

## Unit 7

### Income Consumption Hypothesis For MA first Semester Micro Economic Analysis

Keynes mentioned several subjective and objective factors which determine consumption of a society. However, according to Keynes, of all the factors it is the current level of income that determines the consumption of an individual and also of society.

Since Keynes lays stress on the absolute size of income as a determinant of consumption, his theory of consumption is also known as absolute income theory. Further, Keynes put forward a psychological law of consumption, according to which, as income increases consumption increases but not by as much as the increase in income. In other words, marginal propensity to consume is less than one.

$$1 > \Delta C / \Delta Y > 0$$

Since Keynes propounded his theory of consumption there have been significant developments in this field and several alternative theories of consumer behaviour have been put forward.

First, Duesenberry has propounded that consumption expenditure depends on income of an individual relative to incomes of others rather than the absolute size of his own income.

His theory is therefore called Relative Income Theory of Consumption. Secondly, Modigliani put forward a theory known as life cycle hypothesis, according to which an individual plans his even consumption profile in his lifetime which depends not so much on his current income but on his expectations of income in the whole lifetime.

Further, a famous American economist Friedman has advanced a hypothesis regarding consumption behaviour, called permanent income hypothesis, according to which consumption of an individual depends on permanent income rather than current level of income.

It is important to mention here an important puzzle about consumption function pointed out by Kuznets, a Nobel prize-winner in economics. Contrary to Keynes's proposition that proportion of income spent on consumption declines as income increases (that is, average propensity to consume falls with the increase in income), Kuznets found from a statistical empirical study of consumption of the economy of the USA that average propensity to consume had remained constant over a long period despite the substantial increase in income.

How the average propensity to consume has remained stable despite the substantial increase in income has been a great puzzle in consumption theory. We shall study below how modern theories of consumption such as Duesenberry's relative income theory of consumption life cycle hypothesis and Friedman's permanent income theory succeed in resolving this puzzle.

## **1. Relative Income Theory of Consumption:**

An American economist J.S. Duesenberry put forward the theory of consumer behaviour which lays stress on relative income of an individual rather than his absolute income as a determinant of his consumption. Another important departure made by Duesenberry from Keynes's consumption theory is that, according to him, the consumption of a person does not depend on his current income but on certain previously reached income level.

According to Duesenberry's relative income hypothesis, consumption of an individual is not the function of his absolute income but of his relative position in the income distribution in a society, that is, his consumption depends on his income relative to the incomes of other individuals in the society. For example, if the incomes of all individuals in a society increase by the same percentage, then his relative income would remain the same, though his absolute income would have increased.

According to Duesenberry, because his relative income has remained the same the individual will spend the same proportion of his income on consumption as he was doing before the absolute increase in his income. That is, his average propensity to consume (APC) will remain the same despite the increase in his absolute income.

As mentioned above, empirical studies based on time-series data made by Kuznets reveal that over a long period the average propensity to consume remains almost constant. Now, Duesenberry's relative income hypothesis suggests that in the long run the community would continue to consume the same proportion of income as its income increases.

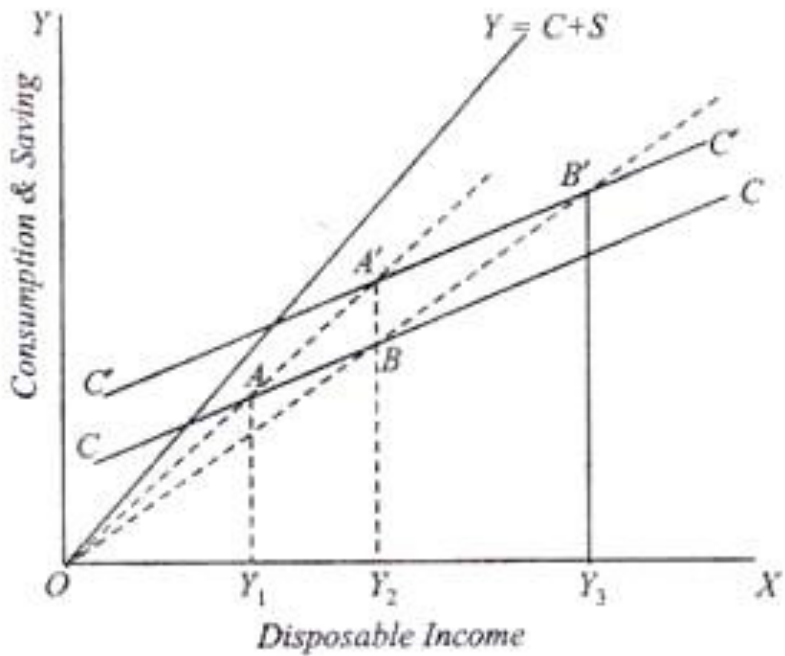
According to Duesenberry, saving as a proportion of income of the individuals with relatively low incomes would not rise much with the increase in their incomes. That is, their savings would not rise to the same proportion of income as was being done by the individuals who had the same higher income prior to the present increase in income.

