

## **Estimating the Payment of Farmland Reverse Mortgage and Its Policy Considerations**

Wonseok Park\* · Deokho Cho\*\* · Byungkyu Kim\*\*\*

---

**Abstract** : This study aims to estimate the payment of farmland reverse mortgage(FRM) and to explore policy considerations about the restructuring of rural area after the initiation of farmland reverse mortgage. Farmland reverse mortgage provides stable monthly income basement for the welfare of rural elderly by liquidating fixed asset such as farmlands which the elderly in rural area owns. The main results of this study can be summarized as follows. First, FRM model based on Housing Equity Conversion Model, which is suggested by Rodda *et al* (2003), was built. Then, critical factors like farmland value rising rates and interest rates were elaborated, and affordable and proper monthly payment were estimated. 246,982 won, 419,374 won and 757,379 won is given to the borrower at age 65, 75 and 85 respectively with 100,000,000 won value farmland. Second, policy considerations which are necessary for the successful launch of FRM, and restructuring of rural area after launching FRM were discussed. Three policy considerations were proposed. First is about the integrated asset management system for rural elderly people. Second is about the reasonable settlement of corporate farmers system. And third is about the preparations for rural land use planning.

**Keywords** : farmland reverse mortgage, monthly payment, restructuring of rural area, corporate farmers system, integrated asset management system

---

### **1. Introduction**

Currently, Korean government has examined the introduction of farmland reverse mortgage system.

The main causes of introduction of farmland reverse mortgage system are, firstly, to provide stable income basement for rural elderly people in order to cover deficiency caused by social security

---

This work was supported by the Korea Research Foundation Grant funded by the Korean Government (MOEHRD) (KRF-2008-322-B00034).

\* Professor, Department of Real Estate, Daegu University

\*\* Professor, Department of Public Administration, Daegu University

\*\*\* Research Professor, College of Public Administration, Daegu University

networks like national pension and basic old age pension, and secondly, to manage the resources of rural area such as farmlands effectively. Korea has entered into aging society and its speed is very fast. Especially, rural area suffers from the problems of extreme aging such as unstable and insufficient income, deficiency of labor power, and decrease in the vitality of rural society. Farmland reverse mortgage might alleviate these problems by providing stable income stream backed by rural farmland owned by rural elderly people. By the way, introduction of farmland reverse mortgage system brings about inevitable restructuring of rural area, because it is accompanied by the changes of farmland ownership and land use. Therefore, it is valuable to study estimating the amount of monthly payment which can be given to the elderly, and the policy considerations about the effective directions of restructuring of rural area after introduction of farmland reverse mortgage system.

In this context, this paper aims at estimating monthly payment the elderly can receive by liquidating their farmland, and examining major policy considerations about the restructuring of rural area after introduction of farmland reverse mortgage system. This study proceeds as follows.

First, we build FRM model(life-time monthly payment plan model) based on Housing Equity Conversion Model which is suggested by Rodda *et al* (2003). Then, we elaborate critical factors like farmland value rising rates and interest rates, apply those to the life-time monthly payment plan model, and estimate affordable and proper monthly payment.

Second, we discuss policy considerations which are necessary for the successful launch of FRM,

and restructuring of rural area after launching FRM. We propose three policy considerations in this paper. First is about the integrated asset management system for rural elderly people. Second is about the reasonable settlement of corporate farmers system. And third is about the preparations for rural land use planning.

## 2. Actuarial model (Basic model) and estimating PMT

### 1) Actuarial model

Building the FRM actuarial model is the beginning point of the launch of FRM. To estimate pmt(constant monthly payment) which is given to the borrowers (the elderly over age 65) by liquidating farmland that the borrowers own, we apply Home Equity Conversion Mortgage model which is developed by Rodda *et al* (2000; 2003) to FRM. As we see in the equation (1) below, the amount of monthly payment for the farmland reverse mortgage is calculated under the condition that the presented value of total projected mortgage insurance premium(PVMIP) is equal to the present value of expected losses(PVEL).

$$\begin{aligned}
 PVMIP &= UP_0 + \sum_{t=1}^{\pi(a)} \left[ \frac{mip_t P_{a,t}}{(1+i)^t} \right] \\
 &= \sum_{t=1}^{\pi(a)} \left\{ \frac{\max[(OLB_r - L_t)q_{a+t}, 0] \cdot P_{a,t}}{(1+i)^t} \right\} = PVEL \quad (1)
 \end{aligned}$$

PVMIP=Present value of total projected mortgage insurance premium.

