Necessity of Insurance Development for Emerging Economies - Proposal for an integrated Diamond Model

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<abstract>

- Despite voluminous research and belief of its importance for economic development, insurance is not yet generally accepted as critical or urgent by development economists or developing countries.
- While UN SDG and development cooperation focuses on hunger, poverty, education and sanity, we believe that these goals can be reached by developing insurance system in underdeveloped countries.
- Incorporating existing literature and experience, we propose a new descriptive Diamond model, different from Michael Porter's, to explain the role of insurance in economic and social development.
- Based upon economic theory and development, the model explains how insurance help develop leading industry, human resource, financial market, and social protection.

1. Observation and Motivation

- G7 (2015) meeting decided to increase insurance inclusion by 400 million people by 2020 at underdeveloped/underserved economies.
- However, we still see difficulty of understanding the importance/urgency of insurance development in ODA/international development cooperation projects.
- Here to review all the theoretical/empirical research on the subject
- To propose a new logic to underscore the importance of insurance development in the least development countries
- To propose an innovative scheme for development cooperation

2. Difficulty of understanding the importance of Insurance Development

- Jung et all (2017) failed to persuade the KOICA and development academicians in Korea.

- The Insurance director of Laos government also appealed for the difficulty in discussing policy issues within the ministry of Finance.

- Many others point out the issue elsewhere.

3. Review of academic research on the role of insurance in economic and social development

3.1. Influence on economic growth

(1) JF. Outreville(2013), “The Relationship Between Insurance and Economic Development: 85 Empirical Papers for a Review of the Literature”

→ The objective of this article is to propose a review of 85 empirical papers examining the relationships between insurance and economic development. This paper has examined the causality links between insurance and economic development and the role of insurance as a significant determinant in the process of economic growth.

3. Review of academic research on the role of insurance in economic and social development

3.1. Influence on economic growth

(2) JF. Outreville(1990), “The Economic Significance of Insurance Markets in Developing Countries”

→ This article investigates empirically the relationship between property-liability insurance premiums and economic and financial development. A model is specified for property-liability insurance demand and it is tested with a cross-section of 55 developing countries.

3. Review of academic research on the role of insurance in economic and social development

3.1. Influence on economic growth

(3) Peter Haiss, Kjell Sümegi(2008), “The relationship between insurance and economic growth in Europe: a theoretical and empirical analysis”

→ This article investigates both the impact of insurance investment and premiums on GDP growth in Europe. We find a positive impact of life insurance on GDP growth in the EU-15 countries, Switzerland, Norway and Iceland. For the New EU Member States from Central and Eastern Europe, we find a larger impact for liability insurance. Furthermore our findings emphasise the impact of the real interest rate and the level of economic development on the insurance-growth nexus.

3. Review of academic research on the role of insurance in economic and social development

3.1. Influence on economic growth

(4) Maurice Kugler, Reza Ofoghi(2005), “Does Insurance Promote Economic Growth? Evidence from the UK”

→ We use the components of insurance premia to find a long run relationship between development in insurance market size and economic growth for most components by using hansen’s Trace l and max l cointegration tests. Results show for most cases, we have a long run relationship between insurance market size and economic growth rather than a cyclical effect.

3. Review of academic research on the role of insurance in economic and social development

3.1. Influence on economic growth

(5) B Onyebuchi, SP Nwankwo, OI Onuka(2018), “Insurance Sub-Sector Development: An Emerging Pillar For Economic Growth and Sustainability in Nigeria”

→ This study examined the effect of Insurance sub-sector development on economic growth and sustainability in Nigeria. The results of the analysis revealed the presence of long run relationship between insurance premium and economic growth in Nigeria. The study concluded that Nigeria has enormous insurance potentials waiting to be tapped into for rapid economic growth in Nigeria.

3. Review of academic research on the role of insurance in economic and social development

3.1. Influence on economic growth

(6) Marco Arena(2006), “Does Insurance Market Activity Promote Economic Growth ? Country Study For Industrial And Developing Countries”

→ The author tests whether there is a causal relationship between insurance market activity and economic growth. Using the generalized method of moments for dynamic models of panel data for 56 countries and for the 1976-2004 period, he finds robust evidence of a causal relationship between insurance market activity and economic growth. Both life and nonlife insurance have a positive and significant causal effect on economic growth. High-income countries drive the results in the case of life insurance. On the other hand, both high-income and developing countries drive the results in the case of nonlife insurance.

3. Review of academic research on the role of insurance in economic and social development

3.1. Influence on economic growth

(7) L Han, D Li, F Moshirian, Y Tian(2010), “Insurance Development and Economic Growth”

→ This paper investigates the relationship between insurance development and economic growth by employing. Insurance density is used to measure the development of insurance. The sample is then divided into developed and developing economies. For the developing economies, the overall insurance development, life insurance and non-life insurance development play a much more important role than they do for the developed economies.

3. Review of academic research on the role of insurance in economic and social development

3.1. Influence on economic growth

(8) D Ward, R Zurbruegg(2000), "Does Insurance Promote Economic Growth? Evidence from OECD Countries"

→ This article examines the short- and long-run dynamic relationships exhibited between economic growth and growth in the insurance industry for nine OECD countries. The results from the tests suggest that in some countries, the insurance industry Granger causes economic growth, and in other countries, the reverse is true. Moreover, the results indicate that these relationships are country specific and any discussion of whether the insurance industry does promote economic growth will be dependent on a number of national circumstances.

3. Review of academic research on the role of insurance in economic and social development

3.1. Influence on economic growth

(9) Marco Arena(2008), “Does Insurance Market Activity Promote Economic Growth? A Cross-Country Study for Industrialized and Developing Countries”

→ This article tests whether there is a causal relationship between insurance market activity and economic growth. Both life and nonlife insurance have a positive and significant causal effect on economic growth. For life insurance, high-income countries drive the results, and for nonlife insurance, both high-income and developing countries drive the results.

3. Review of academic research on the role of insurance in economic and social development

3.1. Influence on economic growth

(10) Hadhek Zouhaier(2014), “Insurance and economic growth”

→ The purpose of this paper is to study the relationship between the insurance business and the economic growth of 23 OECD countries over the period 1990-2011, using a static panel data model. The key findings emerged from the empirical analysis show a positive impact of non-life insurance, as measured by the penetration rate on economic growth and a negative effect exerted by the total insurance and non-life insurance, as measured by the density on economic growth.

