasio and Browning (1991) show that controlling for the demographic changes within the households considerably smoothes the age consumption profile. However the close association between consumption and income at young ages still characterizes the data.

In Section II we present evidence that young families and individuals with relatively low current earnings who anticipate rapidly increasing future earnings nevertheless save a significant proportion of their current income. We also show that the reaction to anticipated changes in income is negligible for very young families, and that it becomes sizeable and significantly different from zero for older cohorts. We also show that the level of net worth has a positive effect on consumption, significant and smaller than one, indicating that families do follow a fairly long-term plan of asset accumulation. This casts doubt on the hypothesis of myopic behaviour.

In Section III we outline a theoretical explanation and offer two illustrative examples. We conclude with a general discussion in which we contrast our theoretical explanation

of the behaviour young consumer's with alternative explanations put forward in recent literature.

II. The saving behaviour of young households: an empirical assessment

In a recent paper Carroll and Summers (1991) presented a composite and well-documented picture of consumption behaviour that is difficult to square with standard versions of the permanent income or life cycle theories. In particular, they use microdata to show that the basic implication of a simple life cycle model is not borne out. On the contrary, there seems to be little evidence of low frequency consumption smoothing, as both young and old households dissave too little.

The behaviour of the second group has been thoroughly investigated, both empirically (Ando and Kennikell (1986), Hayashi, Ando and Ferris (1988) among others) and theoretically (Davies (1981), Hurd (1990)).

Our focus here is on the behaviour of young consumers, which is interesting for at least two reasons.

First, the predictions of the life cycle theory at the individual level are characterized by, among other features, zero life time saving and negative correlation between current saving and expected future income. The main features of macrodata are positive and sizeable total saving and positive correlation between the saving income, ratio and the growth rate of aggregate income. The implications of the theory at the micro level and macrodata are usually reconciled with each other by aggregating consumers at different points in the life cycle. However, the effects of aggregation are unambiguous only when the preferred age pattern of consumption and the lifetime earnings profile are such that families do not dissave before retirement. If young individuals dissave significantly the larger weight assigned to them in a growing economy by the process of aggregation

could result in total saving being negatively correlated with growth. The saving behaviour of young consumers is therefore crucial in assessing the consequences of aggregation for the level of total savings and its correlation with the growth of income[2].

Second, whereas simple extensions of the life cycle theory have been able to account for the low level of dissaving among the old, the behaviour of the young has proved more difficult to rationalize. Liquidity constraints and myopia are often invoked to explain the lack of borrowing against a higher future stream of income. These hypotheses are suggestive but they are not entirely convincing (see the discussion in Section IV). We hope that greater emphasis on young people will eventually make it easier to discriminate between the alternative interpretations of saving behaviour.

II.1 Descriptive evidence: high saving rate by the young and a potential sample selection bias

Table 1 shows saving by age for Italian and Japanese households, together with the cross-section earnings profile, which appears to be increasing with age. Given the high growth experienced by both countries, the adjustment for increases in productivity would make the two profiles extremely steep, especially at the beginning of

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2. To be sure, the reference to aggregation could in principle be avoided, as both positive savings and a positive correlation with the growth rate of the economy are consistent, in general equilibrium, with a representative agent model; however, the latter seems to require a higher level of sensitivity of consumption decisions to interest rates than is usually estimated (or larger movements in interest rates than those currently observed; see also Carroll and Summers, 1991). The aggregation of consumers at different points in the life cycle thus appears the most reliable mechanism to explain the macrocorrelation between savings and growth.

Table 1

Younger households' saving, disposable income, wealth accumulation and earnings by age. Italy and Japan

Italy					Japan (3)				
Age of the head-of household	Saving (1)	Annual change in wealth (2)	Disposable income	Earnings	Age of the head-of household	Saving (4)	Annual change in wealth (5)	Disposable income	Earnings
20 - 23	2,744	-	21,391	15,253	20 - 24	405.2	584.4	1640.5	1577.1
24 - 27	3,504	9,267	23,229	17,232	25 - 29	404.6	745.9	2252.6	2101.9
28 - 31	5,076	12,238	27,109	20,103	30 - 34	391.4	952.5	2943.1	2713.9
32 - 35	6,205	10,103	29,613	23,488	35 - 39	478.3	1090.7	3579.1	3251.9
36 - 39	5,611	16,387	31,786	25,505	40 - 44	586.1	1143.4	4044.3	3620.7
40 - 43	7,903	9,531	33,856	26,971					

Sources: Italy: Indagine sui bilanci delle famiglie, Banca d'Italia, 1987 and 1989. Data are expressed in thousands of 1987 lire. Japan: National survey of family income and expenditure, 1979 and 1984, Status Bureau, Government of Japan. Thousands of yen.

(1) Defined as households' disposable income minus households' consumption expenditure.

(2) Annualized change in net worth between the end of 1987 and the end of 1989, in 1987 prices.

(3) These figures represent a weighted average for ordinary families (married couples, their children and other members such as retired parents), single person households, and working male adults living in another household. See also the explanation in the text on the construction of cohorts.

(4) Defined as household disposable income minus (economic) consumption.

(5) Weighted average of the annualized change in net worth for ordinary and single households between the fourth quarter, of 1979 and the fourth quarter, of 1985, in 1979 prices, and the saving of male, working dependent adults (mostly living with their parents). For the last group, we are using saving defined as income minus consumption since we do not have information on their assets and liabilities. This concept includes real capital gains and losses, especially on values of residential property.

life[3]. Consequently, the strict life-cycle theory would suggest that young consumers decumulate substantial amounts of wealth (where they have any at the beginning of their working lives) or run negative saving.

The evidence points in the opposite direction. Young households save a considerable proportion of their current income. Combining cross-section data for different years and looking at the annual change in net worth of the average household in a specific age cohort, while giving a rather different measure of net accumulation, nonetheless confirms the basic fact: in spite of steep earnings profiles young households, both in Italy and Japan, accumulate wealth[4].

