

## Population Ageing and the Australian Tax Transfer System in 21<sup>st</sup> Century

**Abstract.** *The latest Inter-generational Report leaves Australia in little doubt about the immense challenges from ageing population over the next 40 years. Such changes will eventually have a fundamental impact on living standards of Australians. Fiscal reform will form part of the overall policy response to demographic change, but formulating an optimal response requires a solid understanding of how the evolution of such demographic factors affects individuals, markets and government budget operations.*

Australia, like most other developed countries, has an ageing population, which is attributed to falling mortality and, especially, fertility rates in the past. Projected mortality improvements in the next few decades imply further ageing of Australia's population, which is also expected to increase due mainly to net migration inflows. The latest Intergenerational Report leaves the country in little doubt about the immense challenges it faces from a population that is both changing and growing. Not only are we living longer but there is also a demographic transformation occurring as the first of the baby boomers march beyond the country's official pension age of 65. Such changes in the size and age structure of the population over the next 40 years will have a fundamental impact on the economy, income growth and ultimately living standards. Fiscal reform will inevitably form part of the overall policy response to demographic change, but formulating an optimal policy response requires a solid understanding of how the evolution of such demographic factors affects individual behavior, market equilibrium, macroeconomic aggregates, government budget operations and the wellbeing of Australians.

In a research program co-authored by Dr. George Kudrna (UNSW), Dr Chung Tran (ANU), Professor Alan Woodland (UNSW), we study the economic effects of the dynamic evolution of the demographic structure for the Australia economy and implications of policy reforms in years to come.

In the first research paper entitled "*The Dynamic Fiscal Effects of Demographic Shift: The Case of Australia*", we quantify the fiscal challenge caused by demographic shift and to isolate the quantitative importance of each demographic factor in the context of Australia. Our main results are summarised as follows:

- First, demographic shift in Australia affects various macroeconomic variables. Changes in the population age distribution towards older ages negatively impact labour supply and output but increase assets and consumption, all in per capita terms. We find that per capita GDP decreases 6.2 percent by 2050 as a result of the future demographic shift. This contraction reduces investment opportunities in the domestic economy and leads to increased capital outflows.

- Second, demographic shift affects the fiscal position of the government over time, with significant changes in the tax base. Tax revenues move in favour of asset incomes and consumption and away from labour earnings.
- Third, the projected larger proportion of older Australians leads to significant expansions in old-age related government expenditure programs. Our simulation results indicate that the percentage increases in the sizes of health care, aged care and pension programs by 2050 are 24.5, 125.9 and 62.7 percent, respectively, creating a fiscal challenge. In order to finance such substantial increases in age related benefits, the government will have to cut non-age related expenditures and/or increase taxes substantially during the demographic transition. Specifically, we find that a 32 percent cut in non-age related expenditures or a 28 percent increase in the consumption tax rate is required for the government budget to be balanced in 2050.
- Fourth, we quantify the relative importance of the increase in longevity vs. the decline in fertility embodied in the demographic change. Our decomposition results indicate that the main driving force behind the increased fiscal costs is the increase in survival rates rather than the decline in fertility rates. Furthermore, our results lead to the conclusion that higher fertility and increased immigration are not effective solutions to deal with the increasing fiscal burden of old-age related government spending programs, since their fiscal effects are estimated to be rather small.

In the second paper entitled “*Facing Demographic Challenges: Pensions Cuts or Tax Hikes*” we investigate the macroeconomic and welfare implications of the two fiscal policy options to respond to demographic shift: (i) a cut to government spending by reducing pension benefits and (ii) an increase in taxation revenues through adjusting either consumption or progressive income or payroll taxes. Our main results are summarised as follows:

- While the two fiscal reform options achieve the same goal of reducing the fiscal burden of population ageing, their macroeconomic and welfare outcomes differ greatly. In terms of the welfare effects, we find that young and future generations prefer pension cuts, but currently older and middle-age generations prefer to finance the fiscal burden through tax hikes. Furthermore, higher income households would prefer pension cuts as the age pension is not an important source of retirement income for them, whereas lower income types would prefer tax hikes with increases in progressive income tax rates. Interestingly, the indirect and regressive consumption tax hikes have opposing effects on macroeconomic aggregates and welfare across skill types to those obtained from the income tax hikes. We show that the required increases in the consumption tax rate result in positive effects on per capita labour supply, assets and output, but reduce the welfare of low income households most. Conversely, the increases in progressive income or payroll taxes result in negative effects on output but reduce the welfare of poor households least.
- We analyse the consequences of a mix of pension cuts and tax hikes. Given that the examined pension cuts alone only partially reduce the fiscal pressure, we allow either

the consumption or payroll tax rates to adjust to close the fiscal gap. The results for these two experiments indicate that each tax rate initially declines due to pension cuts, but this is shown to reverse after 2030, with the payroll tax in particular rising significantly to fund the increases in age-related spending. Similarly to the effects of tax hikes alone, pension cuts combined with adjustments in consumption (payroll) taxes have positive (negative) long run effects on the economy. Furthermore, welfare losses to future generations from increased payroll taxes are more than double of those resulting from consumption tax adjustments. The comparison of these two experiments indicates that the mix of pension cuts and labor income tax hike has some advantages by 2030. However, the mix of pension cuts and consumption tax hikes is a dominant policy option beyond 2030.

Our findings have important policy implications. We show that even though the costs of population ageing in the coming decades are inevitable, the transitional cost on aggregate economy and welfare can be minimized by the choice of fiscal policy option and the timing of policy implementation. Reforms that allow individuals to have enough time to adjust and those that minimize the fiscal distortion on labor supply stand out as the best policy options. However, none of these policy reform options is likely to gain political support as each policy results in welfare losses for the current retiring and working generations. The conflict of interest between current and future generations suggests political infeasibility for any structural fiscal reforms. More importantly, our results also suggest that a gradual shift from the retirement income support scheme that relies heavily on a means-tested pension system (e.g., an unfunded public pension scheme) towards a superannuation system (e.g., a self-financed private pension scheme) may effectively help control fiscal cost of demographic transition while allowing individuals to adjust labor supply and savings for retirement. How to design a means-tested pension system to exploit interactions between these two retirement systems is important.

In a research paper co-authored by Dr Chung Tran (ANU) and Professor Alan Woodland (UNSW) entitled “*Trade off in Means Tested Pension Design*”, we explore optional design of an age pension system. We show that inclusion of means testing into the pension benefit formula allows governments to have additional policy instruments to affect the number of public pensioners and the benefit level. The former is aimed at strengthening risk sharing across individuals and generations and to mitigate the adverse effects of self-insurance incentives. We quantitatively analysed the welfare implications of these salient features of old-age pension design for the trade off between insurance and incentive effects. We find that the extensive margin strengthens the insurance effect but introduces two opposing effects on incentives, and that the magnitude of the positive extensive margin effect depends on relative strength of the intensive margin. The final welfare outcome depends how two opposing effects on incentives play out in the economy. We investigate these trade-offs in a dynamic general equilibrium model with heterogeneous agents that is calibrated to the Australian economy. We find that the introduction of a taper rate leads to positive welfare outcomes and

that the pattern of welfare effects varies, depending on the level of maximum pension benefits. Overall, we find there are combinations of the maximum pension benefit and taper rate that balance out the negative incentive effects and positive insurance effects.

## Reference

George Kudrna, Chung Tran and Alan Woodland, “*The Dynamic Fiscal Effects of Demographic Shift: The Case of Australia*”, **Economic Modelling** Vol. 50, November 2015

George Kudrna, Chung Tran and Alan Woodland, “*Facing Demographic Challenges: Pension Cuts or Tax Hikes*” ANU Economics and Econometric Working Paper, June 2015

Chung Tran and Alan Woodland, “*Trade-Offs in Means-Tested Pension Design*”, **Journal of Economic Dynamics and Control**, Vol. 47, October 2014