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Evaluating Borrower's Net Yield in Long-Term Fixed Rate Mortgage Loans in Korea

Seungryul Ma[†]

ABSTRACT

The Korean government has tried to change the structure of residential mortgages in Korea from the short-term variable-rate non-amortizing loans to the long-term fixed-rate amortizing loans since the early 2000's. This study examines the borrower's net yield from that new type of loans, which is defined as the difference between the lender's yield out of the borrower's repayment and the borrower's yield from the expected gain on the portion of housing equity funded by consumer. The main hypothesis tested is that the borrower's net yield will be affected by the time of loan origination and the level of mortgage interest rate charged because the future fluctuations of housing values and that of market interest rates are expected to be key determinants. The results confirm the hypothesis in that borrower's net yields show positive or negative values according to the time of loan start, the level of fixed loan rates, or home regions. The results documented can offer a useful information as to the financial consumers' decision on loan amount and the timing of loan application considering the housing and mortgage market condition, which in turn can provide policy implication to regulating the maximum loan-to-value (LTV) ratio regulations.

Keywords: net yield, long-term amortizing loan, housing value, market interest rate

1. Introduction

The mortgage market in Korea has been expanded rapidly in the 2000s. Most of the mortgage loans consisted of short-term variable rate loans and the entire principal must be paid by the borrower as a lump sum at the loan's maturity date. Related to this, several efforts were made to alleviate the risks which could be caused by the fluctuation of interest rates and borrower's repayment burden under interest-only loan. For the purpose of risk management, Korea government tried to change the loan structure from short-term variable rate loans to long-term

fixed rate loans as well as from interest-only loan to amortizing loans. In 2004, the KHFC(Korea housing finance corporation) launched a new mortgage loan(called as "Bogumjari loan") which was the start of a long-term amortizing fixed rate loan in Korea(Korean Association for Housing Policy Studies, 2016). With this opportunity, borrowers could realize their dream of owning their homes with fraction of the price of their homes(e.g. 30%). Since the sale of the Bogumjari loan, Korea has had the opportunity to build a more advanced housing finance system which provides long-term amortizing fixed rate loans.

There were several researches focusing on the choice problem between fixed rate mortgages(FRM) and adjustable rate mortgages(ARM) as we could see in the Dhillon et al.(1987), Sa-Aadu and Sirmans(1995), Campbell and Cocco(2003), Coulibaly and Li(2009), and Mugerma et al.(2013), etc. Dhillon et al.(1987) confirmed that pricing

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variables play a major role on the selection of FRM or ARM but, borrower's characteristics generally do not affect significantly on the selection of FRM or ARM. Sa-Aadu and Sirmans(1995) confirmed that the selection of short-term or long-term loan period usually depends on borrower's characteristics and at the time that the future interest rates are expected to be increased, the selection of ARM would be reduced. Campbell and Cocco(2003) showed that mortgage contract types could affect borrower's wealth significantly. They showed that FRM could expose borrower's household to wealth risk and ARM could expose borrower's household to income risk. They insisted that inflation-indexed FRM could be a more superior product in the aspect of managing wealth risk and income risk simultaneously.

Coulibaly and Li(2009) confirmed that pricing variables and maturities were important considerations to select the products and risk aversion borrowers prefer FRM. Mugerman et al.(2013) have focused on the behavioral aspects of the decision making mechanism between FRM and ARM and pointed out that the final choice of interest rates between FRM and ARM does not fit well with the findings of the theoretical literature. They confirmed that changes in the short term interest rate might play an important role for the individual decisions.

In Korea, Min et al.(2012) analyzed the factors of mortgage borrower's selection between FRM and ARM and confirmed that interest rate spread, income, and the type of households were main factors of determination. Ahn(2015) also analyzed the factors of mortgage borrower's choice between FRM and ARM. To increase the ratio of FRM, he insisted that it is necessary to recognize the risks due to future fluctuation of interest rates and to narrow the spread between fixed and adjustable rates and to raise the lender's ability regarding interest rate risk management. On the other hand, Ma and Kim(2010) compared the money's worth between FRM and ARM and confirmed that money's worth in FRM was larger than that in ARM in the view point of borrowers.

We could confirm the degree of qualitative improvement in the structure of household's debt due to the introduction of FRM if we check the changed annual ratio of FRMs or ARMs and that of amortizing loans or interest-only loans. According to the BOK(Bank of Korea), the ratio of FRMs has increased from 0.5% at the end of 2010 to 44.6% at the end of third quarter of 2017 and the ratio of amortizing loans has increased from 6.4%

at the end of 2010 to 49.1% at the end of third quarter of 2017. These phenomenon shows that the structure of household debt is improved greatly through the introduction of long-term amortizing fixed rate loans.

However, due to the continued low interest rates since global financial crisis in 2008, it appears that the size of household debt has sharply increased. As of the end of second quarter of 2017, overall household debt in Korea was 1,388 trillion won and 54% of debt consisted of mortgage loans. Under this circumstance, the government is trying to lower the speed of ever increasing amount of debt through toughening the regulations of LTV and DTI ratios and helping borrowers to maintain the capability to repay their debts by using long-term amortizing fixed rate loans(Ministry of Strategy and Finance(2017)).

Kang and Lee(2012) found that the amount of loan would increase if the future housing market was expected to be positive by analyzing borrower's characteristics who used long term mortgage loans. They showed that the borrowers who used mortgage loans under the expectation that the future housing prices would be increased steadily could have financially negative result according to the market environment. Kim and Lee(2016) analyzed borrower's characteristics regarding repayment methods and showed that the selection of long-term amortizing method was mainly influenced by the level of borrower's income and interest rate. Moon and Kim(2015) analyzed the effect of LTV regulation on the banking institutional soundness and showed that tightening the LTV regulation could aggravate the soundness of financial institutions unlike policy maker's intention. Choi and Park(2015) studied whether macro-prudential tools such as LTV and DTI ratios served to achieve micro-prudential purposes to prevent default risk at an individual mortgage level and found that the transition from interest-only bullet loans to amortizing loans and from variable rate loans to fixed rate loans tended to lower the default rate.

The previous studies related to mortgage loans mainly focused on the borrower's choice between fixed rates and variable rates, analysis on characteristic of borrowers in mortgage loans, determinants of demand in mortgage loans, and the effect of LTV or DTI regulations on the housing finance market. Beside these previous studies, judging from borrower's viewpoint, one of the most useful information will be borrower's yield in mortgage loans. Nevertheless, it is difficult to find an analysis which dealt with the subject of borrower's yield in mortgage

loans. So, in this analysis, we are going to conduct an analysis to confirm the borrower's net yield focusing on the borrowers who use long-term amortizing fixed rate loans.

Because borrower's net yield will be affected by the fluctuation of future housing values and market interest rates, borrower's net yield on housing asset will be affected by the time of loan origination and the level of fixed loan rate determined at that time loan was originated. In addition, since housing prices will vary from region to region, the borrower's net yield will also depend on residential area. It is expected that the results of this analysis could give a useful information to the borrowers to make a decision of loan amount and the timing of applying for a loan. In the aspect of housing policy, the results of this analysis could be used for improving the system related to LTV regulation.

The remainder of this paper consisted as follows: section 2 presents an overview of mortgage loans we want to analyze, section 3 presents a methodology and data we use in our analysis, section 4 reports the results of the analysis, and section 5 presents our conclusions.

II. Overview of Mortgage Loans

A. Mortgage Loans for Analysis

We will analyze borrowers' yields according to the home regions and time of loan origination. In this paper, we focused on Bogeumjari loans, the most representative long term fixed rate mortgage loans which have more

than 10 year maturity in Korea. Table 1 shows a brief information about eligibility to apply for Bogeumjari loans.

B. Cash Flow of Nest Loans

In this analysis, we focused on the borrowers who selected CPM as repayment method in nest loans. The cash flow of CPM in nest loans is as follows:

$$I_t = L_{t-1} \times i, \quad (1)$$

$$A_t = P - I_t, \quad (2)$$

$$L_t = L_{t-1} - A_t \quad (3)$$

Where, I_t : interest owed in period t , L_t : outstanding loan balance after the period t payment has been made, i : fixed interest rate, A_t : principal paid down in the period t payment, P : amount of the loan payment.

The amount of loan payment ($P_t = P$) in the CPM can be calculated using the annuity formula as below (Geltner and Miller, 2001).

$$P = \frac{L_0}{\sum_{t=1}^N (1+i)^{-t}} \quad (4)$$

$$= \frac{L_0}{\left\{ \frac{1}{i} \left[1 - \frac{1}{(1+i)^N} \right] \right\}}$$

Where, N : the period until maturity

Table 1. Outline of Bogeumjari loans

Standards for Application	<ul style="list-style-type: none"> • Non-homeowner or homeowner who own a home temporarily • Income of married couple less than 70 million won
Interest Rate	<ul style="list-style-type: none"> • Fixed rate for the entire period
Target Housing	<ul style="list-style-type: none"> • Houses involved on record and valued below 600 million won
Support Limit	<ul style="list-style-type: none"> • Within 70% of housing price but, applied differently by home regions
Loan Period	<ul style="list-style-type: none"> • 10-year, 15- year, 20-year, or 30-year
Repayment Method	<ul style="list-style-type: none"> • Constant-payment mortgage (CPM), • Constant-amortization mortgage (CAM) • Graduated payment mortgage (GPM) * Not allow interest-only periods

Source: Korea Housing Finance Corporation (<https://www.hf.go.kr>)

III. Methodology and Data

A. Evaluating Borrower's Net Yields

To calculate borrower's net yield(y) on the portion of housing equity which was funded by Bogeumjari loan, we evaluated ① borrower's yield($y^{(*)}$) on the portion of housing equity which was funded by loan and then evaluated ② lender's yield($y^{(**)}$) on the amount of borrower's repayment using trial and error method respectively. After evaluating the values of $y^{(*)}$ and $y^{(**)}$, we can evaluate the borrower's net yield(y) on the portion of housing equity which was funded by Bogeumjari loan. In this analysis, we evaluated borrower's net yield(y) by subtracting lender's yield on the amount of borrower's repayment($y^{(**)}$) from borrower's yield caused by the increase in the price on the portion of housing equity funded by loan($y^{(*)}$).

B. Borrower's Yield on Housing Equity

First, we could evaluate borrower's yield (y_n^*) at time $t=n$ caused by the increase in the price on the portion of housing equity which was funded by Bogeumjari loan using the equation below.

$$E_0 = E_n / (1 + y_n^*)^n \quad (5)$$

$$\Leftrightarrow (H_0 \times LTV_0) = (H_n \times LTV_0) / (1 + y_n^*)^n$$

But, $H_n = H_0 \Pi_{t=1}^n (1 + g_t)$

Where, E_0 : portion of housing equity which was funded by Bogeumjari loan at $t=0$ (i. e., $E_0 = H_0 \times LTV_0$), E_n : portion of housing equity which was funded by Bogeumjari loan evaluated at $t=n$ (i. e., $E_n = H_n \times LTV_0$), H_0 : initial housing value at $t=0$, H_n : housing value at $t=n$, LTV_0 : loan to value ratio at $t=0$, y_n^* : borrower's yield (or the internal rate of return) on housing equity evaluated at $t=n$, g_t : housing appreciation rate at t .

C. Lender's Yield from Borrower's Repayment

Second, we could evaluate lender's yield (y_n^{**}) derived from the amount of borrower's repayment at $t=n$ using

the equation below.

$$L_0 = (FVCP_n + L_n) / (1 + y_n^{**})^n \quad (6)$$

But, $FVCP_n = \sum_{t=1}^{n-1} [P \Pi_{a=t}^{n-1} (1 + r_a)] + P$

Where, L_0 : the initial loan balance (i. e., $L_0 = H_0 \times LTV_0$), $FVCP_n$: cumulative future value of repayment at $t=n$, L_n : outstanding loan balance at $t=n$, y_n^{**} : lender's yield (or the internal rate of return) evaluated at $t=n$, r_a : risk-free interest rate at $t=\alpha$ ¹.

D. Borrower's Net Yield

We can see that the value of E_0 is exactly equal to the initial loan balance (L_0), that is $E_0 = (H_0 \times LTV_0) = L_0$. But, the value of E_n is expected to be totally different from the combined value of cumulative future value of repayment and outstanding loan balance at $t=n$ ($FVCP_n + L_n$). That means $E_n \neq (FVCP_n + L_n)$.

So, if we could evaluate the borrower's yield caused by the increase in the price on housing equity (y_n^*) and lender's yield derived from the amount of borrower's repayment (y_n^{**}) respectively, we could get borrower's net yield (y_n) on the portion of housing equity which was funded by Bogeumjari loan as follows.

$$y_n = y_n^* - y_n^{**} \quad (7)$$

We can see that if $y_n > 0$, then the borrower realizes net profit from using long-term amortizing fixed rate loan. On the contrary, if $y_n < 0$, then the borrower realizes net loss from using amortizing loan.

E. Data

Because the borrower's yield will be affected by the fluctuation of future housing values or market interest

¹ In this analysis, because we analyse long-term mortgage loans, we used risk-free interest rate in the calculation of future value of long term cash flow to avoid the application of subjective risk premium in the course of calculation. If we consider the aspect of risk premium, the value of borrower's net yield could be relatively lowered than our analysis.

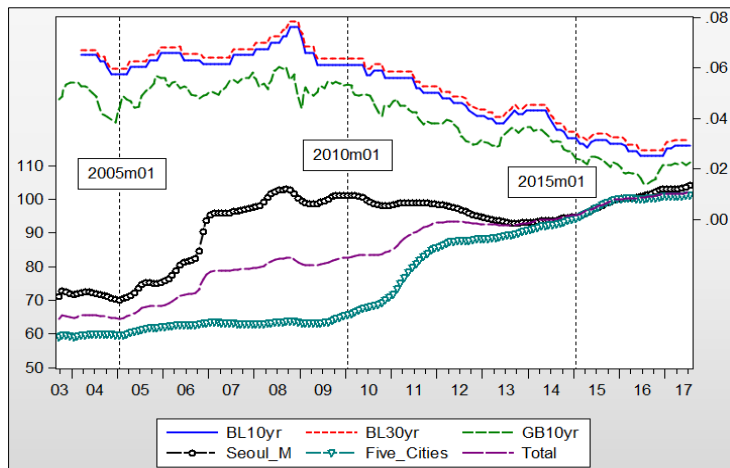


Figure 1. Trends of Interest Rates and Housing Prices

(Note) 1. BL10yr: 10-year nest loan rate, BL30yr: 30-year nest loan rate, GB10yr: 10-year government bond yield
 2. Seoul_M: housing price in Seoul metropolitan area, Five_Cities: housing price in five big cities, Total: housing price in whole country.

rates, the borrower's yield in Bogeumjari loan will be affected by the time of loan origination or the level of fixed loan rate determined at the time loan was originated. The borrower's yield also will vary with home region because the housing values vary by regions even though the condition of mortgage loan contract such as the level of loan rates is same. In this analysis, we classified borrower's home region into three areas as follows.

- ① Total (whole country)
- ② Seoul Metropolitan (Seoul, Incheon, and Gyeonggi)
- ③ Five Big Cities (Busan, Daegu, Daejeon, Gwangju, and Ulsan)

As proxy variables of housing prices, we used regional housing price indexes from KB Kookmin Bank. And then, we used the yield data of 10-year government bond as a proxy variable of risk-free interest rate. Figure 1 represents the trends of interest rates and housing prices.

The rate of Bogeumjari loan was higher than that of government bond when we compared it during the same time period. Between 10-year and 30-year nest loans, the yield of 30-year was a little higher than that of 10-year Bogeumjari loan².

² The maturity of Bogeumjari loan is classified into 10-year, 15-year, 20-year, or 30-year. But, we analyzed only 10-year and 30-year loans in this paper because KHFC has not released the time series of 15-year and 20-year loan rates since its introduction. Although we did not analyze the effect of 15-year or 20-year Bogeumjari loans, we think that there would be no bias in the interpretation of the results in this paper.

F. Level of Repayments According to the Time of Loan Start and Loan Period

Considering the distinctively different characteristics of time series, we assumed that the loan started at January 2005, January 2010, or January 2015 respectively in 10-year Bogeumjari loan. Regarding the reason why we assumed the time of loan start like this, we explained more concretely in Table 2. On the other hand, in 30-year Bogeumjari loan, we assumed that the loan started at January 2005 or January 2015 respectively.

If we assume that all the initial housing prices are 100 million won regardless of the time of loan start or loan maturity, the amount of monthly repayments in loans according to the time of loan start, maturities, or the LTV ratios will be as in Table 3.

G. Forecasting Model of Stochastic Variables

1. Stochastic Models for Forecasting Housing Prices

In the long-term amortizing loan, it is necessary to forecast long-term stochastic processes of housing prices to calculate borrower's net yield. To generate future processes of housing prices through Monte Carlo simulation, we used GBM(Geometric Brownian Motion) model in our analysis. We can generate housing price at $t + \Delta t$

Table 2. Beginning of Loan Period and Maturity in Bogeumjari loans

Loan Start	10-year Maturity	30-year Maturity	Characteristics of time series
01. 2005	① 01.2005 -12.2014	④ 01.2005 -12.2034	After 01. 2005, Seoul metropolitan area showed continuous and fast pace of increase in the housing prices but, 5 big cities showed little change
01. 2010	② 01.2010 -12.2019		After 01. 2010, Seoul metropolitan area showed little change or decrease but, 5 big cities showed continuous and fast pace of increase in the housing prices
01. 2015	③ 01.2015 -12.2024	⑤ 01.2015 -12.2044	After 01. 2015, both Seoul metropolitan area and 5 big cities show continuous increase in the housing prices

(Note) When we analyzed the borrower’s net yields, we used forecasted values of housing prices after 11.2017 in addition to the original data from 01.2005 to 10.2017.

Table 3. Amount of Monthly Repayments in Bogeumjari loans (unit: won)

Maturity		10-year			30-year	
Time of Loan Start		01.2005	01.2010	01.2015	01.2005	01.2015
Fixed Loan Rates		5.75%	6.10%	3.20%	5.95%	3.45%
Monthly Repayments	LTV: 70%	768,385	780,663	682,407	417,438	312,381
	LTV: 60%	659,615	669,140	584,920	357,804	267,755
	LTV: 50%	548,846	557,617	487,433	298,170	223,129
	LTV: 40%	439,077	446,093	389,947	238,536	178,503
	LTV: 30%	329,308	334,570	292,460	178,902	133,877

(Note) 1. Initial housing prices: 100 million won
2. Repayment method: CPM(not allow interest-only periods)

Table 4. Results of Parameter Estimation for the GBM Model (09.2003-10.2017)

Region	μ_H	σ_H
Total	3.36	1.71
Seoul Metropolitan	2.93	2.77
Five Big Cities	3.91	1.62

(Note) 1. Seoul Metropolitan area: Seoul, Incheon, and Gyeonggi area
2. Five Big Cities: Busan, Daegu, Daejeon, Gwangju, and Ulsan

using the GBM formula as below(Charnes, 2012).

$$H_{t+\Delta t} = H_t \cdot \exp\left[\left(\mu_H - \frac{\sigma_H^2}{2}\right)\Delta t + \sigma_H \varepsilon_t \sqrt{\Delta t}\right] \quad (8)$$

Where, H_t : housing price at time t , μ_H : the average growth rate of housing price stated on an annual basis, σ_H : the volatility of the housing price, ε_t : a standard normal random variate.

Table 4 shows the results of parameter estimation for the GBM model using regional housing prices data from September 2003 to October 2017.

As we can see in Table 4, the average growth rate of housing price(μ_H) in five big cities was larger than

that in Seoul metropolitan area. But, the volatility of the housing price(σ_H) in five big cities was smaller than that in Seoul metropolitan area³.