A potentially important bias might arise from the fact that young consumers still living as dependents within their families do not appear as independent households in the surveys. If (for whatever reason) they tend to consume more of what they earn (or, similarly, if the young consumers who become independent are thriftier), the observed "oversaving" of the young might be a statistical illusion. Given the tendency for young consumers in both Japan and Italy to live in their parents' houses long after they start working, this sample selection problem could be important.

Before proceeding with the more elaborate analysis, we check in the simplest possible manner whether the living status of young adults makes a significant difference. Table 2 shows mean values of some key variables for a number of

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3. Assuming a rate of growth of productivity of 4 % in Italy and 5 % in Japan (approximately equal to the average growth of GDP per worker in the last 30 years in the two countries) the adjustment for growth would lead to a level of earnings in the highest age bracket 2.2 times as large as that in the youngest age bracket in Italy, and 2.6 times that in Japan.

4. The larger estimate for saving implied by the change in net worth is due partly to capital gains on housing, which were substantial in both Japan and Italy between the two years used to construct the figures in the table.

Table 2

Disposable income, consumption and net worth by type of household: Italy (I) and Japan (J)

	Age		Disposable income		Consumption		Net worth		Saving rate	
	I	J	I	J	I	J	I	J	I	J
A Pure nuclear families	58	52	30,880	4,611	23,947	4,029	162,140	22,104	.22	.14
B Extended families with one working adult aged 25-29	58	54	48,234	5,556	33,133	4,334	194,379	23,879	.31	.22
C Single person families aged 25-29	27	27	19,741	2,113	17,332	1,667	47,467	4,083	.12	.21
D Combined households (A+C)			29,803	5,731	23,308	4,841	151,056	19,610	.22	.15

Source: Italy: Indagine sui bilanci delle famiglie, Banca d'Italia, 1988 - Data for Italy are expressed in thousands of 1987 lire.
Japan: National survey of family income and expenditure, 1979, Status Bureau, Government of Japan. Thousands of 1979 yen.

relevant groups. Our comments refer to Japan but, as can easily be seen, the same conclusions apply to Italy. Row A corresponds to pure nuclear families[5] ; row B corresponds to pure nuclear families extended to include one, and only one, working dependent adult male aged 25-29[6] (extended families); and row C corresponds to a single, working adult male aged 25-29 and living alone[7]. For row B the saving-income ratio is .22, while for the sum of rows A and C, which represents a fictitious family comparable with that in row B, it is .15. Thus, the saving-income ratio is 7 percentage points higher for the extended families. The conclusion that we draw from this Table is that, if anything, young working dependents save proportionately more than independent consumers of comparable age. It is thus difficult to interpret the overall behaviour of young households within a standard consumption smoothing paradigm. However, the issue deserves further scrutiny, especially on the question of the response of young consumers to (expected) future changes in earnings.

II.2 Young consumers and future income changes

If many years of longitudinal data on both earnings and consumption were available it would be possible to construct measures of expected future earnings for each single consumer

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5. That is either couples, possibly with non working children, or one of the remaining member of a former couple with non working children.

6. In most cases the additional working dependent adult is the son or daughter of the head of household, though we allow for all other possible cases. For Japan only households with male dependent adults where selected.

7. To correct for a possible bias in the saving propensity due to the age of the pure nuclear families being lower than that of the extended families, for Italy we randomly draw a sub-sample from the pure nuclear families that has the same (head of household's) age distribution as that observed among the extended families. For Japan we select pure nuclear families in the age bracket 50-54, approximately matching the average age of the extended families.

and test their effect on current consumption. Unfortunately, longitudinal data are not usually available for either consumption or earnings. For Italy we have access to a short panel where a sample of households were interviewed both in 1987 and 1989. This information can be usefully exploited to test for the effects of future expected income on current consumption. For Japan we do not have panel data. However, by combining cross-sectional data at different points in time it is possible to construct cohort average data for consumption and current and future earnings.

The basic idea is illustrated in Fig. 1, which shows two cross-section patterns of earnings for individuals (heads of households) with specific characteristics (occupation, education etc.) over all ages. Suppose that the cross-section age-earnings profile aa was observed in year t, and bb was observed in year t+h (to be specific, let t be 1979 and t+h be 1984, the two years covered by the available Japanese surveys). Suppose then that the position p represents the actual earnings of a group of individuals aged 35 in 1979. They will be aged 40 in 1984, and hence will occupy the position s in that year. We suppose this position represents, for 1979, the expected earnings five years ahead of individuals who, in 1979, occupy position p. Note that this group's lifetime path of earnings is considerably steeper than either aa or bb[8] and is generally quite different from

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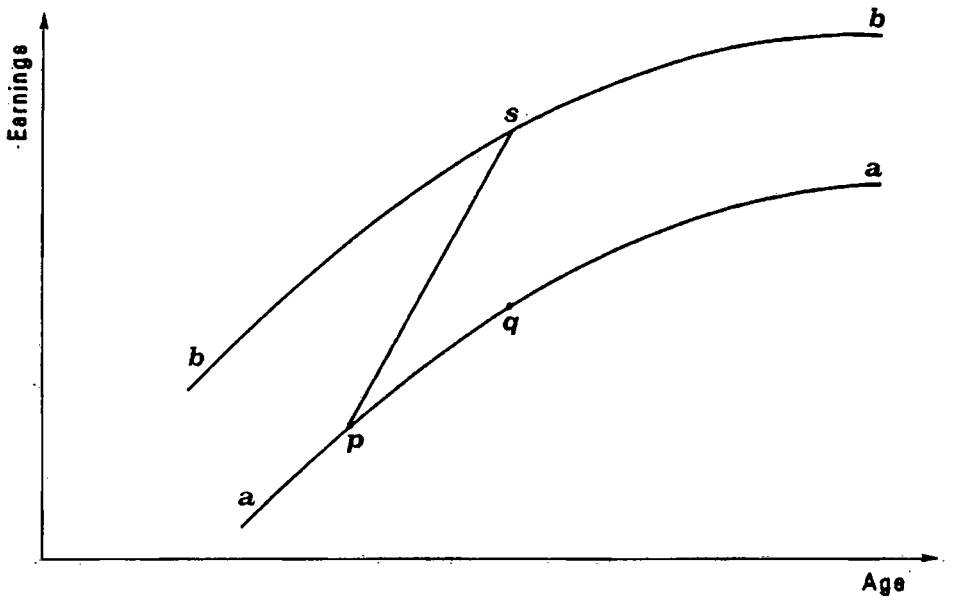
8. The movement from position p to position s consists of two components. The first, from s to q, is the age effect, which might include improvements in skills and, therefore, an increase in productivity that cannot be distinguished from other effects of age. The second component of the movement, from q to s, is the productivity increase specific to calendar year, and is common to all members of the work force, regardless of age. An empirical distinction between these two reasons for a change in earnings could be important since changes due to calendar year productivity increases are more likely to be subject to surprises. Thus, the distinction is potentially useful in assessing the explanation of the observed savings-growth correlation in fast expanding economies based on a "surprise" element.