3. Review of academic research on the role of insurance in economic and social development

3.2. Influence on income redistribution

(1) Lee In Mu, Hong Joo Jung, and Patricia Born(2017),"Insurance Market Development and Income Inequality"

→ This study aims to empirically analyze the relationship between insurance market development and income inequality for 13 countries from 1980 to 2006. Specifically, we examine how country-level income distributions are related to one particular measure of insurance market development. Thus, the evidence indicates that life insurance market development results in reduction of income inequality for the total sample of countries. Furthermore, income inequality is lessened as the life insurance market expands in the higher income economies. The empirical findings have some implication for insurance consumer well-being in high income countries.

3. Review of academic research on the role of insurance in economic and social development

3.2. Influence on income redistribution

(2) Charlotte Bartels, Dirk Neumann(2017), “Redistribution and Insurance in Welfare States around the World”

→ This paper sheds light on the empirically prevalent mix of redistribution and insurance in different welfare states. Whereas redistribution in a one-year-period framework is an empirically intensely studied question, insurance, understood as the income-smoothing function of welfare states, is addressed to a much smaller extent. Our results suggest that a substantial share of annual redistribution turns out to serve as individual insurance in a longer perspective, even for a few years.

3. Review of academic research on the role of insurance in economic and social development

3.2. Influence on income redistribution

(3) Erik Feyen, Rodney Lester and Roberto Rocha(2011), “What drives the development of the insurance sector? An empirical analysis based on a panel of developed and developing countries”

→ This paper contributes to the literature by examining the determinants of insurance premiums and total assets for a panel of about 90 countries during the period 2000-08. The results show that life sector premiums are driven by per capita income, population size and density, demographic structures, income distribution, the size of the public pension system, state ownership of insurance companies, the availability of private credit, and religion.

4. Practical challenges in understanding of the importance of insurance

- A number of UN SDG goals for fundamental needs of recipient countries, e.g. hunger, poverty, sanitation, education,..
- Missing link of the development goals and insurance development
- Apparent indirect contribution or consequences of insurance services
- Public image of insurance as a luxury good

5. Plausible way to show the importance

- Beginning with Political/economic goals
- Logical/persuasive
- General (wider than Finance; not as a part of finance)
- Simple to understand (with examples)

6. A Proposal for the Diamond model

- Two economics inputs of inputs/growth : labor and capital
- Industry policy (for leading sector)
- Social Policy (for lagging sector or people)

→ setting four corners of Diamond

6.1 support of leading industry/sector

- Most of underdeveloped countries have a few common industries – agriculture, mining, or tourism
- They should keep growing the industries and level up their industry structure
- Insurance can be a stepping stone for the development (Iranian minors, German industry association, USA innovation)

→ Role of property and liability insurance (not with standing agricultural crop insurance, foreign trade credit insurance)

→ Cannot be replaced by finance

6.2 Two economic inputs for production or growth 1

- Labor (human resource)

- Family, Health, and Education (protection, resilience, and development of human resources)

  (ex) Education insurance in Korea

→ Role of Life/Health insurance

6.3 Two economic inputs for economic growth 2

- Capital (financial system)
- Insurance as a part of finance or a complement of finance
- Risk analysis (credit analysis) in banking
- Micro (credit life) insurance as a condition of micro finance
- History of ocean marine insurance in terms of price structure
- Deposit insurance (pension guarantee) as a guardian of financial system (public pension)

→ Insurance development as a necessary condition of financial system

→ Role of insurance in general as developer of capital market

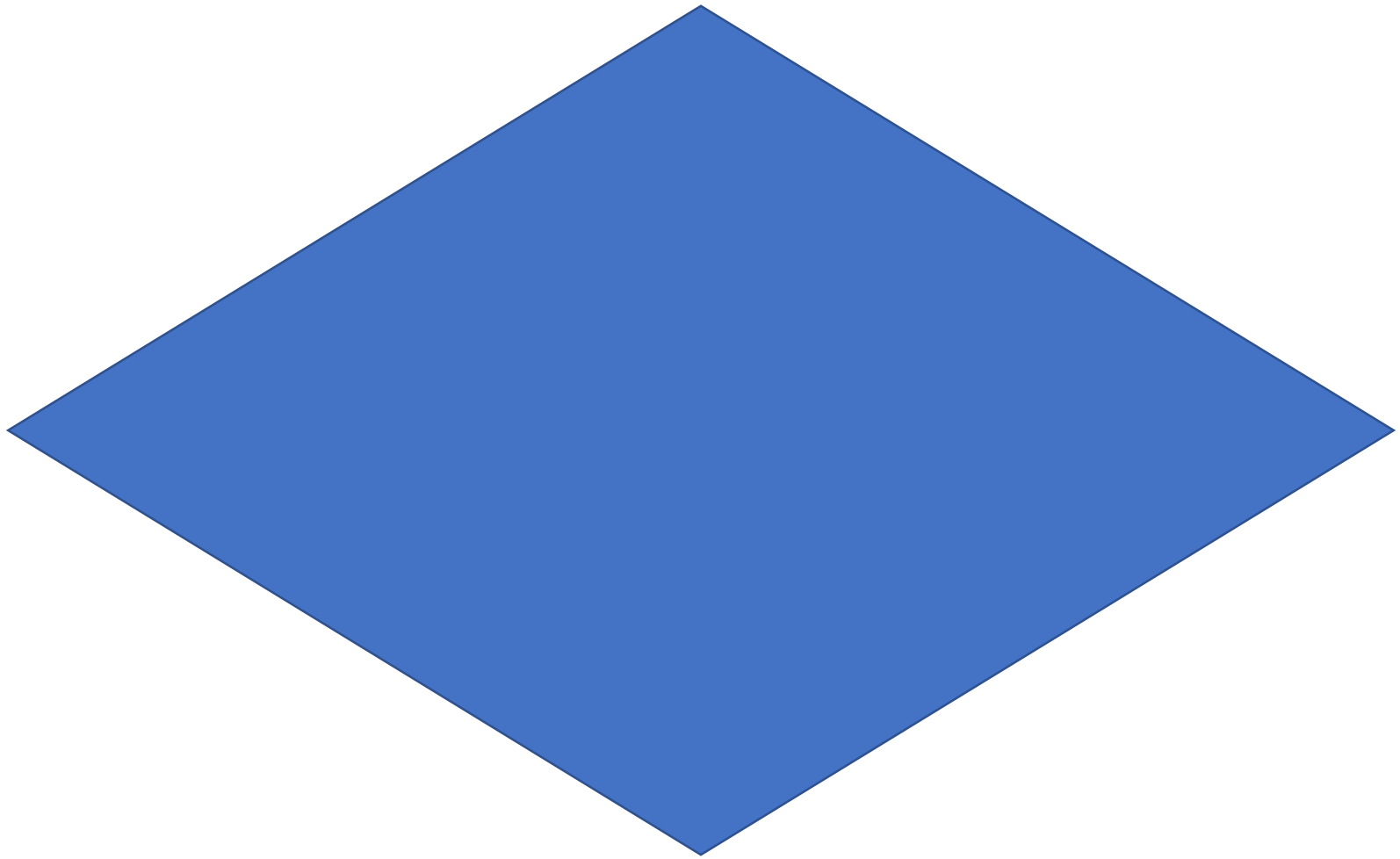
6.4 Support of the lagging sector or people