This is because with the increase in incomes of all individuals by the same proportion, the relative incomes of the individuals would not change and therefore they would consume the same proportion of their income. This applies to all individuals and households. It therefore follows that assuming that relative distribution of income remains the same with the growth of income of a society, its average propensity to consume (APC) would remain constant.

Thus, this conclusion of the relative income hypothesis differs from the Keynesian theory of consumption according to which, as seen above, as absolute income of a community increases, it will devote a smaller proportion of its income to consumption expenditure, that is, its APC will decline.

It is important to note that relative income theory implies that with the increase in income of a community, the relative distribution of income remaining the same, does not move along the same aggregate consumption function, but its consumption function shifts upward. Since as income increases, movement along the same consumption function curve implies a fall in average propensity to consume, Duesenberry's relative income hypothesis suggests that as income increases consumption function curve shifts above so that average propensity to consume remains constant.

This is illustrated in Figure 7.1. Suppose a family A' has  $Y_1$  level of income and is spending  $Y_1A'$  on consumption. Suppose its income level rises to  $Y_2$ . Now, its consumption would not rise only to  $Y_2B$  (i.e. equal to the consumption of the family B at  $Y_2$  income level) but to  $Y_2A'$  where  $A'$  lies on the same ray from the origin as the previous point A of consumption. This implies that the consumption expenditure of family A has risen in the same proportion as its income with the result that its average propensity to consume remains constant.



**Fig. 7.1.** *Duesenberry's Relative Income Theory of Consumption*

Likewise, if income of family B which is having consumption expenditure  $Y_2B$  at income level  $Y_2$ , rises to  $Y_3$ , its consumption expenditure will increase to  $Y_3B'$  where  $B'$  lies on the same ray from the origin as  $B$ . This again means that the proportion of income devoted to consumption by family B (i.e. its APC) remains constant as there is increase in its absolute income.

Thus, if the proportion of income devoted to consumption of the average family at each income level remains the same as its income increases, the aggregate consumption of the community as proportion of its income will also remain constant though its absolute consumption and absolute savings will increase with the absolute increase in income.

As income increases and a society moves along the same consumption function curve, its average propensity to consume falls. But Duesenberry's relative income hypothesis suggests that as income increases consumption function curve shifts above so that average propensity to consume remains constant. In Figure 7.1 it will be seen that if points  $A'$  and  $B'$  are joined together, we get, a new consumption function curve  $C'C'$ .

### **Demonstration Effect:**

By emphasising relative income as a determinant of consumption, the relative income hypothesis suggests that individuals or households try to imitate or copy the consumption levels of their neighbours or other families in a particular community. This is called demonstration effect or Duesenberry effect. Two things follow from this. First, the average propensity to consume does not fall.

This is because if incomes of all families increase in the same proportion, distribution of relative incomes would remain unchanged and therefore the proportion of consumption expenditure to income which depends on relative income will remain constant.

Secondly, a family with a given income would devote more of his income to consumption if it is living in a community in which that income is regarded as relatively low because of the working of demonstration effect. On the other hand, a family will spend a lower proportion of its income if it is living in a community in which that income is considered as relatively high because demonstration effect will not be present in this case.

For example, the recent studies of household expenditure made in India reveal that the families with a given income, say Rs. 5000 per month spend a larger proportion of their income on consumption if they live in urban areas as compared to their counterparts in rural areas.

The higher propensity to consume of families living in urban areas is due to the working of demonstration effect where families with relatively higher income reside whose higher consumption standards tempt others in lower income brackets to consume more.

### **Ratchet Effect:**

The other significant part of Duesenberry's relative income hypothesis is that it suggests that when income of individuals or households falls, their consumption expenditure does not fall much. This is often called a ratchet effect. This is because, according to Duesenberry, the people try to maintain their consumption at the highest level attained earlier. This is partly due to the demonstration effect explained above. People do not want to show to their neighbours that they no longer afford to maintain their high standard of living.

