SUMMARY

Reverse mortgage is a loan which allows customers to cash out the home equity from their properties without having to sell them. This is an attractive means of financing for retirees who may be asset rich but cash poor. Reverse mortgage may be either for fixed period or lifelong. Interest rate is normally variable over the loan period. Lenders may allow a lumpsum loan at origination or monthly disbursements over the loan period.

Lenders face many risks in reverse mortgage. These risks include interest rate, cross-over, collateral, liquidity, diversification, hedging, credit, prepayment, accounting and high cost of administration. In view of the many risks, lenders have to be active in the risk management of reverse mortgage. This is probably why except for NTUC Income, there has been no other financial institution providing reverse mortgage since NTUC Income’s launch in Jan 1997.

The objective of this study is to evaluate the interest rate and cross-over risks of reverse mortgage. Interest rate risk relates to the fluctuations of interest rate over time in reverse mortgage. Cross-over risk refers to the risk of borrower living beyond the loan period committed or expected by lenders.
The author hopes that this study will bring a better understanding of the two key risks faced by lenders of reverse mortgage. The use of empirical data can provide some useful basis for examining some of the risk issues in reverse mortgages.

Macaulay’s duration is used to evaluate the interest rate risk. Macaulay’s duration measures the sensitivity of changes in the value of a stream of cashflows to changes in the term structure of interest rates. The study examined various effects on Macaulay’s duration arising from absolute changes in market interest rates. The findings are:

a) The longer the loan period, the less sensitive is the change in Macaulay’s duration relative to absolute change in interest rates when market rate rises, although Macaulay’s duration generally rises over the loan period.

b) Reverse mortgage is more sensitive to market interest rate drops than market interest rate rises.

c) Reverse mortgage with lower initial interest rate is less sensitive to market interest rate increases.

d) There is a lump sum loan level at which the percentage change in reverse mortgage price is the same for the same absolute change in interest rate vis-à-vis a case where there is only monthly drawing.
e) The absolute reverse mortgage price changes are higher in the case of male borrowers but the relative percentage change are identical for both male and female borrowers, given the same absolute change in interest rates.

In estimating the cross-over risk, the mortality rate and prepayment probability are examined to calculate the cross-over risk. The findings are:

1) The older a borrower is at loan origination, the lower is the cross-over risk as the point at which cross-over risk is zero is reached earlier.

2) Male borrowers have lower cross-over risks compared to female borrowers assuming the same age at loan origination.

In summary, the implications are the lenders can manage interest rate risk better by lending to older borrowers at time of loan origination (as compared to younger borrowers) as well as offering fixed term and flexi-rate rather than lifelong and fixed rate reverse mortgage. For cross-over, the risk is lower for older borrowers (at time of loan origination) and for female borrowers.