Chapter 2
Literature Review

2.1 The Concept of the Reverse Mortgage

Reverse Mortgage is a mortgage which allows older homeowners (aged 62 or older in the U.S.) to convert their lifetime home equity savings into cash. It is aptly named because the payment stream is “reversed.” Instead of making monthly payments to a lender, as in a regular mortgage, the borrower receives payment from lenders against the value of their property. Under the concept of payment pattern, the RM is basically designed to enable elderly homeowners to unlock non-liquid assets tied up to their housing equity in order to generate income (Ong, 2008). Because the elderly person is conventionally classified on the economic circumstance as “asset-rich but income-poor” group (Hancock, 1998; Rowlingson, 2006), the RM can be an alternative option for those elderly homeowners to enhance the liquidity of their poverty and improve their current consumption.

Figure 2.1 shows the relationship between home equity and RM versus life span. In stage 1, the debtor may apply for a mortgage from the bank in order to purchase a house. Then, with the accumulating repayment for the loan balance, the home equity increases over the time. Then after the debtor pay out the mortgage fully, the debtor finally own the house without any debt (stage 2). But oftentimes this is achieved at the time when the debtor reaches middle age or in the latter years of their working life. It means they might retire soon, having no more income in the future. If they do not have a good retirement plan or do not have other people to support them like their children, then, it will become a serious challenge for them to face their life after retirement. Under this condition, they only have their house which was earned during their life time but lack any other source of income. They now have to make the difficult decision to sell their house and move to another place or reduce the daily expenses dramatically; otherwise, they can only rely on the government’s support.

