DETERMINANTS OF PRIVATE CONSUMPTION

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Executive Summary

Following a rapid overview of the current state of play in relation to consumption research, with reference being made to both the Euler equation and the more traditional "solved out" consumption function approaches, a reasonably detailed assessment is made in the study regarding the historical progression of thinking in terms of consumption theory. Reference is made to the demise of Keynes' absolute income hypothesis following the excessively pessimistic post WW2 consumption forecasts generated using Keynesian consumption functions. This important forecasting failure highlighted not only the weakness of the latter's empirical but also its theoretical underpinnings, leading to its abandonment and the search for more robust alternative explanations of the underlying processes at work.

From the review of post-Keynesian consumption theories, including the Permanent Income (PIH) and Life Cycle (LCH) hypotheses, the study highlights a number of key points including: the pivotal role being played in current consumption thinking by the notion of lifetime or permanent income; the role of expectations; and the important assumption concerning the desire of consumers to smooth out their lifetime consumption path. As regards the role of future expectations, the latter can affect current consumer patterns with optimism being reflected in higher current levels of consumption and with pessimism having the reverse effect. In addition, consumers tend to operate to smooth their consumption paths, with consumers undergoing income declines resisting departures from their previous consumption levels and with consumers enjoying income gains not boosting their expenditures by an equivalent amount unless they are convinced that the change in income is a permanent one.

The paper goes on to look at the PIH/LCH view of the world with a more critical eye and draws attention to the empirical evidence pointing to a close link between consumption trends and movements in current disposable income. It poses the question that if perceptions of lifetime wealth as opposed to current income are supposedly the prime determinant of consumption, how come the empirical evidence of the link between consumption and various, wide and narrow, definitions of wealth is far from perfect.

Following a discussion on a number of crucial consumption parameters, namely the influence on consumer behaviour of time horizon and time preference considerations, as well as liquidity constraints, the study suggests a range of credible reasons why one could expect deviations from the PIH/LCH framework, including a preference amongst consumers to defer, rather than to smooth, consumption; the view that consumers may not be as rational or forward looking as theory would suggest i.e. they may have simple rules of thumb to guide their behaviour; the role of precautionary savings due to uncertainty over future wealth; and finally the part played by liquidity constraints in ensuring that, even if they wanted to, consumers are often financially unable to smooth their consumption paths.

It becomes clear from this latter analysis that while the rational expectations school of thought may give primacy to the role of wealth in the determination of consumption, the overall conclusion of the evidence presented is clear and unambiguous, with the overriding impression being that consumption is affected by movements in terms of both total wealth and current income. Wealth, defined as the sum of financial and housing wealth plus the present discounted value of expected future labour income, is clearly the deciding factor in the long run. As regards the short to medium term, however, the situation is less clearcut with substantial empirical evidence quoted in the text which suggests that current income is still a key factor influencing the consumption decisions of a large proportion of households faced with uncertainty and liquidity constraints.

In discussing the role of interest rates in the whole consumption story the study highlights the basic conflict, common in a lot of areas of economics, between the income and substitution effects, with increases in real interest rates having a duel effect namely increasing the return on savings (i.e. the income effect) while at the same time encouraging people to save more because of the higher return (i.e. the substitution effect). The overall effect of interest rate changes on current as opposed to future consumption is therefore ambiguous due to these competing influences. Real interest rate increases are also absorbed into consumers permanent income computations with expected future income being more heavily discounted and with overall wealth consequently declining.

The paper then makes the important point that the modelling of consumption behaviour is a constantly evolving process. Inaccuracies in consumption functions, such as for instance relating consumption solely to income, can seriously affect the predictive power of models as reflected in how badly the latter got it wrong in the 1970s (i.e. failure to predict the rise in savings due to inflation effects) and again in the 1980s (i.e. underestimated the fall in savings due to financial liberalisation). Following these failures the search for additional explanatory variables was intensified. Wealth, interest rates and inflation were all perceived to play an influential role in the spending plans of consumers and were consequently used to augment the existing consumption equations.

In looking at the question of the likely path of consumption in the future, it is contended that engaging in long range forecasts would add little to our knowledge of consumer behaviour, due to the well established cointegrating relationship between income and consumption over the longer run. This study consequently stresses the importance of trying to convey a sense of the likely evolution of the consumption/savings split in the Community based on an analysis of plausible medium to long run influences on consumers emanating from budgetary consolidation, financial liberalisation, structural reform and demographic changes.

As regards the prospect of ongoing budgetary consolidation, a number of points are stressed including:

- *firstly, the importance of consolidation in terms of boosting national savings and growth due to the significant non-Ricardian effects attaching to cutting deficits and debt levels. The distinction is made between the classical and neoclassical views of government budgets, with the latter view stressing that fiscal policy can have important real economy effects; and*
- *secondly, how consumer behaviour plays a key role in determining the effectiveness of fiscal policy i.e. its role in boosting the crowding in effects. An insight is given as to the implications for fiscal policy of forward looking consumers (Ricardian Equivalence) versus more realistic or shorter time horizon (myopic) consumers as well as the impact of credit restrictions.*

As regards financial liberalisation, it is pointed out that diminishing liquidity constraints over time in the Community, as a result of ongoing financial sector deregulation, should imply, all other things being equal, that the permanent income theory of consumption will provide a more accurate description of consumption behaviour in the future. If this proves true then real economy shocks which are of a temporary or transitory nature should impact less strongly than hitherto in terms of current consumption spending. Since such temporary real economy shocks are widely regarded to be the main determinant of cyclical fluctuations in economic activity, this could result in a diminution in the amplitude, if not the regularity of recurrence, of business cycles, with significant implications for stabilisation policy (i.e. with fluctuations becoming less volatile or severe there will be a weakened case for intervention in terms of stabilisation policy).

This latter view is also consistent with the predictions of post-Keynesian theories that there are relatively low marginal propensities to consume (MPC) out of changes to current income especially if these changes are perceived to be transitory in nature. Consequently if the short run MPC is low, then the short run multiplier effect of changes in Government expenditure will also be small. In other words, Government actions, especially if the latter are perceived as temporary aimed at stabilizing the economy are, on the basis of Friedmans' PIH, relatively ineffective. In the context of the overall macroeconomic debate therefore Friedman's PIH can be interpreted as a direct assault on the efficacy of Keynesian short-run demand management policies. It should be stressed, however, that while the implication of post-Keynesian consumption theories is that consumption exhibits greater stability than Keynesians imagined this must be seen in the context of consumers having a sufficiently long planning horizon which encompasses more than just current income considerations.

As regards microeconomic reforms, it is contended that forward looking consumers would react to credible micro-economic policy actions, which engender expectations of higher future growth rates, by increasing current consumption. As regards the specific reforms discussed in this paper, it is evident that the tax system as well as the social security and welfare systems can both have significant effects on the savings behaviour of households. As regards taxation, a structure which relies disproportionally on direct income taxes in preference to indirect taxes tends to lead to a lower aggregate level of saving. Lower saving is likewise associated with higher Government transfers to households.

Finally, concerning demographic changes, the paper stresses that ageing will have direct effects on savings and consumption patterns as well as indirect effects through its impact on government finances.

In overall operational terms, therefore, on the basis of the concrete examples discussed above, the study highlights the following points as regards the forecasting of consumption:

- *firstly, that the consumption impact of changes in income depend crucially on the perceptions of consumers as to the transitory or permanent nature of these income changes and*

- *secondly, that consumers' expectations regarding the impact of various policy measures or events on future "wealth" prospects can have an important impact on present consumption patterns.*

DETERMINANTS OF PRIVATE CONSUMPTION

INTRODUCTION

The Commission's services Summer 1998 medium-term projections were predicting an average growth rate for private consumption of around 2¾% over the period 1998-2002. This projected rate of growth, being below that for GDP, left room for a strong expansion of fixed investment and the capital stock over the years in question, with the result that the Community's potential rate of growth could be boosted and any problems in terms of overheating successfully avoided. Ensuring the realisation of this latter, highly favourable, overall medium-term scenario requires, as always, prudent policy management and an acceptance amongst policy makers that its achievement hinges crucially on a complex set of behavioural relationships underpinning the economy. This study looks at one of these key behavioural linkages, namely the conduct of consumption, and tries to elucidate some of the main driving forces behind, and influences on, this central component of the growth process itself and of its cyclical pattern over time.