PVEL=Present value of expected losses

UP<sub>0</sub>=Up-front mortgage insurance premium at

$t=0$

$T(a)$ =The number of months left for the borrower living until 100years old

$Mip_t$ =Projected monthly mortgage insurance premium at  $t$

$Mip_t=(OLB_t-1+pmt)*m$

$pmt$ =the annuity payment (constant monthly payment),  $m$ =% of monthly mortgage insurance premium

$OLB_t$ =Expected outstanding balance at  $t$

$OLB_t=[(OLB_{t-1}+pmt+mip_t)](1+i)$

$P_{a,t}$ =Loan survival probability for the borrower at age  $a$  living until age  $a+t$

$q_{a+t}$ =the probability of loan termination at age  $a+t$

$i$ =Interest rates(discount rates)

$L_t$ =Expected farmland value at  $t$ ;

$L_t=L_0*(1+g)^t$

$g$ =average farmland rising rate

To apply the basic factors to the model, we elaborate farmland value rising rates using farmland value data from the Ministry of Land, Transport, and Maritime Affairs, and interest rates using data from the Bank of Korea<sup>1)</sup>. To figure out loan survival probability and the loan termination probability, we use mortality rates table extracted from National Statistics Office (NSO) of Korea.

### (1) Estimating interest rates

$Pmt$ (constant monthly payment) is closely related to interest rates. When interest rates get higher,  $pmt$  that the borrower receive gets lower because higher interest rates applied as higher discount rates. Thus applying lower interest rates provides more  $pmt$  to the borrower, and a desirable way to enhance the welfare for the elderly. In addition, applying stable interest rates is also critical to decrease the risk that the lender bears in in the future because unstable interest rates could increase the risk the lender bears in in managing FRM. To find out stable as well as lower interest rates, we consider monthly interest rates for certificate of deposit, national fund, and company fund from 2000 to 2009, and figure out average interest rates per year and stability of each using Crystall Ball predictor.

As we see in the table 1, interest rates for CD is the lowest and most stable among three. Thus we apply interest rates for CD to FRM model to provide more generous  $pmt$  for the welfare of the elderly and decrease the risk that the lender bears in the future.

### (2) Estimating farmland value rising rates

Farmland value rising rates is also critical factor deciding the amount of  $pmt$  because higher

Table 1. Average expected rates of interest and stability

	Certificate of Deposit (91 day)	National Fund (3 years)	Company Fund (3 years)
Annual Average Interest Rates	4.78%	5.25%	6.18%
Standard Deviation	1.13	1.30	1.49
Theil's U	0.9847	1.01	1.01

Note: Theil's U: Theil's U is a statistical measure for the assessment of the forecast quality. If the value of Theil's U is bigger than 1, we cannot use it for forecasting.

Table 2. Estimation of farmland value rising rates

	Dried Field	Rice Field
Farmland Value Rising Rates (mean/ standard deviation)	0.7186/1.8339	0.6183/1.6069
Present Value	100,000,000 won	100,000,000 won
*Future Value	272,480,163 won	236,999,901

\* Future value is the value that the borrower at age 65 reaches 100 years old.

farmland value rising rates produce more pmt in the model. We can enhance the effectiveness of FRM model, and decrease the risk due to inappropriate estimation of farmland rising rates by estimating proper farmland value rising rates. To estimate average farmland value rising rates per year, we use quarterly fluctuation rates of officially assessed land price for farmland which is composed of dried field and rice field from 1989 to 2009.

As we see in the table 2, average quarterly land value rising rate for dried field is 0.7186%, and for rice field is 0.6183%. When we convert it to the annual land value rising rate, annual land value rising rate for the dried field is 2.87% and annual land value rising rate for the rice field is 2.47%. We apply 2.87% as farmland value rising rates to provide more pmt which meets with the goal of FRM, welfare for the elderly (Yeo and Cho, 2010).

