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DOES THE UNITED KINGDOM'S "TRIPLE LOCK GUARANTEE" PROVIDE A SURPLUS BETWEEN THE BASIC STATE PENSION AND HOUSEHOLD EXPENDITURE IN 2056?

By Emily Rands

This article predicts the gap between the full U.K. Basic State Pension (BSP) and household expenditure in 2056 for a range of different dynamic inflation (Consumer Price Index, or CPI) predictions. In this article, the best and worst case scenario and the average surplus and deficit are detailed and analyzed in order to determine whether the BSP is sufficient to cover the expenditures for a state pension dependent single person and married couple. The key results of this research, which provides new insights regarding the BSP and expenditures, are:

1. Expenditures exceeded the BSP when a linear model of earnings with no relationship to inflation was used.
2. BSP exceeded expenditures when earnings were assumed to vary in response to inflation.
3. On average, the BSP exceeded expenditures.

This research has been undertaken as the state pension system has been criticized by many as inadequate, for example in reports such as "Living Longer and Prospering?" by S. Harper, K. Howse and S. Baxter at the Oxford Institute of Ageing, and so it is interesting to determine whether the BSP when I retire under the U.K. government's new "triple lock guarantee" will be sufficient to cover expenditures.

It is believed that many young people, like myself, are facing, as stated by Lord John McFall, a "long retirement spent in poverty," due to the increased life expectancy and falling fertility in the United Kingdom which is documented by the United Kingdom's Office for National Statistics (ONS). The United Kingdom's state pension system has, historically, had a low replacement rate for gross and net (which are gross earnings with adjustment for tax and social security payments) earnings compared to the Organisation for Economic Co-Operation and Development's (OECD's) average (as detailed in the OECD's "Pensions at a Glance" documents).

As stated previously, this article models the BSP that I will receive in 2056, which is when I am due to retire at the age of 68 under the United Kingdom's current state pension system (as at April 2011). The BSP is a flat rate pension that is updated at the end of each tax year (April) and is dependent on the number

of years of National Insurance (NI, which is a form of social security) contributions the claimant has (currently I will require 30 years of NI contributions in order to receive the full BSP at retirement). The modeling of BSP uses the U.K. government's "triple lock guarantee," which guarantees the BSP will be compounded forward by the highest of inflation (which is currently measured by the CPI), earnings (which is measured by the ONS by Average Weekly Earnings (AWE)) and 2.5 percent from April 2011 onwards, as detailed on the U.K. government's website *www.direct.gov.uk.*

Table 1—Average Weekly Household Expenditure in 2009

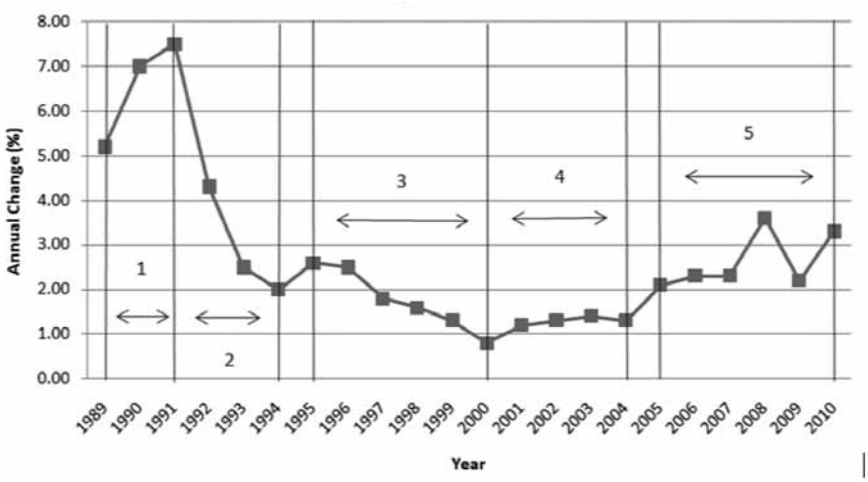
Type of Retired Household	Average Weekly Household Expenditure (£)
One-Person Household	148.90
Two-Person Household	261.90

Source: G. Horsfield (editor), *Family Spending, A report on the 2009 Living Costs and Food Survey,* ONS.

The household expenditures, as given by the ONS, are shown in Table 1. All expenditures are for households dependent on the state pension. The Microsoft® Excel® 2007 "Trendline" function, which uses least squares modeling, was used to model inflation, earnings and the relationship between inflation and earnings. When the relationship between earnings and inflation was modeled, it was assumed that earnings changed with response to inflation.

