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## 5 An illustration of model results

As part of its research on *Superannuation Policy for Post-Retirement* the Commission has developed a model — referred to as the *Productivity Commission Retirement Model* (PCRM) — to assess the effects of increasing the preservation age. The PCRM can be described as a ‘behavioural microsimulation’ model. Behavioural microsimulation models seek to simulate individual or household level decisions, and are commonly used within an economic framework to assess the impact of policy changes (such as changes in tax and benefits) on governments’ fiscal positions and on labour supply. They are particularly useful where there is a wide variety of decision makers, and where complex policy changes are likely to impact these different decision makers in different ways.

The role of this paper is to illustrate how income and savings balances fluctuate over an individual’s lifetime, and how households determine their response to a change in the preservation age in the PCRM.

### Income and savings over the life cycle

The following life cycle diagrams are designed to illustrate how income and savings balances fluctuate over an individual’s lifetime (figures 5.1 and 5.2 respectively). In these illustrations, individuals are assumed to begin work at the age of 20 and to retire at the age of 65. Two households are presented as examples.

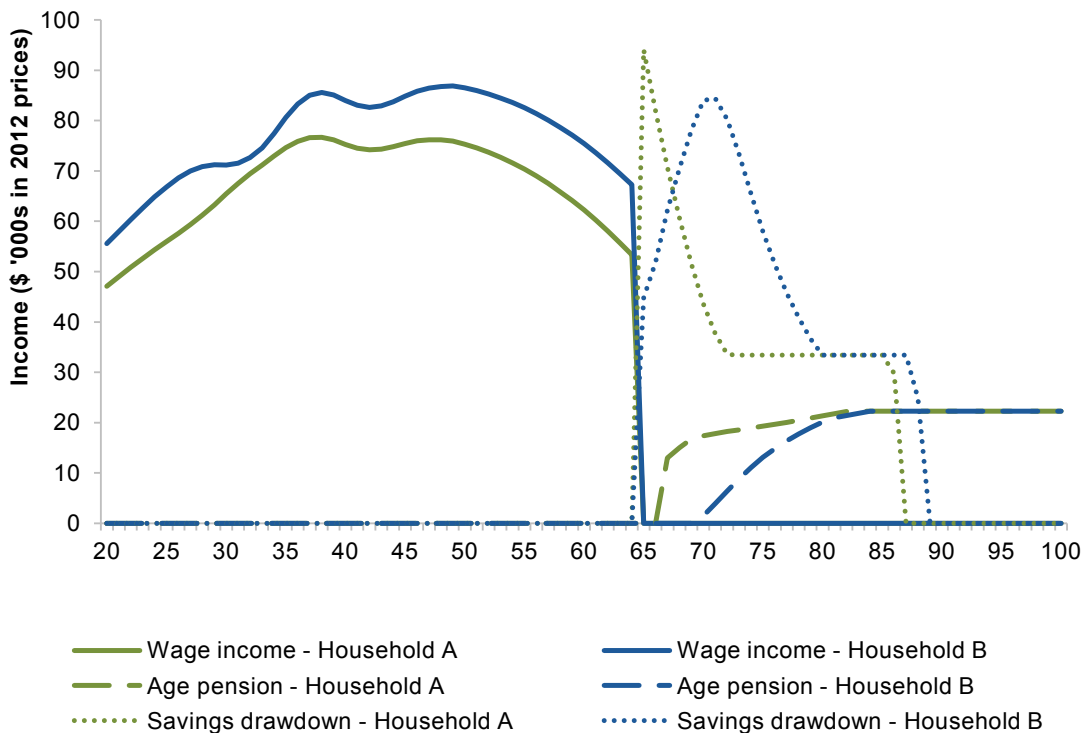
- Household A is a single male in the second *lowest* wealth quartile (for single males of a given age).
- Household B is a single male in the *highest* wealth quartile (for single males of a given age).

Income is derived from three sources:

- Wage income — this is only earned while an individual is working (that is, up to 65 years in this example). Wage income has an ‘inverted-U’ relationship with age.
- Draw down of savings — this occurs immediately after retirement until savings are extinguished. Draw down of superannuation and non-superannuation savings occurs simultaneously.
- Age Pension — this is only available when individuals meet the relevant asset and income tests.

Savings are accumulated in the form of both superannuation and non-superannuation assets.

