

# **THE MALAYSIAN PRIVATE CONSUMER EXPENDITURE: RECONCILING BETWEEN THEORIES AND DATA**

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## **I. Overview**

This paper attempts to examine the Malaysian private consumer expenditure behavior against the backdrop of the Keynesian and two post-Keynesian consumption theories, namely the Life Cycle Theory and the Permanent Income Hypothesis. Attention is focussed on these two post-Keynesian theories as they are the principal theories of private consumption commonly referred to in macroeconomics texts. They also seem to gain more acceptance amongst economists compared with Duesenberry's relative income approach (Branson, 1989). Specifically, the paper aims to relate as extensively as possible the Malaysian annual private consumer expenditure data to the theories and to draw policy implications if warranted. Private consumption accounts for approximately 43% of Malaysia's GDP in 2003. As such, understanding the trend movements of private consumption is essential for effective macroeconomic management given that it is integral in the Keynesian theory of income determination. The relationship between private consumer expenditure and income is a major aspect in macroeconomics.

The rest of the paper is configured as follows. Section II describes the theories while the subsequent attempts to reconcile the theories with Malaysian annual data dating back to the 1960s. Policy implications in the light of the data analysis are drawn in Section IV. The chapter concludes with remarks in Section V.

## II. The Theories

Keynes' consumption function may simply be written as follows:

$$c = a + by_d \quad (1)$$

where  $a > 0$  and  $0 < b < 1$ ,  $c$  is real consumer expenditure and  $y_d$ , the real disposable income. Figure 1 is the graphical representation of the consumption function that plots real consumer expenditure against real income ( $y$ ). It suggests that households are inclined to consume a smaller fraction of their income or correspondingly tend to save a larger fraction as their income surges. Thus, the ratio of consumption to income or the average propensity to consume (APC) falls with the rise in income.<sup>1</sup> This absolute income hypothesis would imply that the rich would save proportionally more than the poor. Another implication of the hypothesis is that the marginal propensity to consume (MPC) is less than the APC, implying that as income increases from recent levels, consumption would not rise proportionally. Conversely, consumption would not fall proportionally with income as households strive to defend their consumption standards.

However, the absolute income hypothesis could not withstand the empirical observation that the long run relationship between consumption and income is a proportional one rather than non proportional as equation (1) suggests. According to Branson (1989), a theory of consumption should be able to explain four observed phenomena viz:

- i) increase in the ratio of saving ( $s$ ) to income ( $s/y$ ) with socioeconomic stratum;
- ii) lower than average  $c/y$  in times of boom but higher during slumps, thus short-run fluctuations in income have a bearing on the  $c/y$ ;
- iii)  $c/y$  is generally constant in the long run as income grows along trend; and
- iv) the effect of wealth or assets on consumption.

The first two phenomena would imply that  $MPC < APC$  while the third,  $MPC = APC$ . The absolute income hypothesis of Keynes failed to explain the third and fourth phenomena and this prompted the development of new theories such as the Life-Cycle Theory of Consumption and the Permanent Income Hypothesis (see e.g. Branson, Froyen & Low, 2001). The life-cycle theory was advanced by Franco Modigliani, Albert Ando and Richard Brumberg (see Modigliani & Brumberg, 1954; Ando & Modigliani, 1963; Modigliani, 1966 & 1986) while the permanent income hypothesis by Milton Friedman (Friedman, 1957).

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<sup>1</sup> A downward trend in the average propensity to consume could arouse fears of a secular stagnation of the economy. This arises from the fact that as the ratio of saving to income increases, aggregate demand may eventually fall short of full employment output unless the rise in the ratio is offset by other components of aggregate demand, namely government expenditure and private investment. The secular stagnation hypothesis may be illustrated as follows: If  $y = c + i + g$  or  $1 = c/y + i/y + g/y$  is the condition for equilibrium real output  $y$ , and if  $i/y$  does not rise, then it is imperative that  $g/y$  must be increased to offset the decline in  $c/y$  in order to maintain full employment demand as income grows. Hence unless government expenditure increases more rapidly than income, the economy would stagnate.