- Social insurance for the people in need
- Social support of workers in economy : public pension, medical insurance, workers compensation, unemployment insurance
- Safety net of economy and society
- The roles that cannot be played by financial system

→ Role of Social insurance system (which should be rationally designed, otherwise harmful to economy)

6.5 value of the diamond model

- Comprehensive (covering both private/public insurance)
- Backed by previous research and experience
- Aiming national political/economic growth target
- Differentiated from finance
- Visual and apprehensive
- Needing more examples or cases
- Expansion to risk management



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- Peter Haiss, Kjell Sümegi, “The relationship between insurance and economic growth in Europe: a theoretical and empirical analysis”, Empirica, 2008.

Thanks for your attention!

Does Financial Literacy Determine How Consumers Handle Financial Disputes? A Preliminary Analysis

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Presentation Outline

01 Introduction

02 Literature Review

03 Data and Analysis

04 Discussion and Policy Implications

Research Background

Among 67.8 percent Indonesians that use financial products, only 29.7% ha ve a complete understanding of the products (OJK, 2016)

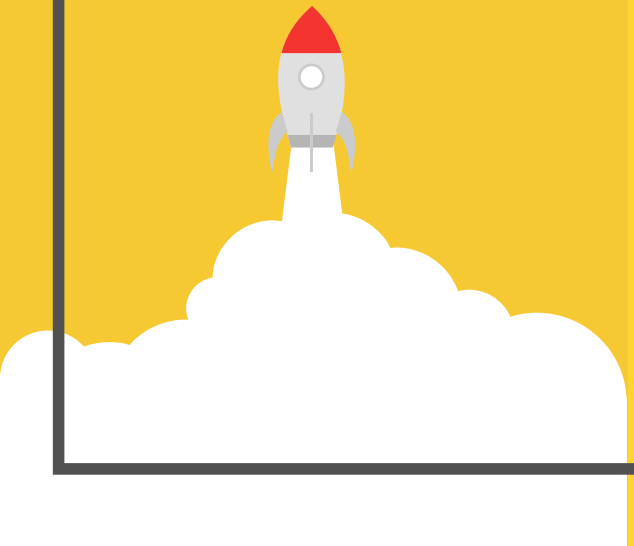
The uninformed customers are more vulnerable to make bad financial decisi ons, hence experience financial dispute

Financial sectors, particularly Banks, are the most complained sector during the last six years (YLKI, 2018)

Research Objectives

i. Examining different levels of financial literacy using two sets of questions

i. Examining the relationship between financial literacy and financial disputes



Literature Review (1)

Low level of financial literacy

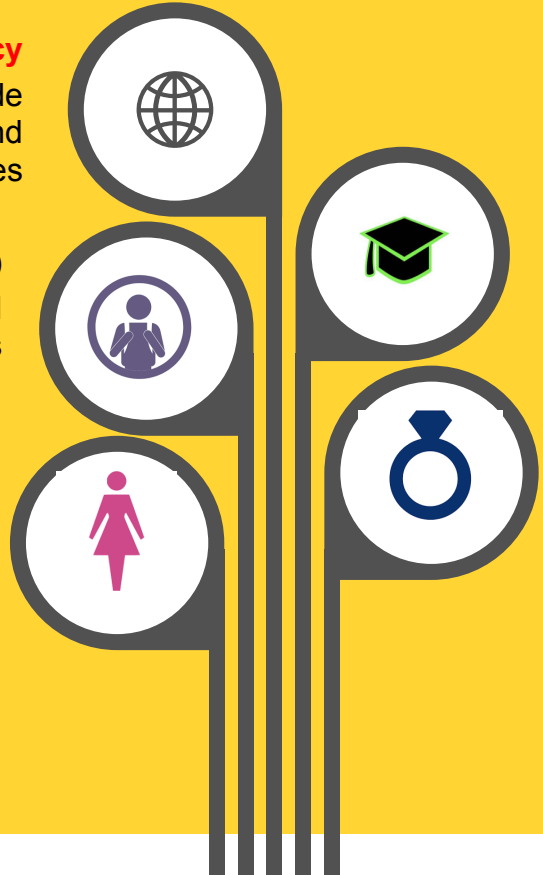
has become a major concern in de veloped, developing and less developed countries

Allgood and Walstad (2013)

observed lower level of financial literacy among young adults

Herd et al. (2012)

women have low financial literacy



Garcia and Tessada (2013)

found positive correlation between educational attainment and financi al literacy

Cole et al, 2009

found no significant influence of marital status to financial literacy In India and Indonesia

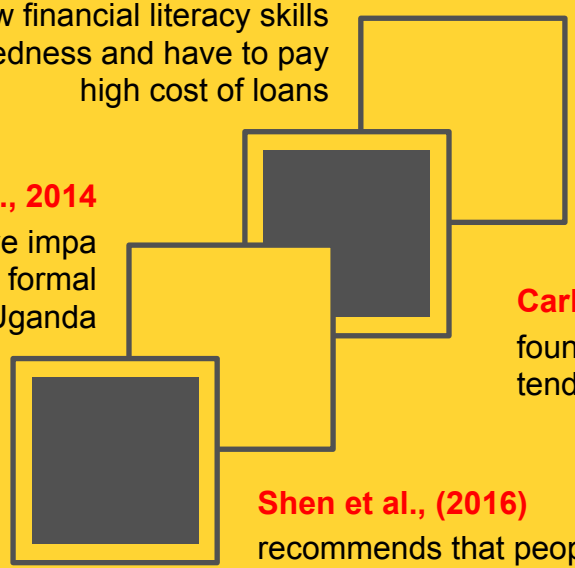
Literature Review (2)