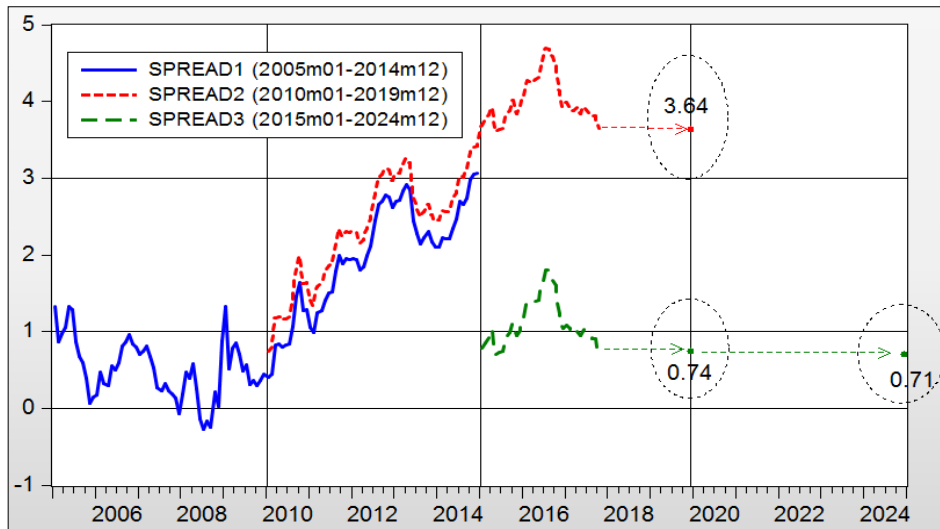
2. Stochastic Models for Forecasting Interest Rates

We used Vasicek model in our analysis to generate future processes of interest rates through Monte Carlo

³ The estimated parameters in Table 4 could be changed if we use different period of time series. Plus, although the magnitude of volatility in Seoul Metropolitan area was estimated larger than Five Big Cities in our analysis, but in the future, the magnitude might be reversed because the past data does not always explain the future situation similarly.

Table 5. Parameter Estimation for the Vasicek Model (09.2003-10.2017)

	α	θ	σ
10-year government bond yield	0.107	2.514	0.701

**Figure 2.** Spreads between Fixed Loan Rates and Market Interest Rates (unit: %)

simulation. We can generate future stochastic processes of interest rates using the Vasicek formular as below.

$$\Delta i_t = \alpha(\theta - i_t)\Delta t + \varepsilon_t \sigma \sqrt{\Delta t} \quad (9)$$

Where, i_t : interest rate at time t ($\Delta i_t = i_{t+1} - i_t$), α : speed of mean reversion, θ : mean reverting level, σ : volatility of the interest rate, ε_t : a standard normal random variate.

Table 5 shows the estimated parameters of Vasicek model by using the maximum likelihood estimation method. We used the yield data of 10-year government bond from September 2003 to October 2017.

IV. Results of Analysis

A. Differences between Fixed Loan Rates in Bogeunjari loans and Market Interest Rates

Borrower's net yields will vary according to the resi-

dential area or the time of loan start due to the fluctuations of housing prices and interest rates. As we can see in the Table 5, the borrower who has applied to 10-year Bogeunjari loan which began from 01.2005 paid back all debts to the lender at loan rate of fixed 5.75% during 10 years and the borrower who has applied to 10-year nest loan which began from 01.2010 would pay back all debts to the lender at loan rate of fixed 6.10% until 12.2019.

In Figure 2, SPREAD 1 represents the spreads between loan rate of fixed 5.75% and 10-year government bond yields from 01.2005 to 12.2014. SPREAD 2 represents the spreads between loan rate of fixed 6.10% and 10-year government bond yields from 01.2010 to 12.2019. SPREAD 3 represents the spreads between loan rate of fixed 3.20% and 10-year government bond yields from 01.2015 to 12.2024.

In Figure 2, the spreads after 11.2017 were generated by using forecasted yields of 10-year government bond. On this occasion, we used the median values on the probability distribution of forecasted future yields of 10-year government bond at each time period created by 30,000 trials of Monte Carlo simulation⁴.

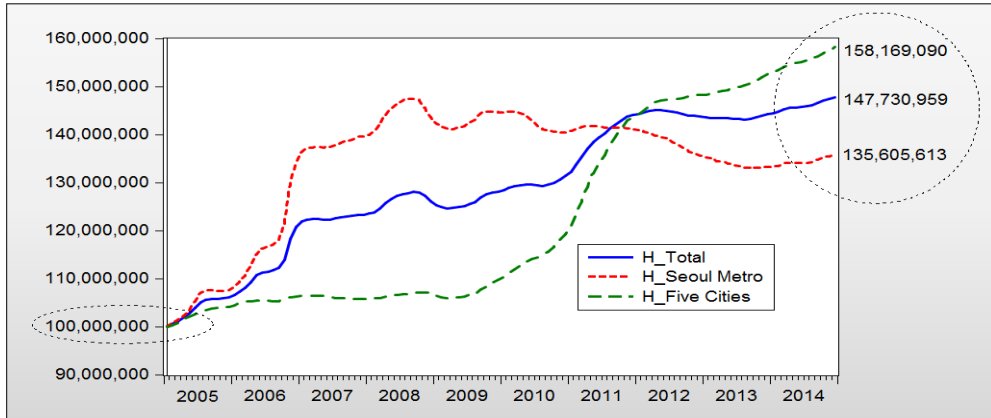


Figure 3. Regional Housing Prices (01.2005 to 12.2014)

As we could confirm in Figure 2, the borrowers who applied to 10-year nest loan which began from 01.2005 experienced the situation that the spreads(SPREAD 1) had increased until loans were terminated due to decreased market interest rates after global financial crisis. The SPREAD 1 was about 3% at 12.2014, the end of the loan period. The borrowers who have applied to 10-year nest loan which began from 01.2010 have experienced the situation that the spreads(SPREAD 2) were larger than SPREAD 1 and showed that the spread would be about 3.64% at 12.2019, the end of the loan period. On the other hand, the borrowers who have applied to 10-year nest loan which began from 01.2015 showed relatively lower spreads(SPREAD 3) compared to SPREAD 1 or SPREAD 2. SPREAD 3 showed about 1% of spread for most of the loan period and showed that the forecasted spread would be only about 0.71% at 12.2024, the end of the loan period.

The results of above spread analysis tells us that the borrowers who have applied to Bogeumjari loan from 01.2005 to 01.2010 could have net loss($y < 0$) because they have selected higher fixed loan rates which failed to reflect future trend of lower market interest rates. On the contrary, the borrowers who have applied to nest loan after 01.2015 could have net profit($y > 0$) if the future market interest rates shows upward trend continuously due to lower fixed loan rates they have selected. Of course, whether the borrower's net yield would become a neg-

ative(-) value or a positive(+) value would also depend on the future trend of housing prices until the loan is terminated.

B. Housing Appreciation Rates

If the borrowers have applied to 10-year nest loans in 01.2005, the loan period ended in 12.2014. In this case, if we assume that the initial housing prices were all the same, 100 million won, regardless of residential area and then the regional housing price indexes of past periods were utilized, we could generate the trends of housing prices from 01.2005 to 12.2014. We could also confirm the variability of housing prices by region.

Figure 3 shows the trends of regional housing prices from 01.2005 to 12.2014 when the initial housing prices in 01.2005 were all assumed 100 million won regardless of region. In 12.2014, we could confirm that the housing price of whole country was 148 million won, Seoul metropolitan area was 136 million won, and 5 big cities was 158 million won respectively. So, if we assume that all the borrowers borrowed the same amount of money from 10-year Bogeumjari loans at the same time regardless of residential area, we could guess that the borrowers whose home were located in Seoul metropolitan area would have lower profits than the borrowers whose home were located in 5 big cities.

If the borrowers have applied to 10-year loans in 01.2010, the loan period ends in 12.2019. In this case, if we assume that the initial housing prices were all the

⁴ Refer to Charnes(2012) for the details of Monte Carlo simulation method.

same, 100 million won, regardless of residential area and then the regional housing price indexes were utilized, we could generate the trends of housing prices from 01.2010 to 12.2019. We could also confirm the variability of housing prices by region.

However, because we could only use data until 10.2017, to forecast future housing prices after 11.2017, we conducted Monte Carlo simulation by using GBM model. The housing prices after 11.2017 in Figure 4 show the median values on the probability distribution of forecasted

future housing prices at each time period created by 30,000 trials of Monte Carlo simulation.

On the other hand, if the borrowers have applied to 10-year loans in 01.2015, the loan period ends in 12.2024. In this case, if we assume that the initial housing prices were all the same, 100 million won, regardless of residential area and then the regional housing price indexes were utilized, we could generate the trends of housing prices from 01.2015 to 12.2024. We could also confirm the variability of housing prices by region. The forecasted

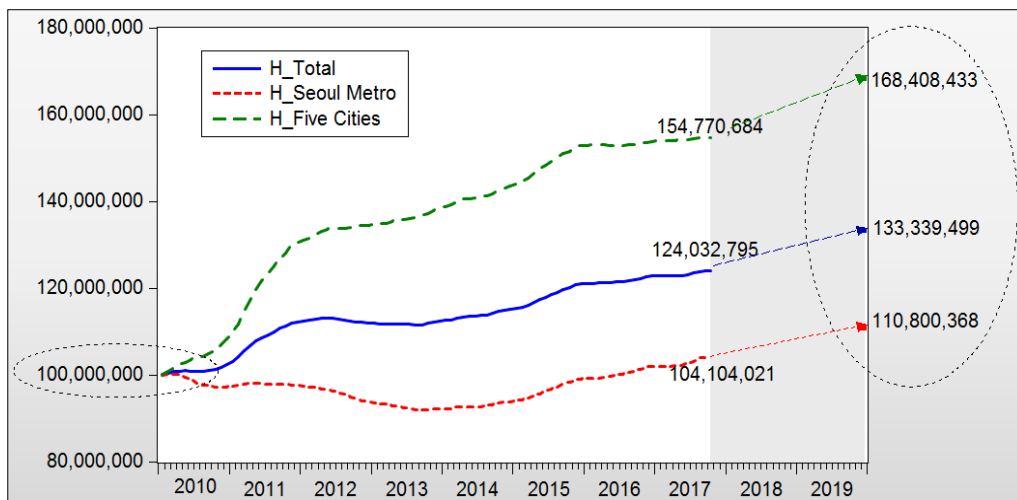


Figure 4. Regional Housing Prices (01.2010 to 12.2019)

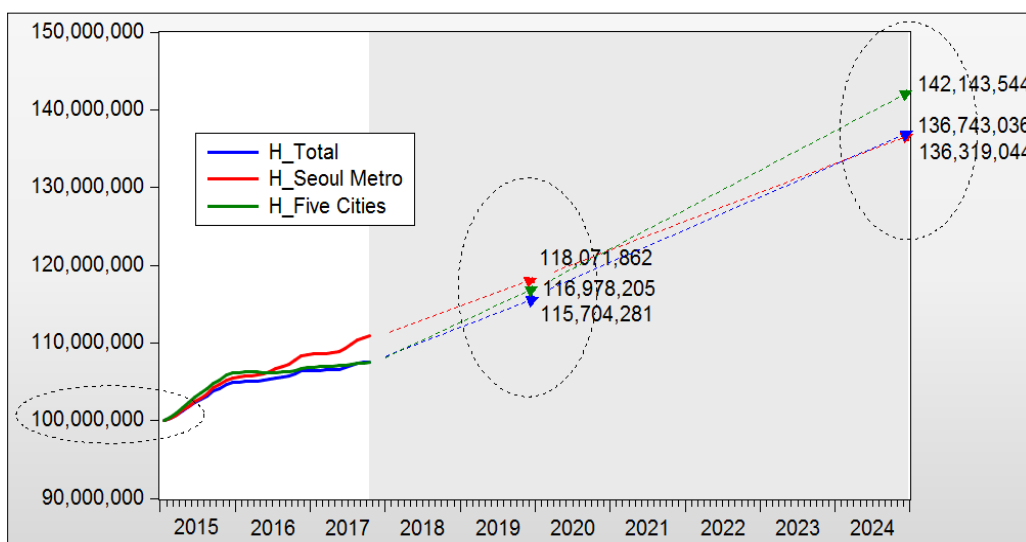


Figure 5. Regional Housing Prices (01.2015 to 12.2024)

housing prices from 11.2017 to 12.2024 in Figure 5 were median values on the probability distributions of future housing prices which were generated by Monte Carlo simulation.

If we compared Figure 3, Figure 4, and Figure 5 each other, we could confirm that the housing prices at the time the loan is terminated would show totally different values according to the circumstance of regional housing market.

When we compared the housing prices at the moment the loan is terminated between Seoul metropolitan area and 5 big cities, the largest price gap appeared with the borrowers who have applied in 01.2010 and the smallest price gap appeared with the borrowers who have applied in 01.2015. From this fact, we could expect that the borrower's net yield would vary according to the time of loans start as well as home regions.

C. Analyzing Borrower's Net Yield

1. Borrower's Net Yield When the Loan Period is 10-Years

As we discussed in Table 2, we set up the time of loan start was ①01.2005, ②01.2010, or ③01.2015 respectively when we assumed the loan period is 10-years. It is expected that the borrower's net yield would appear differently due to different trend of regional housing prices.

To consider the different effects of residential area on the borrower's net yield, we classified home region into 3 groups (Total, Seoul Metropolitan area, and 5 big cities). First, Table 6 shows the results of analyzed borrowers' net yields in the whole country area(Total).

As we can see in Table 6, the borrowers who applied 10-year Bogeumjari loan in 01.2005 or 01.2010 showed negative(-) net yield, -1.43% and -1.82% respectively. We could say that this results appeared because the amount of lender's yield(y^{**}) from borrower's repayment was larger than borrower's yield(y^*) on the portion of housing equity at loan maturity. This phenomenon was mainly resulting from relatively high level of repayments the borrowers have paid continuously during 10 years due to higher fixed loan rates(5.75% and 6.10%).

On the contrary, the borrowers who applied 10-year Bogeumjari loan in 01.2015 showed positive(+) net yield, 0.39%. This results appeared because the estimated amount of y^{**} was smaller than that of y^* and this phenomenon was mainly resulting from relatively low level of repayments the borrowers have paid due to lower fixed loan rates(3.20%).

Second, Table 7 shows the results of analyzed borrowers' net yields on the portion of housing equities which were funded by 10-year Bogeumjari loan in the Seoul metropolitan area and five big cities.

According to the results in Table 7, the borrower's net yields in Seoul metropolitan area were similar to

Table 6. Borrowers' Net Yields (Target Region: Total)

(unit: 1,000 won)

	Time of Loan Start		
	①01.2005	②01.2010	③01.2015
Initial loan balance: $L_0 (= H_0 \times LTV_0 = E_0)$	70,000	70,000	70,000
Housing equity purchased by loan evaluated at $t=n$: E_n	103,411	93,363	95,745
Cummulative repayments plus loan balance at $t=n$: $FVCP_n + L_n$	119,264	111,872	92,110
Borrower's yield on the housing equity: y^*	3.91%	2.88%	3.14%
Lender's yield from borrower's repayment: y^{**}	5.34%	4.70%	2.75%
Borrowers' net yield on the housing equity: y	-1.43%	-1.82%	0.39%

- (Note) 1. All the initial housing prices were assumed 100 million won irrespective of loan start and all the LTV_0 were assumed 70% (hereafter, all the assumptions are the same)
 2. We used actual data of housing prices and discount rates if the time of loan start was 01.2005. But, if the time of loan start was 01.2010 or 01.2015 then we used forecasted values when we use the values after 11.2017
 3. We used median values on the probability distribution of future forecasted values which were generated by 30,000 trial Monte Carlo simulation
 4. The LTV level has no effect on the borrower's yield (y_n) but, it has a proportional effect on the future housing equity ($H_n \times LTV_n$), cummulative future value of repayment ($FVCP_n$), or outstanding loan balance (L_n)
 5. All the results were estimated at loan maturity($t=n=120$)
 6. Outstanding loan balances at $t=n$ are all zero($L_n=0$)

the results in whole country in Table 6. The borrowers who applied to 10-year loans in 01.2005 or 01.2010 showed negative(-) net yield, -2.29% and -3.67% respectively and the borrowers who applied to the loans in 01.2015 showed positive(+) net yield, 0.36%. In this case, the amount of net loss that the borrowers in Seoul metropolitan area could suffer was relatively larger than the borrowers in whole country. This phenomenon has appeared because the cumulative amount of repayments was exactly the same regardless of residential area but, at loan maturity, the housing price in whole country was relatively higher than Seoul metropolitan area. On the other hand, the borrowers who applied to 10-year loans in 01.2015 showed similar net yields because the evaluated housing prices at loan maturity were similar to each other.

On the contrary, the borrower's net yields in five big cities were different from those in whole country or Seoul metropolitan area. In this case, the borrowers who applied to 10-year loans in 01.2010 or 01.2015 showed positive(+) net yield at loan maturity, 0.52% and 0.77% respectively. This phenomenon was resulting from the fact that the housing price in five big cities was relatively higher than that in Seoul metropolitan or whole country at loan maturity.

2. Borrower's Net Yield When the Loan Period is 30-Years

As we discussed earlier, when we assumed the loan period is 30-years, we set up the time of loan start was ④01.2005 or ⑤01.2015 respectively. To confirm the borrower's net yields which could be changed by the passage of time, we separately evaluated the borrower's net yields at $t=120, 240$, or 360 . In this case, to consider the different effects of home regions on the borrower's net yield, we also classified home regions into 3 groups.

First, Table 8 shows the results of analyzed borrowers' net yields which were funded by 30-year loans when the loan started in 01.2005.

When we assumed the beginning of loan period was 01.2005, the borrower's net yields which were evaluated at $t=120, 240$, or 360 showed -1.87%, -1.49%, or -0.99% respectively in whole country. As we can see in Table 8, the borrower's net yields were increased by the passage of time. In previous analysis, we could confirm that the borrower's net yield at $t=120$ was -1.43% when the borrower applied to 10-year nest loans in 01.2005. Therefore, if we compare the values at $t=120$, we could confirm that the net yield of 10-year Bogeumjari loan was relatively

Table 7. Borrowers' Net Yields (Seoul Metropolitan and Five Big Cities) (unit: 1,000 won)

Loan Start	Seoul Metropolitan			Five Big Cities		
	①01.2005	②01.2010	③01.2015	①01.2005	②01.2010	③01.2015
$L_0 = E_0$	70,000	70,000	70,000	70,000	70,000	70,000
E_n	94,923	77,612	95,530	110,718	117,881	99,469
$FVCP_n + L_n$	119,264	111,872	92,110	119,264	111,872	92,110
y^*	3.05%	1.03%	3.11%	4.59%	5.22%	3.52%
y^{**}	5.34%	4.70%	2.75%	5.34%	4.70%	2.75%
y	-2.29%	-3.67%	0.36%	-0.75%	0.52%	0.77%

Table 8. Borrowers' Net Yields (Time of Loan Start : 01.2005) (unit: 1,000 won)

	Total			Seoul Metropolitan			Five Big Cities		
	$t=120$	$t=240$	$t=360$	$t=120$	$t=240$	$t=360$	$t=120$	$t=240$	$t=360$
E_n	103,411	141,664	197,844	94,923	129,633	173,019	110,718	157,823	233,068
$FVCP_n$	64,792	153,128	266,274	64,792	153,128	266,274	64,792	153,128	266,274
L_n	59,741	37,685	0	59,741	37,685	0	59,741	37,685	0
y^*	3.91%	3.53%	3.47%	3.05%	3.09%	3.02%	4.59%	4.07%	4.02%
y^{**}	5.77%	5.02%	4.46%	5.77%	5.02%	4.46%	5.77%	5.02%	4.46%
y	-1.87%	-1.49%	-0.99%	-2.72%	-1.94%	-1.44%	-1.18%	-0.95%	-0.45%

(Note) Assumption: $H_0 = 100$ million won, $LTV_0 = 70\%$

larger than 30-year loan. However, when we evaluated the values at loan maturity, the net yield of 10-year loan was relatively smaller than 30-year loan. This results tell us the fact that the borrowers who applied 30-year Bogeumjari loans could reduce the amount of loss if they keep the loan contracts continuously until the loan expire.

