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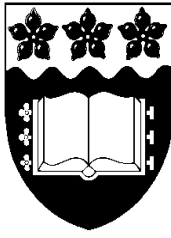
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**Do Government Benefits for High Income Retirees  
Encourage Saving?**

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# Do Government Benefits for High Income Retirees Encourage Saving?

## Abstract

The Australian Commonwealth government provides a set of benefits to high income older people, which are intended to promote saving for retirement. It has not been established whether this unusual policy is effective. Using illustrative models, it is shown that these benefits may induce some people to save and work more, but they may have the opposite effect on other, more affluent, people. It is unclear which effect dominates. These benefits are likely to have increased Commonwealth government expenditure on affluent older people, accompanied by a reduction in state government expenditure on people with slightly lower incomes.

Keywords: retirement, saving, incentives, Australia

*JEL* classification numbers: D91; H31

## I Introduction

Faced with the fiscal pressures of ageing populations, most OECD countries have sought to reduce reliance on publicly funded retirement income schemes. Such reforms include lifting the eligibility age for public pensions, introduction of mandatory private pension schemes and favourable taxation treatment of voluntary private saving for retirement (Whiteford and Whitehouse, 2006). Australia has implemented reforms in each of these areas. Beginning in 1999, however, it has progressively introduced a set of new government benefits for high income retirees. The Commonwealth Seniors Health Card (CSHC) is the key component of this system. Eligibility for other (cash and non-cash) benefits is tied to the CSHC. The CSHC is intended to 'encourage people to save for their own retirement'

(Costello, 1998: 5). The purpose of this paper is to evaluate the likely effectiveness of this strategy.

In assessing the welfare effects of the CSHC, Siminski (forthcoming) highlights equity concerns and possible efficiency loss associated with increased pharmaceutical consumption. However, it remains to be established whether the CSHC has achieved its goal of promoting saving for retirement. The budgetary implications of any such induced saving have not been evaluated either. The incentives provided have the potential to influence the earning and consumption decisions of people throughout their adult lives. An empirical evaluation would be difficult as there is no obvious comparison group from which to infer counterfactual behaviour. The aims of this paper are more modest. I present a series of illustrative models of the incentives for saving and earning behaviour both before and during the age of eligibility for retirement benefits. These models all stem from the effect of the CSHC and related benefits on the interaction between private income and benefit income for people of retirement age. This relationship is discussed in Section III.

Saving for retirement may be affected by at least three behavioural responses. People may be induced to change the balance between consumption and saving in the pre-retirement age period. The majority of the paper is devoted to this issue (Section IV). People may also be influenced to change the quantity of labour supplied in the pre-retirement age period. Finally, the CSHC may affect the optimal quantity of labour supplied by those old enough to be eligible for retirement benefits. It is shown in Section V that the budget constraint in such labour supply models is analogous to that of the inter-temporal consumption model. The key result in all of the models considered is that the CSHC has created a new discontinuity in the budget constraint. As a result, it may provide an incentive for some people to save for retirement, but it may have the opposite effect on other, more affluent people. Section VI considers the budgetary implications of the CSHC incentives and Section VII concludes.

## **II The Changing Role of the Commonwealth Seniors Health Card**

The role of the CSHC in Australia's system of retirement benefits has evolved considerably since its introduction in 1994 by the Keating Labor government. It was originally provided to low income older people who did not receive the age pension, primarily due to the

pension's assets test or residency requirements (Dawkins, 1993). Its main benefit was eligibility for the Pharmaceutical Benefits Scheme concession. In 1999, under the Howard coalition government, the income eligibility threshold for the CSHC was almost doubled and it was increased again in 2001. As a result, the number of CSHC recipients increased by around 600% (Department of Family and Community Services, various years; Standing Committee on Family and Community Affairs, 1997). From 1999, its primary role ceased to be that of a safety net for low income retirees. Most of its beneficiaries are wealthy, relatively high income retirees (Siminski, forthcoming). It is estimated that in 2007 the total cost to government of the CSHC was in the order of \$271 million.<sup>1</sup>

Importantly, the CSHC income eligibility threshold is not indexed to inflation. It has remained at \$50,000 per annum for singles and \$80,000 for couples since 2001. It has thus decreased considerably in relation to the threshold for a part-rate age pension. At August 2008, the CSHC threshold is 27% higher than the age pension threshold for singles, while it was 87% higher in 1999. For couples, the CSHC threshold is 21% higher than the pension threshold, compared to 86% in 1999.<sup>2</sup> By default, the CSHC is reverting back to its original role. In the absence of further policy changes, it will soon again be a benefit for people whose income is low enough to qualify for an age pension. Despite this, the number of CSHC holders increased in each year up to 2007 (Department of Family and Community Services, various years) due to population ageing and the fact that Australians are (slowly) becoming more affluent in retirement (Australian Government, 2007: Chart C6). However, this trend has recently reversed, as the number of CSHC holders fell by 13% in the year to June 2008 (Macklin, 2008). The new Rudd Labor government will shortly be forced to reform the CSHC again. The apparent options are to link CSHC eligibility back to the age pension income test, or to increase the CSHC threshold again. While total expenditure on the CSHC is relatively

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<sup>1</sup> Authors calculations from Siminski (forthcoming: Tables 1, 2, 5). The proportion of CSHC holders who are single was estimated using the Household Expenditure Survey 2003-04 Expanded Confidentialised Unit Record File. The estimate of \$271m includes the cost of the Telephone Allowance and Seniors Concession Allowance to CSHC holders. It does not include the costs of the 2007 one-off payment to seniors, the Medicare Safety Net Concessional threshold or the incentives provided to doctors to bulk-bill CSHC holders.

<sup>2</sup> A second factor in this convergence is the decrease in the age pension taper rate from 50% to 40% in July 2000, which substantially increased the income eligibility threshold for a part pension.

small, the number of high income retirees will increase as the population ages and becomes more affluent.

### **III Benefits for People of Retirement Age**

The CSHC affects the interaction between private income and benefit income for people of retirement age. This section considers this interaction in detail for single people. It serves as an input into the analyses in the following sections. The results for coupled people are not shown in detail, but are similar in substance as will be shown in Section IV. Benefits are defined broadly to include cash benefits, rebates and concessions provided by the Commonwealth and state governments and private providers. Many of these benefits vary by state and by utilisation of the goods and services in question, so it is emphasised that the exercise is illustrative.

Age pensioners and CSHC holders are entitled to the Pharmaceutical Benefits Scheme concession, estimated to be worth an average of \$547 p.a. for single CSHC holders (Siminski, 2008). Both groups also receive the Telephone Allowance (\$88 p.a.).<sup>3</sup> CSHC holders receive the Seniors Concession Allowance, which for singles is of equal value to the Utilities Allowance for pensioners (\$500 p.a.).<sup>4</sup> Both groups might benefit from higher rates of bulk-billing<sup>5</sup> for GP services due to Commonwealth government financial incentives for GPs, and concessional coverage under the extended Medicare Safety Net, but their value is difficult to quantify. 'One-off' payments to seniors (such as those provided in 2006 and 2007) are also excluded here.