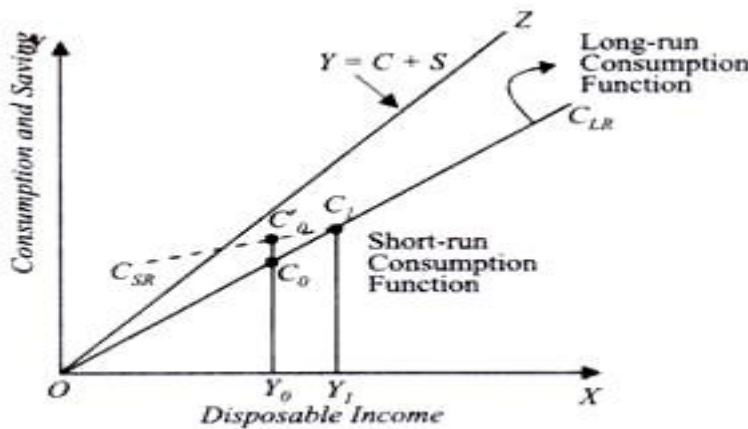
Further, this is also partly due to the fact that they become accustomed to their previous higher level of consumption and it is quite hard and difficult to reduce their consumption expenditure when their income has fallen. They maintain their earlier consumption level by reducing their savings. Therefore, the fall in their income, as during the period of recession or depression, does not result in decrease in consumption expenditure very much as one would conclude from family budget studies.

This is illustrated in Figure 7.2 where on the X-axis we measure disposable income and on the Y-axis the consumption and savings. Starting with disposable income of zero, we assume that there is steady growth of disposable income till it reaches  $Y_1$ . The linear consumption function  $C_{LR}$  is the long-run consumption function. It will be seen from the figure that at  $Y_1$  level of disposable

income, the consumption expenditure equals  $Y_1C_1$ . Now suppose with initial income level  $Y_1$  there is recession in the economy with the result that disposable income falls to the level  $Y_0$ .

According to Duesenberry, consumption would not fall greatly to the level  $Y_0C_0$  as the long-run consumption function  $C_{LR}$  would suggest. In their bid to maintain their consumption level previously reached people would now save less and reduce their consumption level only slightly to  $Y_0C'_0$  whereas point  $C'_0$  is on the short-run consumption function  $C_{SR}$ .

Since  $Y_0C'_0 > Y_0C_0$ , the average propensity to consume at income level  $Y_0$  is greater at  $C'_0$  than at  $C_1$  at income level  $Y_1$  (A ray drawn from the origin to the point  $C'_0$  will have greater slope than that of  $OC_1$ ). When the economy recovers from recession and disposable income increases, the economy would move along the short-run consumption function  $C_{SR}$  till the consumption level  $C_1$  is reached at income level  $Y_1$ . Beyond this, with the growth of income the consumption will increase along the long-run consumption function  $C_{LR}$ .



**Fig. 7.2. Duesenberry's Ratchet Effect**

**Aggregate consumption function of the community:**

From the analysis of demonstration and ratchet effects it follows that Duesenberry's relative income hypothesis provides an explanation for why aggregate consumption function of the community may be flatter than the family budget studies would suggest. Duesenberry emphasizes that it is relative income rather than absolute income which determines consumption expenditure of households.

When income of the community increases, relative income remaining constant, the proportion of consumption expenditure to income will not increase much because relative incomes of the households remain the same (Note that this implies that saving ratio will not rise much).

Due to demonstration effect every household will increase its expenditure in the same proportion as the increase in income. On the other hand, if the income of the community decreases, the consumption expenditure would not decline much due to the ratchet effect according to which people try to maintain their previously attained higher level of consumption. This makes the consumption function of the community flatter than suggested by the cross-sectional family budget studies.

Further, it also follows from the Duesenberry relative income hypothesis that short-run aggregate consumption function of the community is linear rather than curved. As stated above, if, in the short run, the level of income increases, the proportion of consumption expenditure to income is not likely to increase much due to the operation of demonstration effect and with the fall in income the proportion of consumption to income is not likely to decline much due to the ratchet effect.

This makes the short-run aggregate consumption function of the community linear. It is worth noting that Duesenberry's theory assumes that relative distribution of income does not change much. This is in accord with the facts of the real world situation where changes in income distribution do not take place in the short run. Thus Duesenberry's theory provides a convincing explanation in terms of demonstration and ratchet effects why aggregate consumption function is linear rather than nonlinear.