The results in Seoul metropolitan area were similar to those in whole country. As we can see in Table 8, the borrower's net yields which were evaluated at t=120, 240, or 360 showed -2.72%, -1.94%, or -1.44% respectively. In Seoul metropolitan area, the amount of net losses was estimated relatively larger than that in whole country.

The results in five big cities were also similar to those in whole country or Seoul metropolitan area. The borrower's net yields which were evaluated at t=120, 240, or 360 showed -1.18%, -0.95%, or -0.45% respectively. Hence, the amount of net losses in five big cities was relatively smaller than that in whole country or Seoul metropolitan area.

Second, Table 9 shows the results of analyzed borrowers' net yields which were funded by 30-year Bogeumjari loans when the time of loan start was 01.2015.

When we assumed the time of loan start was 01.2015, the borrower's net yields which were evaluated at t=120, 240, or 360 showed -0.22%, 0.23%, or 0.40% respectively in whole country. As we can see in Table 9, the borrower's net yields in this case were also increased by the passage of time. Different from previous cases, when we evaluated the values at maturity, the borrower's net yield showed positive(+) value.

As we can see in Table 9, the borrower's net yields which were evaluated at t=120, 240, or 360 in Seoul metropolitan area showed -0.24%, -0.01%, or 0.09%

respectively. In Seoul metropolitan area, the amount of net profits at maturity was estimated relatively smaller than that in whole country.

The borrower's net yields which were evaluated at t=120, 240, or 360 in five big cities showed 0.17%, 0.70%, or 0.90% respectively. In this case, all the borrower's net yields showed positive(+) values regardless of evaluated time.

D. Relationship between Borrower's Net Profit and LTV Ratio

The level of LTV does not affect the level of borrower's net yield (y_n) we have discussed so far. But, it makes a proportional impact on the amount of future housing equity (E_n), cumulative future value of repayment ($FVCP_n$), or outstanding loan balance (L_n).

Table 10 shows the values of borrower's net profit (Y_n) evaluated at maturities in the 10-year and 30-year Bogeumjari loans according to the level of LTV ratios, time of loan start, and home regions. We evaluated the borrower's net profit by subtracting cumulative future value of repayment ($FVCP_n$) from the amount of future housing equity (E_n).

$$Y_n = E_n - FVCP_n \quad (10)$$

Where, Y_n : borrower's net profit at t=n.

It was estimated that all the borrowers who applied to loans in 01.2005 would get net loss regardless of loan periods as we can see in Table 10. The amount of net loss ($Y_n < 0$) in Seoul metropolitan area was relatively

Table 9. Borrowers' Net Yields (Time of Loan Start : 01.2015)

(unit: 1,000 won)

	Total			Seoul Metropolitan			Five Big Cities		
	t=120	t=240	t=360	t=120	t=240	t=360	t=120	t=240	t=360
E_n	95,715	133,759	187,055	95,525	127,673	170,452	99,521	146,960	216,909
$FVCP_n$	42,167	96,206	165,883	42,167	96,206	165,883	42,167	96,206	165,883
L_n	55,645	31,664	0	55,645	31,664	0	55,645	31,664	0
y^*	3.13%	3.24%	3.28%	3.11%	3.01%	2.97%	3.52%	3.71%	3.78%
y^{**}	3.35%	3.02%	2.88%	3.35%	3.02%	2.88%	3.35%	3.02%	2.88%
y	-0.22%	0.23%	0.40%	-0.24%	-0.01%	0.09%	0.17%	0.70%	0.90%

(Note) Assumption: $H_0 = 100$ million won, $LTV_0 = 70\%$

Table 10. Borrower's Net Profit at Maturity

(unit: 1,000 won)

Loan Start	LTV ₀	10-Year Bogeumjari loans			30-Year Bogeumjari loans		
		Total	Seoul Metropolitan	5 Big Cities	Total	Seoul Metropolitan	5 Big Cities
01.2005	70%	-15,852	-24,340	-8,546	-68,429	-93,255	-33,206
	50%	-11,323	-17,386	-6,104	-48,877	-66,611	-23,718
	30%	-6,794	-10,431	-3,663	-29,327	-39,966	-14,231
01.2010	70%	-18,530	-34,325	6,027			
	50%	-13,236	-24,518	4,305			
	30%	-7,941	-14,711	2,583			
01.2015	70%	3,632	3,345	7,402	21,173	4,569	51,027
	50%	2,594	2,389	5,287	15,123	3,263	36,448
	30%	1,557	1,434	3,172	9,074	1,958	21,869

(Note) 1. $H_0 = 100$ million won2. Borrower's net profit at maturity(Y_n) : $Y_n = E_n - FVCP_n$

3. For the values of market interest rates and housing prices after 11.2017, we used the median values on the probability distribution of forecasted values at each time period created by 30,000 trials of Monte Carlo simulation

larger than the other regions. In the view point of LTV ratios, we could confirm that the amount of net loss would become relatively higher when the borrowers selected higher LTV ratio.

Unlike Seoul metropolitan area or whole country, it appeared that the borrowers would get net profit ($Y_n > 0$) at loan maturity in the five big cities when they applied to 10-year Bogeumjari loans in 01.2010. So, in this case, we could confirm that the amount of net profit would become relatively higher in the five big cities when the borrowers selected higher LTV ratio.

When the borrowers have applied to Bogeumjari loans in 01.2015, it was estimated that all the borrowers would get net profit regardless of loan periods as we can see in Table 10. In this case, we could confirm that the amount of net profit would become relatively higher in the five big cities compared to the other home regions and the amount of net profit would be increased when the borrowers selected higher LTV ratio.

E. The Loan Rates which Make Borrower's Net Yield Become Zero

We defined fair rate (y_n^F) as the level of loan rate which makes borrower's net yield become zero at loan maturity in our analysis ($y_n^F = y_n^* - y_n^{**} = 0$). Table 11 shows the level of fair rates which would vary with borrower's home regions, loan periods, or the time of loan start.

As we can see in Table 11, when the borrowers applied to Bogeumjari loans in 01.2005, the level of fair rates appeared to be lower than the level of actual fixed loan rates regardless of home regions or loan periods. This phenomenon was resulting from the fact that the growing speed of housing prices was relatively lower than that of cumulative future values of repayment. Consequently, all the borrowers are expected to suffer a net loss at maturity due to high fixed loan rates (5.75% in 10-year loan or 5.95% in 30-year loan).

When the borrowers applied to 10-year loans in 01.2010 in whole country or Seoul metropolitan area, the levels of fair rates appeared to be lower than actual fixed loan rates as similar to the case that the borrowers applied to loans in 01.2005. Especially, the level of fair value showed -1.45% in the Seoul metropolitan area when the borrowers applied to 10-year loans in 01.2010. This was mainly due to negative(-) growth rates of housing prices shown in the Seoul metropolitan area during the loan period. So, in this case, we could see that the borrowers who applied to 10-year Bogeumjari loans in 01.2010 in the Seoul metropolitan area must have been suffered net loss although the level of fixed loan rate was zero. On the contrary, the level of fair rates appeared to be higher than actual fixed loan rates in the five big cities. This phenomenon was resulting from the fact that the growing speed of housing prices in the five big cities was relatively higher than that of cumulative future values of repayment although the fixed loan rate was very high.

Table 11. The Level of Loan Rates which Makes Borrower’s Net Yield Become Zero (unit: %)

Region	Loan Period	Loan Start	Loan Rate		
			Actual Rate (A)	Fair Rate (B)	Difference: (A-B)
Total	10-year	01.2005	5.75	2.70	3.05
		01.2010	6.10	2.25	3.85
		01.2015	3.20	4.02	-0.82
	30-year	01.2005	5.95	3.39	2.56
		01.2015	3.45	4.45	-1.00
		01.2015	3.45	4.45	-1.00
Seoul Metropolitan	10-year	01.2005	5.75	0.95	4.80
		01.2010	6.10	-1.45	7.55
		01.2015	3.20	3.97	-0.77
	30-year	01.2005	5.95	2.35	3.60
		01.2015	3.45	3.62	-0.17
		01.2015	3.45	3.62	-0.17
Five Big Cities	10-year	01.2005	5.75	4.14	1.61
		01.2010	6.10	7.27	-1.17
		01.2015	3.20	4.85	-1.65
	30-year	01.2005	5.95	4.75	1.20
		01.2015	3.45	5.75	-2.30
		01.2015	3.45	5.75	-2.30

(Note) Fair rate: the level of loan Rates which makes borrower’s net yield become zero

Finally, we could confirm that the levels of fair rates appeared to be higher than actual fixed loan rates when the borrowers applied to Bogeumjari loans in 01.2015. This phenomenon was resulting from the fact that the growing speed of housing prices was relatively higher than that of cumulative future values of repayment. In this case, the level of monthly payments was low due to low fixed loan rates (3.20% in 10-year loan or 3.45% in 30-year loan).

V. Conclusions

In this analysis, we evaluated the borrower’s net yield focusing on the long-term amortizing fixed rate loans. The value of borrower’s net yield could show positive(+) or negative(-) value according to the time of loan start or the level of fixed loan rate because borrower’s net yield would be affected by the future fluctuations of housing values and market interest rates. The borrower’s yield also would vary with home regions due to different housing appreciation rates.

According to the historical experience, we could see that the borrowers who applied to Bogeumjari loans in 01.2005 suffered net loss due to higher burden of repayment. The borrowers who applied to loans in 01.2010 showed different results by home locations. In this case, the borrowers who applied to loans in whole country or Seoul metropolitan area experienced net loss because the growing speed of housing prices was relatively lower than that of cumulative future values of repayment. But, in the five big cities, the borrowers experienced net profit because the growing speed of mortgaged housing prices was relatively higher than that of cumulative future values of repayment. On the other hand, the borrowers who applied to loans in 01.2015 were expected to have net profit from using Bogeumjari loans due to lower burden of repayment. So, in this case, the borrowers who have selected a higher LTV ratio were expected to have a higher net profit⁵.

It is expected that the results of this analysis could give a useful information to the borrowers who plan to

⁵ On the contrary, from the view point of lenders, the risk of reverse margins is likely to increase due to the application of low fixed loan rates. Therefore, maintaining a low LTV ratio might be a possible way to reduce the size of risk for the lenders.

use long-term amortizing fixed rate loans when they decide the loan amount, the loan maturity and the timing of applying for a loan considering the environment of mortgage market. And, the results of this analysis could also be used to create policies related to LTV regulation. In the aspect of financial consumer protection, the government is necessary to consider decrease of LTV when the actual loan rate is expected larger than the level of fair rate(y_n^f). On the contrary, the government is necessary to consider increase of LTV when the level of fair rate(y_n^f) is expected larger than actual loan rate.

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The Impact of Fiscal Conservatism: A Case Study of the 2007 National Pension System Reform in Korea

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ABSTRACT

This research intends to identify the influential factors in the 2007 National Pension System (NPS) reform in Korea (the Republic of Korea) which drove the NPS toward a structural transformation. This research also examines the applicability of the theory of Clemens and Cook (1999) to the Korean policy shift, who argue that the innate driving force of a policy, an internal contradiction, can be a critical source of structural policy change. A literature review based case study was carried out in this research. The findings are as follows. Firstly, rising fiscal conservatism was the main determinant of the 2007 NPS structural reform. The processes and conditions of the reform documented were: the fiscal conservatism embedded in NPS generated serious policy problems and led to an accumulation of the internal contradictions within NPS by raising the question on its fundamental policy goal. As time passed without any self-correction mechanism with respect to the problematic policy, the NPS lost credibility in the eyes of the public and also lost policy legitimacy. At the same time, there was a competing policy alternative to the NPS. This was the universalistic tax-based Basic Old-Age Pension System. This has been a challenge to NPSin that it had been designed based on the social insurance financing principle. The pre-conditions for the structural NPS reform were fully complete and they could be exploited by self-interested political parties in the following policy-making stages. Secondly, the theoretical assumption that the internal contradiction of a policy can be a decisive power for structural transformation, as suggested by Clemens and Cook (1999) among others, was proven to be theoretically and practically accurate in the Korean public pension reform case.

Keywords: Public Pension System, National Pension System, Korea, Fiscal Conservatism, Public Pension Reform, Structural Pension Reform

1. Introduction

What were the dominant factors which drove the National Pension System of Korea (NPS¹) toward structural reform in 2007? This research² seeks to answer this question

through an institutional analysis of the reform. The NPS is a public pension system covering almost all of the population, except for public sector workers, in Korea. The reason this research chooses this reform case is that it clearly shows structural reform, which is generally known to be much more difficult than parametric reform,

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¹ The NPS is one of the public pension systems in Korea. The NPS is designed as a semi-funded financing scheme and is operated by a public organization, the National Pension Service (NPSrvc).

² This research is based on the doctoral thesis of the researcher, completed at the University of Kent in the UK. The doctoral thesis

is titled 'An Analysis of the 2007 National Pension System Reform in Korea: A Political and Institutional Approach to Its Reform'. Through the 2007 NPS reform, the one-tiered public pension system, the NPS alone, was structurally fragmented into a two-tiered public pension system, the NPS and the Basic Pension. The reform is important because it still has many meaningful implications for academia and it was controversial in terms of its causes, processes and results.

both financially and politically (see Pierson, 1997; Bonoli, 2000). The NPS was structurally transformed, through the 2007 reform, from a mono-pillar system (the NPS alone) to a two-pillar system (the Basic Old-Age Pension System (the 'Basic Pension') and the NPS). What, then, made this difficult public pension reform possible?

Firstly, this research assumes the policy itself (i.e., the NPS) to be one of the critical sources of the reform. While policy itself is normally set as a dependent variable in political analysis research designed to assess the determinants of policy change, this research treats it as an independent variable: a kind of determinant. The theoretical concept of 'internal contradiction' is borrowed from the theory of the historical institutionalists Clemens and Cook (1999), and it is the key element by which this research will trace the sources of radical change in the NPS. Unlike other institutionalists' approaches, which try to identify the determinants of policy change from the outside of the policy, the authors' research focuses on the policy itself, hence the centrality of the concept of 'internal contradiction'. The term 'internal contradiction' is defined as the 'instability inherent in certain systems of belief or practice' (Clemens and Cook, 1999: 449).

Secondly, this study assumes that a resilient policy paradigm or principle may be embedded in the NPS and that it continually accumulates internal contradictions if it is not adapted to the changed environment. Thus, the question arises: what is the influential policy paradigm which strongly has influenced on the design of the NPS? This research hypothesizes that the fiscal conservatism embedded in the NPS could be the key source of internal contradiction, which increases when the NPS does not adapt itself properly to the changed environment or necessary policy requirements. According to Clemens and Cook (1999: 449), once a policy is established, its internal contradiction starts its accumulation as a grave-digger digs its own grave. As a policy produces its constituency, the accumulated internal contradiction produces opponents to the present policy (ibid). In this sense, if fiscal conservatism had continuously increased the internal contradictions of the NPS, the NPS might have produced too many opponents against itself so that radically changed the NPS in certain conditions. What is 'fiscal conservatism' then? The Korean welfare state is categorized as a 'developmental welfare state'. The influential trait of a developmental welfare state is that governmental subsidy for welfare programs is strictly limited. This is because tax

revenue should be fully invested for economic growth: i.e., industrial infrastructure construction (Kwon, H. J. 1997, 2005; Goodman and Peng, 1996; White and Goodman, 1998). The general definition of the term 'fiscal conservatism' is that the government operates a budget or financial policy under the principle that a deficit should be reduced at the expense of redistributive transfers (Gilles, 2001). This research, however, simply defines it as 'the conservative financial operation principle under which governmental subsidy is strictly limited and the state's financial responsibility is not institutionalized for welfare programs'. In this sense, the NPS can be seen as a representative welfare program which is designed and operates based on fiscal conservatism (see Lee, H. K. 1994, 2004; Kim, Y. H. and Seok, J. E., 1999).

Thirdly, this research will carry out a procedure to look at the impact of fiscal conservatism on structural reform in the case of the 2007 NPS reform in Korea. The first step of this research will be to attain theoretical understanding. The path-breaking power of 'internal contradiction' and the developmental logic of it toward radical policy change will be discussed in Chapter II. Based on the theoretical understanding of the historical institutionalists, Clemens and Cook, (1999), the main discussions will be followed step by step in the next stage. The conditions, processes and outcomes of the theory will be examined in reference to the NPS reform case in Korea. In the first section of the chapter, III, this study will look at the overall feature of the NPS to give general understanding to readers. In the second section, the real features of the NPS, which express best the internal contradiction caused by fiscal conservatism in the NPS, will be addressed. The serious policy problems, old-age income insecurity and long-term financial insecurity issues, will be explained. The fundamental cause of the policy problems, fiscal conservatism, will also be discussed. In the third section, the phenomena of policy failure, and distrust of the general public in the NPS, will be presented. The NPS, which lost credibility with the public, might not survive without fundamental transformation. In the fourth section, the decisive role of a strong policy alternative will be demonstrated. The existence of a competing alternative may continuously erode the present policy, the NPS, to the extent that it causes a loss of legitimacy on the part of the policy. The emergence of the Beveridgean model, the Basic Old-Age Pension System, and the completion of the last condition for the path-break-

ing policy change, based on Clemens and Cook's (1999) hypothesis, will be discussed. The conclusion of this research will be added lastly.

II. Theoretical Understanding of a Policy's Ability to Bring About Structural Change

Most institutionalists, like Myles and Quadagno (1997), Ferera (1996) and Pierson (2004), emphasize that a policy, once it is established, hardly changes as interest groups are formed that are resistant to a change in the policy. Such institutional inertia well explains why a cut-back or structural change to a welfare program is so difficult. How can we understand the structural change of the NPS in 2007, then? Can a general assumption of institutionalism, path-dependency, explain effectively the contradictory results of considerable benefit cuts in the NPS combined with the introduction of the Basic Old-Age Pension System? With regard to this question, there have been many theoretical attempts to identify the explanatory logic of institutionalism when it comes to radical institutional change. Most authors, such as Krasner (1984) and Stinchcombe (1978), find the source of institutional change outside of the institution, treating it as an exogenous variable. Clemens and Cook (1999), however, paid attention to the internal power of a policy which leads to a radical policy change, and named it internal contradiction. According to Clemens and Cook (1999), the 'internal contradiction' of a policy leads a policy to the point of having the potential for radical change. How, then, does the internal contradiction have strong influence on radical reform?

According to Clemens and Cook, the sustainability of a policy leads relevant actors to expect a certain result, and it improves the stability and efficiency of society. But at the same time, it is difficult for a policy to react actively to environmental changes due to such inertia. Therefore, the instability and ineffectiveness of the policy are likely to increase simultaneously in the long run (ibid). In other words, the general nature of a policy, which becomes stable and then improves in effectiveness, consequently makes the policy less effective, and makes it inappropriate. Such an internal contradiction can be much greater when both a demand for policy change

and its opponents' power to change it are significant. In such cases, the contradiction will eventually lead to a policy failure. If a policy failure is not addressed quickly and effectively within an existing policy paradigm, furthermore, structural or fundamental change is likely to occur. Once the failure becomes obvious, the existing policy is challenged by a competing policy alternative with a new paradigm, and an ambitious political entrepreneur may exploit the alternative in order to claim credit and gain the support of the public (ibid).

Clemens and Cook (1999: 449) provide us with a good understanding of the fact that the firm belief or practice of a society in maintaining a policy or an institution can be a potential source of reform. Institutions or policies have a tendency to be unchangeable or path-dependent in spite of their innate incompleteness and instability. However, the characteristics of an institution can be an influential factor leading to its own fundamental change in some circumstances. This concept is innovative and closely related to the dialectic insight that 'highlights the instabilities inherent in a certain systems of belief and practice' (ibid: 449). Researchers focusing on the elements of internal contradictions claim, similarly to the Marxian insight into 'macro historical change', that 'institutions may produce their own grave-digger' (ibid: 449).