GROWTH AND VOLATILITY: Households' consumption choices are important to both growth and cyclical fluctuations.

- Regarding *growth*, the distribution of society's resources between current consumption and physical and human capital investment constitutes the basis for long run changes in an economy's standards of living. That resource distribution is influenced on the household side by the allocation of incomes between savings and consumption, with the latter split being tempered by rates of return and time horizon considerations as well as other constraints.
- Concerning the question of *fluctuations*, given the sheer size of consumption in overall demand it is imperative to understand the latter's determinants if we are to assess the impact on aggregate output of fiscal and monetary policy changes as well as technology shocks. In this regard, it should be stressed that investment is much more volatile than consumption since changes in the latter, unlike the former, are generally bounded above by changes in income. Consequently, even if the change in income is perceived to be a permanent one, the boost to consumer spending will be less than or equal to the income boost whereas the change in investment in certain circumstances could substantially exceed such a "permanent" change in income.

KEEN RESEARCH INTEREST: It is hardly surprising, given that private consumption comprises well over half of aggregate economic expenditure, that consumer behaviour constitutes one of the most important, and indeed one of the most active, areas of economic research. Given the frenzied pace of activity in this area it is perhaps inevitable that wide differences of opinion continue to persist on how best to characterise the behaviour of consumption empirically. For the purposes of simplification one can group these disparate views into two broad schools of thought with:

- one group emphasising the importance of defining optimal behaviour in a world of efficient financial markets and "*infinitely"* lived consumers and
- with the other focussing more on the effect of financial market imperfections (e.g. liquidity constraints), the role of uncertainty, the widespread use of simple "rules of thumb" to guide consumer behaviour and life cycle effects.

The first school of research uses what is known as the *Euler equation approach* which assumes rational expectations and focuses on defining optimal, intertemporal, behaviour i.e. rational, infinitely lived consumers maximise their utility subject to an intertemporal budget constraint. Most of the recent empirical work on consumption has adopted this research approach. This latter approach is normally associated with the pioneering work of Robert Hall of Stanford University who, in a paper in 1978, put forward the so called *"random walk" theory of consumption* which basically purported that changes in consumption were largely unpredictable.

This latter conclusion, if correct of course, would have enormous implications for the more traditional *"solved out" consumption function approach*, which uses empirical models to explain the behaviour of consumption, since it implies that the latter has no forecasting value. At the moment, however, the empirical evidence in support of the random walk theory is far from conclusive. In fact, the main contention of this paper is that while a knowledge of *wealth considerations, dynamics and the impact of expectations* is clearly essential, attention also needs to be focussed on questions such as *liquidity constraints, uncertainty and the role of current income* if an in-depth understanding of real world consumption trends is to be achieved.

The paper is structured as follows: following a discussion on the evolution of consumption theory in section one, the paper goes on in the subsequent section to critically examine the widely accepted permanent income / life cycle hypotheses concerning consumer behaviour in terms of the empirical evidence. Attention is also devoted to the role of time horizon, time preference and capital market imperfections in determining the consumption / savings split of individual consumers. The section finishes with a short discussion on modelling consumption (Box 2), stressing the forecasting inadequacies of an essentially Keynesian framework due to its insufficient attention to expectations and forward looking behaviour. Section three then goes on to examine the likely key influences on consumption trends in the Community over the medium to long run. The reaction of consumption to both ongoing budgetary consolidation and financial liberalisation, the impact of taxation and social welfare reforms and finally the effect of demographic changes are all looked at. In the last section the results of a number of simulations with the Commision services' QUEST II model are presented.

SECTION 1: THE HISTORICAL EVOLUTION OF CONSUMPTION THEORY

Most present day commentators accept some version of the permanent income / life cycle (PIH/LCH) theory of consumption with the simple Keynesian consumption function approach, with its suggestion that current disposable income[1] is the main determinant of consumer spending, no longer taken seriously because of both its theoretical and long-run empirical inadequacies.

1.1 THE FALL OF KEYNES' ABSOLUTE INCOME HYPOTHESIS(AIH):

- *Theoretically*, the forward looking aspect of the PIH/LCH approach gives it an analytical edge over the Keynesian approach since it is explicitly predicated on the utility maximising behaviour of consumers and consequently considers future as well as current income.
- *Empirically*, it was discovered that the longer term properties of Keynes consumption function, with its emphasis on current income, behaved poorly with its implication that the average propensity to consume, APC (i.e. the ratio of consumption to income) would decline as incomes grew since the APC is higher at low income levels relative to that at higher income levels.

Given the credibility gained from the short run, business cycle, evidence being consistent with Keynes' views in the 1930s, it was feared by many commentators using the Keynesian approach that the end of World War II would lead to the Great Depression all over again because of domestic demand shortages emanating essentially from consumption.

Thankfully, Keynes was proven wrong, with his post WWII forecasts for consumption growth proving excessively pessimistic since no trend decline in the APC materialized after the war. As a result of this forecast failure, the Keynesian propensity to consume became primarily an analysis tool for the short-run i.e. for a single business cycle.

The empirical foundations of the Keynesian function were further undermined with the publication by Kuznets in 1946 of longer-run US data, covering the period 1879-1938, which confirmed the stability of the APC over a much longer stretch of time. This data set showed that if decade averages were taken as opposed to the shorter run of business cycle data which had been used up until then, it became evident that the APC showed no tendency to decline secularly (i.e. in the US it stayed relatively constant at around 0.9).

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[1] *Sources of Household disposable income*

In terms of disposable income, households have access to the following main sources:

- they receive wages and salaries for supplying labour to firms and to the government
- they derive a share of the gross operating surplus of enterprises, through dividend payouts on share ownership or as a result of their self-employed status.
- they benefit from income transfers from the government (e.g. unemployment benefits etc.) and from overseas.
- they earn interest payments from their bond holdings.

The total of all the above income components net of taxes and social security contributions constitutes the overall disposable income available to households with the consumption function determining the split into savings and expenditure.

1.2 POST-KEYNESIAN CONSUMPTION THEORIES:

A large number of alternative hypotheses were formulated which tried to reconcile the cyclical or short-run achievements of the Keynesian consumption[2] function with its failures in the long-run

- **Relative Income Hypothesis (Duesenberry)**
- **Permanent Income Hypothesis (Friedman)**
- **Life-Cycle Hypothesis (Modigliani)**

All of the above three theories are intertemporal choice theories i.e. the choice between current consumption and savings or higher levels of future consumption. All three were able to provide adequate explanations for the following empirically observed phenomena:

- *Short–run or business cycle data* showed that the consumption to income (C/Y) ratio (i.e. the APC) varied inversely with income during cyclical fluctuations, with the ratio being greater than average during downturns and smaller than average during boom periods – in other words, over a short-run horizon, as income fluctuates or deviates from its long-run trend growth, the marginal propensity to consume (MPC) is less than the average propensity to consume (APC) i.e. consumption displays a flatter Keynesian path.

- As regards the *long run*, on the basis of trend data there appeared to be no tendency for the C/Y ratio to change i.e. consumption is a constant proportion of permanent lifetime income. Consequently MPC=APC as income grows along trend.

- *Relative Income Hypothesis*: Duesenberry contended that the utility of consumers depended not so much on their absolute income (Keynes' view), but rather on their relative income, both current income relative to previous income and current income relative to the income of others in society with whom the consumer feels in competition with. Consequently, economy-wide increases in absolute incomes which do not affect the relative income distribution will have little impact on the behaviour of consumers in terms of the share of income consumed. The latter is Duesenberry's explanation for the stability of the average propensity to consume over long periods of time.