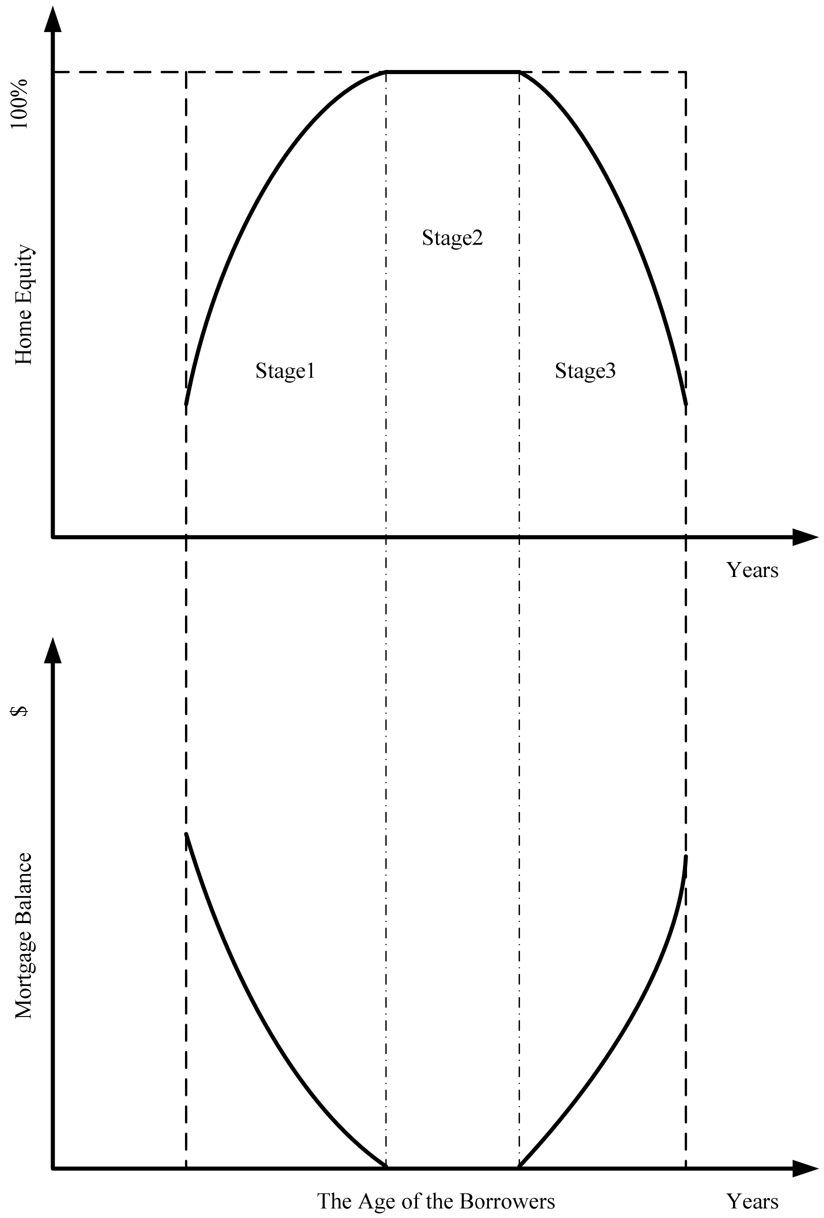


Figure 2.1 Relationship between Home Equity and Reverse Mortgage versus life span

Therefore, considering that we need to provide a more dignified life for the elders and improve the liquidity of real estate, the RM can be another feasible option for them to enhance the quality of their life as retirees. As the homeowners apply for the RM, the home equity will decrease and the mortgage balance will increase together with the annuity they receive from the creditor (stage 3). The amount of money they can take depends on the borrower's age, the current interest rate, other loan fees, and the appraised value of the house. Generally, the more valuable the house is the lower the interest, and the older borrower is, the bigger mortgage the borrower can get (HUD, 2006).

Due to the U.S. Department of the Housing and Urban Development, the Federal Housing Administration (FHA)'s reverse mortgage program, Home Equity Conversion Mortgage (HECM), have five payment plans for borrowers to choice and the reverse mortgage cost are shown as follows[6]:

The payment plan of HECM

- **Tenure -** equal monthly payments as long as at least one borrower lives and continues to occupy the property as a principal residence.
- **Term -** equal monthly payments for a fixed period of months selected.
- **Line of Credit -** unscheduled payments or in installments, at times and in an amount of your choosing until the line of credit is exhausted.
- **Modified Tenure -** combination of line of credit plus scheduled monthly payments for as long as you remain in the home.
- **Modified Term -** combination of line of credit plus monthly payments for a fixed period of months selected by the borrower.

The HECM cost

- **Origination Fee –** borrowers will pay an origination fee to compensate the lender for processing HECM loan. A lender can charge a HECM origination fee up to $2,500 if the borrowers' home is valued at less than $125,000. If the borrowers' home is valued at more than $125,000 lenders can charge 2% of the first $200,000 of the home's value plus 1% of the amount over $200,000. HECM origination fees are capped at $6,000.

- **Closing Costs -** Closing costs from third parties can include an appraisal, title search and insurance, surveys, inspections, recording fees, mortgage taxes, credit checks and other fees.

- **Mortgage Insurance Premium (MIP) –** borrowers will incur a cost for HECM insurance. They can finance the mortgage insurance premium (MIP) as part of the loan. Borrowers will be charged an upfront MIP at closing which will be 2% of the lesser of their home's

[6] Source: the U.S. Department of the Housing and Urban Development.
(web site: http://www.hud.gov/offices/hsg/sfh/hecm/hecmabou.cfm , last scanning by Nov. 19, 2008)

