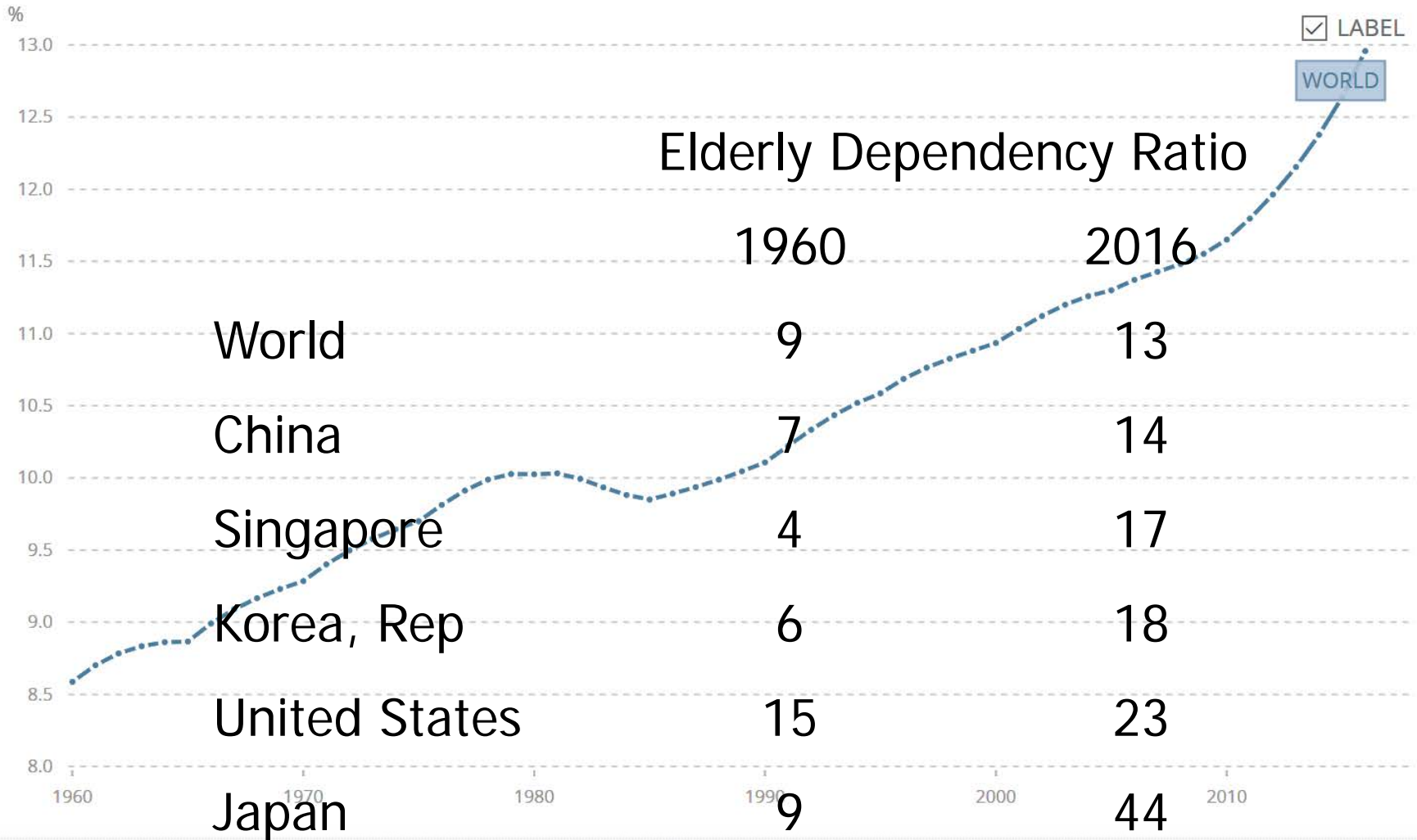


# Discussion on **Hacking Reverse Mortgages**

By Deborah Lucas, MIT

Discussant: Yongheng Deng  
Wisconsin School of Business & ABFER

# World Bank estimates of elderly dependency ratio (age > 64 as % of working-age population)



# United Nations Report on World Population Ageing: 1950 - 2050

- Population ageing is unprecedented
- Population ageing is pervasive
- Population ageing is enduring
- Population ageing has profound implications for many facets of human life

# Well-Being of Elderly Living

- 80% of households over the age of 62 own their homes, and home equity makes about half of their median net worth
- Home equity is an illiquid asset
- Elderly households are typically living in the situation of “housing asset rich but cash poor”
- Reverse mortgage helps the elderly households to unlock their home equity and allows ageing in place
- Providing both liquidity and longevity insurance

# A Reverse Mortgage Puzzle

- Despite the RM's potential appeal and government backing, the demand for HECM in the US market has been extremely limited (<.3% of seniors each year)
- Korea Housing Finance Corp has launched a Korean government insured Korean reverse mortgage (KRM) in 2007 and had 515 borrowers. By 2012, demand for KRM was only 2,721 borrowers.
- OCBC Bank and NTUC Income began offering first reverse mortgages in Singapore in 2006 but they were discontinued due to a lack of demand. Only 38 private property and 10 HDB reverse mortgages are still being serviced by NTUC Income.
- Singapore Gov't HDB launched Lease Buyback Scheme (LBS) in March 2009, enhance-LBS in 2015
- China...?