Earnings
b
s
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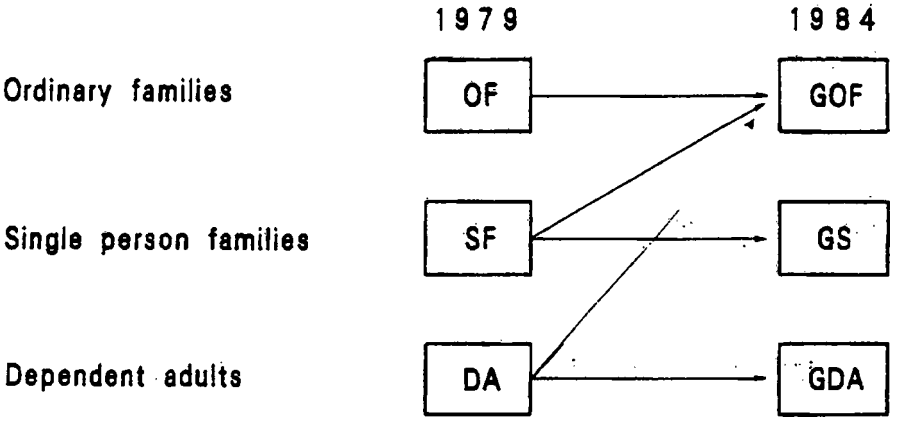
1979
1984
Ordinary families
OF
GOF
Single person families
SF
GS
Dependent adults
DA
GDA

the path that would be obtained by adjusting aa for the growth in the economy's overall productivity.

The principal problem when using a sequence of cross-section data to approximate panel data stems from the possibility that, between 1979 and 1984, the household in question changed type. For example, single persons get married, married couples divorce and so on. Since the mean income of these different household types is different, careful handling of the type changes is required in order to obtain reasonable estimates of expected future income. Clearly, the issue is of particular relevance for young consumers, who are the focus of our attention[9].

Consider then the population of ordinary households (husband and wife, their children and perhaps other members) aged between 30 and 35 living in 1984. Let us focus our attention on the male head of each household. He could have come from one of four groups. He may have already been the head of the same household; he could have been a single person living independently; or he could have been a working dependent adult in someone else's household, most probably his parents'. The fourth possibility, a non-working dependent adult in some one else's household, can be dismissed for our purposes since there are very few non-working dependent adult males over the age of 25.

We shall refer to type i families, i=(OF, SF, DA), and type j families, j=(GOF, GSF, GDA), where the symbols represent respectively: ordinary families with married couples at the core, male single person families, and working male dependent adults in 1979 (i) and 1984 (j), and G is a mnemonic for grown. All are aged 25-29 in 1979 and 30-34 in 1984.

We have no information that can precisely match each

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9. A similar problem, arising when older people merge into one of their children's households, was tackled by Hayashi, Ando and Ferris (1988).

type i family with a type j family. By making strong assumptions we can, however, deduce the transition probabilities. We assume, first of all, that all families in OF will move to GOF. Since the divorce rate in Japan is extremely low and the mortality rate at these ages is also low, this seems a reasonable assumption. We also assume that families in SF will be either in GSF or GOF and families in DA will be either in GDA or GOF; in other words we assume that a single person does not become a dependent adult, or a dependent adult a single person. This may not be a reasonable assumption, but without it, it would become extremely hard to proceed. The possible transition paths are illustrated in Figure 2. From the number of families and individuals in each group, obtained from the 1980 and 1985 censuses, we estimated the transition probabilities, which are then used to compute the expected future earnings of each type i family. We verified that the number of corresponding families and individuals in the samples of the National Survey of Family Income and Expenditure, multiplied by sampling ratios, approximates the census figures fairly well.

The last step was to divide the family types into smaller groups in order to construct a set of cohort means to be used in the estimation. We used occupation, location, and the number of children as classificatory variables, and managed to obtain about 70 cohorts for each age group.

As mentioned before, we departed in this paper from the standard approach to constructing expected earnings, which adjusts the cross-section pattern of earnings of similar families for the general productivity gains over time. For each 1979 cohort the level of future expected earnings is defined as the mean earnings of the corresponding cohort in 1984, using as weights the transition probabilities computed as shown above. In other words we assume a perfect foresight forecast.

For the Italian case we proceed in a somewhat simpler way. The availability of a two years panel for 1987 and 1989

taken from the Italian Survey of Households' Income and Wealth[10] (SHIW) allows the construction of an estimate of future expected income; this is obtained taking the fitted values of a regression of earnings in 1989 against information available in 1987, including earnings in that year[11].

II.3 Empirical findings.

