

An Investigation of Mortgage Insurance in Thailand

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Abstract

Thailand is among the fastest ageing countries in the world. Due to the prolonged period of low interest rates since the financial crisis and the recent decline in economic growth, coupled with rising inflation, numerous elderly individuals lacking adequate savings are facing difficulties during their retirement. Even though reverse mortgages offer elderly homeowners a means to utilize their housing wealth without the need to sell or relocate, these loans are rarely taken by elderly Thais. To encourage the uptake of reverse mortgage loans in response to the rapidly aging demographic, the government should consider implementing mortgage insurance. This measure would help improve the monthly payments for elderly borrowers. The study investigates the fiscal costs associated with mortgage insurance and provides a framework for estimating these costs. The framework considers important policy choices such as housing prices, take-up rates, and government support levels. Based on simulations, the study offers an analysis of fiscal costs under various scenarios. Gaining an understanding of these effects on fiscal costs is important for the design of subsidy policies that promote the adoption of reverse mortgages, ultimately leading to better well-being of elderly Thais.

Key words. Mortgage Insurance, Reverse Mortgage, Elderly, Aging Society

Introduction

Thailand is one of the countries experiencing rapid aging. By 2025, the proportion of people aged 60 or older is expected to exceed 20%, and by 2031, it is projected to exceed 30%. This demographic shift poses a challenge, as Thailand has an inadequate pension system and a relatively low-income population. With the prolonged period of low interest rates since the financial crisis and the recent decline in economic growth coupled with rising inflation, many elderly people without sufficient savings may face difficulty in sustaining their livings. Given that more than 70% of Thai elderly own their homes, reverse mortgages seem to be a potential mechanism to alleviate this challenge. It can serve as a welfare-enhancing tool to supplement pension income or function as a form of insurance for elderly people. However, reverse mortgages are rarely adopted by the elderly in Thailand.

Reverse mortgages basically provide a means to convert their illiquid asset (home) into cashflows for their spending needs. These loans allow elderly homeowners to consume their housing wealth without having to sell or move out of their homes. Unlike regular mortgages that are repaid in installments, the outstanding loan balance on an RM is repaid once, at termination. There is no assessment of borrowers' ability to repay, only value of the house pledged as collateral is relevant in the reverse mortgage assessment. Reverse mortgages are nonrecourse loans, borrowers are not liable if the value of the house is less than the loan outstanding, and neither are their spouses nor descendants. Despite the potential appeal (Mayer and Simons, 1994; Venti and Wise, 2004), the demand for reverse mortgages has been limited (Shan, 2011). Potential explanations to the low adoption include distrust and lack of understanding exacerbated by the product's complexity (Fornero et al., 2016; Davidoff et al. 2017; substantial upfront costs (Davidoff, 2015; Lucas, 2016); medical costs and reluctance to spend bequests (Nakajima and Telyukova, 2017; Mayer and Mouton, 2020).

In Thailand, reverse mortgages were introduced in 2017 by one of government owned bank, Government Saving Bank. However, like other countries, the take-up rate of the loan has been limited. It is plausible that the relatively low monthly payment received by borrowers from loans may be one of the main obstacles. To manage the risk of potential losses from repayment shortfall, banks further discount the home collateral value due to the non-recourse nature of the loan, resulting in low monthly payments. In some countries, such as the United States, reverse mortgage loans are insured by the U.S. Federal Government under the Home Equity Conversion Mortgage (HECM) program. Therefore, there is a need to explore mortgage insurance in Thailand to promote the use of reverse mortgages for Thai elderly.

The aim of this paper is to investigate the fiscal costs of mortgage insurance under various hypothetical scenarios related to housing prices, take-up rates, and government support levels. Understanding the costs of subsidies is beneficial in designing and implementing policies to use reverse mortgages to cope with Thailand aging society.

