

## THE QUALITY OF POPULATION SAVING PROCESS BY CONSUMPTION

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**Abstract:** Fifty years ago, Modigliani and Brumberg formalized the idea that people maximize the utility of their future consumption, postulating that the main motivation for saving is to accumulate resources for later expenditure and in particular to support consumption at the habitual standard during retirement. The LCH represented a fundamental shift in the economic debate of the post-war period and in the way of thinking about saving. Today it is still the reference framework for analyzing individual and aggregate saving.

As for the microeconomic implications, from the postulate of utility maximization it follows that according to LCH consumption is evenly distributed over time and this, in turn, implies that the individual, during his active period, builds up a stock of wealth, which he consumes during his old age. Thus, wealth is hump-shaped. Infinite horizon models, buffer stock models of saving, models in which people save mainly for precautionary purposes, or models in which saving is driven by myopic or irrational behaviour do not share this implication.

**Keywords:** saving, consumption, aggregate saving, life-cycle

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### 1. Introduction

The life cycle model is built on the theory that consumption in a given period depends on the expectations in terms of life income and not on the current period income.

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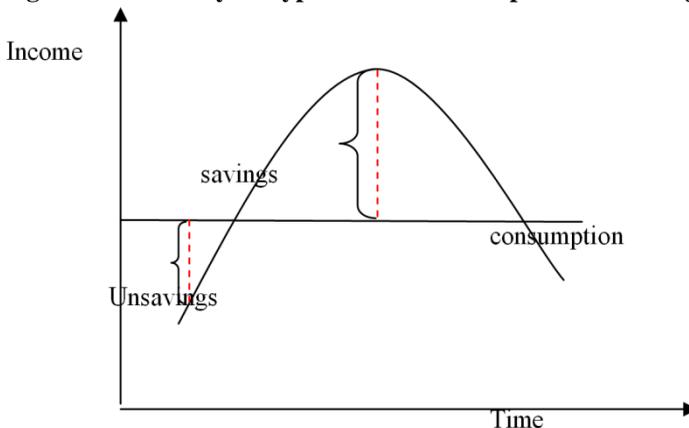
The contribution of life-cycle hypothesis consists of the observation that income tends to fluctuate systematically throughout their lives, and personal saving behavior is determined, therefore, by certain stages of the life cycle (Life Cycle).

Franco Modigliani, a winner of the Nobel prize for economics in 1986, had been studying the life-cycle model in a series of works written in 1950 and in the first half of the 1980s 60 in collaboration with Richard Grumberg and Albert Ando (Modigliani & Brumberg, 1957). The conference, held during the Nobel prize awards, by the title "The life cycle, individual prosperity and the good condition on the nations" which puts into evidence an analysis of the fundamental contribution of life cycle hypothesis upon savings (Ando & Modigliani, 1963).

## 2. Life-Cycle Theory

In this theory stands the idea that the level of income of young people is low and they frequently turn to debt because there is a strong belief in a future rich income, in the active period. During the years of employment, the income increases, reaching a maximum point in mid-life, when people start paying their debts and also increase their savings for the retirement period. When retirement is approaching, the work income drops to 0 and people start spending money from their savings. This model can be studied in the figure 1.

**Figure 1: a - Life-cycle hypothesis of consumption and saving**



Source: Courant Paul N., Gramlich Edward M. and Laitner John P. - "A Dynamic Micro-economic Estimate of the Life-Cycle Model.", In Retirement and Economic