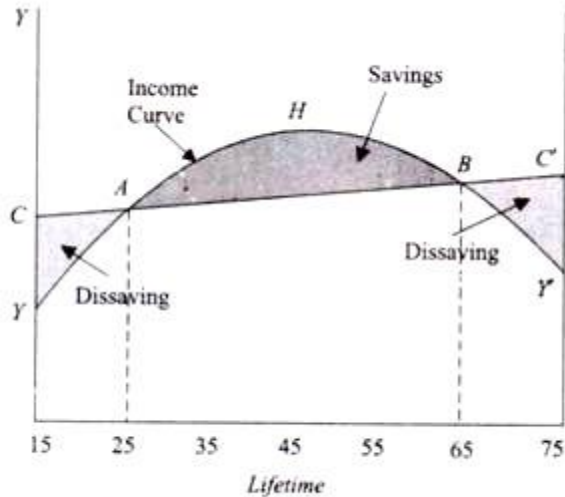
## **2. Life Cycle Theory of Consumption:**

An important post-Keynesian theory of consumption has been put forward by Modigliani and Ando which is known as life cycle theory. According to life cycle theory, the consumption in any period is not the function of current income of that period but of the whole lifetime expected income.

Thus, in life cycle hypothesis the individual is assumed to plan a pattern of consumption expenditure based on expected income in their entire lifetime. It is further assumed that individual maintains a more or less constant or slightly increasing level of consumption.

However, this level of consumption is limited by his expectations of lifetime income. A typical individual in this theory in his early years of life spends on consumption either by borrowing from others or spending the assets bequeathed from his parents.

It is in his main working years of his lifetime that he consumes less than the income he earns and therefore makes net positive savings. He invests these savings in assets, that is, accumulates wealth which he consumes in the future years. In his lifetime after retirement he again dis-saves, that is, consumes more than his income in these later years of his life but is able to maintain or even slightly increase his consumption in the lifetime after retirement.



**Fig. 7.3.** Life Cycle Theory of Consumption

Life cycle hypothesis has been depicted in Fig. 7.3. It is assumed that a typical individual knows exactly at what age he will die. In Fig. 7.3 it is taken that the individual would die at the age of 75 years. That is, years 75 is his expected lifetime. It is further assumed in the life cycle theory that net savings in the entire lifetime is zero, that is, the savings done by the individual in his working years of his life is equal to the dissavings made by him in his early years of life before he is able to earn income as well as the dissavings which he makes after retirement.

It is also assumed for the sake of simplicity that interest paid on his assets is zero. The curve YY shows income pattern of the whole life-time of the individual whereas CC' is the curve of consumption which is assumed to be slightly increasing as the individual grows old. It is assumed that our individual enters into labour force (i.e., working life) at the age of 15 years.

It will be noticed from Fig. 7.3 that upto the age of 25 years his income, though increasing, is less than his consumption, that is, he will be dissaving during the first 13 years of his working life. To finance his excess consumption over his income, he may be borrowing from others.

Beyond the age of 25 or point A on the income and consumption curves and upto the age of 65 years his income exceeds his consumption, that is, he will be saving during this period of his working life. With these savings he will build up assets or wealth. He may use these savings or wealth to pay off his debt incurred by him in the early stage of his working life. Another important motive of his savings and building up assets or wealth is to provide for his consumption after retirement when his income drops below his level of consumption.

It will be observed from the Fig. 7.3 that beyond point B (that is, after retirement at 65 years) his current income falls short of his consumption and therefore he once again dissaves. He would be using his accumulated assets or wealth from his earlier working years to meet the dissavings after retirement at the age of 65. It is important to note that we assume that he does not intend to leave any assets for his children. Given this assumption, his net savings over his lifetime will be zero.

Therefore, in Fig. 7.3 his savings during the period when he earns more than his consumption expenditure, that is, the shaded area AHB will be equal to the two areas of dissavings, CYA + BC'Y'. Thus he dies leaving behind no assets or wealth. He has planned his consumption expenditure over the years that his net savings at the time of death are zero. However, this assumption can be relaxed if he wishes to leave some assets or wealth for his children.

Some important conclusions follow from the life cycle theory of consumption. The fundamental idea of the life-cycle hypothesis is that people make their consumption plans for their entire lifetime and further that they make their lifetime consumption plans on the basis of their expectations of lifetime income. Thus in the life cycle model consumption is not a mere function of current income but on the expected lifetime income. Besides, in life cycle theory the wealth presently held by individuals also affects their consumption.