- *Permanent Income Hypothesis*: Friedman put forward the thesis that a household's consumption was proportional to its permanent income i.e. the average income which a household could reasonably expect to earn over its particular planning horizon. This hypothesis grew out of the long observed fact that incomes other than current disposable income affected current patterns of consumption. The permanent income hypothesis can explain both the long-run

[2] It should be mentioned that unlike Keynesian consumption theory which explains "consumer expenditure" trends, both the PIH and LCH explain "consumption". The distinction is important since consumption, while it includes all expenditure on non-durables it only counts a depreciation charge for the use of consumer durables.

constancy of the consumption to income ratio (i.e. constancy of APC) while at the same time explaining why this ratio varies inversely with income during cyclical fluctuations.

The permanent income hypothesis (PIH) provides intuitive explanations for many of the more important aspects of consumer behaviour with, at its heart, the fact that over long periods of time variations in permanent income reflect variations in aggregate income growth in an economy i.e. permanent increases in the economy's resources. On the policy front it can guide policymakers as to the most effective policy course by, for example, explaining the relatively small economic impact which temporary tax cuts would engender compared with a permanent reduction.

- *Life Cycle Hypothesis:* Modigliani and his collaborators, most notably Ando, formulated the life-cycle hypothesis (LCH). The LCH is similar in many aspects to the PIH in that again, as with the PIH, consumption is a constant proportion of income. However, according to this view consumption is dependent on the position of the individual in the life cycle, with the objective of the average consumer being to even out consumption over a lifetime in which income fluctuates substantially depending on age. In the young adulthood and retirement phases, when income received is low, consumption patterns are maintained through recourse to borrowing or by drawing down past savings. Consequently in these phases of the life cycle, consumption is a high proportion of income. As regards the middle phase, when income tends to be relatively high, savings are built up to finance post-retirement consumption with the result that a smaller proportion of income is consumed in this phase. This generates the well documented hump-shaped pattern of savings over a lifetime.

  In the most normal formulation of the life-cycle hypothesis, the lifetime planning horizon of the individual consumer, combined with the expected proportionality between consumption and permanent income, ensures that no net lifetime savings are planned with transfers to heirs only being equivalent to their own initial inheritance[3]. Changes in current income influence changes in current consumption only to the extent that such changes can be regarded as being permanent and consequently justify a recalculation of lifetime consumable resources. In the event of temporary income gains, the consumption impact is likely to be small.

All three theories have a basic grounding in the microeconomic theory of consumer choice. This is particularly true in the case of the PIH and LCH hypotheses which explicitly assume that the driving principle underlying observed consumer behaviour is that of rational consumers attempting to maximise utility by allocating their permanent incomes (i.e. their lifetime stream of earnings) to an optimum pattern of lifetime consumption. The relative income hypothesis (RIH), on the other hand, is somewhat at odds with the traditional microeconomic theory of consumer behaviour since it violates the key assumption that an individuals preferences should be independent of the consumption behaviour of others. This is one of the reasons for

[3] This is in sharp contrast to the Ricardian view where current generations are assumed to have strong inter-generational ties. Unlike life cycle consumers the Ricardian variety are assumed to have "infinite" lives in the sense that they are strongly linked to their descendants via a bequest motive.

the failure of the RIH to command the same empirical interest as does the PIH/LCH approaches.

In addition, the success of the PIH/LCH approach was not only built on its solid grounding in microeconomic utility maximising theory but also on its empirical explanatory power being consistent, as it was, with both the short-run and long-run evidence. Over the long-run, it suggested that wealth (i.e. permanent income) was the main determining factor in terms of consumption and that the consumption to wealth ratio was a stable one. As regards the short-run it encompasses the Keynesian approach by explaining why over the business cycle consumption fluctuates less than disposable income as a result of consumption smoothing by consumers – which has the effect of evening out consumption in the face of fluctuating income (see Box on Consumption Smoothing).

SUMMARY OF SECTION 1: The essential points to be retained from the above review of post-Keynesian consumption theories are:

- *Firstly*, the key role played in current consumption thinking of the notion of permanent or lifetime income, the role of expectations and the important assumption concerning the desire of consumers to smooth out their lifetime consumption path.

- The points raised in the previous indent translate themselves into the following *two conclusions* relating to forecasting the impact of changes in income on actual consumption spending:

  📖 Firstly, the consumption impact of changes in income depend crucially on the perceptions of consumers as to the transitory or permanent nature of these income changes. Consequently, unless there is absolute certainty on behalf of consumers that the current change in income is a permanent one it is likely that consumption will respond by less than the change in income.

  📖 Secondly, consumers' expectations regarding the impact of various policy measures or events on future "wealth" prospects can have an important impact on present consumption patterns; in other words influences other than current disposable income, such as wealth, can impact on current levels of consumer spending.

BOX1: CONSUMPTION SMOOTHING

Current income constitutes only a proportion of the resources available to an individual consumer, with any meaningful measurement encompassing total wealth, including existing financial and housing assets allied to human wealth measured as the net present value of expected future labour income. In terms of the allocation of these resources to lifetime consumption, given the substantial degree of discretion which the consumer possesses, a reasonable initial hypothesis is that the average life cycle consumer would desire to spread their consumption in a reasonably even pattern over their lifetime.

In overall terms therefore consumption smoothing, given the expectation of increasing lifetime income, implies borrowing or dissaving in young adulthood and paying back or saving when older to cater for retirement. Under this scenario, the average consumer has a reasonably good idea of what his lifetime permanent income should be, with temporary income changes eliciting the type of consumption smoothing mentioned in the main text, whereas permanent changes would provoke a permanent shift in consumption patterns.

Consequently, it is safe to conclude that temporary income disturbances, which constitute the likely majority of country-specific income shocks, have little effect on consumption behaviour. Consumption smoothing in the face of such temporary shocks offers the most appropriate explanation for consumption being the most stable element of aggregate demand, with consumers acting to defend living standards already attained. Furthermore, if future permanent income changes are currently anticipated by consumers, such future changes can be reflected in current consumption patterns. Consequently, shifts in future expectations can impact on the current behaviour of consumers.

SECTION 2: ARE WEALTH AND CURRENT INCOME THE KEY DETERMINANTS OF CONSUMPTION ? WHAT IS THE ROLE OF INTEREST RATES

This section will examine in more detail the key determinants of consumption. Unlike the previous section which stressed the primacy of the permanent income / life cycle paradigm, this section will more critically examine the key assumptions underlying this theory and will find it wanting in a number of respects in terms of real life behaviour of consumers. Following a discussion on the key driving forces underlying consumer behaviour this section will provide evidence to back up its contention that not only wealth but also disposable income influences consumption.

SECTION 2.1 KEY DRIVING FORCES UNDERLYING CONSUMER BEHAVIOUR: ROLE OF TIME HORIZON, TIME PREFERENCE AND CAPITAL MARKET IMPERFECTIONS

Three key factors influence an individuals decision making process in terms of determining his consumption/savings split and in terms of determining the importance he attaches to current as opposed to future income. In essence these can be summarised as his planning horizon, his time preferences and finally his ability in practice to realise his perfect (his utility maximising or theoretically most satisfying) consumption path i.e the extent to which he is faced with liquidity constraints[4].

The time horizon / time preference factors are the key determining influences on an individuals calculation of his lifetime wealth. Regarding the latter it is clear that the length of his planning horizon (1 year V 50 years) and his preference as to current V future consumption[5] play a determining role. As regards the consumers ability to realise his "utility maximising" consumption path this is largely determined by the extent to which the consumer is in a financial position to smooth his consumption i.e. can he borrow or lend at reasonable rates of interest whenever he wants or is he faced with financial market constraints on his ability to do so.