# Key takeaways

- The paper proposes a valuation model to estimate and calibrate the NPVs of HECM among the borrowers, the government, and the lenders. The results show that
  - HECMs are extremely expensive relative to the value they deliver to **borrowers – the loser**, risk adjusted NPV for borrowers is -\$27K, gov't -\$4, **lender is the big winner** receiving NPV of \$31K (top 5 lenders take about 60% of the market).
  - Majority of the borrowers (80%) who take full draw in year 1 receive risk adjusted NPV of -\$36K, gov't -\$1K, lenders \$35K.
  - Ruthless strategy: 10% of the borrowers never draw on the credit line (beyond covering fees and interest on these fees) until they move, and exercise the put option at move if option is in the money, achieve NPV of \$53K, gov't -\$55K, lender \$2K.

# Key takeaways (cont'd)

- Anything that causes the loan balance to increase early on, or that increases the average life of the loan, makes it more expensive for the borrower.
- The ruthless strategy takes almost full advantage of the house price insurance from the put option, and it avoids most of the high annual costs, is extremely profitable (to a small group of financially supplicated borrowers, who are most likely not the needy elderly households).
- Higher house price volatility increases the value of the put option, making contract more valuable to the borrowers, and more costly to the gov't which is the writer of the option.
- Early termination (move out) benefits the borrowers, and is costly to the lenders, because it cuts short the duration of expected return for the lenders, and such risk is not insured by the gov't.

# Policy suggestions

- The current HECM program suffers from the disadvantages of guaranteed lending without reaping its advantages.
- The program does not leave skin-in-the-game for private lenders.
- Lenders bear no credit risk and have little incentive to screen out high-risk borrowers.
- Opacity and complexity of the current pricing structure discourage the competition.
- The tail of the longevity risk should be better managed by gov't because of its ability to spread costs across generations as well as across taxpayers at a point in time.



# Additional scenarios for evaluation and calibration

- The target group of the gov't insured HECM program is the "home equity rich but cash poor" elderly households and the goal of the HECM is to help them to unlock their illiquid home equity.
- Although the ruthless strategy can make RM borrower the biggest winner, it is inconsistent with the gov't policy goal.
- Therefore gov't should discourage such pure financially motivated RM borrowers, for example, by taxing the put option exercises.

# Additional scenarios for evaluation and calibration (cont'd)

- Although type 5 (never draw) seems to reach a relatively balanced distribution of costs and benefits among borrowers, gov't and lenders, it does not help the needy elderly households to liquify their home equity and improve their retirement life.
- Consider type 6 – encourage the primarily target group to take term annuity with an affordable cost structure. In so doing the program offers term annuity with step-up interest rates (e.g., interest free for the first x draws, or a teaser rate fixed for the first x years before adjust to the market rate,...), to reduce the interest rate costs occurred in early years. Hence to help the needy elderly households to improve their retirement life by liquifying their home equity.

# Additional scenarios for evaluation and calibration (cont'd)

- Bequest motivation is one of the major barriers of demand for RM. This is especially relevant in the Asian context.
- Consider type 7 – RM with option to buyback (a call option). The MR borrower can long a call option on their house. This offers the RM taker an option to buyback their house when the market is booming at a predetermined price and share the potential growth of the housing assets to their kids (at a cost of paying a call option price, i.e., a larger rate spread). Hence the option is to target the bequest motivated elderly households to participate.

# Additional scenarios for evaluation and calibration (cont'd)

- Extend the analysis to the secondary RM market, i.e., study the pricing, returns and risks of the Ginnie Mae securitized reverse mortgage products, so that we can develop an affordable and sustainable RM market through funding from private investors in the secondary capital markets instead of entirely depend on the government subsidies right now.
- The GSEs experience in the RMBS markets has proofed that it can effectively reduce the borrowing costs (narrow down the rate spreads) for mortgage borrowers.
- In such analysis, the calibration needs to consider both directions of house price drift (positive and negative).

# Final comments

- This is an extremely smart policy paper, which provides very useful and carefully designed framework of valuation tools.
- It offers a clear explanation of the root problems of the reverse mortgage puzzle and solutions to address the underlying structure problems of the current government sponsored HECM program.
- I enjoyed reading the paper, and strongly recommend policy makers to read it too.