The post-Keynesian theories have a microeconomic foundation in the theory of consumer choice. It is assumed that the observed consumer behavior represents an outcome of the quest by rational individuals to maximize utility by optimally allocating a lifetime stream of earnings so as to secure an optimum lifetime consumption pattern. Specifically, a consumer prefers to smooth his actual income stream into a more or less even consumption pattern. Thus the theories depart from the assumption that there exists a single representative consumer with the following utility function:

$$U = U(c_0, \dots, c_t, \dots, c_T) \quad (2)$$

where his lifetime utility (U) is a function of his real consumption (c) in every time period up to T, the instance before his demise. His objective is to maximize utility subject to the constraint that the present value of his total lifetime consumption does not outstrip the present value of his total income as follows:

$$\sum_0^T \frac{c_t}{(1+r)^t} = \sum_0^T \frac{y_t}{(1+r)^t} \quad (3)$$

The underlying assumption of such a lifetime budget constraint is that the consumer can freely allocate his income stream to a consumption stream in an optimum manner via borrowing and lending and that neither does he receive nor bequeath.

Such an optimization model would yield the following general consumption function:

$$c_t = f(PV_t) \quad (4)$$

where  $f' > 0$  and  $PV_t$  refers to the present value of his current and future incomes at time t, i.e.  $PV_t = \sum \frac{y_t}{(1+r)^t}$ . Thus an individual's consumption at time t would vary directly and contemporaneously with the present value of his income.

Ando and Modigliani however decomposed income into labor income ( $y^L$ ) and asset or property income ( $y^P$ ). Hence,

$$PV_0 = \sum_0^T \frac{y_t^L}{(1+r)^t} + \sum_0^T \frac{y_t^P}{(1+r)^t} \quad (5)$$

where time 0 refers to the current period with t ranging from zero through T. And if capital markets are efficient, the present value of the income from an asset may simply be equal to its value at the onset of the current period, i.e.

$$a_0 = \sum_0^T \frac{y_t^P}{(1+r)^t} \quad (6)$$

where  $a_0$  refers to the real net worth at the start of the period.

Generally if the representative consumer were to experience a rise in the present value at any instance, he would raise more or less proportionately his consumption in all periods from then on. Equation (4) may be translated more specifically into

$$c_t = k(PV_t) \quad (7)$$

where  $k$  refers to the fraction of the consumer's present value that he wants to consume in period  $t$ .<sup>2</sup> Thus any increase in the present and or expected labor income and the value of the current assets held that boosts his estimate of the present value would induce the consumer to consume some fraction of the rise in the current period.

Thus the life-cycle hypothesis would imply in the context of our analysis of the Malaysian economy the following:

- i) Private consumption depends not merely on current income but also expected future income and current asset holdings. Consumption responds limitedly to variations in current income particularly if they do not entail changes in expected future income. In other words, transient income changes have nominal impact on consumption;
- ii) However, any sustained increase in current income has a considerably greater impact on current consumption;
- iii) The age profile of the Malaysian population has a bearing on the private consumption-income ratio given that an individual's position in his life cycle would determine his consumption and savings. The young in the work force may have relatively low income and thus low if not negative saving rates. As their income rises in their middle-age years, their saving rates may increase correspondingly. Then upon retirement, their incomes would slacken and they would start dissaving. This essence of the life-cycle hypothesis is captured in Figure 2. It depicts a typical individual with an expected lifespan of  $T$  with an income stream over his lifetime as represented by the  $y$ -curve. However based on the optimizing model sketched in the preceding section, the individual may wish to maintain a generally constant or perhaps moderately rising level of consumption over his lifetime as indicated by the  $c$ -curve. Thus, in the early stage of his life, the individual is a net borrower. In the mid-stage, he has sufficient income to repay debts and make provisions for retirement after meeting the consumption needs. Subsequently in the late stage, he dis-saves.