The regression results for Japan relating to the 1979 survey are shown in Table 3, part A. Regressions were run by dividing all the variables by earnings in 1979 (Y79). For ease of interpretation, the results are shown in the level form. The two columns refer respectively to households whose head was aged 25-29 and 30-34 in 1979.

Considering first the younger consumers, we note that the coefficient of current earnings (after the terms KID and MEM are taken into account), is .584, against the .052 for expected future earnings (denoted as EY84). Further, the coefficient of EY84 is not at all significant. This result appears to confirm the contention of Carroll and Summers (1991) and Carroll (1989) that expected future income does not have much effect on either consumption or savings.

On the other hand, the coefficient of net worth in 1979, W79, is significantly different from zero (.05, with a t-ratio of 4.58), but considerably smaller than one. This means that, in contrast with the myopia hypothesis, young

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10. The SHIW is a survey sponsored by the Bank of Italy and collects information on a random sample of about 8,000 Italian households. A subset of the 1987 total sample has been interviewed again in 1989 and forms the panel component(1208 households). Further details on the survey can be found in Guiso, Jappelli and Terlizzese (1991).

11. Our procedure has the shortcoming that it covers only a horizon of five years in the case and Japan and two years in the case of Italy. For the young groups with which we are dealing here, the relevant expected earnings should cover the major portion of their working life of some 30 years or so.

Dependence of younger households' consumption on current earnings, expected future earnings and net worth

(dependent variable: consumption in the 1979 survey)

A	Age of household head in 1979	
	25 - 29 n. of cohorts = 62	30 - 34 n. of cohorts = 71
constant	454.4 (5.17)	1082.8 (7.15)
Y79	.506 + .049 KID + .016 MEM (2.57) (5.45) (.38)	.198 + .048 KID + .125 MEM (2.34) (7.61) (3.78)
EY84	.052 (.79)	.169 (3.65)
W79	.05 (4.58)	.025 (2.55)
R^2	.64	.72
Mean of	{ C79 = 2517.1; KID =1.47; MEM = .41 }	{ C79 = 2880.6; KID = 1.52; MEM = .41 }

Dependence of younger households' consumption on current earnings, past consumption and net worth

(dependent variable: consumption in the 1984 survey)

B	Age of household head in 1984	
	30 - 34 n. of cohorts = 62	35 - 39 n. of cohorts = 71
constant	1081.0 (4.75)	1012.7 (3.95)
Y84	.420 + .030 KID + .215 MEM (6.08) (3.01) (2.90)	.446 + .030 KID + .128 MEM (7.34) (3.44) (1.64)
C79	-.75 (-.69)	-.032 (-.22)
W84	.037 (4.66)	.032 (6.25)
R^2	.71	.77
Mean of	{ C84 = 2919.4; KID =1.54; MEM = .16 }	{ C84 = 3321.8; KID = 1.52; MEM = .18 }

Legend:
KID = Number of children aged 17 or younger;
MEM = Number of members in the family, other than husband, wife and their children.

consumers plan for the future, although they adjust very slowly if they find a significant gap between their current and planned patterns of asset accumulation.

For the older age group, the coefficient of current income is considerably smaller (.294, taking into account the terms KID and MEM), and the coefficient of expected income is both large, .169, and significant. This is a clear indication that the older group takes future earnings into account in determining consumption. Net worth has a somewhat smaller coefficient, but remains an important variable in the regression[12].

In Table 3, part B, using the 1984 survey as the reference year, we investigate the possibility that past consumption (C79) might affect current consumption in the form of habit persistence. Since only two surveys are available, we cannot construct the perfect foresight earnings forecast for the 1984 cohorts. It turns out that C79 is completely insignificant in these regressions and we conclude that, for this set of data, habit persistence is not an important factor in the determination of current consumption.

Table 4 reports the analogous estimates for Italy. The regressions were run by dividing all the variables by an estimate of permanent earnings[13] and inserting "transitory earnings" (measured as the difference between current and

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12. To assess whether the impact on consumption of changes in earnings due to calendar year increases in productivity differs from that of changes due to the age effect, according to the classification made in note 7, we ran a regression splitting EY84 into these two components. Unfortunately, this distinction was possible only for the younger group; in this case both components turned out to be not significantly different from zero.

13. Permanent earnings are identified with the fitted values of a Weighted Least Squares regression against a vector of family characteristics including a polynomial in age. Notice that, by construction, the "transitory" component of earnings is given by the residuals of this regression; hence, as in King and Dicks-Mireaux (1982), it might include also a permanent component.

Table 4

Dependence of younger households consumption on current earnings, expected future earnings and net worth: Italy

(dependent variable: consumption in the 1987 survey)

	Age of household head in 1987			
	20 - 30		31 - 40	
	A1	B1	A2	B2
Constant	.009 (.630)	.009 (.582)	-.8E-3 (.157)	.3E-3 (.006)
$\bar{Y}87$	.760 (3.428)	.744 (3.136)	.344 (3.187)	.350 (3.284)
$\tilde{Y}87$	.692 (4.752)	.695 (4.660)	.407 (4.970)	.381 (4.681)
y^e89	-.139 (.608)	-.138 (.588)	.228 (1.850)	.259 (2.113)
$D1y^e89$		.037 (.293)		-.103 (2.432)
W87	.049 (3.328)	.049 (3.281)	.020 (3.655)	.020 (3.761)
AGE	-.1E-3 (.188)	-.11E-3 (.187)	.17E-3 (1.074)	.1E-3 (.898)
NCOM	-.14E-3 (.159)	-.06E-3 (.007)	.97E-3 (.794)	.76E-3 (.627)
NKID	-.84E-3 (.593)	-.8E-3 (.721)	-2.00E-3 (1.563)	-1.90E-3 (1.439)
EDUC	.2E-4 (.054)	.04E-3 (.094)	.1E-3 (.777)	.1E-3 (.848)
R^2	.698	.699	.433	.453
SE	.324	.329	.279	.276
Mean of dep. var.	1.021	1.021	.933	.933
N° of observations	36	36	175	175

Legend:
$\bar{y}87$ = permanent income in 1987; $\tilde{y}87$ = transitory income in 1987; y^e89 = earnings expected in 1987 for 1989; D1 = 1 for households whose head has changed job position; W87 = net worth at the beginning at 1987; AGE = age of the household head; NCOM = number of family members; NKID = number of children.