In this sense, a welfare policy chosen by the political elite and preceded by path-dependent frameworks might have a great potential to become a grave-digger. According to the theory of 'policy feedback effects' on politics (Pierson 1993, 2001), a policy, once established, creates strong political supporters who benefit from the policy. However, it is also argued that a policy which has a severe internal contradiction could also inevitably produce opponents who suffer because of the existing policy but cannot realize their interests because of their weak position in the power distribution. From this perspective, the following questions are raised: what elements of an institution make it more contradictory and what conditions enable the opponents who have been disadvantaged in their power configuration to realize their interests? These questions should be at the core of explaining the vigorous reform debates and confrontation between present and alternative institutions related to welfare policies. Clemens and Cook also suggest the concept of 'multiplicity' (Clemens and Cook, 1999: 449). Multiplicity refers to the existence of diverse alternative institutions. Institutional conflicts can be stimulated by strain between 'multiple institutions'

as well as internalized contradiction (Sewell, 1992: 16-19). Revolution can happen when the present institution is no longer accepted as inevitable due to the existence of competing alternatives (Stinchcombe, 1978: 40).

Given the aforementioned comments, the existence of the competing alternative can be an important condition of significant institutional change. In this regard, if some internally contradictory factors disrupt the legitimacy of existing policy, competing policy alternatives emerge and confront each other at a critically strategic point. Subsequently, any political innovator will seek to advance his/her interests by raising the issue of a fundamental change of a present policy to the competing alternative (Clemens and Cook, 1999). In addition, political or policy experimentation may be experienced by the people who have been disadvantaged by the present policy at a critical point. Politically marginalized individuals and groups are especially likely to try to experiment with policy alternatives because they need to invest relatively little in changing institutions (ibid). Political challengers or entrepreneurs exploit this situation to gain votes by using alternatives for, and mobilization of, socially marginal actors.

Let us look at the processes and the conditions of a fundamental policy change. Institutions, including policies, provide firm guidelines for the public about how to act. In this sense, institutions make people's real lives more efficient by providing stable expectations and rules of the game. However, institutions have to adapt to the changing environment in order to survive. Nevertheless, an institution does not change easily because the people with vested interests who seized decision-making power in the present institutional configuration will prevent the institution from being changed until some critical juncture arises (Krasner, 1984). Even if an institution (or a policy) needs to be changed in a path-breaking way by adapting to the changed environment, it will not change fundamentally, which results in the ineffectiveness of its function over time. As Clemens and Cook (1999: 449) have stated, institutions which do not adapt to the changed environment produce grave-diggers by accumulating opponents of the present policy. This research argues that, in advanced democratic societies, institutions, including political ones, evolve gradually, as in North's (1990) argument. However, in immature democratic societies with deformed institutions (political or social) it is difficult for an institution (or a policy) to change gradually in regard to its core policy principle or policy paradigm. Rather, in less demo-

cratized societies, institutions do not evolve until the internal contradictions and inherent instabilities fully accumulate, as Krasner (1984) argues. The accumulated internal contradictions result in diverse policy problems as time passes and those policy problems, again, erode the legitimacy of the present policy. The policy's loss of legitimacy will be recognized by the public and this situation can be exploited by ambitious political actors when a competing alternative emerges (Clemens and Cook, 1999). The final outcome of the policy competition ignited by internal contradiction comes about after a long political confrontation among political actors under the given political configuration and decision-making rules of the game. What, then, happened in the NPS reform, which was completed in 2007?

III. The Causes, Conditions and Processes of the Structural Change of the NPS

As mentioned in the introduction, a fundamental (structural or radical) change of a policy often follows four steps. Firstly, the policy problems clearly emerge and the problems are recognized by the public. Secondly, the policy failure and the loss of its legitimacy take place. Thirdly, the policy is recognized as not a necessary one if a competing alternative emerges. Fourthly, political entrepreneurs try to exploit this situation in pursuit of their own interests. Even so, other factors, such as institutional conditions which instigate the political actors' self-interest are necessary for a fundamental policy change to take place. We will look at these step by step after looking at the general features of the NPS.

A. General Features of the NPS and Fiscal Conservatism

The public pension systems of Korea can be categorized into two groups: 1) public pension systems for public sector employees, such as the Government Employees Pension System (GEPS), the Military Personnel Pension System (MPPS) and the Private Teachers Pension System (PTPS); and 2) the NPS for all private sector workers and other voluntarily insurable people, such as the

non-working spouses of insured individuals. Much later than the introduction of other public pension systems for public sector workers, the NPS was introduced in 1988 by the enactment of the National Pension Act in 1986 and the establishment of NPSrvc, which operates the NPS and the NPS fund, in 1987.

The NPS covered regular employees who were over 18 to under 60 in businesses with more than 10 employees (except for those that already had occupational pensions) when it was introduced and it was expanded to businesses with more than five employees in 1992. Lower income classes without the ability to make contributions and employees in businesses with fewer than five employees were excluded, as were those who were over 60 at the time of the pension system implementation (Oh, G.H., 2006: 169). Moreover, in July 1995 there was an expansion of pension participants to include farmers, fishers and residents in farming and fishing villages and the self-employed in those districts, and in the latter half of 1998 an expansion to include self-employed people in cities (NPSrvc, 2010). The expansion of the NPS, in terms of legal coverage, was very fast: it took only 11 years for the NPS to cover the entire nation from the time of its introduction. The real coverage of the NPS, however, was much lower. The real coverage of the public pension systems was only 57.5 percent of the eligible workforce in 2007 (NPSrvc, 2008). Moreover, the average insured years of pensioners under the NPS was less than 20 years until the major reform was completed in 2007. The expected long-term average insured years of the NPS in 2050 also was only 21 years (Oh, S.H. and Jung, C.L., 2012). This was mainly because there were too many vulnerable people who could not pay contributions to the NPS. Most of them were poor and/or unstable incomers in work, such as irregular workers, self-employed, those who had been laid off and family carers who needed financial subsidy from the state. However, there was no financial subsidy from the tax revenue for them to be encouraged to pay contributions to join the NPS, which had a very favorable redistribution mechanism. Moreover, up until the 2007 reform was completed there were no pension credit systems under which insurers who could not work because of being engaged in socially desirable activities, such as national defense and child care, could increase their contribution history. The NPS was designed as a semi-funded contributory social insurance scheme. For that reason, the elderly who were over 60 years old

at the time the NPS was introduced were totally excluded from the scheme. Instead, the fund could be incredibly increased because it was designed as the semi-funded scheme for accumulating national capital (see Lee, H. K., 1994). The NPS fund was the third largest public pension fund in the world by the year 2015. What does the amount of fund mean in Korea where the old-age poverty ratio is the highest among the OECD countries, and has been each year this ratio has been recorded (i.e., 45.7 percent in 2015)? This is one of the clear pieces of evidence that the principle of fiscal conservatism is being applied, which protects the fund instead of the income of the old.

The benefit level of the NPS has been radically cut, moving from 70 percent of the replacement ratio in 1988, to 60 percent in 1999 and 50 percent in 2008, and planned to gradually decrease by 0.5 percent per year to 40 percent in 2028. In particular, the radical reduction of the replacement ratio of the NPS, from 60 percent to 40 percent, was executed in 2007, instead of the introduction of the Basic Old-Age Pension System. The contribution rate of the NPS started at 3 percent of the participant's income in 1988, moving to 6 percent in 1993 and 9 percent in 1999. Even though the contribution rate of the NPS has been quite low compared to its benefit level, it has been difficult for vulnerable people to properly pay contributions without any financial support from the state. Most importantly, we have to remind ourselves that the NPS was designed to be financially independent from the state (Lee, H. K., 1994).

B. Serious Policy Problems in the NPS

What were the serious and continuous problems of the NPS and what were the main causes of them? In this research it is argued that the most significant policy problem was the vast range of uninsured people due to the large blind spot of the real coverage of the NPS. Approximately 60 percent of elderly persons aged 60 and over did not have any type of public pension benefit in 2007 (NPS, 2008). The average insured years of the subscribers in the NPS, which is one of the core factors representing the level of the pension payment, was expected to be about 24 years even in 2050 (Oh, S. H. and Jung, C.L., 2012). This clearly shows the old-age income insecurity of Korean people at present and in

the future. However, on the other hand, conservative politicians, bureaucrats, news media and neo-liberal economists, which take core positions of Korean society, have always criticized the NPS for the over-generous benefit scheme (Jung, C.L., 2012). This phenomenon represents well the dominance of developmental welfare and neo-liberalism in Korean society. The neo-liberalists, the hegemonic major group of Korean society seeking economic growth first and most, have emphasized the long-term financial stability without governmental subsidy to the NPS (Lee, H. K., 1994). According to the two phenomena mentioned above, this study assumes that the most serious policy problems that necessarily erode the legitimacy and so increase the possibility of radical reform of the NPS are 'income insecurity' and 'long-term financial instability'. Then, one question can be raised that "would it be possible for the NPS to achieve the two basic missions of the NPS, income security and long-term financial stability, under the social insurance contributory public pension scheme? If we simply define the 'fiscal conservatism', in this research, as 'the strict ideology or principle that social insurance welfare systems like the NPS should be operated independently from government subsidy, the fiscal conservatism would not allow for the social minorities to be fully insured in the NPS because of the vulnerability of their income. In this sense, the fiscal conservatism may be the critical source of the instability, internal contradiction, of the NPS.

This research suggests 'fiscal conservatism' as a core source of 'internal contradictions' in the NPS since the fiscal conservatism embedded in the design and operational principle of the NPS is assumed to be the main cause of the two policy problems mentioned above paragraph. We will examine the real features of the two policy problems of the NPS and discuss their causes to prove the causal relationship between fiscal conservatism and the two main problems.

1. Income insecurity problems

The NPS expanded its coverage very quickly. Eleven years after it was introduced, it achieved universality in terms of legal coverage for the whole nation under a single-pillar system. Moreover, the last stage of the expansion to the urban self-employed was accomplished in the midst of the harsh economic crisis in 1998. The Kim Dae-Jung government publicized the fact that Korea

made pension systems available to all people. In fact, there had been many significant achievements in expansion of welfare program coverage in the Kim Dae-Jung government. Some scholars such as Kim, Y.M. (2001) see the coverage expansion as significant in that it was the turning point towards a real welfare state that views individual welfare as the state's responsibility on the basis of universalism (Kim, Y.M. and Kim, K.S., 2005). However, others such as Jo, Y.H. (2002) and Yang, J.J. (2003) assess the welfare policy of Kim Dae-Jung's government as promoting a workfare state based on neo-liberalism with the main intention being to support the efficiency of the market and economy. The NPS seems to have two distinct characteristics. On the one hand, it is very generous, universal and solidarity-promoting in legal terms. On the other hand, it has very vulnerable, discriminatory and fragmented content in reality. It is generally accepted that there exists a huge gap between the legal and real content of the NPS (Kim, Y. M. & Kim, K. S. 2005; Lee, H. K. 1994, 2004; Kim, Y. H. & Seok, J. E. 1999). This study argues that this contradictory feature of the NPS is the most symbolic trait of the Korean welfare state including income security systems such as the NPS. This trait is closely related to the most complex problems of the NPS, particularly the distrust in the NPS. This contradictory feature of the NPS increased and remained strong until recently. The contradictory characteristics of the NPS, grew, together with coverage expansion of the NPS to encompass the self-employed in urban areas in 1999. Let us take a look at these contradictory features one by one.

Firstly, there were too many contribution exemptions in the NPS that legally enabled individuals to not make contributions for a long time. Even though everyone who was aged from 18 to 59 could be covered by the law (National Pension Act), many people legally did not make contributions. The people who were allowed contribution payment exemption totalled 12.7 per cent of total local insured people³ (3.2 per cent of the total insured) in 1995. However, this figure reached 56.3 per cent (28 per cent of the total insured) in 2007 (National Pension Service, 2008). This covers all the people who legally

³ These are region based insured, consisting of the self-employed, farmers and fishers, irregular workers, etc. They also have to make contributions if they earn income but income detection is nearly impossible if they are engaged in an unstable and low income business.

did not pay contributions over a long time and may not have accumulated the necessary contribution history: at least 10 years for a reduced pension or at least 20 years for a complete pension. Most of them were very vulnerable people whose income was very low and unstable. For example, contribution exemptions were granted in cases of unemployment, lay-off, bankruptcy, etc. Additionally, about 12 per cent of total insured people in the NPS illegally failed to pay contributions for more than 3 months in 2007 (National Pension Service, 2008). They are not supposed to receive a proper pension benefit. As a result, a considerable number of the NPS members who legally or illegally did not pay for a long time could face old age poverty on a large scale. As mentioned above, there was a too big portion of the population not covered by the public pension system in Korea. A so-called 'blind spot problem' was occurring in the NPS. According to Seok, J. E. (2004: 203–206) there are two possible types of blind spot problems:

- (i) traditional types that normally occur in developing countries mainly due to system design limitations; and
- (ii) non-traditional types which emerge in advanced industrial countries mainly due to their flexible labour market policy.

The traditional blind spot problem is caused mainly by a system design in which only a limited number of formal workers can be covered by the income security system because of administrative and economic limitations in including many social minorities. In Korea, many informal workers such as unpaid housewives, part-time workers and people working in very small businesses are excluded from the NPS in real terms. The non-traditional blind spot problem can exist even in advanced welfare states because of post-industrial social change where a flexible labor market policy is strongly required. Employment has been the underpinning of the traditional welfare state design (insurance-based male breadwinner model), under which many irregular workers and unemployed people cannot be adequately supported by the income security system (Walwei, 1995).

In Korea, even though the expansion of legal coverage was successfully completed in 1999, 11 years after the introduction of the NPS, the ratio of real participation⁴

in the public pension systems was only 57.5 per cent of the eligible workforce in 2007 (National Pension Service, 2008). This is because there were too many legal contribution exemptions on the one hand as mentioned above, and on the other hand a considerable portion of other insured people who did not pay contributions for a long period illegally. Most significantly, there were no income security measures in the NPS for the elderly who were already 60 and over when the NPS was introduced in 1988. They have been the poorest cohort even after the introduction of the general public pension system in Korea, in contrast to Western welfare states, where the elderly have normally been a richer group. As a result, the beneficiaries of public pension systems among the elderly aged 60 and over amounted to only 27.9 per cent in 2007 (National Pension Service, 2008). Secondly, even those who participated in the system did not always receive enough pension benefits after retirement because the contribution history they had accumulated was too short. According to the long-term simulation research of the National Pension Research Institute, the average insured period of the participants will be about 21 years until the 2050s (Oh, S.H. and Jung, C.L., 2012). This means that even though the work period ceiling was designed to be 40 years, the length of the real work period of those insured by the NPS is almost half of that even after the NPS matures. There are many reasons for the short work experience of retirees benefitting from the NPS: relatively late participation in work because of higher education, involuntary early retirement, family care or childbirth work leave (for women), compulsory military service (for men), lay-off, etc. While most Western welfare states have adopted various types of pension credit programs to give extra contribution records to members through the state's contribution payment, there was no form of pension credit system in the NPS until the 2007 NPS reform was completed (National Pension Service, 2008). According to the empirical research of Choi, H.S. (2002: 236), the future projection of the average replacement rate of the NPS is only 30–35 per cent until 2024 under the former NPS scheme which provides a 60 per cent of legal income replacement rate for workers with a 40-year work career (before the 2007 NPS reform). In addition, this tendency is not expected to improve

⁴ Here the real participation ratio refers to the portion of the insured which are regularly making contributions to the public pension system

divided by the people aged from 20 to 59.

even far in the future according to Choi, H.S. (2002). Moreover, the average real replacement would be from about 20% to 23% or more under the reformed NPS in 2007 because the replacement rate will be decreased gradually to 40 per cent for workers with a 40-year work career by 2028. For example, according to the research of Choi, H.S (2002), the empirical replacement rate of the NPS for the average income earners by the year 2024 was shown as 34.54 per cent under the NPS scheme before the 2007 reform. This is a very low replacement rate which demonstrates the inadequacy of the benefit provided by the NPS in reality and may make system participants regard their benefit as pocket money even though the legal benefit structure of NPS was very generous relative to their contribution rate. The replacement rate of the NPS before the 2007 reform was 60% for workers with a 40-year work career. The replacement rate of the NPS was in the middle among OECD countries' ones (Kwon, M.I. 1999). It is comparatively generous given the contribution rate of 9 per cent. Most Western countries' contribution rates are around 20%, which is much higher than the contribution rate of the NPS (see Table 1).

However, the replacement rate itself has to be considered in terms of recipients' politics. Many Korean people consider the contribution to the social insurance as a tax rather than compulsory saving. These citizens think that the tax system is unfair in terms of both collection and expenditure. They also do not understand the public pension financing pay-as-you-go system (Nam, C.S., 2005). They are very anxious about the depletion of the NPS fund because they think they will not be able to receive the pension benefits which they saved for. Various neo-liberals such as pension experts, bureaucrats and con-

servative major newspapers over-emphasized the fund depletion (Jung, C.L., 2009). As a result, most Korean people have been very reluctant to make contributions to the NPS. This is a very different attitude toward the pension system than that found in Western welfare states. Generally, people in Western countries prefer increasing the rate of contribution to decreasing the pension benefit (Taylor-Gooby, 1999). However, most people in Korea prefer benefit reduction to an increase in the contribution rate (Nam, C.S., 2005). As the NPS system did not provide any credit system for people who were taking part in socially valuable work such as military service, higher education and sick family care, unlike in Western countries most retirees had to receive benefits based on a very short contribution period before the 2007 NPS reform. The pension credit system for compulsory military service and childbirth was first introduced in the 2007 reform on a very limited scale. Additionally, if we consider the people in the blind spot, the replacement rate drastically falls to 24.3% (Choi, H.S., 2002: 236). This figure shows clearly the reality of the Korean old age income security system, particularly the very limited function of the NPS in old age poverty prevention. The research shows that what is important is not the legal coverage or benefit structure but the real impact.

Let us look at this feature in detail based on the empirical data of Choi, H.S. (2002). Firstly, the present NPS system in Korea has fundamental problems in terms of real system coverage. Almost 40% of eligible people do not join the scheme. This means that the NPS takes responsibility only for haves, not for have-nots. This results in distortion of the national redistribution structure and thus increases the income inequality among the elderly⁵. It is crucial

Table 1. Pension contribution rate (per cent of gross earnings)

	1994	1999	2004	2007	2009	Employee 2009	Employer 2009
Canada	5.2	7.0	9.9	9.9	9.9	5.0	5.0
France	21.5	16.7	16.7	16.7	16.7	6.8	9.9
Germany	19.2	19.7	19.5	19.9	19.9	10.0	10.0
Japan	16.5	17.4	13.9	14.6	15.4	7.7	7.7
Korea	6.0	9.0	9.0	9.0	9.0	4.5	4.5
United States	12.4	12.4	12.4	12.4	12.4	6.2	6.2
Sweden	19.1	15.1	18.9	18.9	18.9	7.0	11.9
OECD34	19.2	19.3	20.0	19.8	19.6	8.4	11.2

Source: OECD (various years), Taxing Wages; OECD (2008), Revenue Statistics; Social Security Administration, United States (various years), Social Security Programs throughout the World; OECD pension and tax models.

⁵ Even though the NPS has a strong redistribution scheme, this scheme is operating only among participants; outsiders cannot benefit from the scheme. This necessarily increases the inequality gap between insiders and outsiders of the NPS.

to recognize that those who are excluded from the NPS in real terms are the most vulnerable people and are the most in need of social protection. Secondly, Korea has been experiencing both the traditional and non-traditional blind spot problems at the same time. This is because Korea has expanded its coverage without proper measures to address the blind spot problems, such as various credit schemes for the social contributors or a contribution supplement system for the poor. The term 'blind spot' is defined as 'the people who cannot receive pension in the old age because their contribution period did not reach the required minimum guide line' (NPSrvc, 2006). Korea has sought a top-down coverage expansion strategy unlike most Western countries such as the UK and Germany, in which the pension systems were introduced for the most vulnerable groups such as miners (Park, C.Y. et al., 2000). This caused the people who are in the blind spot to be the most vulnerable group in terms of old age income (Choi, H.S., 2002: 225). Moreover, national restructuring for increasing market flexibility in the economic crisis, started in 1997, produced many irregular workers and vulnerable self-employed individuals. This means that radical coverage expansion of the NPS has not been effective in protecting the social minority from the direct threats of globalization and neo-liberalism. The pragmatic top-down approaches along with a developmental state ideology plus neo-liberal ideas in the post-industrial context have not allowed for any space for social rights for the institutional minority. A path-dependent NPS change without overcoming the policy paradigm does not seem to work appropriately for the institutional minority. In this respect, paradigmatic institutional change, or structural change with different policy goals, was strongly suggested by many scholars such as Kim, Y.H. (2004), Kim, Y.H. and Seok, J.E. (1999) and Choi, H.S. (2002) as a core answer in terms of enhancing income security and equality for all within the limited resources of the NPS. Thirdly, Korea has been producing many irregular workers who are weak in political power. Irregular labourers receive much lower payments than regular workers who have strong trade unions. According to the statistics of the Korean Statistical Office in 2002, the average wage of irregular workers is only about 50 per cent of that of regular workers and this situation has not improved over time (Yang, J.J. 2003: 413–414; also see Figure 1).