Methodology

Due to the nonrecourse of reverse mortgage, the fiscal costs can be viewed as the put option. However, the option is not a standard option because the maturity is unknown depending on the life expectancy of the borrower. In addition, the strike price is time-varying upon the death of borrower. There is no close-form solution for this complex option, the

solution can be estimated using the simulation. Specifically, following Davidoff (2015) the mortgage insurance payoff can be expressed as:

$$V^M(T) = \max\{0, l \cdot R(T) - H(T)\} - R(T) \cdot f \quad (1)$$

where f = lender costs and original fees at inception, \hat{H} = housing value; l = loan; $R(T)$ = accumulated growth rate since origination; T = loan maturity or the decease of the borrower, whichever is earlier.

The housing value simulation is based on the standard geometric Brownian process.

$$\hat{H}_{t+n} = H_t e^{(\alpha - 0.5\sigma^2)n + \sigma\sqrt{n}Z} \quad (2)$$

Since the loan is long-term in nature, it is more appropriated to incorporate the “jump” in housing value during economic crisis. Based on Merton (1976), the simulation of housing value is as follows.

$$\hat{H}_{t+n} = H_t e^{(\alpha - \lambda k - 0.5\sigma^2)n + \sigma\sqrt{n}Z} e^{m(\alpha_j - 0.5\sigma_j^2) + \sigma_j \sum_{i=0}^m W_i} \quad (3)$$

where \hat{H} = housing value; α = average rate of housing value growth; λ = jump frequency per year; σ = standard deviation of housing value growth rate; Z = normally distributed random variable; W_i = normally distributed random variable; m = Poisson random variable; α_j = Mean of jump magnitude; σ_j = Jump Volatility; $k = e^{\alpha_j} - 1$; t = time; n = period.

As for baseline (from historical data), the α and the interest rate = 6%, λ = jump frequency per year, $\sigma = 5\%$, $\sigma_j = 5\%$, and $\alpha_j = -7.5\%$.

Main Results

Based on the simulation with jump component in the housing process, under the constant take-up rate at 1% during the next five years, Table 1 reports the fiscal costs at loan to value (LTV) at 70% and 80% at different housing values. Figure 1 shows the fiscal costs with LTV from 70% - 100%. Since the take-up rate of the loans may be uncertain, Figure 2 shows the effects of the take-up rate between 0.5% to 2%. In addition, the government can provide subsidies by setting different LTV depending on the house values. For example, 100% and 70% for the house value of 2 and 7 million baht, respectively. This policy provides more support for the less wealthy elderly than the wealthier elderly. Specifically, LTV% x2, x3, x5, x7 represent the subsidy policy of different LTV levels for the housing value of 2, 3, 5, 7 million, respectively. Figure 3 shows fiscal costs at different levels of LTV subsidies. Overall, the preliminary evidence suggests that fiscal costs are significantly affected by loan-to-value (LTV) levels, which have a direct impact on borrowers' monthly payments. Consequently, it would be more appropriate to offer greater subsidies to low-income elderly individuals or those with lower-valued housing. Such targeted policies incur much lower costs than across-the-board policies.

