Speaker: Prof. Pavel V. Shevchenko

Talk Title: Optimal Annuitisation, Housing, Consumption and Investment in Retirement under Expected Utility Stochastic Control Framework

Talk Abstract:

In this paper we develop expected utility model for optimal behavior of retirees subject to consumption, housing, investment, bequest, and government-provided means-tested Age Pension. The model is applied to the Australian retirement framework. Few retirees in Australia utilise financial products in retirement, such as annuities or reverse mortgages. Since the government provided means-tested Age Pension in Australia is indirect annuity stream which typically is higher than the average consumption floor, it is argued that this is the reason why Australians do not annuitise. Moreover, in Australia where assets allocated to the family home are not included in the means-test, the incentive to over allocate housing assets is high. This raises the question whether a retiree is really better with over allocating into family home, while accessing home equity later via downsizing housing or by taking a reverse mortgage. We calibrate the model using empirical data of consumption and housing from the Australian Bureau of Statistics 2009-2010 Survey. The model is solved numerically as a stochastic control problem that allows to find the optimal housing, consumption and risky asset allocation depending on age and wealth. We then extend the model to stochastic interest rate and additional optimal decisions with respect to the house upgrade/downgrade, reverse mortgage and access to annuities. In one-dimensional case we solve the model numerically using quadrature method and for multi-dimensional cases we develop the Least Squares Monte Carlo method. The key findings are as follows. The optimal policy is highly sensitive to the means-tested Age Pension early in retirement,

but this sensitivity fades with age. The allocation to risky assets shows a complex relationship with the means-tested Age Pension. As a general rule, when wealth decreases, the proportion allocated to risky assets increases, because the Age Pension works as a buffer against investment losses. Couples can be more aggressive with risky allocations owing to their longer life expectancy compared with singles. Annuitisation is optimal sooner rather than later and the means-tested Age Pension crowds out annuitisation. Finally, it is never optimal to downscale housing if a reverse mortgage is possible when means-tested Age pension is available.

Speaker Bio:

Pavel Shevchenko is a Professor in the Department of Actuarial Studies and Business Analytics, Director of the Risk Analytics Lab (since 2016) and Co-Director of the Centre for Financial Risk (since 2017) at Macquarie University. Prior to joining Macquarie University, he worked as a Research Scientist in the government science agency CSIRO Australia (1999-2016) holding a position of Senior Principal Research Scientist (2012-2016). Since 1999, Prof Shevchenko has been working in the area of financial risk leading research and commercial projects on: modelling of operational and credit risks; longevity and mortality,retirement products; option pricing; insurance; modelling commodities and foreign exchange; and the development of relevant numerical methods and software. He received a MSc from the Moscow Institute of Physics and Technology and Kapitza Institute for Physical Problems (1994), and a PhD from The University of New South Wales in theoretical physics (1999).