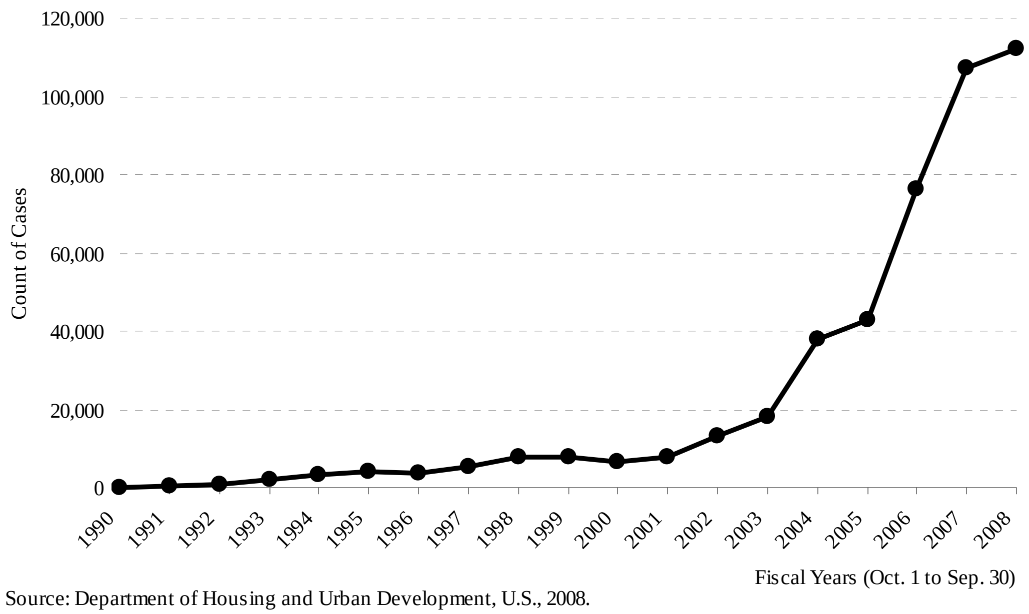
value or the FHA HECM mortgage limit for the borrowers' area. They will also be charged a monthly MIP that equals 0.5% of the mortgage balance. The HECM insurance guarantees that they will receive expected loan advances and that they will not have to repay the loan for as long as they live in their home. The insurance also guarantees that, if the borrowers or their heirs sell the home to repay the loan, the total debt can never be greater than the value of their home.

- **Servicing Fee -** Lenders or their agents provide servicing throughout the life of the HECM. Servicing includes sending borrowers account statements, disbursing loan proceeds and making certain that they keep up with loan requirements such as paying taxes and insurance. HECM lenders may charge a monthly servicing fee of no more than $30 if the loan has an annually adjusting interest rate and $35 if the interest rate adjusts monthly. At loan origination, HECM lenders set aside the servicing fee and deduct the fee from their available funds. Each month the monthly servicing fee is added to their loan balance.
- **Interest Rate -** HECM borrowers can choose an adjustable interest rate or a fixed rate. If one chooses an adjustable interest rate, it may choose to have the interest rate adjust monthly or annually. Lenders may not adjust annually adjusted HECMs by more than 2 percentage points per year and not by more than 5 total percentage points over the life of the loan. FHA does not require interest rate caps on monthly adjusted HECMs.

Overall, during the payment from the creditor in the RM, the debtor receives the money with no repayment of interest or principal. All of them will be contained in the mortgage balance. While the debtor is alive and is still living in the house, there won't be mortgage repayment even though the mortgage balance exceeds the house value. The repayment must be made until the homeowner dies or vacates his home (Reed & Gibler, 2003).

2.2 Review the Reverse Mortgage

The reverse mortgage scheme has been developed in many countries, such as England, America, Canada, Singapore, and Australia. In fact, America is currently the dominant market of RM. In the U.S., as shown in Figure 2.2, participants of RM have grown up substantially in current years even though the market development has proven to be a very slow process. Until 2008, more than 45,700 loans were insured by the federal Home Equity Conversion Mortgage (HECM) insurance program, which account for approximately 90 percent of all reverse mortgages. However, about three-fourth (74%) of the loans were insured recently, in the last four years (FY 2005-2008), since the program was initiated two decades ago (HUD, 2008). The huge increasing proportion of the HECM candidates could be ascribed to the improvement of risk management by the Federal government and advertising the concept of the scheme for eligible homeowners. Nevertheless, the most important reason is the millions of baby boomers reaching retirement age, making the RM and similar financing products gain tremendous popularity (DeRita & Sally, 2006).



Source: Department of Housing and Urban Development, U.S., 2008.

Figure 2.2 HECM cases endorsed in the U.S. from 1990 to 2008

As the aging problem has become a serious challenge in both social economic and political issues, we have seen mounting research regarding the feasibility of RM in their country. The research relating to the potential market for RM could be classified into supply and demand aspects.