**(3) Loan survival probability and loan termination probability**

① Estimating loan survival probability

We use mortality rates table which is released by National Statistics Office (NSO) to estimate loan survival probability. In estimating loan survival probability, we consider 20% as other loan

termination reason except for death. We use information on the number of survivors per 100,000 people in each age group in mortality table to estimate loan survival probability. Loan survival probability can be calculated with the following equation (1) (Cha and Jung, 2008).

$$L_{x,t} = (S_{x,t} / S_{x,0}) 1 + m \tag{1}$$

$L_{x,t}$  = loan survival probability at t

$S_{x,t}$  = the number of survivors since age x until t

x = eligible age for FRM = 65

t = years after the borrower join with FRM

m = loan termination probability except for death = 0.2

Loan survival probability at the time that the borrower join FRM is 1 and loan termination probability at the time the borrower join FRM is 0. Loan survival probability at each age after the borrower joins FRM at 65 years old is calculated as the number of survivors per 100,000 people at each year(t) is divided by the number of survivors per 100,000 people at the year that the borrower joins FRM for the first time(0). Then we applied 1.2 square to consider the loan termination probability due to other reasons except for the death.

## ② Estimating Loan Termination Probability

Annual loan termination probability is calculated by the following equation (2) which using the estimated annual loan survival probability through the equation (1)

$$D_t = L_{x,t} - L_{x,t+1} \quad (2)$$

$D_t$ =loan termination probability at t

Loan termination probability at 65 years is the value that the loan survival probability at 66 years old is subtracted from that at 65 years old.

## (4) The basic factors applied to the model

To estimate monthly payment, basic factors in the table 3 are applied to the actuarial model and trial and error method is used to find out pmt

meets with the condition that PVEL is equal to PVMIP or minimizing the value that  $PVEL < PVMIP$ .

We apply 2% of farmland value as up-front insurance premium, and 0.5% divided by 12months of outstanding balance as monthly insurance premium as HECM does. We estimate the average annual CD interest rate (4.78%) using historical CD interest rates data and add 200 basis points as spread. We also estimate average annual farmland value rising rate (2.87%) using historical farmland value data.

## 2) Expected monthly payment (PMT)

We estimate pmt, PVMIP, PVEL and net liability depending on the borrower's age 65, 75, and 85 when the borrower joins the FRM with 100,000,000

Table 3. Basic factors applied to the actuarial model

Factors	Definition
Up-front mortgage insurance premium	2% of farmland value
Monthly mortgage insurance premium	$(OLB_{t-1} + pmt) * 0.5 / 12$
Monthly Interest Rate	6.78% (certificate of deposit interest rate 4.78% + spread 200 basis points) / 12
Monthly Farmland Value Rising Rate	2.87% / 12
Loan Termination Probability	(Loan survival probability at t) - (Loan survival Probability at t+1)
Loan Survival Probability	(Loan Survival Probability) 1.2

Table 4. Estimates of pmt, PVMIP, PVEL and NL by age (farmland value=100,000,000 Won)

(Unit: KRW)

Age	Up	m	pmt	PVMIP	PVEL	NL
65	2%	0.5%/year	246,982	4,457,185	4,457,137	-48
75	2%	0.5%/year	419,374	3,827,755	3,827,724	-31
85	2%	0.5%/year	757,379	3,094,868	3,094,861	-7

Note:  $L_0=100,000,000$ won,  $g=2.87\%$ ,  $i=6.87\%$

Table 5. Estimates of pmt, PVMIP, PVEL and NL by age (farmland value=200,000,000 Won)

(Unit: KRW)

Age	Up	m	pmt	PVMIP	PVEL	NL
65	2%	0.5%/year	493,964	8,914,369	8,914,274	-95
75	2%	0.5%/year	838,749	7,655,513	7,655,507	-6
85	2%	0.5%/year	1,514,758	6,189,736	6,189,722	-15

Note:  $L_0=200,000,000$  won,  $g=2.87\%$ ,  $i=6.87\%$

Won (about 100,000 U.S \$)value farmland. Table 4. shows pmt, PVMIP, PVEL and NL according to the borrower's age 65, 75, and 85.