Lets look at each of these three factors in turn in more detail.

2.1.1. TIME HORIZON CONSIDERATIONS: This particular feature can be simply summarised as whether a consumer has a short or long planning horizon in terms of his consumption / savings choices. To meaningfully analyse this question it is necessary to look more closely at a consumers motives for saving.

THEORIES OF SAVINGS: A wide variety of motives for household saving have been put forward in the theoretical literature. For convenience purposes these motives can be grouped together into essentially three theories of savings with, as one would

[4] The term liquidity constrained refers to those consumers whose spending over the short to medium term is determined by fluctuations in their disposable income as opposed to their long-run wealth position.

[5] The rate of time preference can be estimated from the wealth/consumption relationship. The life cycle model of the latter relationship implies a relatively low rate of time preference in countries such as Japan which have high saving ratios, with countries such as the US, with a relatively low saving ratio, displaying a higher rate of time preference.

intuitively expect, assumptions about an individual's time horizon being one of the essential differences between the competing hypotheses.

- The *life cycle model* assumes that an individual's time horizon is their own lifetime and that their utility hinges solely on their own consumption. The desire to smooth one's lifetime consumption path by evening out normal cyclical income fluctuations provides the fundamental motive for saving/dissavings during different periods of one's life, with the need to provide sufficient resources for retirement being the clearest example of these life-cycle effects.

- The *bequest model* assumes that an individual's time horizon is multi-generational with strong ties linking current generations to their descendants and with individuals driven to maximize not only their own utility but also that of future generations through a bequest motive.

- The *precautionary or "buffer stock" theory of saving* is built on the view that a major motive for holding and accumulating assets is to shield one's consumption against future uncertainties such as unpredictable fluctuations or disruptions in income or extraordinary health expenditures. One of the intuitive implications of this "buffer stock" model is that individuals with higher income uncertainty should amass a greater stock of wealth to allow for this.

2.1.2. TIME PREFERENCE EFFECTS: IMPACT OF THE INTEREST RATE ON CONSUMPTION AND SAVINGS: HOW GREAT IS THE CONSUMPTION RESPONSE TO VARIATIONS IN THE REAL RATE OF INTEREST [6]?

OVERALL ROLE OF INTEREST RATES[7]: Interest rates appear through two avenues in the typical life-cycle model:

- *Firstly*, if the discount rate used by consumers to *discount future income* is related to observed real rates of return, the latter interest rates are used as a parameter in the model. It should be noted that there is in reality a large discrepancy between the two sets of interest rates with consumers tending to discount future income flows at a much higher rate than that implied by observation of the real interest rate. For example, Hayashi (1982) found the discount rate for income used by US households to be over 13% compared with 3½% for the real interest rate. This empirical evidence carries major implications for the real economy since the lower the subjective discount rate the greater the impact in terms of thrifty behaviour and by implication the greater the accumulation of non-human and human capital.

- *Secondly*, the interest rate is included as a variable when testing for the presence of *intertemporal substitution effects*. A priori one would expect the sign of the substitution effect to be negative in terms of current consumption since increases in the interest rate reduce the relative price of goods to be consumed tomorrow creating a substitution effect which tilts consumption towards the future. Consequently consumers, irrespective of whether they are lenders or borrowers,

[6] The interest elasticity or sensitivity of consumption and savings has big implications for the efficacy of fiscal and monetary policy in terms of influencing business cycle developments.

[7] Prior to Keynes' PIH, the interest rate was given a large role in determining the choice between consumption and saving (Fisher's theory)

have a choice to make between current as opposed to future consumption with the expression of such basic intertemporal preferences impacting strongly on the time profile of consumption. As pointed out above there is a strong underlying rationale attaching to the belief that consumers prefer consumption to follow a reasonably steady path over time, with the implication being that intertemporal substitutability may be low.

INTERTEMPORAL SUBSTITUTION EFFECTS: As regards this latter point on the degree of substitutability, it is essential to know whether the elasticity of substitution is low or not in order to assess the degree of responsiveness of consumption to changes in rates of return. If, for example, consumer spending behaviour is not influenced greatly by interest rate changes then attempts by governments to stimulate savings by, for example, making the fiscal treatment of interest income more attractive will ultimately prove futile. Assessing the extent of this responsiveness to rates of return changes is consequently an important area of empirical research with Hall (1988) and Campbell and Mankiw (1989), amongst many others, examining this issue.

In general this research suggests that consumption growth responds relatively little to variations in the real interest rate. In fact most commentators would suggest that the elasticity of substitution is definitely below unity and in all probability below one half. In other words there is a low degree of readiness on behalf of consumers to substitute present for future consumption.

INCOME EFFECTS: While the substitution effect is low it is nevertheless negative which should mean that an increase in interest rates will result in a drop in current consumption. However, this need not necessarily be the case. The intertemporal dimension of consumption decisions is more complex than that. The reason for this is that the change in interest rates has an income effect as well as a substitution effect. If, for example, a particular consumer is a net saver, the interest rate increase permits the attainment of a higher consumption path than before and consequently the rate hike would exert a positive income effect on consumers that are net savers. In fact, at the economy wide level, consumers are on average net savers since the stock of wealth in the economy is positive with the result that an increase in interest rates has a positive overall income effect both on present and future consumption.

WEALTH EFFECTS: Finally, it should be reiterated that interest rate changes also have wealth effects, with rate increases reducing overall wealth through reducing the present discounted value of future income flows.

OVERALL SUMMARY OF INTEREST RATE EFFECTS: To summarise, therefore, interest rate effects are ambiguous in terms of their impact on *current* consumption due to the opposing influence of positive income and negative substitution effects. At the level of the individual consumer the impact on *current* consumption of course depends on whether the latter is a net lender or borrower with increases in the real rate of interest tending to increase the consumption of the former with the opposite impact on borrowers. Taken as a whole, interest rate increases would appear to reduce aggregate consumption (i.e. both *current and future* consumption) because of the wealth declines associated with the heavier discounting of future income.

2.1.3. CAPITAL MARKET IMPERFECTIONS: Liquidity constraints in effect determine the extent to which a consumer can achieve his perfect consumption path. This is an

area which will be looked at in more detail later on in this section so at the moment all that needs to be highlighted are the potential ways in which liquidity constraints can impact on the level of consumption. How do such constraints ensure that current income is more important to the explanation of consumption changes than is forecasted by the permanent income hypothesis. Liquidity constraints impact on consumption in essentially two ways:

- *Firstly*, binding liquidity constraints ensure that individuals consume less than they would otherwise do.

- *Secondly*, as stressed by Zeldes (1989), the expectation of such constraints binding in the future, irrespective of whether they do so at present can impact negatively on current consumption i.e. consumers precautionary savings are higher due to the presence of liquidity constraints reflecting the need to insure oneself against the effects of possible future declines in income.

In overall terms therefore liquidity constraints raise savings levels with some empirical evidence (Jappelli and Pagano – 1994) to suggest that cross country differences in aggregate saving may partly stem from cross country differences in liquidity constraints.

SECTION 2.2 DETERMINING THE RELATIVE IMPORTANCE OF WEALTH V CURRENT INCOME IN TERMS OF INFLUENCING CONSUMPTION: THE EMPIRICAL EVIDENCE

Given the discussion in section 2.1 regarding the three key influences on actual consumer behaviour, it is clear that there are a number of highly credible reasons why one would expect to see deviations from the consumer behaviour predictions hypothesised by the permanent income thesis. While consumption is undoubtedly a positive function of lifetime human and non-human wealth, growing in fact one for one over the long run, it also appears in the short-run to be constrained by current disposable income, a large part of which is made up of current after-tax labour income. If, as assumed by the PIH, all consumers were highly rational and forward looking and operated in a situation of perfectly functioning financial markets they would be able to borrow and lend freely and smooth their lifetime consumption patterns. In reality a substantial proportion of consumers would not appear to function in this way for a variety of reasons including:

- *Firstly*, uncertainty concerning future wealth calculations and income flows make people subscribe to more risk averse or precautionary types of behaviour i.e. people may insulate themselves against unfavourable outcomes by adopting more prudent behaviour such as discounting future income at a higher rate to reflect the greater uncertainty. This is consistent with the results of Hayashi mentioned earlier.