"permanent" earnings) as an additional regressor.

The age classes considered differ somewhat from those used in the Japanese case because of data availability. In spite of this and of the different nature of the data used, the results appear surprisingly similar to those obtained for Japan.

For the younger age class, expected future earnings are not statistically significant (column A1); the coefficient of wealth is instead significant and of the same order of magnitude as that for Japan, even though, given the size of the sample (only 36 observations), we do not consider this result as a particularly robust one.

For the older age group, the coefficient of expected future income (column A2) is sizeable (.228) and significant at the 10 percent level.

In columns B1 and B2 we report an additional specification for the two age groups that includes future expected income interacted with a dummy representing (future) changes in the job position of the head of the households; while we postpone the interpretation at these results to the end of Section III.1, it is worth noticing that the introduction of this additional regressor decreases the effect of future income on current consumption for those who will change job position, relatively to those who will not.

It is difficult to square these results with the hypothesis of myopic behaviour. Further, simple models of consumption associated with liquidity constraints appear to be contradicted[14]. It is interesting, in our view, that the effect of future earnings on current consumption becomes significant only for households who are at a later stage of the life cycle, albeit still relatively young. One possible

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14. A positive effect of future expected income on current consumption might be consistent with the presence of liquidity constraints in the Deaton's model, in which the anticipation of higher future income reduces the need for precautionary saving.

explanation is that liquidity constraints, while binding for very young households, cease to bite fairly soon. In the Section III, after presenting our theoretical framework to account for the saving behaviour of young households, we shall take up again this issue, arguing that the age dependency of the sensitivity to expected future income finds a natural explanation in our approach.

III. The life cycle of opportunities

In the conventional approach, economic agents are identified with a given preference relation defined over a given consumption set. Although this description is inherently static, some goods could be interpreted as being available only in the future, and the preference relation could be dependent on the state of the environment, as the description of each good involves the contingencies in which it will be consumed.

However, in the absence of a complete set of markets in which, at the beginning of the agent's life, all the commodities so defined can be exchanged, it seems more natural to define not only agents' decisions but also their "identities" as being the result of a sequential process.

At the start, each agent has a preference relation involving a (usually small) set of commodities, namely those with which he is most familiar, perhaps because of his parents' behaviour. But he probably does not have a clear opinion concerning other goods, certainly those not yet invented but also, and more significantly, those consumed in different socioeconomic levels.

As the agent grows older and pursues his career, his position on the social ladder changes, he moves to different places and the composition of his family evolves. He becomes acquainted with new people, observes new habits and discovers new consumption patterns. Indeed, the agent's own social identity, as defined by his relationships with other people,

can be said to evolve with age.

At the beginning of their working lives, individuals face a wide range of possible paths, all of which might involve not only different patterns of lifetime earnings but also a different structure of needs and preferences. As they grow order, either by choice or by chance some of the original possibilities will no longer be feasible, and each individual will eventually settle down in what might be called a "social niche".

The social niche to which an individual belongs entails, to some extent, a preferred consumption structure and, for this reason, we interpret the discovery of the niche as providing the opportunity for improving consumption choices. It is then intuitive that people have an incentive to postpone some of their purchases until they have learned in which social niche they will end up.

To put it more formally, we are describing a situation in which utility is the joint product of consumption and (social) environment. The two "factors" are complementary, so that a better environment entails higher marginal utility of consumption.

In the following, rather than pursuing the analysis at the abstract level, we shall present two simple examples.

In the first model, the niche is taken to represent the position in the "social pyramid". The higher the position the better the environment: social promotion improves health conditions, raises the cultural level, boosts the self image. The positive externalities associated to the improvements in the environment justify the assumption that social promotion entails larger utility per unit of expenditure. In the model the social stratum the agent belongs to is made to coincide with his kind of job, which is given at the beginning of the working life but might change with age.

In the second model the social niche will be identified with the agent's "true tastes", which are unknown at the beginning of his life and are progressively discovered; the

opportunity to learn about his real preferences leads the young consumer to accumulate resources for the day when, having grown up and "discovered himself", he will be able to derive greater utility from consumption. If the evolution of preferences over the life cycle is ignored, saving of young cohorts will be underestimated, or their borrowing overestimated.

In both models young consumers have something to learn (about themselves or their environment), and this knowledge can be usefully exploited in their consumption choices.

Further, in both models saving is motivated by the desire of flexibility in an environment where opportunities are expected for the future. Finally, both models might yield positive savings when young in circumstances where a pure life cycle model would predict borrowing or zero savings.

III.1 The opportunity of social promotion

In the first example an individual's niche is identified with his job position. Let us suppose that the various jobs in an economy are associated with different incomes, working conditions and overall social environments[15]. They can often be ranked according to a dominance criterion, as some involve both a larger income and a more agreeable environment. For example, let us consider a mine worker and a university teacher. The switch from the former's to the latter's job, quite apart from bringing a higher income, implies a dramatic improvement in health conditions and in the cultural and social quality of life. Similar though less marked differences usually accompany the progression from a job as an unskilled worker to one as a skilled craftsman and from the latter to a managerial position, or, more generally,

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15. The idea of a strict connection between a consumer's job position and his social niche, i.e. his social status, is emphasized by Solow (1990).

whenever there is a change in the type of job.

We believe it is reasonable to assume that the better the working conditions and the stronger the positive externalities generated by relationships with colleagues and by the social circle associated with a given job, the higher the utility derived from each unit of consumption (on this point, see also Arrow, 1974).