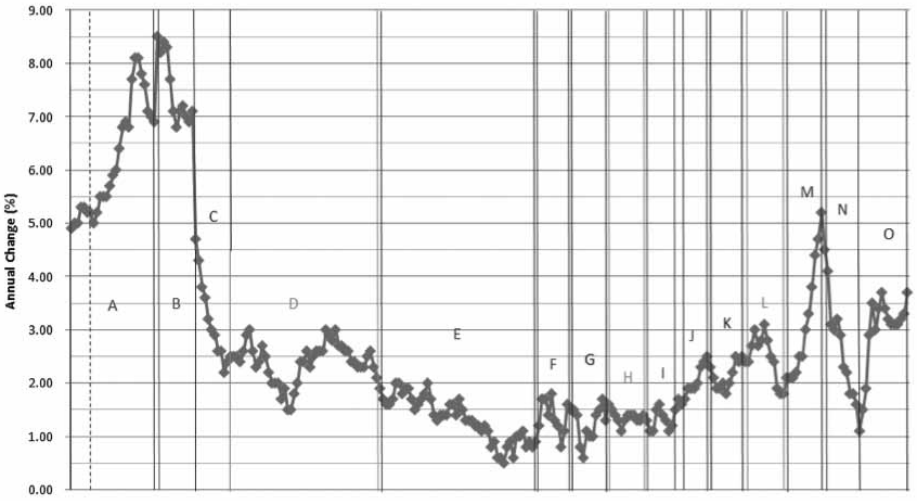
A dynamic inflation prediction was used, rather than a flat rate inflation prediction, which is used in most reports due to the government's "triple lock guarantee." This was done because choosing a flat rate of inflation below 2.5 percent would mean it would be dominated by the guarantee of a 2.5 percent increase in BSP. To model inflation, monthly and yearly CPI data from January 1989 to December 2010 from the ONS was split into periods, as shown in Figures 1 and 2, as a single model did not give sensible predictions of future CPI.

Figure 1



Source: http://www.statistics.gov.uk/statbase/tsdtimezone.asp

Figure 2



Source: http://www.statistics.gov.uk/statbase/tsdtimezone.asp

Least squares models were fitted to the five periods shown in Figure 1 for yearly data and 15 periods shown in Figure 2 for monthly data. Inflation models were based on the first peak (periods 1 and 2 in Figure 1 and periods A, B and C in Figure 2) and the final peak (period 5 in Figure 1 and periods M, N and O in Figure 2); there were four inflation models for the yearly data and another four inflation models for the monthly data. The regression with the best fit, or the highest R^2 value, was used for each period. Inflation could be modeled in a variety of ways. For example, it could be assumed that inflation follows a stochastic process; however, due to the long period of time that was modeled, the likelihood of error is high no matter what modeling technique is used.

Some BSP models used capped inflation predictions, which meant that earnings were also capped due to the relationship assumed between earnings and inflation. Earnings models with negative earnings, earnings of over £2,000 per week and jumps of over 25 percent (for uncapped inflation predictions) or 20 percent (for capped inflation predictions) were removed. A linear model of earnings with no relationship to inflation was also used with each of the eight inflation predictions discussed above to create a BSP prediction.

Under the "triple lock guarantee," the BSP for a single person dependent on the state pension in 2056 is the product of £102.15, which is the BSP for a single person as of April 2011, and 1 plus the maximum of the percentage increase (in decimal form) in inflation (CPI), earnings (AWE) and 2.5 percent for each year from 2012 to 2056. Similarly, the BSP for a married couple in 2056 will be the product of £163.35, which is the BSP for a married couple as of April 2011, and 1 plus the maximum of the three percentage increases detailed above for each year from 2012 to 2056. (BSP as at April 2011 given on *http://www.scottishlife.co.uk/scotlife/web/site/Adviser/TechnicalCentralArea/Rates&FactorsArea/BasicStatePension/BasicStatePension.asp*). The "triple lock guarantee" thus ensures that each year there is a minimum increase of 2.5 percent in the BSP, even if inflation and earnings increases are low. It also ensures that those receiving the BSP benefit from high average increases in earnings and that their purchasing power is not affected when inflation is high.

BSP predictions were given in 2011 prices by

$$BSP_{2011} = \frac{BSP_{2056}}{\prod_{i=2012}^{2056}(1 + CPI_i)}, \qquad (1)$$

where is the BSP prediction for 2056 and denotes the predicted percentage value (in decimal form) of CPI for year i, where i is from 2012 to 2056. The expenditures listed in Table 1 were given in 2011 prices by

$$Expenditure_{2011} = 1.033 \times Expenditure_{2009}, \qquad (2)$$

as the CPI figure for 2010 is 3.3 percent and expenditures were for Jan. 1 through Dec. 31, 2009. Inflation from January through March 2011 was ignored because when this modeling was performed in February 2011 only January inflation figures were available, which does not have a significant effect on the results. The gap between BSP and expenditures is therefore

$$BSP_{2011} - Expenditure_{2011}. \qquad (3)$$

Table 2 details the best case scenario (the largest positive gap) and worst case scenario (the smallest positive gap or largest negative gap) for the gap between the BSP prediction and expenditures in 2011 prices. It also gives the average surplus (positive gap) or deficit (negative gap) between BSP and expenditures. Surpluses suggest the BSP is sufficient to cover expenditures, and deficits suggest the BSP is not sufficient to cover expenditures.