As we see in the table 4, 246,982 won, 419,374 won and 757,379 won is given to the borrower at age 65, 75 and 85 respectively every month until she reaches 100 years old or die. As borrower's age gets older, the amount of pmt the borrower receives gets bigger. If land value rising rate gets higher, the amount of money the borrower receives gets bigger although it gets smaller as interest rates get higher. We add 2% spread to the CD interest rates in actuarial model as margin the lender can take. If the government manages the FRM herself, margin could be decrease because the government does not pursue the margin. In this case, pmt increases as interest rate decreases. The table 5. below shows pmt, PVMIP, PVEL and NL according to the borrower's age 65, 75, and 85 with 200,000,000 won value farmland.

### 3. Policy considerations

#### 1) Building integrated asset management system

First policy consideration is about the integrated

asset management system for rural elderly people. It involves the construction and use of database about the information of farmlands and their owners. Integrated asset management system is required to consult management of rural resources owned by rural elderly people effectively, and to implement purchase, lease, subdivision and amalgamation of farmland systematically, accompanied by introduction of farmland reverse mortgage system. Therefore, integrated asset management system can be linked to rural welfare system.

Integrated asset management system could be the basis for FRM management and plan for restructuring the rural area. It includes information on location, size and value of farmland the elderly own, and pmt according to farmland owners' age and value of farmland. This system is useful for the elderly whom are potential borrowers of FRM because the elderly gain the information on the size and value of farmland they have and the amount of monthly payment they can receive with their farmland by visiting and even clicking the integrated asset management system website.

It is also useful for the government agency or private agency who implement and manage FRM because they consult potential borrowers using the system, they figure out which farmland is the potential object of FRM, and the scale of farmland

which will be the object of restructuring in the future through the integrated asset management system. Thus, integrated asset management system is prerequisite condition for the successful and smooth launch of FRM. To build integrated asset management system, the inter-cooperation between Korea Rural Community & Agriculture Corporation managing farmland information system, and the Ministry of Land, Transport, and Maritime Affairs managing Korea Land Information System (KLIS) is required.

Figure 1 is illustration of integrated asset management system we built and manage currently. We built integrated asset management

system with ‘a part of A town data’ using Geographical Information System (GIS). we called “web-based rural area management system”. This system consist of three part. First part is the analysis of the farmland pension, second part is the estimation of monthly payment by target farmland, and third part is the analysis of potential scale of restructuring farmland.

When we click the specific farmland, we can get the information on the address, purpose, size, value of that specific land, and owner's age. We also can estimate the amount of monthly payment the borrower can receive by joining FRM according to his age and value of the farmland. And we also