How the consumption of an individual in a period depends on these factors highlighted by life cycle theory can be expressed in the form of an equation. To do so let us consider an individual of a given age with an additional life expectancy of T years and intends to retire from working after serving for N years more. Then suppose that in the current period and thereafter in his life span the individual will consume a constant proportion, 1/T of his life-time income in equal installments per year.

Thus

$$C_t = 1/T (Y_{Lt} + (N-1)Y^e_L + W_t)$$

where

$C_t$  = the consumption expenditure in the current period t

$Y_{Lt}$  = Income earned from doing some labour in the current period t

N-1 = remaining future years of doing some labour or work

$Y^e_L$  – the average annual income expected to be earned over N-1 years for which individual plans to do some work

$W_t$  = the presently held wealth or assets

It will be observed from the above equation that life cycle hypothesis suggests that consumption in any period does not depend only on current income but also on expected income over his entire working years. Besides, consumption in any period also depends on his presently owned wealth or assets which are built up during the prime working years of one's life when income exceeds savings.

**The general consumption behaviour as suggested by Ando-Modigliani life cycle hypothesis can be expressed in the following functional form:**

$$C_t = b_1 Y_{Lt} + b_2 Y^e_L + b_3 W_t$$

where



$C_t$  = Consumption expenditure in a period  $t$ .

$Y_{Lt}$  = Income earned from doing some labour in the current period  $t$ .

$Y_L^e$  = the average annual income expected to be earned from labour during the further years of working life.

$W_t$  – wealth currently owned

$b_1$  represents marginal propensity to consume out of current income

$b_2$  is marginal propensity to consume out of expected lifetime income, and

$b_3$  is the marginal propensity to consume out of wealth.

It is significant to note that consumption would not be much responsive to changes in current income (i.e.,  $Y_{Lt}$ ) unless it also changes expected future lifetime income ( $Y_L^e$ ). A one time or temporary change in income, say, by Rs. 1000, will affect consumption in the same way as the increase in wealth.

The consumption of these Rs. 1000 will be spread over the entire lifetime in a planned consumption flow per period. With 50 years of future life, increase of Rs. 1000 of transient or temporary income will raise the consumption by  $1000/50 = \text{Rs. } 20$  per period. This implies that consumption function curve will shift above.

A permanent increase in income that is expected to persist throughout the working years, which implies that in future expected lifetime income also rises, will produce a large effect on consumption in each of the remaining period of one's lifetime. Further, the increase in wealth will shift the consumption function upward, that is, will increase the intercept term of the consumption function.

To estimate behaviour of the consumer on the basis of life cycle hypothesis, one is required to make some assumptions how people form their expectations regarding labour income over their life time. In the study of consumption function for the United States, Ando and Modigliani made the assumption that the expected future labour income is simply a multiple of current labour income. Thus, according to this assumption,

$$Y_L^e = \beta Y_{LT}$$

where  $\beta$  is a multiple of current labour income. This assumption implies that people revise their expected labour income of future by a certain multiple of the change in current labour income. With this assumption, aggregate consumption function for the community can be expressed as under

$$C_t = (b_1 + b_2\beta)Y_{LT} + b_3W_t$$

**This function has been estimated taking time-series data for the U.S.A. and the following estimates have been obtained:**

$$C_t = 0.72 Y_{LT} + 0.06W$$

According to these estimates, if current labour income increases by Rs. 100 along with assumed effect on expected future income, consumption will increase by Rs. 72 per period. Besides, the increase in wealth by Rs. 100 will raise the consumption expenditure by Rs. 6. It therefore follows that according to life cycle hypothesis the relationship between income and consumption is non-proportional, increase in labour income by Rs. 100 crore leads to increase in consumption by Rs. 72. Further, the increase in wealth will shift the consumption function upward, that is, will increase the intercept term of the consumption function.

The consumption function based on life cycle hypothesis is illustrated in Fig. 7.4 where along the X-axis we measure disposable income and along the Y-axis the consumption expenditure. The short-run consumption function is shown by the curve  $C_{SR}$  which has a slope of 0.6 which is the marginal propensity to consume out of labour income in the short run.

This short-run consumption function is linear and has an intercept term indicating that average propensity to consume declines as labour income increases and  $MPC < APC$ . The intercept of the short-run consumption function measures the effect of wealth on consumption.

Since wealth increases over a period of time due to savings in the prime working years, the short-run consumption function will be shifting upward, that is, the intercept of the short-run consumption function will be increasing as wealth grows in the long run. Overtime the shift in the short-run consumption function may trace a series of points on a long-run consumption function  $C_{LR}$  passing through the origin.