- *Secondly*, a large proportion of consumers act in a simpler, less forward-looking, fashion than theory would suggest with many using simple rules of thumb, such as monitoring "buffer" stocks of liquid assets. Consequently, to the extent that consumers do look forward, their planning horizons appear to be much shorter than theory presupposes, a proposition which can be intuitively accommodated if

one accepts the pervasiveness of market imperfections, uncertainty and myopia or backward looking behaviour.

- *Thirdly*, some consumers may not be interested in smoothing their consumption over their lifetime and may, for example, prefer to defer consumption to later in life when in fact they have more time to enjoy their accumulated wealth.

- *Finally*, even if an individual consumer wishes to borrow to realise a constant level of lifetime consumption, the widespread recourse of banks to credit rationing allied to other forms of liquidity constraints will ensure that in reality his or her spending, at least in his early years, will not be front-loaded with debt and will be restricted to his current levels of disposable income. In other words, while consumers may have the desire to even out consumption in circumstances of fluctuating income, they may not have the ability to realise such an increase in utility.

Given the logical appeal of the above reasoning, it is clear that a more realistic characterisation of consumers actual behaviour is one in which consumption is dependent not only on calculations of total lifetime wealth but also is heavily influenced by current disposable income. The key question then in terms of explaining consumer spending patterns is determining the proportion of consumption which is actually dependent on total wealth (i.e. financial wealth, housing wealth and expectations of future labour income) and the proportion which is predicated on current income levels.

EMPIRICAL EVIDENCE : ARE CONSUMERS LIQUIDITY OR WEALTH CONSTRAINED: Establishing the relative importance of these primary determinants of consumption is essentially an empirical question. In the terminology used in the literature we must decide the proportion of "liquidity constrained" v. "wealth constrained" households.

- *Campbell and Mankiw* (1989) estimate that up to one half of all households are of the liquidity constrained, Keynesian-type, with the other half being typical life cycle/permanent income consumers i.e. wealth constrained. This ratio of course would differ across countries with variations being dependent, amongst other things, on the degree of liberalisation of domestic financial markets. In fact, in their research Campbell and Mankiw provide estimates of the consumption share of such households in 6 countries with the estimates lying in the range 0.2 –0.6 and with their explanation for the cross-country differences linked to the relative development of their respective credit markets.

The broad conclusion emanating from the above estimates appear to be further corroborated from the results of 2 studies, reported in Blanchard (1997), which also throw light on this question of whether consumers are either myopic, i.e. driven by current income, or forward looking i.e. influenced by expectations of future income.

- The first, a study by *Venti and Wise (1993),* looks at the savings behaviour of people in anticipation of retirement. This type of study provides valuable empirical information regarding the extent to which people do forward planning in order to smooth out the inevitable decline in their future employment income. The results of this research appear to suggest, however, that few individuals have planning horizons which stretch over their lifetime, with most giving little consideration to the question of saving for retirement until their 40s. In addition,

while saving may start at that time, the reality is that for many their savings ratio is vastly inadequate given normal retirement durations, with many in fact relying almost exclusively on State support.

- The second study by *Poterba (1988)* looks at the impact on consumer behaviour of a change in future expected income resulting from announced income tax cuts. The package of tax cuts specifically referred to were those announced in 1981 by the Reagan Administration and passed by the US Congress in July of the same year. The latter income tax cuts were substantial (i.e. a cumulative decline of twenty three percent) and were to be phased in over a three year period 1981 – 1983 (5% in 1981, 10% in 1982 and 8% in 1983). The key question addressed by the study was whether and to what extent consumers reacted in the initial year of the package to the anticipated decrease in labour taxes in the two subsequent years. Poterba concluded that no evidence could be found for any positive consumption impact emanating from the pre-announced tax cuts.

  While such evidence is undoubtedly not conclusive that present consumption patterns are not affected by expectations of future income changes, since the credibility of Governments' fiscal actions must also be considered as a factor in the present example, it does nevertheless suggest that the impact of expected future tax changes on current consumption may be less substantial than some commentators have suggested in the past. Finally, this piece of research highlights an important conclusion in relation to our present thinking on consumption; how consumers respond to changes in their present or future incomes depends crucially on their perception as to whether such changes are likely to persist or are merely transitory. In the above case, consumers clearly suspected either that the Government would not deliver on the announced cuts or that such cuts were likely to be reversed in the future.

- *Example of Liquidity Constraints operating at the National Level*: An interesting example of the macro-economic importance of liquidity constraints is given by the respective cases of East Germany and Poland in the early 1990s. Both of the latter were making rapid progress towards the establishment of market based economies and consequently their long-run permanent income would have been expected to rise substantially. However, the extent to which both were able to borrow abroad against future prosperity was dramatically different with East Germany being able to run a large current account deficit because the servicing of its external debts were, in effect, assumed by West Germany. This, however, was not the case for Poland where because of liquidity constraints i.e. an inability to sufficiently borrow against future permanent income increases, Poland had to limit its expenditure to more closely reflect its current income level.

Conclusion: The permanent income / life cycle view of consumption which predicts that wealth (i.e expectations of future income) is the driving force for consumption would appear to be only partially true. It is clear from the evidence presented that current disposable income plays a key role in the decision-making process of a large proportion of households. It must be accepted that the existence of substantial market imperfections, driven in the main by uncertainty on the part of banks concerning the future prospects and incomes of individual clients, means in practice that borrowings, justified on the basis of a household's intertemporal budgetary constraint, are simply not feasible with the implication being that current disposable income also plays a major role in affecting aggregate consumption.

Box 2 Forecasting Consumption: Modelling Consumer Behaviour is an evolutionary process

FORECAST FAILURES IN 1970S AND 1980S: Modelers reacted to their failure in the 1970s to forecast the rise in savings which occurred, as a result of the impact of inflation on consumer behaviour, by including an inflation variable in their models which acted as a proxy for the inflation loss on liquid assets[8]. These consumption equations had to be amended still further in the 1980s in a large number of countries in order to account for their failure to forecast the opposite problem of a sharp decline in their savings ratio which many attributed to the impact of financial sector deregulation. Financial liberalisation, it was felt, had increased the spendability of previously illiquid physical assets held by the personal sector and had acted to reduce the number of liquidity constrained consumers in the economies affected. Consequently models were adapted to include variables on wealth especially physical wealth and were increasingly focused on the forward looking behaviour of consumers.

These developments in terms of modelling mirrored the growing acceptance of the *permanent income/life cycle hypotheses with their emphasis on forward looking consumers and consumption smoothing to reflect the smoothness of permanent income changes*. The models have also taken on board the results of empirical research indicating the presence of substantial liquidity constraints on consumption with its implication that aggregate consumption responds to changes in current income as well as in permanent income.

In overall terms therefore consumption functions have evolved over the last number of decades from their original Keynesian roots to resemble the life cycle models of consumption emphasising forward looking behaviour and allowing for the impact of liquidity constraints. Consequently, most modern models distinguish two types of consumers, the forward looking or wealth constrained variety who smooth their consumption profile in accordance with the life cycle hypothesis and the liquidity constrained or backward looking variety who are restricted to their current incomes in terms of their purchasing patterns.

[8] The inflation rate is included in consumption functions as a proxy for "real wealth effects" i.e. a perceived wealth loss by net saving consumers. (Note: inflation impacts on savings behaviour essentially through a heightening of economic uncertainty).

Section III: Future Consumption Trends in the Community: What are the likely key influences over the medium to long run ?