Age Pensioners receive a range of benefits to which CSHC holders are not entitled. This includes the pension itself (a maximum of \$14,216.80 p.a. for singles), the Pharmaceutical Allowance (\$150.80 p.a.) and Rent Allowance from the Commonwealth government. The pension (including the Pharmaceutical Allowance) is reduced by 40 cents for each dollar of

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<sup>3</sup> The Telephone Allowance is \$44 p.a. higher for those with a home internet connection. This is not included in the analysis.

<sup>4</sup> For couples, however, the Seniors Concession Allowance is more generous (\$1000) than the Utilities Allowance (\$500).

<sup>5</sup> Bulk-billing is a billing system which includes no charge for the patient.

private income exceeding \$3,588 p.a. Few people in this age and income group are renters (just 3% of CSHC holders were renters in 2003-04).<sup>6</sup> Pensioners also receive Commonwealth subsidies for some types of health care such as diabetes and hearing services. Pensioners are entitled to a range of state government rebates, which (depending on the state) subsidise council and water rates, energy, public transport, ambulance, drivers' licenses and motor vehicle registration (for further details, see the DVA Fact Sheets for each state and territory, such as DVA, 2008a, 2008b, 2008c). Telephone service providers such as Telstra and Optus offer discounts to pensioners. In addition to the pension and Pharmaceutical Allowance, the combined value of benefits available to pensioners (but not CSHC holders) is assumed to be \$500 per year per single person.

The dotted line (labelled current system) in Figure 1 illustrates the relationship between private income and benefit income for single people at August 2008 (males aged 65 and over; females aged 63.5 and over) who meet the age pension assets and residency tests. The solid red line (denoted 'no CSHC') represents a hypothetical 2008 benefit structure (for those who meet the age pension assets and residency tests) if the CSHC was abolished. This is also the benefit structure that these same people would be subject to if the 1999 reform had not occurred. The benefit structure of the two systems is identical at private incomes outside of the range presented in this Figure. These schedules also have a similar shape for the combined income of couples.

The current retirement benefit system for singles is thus a function of private income ( $P$ ) as follows:

$$\begin{aligned}
 B_C &= 16,002.60, & P < 3,588 \\
 &= 16,002.60 - 0.4(P - 3588) = 17,437.80 - 0.4P, & 3,588 \leq P < 39,507 \\
 &= 1135, & 39,507 \leq P < 50,000 \\
 &= 0, & P \geq 50,000
 \end{aligned}$$

If the CSHC did not exist, the function would be:

$$B_N = 16,002.60, \quad P < 3,588$$

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<sup>6</sup> Authors calculations from the 2003-04 ABS Household Expenditure Survey Expanded Confidentialised Unit Record File.

$$= 17,437.80 - 0.4P,$$

$$3588 \leq P < 39,507$$

$$= 0,$$

$$P \geq 39,507$$

#### IV Inter-temporal Substitution of Consumption

Consider a two-period model (pre-retirement:  $t = 0$  and retirement:  $t = 1$ ), where a consumer maximises utility by choosing consumption in each period. The consumer's private income in period 0 ( $I_0$ ) is assumed exogenous. Assume also that the consumer's utility function is additively separable over the periods. The consumer may exhibit a preference for current consumption ( $\delta \geq 0$ ). The consumer's problem is to maximise total utility as follows:

$$\max U = U(C_0) + \frac{U(C_1)}{(1 + \delta)}, \quad (1)$$

where  $C$  represents consumption in each period. The budget constraint for this consumer represents the possible combinations of  $C_0$  and  $C_1$ , where

$$C_1 = (1 + r)(I_0 - C_0) + B_1$$

This equation states that consumption in retirement is a function of saving in period 0 ( $I_0 - C_0$ ), the real interest rate ( $r$ ), and government benefits in retirement ( $B_1$ ). Government benefits are a function of private income in period 1, as discussed in the previous section. Private income in period 1 is equal to  $(1 + r)(I_0 - C_0)$ . Thus the budget constraint for the current system is:

$$C_1 = (1 + r)(I_0 - C_0) + 16,002.60,$$

$$(1 + r)(I_0 - C_0) < 3588$$

$$= 0.6(1 + r)(I_0 - C_0) + 17,437.80,$$

$$3588 \leq (1 + r)(I_0 - C_0) < 39,507$$

$$= (1 + r)(I_0 - C_0) + 1135,$$

$$39,507 \leq (1 + r)(I_0 - C_0) < 50,000$$

$$= (1 + r)(I_0 - C_0),$$

$$(1 + r)(I_0 - C_0) \geq 50,000$$

If the CSHC did not exist, the budget constraint would be:

$$C_1 = (1 + r)(I_0 - C_0) + 16,002.60,$$

$$(1 + r)(I_0 - C_0) < 3588$$



$$= 0.6(1+r)(I_0 - C_0) + 17,437.80,$$

$$3588 \leq (1+r)(I_0 - C_0) < 39,507$$

$$= (1+r)(I_0 - C_0),$$

$$(1+r)(I_0 - C_0) \geq 39,507$$

It is not immediately clear what values are appropriate to assume for the rate of time preference ( $\delta$ ) and the real interest rate ( $r$ ). The pre-retirement period may perhaps represent 40 years, and the retirement period 25 years. Alternatively, one might assume that planning horizons are shorter than this. However, if one assumes that  $\delta = r$ , the actual level of these constants is largely inconsequential for what follows. To see this, consider the slope of the budget constraints and indifference curves. At all points, the slope of both budget constraints is proportional to  $(1+r)$ . The slope of indifference curves at all points is equal to the marginal utility of  $C_0$  divided by the marginal utility of  $C_1$ :  $\frac{(1+\delta)U_{C_0}}{U_{C_1}}$  which is proportional to  $(1+\delta)$ , regardless of the functional form of the utility function. The solutions to the optimisation problem would be completely independent of the level of  $\delta = r$  if the budget constraints did not include constant components. Even with the constant components, the results are highly insensitive to this level. To simplify the analysis,  $\delta$  and  $r$  are set to zero. The qualitative implications of the model are unchanged with alternate levels of  $\delta = r$ , even at large values such as 200%.