In addition, irregular employees are very weak in their political power because they are excluded from large,

well-organized company trade unions. Trade unions in Korea have exercised only a limited effect in enhancing the welfare state because the authoritarian government had controlled the labor movement for long time with a divide and rule strategy to weaken political negotiation with the government (Han, S.K., 1999) The Korean authoritarian government introduced a corporate trade union system and this made individual trade unions of companies seek their own corporate welfare prior to state welfare for all labor (Yang, J.J., 2004a). This tradition has impacted negatively on the irregular labor force until recently. The labour market flexibilization policy in Kim Dae-Jung's regime resulted in both producing a massive number of irregular workers⁶ and loading the cost of market flexibilization onto irregular workers (Yang, J.J., 2003: 408–413). This unfavorable power structure implies that the blind spot problem cannot be easily eliminated. As a result, only around 20% of irregular workers are joining the public social insurance welfare systems; this is a significantly low level compared with about 90% of regular workers by the year 2001, and the situation is not expected to improve (Lee, H.G., 2001). Recent statistics also shows that situation has not improved much (see Figure 2).

Fourthly, the very nature of a pension system based on social insurance like the NPS inevitably results in institutional exclusion because its financial resources come from the contributions of workers. Social insurance is a system built on the basic assumption of perfect employment. However, labor market flexibilization in the post-industrial society made this assumption useless. Without consideration of the flexible labor market, it is almost impossible for government to prevent poverty and income inequality by using only the traditional social insurance principle (Yang, J.J., 2003: 408). This means that the other old age income security schemes designed on the basis of other principles (e.g. tax-based financing) should complement the old age income security programs based on the principle of social insurance. For this reason, most advanced welfare states have reformed since the 1980s with effective measures to supplement this weakness. The countries that have a basic state pension system have

⁶ According to the research of Kim, Y. B. (2001), the portion of irregular workers out of total salaried workers rapidly increased after the foreign currency crisis started in 1997, from 43.4% in 1996 to 52.9% in 2000. This symptom emerged in most industries, particularly the service industry.

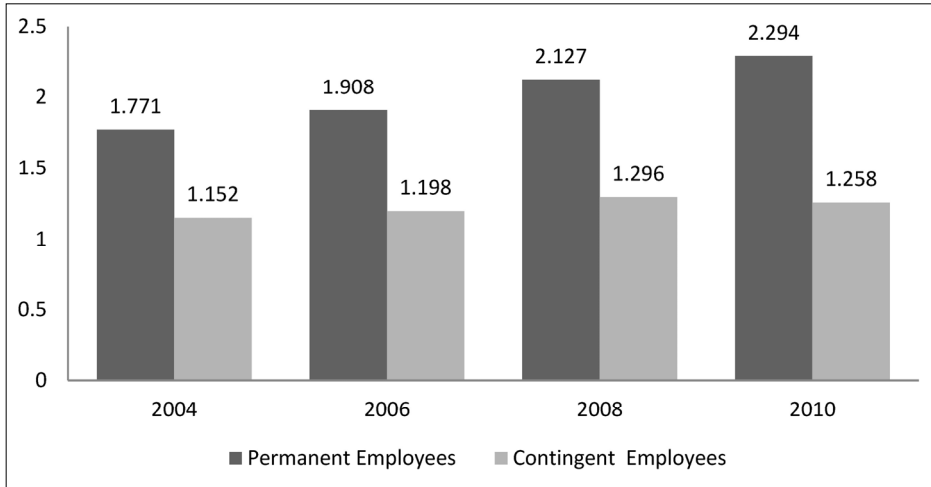


Figure 1. Average Monthly Wage Unit: Million Won (thousand US\$)
 Source: Statistics Korea : <http://kostat.go.kr/portal/eng/index.action>

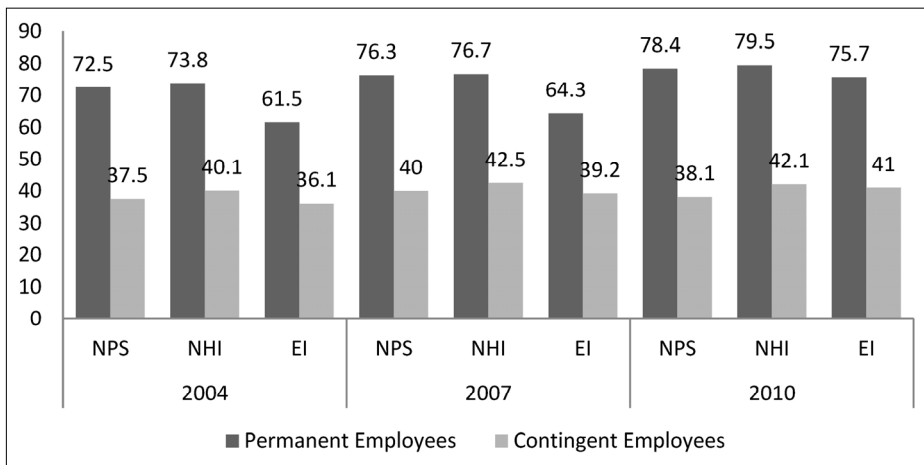


Figure 2. Percentage of employees insured by social insurance schemes
 Source: Statistics Korea : <http://kostat.go.kr/portal/eng/index.action>

fewer blind spot problems because the benefit of the basic pension system is not directly linked with contributions. Almost all Western welfare state countries, including the countries with earnings-related social insurance pension systems such as Germany, have been providing many measures such as pension credit systems and contribution exemptions without reduction of their benefits (Seok, J.E., 2004). However, Korea, which has a strong tradition of fiscal conservatism for welfare programs, has maintained its contributory financing principle strictly without introducing any proper measures to counteract the weak-

nesses before the 2007 NPS reform. The NPS did not provide any credit systems for the people who are doing socially useful work for the nation such as military service and family care. A very generous benefit structure without proper measures for the institutional minority had been the main source of blind spot problems. In this sense, the two sources of policy problems in the NPS, the pension system design and financing resource principle, should be the key points to discuss.

The blind spot problems in the NPS emerged in various aspects. Firstly, the most vulnerable generation among

the people in the blind spot were the elderly who did not have the chance to enrol in any public pension scheme. As there was not proper consideration of the elderly when the NPS was introduced, they have to survive without a pension benefit. They had sacrificed themselves to construct the industrial country, educating their children and supporting their parents. However, most of them were unable to save money for themselves because the daily survival of their extended family was the most important issue. They had to support parents and their children without necessary state income provision. They also strove to educate children as much as they could by spending most of their income⁷. The state fully exploited them and their well-educated children for the industrialization of Korea. While the government should have prioritized their income security when the NPS was introduced, the NPS was designed as a contributory semi-funded scheme and the collected contributions were saved for the future old age income of present workers, not for the present elderly. However, even after democratization, the Korean government never gave up the 'economy first' policy and made clearer the financial neutrality (non-interventionism) of the NPS⁸. One of the outcomes of this idea was neglect of the elderly. The old age have to depend on their children for care and income. As mentioned above, the income dependency ratio on children for the elderly was 63.7 in 1988. Although the Old Age Pension (allowance) was introduced in 1998 by Kim Dae-Jung's regime to compensate for exclusion of the elderly from the public pension system, it was a very tiny benefit and had strict eligibility requirements⁹. The Old Age Pension was designed to pay a flat-rate benefit only to

the elderly aged 65 and over as of 1 July 1998. For this reason the beneficiaries were to decrease over time and this scheme was abolished in 2008 when the Basic Old Age Pension became effective. In this sense, this scheme can be regarded as a provisional measure by the government to alleviate the complaints of the elderly who had not been given any benefit from the public income security provision scheme. As a result, only 14% of the old aged 60 and over were benefitting from the Old Age Pension System as of the end of 2006. On the other hand, only 18 per cent of the elderly aged 60 and over were benefitting from the public pension systems (including the NPS) and only 28.5% of the total elderly aged 60 and over were receiving any type of provision from public income security systems by the end of 2003. Moreover, their benefit level was minimal. 90.5% of them were receiving the benefit under the minimum living cost. By the criterion of minimum living cost, 95.2% of total elderly could be regarded as experiencing the blind spot problem under the public old age income security system (Seok, J.E., 2004). This phenomenon has not improved much over time. For example, only 27.9% of the elderly aged 60 and over were receiving any type of pension benefit from the public pension system in 2007 (National Pension Service, 2008).

This research argues that the blind spot problem should be regarded as the most serious policy problem among issues of the NPS. The seriousness of the blind spot problem of the NPS is broadly accepted by most scholars (see Kim, Y.M. and Kim, K.S., 2005; Moon, H.P., 2004; Yun, S.M., 2004a). Even though we accept that it is inevitable for the social insurance welfare model to leave some blind spots, Western welfare states have reduced these significantly through various financial support measures such as pension credit systems, the minimum income guarantee method, and introduction of a basic pension scheme based on tax financing (National Pension Service, 2008). In detail, the cost of redistribution measures and pension credits should be covered by the state (Lee, J.W., 2002). The financing resource issues have been the top priority in debates on public pension system reform in continental European welfare states of the social insurance-based Bismarckian model. As Natali and Rhodes (2004: 1) argue:

The political debate has centered on the distinction between contributory and non-contributory benefits and

⁷ Koreans have been raised within the Confucianist tradition to see education as the most important job in people's lives in terms of both becoming a gentleman/lady in society and increasing one's social status. Many parents sold a cow, the most precious property of their household, for higher education for their children, particularly the eldest male child. The word 'Ugotap', which is translated as 'Tower Made of Cow Bones' and represents the sacrifice of parents for children's university education with a cow, was popular. This illustrates the fact that in the early NPS era the elderly could not save anything for themselves, instead expecting their children's support when they are in their old age.

⁸ When the NPS was reintroduced one of the basic principles in its design was the non-intervention principle. The financial problems of Western welfare states at that time was taken as a good excuse for that principle (Lee, H.K., 1994).

⁹ The level of the highest benefit was US\$ 50 (£25) in 2002. The eligibility can be assessed through income and means testing for the partner or children.

the need, emphasised especially by the unions, to clearly distinguish expenses directly attributable to the state (and to be covered by general taxation), from those attributable to the pension scheme (and to be financed from contributions).

As a result, academics and politicians in the European countries broadly agree (notably unlike the USA) on the necessity of the state bearing financial responsibility even in the social insurance public pension systems. In reality most countries, whether or not they have adopted the Bismarckian or Beveridgean model, share a considerable part of the cost of public pension benefits. Specifically, most states contribute about 20% to 30% of total expenses of the public pension benefit (Lee, J.W., 2002; National Pension Service, 2008). For example, Germany shares about 30% of total expenses of the public pension benefit.

However, in Korea, because of the strict financing principle of fiscal conservatism, there is little possibility for social minorities to obtain proper pension benefits through the state's financial support. The majority of academics, bureaucrats, politicians and media in Korea do not claim that the state should be financially responsible. Rather, they emphasize the danger of fund depletion (for the NPS) which was expected when it was designed to eventually be depleted; the fund depletion time could be controlled by partial adjustment of the contribution rate and by the state's financial subsidy (Jung, C. L., 2009). The seriousness of the insecurity of old age income for the present and future elderly does not seem to significantly matter for them. This institutional and political situation surrounding the NPS has kept the NPS from evolving toward gradually adopting proper measures for state financial responsibility. This attitude increased the internal contradiction that led to the great distrust of the public in the NPS. As Clemens and Cook (1999) explained and this research assumed, the incredible distrust of the people in the NPS showed that the NPS lost the legitimacy and was exposed to policy failure. The pre-condition of the radical reform including structural change of the NPS was already established. The principle of fiscal conservatism was a decisive driving force coming from the innate feature of the NPS and leading to fundamental reform. So, how did the principle of fiscal conservatism affect the financial instability debate? We will now trace the relationship of fiscal conservatism and the long-term financial instability issue in Korea.

2. Long-Term Financial Instability

Many scholars in Korea, particularly economists, believe that 'the priority among pension system issues to urgently solve is the problem of long-term financial sustainability and the actual cause of the problem is the unbalanced benefit structure: disproportionate structure between contribution and benefit' (Moon, H.P., 2004: 16). Yun, S.M. (2004b: 3) states his judgment of the NPS' financial situation as:

If the current system remains unchanged, it has been projected that the NPS will run a deficit starting from 2036 and that its fund reserve will be depleted by 2047. To address this problem, the National Pension Scheme contribution rate should be increased to 30.0 per cent by 2050 and to 39.1 per cent by 2070.

Yun, S.M. (2004b) argued that reducing benefits and increasing contributions were urgently needed because if the NPS matures, the retrenchment reform will be more difficult. He suggests evidence to support his argument. Firstly, in line with trends of Western countries, the NPS should follow the direction of reinforcing funding features without being over-dependent on the next generation. Secondly, reinforcing the pay-as-you-go trait is not fit for a post-industrial social structure with population ageing (extended life expectancy) due to low economic growth, unstable employment and low fertility. Reinforcing pay-as-you-go traits such as tax-based basic state pension system introduction is counter to world-wide trends. Depending on actuarial calculations focused on population ageing, economists such as Moon, H.P. strongly raised the financial instability issue of NPS in 1995 and this instigated the first round of NPS reform in 1997–1998, in which two issues, coverage expansion and financial sustainability, were confronted (Kim, Y.M. and Kim, K.S., 2005: 214). The NPS was planned as a defined benefit (DB) structure with contribution rates set at 9% of salary and a 60% income replacement rate before the 2007 NPS reform. The benefit level, 60% income replacement, can be regarded as moderate but too generous compared to the 9% of contribution rate. This research argues that the total contribution rate should be raised to the proper level. However, we should consider why the majority of Korean people do not agree with increasing the contribution rate, rather preferring the benefit reduction.

Korea has produced a lot of vulnerable people, mainly after the East Asian economic crisis started in 1997. The portion of irregular workers and the self-employed is much bigger than in any other OECD country. Many of them have been laid-off in the turmoil of national restructuring. It would be more difficult for them to make contributions if the contribution rate increases. This is why the government and politicians could not raise the contribution rate in the 2007 NPS reform. For them, a basic pension scheme that is tax-based and universal (Beveridgean scheme) or a contributory earnings-related benefit scheme like the NPS, with supplementary subsidizing measures such as a minimum pension guarantee and pension credits, is necessary. For both changes, the abolition of the principle of fiscal conservatism is a prerequisite.

Like in other developed countries, the main factor in the financial sustainability issue in Korea is population ageing (Kim, S.S., 2011). Using the United Nations' (UN) definition of old age, the average population rate of old persons in the OECD countries was 8.7% in 1960, 10% in 1970 and 13.7% in 2000, with this ageing trend continuing. The old age support rate (dependency ratio), then, will dramatically increase from 23.8% in 2000 to about 50% in 2050 (Jung, H.W., 2004, cited in Yun, S.M., 2004a). The dependency ratio¹⁰ is very important for welfare programs, particularly old age income security pension systems, in terms of financial sustainability. Most Western welfare states maintain pay-as-you-go financing schemes in which the working generation finances for the older generation's benefits. If the support rate becomes higher, the working generation should have a higher rate of contribution to support them. In this regard, Korea has very serious population ageing problems. Population ageing is proceeding very rapidly in Korea. Korea became an ageing society in 2000, much later than other OECD countries. However, the period in which a society is transformed from an ageing society to an aged society¹¹ will in Korea be the shortest in the world. For instance, according to the research of the OECD (2001), the period for the ageing society to be transformed into an aged society will be only 22 years in Korea, compared with 115 years

in France, 85 years in Sweden, 47 years in the UK and 24 years in Japan. As a result, the old age support rate in Korea will increase from 11.3% in 2000 to nearly 70% in 2050. Korea will take second place following Japan in its dependency ratio among OECD countries (Yun, S.M., 2004a).

The majority of scholars, as well as the bureaucrats of the Rho Moo-Hyun government and former regimes, seem to have a clear policy preference for system security (financial sustainability) instead of social security for the aged based on the assumption of the population ageing. However, some welfare-oriented scholars such as Kim, Y.M (2004)¹² do not agree with the logic of urgently needed retrenchment reform or even with the proposition of retrenchment. Firstly, he argues that even if the proposition suggested by scholars favoring retrenchment is accepted, the expected contribution rate after the 2030s, 19.5% of salary, is maintainable in the future. This is because this is a similar level to the present contribution rates of Western countries¹³. In addition, the expected levels of total pension benefit expenditure in 2050, 7% of GDP, would also be endurable because this is similar to the level of European countries' pension benefit expenditure in the late 1990s. Secondly, radical reduction of welfare benefits based on unclear long-term projections could result in serious social security problems because present pension system participants in Korea mostly have a very short contribution period because of the system's immaturity and unstable work conditions. Thirdly, the present generation has a right to be better supported by the next generation because it is in a situation of double payments: contributions for themselves and private transfers to their parents who do not benefit from the NPS. Fourthly, the contribution rate expected in the future to

¹⁰ This is the index that represents the level of burden imposed on the working generation by the old generation. This is the population aged over 65 divided by the population of 20-to-64-year-olds.

¹¹ According to the UN definition, an ageing society is a society in which people aged over 65 years comprise more than 7% of the total population and in an aged society the proportion is more than 14%.

¹² Kim, Y.M. is Professor in the Department of Social Work in the Jung-Ang University in Korea (Chief Social Secretary for the Moon Government from in 2018) and he has had the leading role in developing the position on social welfare issues and alternatives for a progressive NGO: The Unity for Participatory Democracy. He argues that recent debates on retrenchment of the NPS have some dangers which may result in serious social security problems for many elderly people in the future. Therefore many aspects, such as the negative prospects based on an uncertain long-term proposition, should be questioned (see Kim Y. M. (2004)).

¹³ This argument is reasonably based on the clear evidence of the Western welfare states. However, the argument should be supported by the fact that a substantial amount of the state's financial subsidy based on tax revenue is applied to the public pension system at the same time.

maintain the present income replacement ratio can be affordable if it is effectively adjusted by, for example, necessary taxation. Kim, Y.M. (2004) asserts that the argument for retrenchment over-emphasizes only financial aspects and that it sees the situation around the pension system too negatively, with some neglect of the real welfare situation of the present generation. Judging from these two arguments, the issue of financial sustainability seems to call for further discussion. Regarding the general theoretical logic about financial methods and practices in actual policy, and world-wide multi-pillar public pension recommendations by international organizations such as the ILO, World Bank and OECD, the combination of contributions and taxation as a source of public pension financing is necessary. The state's financial subsidy for the public pension system must be the 'Majungmul', which in Korean implies a few spoonful of water being poured into the mouth of the water pump to attract a lot of bucketful of water from the deep earth.