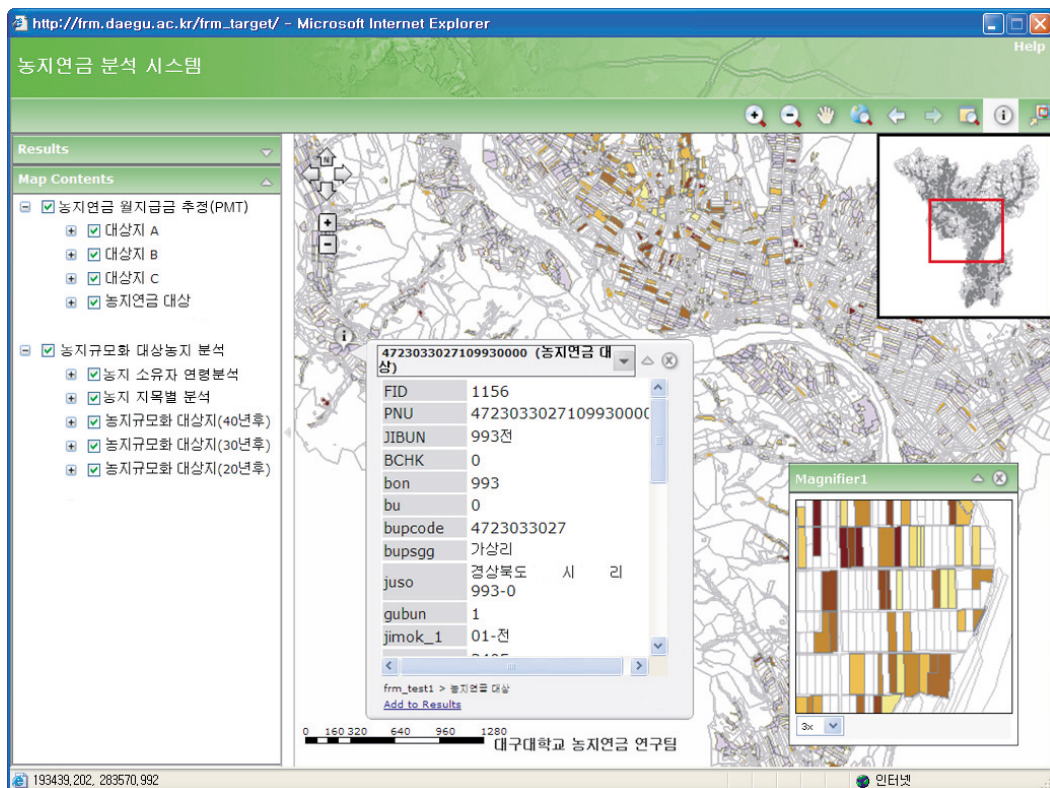


Figure 1. Illustration of integrated asset management system (<http://frm.daegu.ac.kr>)

can forecast the potential scale of restructuring and integrating farmland, which is important information for the public agents who are in charge of rural renewal policy. As the example shows, the system is convenient and useful for both the borrowers (the elderly) and the lender (government agency). Building the integrated asset management system through the whole nation should be accomplished to launch FRM successfully and smoothly.

## 2) Reasonable settlement of corporate farmers system

Second policy consideration is about the reasonable settlement of corporate farmers system. Since land reform in Korea at the end of the 1940s, ‘land-to-the-tiller’ principle has come down. Accordingly until now, domestic agricultural production have been led by small farmers. Therefore most farmlands are held by small farm owners. Tenant farming system is restricted. As a

result, corporate farmers system is not developed.

However, small and family farmers system has already been dismantled, because rural society suffered from aging and hollowing out due to population out flow after the ongoing industrialization. Accordingly small and family farmers system has changed into business farm system. In other words, corporate farmers system will gradually settled. However, corporate farmers system in Korea is still staying in small business farmers system. Thus, massive large capital-led corporate farmers system isn’t launched yet.

But the introduction of farmland reverse mortgage system is inevitably accompanied by the change of farmland ownership allows corporate farmers system to develop. When farmland reverse mortgage system will be introduced, the farmlands held by the elderly who contract farmland reverse mortgage system will be out for sale after the elderly will die. Thus, financial institutions will try to sell their land in order to withdraw principal and interest of farmland mortgage which they hold.

Table 6. Types of agricultural production agents in Korea

	small and family farmers	small business farmers	corporate farmers
time of appearance	after 1940s	after 1970s	after 1990s
lead times	before 1980s	after 1990s	after 2000s
management goals	-half self-sufficiency and half market	-market-oriented	-market-oriented -corporation growth
management size	small	midium	large
management factors	-farmland -labor	-farmland -labor -facility investment	-farmland -labor -facility investment -financial investors
market network	-domenstic	-half domenstic half international	-global

Note: parts of this table is referred by 양병우(2001).



If farmland reverse mortgage system will be developed, the farmland size, which financial institutions will try to sell, also will be increased in size. The new owners of these farmland have resulted in a large companies which have funding abilities. Accordingly corporate farmers system will be developed.

These widespread emergence of corporate farmers system is expected to result in the qualitative changes of ownership structure of corporate farmers system as well as the quantitative growth of corporate farmers system. As shown in Figure 2, types of corporate farmers system vary in size. While private company is small and early stage corporate farmer, institutional investor or corporation is large and well-developed corporate farmer. Until now, the domestic dimension of corporate farmers system have stayed in mostly private companies or any partnership management level.