It will be shown that the effect of the CSHC on saving depends on income in the pre-retirement period. To illustrate this, I consider different levels of  $I_0$ , each chosen to illustrate a different type of effect. Figure 2 shows (parts of) the relevant budget constraints for  $I_0 = \$89,000$ . The red dotted line is the budget constraint corresponding to the current retirement-age benefit system. It has two discontinuities. The first discontinuity (at  $C_0 = \$39,000$ ) results from the income eligibility threshold for the CSHC. The second discontinuity (at  $C_0 = \$49,493$ ) is due to the income eligibility threshold for a part pension. The more shallow slope where  $C_0 > \$49,493$  reflects the pension taper-off. The thick continuous line is the budget constraint corresponding to the 'no CSHC' benefit structure, described above. It has one discontinuity (at  $C_0 = \$49,493$ ) and has the same slope as the first constraint at all points. These two budget constraints are identical at consumption levels

outside the domain of the graph. A thin continuous line is the budget constraint in a hypothetical case of no benefit income.

Assume that the utility function for each period is a constant relative risk aversion (CRRA) function, so that:

$$U = \frac{C_0^{(1-\rho)}}{(1-\rho)} + \frac{(I_0 - C_0 + B_1)^{(1-\rho)}}{(1-\rho)} \quad (2)$$

Where  $\rho$  is the Arrow-Pratt parameter or relative risk aversion, which determines the concavity of the function (Pratt, 1964). The sensitivity of the results to the assumed concavity of the utility function can be tested by varying  $\rho$ . Initially, the analysis follows Siminski (forthcoming) by setting  $\rho$  to 3. It will be shown that the results are not sensitive to alternate assumptions on the extent of concavity. The utility function is thus:

$$U = \frac{C_0^{-2}}{-2} + \frac{(I_0 - C_0 + B_1)^{-2}}{-2} \quad (3)$$

Consider the optimal  $C_0$  which maximizes utility, as specified in equation (3). The indifference curves representing the optimal level of utility under the 'current system' and 'no CSHC' are shown in Figure 3, which is otherwise based on Figure 2. Under the 'current system', utility is maximized with  $C_0$  equal to \$45,068. With 'no CSHC', utility is highest when  $C_0$  is equal to approximately \$49,493. Therefore, the CSHC increases saving by \$4,425 when  $I_0 = \$89,000$ . Similar results are found when  $\$86,400 < I_0 < \$90,600$ .

However, the current system can have the opposite effect at higher levels of  $I_0$  due to the additional budget constraint discontinuity caused by CSHC eligibility. This discontinuity leads some rational decision makers to corner-solutions in the utility maximisation problem. This is shown in Figure 4 for  $I_0 = \$106,000$ . Under the 'current system', utility is maximised at  $C_0 = \$56,000$ . In the 'no CSHC' system, the optimal  $C_0$  is \$53,000. Thus the current system discourages saving at this level of private income. More generally, corner solutions (which all correspond to decreased savings as a result of the current system) are found for  $\$101,200 < I_0 < \$110,300$ . The effect on saving is greatest at  $I_0 = \$110,300$ , with the current system reducing optimal saving by around \$5,150 as compared to the no CSHC system.

For  $\$90,600 < I_0 < \$101,300$ , the CSHC is equivalent to a simple transfer in Period 1. The rational course of behaviour in these circumstances is a small reduction in saving, which allows the consumer to derive utility from the benefit in both periods. The indifference curves corresponding to maximised utility in the current and no CSHC systems are shown in Figure 5 for  $I_0 = \$94,000$ . Under the assumptions that have been adopted, the CSHC induces people in this income range to reduce savings by half the value of the CSHC.

For  $I_0 < \$86,400$  the optimal consumption levels are the same for the current and no CSHC systems. This is illustrated in Figure 6 for  $I_0 = \$82,000$ . The optimal  $C_0 = \$46,300$  under both the current and no CSHC systems. Similarly, the savings of rational decision makers with  $I_0 > \$110,300$  would not be altered by the existence of the CSHC.

The effect of the CSHC on saving is summarised in Figure 7 for  $I_0$  between  $\$80,000$  and  $\$115,000$ . The CSHC has no impact on saving outside of this income range. A positive value on the vertical axis denotes an increase in saving associated with the CSHC, while a negative value denotes a decrease in saving. It is clear from this graph that whilst the CSHC does have a substantial positive effect on saving within a given income range, this range is quite small. The CSHC has a negative effect on saving across a much large range of incomes. In this illustrative model, it is not possible to estimate the net effect on saving. If, however,  $I_0$  was uniformly distributed, the net effect of the CSHC on saving would be negative. The average effect on saving would be a decrease of  $\$525$  within the income range where saving is affected by the CSHC ( $\$86,400 < I_0 < \$110,300$ ) and as mentioned above, the effect is zero outside this range.

When the entire exercise is repeated for couples (treating the couple as a single unit that derives utility through a single CRRA function), the results closely resemble that of singles (Figure 8).

The main features of the results are unchanged when the assumed concavity of the utility function is altered. Figure 9 shows the summarised results for singles with  $\rho = 1$  (a natural logarithmic utility function which represents a low level of concavity) and with  $\rho = 5$  (high level of concavity). More generally, highly concave utility functions lead to smaller effects of the CSHC on saving. At most levels of  $\rho$ , the card elicits positive effects on saving at some

(relatively low) levels of  $l_0$  and negative effects on saving at some higher levels of  $l_0$ . At low levels of  $\rho$  (below approximately 0.7), the CSHC does not elicit a positive saving response at any income level.

The income levels identified above may not correspond to the income levels which induce a given effect on saving in continuous time. In principle, this model could be extended to a multi-period model. Such a model would consider the effect of the CSHC on saving throughout the life course. This has not been pursued. The reason for this is the level of uncertainty around the effect of the CSHC on the actual retirement benefits of people in the future. As mentioned above, the income eligibility threshold is not indexed to inflation and it is subject to ad hoc change. Age pension policy also affects the income range of people who would benefit from the CSHC. For example, the age pension taper rate was decreased from 50% to 40% in July 2000, substantially increasing the income eligibility threshold for a part pension. Furthermore, PBS copayments for both general and concessional patients are subject to change in every year and superannuation policies are regularly adjusted, adding to uncertainty over the future value of the CSHC.

Models which incorporate uncertainty can of course be developed. However, such a model would require assumptions on the probability distribution over future scenarios. Such an exercise would not seem to be useful. For the same reasons regarding uncertainty, the material change brought about by the CSHC is unlikely to have influenced the savings decisions of people whose retirement is distant. On the other hand, the CSHC may have been more effective as a symbol of the likely direction of future retirement income policy. The Howard government made it clear that it intended to increase support for 'self-funded' retirees. To the extent that the CSHC reforms contributed to a general expectation that the government will increasingly support affluent retirees, it may have indeed induced saving. This is a complex issue that has not been accounted for here and may warrant further research.

## V Labour Supply

I briefly consider possible labour supply responses by people of pre-retirement age and people of retirement age (those who meet age eligibility rules for retirement benefits), respectively.