However, it is clear that the debates on reform of the public pension system had been dominated by the long-term financial sustainability issue in both special occupational public pensions and the NPS in Korea. This one-sided debate necessarily resulted in the radical benefit reduction, leaving the contribution rate at a lower level. The income replacement rate of the NPS fell from 70% to 60% in the 1998 reform (and then to 40% in the 2007 NPS reform). The benefit level before 2007 reform was not low compared with that of the advanced Western countries. However, the real replacement rate, indicating the very short insured period (about 21 years), meant that other reform measures were highly needed. Nevertheless, even just after the 1998 NPS reform, whose focus was radical retrenchment for increasing long-term financial sustainability, voices calling for further retrenchment were raised again. This may be clear evidence of fiscal conservatism because further retrenchment reform enables the government to not subsidize tax revenue for the NPS. The reformist Rho Moo-Hyun government, persuaded by welfare bureaucrats, initiated another retrenchment NPS reform in 2003 just after the inauguration of the regime, against Rho's election promise. Even though the bill was blocked in Parliament in the first reform stage, the income replacement rate of the NPS was radically reduced from 60 per cent to 40 per cent until 2028. This is a clear representation of the resilient policy orientation of financial stability reform, rooted in fiscal conservatism.

So, what was the destiny of the parametric reform bill?

The NPS reform bill proposed by the government in 2003 to Parliament was blocked by the majority opposition party and lost legitimacy because of the online Anti-Pension Movement while the retrenchment reform bill was in Parliament. Additionally, the opposition party backed by the Netizens¹⁴ strongly raised the blind spot problems and suggested a structural NPS reform. According to Clemens and Cook (1999), a certain policy containing clear internal contradiction, if it does not evolve gradually, can produce grave-diggers, increasing the opponents to the present policy over time. The principle of fiscal conservatism, representative of a force seeking financial sustainability reform, was proven to be the prominent factor of radical NPS reform. What, then, was the clear evidence of NPS' loss of legitimacy among the public? We will discuss the distrust of the people in the NPS and the effect of this in the next section.

C. Policy Failure and Distrust of the Public in the NPS

The effect of the NPS on the people's life seems to be best expressed by the public's distrust in the system (Kim, Y.H., 2004). Even though the benefit scheme was unrealistically generous in appearance, the level of credibility of the people was excessively low and the resistance to the system was strong. Even though we consider the NPS to have been immature in its existence, and thus the usefulness of the system was not fully recognized by people in general, the level of the distrust was difficult to understand. In-depth study of the causes of distrust in the NPS is still scarce and preceding studies have been mostly superficial, with the exception of the study by Kim, Y.B. (2003)¹⁵. He saw the crisis of social insurance as a crisis of trust, which should be the basis for the system to survive. A definitive analysis of the causes of the lack of credibility in the system, thus, seems to

¹⁴ This term Netizens is an abbreviation of 'Network Citizen' and refers to persons who are actively using internet for non-profit purpose.

¹⁵ He analyzed health insurance and national pension systems in Korea with the three criteria developed by Rothstein (2001): 'substantial justice', for which the system is believed to be necessary; 'procedural justice', which the system is believed to exercise fairly; and 'just distribution of burden', where the system is believed to share the costs and benefits rationally among all participants.

be difficult. He argues that the trust of the insured in the social insurance system is the most important element for the system's long-term sustainability. If the majority of subscribers to a policy do not trust the scheme, it is inevitable that they will engage in various opportunistic behaviours and thus reduce the efficiency of the system. The inefficient system reinforced by the negative feedback effects would result in more severe distrust. Widespread distrust in a pension system shows the critical viewpoint of people regarding the system and leads to strong demand to radical change of the system. In this sense, it can be said that the deeper the extent of the distrust, the greater the demand for a fundamental change in the system. There is plenty of evidence on how and to what extent the public pension systems of Korea are distrusted by people. Even though the area of emphasis is different, relatively conservative economists also agree on the seriousness of distrust in the public pension system in Korea (see Moon, H.P., 2004). According to a survey of employees that was carried out by the Insurance Development Institute (IDI) in August 2004, the average level of satisfaction over the NPS in Korea was only about 1.53 out of 5. This shows the extreme dissatisfaction with the NPS among the population in Korea (Ryu, K.S., 2004). The survey also showed employees' opposition to the present NPS scheme. It was seen that 78.8% of respondents preferred a structural reform towards a two-tiered pension system including a basic state pension (Ryu, K.S., 2004). On the other hand, a member of Parliament publicized an internal survey of the National Pension Service (NPSrvc), mentioning that only one out of ten people in their 20s–30s years old was satisfied with the present NPS (Korea Herald Daily 24 Feb. 2005). Kim, Y.B. (2003) concludes that social insurance such as the NPS in Korea had lost credibility of the people concerned because it did not show fair redistribution both in policy design and in the development process (Ryu, K.S., 2004: 19–21). The research argues that the clearest evidence of people's deep distrust in the NPS was the 'Anti-NPS Movement', which was inspired by a Netizen in May of 2004. This movement was instigated by an ordinary person with a short article titled '8 Secrets about the National Pension System' in which severe complaints about the NPS were expressed. This rapidly spread on the web with opinions being added. Within a few days, strong anti-pension sentiment overwhelmed the whole country. This affected most policy-making actors as well as the general public.

Underlying distrust in the NPS was recognized by all political actors as well as the general public. The process of passing the NPS reform bill focusing on financial sustainability without proper government subsidy was stopped and structural reform was recognized as necessary by the public (Kim, S.K. 2010; Seoul Daily 31 May 2004). Contrastingly, the people in the European countries express their best preference for the public pension systems among modern welfare programs (Wim van Oorschot, 2000). From the historical institutionalists' point of view, members' distrust in an institution can be an internal force for institutional change (Clemens and Cook, 1999). In this sense, the serious level of insured members' distrust can be regarded as representative of strong demand for fundamental reform of the NPS. If distrust becomes abnormally severe due to certain factors, this would magnify the potential power for change in the system. What, then, can be regarded as the influential factors that have provoked such severe distrust in the public pension system in Korea?

On the other hand, two aspects are central to understanding the true features of this incredible phenomenon of distrust. Firstly, the fact that the NPS does not successfully achieve the basic missions of it as an old-age income security system would be one of the critical causes of the people's distrust. As mentioned before, welfare systems such as pension systems have to provide income security as well as poverty prevention for most participants (Flora and Heidenheimer, 1981). Moreover, adequate benefits, with which the middle and upper classes can maintain their living standards, must also be secured through ensuring effective saving mechanisms¹⁶. As a result, securing the system coverage and benefit adequacy would be the basic missions of public pension systems. A system which does not exercise properly these basic roles may not obtain people's trust. Secondly, it is self-evident that members will feel betrayed if the government continuously emphasizes the necessity of retrenchment of the system which was introduced only a decade ago by the government without social dialogue and consensus (National Pension Research Institute, 2006; Kim, Y.H., 2004). Although

¹⁶ Although the income of the middle class is not normally transferred from redistribution within a generation, middle class people can gain extra income from various other mechanisms such as inter-generational income transfers, credit support from tax and investment returns from funds.

there may be some dissent among participants regarding the content of the NPS, had it evolved through genuine procedural justice¹⁷, then it would not bring about such an extreme blaming reaction as the demand for its abolition. In this respect, it appears that along with the substantial problems of the system's contents such as problems of coverage, adequacy and equality as well as financial sustainability, the loss of legitimacy of the policy-making procedure has also been a critical cause of distrust in the public pension system in Korea. What, then, did make clear the loss of legitimacy of the NPS to the eyes of political actors and general public?

D. The Emergence of Competing Reform Alternative: Beveridgean Pension Model

This research adopts the concept of 'multiplicity' based on Clemens and Cook (1999). Multiplicity is defined as 'the existence of multiple institutions' (Clemens and Cook, 1999: 450). In the situation of a policy failure, if there is a competing policy alternative, the legitimacy of the policy can be intensively eroded. In this sense, there was a strong challenge by the Beveridgean model to the conventional Bismarckian type scheme represented by the NPS, which had maintained the strict principle of fiscal conservatism.

1. The Bismarckian Model's Pitfalls with the Strict Principle of Fiscal Conservatism

As discussed above, a social insurance scheme has pitfalls in the coverage and benefit adequacy for the subscribers in cases when it is not appropriately supported by the state. This is a problem because there is a high possibility of unemployment in modern post-industrial society due to the increased flexibility of labor markets. There are also many irregular workers, late entrants into the labor market due to higher education, self-employed workers with low income in the service industries, etc. These are the significant new risks in the post-industrial society (Taylor-Gooby, 1999). Social insurance systems are designed on the presumption of full employment. However, this is almost impossible in a post-industrial

society. In this sense, social insurance welfare programs based on social insurance principles should be supplemented with a tax-based universal scheme for those with a lack of proper contribution history. Even though social insurance welfare programs such as public pension systems started without a clear logic of state financial subsidization, the social insurance contributory elements were supplemented by a universal tax-based scheme or the state's subsidization over time (Bonoli, 1997, 2003).

In general, a social insurance system plays the role of exercising the basic functions of the state for the whole nation as well as the function of insurance for eligible insured people. Among them, insurance takes the role of a risk spread function among participants and helps smooth individual income distributions from working life to after retirement. As a function of the state, there is redistribution to encourage social harmonization and stability. There are other functions of the state which are entrusted to the social insurance system because it is effective (Lee, J.W., 2002). For example, there are diverse pension credits in Western countries which operate within social insurance welfare systems. Pension credit is a program whereby the state pays contributions for the subscribers who sacrificed paid work for the common good of the society. Those pension credits are for national defence duty, higher education, childbirth or maternity leave. Most Western countries introduced and expanded the pension credit system and supplement the lack of contribution history so that the insured acquire proper pension rights. However, in contrast to Western countries, there was no credit system in the NPS before the 2007 reform. Only a tiny part (5 per cent in 2007) of administrative costs was financed by tax revenue (National Pension Service, 2008). The portion of state financing in the NPS in 2006 was only 0.004% of total annual income. This is quite a contrast with the Western countries, which share about 20% to 30% of annual expenses (see Lee, J.W., 2002; National Pension Service, 2008). In the diverse discussions on the financing principle of the NPS, fiscal conservatism was proven to be one of the critical causes of the financial instability of the NPS as well as income insecurity of the elderly.

2. The Challenge of the Beveridgean Model

Contrastingly, the level of financial assistance by the state for the social insurance system in foreign countries

¹⁷ Rothstein (2001) suggested 'procedural justice' as one of the key criteria by which the credibility of a policy can be measured.

is significantly higher than in Korea in terms of the amount and content. For example, in Switzerland, the portion of state support is $\frac{1}{3}$ of the total expense of the public pension system. In France and Germany, it is about 20% and 30 % of total expense of the public pension system respectively. For the farmer's pension insurance in Germany, the government subsidizes three-fourths of the total expense (Kim, S.W., 2007; National Pension Service, 2008). In many European countries such as Germany, France and Sweden, the government pays all contributions for people who are on leave for family care, national defence duty, and higher education. The portion of the state subsidy in the social insurance model should be decided in accordance with the type of function of the source of financing for a welfare program (Schmahl, 1985). Based on this principle, the cost of the function of income security should be financed by subscribers' contributions. Conversely, the costs of exercising the functions of the state should be financed by tax (Lee, J.W., 2002). In this regard, most international organizations regardless of their policy orientation have suggested tax-based public pension schemes for poverty prevention. Among them, the International Labour Organization (ILO) has maintained welfare-oriented policy guidelines. In contrast, the World Bank has preferred the economic growth policy. Due to the huge blind spot in the social insurance contributory public pension schemes, a tax-based universal pension scheme has been an essential requirement for the complement of social insurance scheme. However, the financing principle based on the implicit international consensus was not adopted in the NPS by the Korean government. Even though the NPS has maintained strong redistribution measures for low-income participants, the government does not provide a proper level of finance from tax revenue to the NPS except for a tiny portion of administration cost. In this respect, the NPS has clearly maintained the principle of financial conservatism under which the Korean government has not provided proper tax revenue to the NPS. The outcome of this financing policy of Korea must be the prevalence of old age poverty and long-term financial instability in welfare programs such as NPS. What will happen in the public pension systems, particularly in the NPS, in the next stage of following the long-run conservative financing principle?

We can examine the general viewpoint of the policy experts in the NPS reform policy-making circle in 2002 under the Kim Dae-Jung government. For instance, there

was a resolution on the principles of the NPS reform direction by the Institution Expertise Committee on 20 November 2002. It contained the reform principles that 1) financial stability measures with adjustment of benefit structure should be the first policy priority and 2) social security measures with adoption of a multi-pillar system should be the second priority (Kim, S.K., 2010). The ensuing decision was the declaration that the government would not use tax revenue to ensure both income security and financial sustainability of the NPS. It was a principle of financial stabilization first and resolution of the blind spot problem next. It became the clear guidance of the 2007 NPS reform. The reform board developed three retrenchment reform alternatives without any measurement for the state's financial subsidy. This is another example of the resilient principle of fiscal conservatism in the NPS because the principle and the alternatives guided by this principle absolutely excluded the other options based on Beveridgean principle. There was no option for President Rho Moo-Hyun to choose in 2003. The Rho, Moo-Hyun government, issued a retrenchment reform bill to the Legislature in 2003. However, increased internal contradiction of the NPS originated from the fiscal conservatism and the emergence of competing alternatives resulted in the government's reform bill being blocked and even abolished in the first stage of the 2007 NPS reform. The alternative reform bill was suggested by the opposition party and the reform debates were dominated by the blind spot issue and introduction of the Beveridgean poverty prevention scheme in the next reform stage. In this situation, there was a competing alternative, a basic pension system based on tax revenue. The basic pension system as the first pillar in the multi-pillar system had been supported by all major international organizations such as the ILO and World Bank. It was also suggested by the World Bank to the Korean Government when the national restructuring caused by the East Asian economic crisis was in progress in 2002. In practice, the structural NPS reform alternative was set as the recommended one by the reform board in the Kim Young-Sam government in 1997. There was already a strong reform alternative, the basic pension, and the tax-based basic pension was greatly preferred by the general public in Korea (Ryu, K.S., 2004).

If the government of Korea had taken necessary financial responsibility for the public pension system step by step, both the income insecurity problem and financial

instability problem would have been considerably mitigated and the severe distrust in the NPS would not have emerged. As a result, the demand by the public for structural reform would not have been so great. The financial conservatism of Korea was the most significant element which resulted in the internal contradiction of the NPS so that it increased the potential for radical reform. If the ambitious political entrepreneurs, political parties, try to exploit this situation for their interests, the influential reform alternative, Beveridgean model, could be introduced. The Basic Old Age Pension in the 2007 NPS reform was introduced through this procedure in the changed political institutions and the changed political configurations which were the extra conditions for the structural NPS reform.

IV. Conclusion

The NPS was designed as a contributory social insurance system in which accumulated contributions paid by the insured were the main sources of pension benefit. Under the contributory social insurance scheme, social minorities with low or unstable income could not pay contributions over the necessary period and at the necessary level to be entitled to adequate pension benefits. Thus, this system should have been complemented by other schemes based on a universal tax-based financing principle. However, the NPS, which maintained a strict principle of fiscal conservatism, could not be transformed to meet the necessary needs of the insurable persons through an evolutionary process.

The principle of fiscal conservatism in Korea resulted in income insecurity among the old. Real coverage of the NPS in 2007 was only 57.5% of the eligible workforce. Only 27.9% of the elderly aged 60 and over were receiving any type of public pension benefit in 2007. 90.5% of beneficiaries were receiving a benefit that was below the minimum living cost. Judging from the number of beneficiaries receiving less than the minimum living cost, about 95% of the elderly could be regarded as in the blind spot of the pension benefit. As a result, Korea took first place for relative old-age poverty among OECD countries. On the other hand, public distrust in the NPS was incredibly high. This implies the NPS's loss of legitimacy among the public. The online anti-NPS movement,

which arose in 2004, was a symbol of the phenomenon. In this situation, a strong policy alternative, the Basic Pension System, presented a challenge to the NPS. The Basic Pension System had already been prepared and even suggested by the World Bank, and the reform board of the Kim Young-Sam government recommended it as the preferred alternative¹⁸. The multi-pillar Basic Pension System, based on tax, not on contributions, emerged in 2002 as a presidential election pledge of the presidential candidate of the opposition party. Moreover, the tax-based Basic Pension System was much preferred by the Korean public. Following the framework of Clemens and Cook (1999) and Sewell (1992), the other significant condition, multiplicity (the existence of strong alternatives), was thus achieved.

Through the 2007 NPS reform, the benefit level, the income replacement ratio, was radically reduced from 60 percent to a planned 40 percent by 2028. However, the Basic Old-Age Pension System, with about 5 percent of average earnings of the insured, was newly introduced, with coverage of 70 percent of the elderly aged 65 and over. The Basic Pension System's benefit level was increased twice, to about 10 percent of the average income of the participants in 2015 and to 13 percent in 2018.

In conclusion, the internal contradiction of the NPS, caused by the principle of fiscal conservatism, can be proven to have been the determinant of the radical NPS reform, as certain institutional conditions were met. In the 2007 NPS reform process, the prerequisite for fundamental reform of the NPS seemed to be fully achieved. The process exactly followed the assumptions of Clemens and Cook (1999). Firstly, fiscal conservatism embedded in the NPS produced policy problems, such as serious income insecurity and long-term financial insecurity. It also continuously accumulated internal contradictions within the NPS. Secondly, the accumulated internal contradictions resulted in the policy failure and loss of trust of the public in the NPS. Thirdly, a competing reform alternative (a tax-based basic pension scheme) emerged. Accordingly, the legitimacy of the present NPS, based on strict fiscal conservatism, was lost. So, what will be

¹⁸ The structural reform alternative recommended by the reform board of the Kim, Yeong-Sam government was rejected by the subsequent Kim Dae-Jung government because the policy focus of the alternative was regarded as the reflection of a neo-liberalist idea of the privatization of welfare programs (see Yang, J.J., 2004b).

next? According to the assumptions of Clemens and Cook (1999) and other historical institutionalists, the next stage we have to discuss in the next piece of research relates to the behavior of ambitious political entrepreneurs. They may actively attempt to co-opt the competing alternatives to compete with opposing political actors. The outcome was found to be the transformation of the NPS into a two-tier public pension system structure: the NPS and the Basic Old-Age Pension System (renamed as Basic Pension System later).

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How Does Medical Expenditure Affect Economic Development? Evidence from OECD countries

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A B S T R A C T

This study views medical expenditure as an enhancement factor to human capital and, as such, medical expenditure and national healthcare system can have a positive impact on economic development. Using a non-balanced panel data of 26 OECD countries during the period of 1980 and 2008, we find that, as expected, the level of medical expenditure has a positive effect on economic development. In particular, total medical expenditure, public health expenditure and current health expenditure all show a positive effect while cost of capital for forming health care system has a negative impact on economic growth. No statistically significant effect of private health insurance expenditure is found. The effect of national healthcare system is also examined. Both National Health Service and National Health Insurance groups indicate a positive effect on economic progress with respect to total medical expenditure and public health expenditure. On the other hand, current health expenditure and private health insurance expenditure positively affect the National Health Insurance countries but negatively affect the National Health Service countries.

Keywords: Medical Expenditure, Healthcare System, Dynamic Panel Data Model, Economic Development

1. Introduction

Private health insurance may be one of the key areas to attract increasing attention of financial consumers in economy while it is also crucially important in politics for some countries such as the USA which lacks in nationwide health insurance system. Does private health insurance or public health insurance help financial consumers or national economic growth? Aging trend of global population, along with growing expenditure on healthcare

services, has brought the services and corresponding financing system as a top priority in government policies in many countries.

A number of economists believe healthier people can be more productive, suggesting better health performance can generate better economic performance if other factors are held constant (Hartwig, 2010). Not only health has been viewed as a critical component for economic growth (Sen, 1999), healthy population has also implied more productive labour input for economic development (Bloom and Canning, 2000). Moreover, according to The Commission on Macroeconomics and Health(2001), investment in health has facilitated both economic development and poverty reduction. Also, accessibility to adequate treatment for curable diseases has accounted for the poverty level of households (Liu et al., 2003). Therefore, it is assumed that health, economic growth and poverty reduc-

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tion are closely linked.

Furthermore, healthcare has improved economic growth as well as health itself (Roberts et al., 2004). Healthcare service includes both consumption and investment elements. Previously, healthcare service was perceived as consumption goods needed for better quality of life. As economic theories evolved, health and education have become recognised as human capital, which allows to evaluate healthcare service as investment goods that secure quality of labour and productivity (Kim et al., 2012).