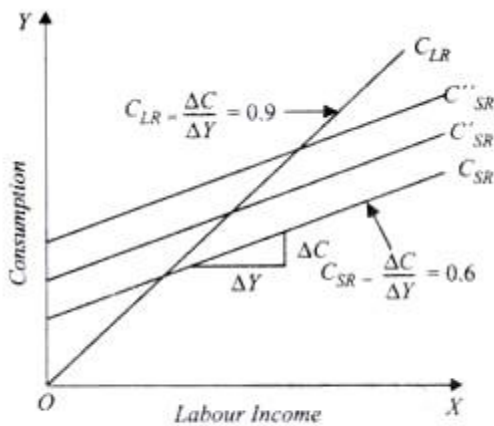


Fig. 7.4. Life Cycle Consumption and Income : Short Run and Long Run

Since the ratios of wealth and labour income are constant over time, the life cycle consumption function is in accord with the conclusion arrived at by Kuznets from the long-run time series data that the long-run consumption function is proportional, with average propensity to consume (APC or MPC) remaining constant and being equal to nearly 0.9. These facts are quite consistent with the long-run consumption function of life cycle hypothesis and thus help in resolving the Kuznets puzzle.

Life cycle hypothesis also explains the non-proportional relationship between consumption and income found in the cross-sectional family budget-studies. It has been found in these studies that

high income families consume a smaller proportion of their income, that is, their average propensity to consume (APC) is relatively lower than those of the low-income families. This can be easily explained by life-cycle hypothesis. Suppose we choose a random sample of families from the population and rank them according to their incomes.

The families with higher incomes are expected to be middle-aged income earners who are in the prime working years of their lifetime and therefore earn more than they consume (i.e., their APC will be relatively lower). On the other hand, the families with lower incomes are likely to have relatively high proportion of new entrants into the labour force and the old people who have retired and, as seen above, they consume more than their current income and their APC being quite high pushes up the APC of the low income families.

### **Shortcomings:**

Although life cycle theory has provided an explanation of various puzzles about consumption function, it is not without critics, Gardner Ackley has criticized the assumption of life cycle hypothesis that in making consumption plans, households have “a definite and conscious vision.”

According to Ackley, the possession of this vision on the part of households sounds unrealistic. Further, according to him, to assume that a household has complete knowledge of “family’s future size, including the life expectancy of each member, entire lifetime profile of income of each member, the extent of credit available in the future, future emergencies, opportunities and social pressure which have a bearing on consumption spending” is quite unrealistic.

Life cycle theory has also been criticized that it fails to recognize the importance of liquidity constraints in determining the response of consumption to income. According to critics, even if a household has a concrete vision of future income, the opportunities to borrow from the capital markets for quite a long period on the basis of expected future income, as has been visualised by life cycle hypothesis, are very little. This creates the liquidity constraints for deciding about consumption plans. As a result, the consumption becomes highly responsive to current income which is quite contrary to the life cycle hypothesis.

### **3. Permanent Income Theory of Consumption:**

Permanent income theory of consumers’ behaviour has been put forward by a well-known American economist, Milton Friedman. Though Friedman’s permanent income hypothesis differs from life cycle consumption theory in details, it has important common features with the latter. Like the life cycle approach, according to Friedman, consumption is determined by long-term expected income rather than current level of income.

It is this long-term expected income which is called by Friedman as permanent income on the basis of which people make their consumption plans. To make his point clear, Friedman gives an example which is worth quoting. According to Friedman, an individual who is paid or receives income only once a week, say on Friday, he would not concentrate his consumption on one day with zero consumption on all other days of the week.

He argues that an individual would prefer a smooth consumption flow per day rather than plenty of consumption today and little consumption tomorrow. Thus consumption in one day is not determined by income received on that particular day. Instead, it is determined by average daily income received for a period. This is on the line of life cycle hypothesis. Thus, according to him, people plan their consumption on the basis of expected average income over a long period which Friedman calls permanent income.

It may be noted that permanent income or expected long-term average income is earned from both “human and non-human wealth”. The income earned from human wealth which is also called human capital refers to the return on income derived from selling household’s labour services, that is, efforts and abilities of its labour.