In the inter-temporal model presented above, the consumer maximises utility by choosing consumption in period 0. It treats income in period 0 (and hence labour supply) as exogenous. A complementary model might make the opposite assumptions. In this model, a consumer maximises utility by choosing the quantity of hours supplied to the labour market in period 0. Consumption in period 0 is treated as fixed. Labour supply in period 1 is assumed to be zero, as in the previous model. The budget constraint in such a model can be expressed in terms of leisure in period 0 and consumption in period 1. Figure 10 shows two such budget constraints for  $C_0 = \$40,000$  and a wage of \$30 per hour. The model abstracts from the taxation system for the purpose of the illustration. It is clear that the shapes of these constraints are the same as those in the original inter-temporal model above. Assuming that the marginal utility of leisure is positive but diminishing ( $U_L > 0$ ,  $U_{LL} < 0$ ), this model has similar implications for saving as the original model.

Finally, the CSHC may affect labour supplied by people of retirement age. Consider a single period model where utility is derived from consumption and leisure by people of retirement age. Assume that saving in previous periods is exogenous. Figure 11 shows two such budget constraints for a single person with no savings and a wage of \$30 per hour. Once again, the budget constraint has the same shape as in previous models, implying that the effect on the labour supply of older people may be positive for some and negative for others.

## VI Fiscal Implications

Implicit in the desire to encourage saving for retirement is a concern for the fiscal sustainability of the public system of retirement benefits. It was shown above that the CSHC may encourage saving for retirement amongst people within a given income range. However, it does not automatically follow that such an incentive leads to a reduction in government expenditure, even with respect to people who are influenced to increase saving. As demonstrated above, the people who would rationally increase saving in

response to the CSHC are those whose incomes would only marginally qualify for a partial rate of the age pension if there was no CSHC. These are people who are on or close to a corner solution in the absence of the CSHC, as depicted in Figure 3. Although they would qualify for the age pension, they would receive very little pension income. They would, however, receive other benefits which are tied to pension eligibility. As discussed in Section III, CSHC holders are also entitled to many of these benefits. Of the benefits that only pensioners receive, most are provided by state governments. Therefore, inducing marginal part pensioners onto the CSHC is approximately budget neutral for the Commonwealth government.<sup>7</sup> It may, however, reduce expenditure by state governments.

On the other hand, expenditure on (richer) people who would not be age pensioners even in the absence of the CSHC (as discussed above and depicted in Figure 4 and Figure 5) is a new cost to the Commonwealth government. Therefore, even if the CSHC does induce some people to save for retirement, its net effect is likely to increase Commonwealth government spending on retirement benefits. Given that most beneficiaries are particularly wealthy (Siminski, forthcoming), this may not be the optimal use of scarce government resources.

## **VII Conclusions**

An illustrative model has been developed to demonstrate the effect of government benefits for high income retirees on incentives to save for retirement. Whilst such benefits may induce some people to save, they may have the opposite effect on others. It is unclear which effect dominates and so no evidence was found that the CSHC achieves its stated aim. Similarly, these benefits may have a positive effect on the labour supply of some people both before and during the age of retirement benefit eligibility, but a negative effect on others. It was shown that the net effect of these benefits is a likely increase in Commonwealth government expenditure on affluent older people, accompanied by a decrease in expenditure by state governments on people with slightly lower incomes.

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<sup>7</sup> There may be some fiscal benefit from taxation on the interest earned on the induced saving. But this may be offset by the consumption tax revenue lost due to the corresponding decrease in consumption.

The issue is complicated by rapidly changing retirement income policies. For people whose retirement is distant, policies such as the CSHC may affect long term retirement plans to the extent that they signal the likely nature of future retirement income policies. This should be taken into account by the government when it considers the next round of CSHC reforms, and it may be an issue worthy of further research.

It has been assumed that people know the value of the PBS concession. It is possible that people overestimate the expected value of the concession, particularly its insurance value. If so, behaviour may reflect this perceived value of the concession rather than its actual value (see Chan and Stevens, 2008; Thaler, 1994). But this would not change the implications of the model. The budget constraints would retain their main features, including their discontinuities, regardless of the perceived value of the PBS concession.

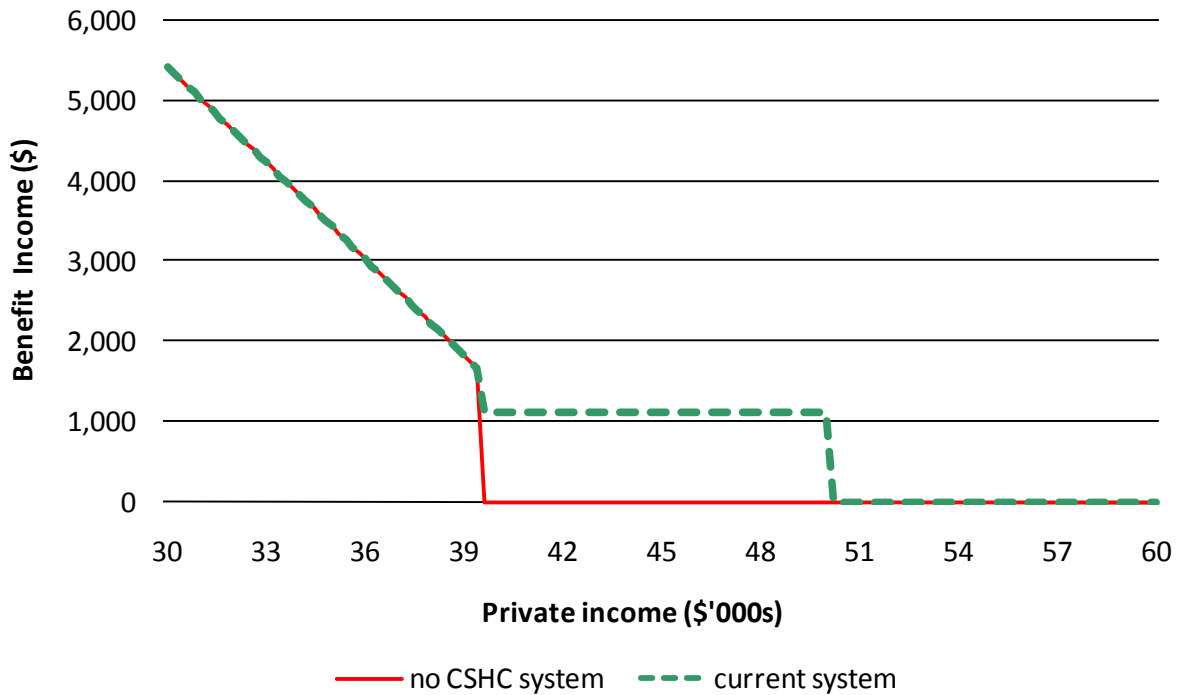
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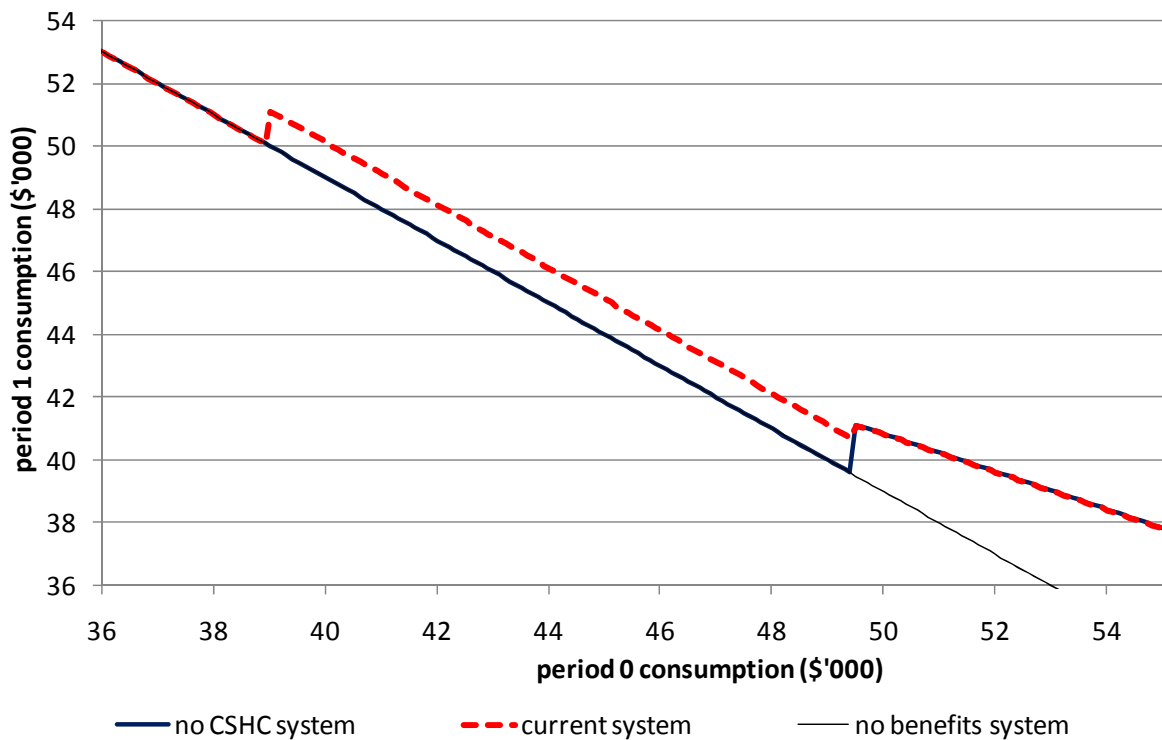