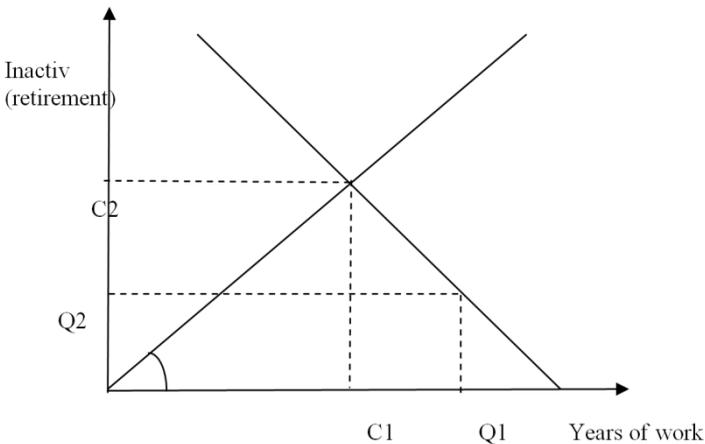
Behavior (eds. Henry J. Aaron and Gary Burtless). Washington, D.C.: Brookings Institution, 1994

We have to take into account the fact that there are 2 periods of diseconomizing in the life of an individual:

- youth period
- retirement period

The figure below exemplifies the same idea, shown above, by a figure, now, familiar of the two period model.

**Figure 2: b - Life-cycle hypothesis of consumption and saving**



Source: Courant Paul N., Gramlich Edward M. and Laitner John P. - *"A Dynamic Micro-economic Estimate of the Life-Cycle Model."*, In Retirement and Economic Behavior (eds. Henry J. Aaron and Gary Burtless) Washington, D.C.: Brookings Institution, 1994

If we consider period 1 as an active period (years of employment) and the second period, an inactive period (retirement period) we reach the same conclusions (unfortunately, a duodimensional graphic does not give the possibility to analyse a third period of life, the youth period). People start saving money to have all the confort when reaching retirement, because the income from the first period is bigger than the income from the second period. In other words, the income from the first period is bigger than the permanent income.

The consumption during retirement is financed both from the active period savings and from the transfers that people receive from government and their children. Even though there isn't an organized system of income transfer from children to parents, the majority of the countries have an indirect system of income transfer from children to elder people through the government. For example, the young workers pay taxes of social assurance which then are distributed to elder people. A system like this has important consequences for saving decisions. A more generous social assurance system, less savings in the active period to be completely certain of consumption during retirement.

The results is a drop of house savings and probably global savings in the economy. When consumption is equal in all periods, consumption equals permanent income. Starting from the equation:

$$C_1 = \left[ \frac{(1+r)}{(2+r)} \right] Q_1 + \left[ \frac{1}{(2+r)} \right] Q_2$$

where:

$Q$  - the cash in which income and savings are measured, being considered as a house spent composite coin

$r$  - interest rate

we could write  $C_1$  as a multiple of wealth ( $W$ )

$$C_1 = \left[ \frac{(1+r)}{(2+r)} \right] \left[ Q_1 + \frac{Q_2}{(1+r)} \right] = k_{(r)} W_1$$

In this way, consumption represents a fraction of the wealth together with the proportional factor ( $k$ ) or the marginal tendency to wealth consumption which depends on the interest rate.

In reality, the proportional factor ( $k$ ) depends on other items like: preference time rate and the age of the individuals.

In the two periods model, the proportional factor  $k = \frac{(1+r)}{(2+r)}$  takes values between 0,5 and 1. For a larger number of periods,  $k$  will be lower. Now, we can ask a simple question: Why? The answer: because a marginal growth in the wealth, will be divided to a high number of periods. As a result, the marginal tendency depends in inverse ratio to the age, the older households will tend to have a higher wealth consumption (savings) in any other period compared to a younger household.

We point out that what is important for a given household is the number of periods planned in the considered time horizon. Thus, households

with an elderly tendency, on average, to have shorter waiting periods than younger ones.