Lusardi and Tufano (2009)

identified Americans with low financial literacy skills experienced over indebtedness and have to pay high cost of loans

Nkundabanyanga et al., 2014

Financial literacy has positive impa ct towards SME's access to formal credit in Uganda



Carlin and Robinson (2012)

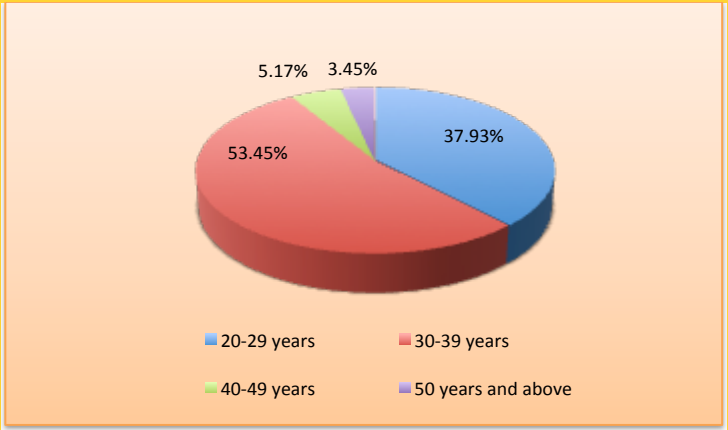
found that people with higher financial literacy tend to make more efficient financial decisions

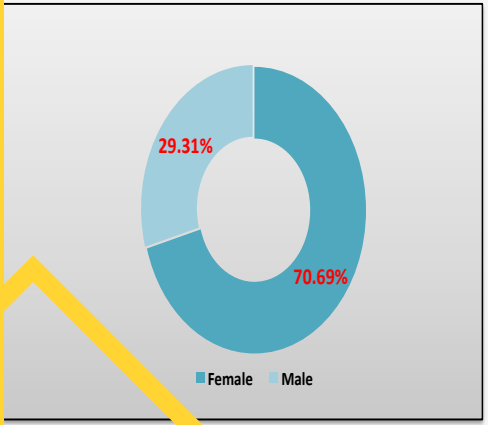
Shen et al., (2016)

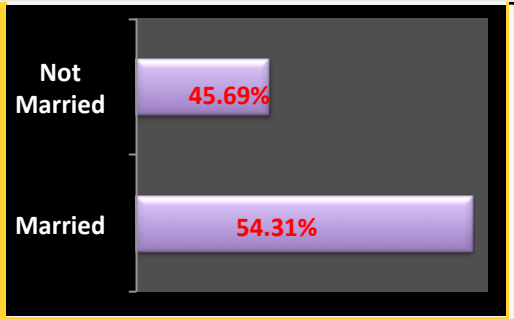
recommends that people with high financial literacy have lower probability to experience financial disputes and handle financial disputes more aggressively

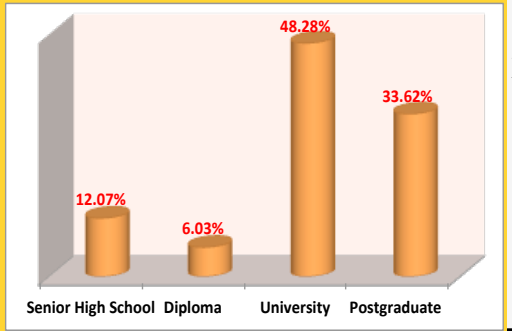
Data

- Collected from 250 Participants from Indonesia through a web based survey
- Minimum age of participant is 20
- Basic and advance Financial literacy questions were adapted from **van Rooij, Lusardi, and Alessie (2011)**
- Financial disputes questions were following **Shen et al. (2016)**









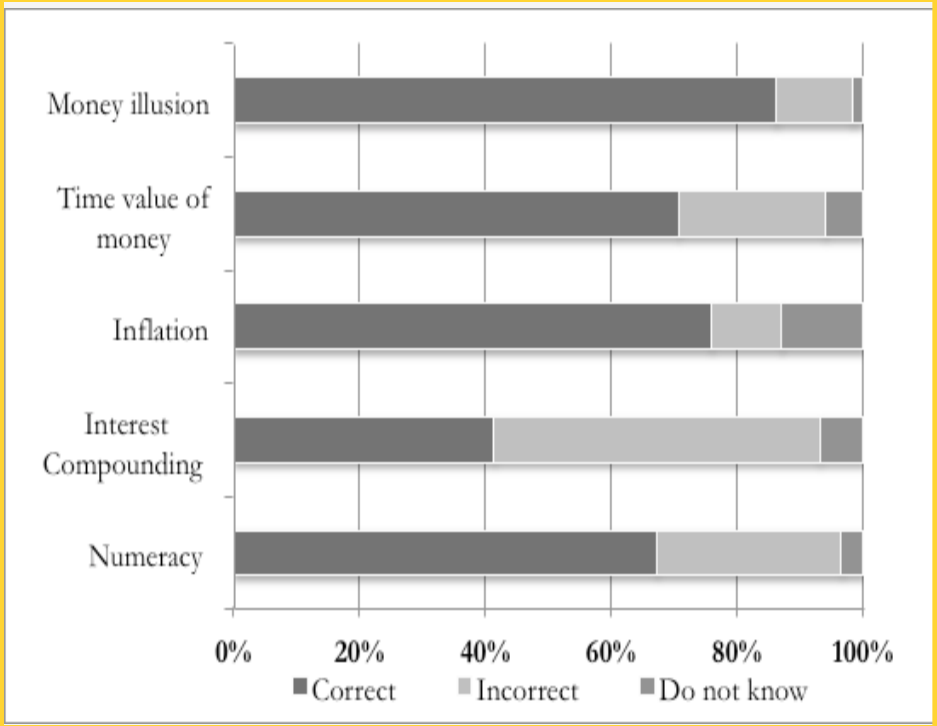
Profession

Private Sector Employee	36.21%
Lecturer/Lawyer/Doctor/Other Professional	20.69%
Entrepreneur	11.21%
Civil Servant	11.21%
University Student	10.34%
Domestic Homemaker	2.59%
Others	7.76%