Since Schultz(1961) first recognised health as human capital, a series of previous studies have reviewed the connection between health and economy which is discussed in the following section. Based on the previous literature, this study considers medical expenditure as human capital and explores the effect of medical expenditure and national healthcare system on economic growth. Using dynamic panel data of 26 OECD countries, System GMM is estimated to examine how different structures of healthcare spending and national healthcare system affect economic growth.

II. Literature Review

Since Schultz(1961) first referred health as human capital, a number of authors have viewed health as a vital factor for future productivity. Mankiw, Romer and Weil(1992) explored the impact of savings, education and population growth on countries' income using Augmented Solow Model, which further considered human capital in Solow Model. Barro(1997) and Gemell(1996) stated health positively affected economic growth. Besides, Knowles and Owen(1995) revealed the relationship among health, education and economic growth, which greatly influenced the future studies.

Initially, health was measured only by life expectancy that was inclined to indicate a positive effect on GDP per capita in general (Knowles and Owen, 1995; Bloom et al., 2001; McDonald and Roberts, 2002; Li and Huang, 2010). However, with MRW model applied for 84 countries, Knowles and Owen(1995) explained the effect was more appealing in low-income countries even though life expectancy generally showed a positive relationship with economic growth.

Recently, a variety of proxies for health capital have been introduced. For example, McDonald and Roberts(2002) applied infant mortality and life expectancy as health variables of 5 yearly averages for 77 countries (22 OECD countries, 55 low-income countries(excluding OECD countries), 39 low-income countries (excluding South American Countries)). The result implied health had a positive impact on low-income countries, whereas no significant effect was discovered in OECD countries.

Also, Li and Huang(2010) employed life expectancy and mortality as proxies for health for Southern Asian countries between 1961 and 2007. In their MRW model, health and education were shown as critical factors for economic growth even after Asian Financial Crisis. Moreover, health suggested a stronger statistical significance than education. Adult survival rate as a proxy for health was also adopted. Using the survival rate, Bhargava et al.(2001) and Jamison et al.(2005) explained health positively influenced economic growth.

Li and Huang(2009) additionally considered healthcare environment for 28 cities in China during the period of 1978 and 2006 to probe the connection among health, education and economy. China is a developing country, for fundamental education is critical. Therefore, the number of primary school students per teacher was defined as education capital. Besides, the ratio of population with or above secondary education was also considered. As for health capital, the number of beds and doctors every population of 10,000 was used. The empirical result explained health had a positive nexus with economic growth. When both education and health capital were jointly examined, the effect was somewhat identical to a certain degree but education capital showed a stronger significance than health capital.

In recent studies, scholars such as Heshimati(2001), Gyimah-Brempong and Wilson(2004), Rivera and Currais (2004) and Hartwig(2010) introduced medical expenditure as health capital. Interestingly enough, each of the results varied. Heshimati(2001) investigated the causality between GDP and medical expenditure. Using data from OECD for the period of 1970 and 1992 for the estimation of Augmented MRW model, he suggested medical expenditure caused a positive effect on economic growth.

Gyimah-Brempong and Wilson(2004) explored the relationship between health and economy to analyse the different effects between developing countries and developed countries. Through the estimation of GMM model

based on dynamic panel data of 4 yearly averages for the period of 1961 and 1995, health capital both in OECD countries and sub-Saharan African countries evidenced its positive impact on GDP per capita.

On the other hand, Hartwig(2010) revisited the connection between medical expenditure and economic development using data of 21 OECD countries between 1970 and 2005. Various models were estimated such as OLS, Arellano-Bond one-step GMM and Arellano-Bond two-step GMM. The results indicated health capital had an inverse relationship with long-term economic progress.

While health capital has certainly showed a positive impact on GDP in poor countries, the results on the relationship have differed in rich countries(Weil, 2007). For instance, Heshmati(2001) Rivera and Currais(1999a, 1999b, 2003) proffered that increasing medical expenditure improved productivity among OECD countries. Conversely, Hartwig(2010) argued there was no relationship between health capital and economic growth in developed countries. Similarly, Knowles and Owen(1995), McDonald and Roberts (2002) rejected the hypothesis that life expectancy promoted productivity in rich countries. Bhargava et al.(2001) proved that adult mortality had a negative impact on economic growth especially in the United States, France and Switzerland.

Furthermore, it is crucial to question the impact of public healthcare system on economic growth. Rivera and Currais(2004) surveyed the impact of public medical expenditure on productivity in 17 cities of Spain. The research witnessed there was a positive connection between the two factors. However, when the public health expenditure was split into two groups, i.e. current health expenditure and health capital formation cost, current health expenditure showed a positive effect on economic growth while health capital formation cost did not indicate any relationship.

Also, it should be addressed that the role of private health insurance is as much important as public healthcare system. Insurance essentially provides protection for risks, which can not only directly influence national income but also indirectly contribute to both increase and stability in income. In addition, insurance has facilitated households' spending and employment, which effectively increases national income. In particular, life and healthcare insurance can play a significant role in national wealth by fostering firms' production activities(Jung et al., 2000). Even so, little research has been conducted to define

the macro effect of private health insurance as each country has different standards in the private sector. Nam(2006) probed the relation between insurance industry and economic development among 16 countries with GDP per capita being over USD 20,000. Gross written insurance was used as a proxy for each insurance industry. Impulse Reaction Analysis and ANOVA were carried out, which proved that insurance industry promoted economic growth. Also, it explained that insurance produced stabilising effect for inflation and employment.

Finally, Propper(2000), Gruber and Simon(2008) identified the relationship between public and private healthcare expenditure. Applying the UK Households panel data from 1991 to 2000, Propper(2000) revealed private healthcare sector played a complimentary role in public healthcare sector. Gruber and Simon(2008) analysed the effect of expanded coverages of Medicaid and Medicare on private insurance sector. The result suggested there was a crowding-out effect between the two healthcare systems.

Based on the previous literature, this study aims to address the effect of health on economic growth among OECD countries. As previously mentioned, health capital was measured by various proxies. In this study, medical expenditure is employed to explore its effect on economic growth. Different types of medical expenditure on economy are considered as well. Table 1 summarises the previous studies on the relationship between health capital and economic development.

III. Research Methodology and Data

A. Research Methodology

This study imitates Knowles and Owen(1995)'s approach, which includes both education and health as human capital in neoclassical growth model that was first proposed by Solow in 1956. Also, dynamic panel data is employed to conduct the analysis.

Although static panel data model can reflect unique traits of each data due to individual-specific effects, it excludes time-series effect of dependant variables as it can not consider internal factor of dependant variables. Dynamic panel data model overcomes such limitation

Table 1. Previous Studies on the Relationship between Health Capital and Economic Development

Researcher(s)	Proxy for Economic Development	Proxy for Health Capital	Countries/Period	Result
Barro & Sala-i-Martin (1995)	GDP per capita growth rates	Life expectancy	134 countries/ 1965-1985	0.046 [*] -0.082 [*]
Knowles & Owen (1995)	GDP per worker	80-Life expectancy	84 countries/ 1960-1985	0.342 [*] -0.381 [*]
Rivera & Currais (1999a)	GDP per worker	Medical expenditure /GDP	OECD countries/ 1960-1990	0.22 [*] -0.33 [*]
Rivera & Currais (1999b)	GDP per worker	Medical expenditure /GDP	OECD countries/ 1960-1990	0.21 [*] -0.22 [*]
Bloom et al. (2001)	GDP per capita growth rates	Life expectancy	104 countries/ 1960-1990	0.04 [*]
Bhargava et al. (2001)	GDP per capita growth rates	Adult survival rate	73-92 countries/ 1965-1990	0.181 [*] -0.358 [*]
Heshimati (2001)	GDP per worker	Medical expenditure per capita	22 OECD countries/ 1970-1992	0.175 [*]
McDonald & Roberts (2002)	GDP per worker	80-Life expectancy	77 countries/ 1960-1989	-0.006-0.12 [*]
Rivera & Currais (2003)	GDP per worker	Medical expenditure /GDP	OECD countries/ 1960-2000	0.18 [*] -0.26 [*]
Rivera & Currais (2004)	GDP per worker growth rates	Public medical expenditure	17 cities of Spain/ 1973-1993	0.13 [*]
Gyimah-Brempong & Wilson (2004)	GDP per capita growth rates	Medical expenditure /GDP, Child Mortality,	22 OECD countries, 21Sub-Saharan African countries/ 1961-1995, 1975-1994	0.0493 [*] -0.0907 [*]
Jamison et al. (2005)	GDP per capita	Adult survival rate	53 countries/ 1965-1990	0.50 [*]
Li & Huang (2009)	real GDP per capita	the no. of beds and doctors per 10,000 people	28 cities of China 1978-2005	0.12 [*] -0.55 [*]
Li & Huang (2010)	real GDP per capita	Life expectancy, Mortality	10 South Asian countries/ 1961-2007	0.62 [*] -0.91 [*]
Hartwig (2010)	real GDP per capita	Real medical expenditure per capita	21 OECD countries/ 1970-2005	-0.124(-0.210 [*])

Note: * denotes statistical significance.

by considering lagged dependant variables in static panel data model. According to Hsiao(1986), the equation of dynamic panel data model that dependant variables follow a first-order auto regression can be constructed as follows:

$$Y_{it} = \alpha + \gamma Y_{it-1} + \beta X_{it} + \epsilon_{it}, \quad \epsilon_{it} = u_i + e_{it}$$

Y_{it} stands for dependant variables observed in country i of year t ; X_{it} independent variables; α constant; u_i individual effects; and e_{it} errors. In relation to static dynamic panel data model, X_{it} and u_i can have correlations, which is not seen as critical in dynamic panel data model. However, it is particularly vital to verify the correlations between Y_{it} and u_i when estimating GMM

because the correlations can still exist even after difference, i.e. $\Delta Y_{it} = Y_{it} - Y_{it-1}$ and $\Delta u_{it} = u_{it} - u_{it-1}$. For this reason, Arellano and Bond(1991) used lagged variables as instrument variables. As such, in the first difference of regression equation, lagged independent variables in level are used as instrument variables, while in the level of regression equation, lagged independent variables in first difference are used as instrument variables.

The following is the panel data linear regression model for the analysis of the relationship between medical expenditure and economic growth:

$$\ln GDP = \alpha + \beta_1 \ln GDP_{-1} + \beta_2 \ln HE + \beta_3 \ln PEE + \beta_4 \ln IT + \beta_5 \ln (n + g + \delta) + u_i + e$$

In the equation, GDP indicates real GDP per capita (US\$ PPP); HE total medical expenditure per capita (US\$ PPP); PEE gross enrollment ratio (primary and secondary school combined); TI total investment rate (as a percentage of GDP); $n + g + \delta^1$ workforce growth. It is noted that medical expenditure is divided into several types - total medical expenditure, public health expenditure, health capital formation cost, current health expenditure and private health insurance expenditure so that each of the effects on GDP can be estimated.²

B. Data and Variables

This study explores how medical expenditure influences economic development³. For the analysis, unbalanced panel data from 26 OECD countries during the period of 1980 and 2008 is used.^{4,5} Only 5 countries including Finland, South Korea, Spain and etc. have the complete data set for the observation period. Having said that, various countries are still considered in spite of inconsistent observation periods. In addition, the effect of different national healthcare systems is also examined. Broadly, there are two types of healthcare systems: National Health Service and National Insurance Service. Countries that provide healthcare through National Health Service include Australia, Canada, Denmark, Iceland, Ireland, Italy, New Zealand, Portugal, Sweden and the UK. Countries that provide healthcare through National Health Insurance include South Korea, Austria, Belgium, Czech Republic, Finland, France,

Greece, Hungary, Japan, Mexico, Netherlands, Norway, Poland, Spain and Switzerland. Unlike the past studies, the United States is excluded because it does not offer healthcare on a national basis for it may distort the result.

Real GDP per capita (GDP) is a dependant variable for economic growth, which is extracted from OECD and expressed in PPP⁶ terms. Various types of medical expenditure per capita are considered as health capital. By doing so, it can observe each of the different effects on economic growth: Total Medical Expenditure(THE), Public Health expenditure(PHE), Health Capital Formation Cost ($PFHE$), Current Health expenditure ($PCHE$), Private Health Insurance Expenditure ($PIHE$). Gross Enrollment Ratio (PEE) substitutes for education capital. Finally, Total Investment rate(as a percentage of GDP) (TI) is also examined. Table 2 describes the definition of each variable and its sources.

C. Descriptive Statistics

Table 3 illustrates descriptive statistics of medical expenditure in OECD countries. The total data set consists of 664 observations from 26 OECD countries during the period of 1980 and 2008. As mentioned earlier, it is an unbalanced panel data of which observation periods are not completely consistent. As such, there exist some missing values and the observed values in each model are different.

With regard to national healthcare systems, 269 observations are produced from the National Health Service group while 395 observations from the National Health Insurance group. As shown in Table 4, the National Health Service group indicates slightly higher GDP per capita and Gini's coefficient. Also, they spend more on public health expenditure, while the National Health Insurance group spend more on private health insurance expenses. There is no substantial difference in health capital formation cost however, there exists a gap between the two groups in relation to current health expenditure.

¹ ' $n + g + \delta$ ' accounts for the total value of population growth, technical growth and depreciation rate. $g + \delta$ ' is 0.05(5%) suggested by Mankiw et al.(1992)

² This study examines four different models. Each model considers different types of medical expenditure to analyse each of the effect, i.e. total medical expenditure, public health expenditure, health capital formation cost, current health expenditure and private health insurance expenditure.

³ Stata 11.0 is used for the data analysis.

⁴ Balanced panel data for the period of 1999 and 2008 is also examined, including 13 countries of Australia, Ireland, Italy, Portugal, Austria, Finland, France, Germany, Hungary, Japan, South Korea, Mexico and Spain. This is to address the recent impact of increasing medical expenditure on economy, which is mainly due to the rising number of elderly population and advance in technology. It can provide a supplementary explanation for the empirical results.

⁵ Hsiao(2000) explained sorting countries by income allows to analyse the relationship between health and economy in a more efficient manner as it allows us to easily identify different healthcare systems, the size of the healthcare funds and financial risks arising from unhealthy population.

⁶ Since every country has a different purchasing power for one US dollar, it may lead to distort the comparative results. In order to overcome the limitation, PPP is applied, which provides information on what one US dollar can buy in different countries by considering the price level of each country. PPP herein stands for Purchasing Power Parity(Henderson, 2009).

Table 2. Definition of Variables and Sources

Variables	Definition	Source(s)
<i>GDP</i>	Real GDP per capita (US\$ PPP)	OECD statistics
<i>THE</i>	Total Medical Expenditure per capita (US\$ PPP)	OECD statistics
<i>PHE</i>	Public Health Expenditure per capita (US\$ PPP)	OECD statistics
<i>PFHE</i>	Health Capital Formation Cost per capita (US\$ PPP)	OECD statistics
<i>PCHE</i>	Current Health Expenditure per capita (US\$ PPP)	OECD statistics
<i>PIHE</i>	Private Health Insurance Expenditure per capita (US\$ PPP)	OECD statistics
<i>PEE</i>	Gross Enrollment Ratio (primary and secondary combined)	World Bank Edstats
<i>TI</i>	Total Investment Rate (as a percentage of GDP)	OECD statistics

Table 3. Descriptive Statistics of Medical Expenditure in OECD countries

	NOB.	Mean	S.D.	Max.	Min.	Observation period ¹⁾
<i>GDP</i>	664	52386.16	15010.06	95720.32	14105.08	1980-2008
<i>GINI</i>	642	28.94	5.15	49.50	19.70	1980-2008
<i>THE</i>	662	1687.79	983.61	5229.80	88.70	1980-2008
<i>PHE</i>	639	1261.35	761.15	4408.40	19.10	1980-2008
<i>PFHE</i>	512	58.31	43.20	273.00	2.20	1980-2008
<i>PCHE</i>	512	1193.16	731.13	4151.00	16.50	1980-2008
<i>PIHE</i>	387	110.6718	122.53	509.30	0.30	1980-2008
<i>PEE</i>	642	102.04	8.64	135.22	83.24	1980-2008
<i>TI</i>	664	22.71	5.42	47.79	10.39	1980-2008

Notes: 1) Different observation period is acquired for each country and model.

2) The statistic value of *PHE* is from Model 2; *PFHE* and *PCHE* Model 3; and *PIHE* Model 4. And the rest is from Model 1.

Table 4. Descriptive Statistics of Medical Expenditure in Different National Healthcare Systems

	NHS				NHI			
	NOB.	Mean	Max.	Min.	NOB.	Mean	Max.	Min.
<i>GDP</i>	269	52888.97	23366.84	12437.92	395	52043.90	95719.40	14105.88
<i>GINI</i>	250	29.30	36.23	19.70	392	28.72	49.5	20.49
<i>THE</i>	269	1761.15	4052.29	276.63	393	1637.58	5229.98	88.70
<i>PHE</i>	269	1369.50	3430.84	177.71	370	1182.71	4408.59	19.10
<i>PFHE</i>	222	1.05	1.22	1.02	290	1.05	1.18	1.01
<i>PCHE</i>	222	1287.80	3268.14	162.59	290	1120.64	4151.45	16.50
<i>PIHE</i>	150	97.77	509.33	.50	233	120.86	505.01	.30
<i>PEE</i>	256	103.12	131.61	83.23	386	101.32	135.21	83.62
<i>TI</i>	269	21.37	42.30	11.50	395	23.62	47.79	10.39
<i>PGRW</i>	269	.64	2.86	-.74	395	.53	26.45	-.83
<i>GD</i>	218	53.11	113.67	4.92	361	48.04	180.78	4.08

Notes: 1) Different observation period is acquired for each country and model.

2) The statistic value of *PHE* is from Model 2; *PFHE* and *PCHE* Model 3; and *PIHE* Model 4. And the rest is from Model 1.

IV. Empirical Results

A. The Effect of Total Medical Expenditure on Economic Development

Table 5. shows the estimated result of System GMM describing the effect of total medical expenditure on economic development. Given each country has different observation periods, four different models are applied-Model 1 only considers total medical expenditure; Model 2 public health expenditure only; Model 3 health capital formation cost and current health expenditure; and Model 4 current health expenditure and private health insurance expenditure.

All the models evidence total medical expenditure, public health expenditure and current health expenditure have a positive connection with GDP. However, health capital formulation cost negatively impacts on GDP. This indirectly implies the effect of healthcare infrastructure is not immediately reflected in the corresponding year. The effect of private health insurance expenditure has no statistically significance. Gross enrollment ratio and total investment rate positively affect GDP while work-

force negatively affects GDP.

Autocorrelation of errors is verified by Arellano Bond test. The test results show e_{it} has a first-order autocorrelation. Also, Sargan test is carried out to test over-identifying restrictions. The test indicates p-value is nearly 0, which questions the fitness of model. However, it should be noted that Sargan test results do not necessarily mean instrument variables are not suitable as it can reject the null hypothesis that over-identifying restrictions are valid when the heteroskedasticity test shows a weak statistical power and the number of instrument variables is bigger than that of panel groups.

Table 6. shows the estimated result of System GMM using balanced panel data of 13 OECD countries for the period of 1999 and 2008. It examines the recent impact of sharp rise in medical expenditure on economic growth. Unlike the previous result from Table 5, increasing medical expenditure after 2000s has a negative impact on economic growth. Total medical expenditure, public health expenditure and current health expenditure have an inverse relationship with GDP. Due to the similar economic characteristics of OECD members, the similar patterns can be observed within the OECD countries.