Friedman's permanent income hypothesis also yields the relationship between consumption and present value as in equation (4). However Friedman differs from Ando-Modigliani in his treatment of the present value term by multiplying it by a rate of return ( $r$ ) as follows:

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<sup>2</sup> The fraction would depend on his inter temporal utility function and discount rate.

$$y_t^P = r.PV_t \quad (8)$$

Friedman terms this product as permanent income ( $y^P$ ). The permanent income is derived based on the consumer's present value defined to include human capital, i.e. the present value of his current and future stream of labor income and income generated by assets or property. It is generally the expected average long term income derived from both human and non human wealth.

Friedman acknowledges the existence of random or transitory components of consumption and income by distinguishing between permanent consumption and transitory consumption and between permanent income and transitory income. Actual total consumption ( $c$ ) in any period is a summation of permanent consumption ( $c^P$ ) and a random transitory component ( $c^T$ ) which could be positive or negative or even zero as follows:

$$c_t = c_t^P + c_t^T \quad (9)$$

Hence actual consumption may be greater or less than permanent consumption at any one time.

Likewise, actual total income ( $y$ ) at any time period is constituted by permanent income and a random transitory component ( $y^T$ ) which could also be positive, negative or zero as below:

$$y_t = y_t^P + y_t^T \quad (10)$$

Thus actual income may exceed or fall short of permanent income. It is assumed that correlations do not exist between transitory and permanent income, between transitory and permanent consumption, and between transitory consumption and transitory income.

It is the relationship between permanent consumption and permanent income that matters and central to Friedman's model. Thus adapting equation (7) to capture this relationship yields the following.

$$c_t^P = ky_t^P \quad (11)$$

This simply says that permanent consumption is proportional to permanent income.<sup>3</sup> However, Friedman does not expect this equation to be a perfect predictor of consumption as he recognizes the fact that apart from consumption driven by permanent income, there is in any period a random component of consumption.

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<sup>3</sup> The individual's ratio of permanent consumption to permanent income ( $k$ ) would presumably depend on the return on savings or the interest rate, inter-temporal preferences of the individual and the variability of expected income.

One factor that could spell a limitation to the realism of the life-cycle hypothesis is the omission of bequests as a factor determining saving. Kotlikoff and Summers (1981) maintain that the desire to make bequests is an important factor driving saving. However saving for bequest purposes perhaps to some extent could be likened to saving for retirement.

In the context of our empirical analysis, the model would imply the existence of a proportional long run relationship between consumption and income, thus the APC is constant and equal to MPC over a long run, though in the short run, the relationship may be non proportional, causing the APC to decline with the rise in income. This is explicable by the possibility that in the long run, growth of income is dominated by movements in permanent income with positive and negative transitory income movements offsetting each other. Since consumption is mainly driven by permanent income and since years of high income would generally correspond with the presence of a positive transitory income component, the ratio of consumption to actual measured income could be low. Conversely, the ratio would be high during low income years as transitory income tends to be negative then.<sup>4</sup>

The pure inter-temporal maximizing models above do not acknowledge the presence of liquidity constraints. Even if a consumer is definite about future income, opportunities to borrow for a long period based on expected future income may not exist. In this respect, consumption may actually be more responsive to current income changes whether transient or otherwise, than what is suggested by the models. Thus the inter temporal budget constraint [equation (3)] may have to be modified and this would yield a “liquidity-constraint” model. The inter-temporal budget constraint of equation (3) assumes that the consumer has borrowing and lending opportunities at the same rate of interest. This assumption may however be generally unrealistic as many are in no position to borrow freely for consumption against future income. Their consumption decisions are constrained by current liquidity which may be defined as current income plus assets at hand.