Let us take an economy in which there are two types of job, σ_h and σ_l, corresponding to two rungs on the social ladder (high and low respectively). σ_h dominates σ_l, since it entails both a better environment and a higher income ($y_h > yl$). Consider also an agent whose life is divided into 2 periods, who consumes c_i in period i (i=1,2) and works, in the first period, in job σ_l. The future, however, also holds the possibility of social promotion and the agent anticipates that, with probability p, he will be offered a better job. Reflecting the idea that there is little social downgrading, we assume that the agent never drops below the social ranking from which he starts. Some partial but clear evidence supporting this assumption is presented in Table 5. Drawing from the 1989 SHIW we can compute that, in the Italian case, 80 percent of the about 600 job changes observed in the sample (over a two year period) leads to earnings at least as high as those in the original job.

On the basis of our previous discussion, we can assume that

$$(1) \qquad u_1(c,\sigma_h) > u_1(c,\sigma_l)$$

where $u(\cdot)$ is the instantaneous utility function, and the subscript on the $u(\cdot)$ denotes a partial derivative[16].

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16. We assume that the agent's utility is directly dependent on his position on the social ladder. Alternatively one might assume that utility depends only on goods, some of which are not marketable but can be acquired through status. A similar approach is taken by Cole, Mailath and Postlewaite (1991) who also emphasize the interaction between agents' social status and savings decisions in a general equilibrium context.

Table 5

Job change and increase in earnings by age

Age	Probability of job change (*)	Probability of earnings increase (**)
< 30	11,7	78,2
30 - 34	10,4	77,9
35 - 39	5,7	83,1
40 - 65	3,9	75,4

Source: Italian Survey of Households Income and Wealth, 1989.
(*) Over a two years time span.
(**) Conditional on job change.

The agent then solves:

$$\text{Max} \quad u(c_1,\sigma_1) + (1-p)\, u(c_{21},\sigma_1) + p\, u(c_{22},\sigma_h)$$

$$\text{s.t.} \quad \begin{aligned} c_1 + s &= y_1 \\ c_{21} &= y_1 + s \\ c_{22} &= y_h + s \end{aligned}$$

where s represents saving and, for the sake of simplicity, the subjective discount rate is set equal to the interest rate and both are set equal to zero. This problem, under assumption (1), will be labeled (A).

To have a benchmark, let us now consider the case in which the only difference between the two jobs is the income they offer, so that the utility function is independent of σ and assumption (1) is replaced by:

$$(2) \quad u_1(c,\sigma_h) = u_1(c,\sigma_1) \ .$$

We shall label this modified problem as (B). It is useful to write down the first order conditions of both problems, for the sake of simplicity assuming interior solutions:

$$(\text{FOC1}) \quad u_1(y_1-s,\sigma_1) = (1-p)\, u_1(y_1+s,\sigma_1) + p\, u_1(y_h+s,\sigma_h)$$

$$(\text{FOC2}) \quad u_1(y_1-s,\sigma_1) = (1-p)\, u_1(y_1+s,\sigma_1) + p\, u_1(y_h+s,\sigma_1)$$

For a given p, let us call $s^*(p)$ the solution to (FOC1) and $\hat{s}(p)$ the solution to (FOC2); the latter is the one usually considered in literature.

If we now take (FOC1) together with assumption (1), it is simple to prove that $s^*(p)$ is larger than $\hat{s}(p)$ and, provided that the gain from social promotion is large enough, s^* can be positive even when $\hat{s}$ is negative.

A second interesting implication of the model is that

the effect on saving of an increase in future expected income can be positive and, if negative, smaller in absolute value than that found in the standard case.

Indeed, suppose that expected increases in income result from an increase of the probability of the better job, σ_h. If the gain from social promotion is large, we have that:

$$(B) \qquad u_1(y_h+s^*(p),\sigma_h) > u_1(y_l+s^*(p),\sigma_l) \ .$$

If (B) is true, it is immediate from the first order conditions that an increase in p yields an increase in the optimal saving, that is $s^*(p)$ is an increasing function, whereas $\hat{s}(p)$ is clearly a decreasing one.

Suppose now that (B) is false, that is suppose

$$(B') \qquad u_1(y_h+s^*(p),\sigma_h) \leq u_1(y_l+s^*(p),\sigma_l) \ ,$$

and assume that the marginal utility of consumption, given σ, is convex. We then have:

$$u_1(y_l+\hat{s}(p),\sigma_l) - u_1(y_h+\hat{s}(p),\sigma_l) >$$

$$u_1(y_l+s^*(p),\sigma_l) - u_1(y_h+s^*(p),\sigma_h),$$

which follows from the assumed convexity of the marginal utility of consumption and the fact that $s^*(p) > \hat{s}(p)$. Note that in the LHS we used condition (A') to substitute σ_l for σ_h. The above inequality implies that a given increase in p, say to p', yields a smaller reduction in the RHS of (FOC1) than in the RHS of (FOC2), and hence a smaller decrease in the optimal s^*, as compared with $\hat{s}$, that is

$$s^*(p)-s^*(p') < \hat{s}(p)-\hat{s}(p').$$

It is worth noticing that an increase in the expected future income arising from a larger y_h would have in this

model the standard effect of reducing current saving. The different result obtained varying the probability of y_h follows from the fact that a rise in p entails, together with the income increase, an increase of the probability of the opportunity: the larger future income goes hand by hand with a better future environment for consumption, and this offsets, to some extent, the incentive to borrow out of the larger income and increase current consumption.