Table 2—Table of Results for the Gap Between BSP and Household Expenditures in 2056 (in 2011 Prices)

Demographic	Best Case Scenario	Worst Case Scenario	Average Surplus or Deficit Per Week
Including Linear Prediction of Earnings with No Relationship to Inflation			
Single Person	Surplus: £ 230.68	**Deficit :** -£ 26.82	Surplus: £ 73.18
Married Couple	Surplus: £ 471.17	**Deficit:** -£ 67.47	Surplus: £ 96.97
Excluding Linear Prediction of Earnings with No Relationship to Inflation			
Single Person	Surplus: £ 230.68	**Surplus: £ 30.68**	Surplus: £ 113.24
Married Couple	Surplus: £ 471.17	**Surplus: £24.48**	Surplus: £ 162.24
2% Cap on Inflation and Excluding Linear Prediction of Earnings with No Relationship to Inflation			
Single Person	Surplus: £ 37.19	**Deficit:** -£ 11.00	Surplus: £ 7.09
Married Couple	Surplus: £ 34.89	Deficit: -£ 42.16	**Deficit:** -£ 13.23
2.5% Cap on Inflation and Excluding Linear Prediction of Earnings with No Relationship to Inflation			
Single Person	Surplus: £ 83.96	**Surplus: £ 3.11**	Surplus: £ 33.82
Married Couple	Surplus: £ 109.69	Deficit: -£ 19.60	Surplus: £ 29.51

Source: Author's calculations

When a linear prediction of earnings with no relationship to inflation is used, the worst case scenario is a deficit between BSP and expenditures for both a single person and a married couple, as highlighted in the first section of Table 2. Lord John McFall believes young people are facing a "long retirement in poverty," which represents the general view that the state pension will not cover expenditures, which may contribute to poverty if pensioners do not have sufficient savings. Poverty in retirement is, however, a very wide and complex topic and so this result does not conclusively support Lord McFall's statement.

When a relationship between earnings and inflation is modeled, which is more reflective of the real world, the worst case scenario is a surplus, as highlighted in the second section of Table 2. This surprising result goes against the general belief discussed previously and is an extension of the idea presented by P. Johnson, D. Yeandle and A. Boulding in "Making Automatic Enrolment Work: A Review for the Department for Work and Pensions," that "somebody earning £10,000 a year over a working life would, net of tax, receive almost as much in benefits at retirement as they received in work." This high replacement rate of BSP for earnings implies that it may be beneficial for those on low incomes, who rely on the state pension, not to save into a personal pension plan. This worst case scenario remains as a surplus until a 2 percent cap was placed on the inflation prediction.

On average all cases, except married couples with a 2 percent inflation cap, were in surplus, which again goes against the general consensus. Jumps of up to 25 percent in earnings were allowed in uncapped inflation models which, when compounded forward under the "triple lock guarantee," created a large surplus of BSP over expenditures, as seen in Table 2. It is possible, therefore, that these large surpluses may have affected the average surplus or deficit calculation. However, these jumps were mainly eliminated for 2.5 percent and 2 percent caps, and these predictions were still in surplus on

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average, suggesting that BSP is adequate to cover household expenditures.

In conclusion, this report provides an interesting insight into the gap between the BSP and household expenditures in 2056 using a dynamic inflation prediction within the U.K. government's "triple lock guarantee." As detailed in Table 2 and discussed above, a linear model of earnings with no relationship to inflation gives a deficit between BSP and expenditures in the worst case scenario, which supports the general belief that the BSP will not be sufficient to cover expenditures in retirement. However, when a relationship between earnings and inflation is modeled, the BSP has a surplus over expenditures in the worst case scenario until a 2 percent cap is placed on inflation. This result goes against the general belief and suggests that it may be beneficial for those dependent on the state pension not to save into a personal pension plan. Finally, on average, except for one case, the BSP is in surplus over expenditures, which also goes against the general belief. Hence, this modeling suggests that when the more realistic assumption that inflation and earnings are related is made, there is a surplus between the full U.K. BSP and household expenditure when I am due to retire at 68 in 2056. So in this article the BSP is projected to be adequate to cover expenditures for those households reliant on the United Kingdom's state pension.