An extreme case of liquidity constraint would involve consumption being limited by current liquidity such as follows:

$$c_t^i \leq y_t^i + a_t^i$$

where  $y_t$  is current income net of debt repayment obligations. The presence of liquidity constraints may however not render in particular the life-cycle theory totally invalid as the constraint may only be one-sided. Specifically, only borrowing at the young age may be constrained while saving for retirement in the middle age may remain optimal and feasible. So the consumption path may be as reflected in Figure 3 with consumption matching income, i.e.  $c_t=y_t$  until point A. Beyond that point, the life-cycle path of Figure 2 would be followed. Generally, liquidity constraints are most binding amongst youth and

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<sup>4</sup> Remember that consumption may have a transitory component but unrelated to income.

the impact of cyclical income fluctuations on consumption would be felt most by the younger set of the working population.

### **III. Data Analyses**

This section analyzes the Malaysian private consumption data by taking an eclectic view that all the three theories of private consumer expenditure could possibly hold. Table 1 shows the annual average share of private consumer expenditure in the gross domestic product of selected countries generally over the period 1999-2003. It is interesting to note that the share of 43.3% recorded in Malaysia as opposed to the higher shares in advanced countries such as Japan (56.6%), South Korea (54.1%), United Kingdom (66%) and the United States (69.4%) seems broadly consistent with the life-cycle theory of consumption as the latter group of countries have more aged population compared with the relatively young Malaysian population. With a higher proportion of elderly people, their national saving rates could be lower as the elderly tend to have low or negative savings.

The other ASEAN countries namely Philippines, Indonesia, Thailand and Singapore may have a demographic structure generally more similar to Malaysia than to the advanced countries. However, the Filipinos, Indonesians and Thais appear to consume relatively more than Malaysians and as much if not more than the nationals of the developed countries. Such a phenomenon could plausibly be explained by the Keynesian absolute income hypothesis as Indonesia, Philippines and Thailand have per capita income levels lower than Malaysia. Hence, the average propensity to consume in these countries tends to be higher.

Table 2 provides the distribution of the Malaysian population by age structure. It is noteworthy that the proportion of Malaysians in the generally economically active population age group of 15-64 has expanded over the years from 52.2% in 1970 to 62.7% by 2003 while the proportion in the unproductive age group of 0-14 shrunk from 44.5% to 33.2% over the same period. The number in the generally less active group of 65 and above has increased only marginally from 3.3% to 4.1%. The dependency ratio has commensurately dipped from 0.69 in 1991 to 0.595 in 2003. Such demographic changes could have contributed to the downward trend in the Malaysian private consumer expenditure ratio as suggested by the life cycle hypothesis. Figure 4 depicts the decline in the ratio though not steadily from about 0.689 in 1967 to about 0.458 in 2003 as more Malaysians enter the age group of high earnings potential.

The secular decline could also have been staged plausibly by surging per capita income arising from the nation's remarkable economic development brought about by its export-oriented industrialization and socioeconomic redistribution programs. Malaysia's real gross domestic product per capita has risen by about four-fold from RM2071.7 in 1967 to RM9191.6 in 2003 (Figure 5). So has real private consumption increased though less rapidly by three times from RM1,428 to RM4208.5 over the same period. The Keynesian hypotheses particularly would predict such a decline in the average propensity to consume on the basis of rising incomes. As Malaysians become richer, they save more proportionally. Their consumption would increase with income though by not as much.

The possible empirical relevance of the life-cycle hypothesis and perhaps Friedman's is also suggested by the fact that the estimated coefficient of correlation between the growth of real private consumer expenditure and the growth of real gross domestic product is only 0.75 over the period 1968-2003. Thus the two variables do not move very closely with each other and this could be an outcome of consumers adopting a long term earnings prospect as a basis for deciding on the quantum to consume. Hence, consumption may not rise or fall proportionately with current income as its annual variation may also be driven by other factors such as expected future income and asset values.