Table 5. The Effect of Total Medical Expenditure on Economic Development (1980-2008)

	(1)	(2)	(3)	(4)
$GDP(t-1)$.891*** (.016)	.875*** (.018)	.844*** (.017)	.923*** (.026)
THE	.025*** (.006)			
PHE		.027*** (.006)		
$PFHE$			-.124[†] (.065)	
$PCHE$.032*** (.006)	.011[*] (.007)
$PIHE$.0004 (.004)
PEE	.089*** (.027)	.114*** (.029)	.113*** (.025)	.102*** (.034)
TI	.096*** (.009)	.097*** (.009)	.082*** (.009)	.087*** (.011)
$n + g + \delta$	-.126*** (.025)	-.118*** (.025)	-.093*** (.023)	-.110*** (.029)
<i>constant</i>	.227** (.094)	.238** (.098)	.374*** (.085)	.095 (.129)
number of obs.	617	594	476	347
number of groups	26	26	23	23
number of instruments	59	59	240	158
Sargan test (p-value)	.000	.000	.000	.000
AR(1) test (p-value)	.002	.002	.005	.008
AR(2) test (p-value)	.337	.280	.492	.906

Notes: 1) ***, ** and * denote significance at 1%, 5% and 10% levels.

2) figures in parenthesis indicate standard deviation.

Table 6. The Effect of Total Medical Expenditure on Economic Development (1999-2008)

	(1)	(2)	(3)	(4)
<i>GDP(t-1)</i>	1.053*** (.049)	1.057*** (.061)	1.062*** (.061)	1.064*** (.065)
<i>THE</i>	-0.044*** (.017)			
<i>PHE</i>		-0.040** (.019)		
<i>PFHE</i>			.013 (.012)	
<i>PCHE</i>			-0.050** (.021)	-.042 (.028)
<i>PIHE</i>				-.0003 (.010)
<i>PEE</i>	-.051 (.118)	-.042 (.118)	-.049 (.118)	-.040 (.119)
<i>TI</i>	.152*** (.038)	.144*** (.038)	.139*** (.038)	.135*** (.039)
<i>n + g + δ</i>	.068 (.050)	.060 (.050)	.053 (.049)	.058 (.052)
<i>constant</i>	-.257 (.268)	-.294 (.299)	-.288 (.296)	-.315 (.305)
number of obs.	117	117	117	117
number of groups	13	13	13	13
number of instruments	21	21	22	22
sargan test (p-value)	.009	.004	.001	.003
AR(1) test (p-value)	.100	.109	.113	.110
AR(2) test (p-value)	.284	.286	.283	.290

Notes: 1) ***, ** and * denote significance at 1%, 5% and 10% levels.
 2) figures in parenthesis indicate standard deviation.

B. The Effect of National Healthcare System on Economic Development

Table 7 shows the effect of different national healthcare systems on economic development. Both National Health Service and National Health Insurance countries positively influence total medical expenditure and public healthcare expenditure. Only the countries with the National Health Insurance scheme show a positive effect on economic growth in relation to health capital formation cost, current expenditure and private health insurance expenditure. Gross enrollment rate has only a positive impact on the countries with the National Health Service while no significant result is found in the countries with the National Health Insurance scheme. With regard to the effect of total investment rate, both groups show a statistically positive significance. On the other hand, workforce growth rate negatively affects the countries with the National Health Insurance scheme.

V. Conclusion

Private health insurance may be one of the key areas to attract increasing attention of financial consumers in economy while it is also crucially important in politics for some countries such as the USA which lacks in nationwide health insurance system. Does private health insurance or public health insurance help financial consumers or national economic growth? Aging trend of global population, along with growing expenditure on healthcare services, has brought the services and corresponding financing system as a top priority in government policies in many countries.

This study analyses how healthcare expenditure and national healthcare system can impact on economic growth. Based on Augmented Solow Growth Model introduced by Knowles and Owen(1995), System GMM is estimated to account for the empirical analysis. Using unbalanced panel data of 26 OECD countries, real GDP per capita is used as a proxy for economic growth and different types of medical expenditure are considered as health capital. Gross enrollment ratio, total investment rate and workforce growth are also considered. Overall,

Table 7. The Effect of National Healthcare System on Economic Development

	(1)	(2)	(3)	(4)
NHS				
<i>GDP(t - 1)</i>	.889*** (.032)	.894*** (.033)	1.036*** (.030)	1.129*** (.035)
<i>THE</i>	.020* (.011)			
<i>PHE</i>		.018* (.011)		
<i>PFHE</i>			-.042 (.112)	
<i>PCHE</i>			-.034*** (.011)	-.060*** (.012)
<i>PIHE</i>				-.012*** (.004)
<i>PEE</i>	.183*** (.032)	.191*** (.032)	.147*** (.030)	.151*** (.047)
<i>TI</i>	.064*** (.014)	.064*** (.014)	.052*** (.013)	.038** (.015)
<i>n + g + δ</i>	-.110*** (.030)	-.121*** (.030)	-.131*** (.034)	-.055 (.052)
<i>constant</i>	.096 (.111)	.072 (.108)	-.324*** (.101)	-.711*** (.148)
number of obs.	246	246	200	130
number of groups	10	10	9	9
number of instruments	85	110	60	60
Sargan test (p-value)	.000	.000	.000	.001
AR(1) test (p-value)	.022	.016	.034	.068
AR(2) test (p-value)	.206	.184	.952	.672
NHI				
<i>GDP(t - 1)</i>	.921*** (.013)	.908*** (.015)	.909*** (.017)	.862*** (.040)
<i>THE</i>	.026*** (.005)			
<i>PHE</i>		.023*** (.005)		
<i>PFHE</i>			.188* (.106)	
<i>PCHE</i>			.028*** (.006)	.025*** (.008)
<i>PIHE</i>				.010* (.006)
<i>PEE</i>	.030 (.040)	.055 (.045)	.117* (.065)	-.081 (.066)
<i>TI</i>	.105*** (.011)	.107*** (.011)	.123*** (.014)	.106*** (.014)
<i>n + g + δ</i>	-.053* (.030)	-.032 (.031)	-.023 (.033)	-.132*** (.037)
<i>constant</i>	.130 (.091)	.122 (.098)	-.038 (.141)	.676*** (.232)
number of obs.	371	348	272	217
number of groups	16	16	14	14
number of instruments	59	59	60	60
Sargan test (p-value)	.000	.000	.000	.001
AR(1) test (p-value)	.025	.028	.045	.048
AR(2) test (p-value)	.830	.719	.489	.989

Notes: 1) ***, ** and * denote significance at 1%, 5% and 10% levels.

2) figures in parenthesis indicate standard deviation.

medical spending proves a positive impact on economic development. During the period of 1980 and 2008, total medical expenditure, public health expenditure and current medical expenditure evidence a positive effect on economy, whereas health capital formation cost generates a

negative effect on the growth. This can be surmised that the effect of healthcare infrastructure is not immediately reflected in the corresponding year. The effect of private health insurance expenditure shows no statistically significance.

Balanced panel data between 1999 and 2008 is also examined. Unlike the previous result, total medical expenditure, public health expenditure and current medical expenditure negatively affect economic development. Also, no significant effect on economy is found in relation to capital formation cost and private health insurance expenditure. This implies the sharp rise of medical expenditure after 2000s has a negative impact on economic growth.

The effect of national healthcare system is explored. Both National Health Service and National Health Insurance groups suggest a positive relationship with economy in terms of total medical expenditure and public health expenditure. However, current health expenditure and private health insurance expenditure positively affect the National Health Insurance countries while negatively the National Health Service countries.

To summarise, the empirical findings imply that financial consumption of private health insurance can influence overall economic growth rate, depending upon which healthcare systems countries have. Future research may be covering updated dataset or analytical tools with innovative technology in health care management and financing.

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Editorial Principles

1. Mission

The International Review of Financial Consumers (IRFC) aims to offer a communication platform for scholars, regulators, and practitioners to share their latest academic research on financial consumers and related public policy issues in both advanced economies and emerging market countries. All theoretical, empirical, and policy papers of relevancy are welcome, with the following as the topics to cover:

- ① protection for financial consumers
- ② business ethics of financial institutions
- ③ market discipline of financial industries
- ④ corporate social responsibility of financial institutions
- ⑤ renovation or innovation of law and regulations related to financial consumption
- ⑥ public policies for financial consumption
- ⑦ fair trading of financial products
- ⑧ dispute resolution for financial consumption
- ⑨ case studies of best practices for financial consumption
- ⑩ international comparison on any of the above topics

2. Publication schedule and contents

IRFC, the affiliated journal of the International Academy of Financial Consumers (IAFICO), will be published twice a year - April and October each year - and will pursue to be the first international academic journal focusing on the research related to financial consumers. As the contribution of financial consumption becomes increasingly important to the national economy for most countries, how to maintain an efficient and equitable financial market is an imminent issue for research. The trend of globalization and liberalization policies has reinforced the challenges in financial markets. Not only the financial instruments become more complicated and hard to understand by the public, but also the frequent changes in regulations and business practices cause confusions to the financial consumers. Consumption disputes regarding the financial products have drawn attention by the media in recent years. IRFC attempts to serve as a forum to publish and share original and innovative research, both academic and policy-oriented, on all the above issues.

3. On ethics for research

The range of research misconducts

① Misconducts related to academic research (“misconducts” hereafter) means that fabrication, falsification, plagiarism, unfair showing of papers' author, during research proposal, research performing, research report and research presentation,

etc. It is as follows.

- 1) “Fabrication” is the intentional misrepresentation of research results by making up data or research result.
- 2) “Falsification” is the distortion of research contents or results by manipulating research materials, equipment and processes, or changing or omitting data or results.
- 3) “Plagiarism” is the appropriation of another person's ideas, processes or results, without giving appropriate approval or quotation.
- 4) “Self-plagiarism” is the reusing a large portion of their own previously written research.
- 5) “Unfair showing of papers' author” is not qualifying people, who have been contributing to research contents or results scientifically, industrially and politically, as an author without just reason, or qualifying people, who have not been contributing the same, as an author with an expression of thanks or respectful treatment.
- 6) Obstructing investigation about misconducts of their own or others, or harming an informant.
- 7) Action which is out range of usually acceptable in the course of the research.
- 8) Action which is suggestion, pressure or threat to others to do the above things.

4. On plagiarism

Types of plagiarism

Following two forms are defined the representative action of research misconducts (Plagiarism).

- ① Using the original author's idea, logic, unique terms, data, system of analysis without indicate the source.
- ② Indicating the source but copying the original paper's words, idea, data and so on without quotation marks.

Bylaws of the International Academy of Financial Consumers (IAFICO)

March 31, 2015

April 19, 2016

Section 1 General Provisions

Article 1 (Official Name)

The official name of this academic society shall be the “International Academy of Financial Consumers (IAFICO hereafter)”.

Article 2 (Registered office and Branch offices)

The registered office is to be in Seoul, South Korea. Branch offices may be established in provincial cities in South Korea or overseas should the need arise.

Section 2 Objectives and Undertakings

Article 3 (Objectives)

** Pending*

The IAFICO is a non-profit association aiming at promoting and developing at an international level collaboration among its members for the study of various issues relating to financial consumers, including its education, legislation, creation of best practices, supervision and policy advancement to contribute to the development of the global economy and financial market, through investigation or research into financial consumers, and other academic activities.

Article 4 (Undertakings)

The following activities shall be carried out in order to achieve the objectives of the IAFICO.

1. Publication of journal and other literature
2. Hosting of academic conferences
3. Additional undertakings corresponding to the objectives of the academic society which are deemed necessary at the board of directors meeting or the general meeting

Section 3 Membership

Article 5 (Requirements and Categories)

The IAFICO shall have following categories of membership :

① Individual member

Individual members are categorized further into a regular member or and associate member.

1. Regular member shall be a specialist in the area such as finance, consumer studies, economics, management, law, or a specialist in the area such as finance, consumer studies, economics, management, law, or education etc, and must be a full-time instructor at a domestic or overseas university, an researcher at a research institute with equivalent experience, or should hold equal credentials to those mentioned previously, and shall become its member by the approval of the board of directors. Regular members attend general meetings and may participate in discussions, hold the right to vote, and are eligible to be elected a director or other status of the IAFICO.
2. Associate members shall be divided into either a student member, who is a current domestic or overseas graduate school student, or an ordinary member, who works for a financial institution or a related organization. Associate members do not hold the right to vote and not eligible to be elected to a director or other status of IAFICO.
3. Both regular member and associate member must pay the membership fee to the IAFICO every year.
4. In the case that a decision is made by the Board of Directors to expel a member due to a violation of the objective of the society, or demeaning the society, or in the case that a member fails to pay the membership fees for two years continuously without prior notice, their membership shall be revoked.

② Institutional member

1. Institutional member

Shall be organizations related to financial consumers who do not damage the impartiality of the IAFICO subject to approval of the Board of Directors Institutional members do not hold the right to vote and are not eligible for election.

2. Institutional member must pay its membership fee to the IAFICO every year.

Section 4 Organization

Article 6 (Designation of Board of Director)

The following Directors are designated to constitute the Board Directors to run the IAFICO.

1. Chairperson
2. Vice-Chairperson
3. President
4. Vice-President
5. Ordinary Directors
6. Auditor

Article 7 (Election of Board Members and Director)

- ① The Chairperson, Directors, and Auditors shall be elected or dismissed at the general meeting.
- ② Appointment of the Directors may be entrusted to the Chairperson pursuant to the resolution of the general meeting.
- ③ The Vice-Chairperson, President, and Vice-President shall be appointed and dismissed by the Board of Directors.

Article 8 (General Meetings)

- ① General meeting shall decide following matters relating to the activities of the IAFICO.
 1. Amendments to the Bylaws
 2. Approval of the budget and settlement of accounts
 3. Election or Dismissal of the Chairman
 4. Election or dismissal of Auditors
 5. Regulations concerning the duty and right of members
 6. Resolutions regarding items submitted by the President or Board of Directors
 7. Other important matters
- ② The Chairperson must call a regular general meeting at least once a year and report on the undertakings of the IAFICO. Provisional general meetings may also be held by the call of the Chairperson, or at the request of at least a quarter of current regular members, or according to the resolution of the Board of Directors.
- ③ At a general meeting, a quorum is formed by one third of regular members. However, regular members who are not able to participate in the general meeting in person may be represented by proxy, by entrusting a specific regular member attending the general meeting with their attendance or voting right. In this case the letter of proxy is included in the number of attendees.
- ④ Resolutions at the general meeting will be made according to the majority vote of the attending members who hold the right to vote.
- ⑤ In principle, the general meetings shall be held with face-to-face meeting, however, it may be held web-based meeting when needed.

Article 9 (Auditors)

- ① The auditors shall audit financial affairs, accounts and other transactions of IAFICO, shall participate in, and may speak at board meeting, and must present and auditor's report at the regular general meeting.
- ② There shall be two appointed auditors.
- ③ Auditors are elected at the general meeting.
- ④ And auditor shall serve a term of two years and may be reappointed.

Article 10 (Board of Directors)

- ① The Board of directors shall be made up of chairperson and fewer than 80 directors.
- ② The Board of Directors shall decide a plan of operation and establish the budget, in addition to matters on the running of IAFICO.
- ③ Board meeting requires a quorum of at least one third of current board members. Resolutions at the Board meeting will be made according to the majority vote of the attending members. However, board members who are not able to participate in the board meeting in person may be represented by proxy, by entrusting another specific

board member attending the board meeting with their attendance or voting right.

- ④ A board member shall serve a term of two years, with a possibility of serving consecutive terms.
- ⑤ A number of sub-committees or branches in each country or region may be set up under the Board of Directors to support the running of the IAFICO.

Article 11 (Steering Committee)

- ① The Board of Directors may entrust some decisions relating to the conducting of business to the Steering Committee.
- ② The Steering Committee shall be comprised of the Chairperson, Vice-Chairperson, President, and the heads of each subcommittee.
- ③ Temporary task forces may be established by the Steering Committee when necessary to run the business of the Steering Committee.

Article 12 (Chairperson)

- ① The Chairperson shall represent the IAFICO and chair its general meeting and board meeting.
- ② There shall be one appointed Chairperson who serves a term of five years.
- ③ In the case of an accident involving the Chairperson, the Vice-Chairperson shall complete the remaining term of office of less than one year. If it lasts longer than one year, a new Chairperson shall be elected at the general meeting.
- ④ A new Chairperson should be elected at the general meeting one year prior to the end of the current Chairperson's term of office.
- ⑤ Should it be judged that it is difficult for the Chairperson to carry out their duty any longer, he or she may be dismissed from their post by the decision of the Board of Directors and general meeting.

Article 13 (Vice-Chairperson)

- ① The Vice-Chairperson shall assist the Chairperson, and serve as a member of the Board of Directors.
- ② The Vice-Chairperson shall serve a term of two years, or the remaining term of office of the Chairperson, whichever is shortest.
- ③ The Vice-Chairperson shall be elected from one of the regular members at a meeting of the Board of Directors, according to the recommendation of the Chairperson.
- ④ The Vice-Chairperson shall may be reappointed.

Article 14 (President)

- ① During its term of office, the President shall become the head of the organizing committee supervising international conferences, and serves for a term of one year. The President shall attend the board meeting as a member of the Board of Directors.
- ② The succeeding President shall be elected by the Board of Directors after considering their ability to organize and host the following year's conferences. The succeeding President shall also attend board meeting as a member of the Board of Directors.
- ③ The Board of Directors may elect the next succeeding President should the need arise. The next succeeding President

shall also attend board meeting as a member of the Board of Directors.

- ④ The President, succeeding President, and the following President may appoint a vice-President respectively by obtaining approval of the Board of Directors.
- ⑤ The appointment and dismissal of the President is decided at the board meeting.

Article 15 (Vice-President)

- ① A Vice-President is a member of the Board Directors and shall assist the President, supervise applicable international conferences.
- ② A Vice-President is recommended by the President and shall be approved by the Board of Directors.
- ③ Multiple Vice-Presidents may be appointed.
- ④ A Vice-President shall serve a term of one year, the same as the term of President.
- ⑤ In the event of an accident involving the President, a Vice-President shall fulfill the President's duties during the remaining term of office.

Article 16 (Editorial Board)

- ① The Editorial Board shall be responsible for editing of journals and other materials to be published by the IAFICO.
- ② The head of the Editorial Board shall be appointed by the Board of Directors, and shall serve a term of office decided by the Board of Directors.
- ③ The head of the Editorial Board shall be a member of the Board of Directors.
- ④ Additional matters concerning the running of the editorial board shall be decided separately by the Board of Directors.

Article 17 (Advisory Board and Consultants)

- ① The Chairperson may select individuals who could make a large contribution to the development of IAFICO, and appoint them as advisors subject to the approval of the Board of Directors.
- ② The Chairperson may appoint consultants subject to the approval of the Board of Directors in order to receive advice relating to all business matters of the IAFICO, such as development strategies, conferences, research plans, and research projects etc.
- ③ Advisors and consultants shall serve terms of one year and may be reappointed.

Section 5 Financial Affairs

Article 18 (Accounting and Revenue)

- ① The fiscal year of the IAFICO shall run from the 1st of January to the 31st of December each year.
- ② The finance required to operate the IAFICO shall be sourced from membership fees, member contributions, society participation fees, and other incomes. Related matters shall be decided by the Board of Directors or the Steering Committee.

- ③ Should the need arise, the IAFICO may accept sponsored research, donations or financial support from external parties in order to support the business performance of the IAFICO. The Chairperson shall report the details of these at the board meeting.
- ④ Chairperson should report all the donation from outside and their usage of the year at the IAFICO homepage by the end of March of the next accounting year.

Section 6 Supplementary Rules

Article 19 (Revision of the Bylaws)

- ① Any other matters not stipulated by this Bylaws shall be resolved by the Board of Directors.
- ② Revision of the Bylaws shall be carried out, by the proposition of the Board of Directors, or at least one-tenth of regular members, at a general meeting where at least one-third of the total regular members are in attendance, or at a provisional general meeting, with the agreement of at least two-thirds of current members.

Article 20 (Dissolution)

Should the IAFICO intend to be dissolved, it must be decided upon at a general meeting with the agreement of at least two-thirds of current members, and permission must also be received from the Fair Trade Commission. Except for bankruptcy, the dissolution must be registered and reported to the Ministry of Strategy and Finance within three weeks, accompanied by a certified copy of register.

Article 21 (Residual Property upon Dissolution)

Should the IAFICO be dissolved, according to article 77 of the Korean civil law, all remaining assets of IAFICO shall belong to the state, local government, or other non-profit corporations carrying similar objectives.

Additional Clause

These Bylaws shall become effective from the 1st April 2016.

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