If farmland ownerships are massively transferred to institutional investors or large-size companies, introduction of new agricultural production

systems being led by large capitalists will expected to start. Therefore, preemptive policy consideration is needed to prepare the massive emergence of corporate farmers system.

To do this, we propose two policy considerations. First, Korean government need to prepare farmland restructuring programs using integrated asset management system. Asset management system may provide information on possible farming size by age and region, and thus farmland restructuring schedules by region can be made through it. These include effective promotion of large size specialist farmers through farmland exchange and integration. Government leads large size specialist farmers to produce region-specific crops which are suitable to their climate and markets, therefore, these system increase productivity. And also, government can plan more stable and predictable policy using contract farming, real option and preliminary pricing system with them. If these systems are promoted successfully, extensive corporate farmers system will appear.

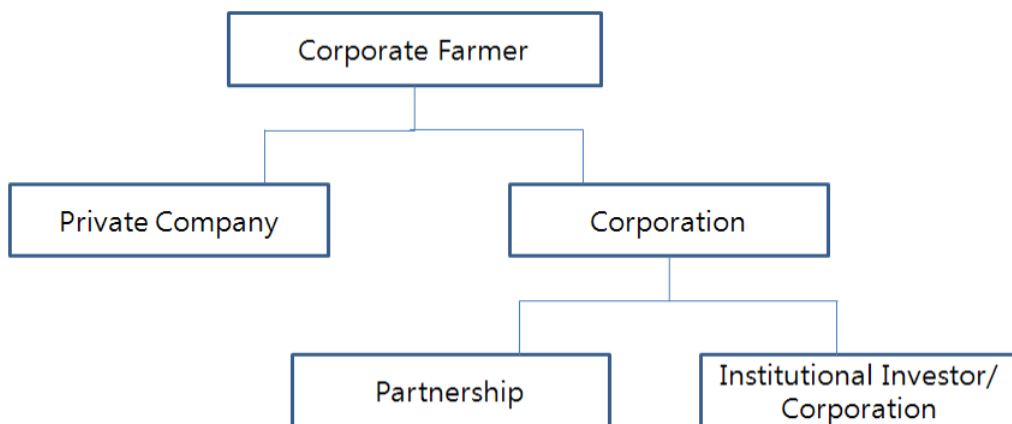


Figure 2. Types of corporate farmer

Second, effective exit strategy for finance companies committing reverse mortgage loan should be prepared. After farmers borrowing reverse mortgage loan died, finance companies will dispose their mortgaged farmlands. When these matters are extensively raised, finance companies may suffer from finding buyers of their mortgage. Thus effective exit strategies for finance companies are very important to activate farmland reverse mortgage system. In this context, promotion of corporate farmers system is a key factor for the exit strategies. Government may consider some alternatives to support buyers such as financial support, tax credit, and the deregulation of current farmland ownership system. And also, initiation of rural land banking system may be considered. Rural land bank might play a key role of exit strategy. These policy considerations will support reasonable settlement of corporate farmers system.

### 3) Preparations for rural land use planning

Third consideration is about the preparations for rural land use planning. Massive change of rural

land is also inevitable because of rapid change of farmland ownership. Rural land use system may be shook by the rapid change of farmland ownership. Therefore, preemptive policy preparations for rural land use planning are also necessary. Figure 3 shows an example of potential scale of restructuring farmland in the near future. Figure 3-1, figure 3-2 and figure 3-3 show potential scale of restructuring farmland of the case region in 2011, 2016 and 2021, respectively. Integrated asset management system enables us to see the change of rural land use after the initiation of farmland reverse mortgage over time.

As shown in figure 3, extensive integration of farmlands after restructuring will be inevitable, and accordingly, massive changes of rural land use will also occur. Namely, the changes of rural land use are closely related to farmland scale-up. Thus, government should prepare new rural land planning systems after restructuring of farmland which means farmland scale-up. These include revision of zoning system, construction code, land use planning process, and so on. In this context, we propose some policy alternatives.