2.3 Risk Assessment and Premium Pricing
- from the aspect of lenders

Concerning the development and the concept of the RM, previous research has introduced the scheme of the types of the reverse mortgage and the market development process in the U.S., U.K., and some European countries (Blalock, 1994; Clarissa & Jim, 2002; Klein & Sirmans, 1993; Redfoot, Scholen, Foundation & Brown, 2007). Because of the unusual cash-flow pattern, the reverse mortgage has even more complicated risks compared with conventional mortgages. The mortgage loan comes due and repayable only when the borrower no longer occupies the house. And during the term, the mortgage lender has to pay the borrower money. The relationship of the borrower and the lender is shown in Figure 2.3. This study suggests that the internal risk in RM for lenders—the asset liquidity risk—means that lenders are lending highly liquid asset to borrowers yet getting non-liquidity of the real estate as a repayment.

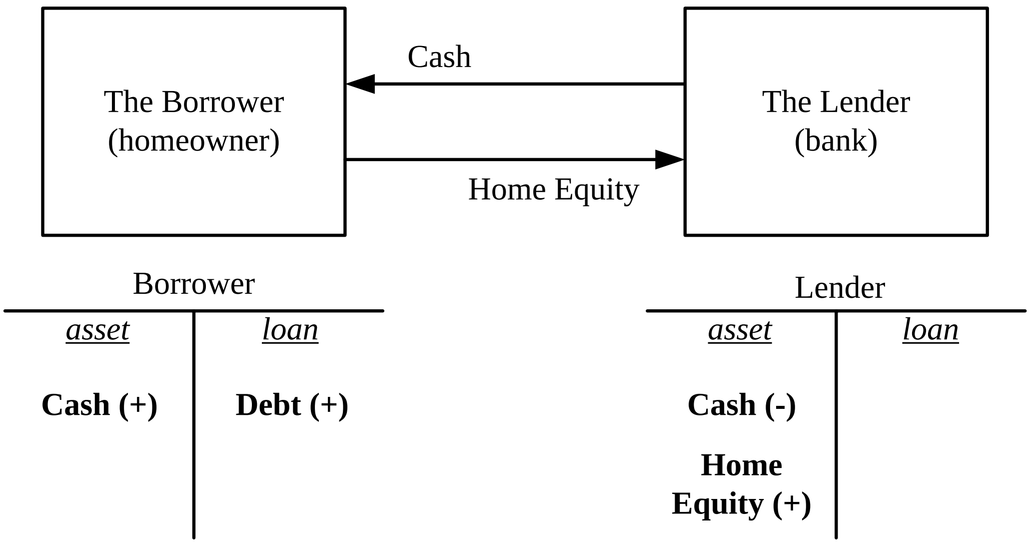


Figure 2.3 The balance sheet of the borrower and the lender

Some studies have also pointed out the potential risks in providing the reverse mortgage loan and had developed theoretical models or provided empirical frameworks that quantify risks inherent in RM (Boehm & Ehrhardt, 1994; Chinloy & Megbolugbe, 1994; Davidoff & Welke, 2005; Klein & Sirmans, 1994; Miceli & Sirmans, 1994; Mitchell & Piggott, 2004; Szymanoski, 1994). According to the research, the risks of supply reverse mortgage for lenders could be collected into five main groups which is the fluctuation of the interest rate risk, the appreciation of the house value risk, the default or prepayment risk, the moral hazard risk, and the longevity risk of the borrower.

Both the interest rate and the house value are the most important factors for lender supplying RM. Since the repayment source of RM is based on the future value of the house, the lender relies on the prospective value of the house and the mortgage interest (Merrill, Finkel & Kutty, 1994). Although there are some research indicating the positive relation between house value and interest rate, it makes the house value grow even as the interest rate rises (Berg, Gu & Lien, 2007; Chen & Lee, 1998; Harris, 1989). The mortgage balance will increase more rapidly than the interest rate rising. Therefore, the mortgage balance will probably exceed the value of a property at the time of repayment. The asset liquidity risk, the uncertain interest rate risk and house value risk are the main reasons why the RM takes little proportion in financial mortgage market.