Monthly Income

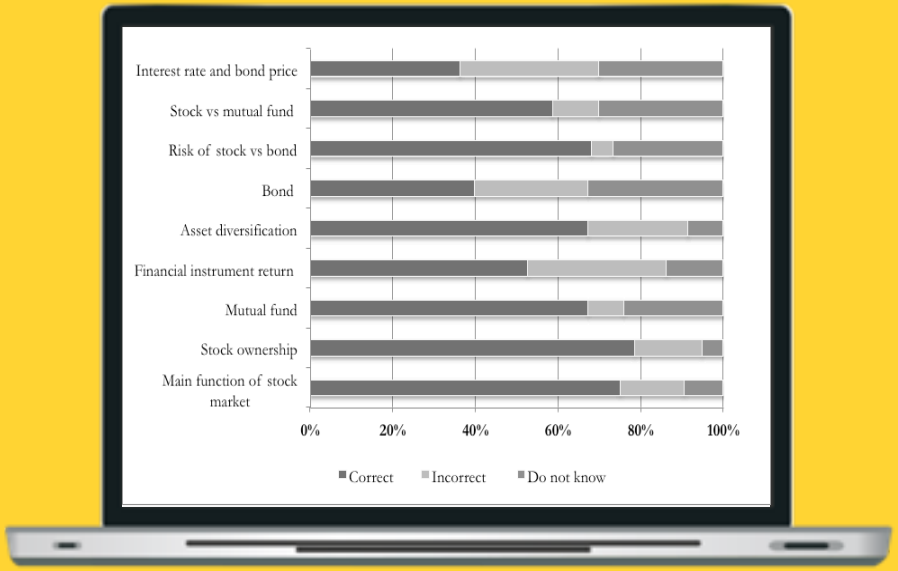
Below Rp5.000.000	31.90%
Rp5.0001-Rp10.000.000	40.52%
Rp10.000.001-Rp15.000.000	13.79%
Rp15.000.001-Rp20.000.000	6.03%
Rp20.000.001-Rp50.000.000	5.17%
above Rp50.000.000	2.59%

Measurement of Basic Financial Literacy



Respondents were found to have good understanding of most of the basic literacy skills, except for interest compounding concept

Measurement of Advance Financial Literacy



- **The majority of respondents can answer the advance literacy questions right**
- **The proportion of "do not know" Answers appeared more frequently in the advance literacy questions**
- **Respondents were shown to have relatively lower understanding of bonds**

Percentage of correct responses to basic and advance literacy questions (1)

	Basic Literacy Score	Advance Literacy Score
Age		
20-29 years	67.73%	60.86%
30-39 years	68.39%	**59.14%**
40-49 years	**80.00%**	**66.67%**
50 years and above	**55.00%**	63.89%
Gender		
Female	**70.59%**	**66.01%**
Male	67.32%	57.99%
Marital Status		
Married	**70.79%**	60.32%
Not Married	65.28%	**60.38%**
Education		
Senior High School	**54.29%**	52.38%
Diploma	60.00%	**39.68%**
University	64.29%	52.98%
Postgraduate	**65.00%**	**66.67%**

Basic literacy score is higher than the advance literacy score. This suggests that respondents have good basic financial knowledge but less understanding of more complex financial instruments

- Respondents in the age group between 40-49 years consistently scored the highest percentage of correct answers for both basic and advance literacy questions
- Female participants outperformed male participants in both basic and advance literacy skills
- Respondents with higher level of education have better basic and advance financial understanding

Percentage of correct responses to basic and advance literacy questions (2)

	Basic Literacy Score	Advance Literacy Score
Profession		
Private Sector Employee	67.32%	64.23%
Entrepreneur	56.92%	41.03%
Lecturer/Lawyer/Doctor/Other Professional	**85.00%**	**80.09%**
University Student	58.33%	55.56%
Others	**35.00%**	41.67%
Civil Servant	72.31%	48.72%
Domestic Homemaker	45.00%	**27.78%**
Monthly Income		
Below Rp5.000.000	**55.68%**	**48.65%**
Rp5.0001-Rp10.000.000	73.19%	59.10%
Rp10.000.001-Rp15.000.000	65.00%	65.28%
Rp15.000.001-Rp20.000.000	77.14%	76.19%
Rp20.000.001-Rp50.000.000	90.00%	**94.44%**
above Rp50.000.000	**100.00%**	92.59%

Respondents from lecturer/lawyer/doctor/otherprofessionals work background are more knowledgeable of basic and sophisticated economic concepts compared to other professions

Respondents with higher level of monthly income possessed better basic and advance financial understanding

Financial disputes and aggression in handling financial disputes (1)

30-39 year

- Highest chance of experiencing financial disputes
- More aggressive in handling financial dispute
- Lowest level of advance financial literacy

- Scored in both basic and advance literacy
- More vulnerable to financial dispute
- More aggressive towards it

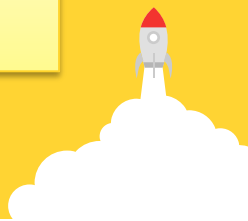
- Less knowledgeable than unmarried one
- Experienced financial disputes more frequently
- Have higher level of aggressiveness

- Postgraduate least prone to financial disputes
- The most aggressive when any dispute happens

Financial disputes and aggression in handling financial disputes (2)

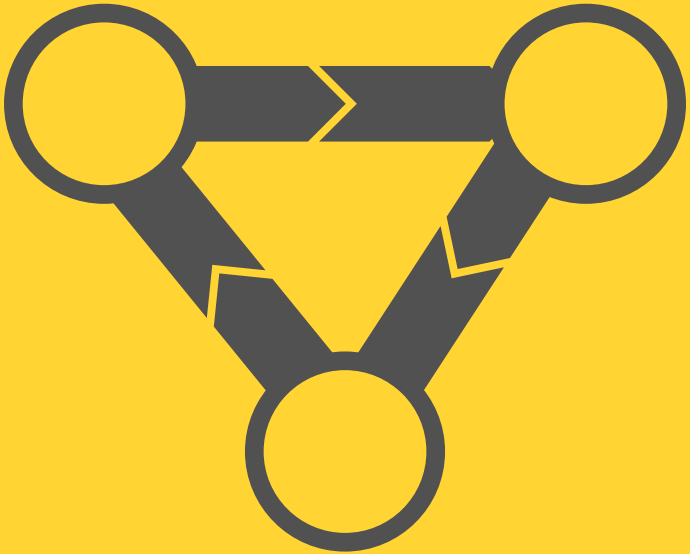
- Despite having the highest literacy scores, lecturer/lawyer/doctor/other professionals face financial disputes more often
- University students are considered to be the most aggressive group in managing financial disputes