Table 1. Fiscal costs at take-up rate 1% for LTV 70% and 80%

Age Group	LTV 70%				LTV 80%			
	Housing Value				Housing Value			
	2	3	5	7	2	3	5	7
60	336,760	923,350	59,992	2,830,977	1,564,168	4,437,141	4,394,628	5,066,913
61	753,678	370,523	2,038,666	1,666,800	2,869,878	2,398,819	2,889,773	4,056,021
62	1,166,163	1,080,980	1,486,587	2,425,152	1,688,304	1,988,036	3,815,117	5,540,826
63	288,330	456,777	959,036	978,786	1,642,760	2,364,897	3,794,395	5,190,961
64	892,132	1,063,129	3,318,112	1,574,104	3,102,773	5,160,383	4,569,090	7,818,803
65	396,814	549,585	1,724,009	1,095,779	2,292,137	3,802,560	6,156,189	9,218,013
66	823,448	281,426	633,182	1,488,879	1,716,065	3,150,560	4,578,930	6,710,589
67	517,636	1,579,417	781,382	1,678,667	2,373,114	1,519,992	5,873,757	7,272,775
68	288,030	1,726,917	428,690	2,781,192	2,794,993	4,500,876	5,863,926	8,741,070
69	837,322	1,013,770	995,513	2,824,303	2,112,642	5,056,740	4,978,274	9,820,392
70	527,980	1,187,527	4,285,440	1,184,291	2,835,187	3,758,898	8,950,105	7,172,390
71	626,639	1,539,018	2,380,917	109,331	2,042,250	2,684,960	4,547,479	6,105,862
72	430,884	607,745	980,624	2,872,722	1,651,455	2,818,032	4,682,775	5,818,902
73	590,783	1,569,238	698,085	4,532,926	1,765,545	2,475,831	5,578,164	6,584,781
74	814,497	1,040,676	1,377,045	2,277,399	1,861,468	1,677,008	4,169,325	8,266,795
75	897,185	908,925	1,329,672	3,035,417	1,861,200	4,165,484	5,581,438	7,393,237
76	708,744	545,526	1,633,895	1,416,367	2,184,357	2,918,632	5,410,527	7,123,513
77	599,740	454,798	439,525	2,312,509	2,150,970	6,088,099	4,446,657	5,910,473
78	643,522	722,581	2,013,798	1,262,088	3,028,156	2,204,722	6,502,784	5,420,953
79	611,527	1,082,408	2,063,990	1,482,918	3,037,307	4,377,087	5,876,322	6,203,361
80	1,187,661	1,355,642	1,364,244	3,977,143	4,346,999	1,887,984	6,796,620	9,842,651
Total	13,939,477	20,059,959	30,992,404	43,807,751	48,921,727	69,436,739	109,456,276	145,279,282

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Figure 1. Fiscal costs with constant take-up rate at 1% with different LTV