An attempt is made to derive proxies though crude for permanent consumption and permanent income by regressing the natural logarithms of real private consumption and real gross domestic product against a constant and a time trend. The coefficient of correlation between 'permanent consumption' and 'permanent income' is estimated at almost unity, thus supporting Friedman's hypothesis. However, further exploration of the data would cast doubts on its validity. The implication of Friedman's hypothesis that the long-run relationship between consumption and income is a proportional one and thus the average propensity to consume is fairly constant in the long run does not appear to show up in the data.<sup>5</sup> Plot of the observed data earlier in Figure 4 has revealed a secular decline in the ratio. Figure 6 which uses the trend consumption and trend gross domestic product as proxies for permanent consumption and permanent income respectively also shows a similar trend. Moreover, the estimated coefficient of correlation between 'transitory consumption' and 'transitory income' of 0.88 is quite tangible.<sup>6</sup>

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<sup>5</sup> In fact, the life-cycle hypothesis could also potentially imply that the long run average propensity to consume is constant. The life-cycle hypothesis would imply the following aggregate consumption function:  $C_t = b_1 Y_t + b_2 Y_t^e + b_3 A_t$  where C, Y,  $Y_t^e$  and A are consumption, current non-asset income, expected non asset income and value of assets, all in aggregate terms respectively. Assuming that  $Y_t^e = \alpha Y_t$  and  $A_t = \lambda Y_t$  hold in the long run, then  $(C/Y)_t = b_1 + \lambda(b_2 + b_3 / \alpha)$  which is a constant.

<sup>6</sup> Transitory consumption (income) is taken as the difference between actual consumption (income) and trend consumption (income).

#### **IV. Concluding Remarks**

Taking all the evidence as a whole, it can be surmised that the Malaysian private consumption behavior could be broadly explained particularly by the Keynesian absolute income and the life-cycle hypotheses. Though the permanent income hypothesis may have some explanatory role, it is not as well supported by the available data compared with the other two theories.

It has been observed in the analysis that there has been a downward trend in the average propensity to consume over the years. Theoretically, this could be a cause for concern for the national economy as this could ultimately lead to its secular stagnation. However this problem may be forestalled and the continued growth of the economy remains feasible as the export sector could be counted upon as an engine of growth.

The fact that the life-cycle hypothesis could be valid would have the following macroeconomic stabilization implications for Malaysia. Consumption may respond strongly to current income if changes in current income affect expected lifetime income. But transient changes such as brought about by temporary changes in tax rates or government transfer payments may at most yield only a nominal impact on consumption. However, the effects of temporary changes in taxes and government spending could still be considerable if they have a long term bearing on the economy's growth capacity.

Moreover since real assets or household wealth could be an important determinant of consumer demand under the life cycle hypothesis, the effectiveness of monetary policy may probably be enhanced relative to fiscal policy as interest rates could affect asset values. An expansionary monetary policy that reduces interest rates could boost the market value of assets such as government and private bonds and corporate equities or stocks, thus stimulating consumption. This monetary policy effect is distinct from the effect that it has on liquidity constraints faced by consumers. Since government and private bonds are hardly held by Malaysian households, the asset value effect of monetary policy would primarily be transmitted to consumption via stock or equity prices. As equities yield dividends, the prices that consumers would be willing to pay for equities for a given dividend yield would rise if market interest rates are lower. Hence, a loose monetary policy would enhance wealth and consumption. In contrast, an expansionary fiscal policy could contribute to a rise in interest rates thus depressing the market value of assets. The resulting decline in private consumption spending may partially offset the initial impact of a fiscal expansion.

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Table 1  
Private Consumer Expenditure as a % of GDP by Selected Country  
Annual Average (1999-2003)

COUNTRY	%
Malaysia	43.3
Philippines	70.4
Indonesia*	64.8
Thailand	56.3
Singapore	42.4
Japan	56.6
South Korea	54.1
United Kingdom	66.0
United States	69.4

\* 1999-2002

Source: Computed from IMF International Financial Statistics Yearbook, various Issues