First is the introduction of urban-rural compound

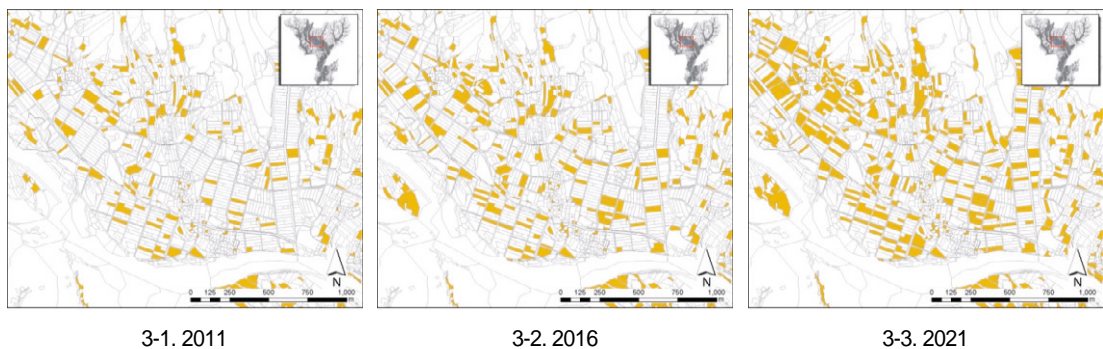


Figure 3. Potential scale of restructuring farmland in the near future

zoning system. Until now, zoning systems of urban and rural land are managed separately. Therefore, urban land uses in the rural zone are restricted. However rural land use after restructuring farmland will be changed. Especially, urban land uses in the farmlands are expanded, because corporate farmers need various facilities which require urban land use. Thus, introduction of urban-rural compound zoning system is worthwhile.

Second is the introduction of new regulation system for large scale farm owners, especially corporate farmers. As we mentioned above, corporate farmers need various facilities such as plants, warehouse, distribution facilities and dormitories. These corporate farmers are rare until now, and their regulation systems are not fully equipped. So, government should prepare new regulation systems including ownership, land use, construction, development, and management.

Third is the provision of new land use system suitable to agricultural restructuring. Restructuring farmland and emergence of corporate farmers will inevitably accompany agricultural restructuring. Namely, integration and change of existing crops, introduction of new crops and new farming process are required. Therefore, current land regulation system can not meet the changing agricultural restructuring. Thus, the provision of new land use system including revision of cadastral system is needed.

## 4. Conclusion

So far, we estimated payment of farmland reverse mortgage and examined policy

considerations about the restructuring of rural area after the initiation of farmland reverse mortgage (FRM). In the result of the initiation of FRM, restructuring rural area could be an inevitable management issue because FRM changes ownership of farmlands and land usage. Therefore, it is necessary to study estimating monthly payment and the policy consideration about the effective directions of restructuring of rural area after introduction of FRM. After estimating the amount of monthly payment the elderly can gain based on FRM annuity actuarial model, the integrated farmland asset management system, the reasonable settlement of corporate farmers' system and the preparations for rural land use planning are discussed.

The main results of this study can be summarized as follows. First, we build FRM model based on Housing Equity Conversion Model which is suggested by Rodda *et al* (2003). Then, we elaborate critical factors like farmland value rising rates and interest rates, apply those to the life-time monthly payment plan model, and estimate affordable and proper monthly payment. Second, we discuss policy considerations which are necessary for the successful launch of FRM, and restructuring of rural area after launching FRM. We propose three policy considerations. First is about the integrated asset management system for rural elderly people. Second is about the reasonable settlement of corporate farmers system. And Third is about the preparations for rural land use planning. In these context, this study is expected to provide several directions for the successful launch of FRM.

## Note

- 1) We estimate the average farmland value rising rates and interest rates using ARIMA with EViews and CB Predictor with Crystal Ball.