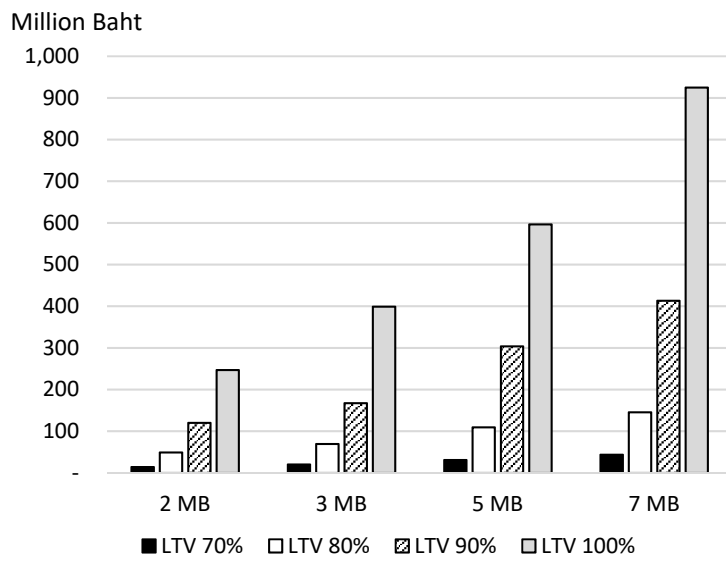
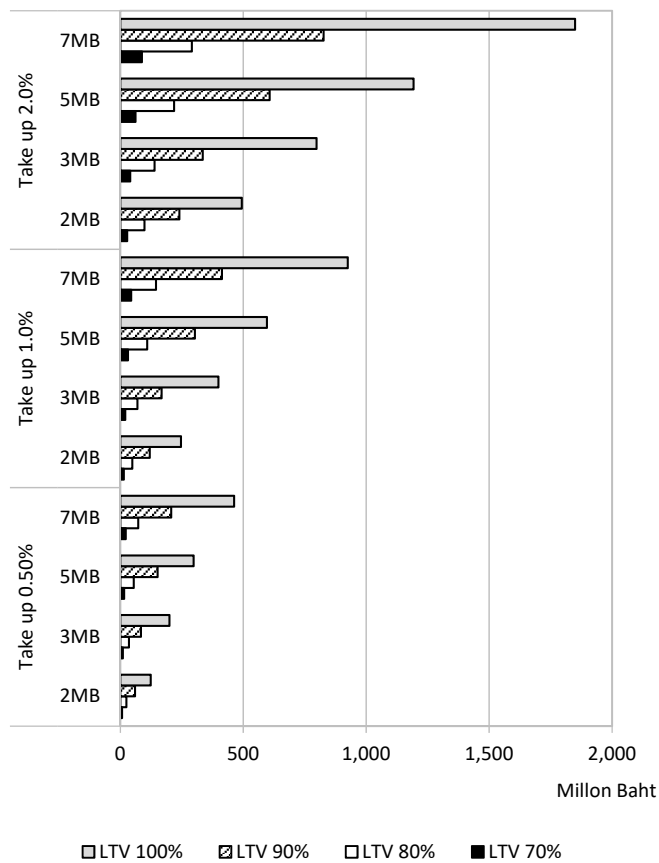
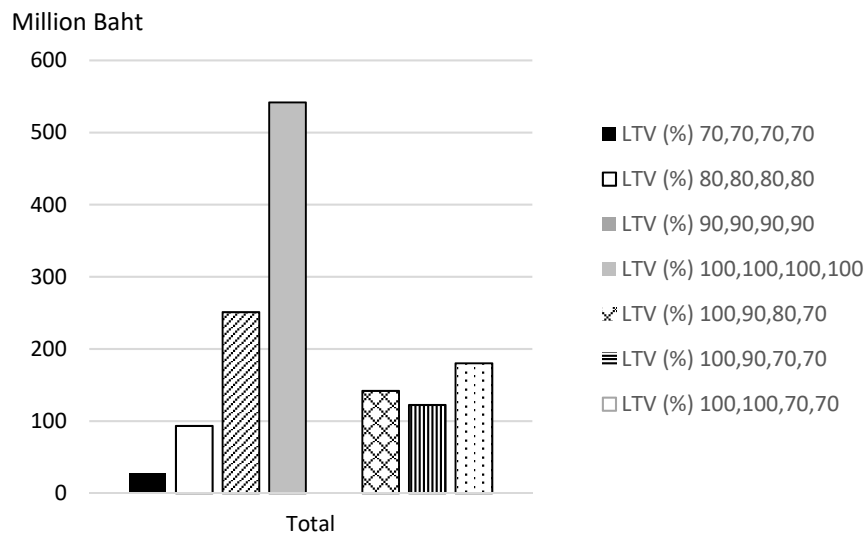


Figure 2. Fiscal costs at various take-up rates



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Figure 3. Fiscal costs at different LTV policies for different levels of housing value



Conclusion

Reverse mortgage provides a means for elderly homeowners to consume their housing wealth without having to sell or move out of their homes. Despite the advantages they offer, reverse mortgages are seldom utilized by elderly Thais. To encourage the uptake of reverse mortgage loans in response to the rapidly aging demographic, the government should consider implementing mortgage insurance. This measure would help improve the monthly payments for elderly borrowers. The study investigates the fiscal costs associated with mortgage insurance and provides a framework for estimating these costs. The framework takes into account significant policy choices, including housing prices, take-up rates, and levels of government support. Based on simulations, the study provides an analysis of fiscal costs across different scenarios. Understanding these effects on fiscal costs is beneficial for designing subsidy policies that support the use of reverse mortgages, ultimately enhancing the well-being of elderly Thais.

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