The saving behaviour that is motivated by the anticipation of future consumption opportunities, geared to the discovery of the social niche, has an intrinsic dynamic that is difficult to fully capture with the overly simple model presented here. Indeed, the discovery of the social niche is a learning process that we believe is faster at young age, slows down as the agent pursues his chosen career and virtually comes to a stop at some time in the middle of the life cycle. Some calculations made on the Italian SHIW, though far from representing conclusive evidence, lend support to this presumption. In Table 5 we show the probability of changing job for different age classes; it peaks at young age (before age 30) with a value close to 12 percent, it falls slightly between 30 and 35 (about 10 percent), it halves between 35 and 40 and hovers a little below 4 percent thereafter. We interpret these findings as suggestive of the fact that the flow of new opportunities that the consumer can reasonably anticipate drains away as he grows older. As a result, the reaction of consumption to expected future income might be negligible at very young age, when changes in income are expected to be offset by changes in consumption opportunities; at a somewhat older age the standard life cycle behaviour would tend to prevail. As anticipated in the previous Section, the age-dependence of the reaction to future income finds a natural explanation in our framework. Also, we are now in the position to provide a reasonable interpretation of the regressions presented in columns B1 and B2 of table 4; these were ran including a

dummy, representing (future) changes in job position, interacted with the expected future income. When the latter is significantly different from zero, the coefficient of the dummy is significant and negative, thereby reducing the size of the effect on current consumption of expected future earnings. Other things equal, a future change in job position leads to larger current saving; assuming that the change in job position is to some extent anticipated, this is precisely what our theory would predict.

III.2 Learning about preferences

In the second example, let us consider a consumer that lives for two periods. In each of the periods there are two goods, **a** and **b**; in the first period the consumer likes **a** but he is uncertain whether he likes **b** or not. However he knows that, in the second period, his own tastes will settle down and he will learn whether **b** yields positive utility. For simplicity, we assume that the consumer has the same, certain income, y, in both periods, that the interest rate on saving is equal to the subjective discount rate and that both are equal to zero.

Also, to keep the model to the bare essential, we arbitrarily set the price of both goods, in both periods, equal to 1 and assume a utility function separable across time units and across goods. The qualitative results do not depend on these simplifying assumptions. Formally, we have the following problem

$$\begin{cases} \max_{\{a_1,b_1,a_{21},a_{22},b_2\}} & p[u(a_1)+v(b_1)]+(1-p)[u(a_1)] + \\ & p[u(a_{21})+v(b_2)]+(1-p)[u(a_{22})] \\ \text{s.t.} & a_1 + b_1 + s = y \\ & a_{21} + b_2 = y + s \\ & a_{22} = y + s \end{cases}$$

where p is both the probability that, today, the consumer likes b and the probability that, tomorrow, his preferences will settle on liking b; s is the amount of saving. The indexing of a in the second period reflects the anticipation of learning and the usual non negativity constraints on a and b are understood. No restriction is imposed on s (i.e. we assume a perfect capital market). Note that, if we neglect the last constraint and assume $a_{21}=a_{22}$ - i.e. we exclude that learning occurs - the solution to the problem requires s=0. This provides us with a convenient benchmark to be used in the assessment of the effect on saving of learning about preferences.

Using the budget constraints, we can write the F.O.C. for the problem as

(i) $p\,u'(y+s-b_2) + (1-p)\,u'(y+s) - u'(y-s-b_1) = 0$

(ii) $p\,v'(b_1) - u'(y-s-b_1) \leq 0 \ (=0 \text{ if } b_1>0)$

(iii) $v'(b_2) - u'(y+s-b_2) \leq 0 \ (=0 \text{ if } b_2>0)$

We assume that $v'(b)-u'(y-b)=0$ has a strictly positive solution. From (ii) and (iii), for given $s\geq 0$ and for $p\in(0,1)$, it follows immediately that $b_2>b_1$. If b_1 is zero for some $p>0$

and $s=0$, then it is zero also for the same p and $s>0$ and we obtain, from (i), that the optimal s is positive.

Let us then assume interior solutions, and suppose that $s=0$. Then, from (ii) we solve for the optimal b_1, say $b_1(p,y)$ and from (iii) we solve for b_2, say $b_2(y)$. Let us define

$$(3) \quad g(p) = p\,u'(y-b_2(y)) + (1-p)\,u'(y) - u'(y-b_1(p,y))$$

where y is understood as an argument of $g(\cdot)$. Clearly if, for given p, $g(\cdot)>0$, the optimal value of s is positive. Before we move to identify the conditions on the utility functions that guarantee that $g(\cdot)$ is positive, let us analyze the meaning of the function $g(p)$. In the second period, the optimal choice of b_2 is zero if the consumer discovers that he does not like b and $b_2(y)$ otherwise. In the first period the optimal choice of b_1 is an average of these two choices, with weights, say, $(1-\gamma(p))$ and $\gamma(p)$. Indeed, the choice of b_1 trades-off the cost of wasting resources - when b_1 is positive and the consumer discovers that he does not like it - with the cost of consuming too little of it. The latter is higher the larger is the marginal utility in the neighborhood of zero.

Residually, we define the optimal choices of the (random variable) $\tilde{a}_2 = [a_{21}, a_{22}]$ - conditional on the realization of the uncertain preferences - and a_1, with the latter being an average, with weights $\gamma(p)$ and $(1-\gamma(p))$, of the formers, that is:

$$(3') \quad g(p) = p\,u'(a_{21}) + (1-p)\,u'(a_{22}) - u'(\gamma a_{21}+(1-\gamma)a_{22})$$

The definition of $g(p)$ given by (3), or equivalently by (3'), reads then as the difference between the expected value of the marginal utility of $\tilde{a}_2$ and the marginal utility of

some weighted average of $\tilde{a}_2$[17].