This is generally referred to as labour income. Non-human wealth consists of tangible assets such as saved money, debentures, equity shares, real estate and consumer durables. It is worth noting that Friedman regards consumer durables such as cars, refrigerators, air conditioners, television sets as part of households’ non-human wealth. The imputed value of the flow of services from these consumer durables is considered as consumption by Friedman.

### **Relationship between Consumption and Permanent Income:**

Now, what is the precise relationship between consumption and permanent income (that is, the expected long period average income). According to permanent income hypothesis, Friedman thinks that consumption is proportional to permanent income

$$C^P = kY^P$$

where

$Y^P$  is the permanent income

$C^P$  is the permanent consumption

$k$  is the proportion of permanent income that is consumed.

**The proportion or fraction  $k$  of permanent income that is consumed depends upon the following factors:**

#### **1. Rate of interest (i):**

At a higher rate of interest the people would tend to save more and their consumption expenditure will decrease. The lowering of rate of interest will have opposite effect on the consumption.

#### **2. The proportion of non-human wealth to human wealth:**

The relative amounts of income from physical assets (i.e., non-human wealth) and income from labour (i.e., human wealth) also affects consumption expenditure. This is denoted by the term  $w$  in the permanent consumption function and is measured by the ratio of non-human wealth to income. In his permanent income hypothesis Friedman suggests that consumption expenditure depends a good deal on the wealth or assets possessed by the people. The greater the amount of

wealth or assets held by an individual, the greater would be its propensity to consume and vice-versa.

### **3. Desire to add to one's wealth:**

Lastly, households' preference for immediate consumption as against the desire to add to the stock of wealth or assets also determines the proportion of permanent income to be devoted to consumption. The desire to add to one's wealth rather than to fulfill one's wants of immediate consumption is denoted by  $u$ .

Thus rewriting the consumption function based on Friedman's permanent income hypothesis we have

$$C^P = k(i, w, u) Y^P$$

The above function implies that permanent consumption is function of permanent income. The proportion of permanent income devoted to consumption depends on the rate of interest ( $i$ ), the ratio of non-human wealth to labour income ( $w$ ) and desire to add to the stock of assets ( $u$ ).

### **Permanent and transitory income:**

In addition to permanent income, the individual's income may contain a transitory component that Friedman calls as a transitory income. A transitory income is a temporary income that is not going to persist in future periods. For example, a clerk in an office may get a substantial income from overtime work in a month which he thinks cannot be maintained.

Thus, this large overtime income for a month will be transitory component of income. According to Friedman, transitory income is not likely to have much effect on consumption.

**Thus, income of an individual consists of two parts, permanent and transitory, which we may write as under:**

$$Y^M = Y^P + Y^t$$

where  $Y^M$  is measured income in a period,  $Y^P$  is the permanent income and  $Y^t$  is transitory income.

### **Measuring permanent income:**

To make the permanent income hypothesis operational we need to measure permanent income. Permanent income, as is generally defined is "the steady rate of consumption a person could maintain for the rest of his or her life, given the present level of wealth and income now and in the future."

However, it is very difficult for a person to know what part of any change in income is likely to persist and is therefore permanent and what part would not persist and is therefore transitory. Friedman has suggested a simple way of measuring permanent income by relating it to the current and past incomes. According to him, permanent income is equal to the last year's income plus a proportion of change in income occurred between the last year and the current year.

**Thus, permanent income can be measured as under:**

$$Y^P = Y_{t-1} + a(Y_t - Y_{t-1}) \quad 0 < a < 1$$

$$Y^P = aY_t + (1-a) Y_{t-1}$$

Let us illustrate this with an example. Suppose, the proportion of change in income in the last year and the current year equals 0.6 and the last year's income ( $Y_{t-1}$ ) is Rs. 80,000 and the current year's income ( $Y_t$ ) is Rs. 85,000, then from above equation permanent income can be estimated as under.

$$Y^P = 0.6 (85,000) + (1-0.6) 80,000$$

$$= 51,000 + 32,000$$

$$= 83,000$$

It is worthwhile to note the two features of the above equations estimating permanent income. First, if  $Y_t = Y_{t-1}$  it implies that current year's income is equal to last year. This further means that last year income is being maintained and therefore the individual would expect to earn the same income in the future also.

In this case then permanent income is equal to the current or last year's income. Secondly, when income of an individual increases in the current year as compared to the last year, the permanent income will be less than the current year's income. This is because individual is not sure whether the increase in income will persist in the future and therefore does not immediately revise his estimate of permanent income by the full amount of the increase in his income in the current year.