Modigliani and Ando have developed some of the earliest empirical tests of the model life-cycle in the study that they did in 1963. In this study, they have proposed the following regression:

$$C = c_1 Yd + k_1 W$$

unde:

$Yd$  - work income

$W$  - financial wealth (savings) of households

$c_1$  - estimative parameter

We reached this equation by using the annual data. It would be expected that  $c_1$  will be less than 1, whereas  $c_1$  measure marginal tendency to consume from current income. We also expect to obtain a  $k_1$  coefficient greater than the annual rate of interest. Still the question why? Answer: because an individual who behaves according to the theory of the life cycle would like to spend his fortune during the active life. If this individual consumes only income derived from interest in every period of life, would die with the fortunes of its (savings) intact. That's why he would have to consume more than he can earn in interest. Ando and Modigliani have estimated the value of  $c_1$  at level 0 and  $k_1$  at the level of 0.6, the latter being greater than the annual rate of interest.

The analysis of Ando and Modigliani represent strong arguments for the theory of life cycle. Other tests of the life cycle model had brought extra arguments, but these gave rise to inconsistencies. It appears that households save more during the active period than in the elder one. But at the same time it appears that the elderly people do not diseconomize very much. In other words, they keep their economies intact and eventually they convey, rather, to the heirs rather than use them for consumption during life. Thus, we can say that one of the important counter arguments that make up the life cycle model is the impotence of the guidance of the people's savings.

When people die they leave their fortunes often to children. These transfers of wealth are called wills. Before the wills to be included in the life-cycle theory, we can ask two questions: firstly, what exactly motivates wills and secondly, in general, how can the wills be incorporated into the theory of savings.

Economists do not agree with the motivation of wills. There are four major schools of thought, two of them assigning certain responsibilities towards parents of their heirs. Among other economists Robert Barro (Barro,

1974) has suggested that people leave wills for altruistic reasons, i.e. they care for their children this way and this will increase the standard of living of their children. At the opposite pole, Douglas Bernheim, Andrei Schleifer and Lawrence Summers are of the opinion that parents have less altruistic motivations, in that wills are designed to influence children's behavior while living with parents (for example: "I will leave you the fortune if you take care of me as I am alive") (Bernheim, Schleifer & Summers, 1985).

A third school of thought advocates the view that wills do not have a specific purpose. In general, people don't know when they will die and want to enjoy all the resources available, but this is where they will live longer than expected (Abel 1985). Thus, if an individual's longevity for 65 years is 80 years old, it will keep some of his wealth to survive until, say, 95 years. Obviously, an elderly person does not want to die of hunger or to endure the discomfort of poverty, in the case a longer life expectancy.

Finally, the fourth economic school of thought argues that wealth isn't accumulated for future use if this is not necessary, but simply builds up for the power and prestige brought to these economies. In this way, the rich will take directly a profit from what they obtain, regardless of their wealth and the consumption it can finance. This point of view calls into question the arguments of the life cycle mode, because it suggests a theory of savings which is not directly linked to the consumption of the current generation or future generations. Keynes described the behavior of the high-saving societies in the 9th century in a paragraph in his famous "the economic consequences of peace (Keynes, 1920):

"The duty to save became 9\10 virtue and" leavening the dough "[national wealth growth] has been the subject of a true religion [...] And so, leavened dough, but with what is not known [...] Saving was designed for the elderly and for children; but this happens only in theory-the virtue of the dough that was never extended to ripen to reach either for themselves or for their children."

### **3. Conclusions**

Finally, we conclude that consumer behaviour and explanation in the individual, time saving of life cycle theory, can be summed up as follows:

- wealth and income from work influencing decisions to consumption;
- marginal tendency toward consumption depends on the individual's position in the cycle of life; If the person is older, the marginal propensity of wealth consumption is greater. The marginal propensity

for consumption out of income from employment depends on the number of years of life remaining active and the number of years of passive life.;

- revenue growth in the wealth and employment will cause an increase in consumer spending.;
- as the active life is longer compared to the passive, consumption will increase and, as a result of the increase in total income and shortening the period during which the negative savings are being made;
- in each year of life, a part equal to  $1/(NL-T)$  of the estate will be consumed, where  $(NL-T)$  represents the life expectancy of the individual at the time  $T$ . ;
- current consumption expenses depend on the current fortune and total income.

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