**Figure 1 Annual Private Income and Benefit Income in Retirement, singles August 2008\***

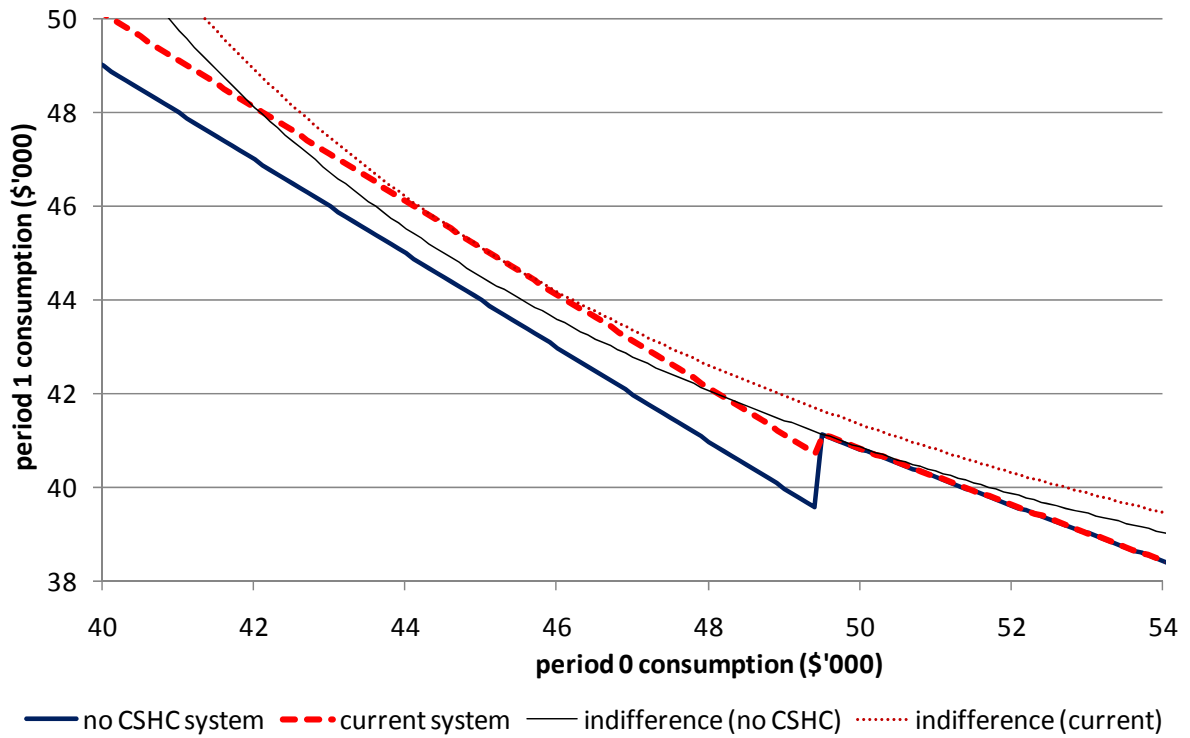


\* For people who meet Age Pension assets test and residency requirements. Retirement benefits include those provided by Commonwealth and state governments, as well as private providers, see text.