- Highest income level had highest financial skill score yet had the highest frequency of financial disputes
- Respondents with lowest income level are the most aggressive In handling dispute



Discussion and policy implications

Financial literacy plays important role in determining the chance of experiencing financial disputes



Financial literacy also play an important role to set positive attitude towards dispute settle ments

OJK should actively educate people, especially the sub-groups with low financial literacy, to increase the financial literacy index in Indonesia to reduce the possibility of having financial disputes


Thank you
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The Effect of Reforming Pension Tax Incentives in Korea

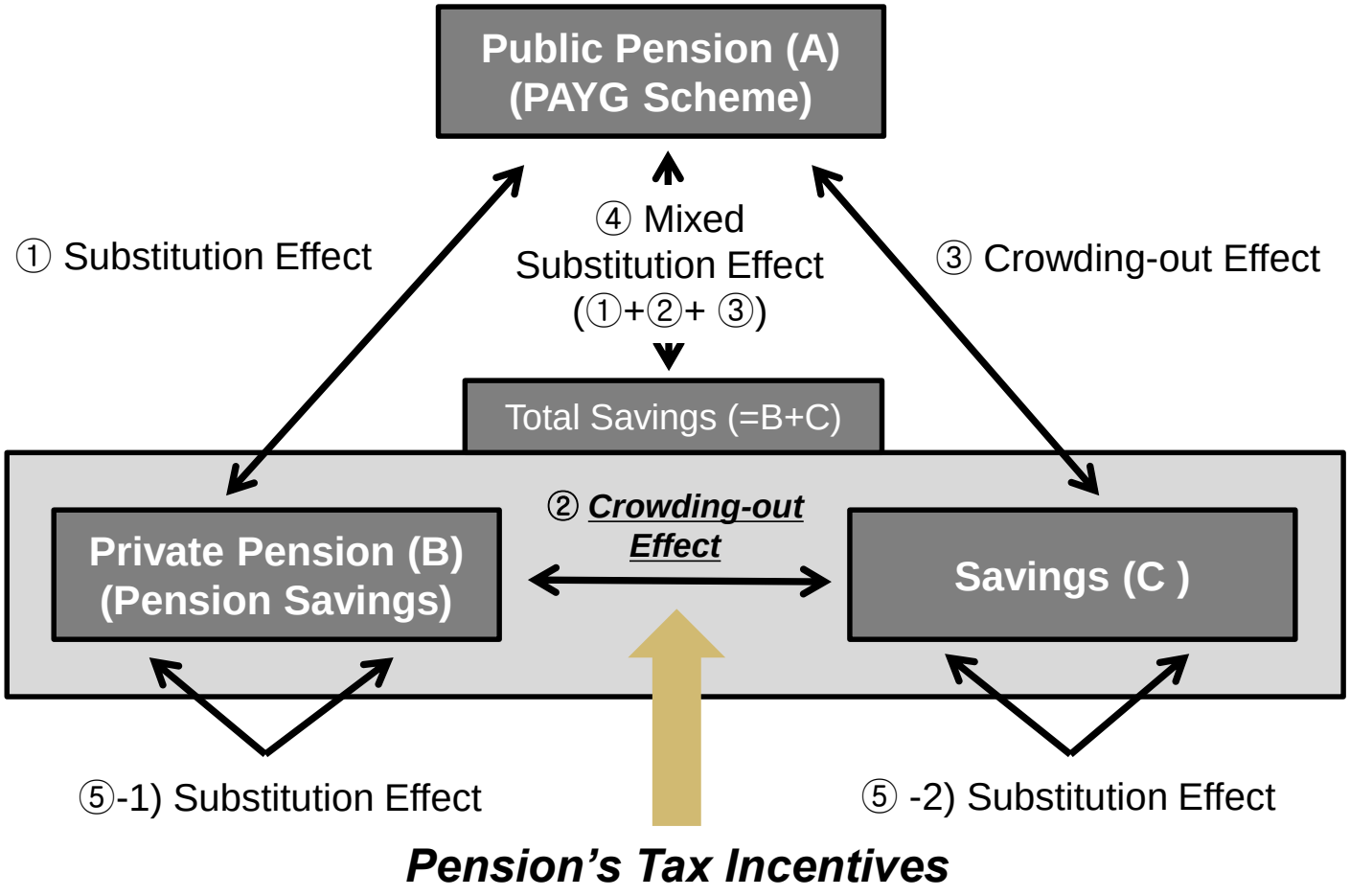
28 july 2018

HEE SOO JUNG

Contents

I. Introduction

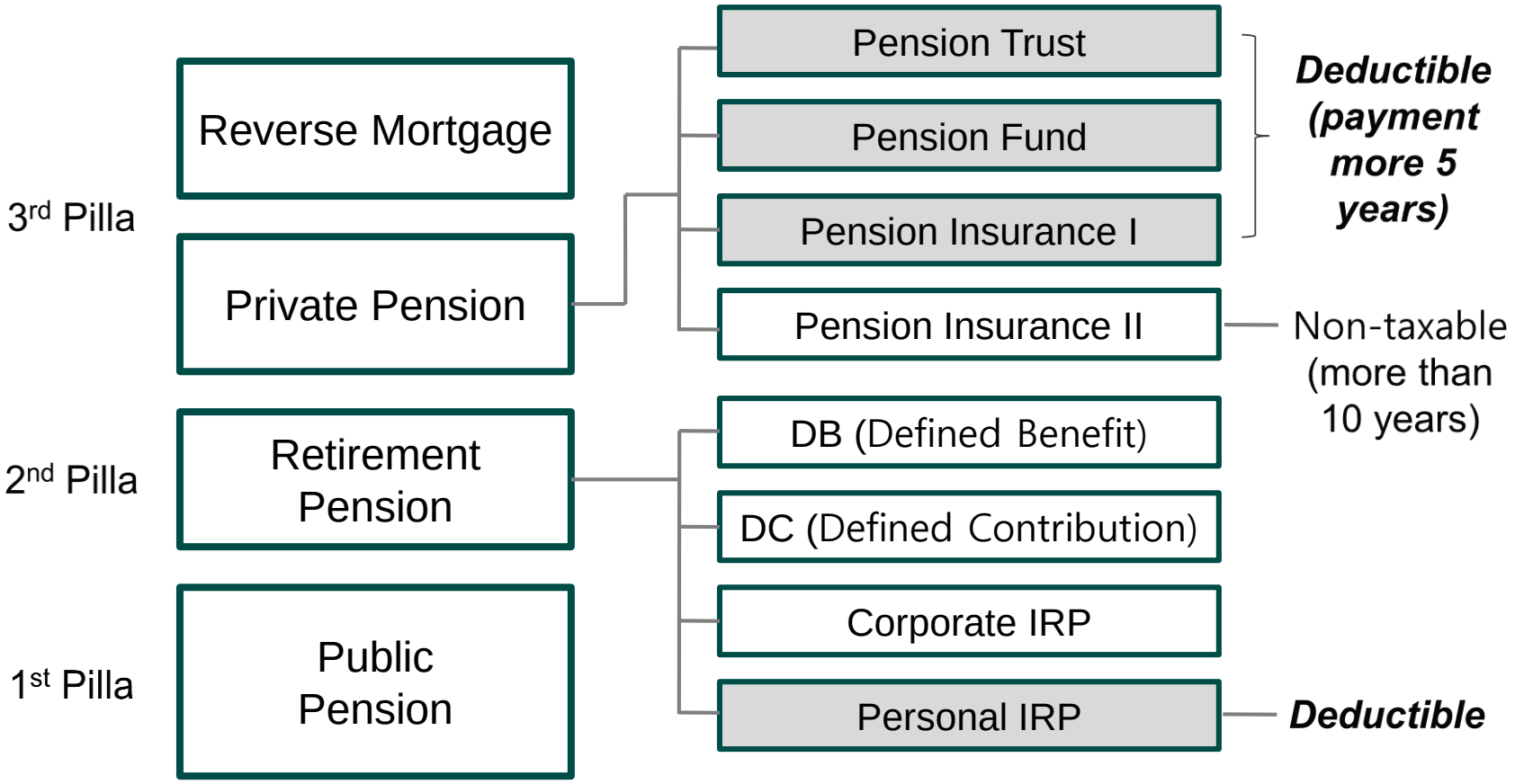
Question : How does a change in pension tax incentives affect savings rate?



Source : Börsch-Supan(2004) rewrite

II-1. Private pension scheme in Korea

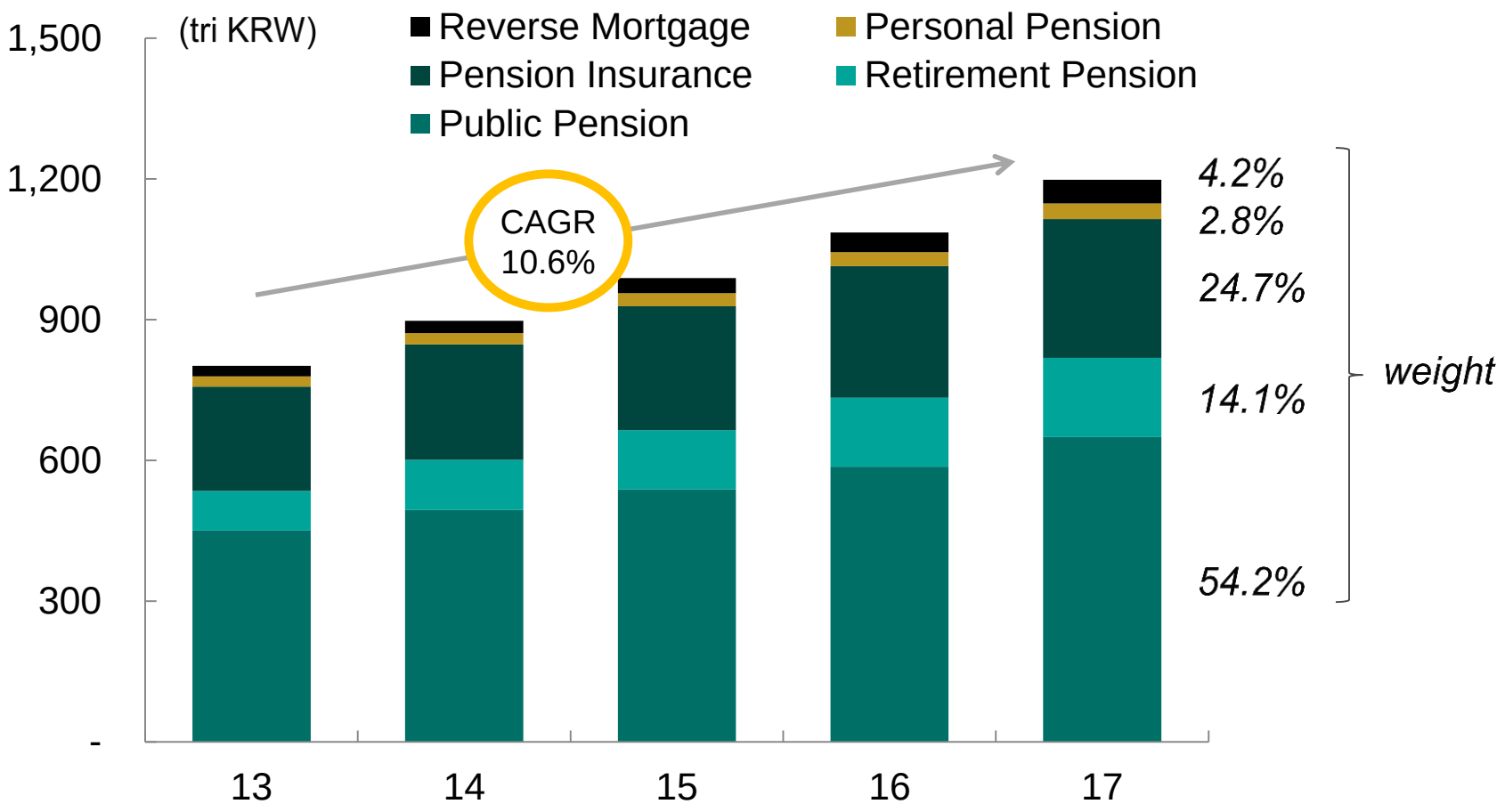
There are two types of tax benefits to be covered by the pension insurance : deductible type and non-taxable benefit