Moving now to the analysis of the conditions under which $g(\cdot) > 0$, first of all note that $g(0) = g(1) = 0$, as $b_1(0) = 0$ and $b_1(1) = b_2$. Hence, a sufficient, though by no means necessary, condition for $g(p)$ to be positive in the interval $(0, 1)$, is that $g(p)$ be a concave function of p. In particular, given that the first two terms of $g(p)$ are linear in p, we look for the condition under which the last term, that is $h(p) = u'(y-b_1(p))$, is convex in p. Differentiating twice $h(p)$ and using (ii) it can be shown that $h(p)$ is (strictly) convex if and only if:

$$(4) \qquad \eta_v + \eta_u > 2(\rho_v + \rho_u),$$

where ρ is the coefficient of absolute risk-aversion and η the coefficient of absolute prudence (that is the coefficient of risk-aversion applied to the marginal utility) evaluated respectively at b for the $v(\cdot)$ and at $(y-b)$ for the $u(\cdot)$. Note that condition (4) implies that the first derivative of at least one of the two functions $u(\cdot)$ and $v(\cdot)$ is convex. It is easily verified that condition (4) is satisfied by utility functions belonging to the class of CRRA functions; the only

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17. Note that the weights used to compute the expected value of the marginal utility of $\tilde{a}_2$, p and (1-p), are not necessarily the same as $\gamma(p)$ and $(1-\gamma(p))$. Since we want to prove that $g(\cdot)$ is positive, we would like the ratio $\gamma(p)/p$ to be small enough. How small is "small enough" clearly depends on the curvature of the marginal utility. If the latter is convex (as customarily assumed in the precautionary saving literature) then $(\gamma(p)/p)=1$ is sufficient to have positive savings, but we can have the same result provided that $\gamma(p)/p$ does not exceed 1 by too much. If, on the contrary, the marginal utility is concave, the function $\gamma(p)/p$ should be appropriately smaller than 1 for the model to generate positive saving. All this means that there is no hope to derive a reasonably weak sufficient condition for positive savings independent on the assumption made on the marginal utility: any condition that is sufficient for a function displaying a concave derivative is likely to be far too strong when referred to a function with convex derivative.

exception is the logarithmic utility, for which the LHS of condition (4) is equal to the RHS and saving is zero for all values of p. As mentioned before (see also the footnote 17), condition (4) is not necessary for our model to generate positive savings. The same result can be obtained with utility functions that do not satisfy (4); one interesting case is the quadratic utility function (i.e. a function with non convex first derivative)[18].

The import of this result is that the opportunity of learning about his own preferences leads the young consumer to accumulate resources for the time when, having grown up and "discovered himself", he will be able to extract higher utility from consumption. Ignoring the evolution of preferences over the life cycle leads, as the benchmark solution shows, to underpredict the saving of the young cohorts (or to overpredict their borrowing).

IV. Discussion

Simple versions of the life cycle hypothesis are unable to explain fully the observed facts regarding the savings of young consumers. An amendment to the theory appears to be called for, and two main directions have been explored in literature: the possibility of liquidity constraints and that of myopic behaviour.

Liquidity constraints represent a somewhat obvious explanation of the relatively small amount of borrowing by the young generations, as they simply postulate that they are unable to borrow.

Although this explanation merely shifts the question one step back, since the presence of borrowing constraints should itself be theoretically justified, it does capture some

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18. Positive saving is obtained for all values of $p\varepsilon(0,1)$ provided that income is well within the interval of definition of the quadratic utility.

important features of the actual working of markets.

There are, however, grounds for doubting whether credit market imperfections are enough to explain the observed deviation of young people's behaviour from that postulated by the life cycle theory.

Firstly, taken literally, the borrowing constraint assumption would imply that agents should be "on the constraint", consuming all their income, whereas we observe non-negligible savings, even in the early part of their working lives. To be sure, Deaton has recently shown that the existence of positive savings can be made compatible with binding liquidity constraints when there is uncertainty and the consumers are either "impatient" or "imprudent"[19]. Both assumptions are somewhat unusual, and their nature implies that the savings thus generated are not likely to be large[20].

Second, and more importantly, the consumption pattern of young generations closely follows that of income in countries where the level development of financial markets is widely different and where the incidence of liquidity constraints is therefore also likely to differ widely.

The second explanation proposed in literature, namely

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19. The role of prudence is not directly examined by Deaton, but a simple extension of his argument to a model with finitely lived consumers establishes the claim.

20. In Deaton's simulations the amount of saving that can be generated is generally less than 1% of (mean) income, a relatively small amount when compared with the actual saving of young households.

We must however note that sizeable savings by the young can be obtained if imperfections in the market for consumption loans are coupled with imperfections in the market for mortgages (Artle and Varaiya, 1978). Saving for the future purchase of a house can also be interpreted within our framework, with no constraints assumed for the credit markets. It can be shown that there is an incentive to increase current saving, postponing the purchase of a house, if (a) home ownership enhances the marginal utility of consumption; (b) there are transaction costs in the secondary market for houses; (c) there is uncertainty about future income streams but learning takes place.

shortsightedness, simply implies that people do not borrow against future income, because they do not think of it.

The status of this hypothesis is not clear, however. It would seem to be an interpretation superimposed on models whose structure has little to do with myopic behaviour.

On the empirical side, shortsightedness is invoked to explain a low (or zero) coefficient on expected future income in regressions explaining current consumption (see Carroll (1989)). In the same regressions, however, current wealth appears to have a coefficient significantly different from zero and smaller than one, which is not consistent with short-sighted consumers.

In this paper we have provided evidence that young people's current consumption responds to some extent to future earnings. We have also offered an explanation of the apparently low responsiveness that preserves the forward looking feature of the life cycle theory. We have outlined a theory in which current savings can be interpreted as a choice of flexibility, since the existence of future opportunities may be an incentive to postpone consumption until those periods in which it yields greater utility.

The life cycle theory starts with the notion that the temporal distribution of resources is different from the optimal allocation of consumption over the life span, and that savings are needed to reallocate resources over time. In its original version, it emphasized the feature that, by and large, earnings are less than the optimal level of consumption after retirement (and perhaps at the beginning of life) and that they tend to be more than the optimal level of consumption during the middle range of family's life. In this paper, we have emphasized the possibility that the optimal consumption pattern may be rising more sharply than earnings at the very young age. This might lead to large savings at the beginning of the working life, when earnings are relatively low, and to consumption lumping rather than consumption smoothing behaviour at the relatively young age.

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