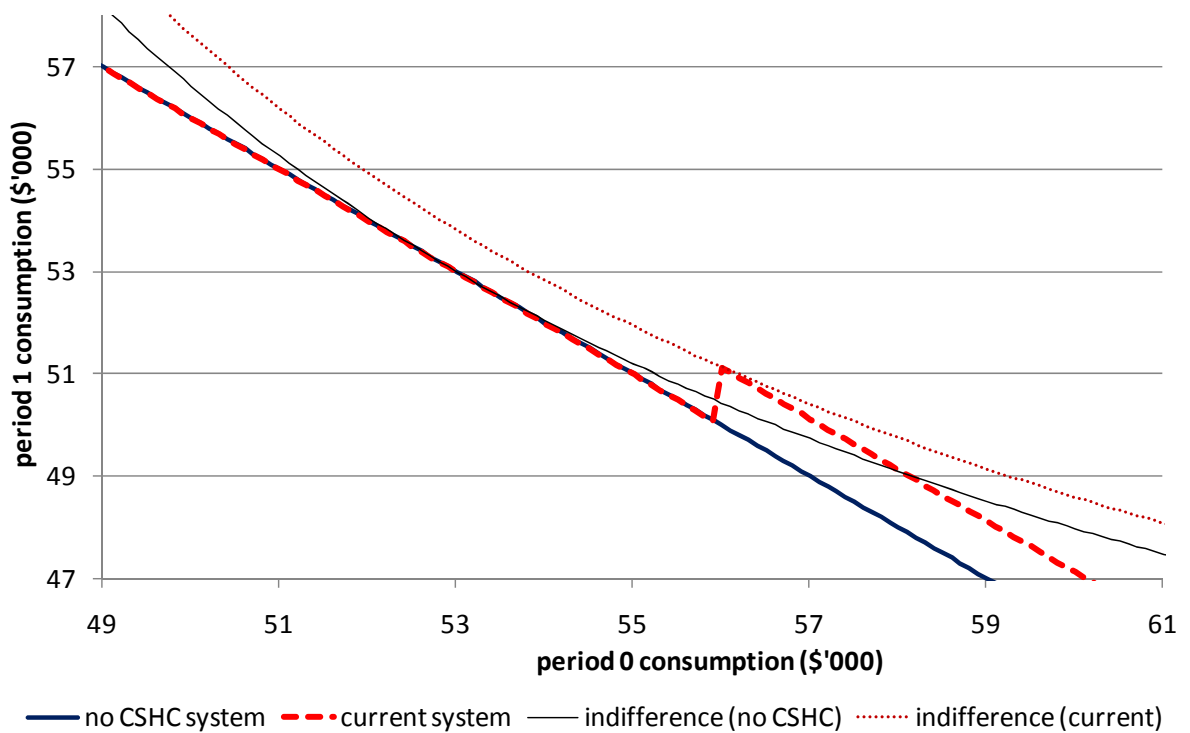
**Figure 2 Inter-Temporal Budget Constraints for Single Person with  $I_0 = \$89,000$**



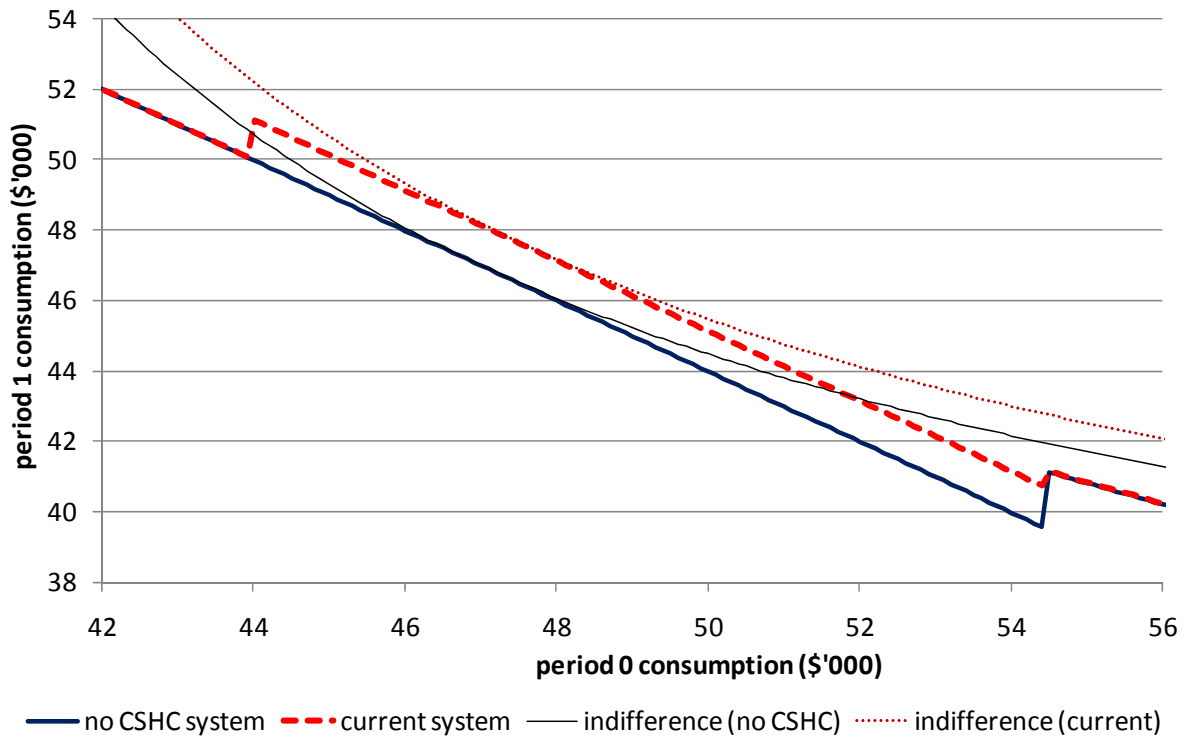
**Figure 3 Inter-Temporal Budget Constraints and Indifference Curves for Single Person with  $I_0 = \$89,000$ , CRRA utility  $\rho = 3$**



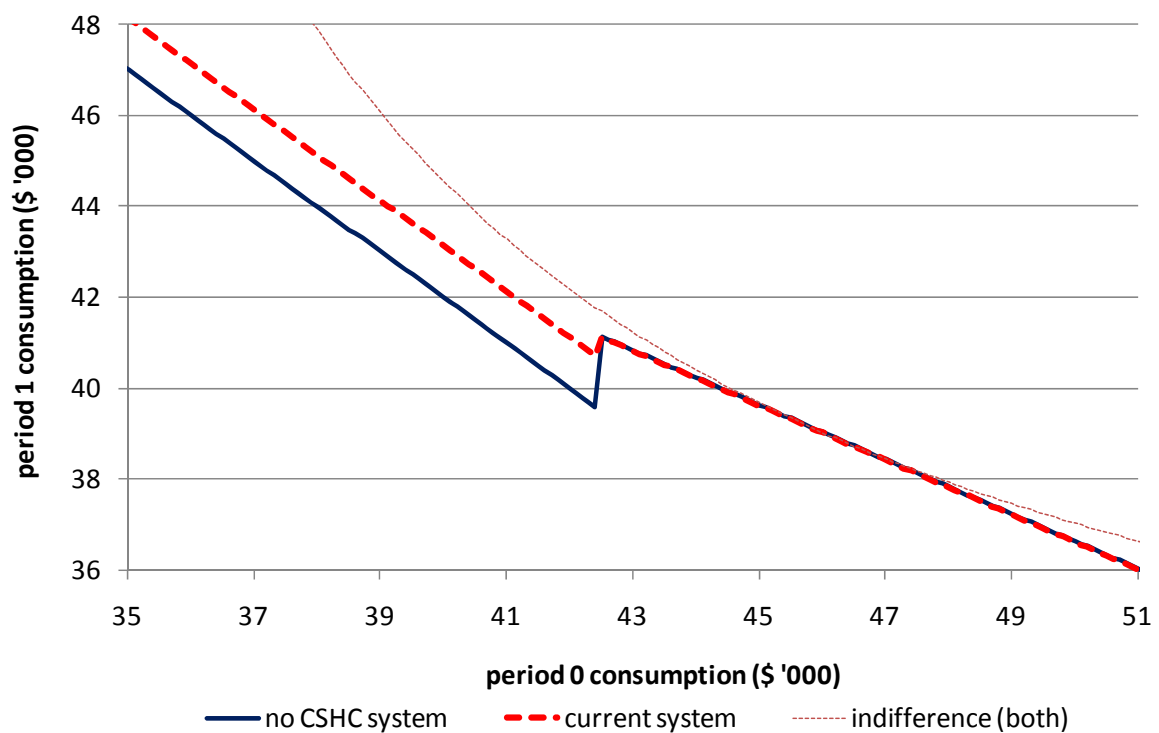
**Figure 4 Inter-Temporal Budget Constraints and Indifference Curves for Single Person with  $I_0 = \$106,000$ , CRRA utility  $\rho = 3$**