## References

- Cha, Ilkwon and Hongju Jung. 2008, The Study on the Pricing Model in Reverse Mortgage Insurance Using Option Theory, *Risk Management* 19(1).
- Cho, Deokho, Seungtyul Ma, Byungkyu Kim, Gyeongsik Jo, and Gabtae Kim, 2008, *The Study on the introduction of Farmland Reverse Mortgage; Final Report*, Korea Rural Community and Agriculture Corporation.
- Kim, Byungkyu, Changhwan Yeo, and Deokho Cho, 2010, The Study on the Launch of Farmland Reverse Mortgage for the Welfare of the Rural Elderly in South Korea: Establishment of Monthly Payment Plan and Risk Analysis, *Paper Presented at 8th WSEAS International Conference on Management, Marketing and Finances*.
- Rodda, David T., Christopher Herbert, and Hin-Kin Lam, 2000, *Evaluation Report of FHA's Home Equity Conversion Mortgage Insurance Demonstration Final Report*, U.S Department of Housing and Urban Development.
- Rodda, David T., Hong Ly, Christopher N. Roger, Corissa Thompson, and Andrew Youn, 2003, *Refinancing Premium, National Loan Limit, and Long-Term Care Premium Waiver for FHA's HECM Program: Final Report*, the U.S Department of Housing and Urban Development.
- Yeo, Changhwan and Deokho Cho. 2010, The Study on the Estimating Farmland Value Rising Rates for the Initiation of Farmland Reverse Mortgage, *Journal of the Korean Regional Development Association* 22(3).
- Lee, Jongeui, 2009, A Study on the Regional Economic Impact of Farmland Reverse Mortgage using Farmers' Net Asset, *Rural Planning* 15(2), pp.69-80.
- 양병우, 2001, 기업농의 성격과 유형에 관한 연구, *농촌사회* 11(1), pp.5-28.
- Correspondence: Byungkyu Kim, Collge of Public Administration, Daegu University, Jillyang, Gyeongsan, Gyeongbuk, 712-714, Korea, Tel: +82-53-850-6381, e-mail: k7333uk5@gmail.com
- 교신: 김병규, 712-714, 경북 경산시 진량읍 대구대학교 행정대학교 전화: 053-850-6381, 이메일: k7333uk5@gmail.com

최초투고일 2010년 10월 1일  
최종접수일 2010년 11월 30일

## 농지 역모기지의 월지급금 추정 및 정책적 시사점

박원석\* · 조덕호\*\* · 김병규\*\*\*

**요약:** 이 논문은 농지 역모기지의 월지급금을 추정하고, 농지 역모기지 도입 이후 농촌지역 원활한 구조조정을 위한 정책적 고려사항들을 검토하는 것을 목적으로 한다. 농지 역모기지는 농촌지역 고령자들에게 농지와 같은 고정자산을 담보로 안정적인 월소득 기반을 제공해 준다. 본 연구의 주요결과는 다음과 같다. 첫째로, Rodda *et al.*(2003)이 제안한 주택지분전환모형에 기초하여 농지 역모기지(FRM)모형을 개발하고, 농지가치 상승률, 이자율 등 모형에 들어가는 변수들을 예측하였으며, 이를 통해 생애 연지급금계획모형을 적용하여 적절한 월지급금을 추정했다. 이에 따라 농지가치가 1억 원일 때, 65세, 75세, 85세 고령자가 받는 월지급금은 각각 46,982원, 419,374원, 757,379원으로 추정되었다. 둘째로, 성공적인 농지 역모기지의 도입과 농촌지역 구조조정을 위한 정책적 고려사항으로 다음 3가지를 제안했다. 첫째는 농촌 고령자를 위한 통합자산관리시스템을 개발해야 하고, 둘째는 기업농체제의 합리적인 정착방안을 마련해야 하고 것, 셋째는 농촌 토지이용계획 수립을 위한 선제적 대응방안을 마련해야 할 것이다.

**주요어:** 농지 역모기지, 월지급금, 농촌지역 구조조정, 기업농 체제, 통합자산관리시스템

---

이 논문은 정부의 재원으로 한국연구재단의 지원을 받아 수행하였음(KRF-2008-322-B00034).

\* 대구대학교 부동산학과 교수

\*\* 대구대학교 행정학과 교수

\*\*\* 대구대학교 행정대학 전임연구원