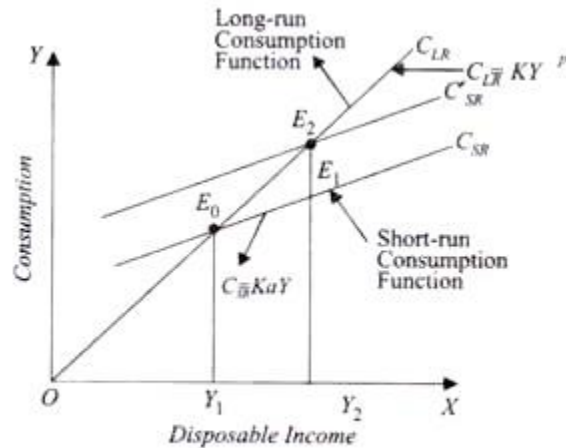
### **Permanent Income, Long-Run and Short-Run Consumption Functions:**

Now, having known the meaning of permanent income and permanent consumption we can describe the precise relationship between consumption and income both in the short run and the long run as under.

$$C = kY^P = kaY_t + k(1-a) Y_{t-1}$$

In the above consumption function  $ka$  is the marginal propensity to consume in the short-run which is obviously less than the long-run marginal propensity to consume which is equal to  $k$ . Thus, according to Friedman's permanent income hypothesis, short-run marginal propensity to consume differs from long-run marginal propensity to consume, the latter being greater than the former. Further,  $k(1-a) Y_{t-1}$  is the intercept of the short-run consumption function.

Friedman's permanent income hypothesis is illustrated in Figure 7.5. It shall be seen from this figure that permanent consumption function is represented by the long-run consumption function curve  $C_{LR}$ , ( $C_{LR} = kY^P$ ). This long-run consumption function shows the proportional relationship between consumption and income and is a straight line passing through the origin which implies that APC is constant and is equal to MPC.



**Fig. 7.5.** *Permanent Income Hypothesis : Long-Run and Short-Run Consumption Functions*

In accordance with permanent income hypothesis, short-run consumption function curves are flatter as compared to the long-run consumption function curve indicating that the short-run marginal propensity to consume is lower than long-run marginal propensity to consume. The reason for this is that the individual is not sure whether the increase in income will persist over the longer period which determines the consumption plans of individuals.

Therefore, the individuals do not fully adjust their consumption expenditure according to their higher current income than would be the case if the current increase in income is expected to be permanent. If the rise in income happens to be permanent, that is, if the next year's income is equal to the higher income of the current year, the individual will fully adjust his consumption expenditure to the higher income level.

It is important to note that in our above analysis we have assumed that full adjustment of consumption expenditure to change in income takes place in two years time. In this case permanent income is the average of the two years incomes. However, in real world permanent income depends on expectations of income for a much longer period depending upon the vision of the individual. In case of longer vision adjustment of consumption expenditure will take place slowly over a long period.

However, if the individual is sure that the increase in income is permanent he will adjust his consumption quickly to higher current income. It, therefore, follows that whereas in the short run average propensity to consume falls as income increases because people are not sure whether the increase in income will persist or not. But when they actually find that the increase in income is permanent, they fully adjust their consumption to their higher permanent income as reflected in the long-run consumption function.

### **Conclusion:**

Permanent income hypothesis is similar to life cycle hypothesis and differs only in details. Like the life cycle hypothesis, permanent income hypothesis can explain the puzzle about the relationship between consumption and income, namely, whereas in the long-run time series data, consumption- income ratio (i.e., APC) is constant, in the short run it declines with the increase in

income as we have seen above. The permanent income hypothesis is quite consistent with the constancy of APC in the long run and its variation in the short run.

Permanent income hypothesis is also consistent with the evidence from the cross-sectional budget studies that high income families have low average propensity to consume than that of low-income families. A sample of high income families at a given time is likely to contain a relatively larger number of families who are having positive transitory increase in incomes. Since the consumption depends on permanent income, the average propensity to consume computed as the ratio of consumption to measured income [ $APC = C/Y^m$ ]

where  $Y^m = Y^p + Y^t$  will be relatively low. On the other hand, a sample of families with low income at a given time would contain a relatively larger number of families experiencing negative transitory incomes and therefore in their case the average propensity to consume estimated as  $C/Y^p + Y^t$  will be relatively high.

Further, by laying stress on changes in rate of interest and the wealth or assets held by the people and desire to add to one's wealth as important determinants of consumption and savings, Friedman's permanent income hypothesis has made an important contribution to the theory of consumption and saving.