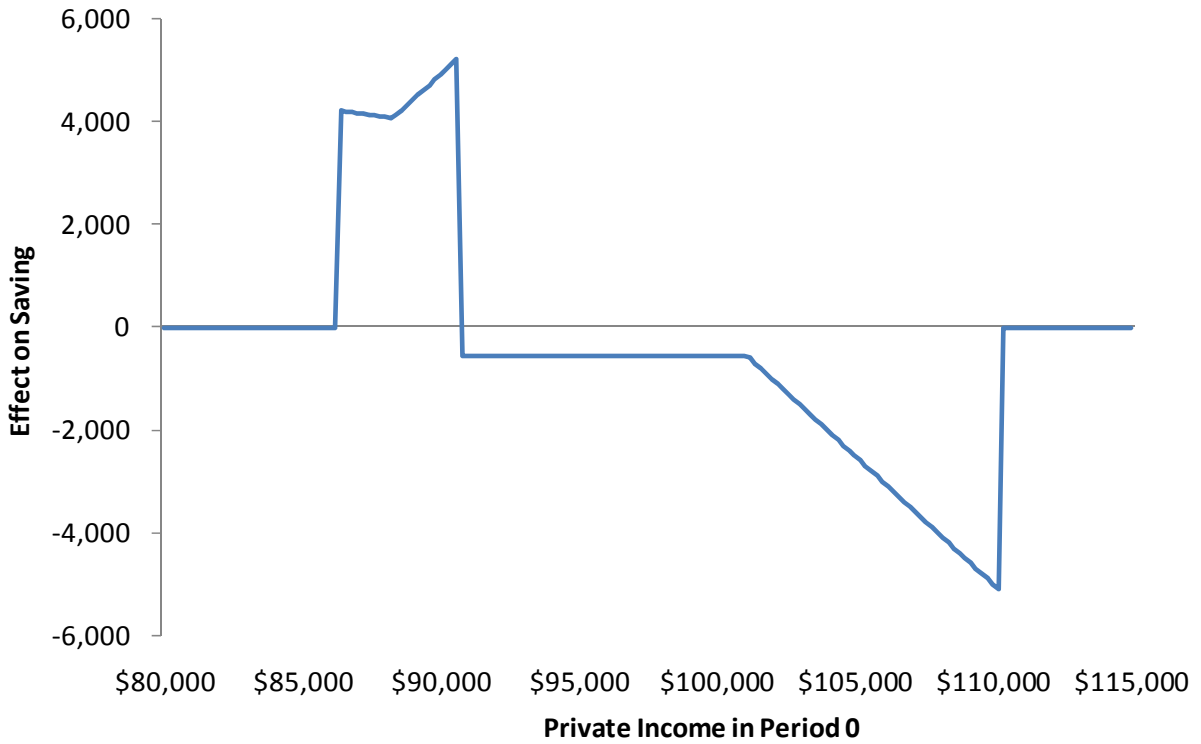
**Figure 5 Inter-Temporal Budget Constraints and Indifference Curves for Single Person with  $I_0 = \$94,000$ , CRRA utility  $\rho = 3$**



**Figure 6 Inter-Temporal Budget Constraints and Indifference Curves for Single Person with  $I_0 = \$82,000$ , CRRA utility  $\rho = 3$**



**Figure 7 Effect of CSHC and related benefits on Saving by Period 0 Income, Singles, CRRA utility  $\rho = 3$**



**Figure 8 Effect of CSHC and related benefits on Saving by Period 0 Income, Couples, CRRA utility  $\rho = 3$**

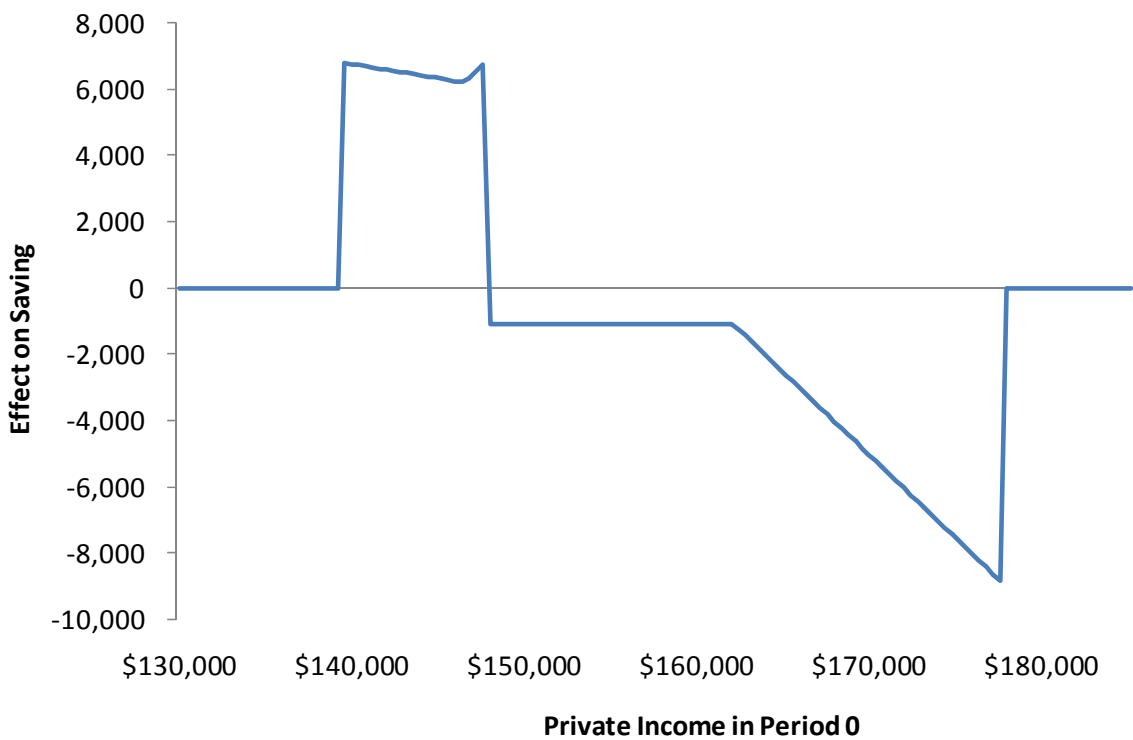


Figure 9 Effect of CSHC and related benefits on Saving by Period 0 Income, Singles, CRRA utility  $\rho = 1, 5$