Figure 5.1 Lifetime income<sup>a</sup>



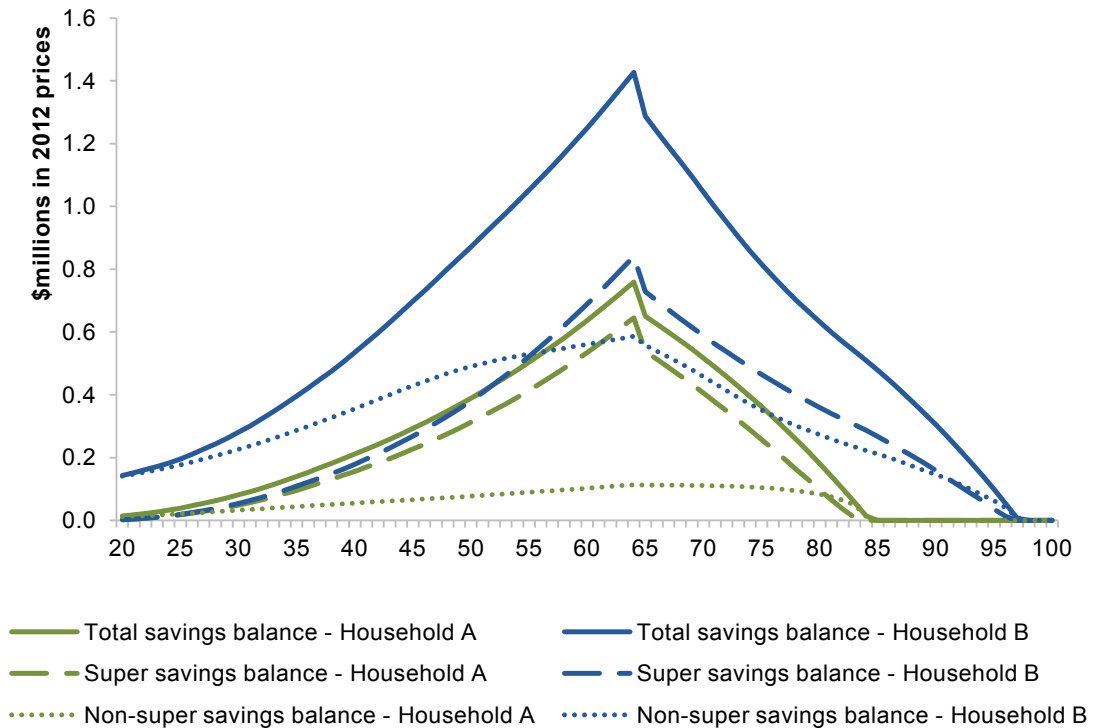
<sup>a</sup> Household A is a single male in the second lowest wealth quartile (for single males of a given age). Household B is a single male in the highest wealth quartile (for single males of a given age).

These figures show that over the course of their lifetimes:

- Household B earns more wage income than Household A.
- Household B accumulates a larger savings balance than Household A and thus receives more income when drawing down assets and exhausts savings at an older age (96 compared to 86 years old).<sup>1</sup>
- Household B has a larger proportion of total savings in non-superannuation assets.
- Household A receives the Age Pension (and obtains the full pension) at a younger age than household B.

<sup>1</sup> The savings drawdown variable becomes flat when individuals reach the minimum withdrawal amount (set at 1.5 times the Age Pension).

Figure 5.2 Lifetime savings balances<sup>a</sup>



<sup>a</sup> Household A is a single male in the second lowest wealth quartile (for single males of a given age). Household B is a single male in the highest wealth quartile (for single males of a given age).

## Illustrating the decision making process

This section illustrates how Household A determines their response to an increase in the preservation age (from 60 to 65) that phases in from 2035 (the phase in is completed by 2043) (Policy 1A).

The lifetime discounted utility derived for each retirement age for Household A is presented in table 5.1. Household A chooses to retire at the age of 67 under the base case. This is because Household A has a relatively small superannuation balance and so intends to retire when they reach the Age Pension age.

Under Policy 1A, there is a lower utility value for retirement ages less than the age of 65 and no change to utility for ages 65 and above. Household A does not change their retirement age because the utility for their original retirement age remains unchanged and the utility associated with other retirement ages is either the same or lower under the policy.

**Table 5.1 Utility for example Household A<sup>a</sup>**

<i>Retirement age</i>	<i>Utility under base</i>	<i>Utility under policy</i>	<i>Difference</i>
50	3.283	3.217	-0.066
51	3.334	3.268	-0.066
52	3.381	3.315	-0.067
53	3.427	3.359	-0.068
54	3.470	3.402	-0.068
55	3.510	3.441	-0.069
56	3.549	3.479	-0.070
57	3.585	3.515	-0.070
58	3.610	3.548	-0.062
59	3.627	3.580	-0.047
60	3.643	3.611	-0.033
61	3.657	3.639	-0.019
62	3.669	3.665	-0.004
63	3.679	3.678	-0.001
64	3.688	3.687	-0.001
65	3.695	3.695	0.000
66	3.700	3.700	0.000
67	<b>3.700</b>	<b>3.700</b>	0.000
68	3.697	3.697	0.000
69	3.694	3.694	0.000
70	3.691	3.691	0.000

<sup>a</sup> Retirement choices are highlighted and in bold.

The lifetime discounted utility derived for each retirement age for Household B is presented in table 5.2. Household B chooses to retire at the age of 61 under the base case. This is because Household B has a relatively strong preference for non-work activities and thus retires soon after the preservation age (when they can access their superannuation savings).

Under Policy 1A, Household B delays their retirement until age 65 because that is the earliest age at which they can access their superannuation.<sup>2</sup>

<sup>2</sup> The utility associated with retirement at ages 65 and above are slightly lower under the Policy scenario 1A for Household B. This is because Household B uses transition to retirement pensions to minimise their tax liabilities, and an increase in the preservation age limits their ability to use this tax-minimisation strategy.

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**Table 5.2 Utility for example Household B<sup>a</sup>**

<i>Retirement age</i>	<i>Utility under base</i>	<i>Utility under policy</i>	<i>Difference</i>
50	3.812	3.812	0.000
51	3.824	3.823	-0.001
52	3.835	3.831	-0.003
53	3.845	3.838	-0.007
54	3.853	3.845	-0.008
55	3.862	3.852	-0.010
56	3.870	3.858	-0.012
57	3.877	3.863	-0.014
58	3.884	3.868	-0.016
59	3.890	3.872	-0.018
60	3.895	3.876	-0.019
61	<b>3.896</b>	3.880	-0.015
62	3.895	3.884	-0.011
63	3.895	3.887	-0.008
64	3.894	3.890	-0.004
65	3.893	<b>3.893</b>	-0.001
66	3.892	3.892	-0.001
67	3.891	3.890	-0.001
68	3.889	3.889	-0.001
69	3.887	3.886	-0.001
70	3.884	3.884	-0.001

<sup>a</sup> Retirement choices are in bold.