How does the preceding, largely theoretical, framework help us in forecasting future consumption trends in the Community ? In particular, how will consumption react to ongoing budgetary consolidation, further financial liberalisation, taxation and social welfare reforms and demographic changes. In this regard, if one accepts the long-run predictions of the permanent income model, which most people do, it would appear meaningless to do long range forecasts since consumption will simply be determined by, in essence, an economy's long-run trend growth rate. Income and consumption form a long-run cointegrating relationship with a long run unitary elasticity between income and consumption ensuring that the latter is relatively constant as a proportion of income.

Consequently, given the futility of long range forecasts, it appears more appropriate to try to provide an insight into consumer behaviour and to convey a sense of the likely evolution of the consumption/savings split in the Community over the medium to long run. In other words, by looking at the following concrete examples, which involve a combination of structural and policy–induced business cycle influences, it is hoped to flesh out the theoretical framework from Section 2:

- **CONSUMER BEHAVIOUR AND ONGOING BUDGETARY CONSOLIDATION**
- **IMPACT ON LIQUIDITY CONSTRAINTS OF PROGRESSIVE FINANCIAL LIBERALIZATION**
- **CONSUMPTION REACTION TO STRUCTURAL REFORM IN THE FORM OF TAX AND SOCIAL WELFARE SYSTEM REFORMS**
- **IMPACT ON CONSUMPTION OF DEMOGRAPHIC PRESSURES**

3.1 CONSUMER BEHAVIOUR AND ONGOING BUDGETARY CONSOLIDATION

As highlighted in the 1998 Broad Economic Policy Guidelines, despite the commendable degree of budgetary consolidation achieved by virtually all of the Member States in recent years, it is clear that supplementary efforts will be required in most countries if compliance with the Stability and Growth Pact's medium-term objective of fiscal positions which are either close to balance or in surplus is to be realised.

This should be seen in the context of EMU implying a fundamental shift in the ground rules surrounding macro economic policies. In this regard, if the public authorities continue to demonstrate a credible commitment to public deficits and debt reduction this may have far reaching implications on the behaviour of forward looking consumers and investors (see Box 3).

As regards consumers, the positive expectations associated with a significant package of deficit reduction, in terms of their anticipation of an easing of future tax pressures, could engender an upward revision to consumption plans. Such "crowding in" effects would feed through in the form of reductions in long-term interest rates, facilitated by the boost to national savings emanating from the consolidation process.

The extent of such *"crowding-in" effects* will be significantly dictated by four essential features of consumer behaviour.

- *Firstly*, the planning horizon of households; are they "life-cycle" or more "Ricardian"
- *Secondly*, the degree to which they believe that the present Government actions are credible i.e. the response of consumers will be largely dictated by their expectations as to the transitory or permanent nature of the Government's actions.
- *Thirdly*, on the assumption that consumers generally feel that the Government action is credible, the response of an individual consumer will depend on the extent to which he or she has the ability to borrow or lend freely in order to smooth their consumption over time. If consumers do have that power (i.e. they do not face credit or liquidity restrictions) then you would expect to see a positive response in the current consumption behaviour of households in anticipation of on-going reductions in public deficits and debt.
- *Finally*, the response of consumers will be influenced by their degree of sensitivity to the inevitable interest rate changes which will occur. We saw earlier that this interest elasticity would appear to be low.

The consumption boost from the credible fiscal consolidation efforts of Governments will feed through as households adjust their savings behaviour in expectation of lower future tax liabilities. The overall impact of this shift from public saving to household dis-saving will nevertheless be positive in terms of overall national saving. As pointed out in a number of recent Commission policy documents the most effective way of increasing national savings is through boosting public savings since, in an historical perspective, the private savings ratio has remained remarkably stable in the Community over the last number of decades with changes to corporate and household saving ratios tending to cancel each other out over time.

BOX 3: CONSUMER BEHAVIOUR AND THE EFFECTIVENESS OF FISCAL POLICY

This box looks at some of the issues raised in the main text in more detail.

Any analysis of *the impact of changes in fiscal policy on the economy* depends crucially on the researchers assumptions in relation to consumption and saving behaviour. Consequently, the likelihood of ongoing fiscal consolidation in the Community over the coming years in order to bring structural deficits down towards zero means that the present analysis should look at the implications of this policy course for savings and consumption.

At this stage it is only necessary to point out that one's views as to the *time horizon of consumers* (i.e. have consumers finite or infinite time horizons) and of the extent to which consumers are *wealth v. credit constrained* can have significant implications in terms of the estimated effectiveness of fiscal policy action.

- If, for example, one were to subscribe to the *Ricardian/classical view* that with infinitely lived, forward looking, rational consumers then one would expect changes in Government debt to have minimal, if any, real effects in terms of economic activity since intertemporal revisions to private sector consumption and savings decisions would tend to offset the effects of any such Government action. In the Ricardian scheme of things, current generations have strong inter-generational ties. In the case of the latter type of *"Ricardian" households* the future tax implications of increases in Government debt are likely to be fully offset by equivalent changes in private consumption and saving behaviour because of the longer planning horizons of such households.

- Alternatively, one could subscribe to a view of fiscal policy which, although continuing to embrace the basic assumption of forward looking optimizing behaviour, suggests that private sector *savings behaviour may not be as sensitive to changes in public deficit**s***, as a strict adherence to the rational expectations viewpoint would imply, with shorter planning horizons for consumers (i.e. life cycle considerations) coupled with capital market imperfections having implications for the real economy impact of fiscal policy. In the case of the latter *"life cycle" households*, since part of the debt burden is assumed to fall on future generations, with which they are assumed to have no strong ties[9], the fiscal change is not fully offset by private sector behaviour and consequently the Government debt increase has larger real economy effects. These latter *"non-Ricardian" effects* can be further amplified if consumers are assumed to face liquidity constraints i.e. credit restrictions which impinge on their capacity to smooth lifetime consumption by borrowing against future incomes. In other words unlike in the case of Ricardian equivalence the level of national savings can under the neo-classical paradigm be affected by changes in public savings with significant implications ensuing for interest rate developments and for wealth / asset accumulation.

The essential point therefore is that *fiscal policy changes can have relatively large real economy effects* if consumers firstly are of the "life cycle" as opposed to the Ricardian variety and consequently do not fully allow for i.e. "excessively discount" the future tax implications of present day fiscal actions and secondly if consumers are "liquidity constrained" to the extent that current consumption is highly sensitive to changes in current disposable income. If both these assumptions hold, as they are assumed to do in most "mainstream" econometric models, then the real economy impact of fiscal policy changes can depart significantly from the Ricardian view of Government deficits.

Simulations in Section 4 of this text assess the extent of such crowding out effects of Government debt using the Commission Services' Quest 2 model and emphasises in particular *the crowding out of private investment due to the higher real rates of interest* associated with excessive consumption of available national resources i.e. a lower pool of savings which in turn results over the long-run in a reduction in real income and consumption levels (i.e. reductions in sustainable real standards of living) as a result of the lower average level of capital accumulation.

Finally, because consumption and savings do not appear to be highly *sensitive to interest rate changes* a large rise in rates may be necessitated to bring savings rates back into balance, thereby adding further to the long run crowding out effects of Government debt.

[9] Individual consumers are assumed to have finite lives i.e. there is no formal link between generations (i.e. the life cycle view)

3.2. IMPACT ON LIQUIDITY CONSTRAINTS OF PROGRESSIVE FINANCIAL LIBERALIZATION

The process of financial market liberalization has already impacted strongly on the pattern of household consumption in at least some of the Member States. This is likely to accelerate with the advent of EMU and with the inevitable widening of the range of financial instruments which will be made available to consumers across the continent. It would be expected that such liberalization will result in a further easing in the liquidity constraints faced by households, with in particular the potential for a substantial increase in the spendability of previously illiquid assets. With consumers given the means to rearrange their wealth portfolios in this way, they will be in a better position than at present to smooth their consumption over time. Consequently, over time one would expect to see a *decline in the share of liquidity constrained households* in consumption functions, with permanent income driven households rising in importance.