Table 2  
Percentage Distribution of the Malaysian Population by Age Structure

Year	Age Structure			Dependency Ratio
	0-14	15-64	65 and above	
1970	44.5	52.2	3.3	N/A
1975	42.0	54.4	3.6	N/A
1980	39.9	56.6	3.5	N/A
1985	38.3	58.2	3.5	N/A
1991	37.2	59.1	3.7	69
1995	35.0	61.5	3.5	62.7
2000	34.0	62.0	4.0	61.4
2003	33.2	62.7	4.1	59.5

Source: Various Five-Year Malaysia Plans

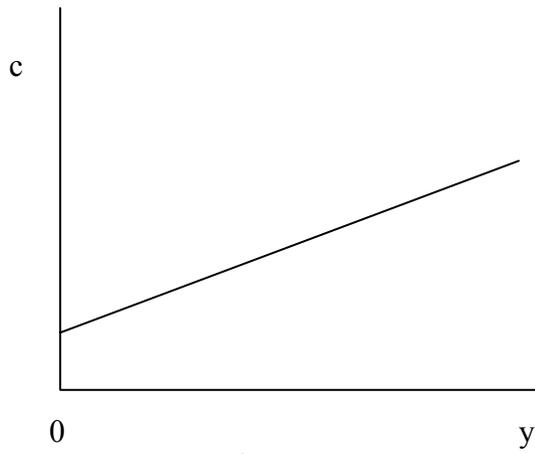


Figure 1  
Keynes' Consumption Function

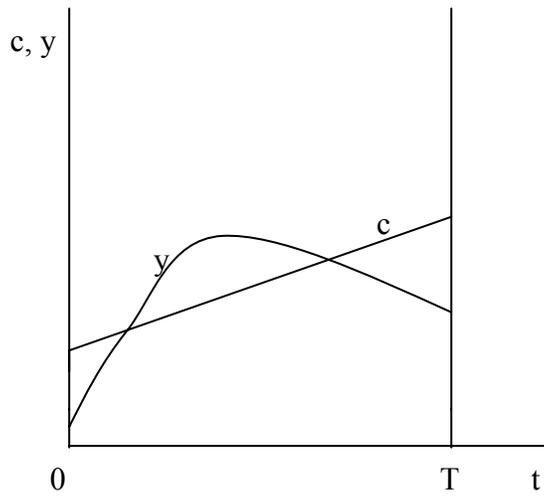
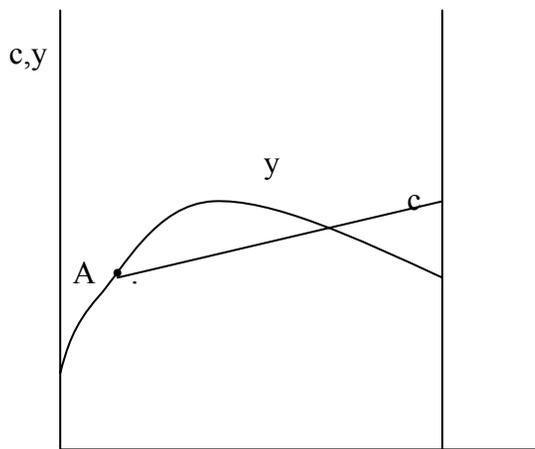


Figure 2  
The Life-cycle Model



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Figure 3  
The Liquidity-constrained Life-cycle Model