Y. K. Tse (1995) established a Mortgage Breakeven Level Annuity (MBA) simulation model to analyze the reverse mortgage under a fixed interest rate and a variable interest rate environment. Besides, he also calculated indicators to analyze the risk and potential profit of RM to lenders, including the expected present value of profit and probability of loss. By using Singapore data, the result shows that even under the low property appreciation level it is still attractive for potential borrower to accept the monthly payment annuity in reverse mortgage scenario. In Taiwan, Chung (2007) calculated the potential annuity for RM in Taiwan by using the MBA simulation model. And in order to manage the risk of RM, Cheng (2007) computed the RM insurance premium by adopting an appropriate house-value forecasting model, interest model and mortality rate. Furthermore, Shih (2008) applied the HECM pricing model built by Szymanoski (1994) to calculate the payment which the lender could offer under the balance of the mortgage insurance fund assumption and the income replacement ratio to the potential borrower in Taiwan. But, the research is limited by using the fixed interest rate which is not common in Taiwan and only concerning the mortgage which is provided under the insurance program.

As mention above, the supply aspect of the reverse mortgage has provided the frameworks and measured risks in RM and evaluated it. However, few studies have provided an investigation of the potential market of RM, namely, the study of the aspect of borrowers is less clear in this area.

2.4 Potential Market and the Feature of Borrowers - from the aspect of borrowers

How large is the demand for reverse mortgage market? Both National Center for Home Equity Conversion and the American Association of Retired Persons (AARP) advocated that the number of elderly households could be very large. And the AARP also indicated that the elders who wish to stay in the home but want to get cash from their house could benefit from RM. Rasmussen, Megbolugbe & Morgan (1995) used the 1990 U.S. Census Public Use Microdata Sample to estimate the potential market of RM. The article positively computed that more than 6.7 million households are qualified for RM in 1989, under the assumption that homeowners who are at least 70 years of age have accumulated more than 30,000 dollars in the home equity, and do not raise any mortgage on their house. But the result should have more discussions because the analysis was based on the assumption that reverse mortgage market appears with low transaction costs. However, the study indicated that female-headed households have a large proportion of the reverse mortgage market.

Other research discusses the application of reverse mortgage. In Singapore, although the Central Provident Fund (CPF) system provides a scenario of enforced retirement saving, it is still facing a rapidly “graying” population that may lacks the sufficient income after retirement. Leong (1996) compared several housing-finance schemes and pointed out that of all Home Equity Conversion Scheme (HECS), the Sale-Leaseback (SL) had the greatest potential to resolve the housing finance problem for the elders in Singapore. However, this study believes that SL essentially is the way for elders to sell their houses. It may cause the elders not willing to do so because of the endowment effect[7]. Besides, SL includes the moral hazard and adverse selection risk, which means the buyers have to bargain with the sellers, it is doubtful if the elders have the abilities or are willing to do the bargain.

Chou, Chow & Chi (2006) tried to find out the potential demand of the RM for those middle-aged homeowners in Hong Kong. By using the data from General Housing Survey (GHS), the research implied approximately 11% of middle-aged homeowners in Hong Kong would like to apply for RM. Moreover, the empirical evidence revealed the factors including childlessness, ownership of stocks, bonds or funds had significantly positive relations to household becoming participants. Conversely, the amount of financial asset (excluding their self-occupied properties) had negative influence on them. The finding confirmed the research made by Weinrobe (1987), which indicated that a married couple, both in good health, with children and with a modestly valued house, would less likely be candidates for RM but older couples, single, and childless one could be more likely candidates comparatively.

2.5 Summary

While considerable attention has been paid in the past to research issues related to the reverse mortgage, a literature on issues of the feasibility of the reverse mortgage from both the supplier and demander side have not yet been much explored. In Taiwan, many researchers consider RM as a way to enhance the economic security preparation for elders and have illustrated the urgency to apply RM program for retirees who lack of sufficient income to support their daily life (Cheng, 2007; Chung & Yu, 2006, 2007). However, it should be under the consideration of the whole economic condition of Taiwan. And early attempts at exploiting the potential of the RM in Taiwan are still critically lacking and have emerged very slowly with a scattered way. Hence, this study this study aims to offer a complete analysis by considering both the RM providers and the demanders.

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[7] Thaler (1980) alleged the endowment effect is a hypothesis that people place a higher value on objects they own than objects that they do not. In other words, it will be more painful for people to lose the objects they own than the objects that they do not.