One of the assumptions underlying the PIH is that access to perfect capital markets ensures that consumers will be able to smooth lifetime consumption through borrowing or lending at the same interest rate. As the process of financial sector liberalization gradually renders Europe's capital markets somewhat less imperfect than at present then the sensitivity of current consumption to current income will concurrently fall over time as the latter has been shown to be linked to the degree of financial deregulation operating in any given country. Eventually, perhaps, ongoing liberalization will provide the empirical evidence to support Hall's contention that if consumers adopt rational expectations and determine their consumption from pemanent income it can be shown that *consumption will follow a random walk* i.e. it is not forecastable. In fact, there is little doubt that liquidity constraints offer one of the main explanations for the widespread failure of consumption behaviour to follow the random walk pattern predicted by Hall.

On the policy front, with financial liberalization removing at least part of these constraints we should be predicting *more powerful real interest rate effects on consumption over the coming decades*.

A word of warning is necessary at this stage in terms of the *optimal speed of financial deregulation*. Given that the net effect of liquidity constraints is to boost the overall level of savings through a form of "forced" thriftiness, it is clear that the "big bang" approach to liberalization carries major, once-off, essentially macro, risks for the economy due to the rapid mobilization of a potentially large stock of savings which have been accumulated over, in many cases, a considerable period of time. This was indeed the experience of countries which underwent rapid and fundamental liberalization in recent decades where the release of a wave of pent-up demand in the economy led eventually to overheating problems manifesting themselves.

3.3 CONSUMPTION REACTION TO STRUCTURAL REFORM IN THE FORM OF TAX AND SOCIAL WELFARE SYSTEM REFORMS

Supply side reforms which augment the potential growth rate of the Community's economies feed consumer's expectations of higher future lifetime incomes. Such reforms are likely to have a positive overall effect on savings behaviour taken over the

longer run but the shorter run impact is likely to be a boost to consumption as the benefits of the structural reforms gradually become apparent and households adjust to the expectations of higher life-long living standards.

TAX REFORM: There are a number of channels through which a country's tax system can impact on aggregate household savings:

- Impact on lifetime wealth calculations
- Impact on the rate of return on saving
- Impact resulting from the progressivity of the tax system and from the distribution between direct and indirect taxes.

Regarding the relationship between taxation and household savings behaviour there is substantial evidence to suggest that the negative impact of income taxes on household savings is of a different order of magnitude to that of consumption taxes. Direct income taxes are both progressive and focused essentially on the working age population and tend therefore to disproportionately affect the high savings groups in a country's population. These high savers are not as affected by the indirect consumption taxes since the latter are more evenly distributed across age groups and income bands. Consequently, if promoting savings is an important public policy objective, this evidence has significant implications for tax policy in terms of the distribution of income and consumption taxes in the overall tax structure of economies with a shift towards the latter indirect form of taxation, whilst keeping the overall tax burden unchanged, potentially boosting the aggregate rate of household savings.

SOCIAL SECURITY AND WELFARE REFORM: The generosity, coverage and financing of the present social security and welfare system in Europe is widely perceived to play a role in household savings behaviour. In terms of financing, the latter burden is shifted more in the direction of the high income earners if a policy of tax financing as opposed to social security contributions is adopted. In terms of the growing generosity and coverage of the system, it is accepted that the improvements it has brought in terms of income and health safety nets reduced the incentives for self-provision. This is particularly evident in the case of retirement saving with the growth of public pension schemes severely reducing the motive for households to privately provide for their old age.

Consequently the post war expansion of the "social safety net" is one of the explanatory factors underlying the secular declines in savings rates in industrial countries. While providing insurance against temporary or permanent losses in income these safety nets reduced uncertainty about future income flows and in the aggregate stimulated consumption. With a partial reversal of these trends over the coming decades being inevitable because of demographic, public finance pressures and other factors, savings and consumption patterns will be affected accordingly.

SUMMARY: It is clear therefore, that the level of public savings itself is by no means the only avenue through which public policy influences the savings decisions of households with the structure of taxation allied to the reach and generosity of the social welfare system being equally important. These latter avenues for impacting on household saving need to be carefully evaluated in the context of the present desire of Member State Governments, as agreed to in successive Broad Guidelines exercises, to overhaul their tax and social security systems.

3.4 IMPACT ON CONSUMPTION OF DEMOGRAPHIC PRESSURES

The ageing of the European population over the coming decades would appear to be an inescapable fact. This ageing process is linked to two essential factors:

- Firstly, the progressive lengthening in life expectancy; and
- Secondly, a fall in fertility rates to below the critical threshold levels (i.e. around 2) required for generational renewal.

It is envisaged that this ageing process, leading to higher old age dependency ratios in most of the Member States, will generate downward pressure on household savings rates in the countries concerned. This conclusion is derived mainly from an analysis of the phenomenon in the framework of the life-cycle hypothesis described earlier. Consequently, the reaction of consumption could be very different if one were to subscribe to either the bequest or "buffer stock" models of savings.

The difficulty in forecasting the likely outcome is, of course, linked to the fact that nothing is available in terms of historical precedents. It must be accepted, therefore, that while an increasing average age in Member States populations would prima facie be expected to result in significant shifts in both the structure and level of consumption there is clearly nothing inevitable about the likely final impact of these long-run changes in population age structures. Circumspection is indeed justified in this case given firstly the highly progressive nature of the process, secondly the difficulty of predicting how consumers will respond to these changing demographics (i.e. will their savings behaviour change etc) and finally given the proven flexibility of most economic sectors which, when combined with, the slow pace of demographic change should ensure that the productive system will have both the capacity and the time to ensure a relatively smooth adaptation process.

Against the background of these very real uncertainties simulation n°3, in the next section, provides an overview of the general macroeconomic impact of such demographic changes on the basis of the life-cycle paradigm.

SECTION 4: SIMULATIONS WITH THE QUEST II MODEL

INTRODUCTION: MODELLING OF HOUSEHOLD BEHAVIOUR IN QUEST II

The behaviour of households in the Commission Services' QUESTII model[10] is characterised by the Life Cycle Hypothesis. The latter is a generalization of the Permanent Income Model since it allows for the analysis of consumption and saving behaviour of households with possibly only a finite time horizon. The Life Cycle Hypothesis is an elegant way to model the basically intertemporal savings-consumption problem of households. According to this hypothesis, households base their consumption decision on a discounted stream of current and future expected net income and on their current stock of financial wealth The basic reason for doing this is derived from a concept of inter-temporal utility maximization of households, whereby they find it optimal to smooth consumption over time.

The calculation of permanent income incorporates the current and discounted future expected net income stream the household sector is expected to earn. It consists of all non-capital income, i.e. net labour income and all other transfers to households, including unemployment benefits. The other determinant for private consumption is financial wealth which, at the aggregate level, consists of the market value of firms in the domestic economy, the net foreign asset position and government debt.

It should be noted, however, that although government debt enters the definition for private wealth, this does not mean that it has a positive effect on private consumption because households deduct future tax payments and reductions in transfer payments, which are required to service the debt, from their permanent income. This is also known as Ricardian Equivalence. This proposition does, however, only hold in its extreme form for infinitely lived consumers. Life cycle consumers will discount the future more heavily and thereby underestimate the tax burden associated with government debt. Consequently they will regard government debt at least partially as net wealth of the household sector. As Summers and Poterba have shown, however, this net wealth effect of government debt is negligible in the life cycle model.

Finally, the empirical specification of the model allows for a deviation to the above formulation reflecting the findings of many empirical studies of consumer behaviour which point to a sizeable fraction of consumption being dependent on real current disposable income because of liquidity constrained private households.