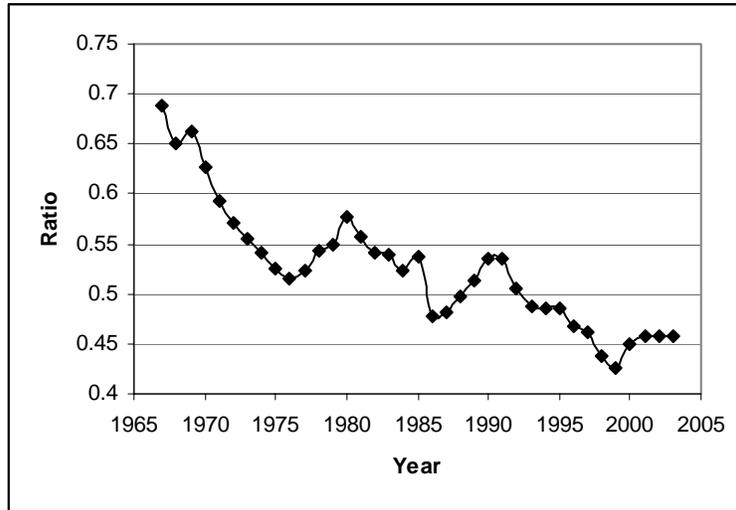


Figure 4  
Ratio of Real Private Consumer Expenditure to Real GDP

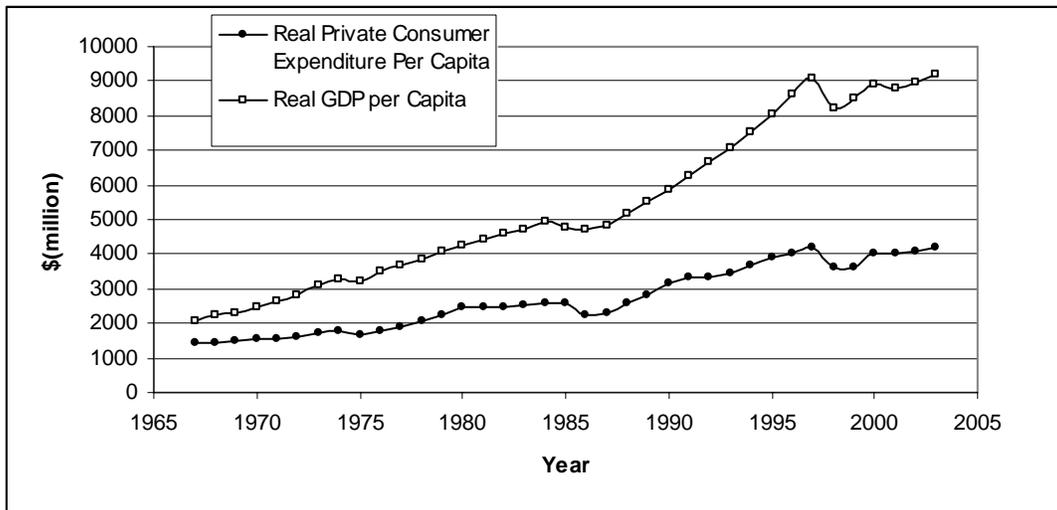


Figure 5  
Real Private Consumer Expenditure Per Capita and Real GDP Per Capita

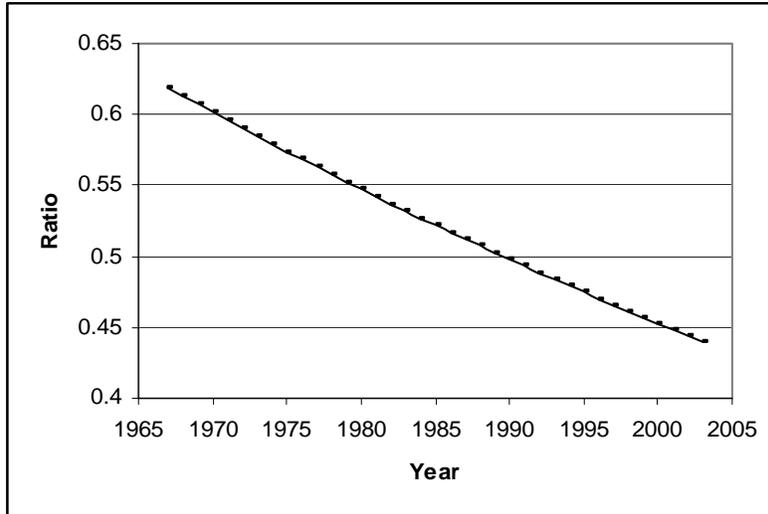


Figure 6  
Ratio of Trend Real Private Consumer Expenditure to Trend Real GDP