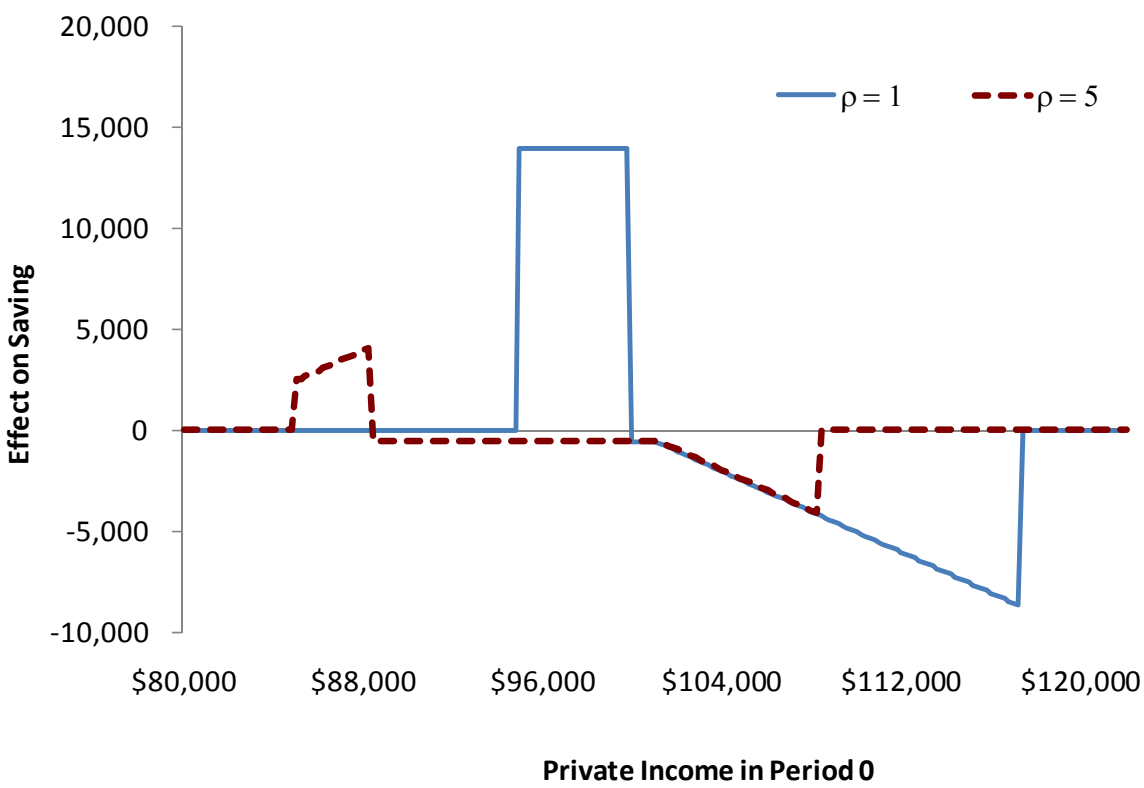
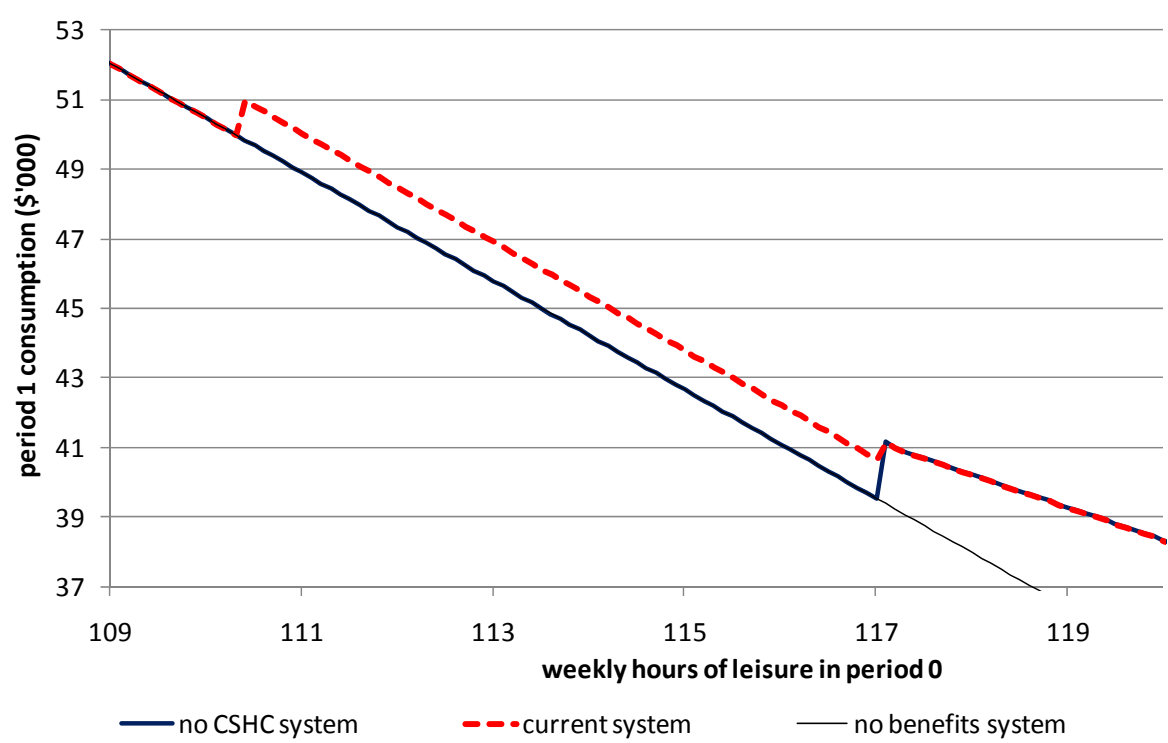


Figure 10 Inter-temporal Budget Constraints for Single Person with  $C_0 = \$40,000$  and wage = \$30 per hour



**Figure 11 Budget Constraints for Single Person of Retirement Age with wage = \$30 per hour and no savings**