SIMULATION 1: EFFECTS OF FISCAL CONSOLIDATION

Simulation results using the QUESTII model confirm the long-run non-Keynesian effects budgetary consolidations may have. Tables 1 and 2 summarise the results[11] of two simulations[12] for the European Union as a whole. The first one assumes that consumers are not liquidity constrained in their consumption demand, whereas the second simulation assumes that consumers are liquidity constrained and that 50

[10] See Roeger and in't Veld (1997a)

[11] The results are reported as percentage deviations between the simulated and the baseline paths.

[12] For both simulations, simultaneous shocks are given to tax rates and to public expenditure. The magnitude of the shocks captures the fiscal consolidation policies followed in the EU during the 1990s.

percent of their consumption demand depends on their current disposable income with the other 50 percent being dependent on their permanent income.

Tables 1 and 2 show that contractionary fiscal policies may in the long run generate expansionary effects. This is due to the forward-looking expectations of economic agents about the future tax cuts implied by reductions in government expenditure in the present time period. When consumers are not liquidity constrained, they increase their consumption demand from the beginning, i.e. as soon as the public expenditure cuts are announced. They integrate, from the beginning, the future cuts in taxes in their life-cycle income, and given the hypothesis that they are not liquidity constrained, they base their current consumption demand on the increased permanent income. Private consumption demand increases by 0.2 percent in the first year, and continues to increase up to 1.1 percent after 11 years.

The results of the simulation with liquidity constraints on consumption demand also give interesting insights as to the short and long-term effects of fiscal consolidation. In this case, consumption demand declines slightly at the beginning given that, in this scenario, 50% of consumption demand depends on current disposable income and therefore the impact of future tax cuts is not fully integrated into current decisions. On the other hand, consumption demand increases by much more later on in the period as the tax cuts come on stream (2.2 percent after 11 years instead of 1.1 percent without liquidity constraints).

TABLE 1: MACROECONOMIC EFFECTS OF FISCAL ADJUSTMENT WITHOUT LIQUIDITY CONSTRAINTS

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
GDP	-0.10	-0.19	-0.26	-0.27	-0.27	-0.23	-0.17	-0.07	0.08	0.27	0.50
PRIVATE GDP	-0.01	0.12	0.29	0.54	0.87	1.27	1.74	2.29	2.89	3.55	3.97
PRIVATE CONSUMPTION	0.20	0.24	0.30	0.37	0.47	0.59	0.71	0.85	0.97	1.08	1.09
PRIVATE INVESTMENT	-1.52	-1.20	-0.77	-0.02	0.95	2.18	3.69	5.49	7.58	9.97	11.85

Source: Bayar et al. (1997)

TABLE 2: MACROECONOMIC EFFECTS OF FISCAL ADJUSTMENT WITH LIQUIDITY CONSTRAINTS

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
GDP	-0.09	-0.15	-0.18	-0.15	-0.10	-0.04	0.03	0.12	0.22	0.35	0.49
PRIVATE GDP	0.00	0.15	0.36	0.66	1.03	1.46	1.94	2.47	3.04	3.64	3.97
PRIVATE CONSUMPTION	-0.01	-0.02	-0.18	-0.10	0.01	0.29	0.68	1.07	1.47	1.88	2.23
PRIVATE INVESTMENT	-0.94	-0.37	0.87	1.81	2.97	3.86	4.70	5.71	6.88	8.16	8.62

Source: Bayar et al. (1997)

SIMULATION 2: REDUCING LABOUR TAXES

It is generally recognised that the trend increase in labour taxes in the EU should be reversed. However, some simulation exercises with the QUESTII model show that budget-neutral reductions in labour taxes would have very different effects depending on how the reduction is compensated for. A cut in labour taxes if it is accompanied by, for example, an increase in VAT rates or by a general reduction in government spending or by a reduction in transfer payments, leads to higher private consumption and growth in the long run, whereas the effects are negative if the compensation is carried out through higher corporate taxes (see Table 3).

TABLE 3: STEADY STATE EFFECTS OF A REDUCTION OF 1 % OF GDP IN LABOUR TAXES

	COMPENSATED BY TRANSFER CUTS			COMPENSATED BY A VAT INCREASE			COMPENSATED BY A CORPORATE TAX		
	GDP	**Cons**	**Invest**	**GDP**	**Cons**	**Invest**	**GDP**	**Cons**	**Invest**
BE	1.53	2.04	1.91	0.63	0.76	0.73	-1.07	-0.60	-5.16
DK	1.91	2.91	2.56	0.56	0.85	0.73	-1.11	-0.87	-5.70
DE	2.40	3.38	2.89	0.79	1.04	0.89	-0.79	-0.74	-4.59
GR	1.59	1.59	1.74	0.38	0.40	0.41	-0.99	-0.27	-4.22
ES	0.91	1.20	1.17	0.26	0.34	0.31	-1.12	-0.46	-4.47
FR	2.29	2.91	2.77	0.80	0.97	0.92	-0.67	-0.30	-4.63
IR	3.24	4.01	3.82	0.76	0.96	0.87	-0.71	-0.43	-4.22
IT	1.69	2.16	2.08	0.50	0.63	0.59	-1.07	-0.60	-5.09
NL	2.38	2.85	2.75	0.94	1.09	1.04	-0.61	-0.22	-4.46
OS	1.23	1.79	1.53	0.37	0.53	0.44	-1.06	-0.46	-4.58
PO	1.71	1.72	1.92	0.35	0.39	0.40	-0.95	-0.17	-4.48
SF	2.34	3.18	2.91	0.66	0.90	0.80	-1.54	-1.43	-6.86
SW	2.23	3.65	2.99	0.70	1.09	0.89	-1.74	-1.61	-8.00
UK	2.39	2.73	2.57	0.49	0.64	0.54	-1.93	-1.24	-6.79
EU15	2.08	2.71	2.47	0.64	0.82	0.74	-1.04	-0.67	-5.00

Source: Roeger and in 't Veld (1997b)

SIMULATION 3: DEMOGRAPHIC PRESSURES

Ageing will have direct effects on savings and consumption patterns, but also indirect effects through its pressure on government budgets. QUESTII simulations on the budgetary costs of demographic changes show that the form of financing of the future increase in transfer spending may have dramatic effects, depending on whether labour taxes or VAT increases are the preferred financing option. Table 4 shows the long-term (steady state) negative effects on growth, consumption and investment of hypothetical future tax increases to finance the costs of demographic changes.

TABLE 4: STEADY STATE EFFECTS OF DEMOGRAPHIC AGEING COSTS

	FINANCED BY A LABOUR TAX INCREASE			FINANCED BY A VAT INCREASE		
	GDP	**CONS**	**INVEST**	**GDP**	**CONS**	**INVEST**
BE	-6.42	-7.76	-7.50	-1.52	-1.95	-1.94
DK	-6.21	-8.67	-7.90	-2.08	-2.75	-2.70
DE	-7.72	-10.29	-8.90	-2.24	-3.13	-2.74
GR	-5.02	-5.60	-5.09	-1.57	-1.64	-1.81
ES	-2.84	-3.70	-3.47	-0.90	-1.22	-1.22
FR	-7.63	-9.38	-8.91	-2.34	-2.89	-2.85
IR	-1.09	-2.46	-1.59	-0.45	-0.79	-0.75
IT	-8.69	-9.51	-9.63	-2.56	-2.91	-2.98
NL	-14.23	-15.90	-15.42	-3.13	-3.64	-3.55
OS	-5.89	-6.61	-6.47	-1.77	-2.15	-2.07
PO	-5.14	-5.19	-5.66	-1.98	-1.96	-2.25
SF	-12.64	-13.42	-13.89	-3.84	-4.19	-4.35
SW	-6.87	-10.42	-8.78	-2.25	-3.19	-2.92
UK	-2.23	-4.04	-3.00	-0.87	-1.25	-1.18
EU15	-6.89	-8.61	-7.99	-2.03	-2.58	-2.48

Source: Roeger and in 't Veld (1997b)

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