Source : FSS(Financial Supervisory Service)

II-2. Pension market in Korea

In 2017, Pension assets are 1,198 trillion KRW, 69 % of GDP



Source : FSC(Financial Services Commission)

II-3. Main contents of pension tax incentives

	The deductible limit	*The deductible type*
2002	Deductible limit 2.4 million KRW (private pension)	The retirement pension system was introduced in Dec. 2005.
2006	Deductible limit 2.4 m KRW → 3.0 m KRW (private pension + retirement IRP)	Income tax deduction (100%)
2011	Deductible limit 3.0 m KRW → 4.0 m KRW (private pension + retirement IRP)	
2014		
2015	Deductible limit 4.0 m KRW → 7.0 m KRW (private pension + retirement IRP) But, additional +3.0 m KRW in retirement IRP	Tax credit (12%)
2017	Deductible limit 4.0 m KRW → 3.0 m KRW (total income > 120 m KRW : private pension) But, max 7.0 m KRW in retirement IRP	But, Total Income < 55 m KRW (15%)

III. Literature Review

After changing of personal pension scheme, consumer tended to reduce savings in order to smooth consumption

Yang(2016)	TSFIE (Taiwanese Survey of Family Income and Expenditure) Corporate Pension	2002~2004 vs 2006~2008	• The increase in pension assets has downed the savings rate by 2.06 % (salary worker : 2.48%p ↓) • The lower the savings rate, the greater the substitution effect..
Won-seok, Jung and Sung-ho, Kang (2017)	NaSTaB (National Survey of Tax and benefit) Personal Pension	2007~2013	• In the Fixed Effect model, changes in the tax incentives increased pension assets • It has no impact on the lower income, but the elasticity of the high-income was high at 0.036

Source : Yang(2016), Won Seok Jung and Sung Ho Kang (2017)

IV-1. Research Methodology

Sample Data

KLIPS (Korea Labor and Income Panel Study)

Period

2010 ~ 2015 (6 years)
(Strongly balance panel data)

Constraints : Income information exists
Age over 19
Savings rate below 100%

Method

DID (Difference-In-Difference)

QDID (Quantile Difference-In-Difference)

Variables

- Dependent variable : savings rate
  (=savings / Total Income)

- Control variables : age, age^2, education level, family, housing ownership status, repayment rate

IV-2. Research Methodology

DID method analyze net effects that reflect systematic differences and time changing differences in Treatment Group(TG) and Control Group(CG)

$$s_{i,t} = \alpha + \beta D_{i,t} + \gamma Z_{i,t} + u_i + v_t + e_{i,t} \qquad \text{(t=1,2)}$$

($s_{i,t}$: savings rate, $D_{i,t}$: changing scheme Dummy variables
$Z_{i,t}$: Demographic variables (age, education, family, home…)

1st difference

$$\Delta s_i = \beta \Delta D_i + \gamma \Delta Z_i + (v_2 - v_1) + \Delta e_i$$

Treatment Group(TG)=1, Control Group(CG)=0

$$\hat{\beta}^{DID} = \overline{\Delta y^{TG}} - \overline{\Delta y^{CG}} = (\overline{y_2^{TG}} - \overline{y_1^{TG}}) - (\overline{y_2^{CG}} - \overline{y_1^{CG}})$$

IV-3. Research Methodology

	change time	Contents	Before the change	After The change
Model 1	2011	Expending of Deductible limit 3.0 m KRW → 4.0 m KRW	2010	2011
Model 2				2012
Model 3				2013
Model 4	2014	Changing of Deductible type Income tax deduction → Tax credit	2013	2014
Model 5				2015

Strongly balance panel data unit

Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*
3,136	***2,985***	***2,918***	***3,096***	***2,966***

V-1. Empirical Results

- ***Estimated results for extension of deduction limit :*** **Model 1 (DID method)**
- **TG (PrPF >3.0 m KRW)**

$\hat{\beta}^{DID}$	Model 1		
	2010	2011	DID
Total Sample	-5.009* (-3.78)	-6.672* (4.37)	-1.662 (0.82)
Low Income	-5.770* (-3.33)	-7.143* (3.56)	-1,373 (0.52)
Middle Income	-8.543* (-3.94)	-14.815* (5.79)	***-6.272**** ***(1.87)***
High Income	-2.866 (-1.47)	-1,953 (0.85)	0.913 (0.30)
Low Age	-5.770* (-3.33)	-7.143* (3.56)	-1.373 (0.52)
High Age	-3.889 (-1.92)	-5.845 (2.50)	-1.956 (0.63)

Notes 1) * p < 0.01, ** p < 0.05, *** p < 0.1
2) ( ) is t-value

Control Variables

	coeffcient
old	0.0559 (1.11)
old^2	-0.0057 (-1.12)
school	0.0020 (0.08)
family	0.0275 (0.41)
home	0.1937 (1.26)
payment	-0.0080 (-0.93)

V-1. Empirical Results

Estimated results for extension of deduction limit : **Model 1 (QDID method)**

$\hat{\beta}^{DID}$	Model 1			
	20th	40th	60th	80th
Total Sample	0.337 (0.13)	-1.138 (0.48)	-3.120 (1.26)	-0.667 (0.22)
Low Income	-2.058 (0.63)	-0.931 (0.33)	-1.034 (0.32)	1.038 (0.24)
Middle Income	-5.916 (1.55)	***-4.671**** ***(1.69)***	-3.925 (0.97)	-4.873 (1.09)
High Income	3.472 (1.28)	-2.277 (0.60)	-1.808 (0.32)	-1.333 (0.25)
Low Age	-2.058 (0.63)	-0.931 (0.33)	-1.034 (0.32)	1.038 (0.24)
High Age	1.624 (0.46)	-2.545 (0.66)	-6.737 (1.52)	-6.340 (1.42)

Notes 1) * $p < 0.01$, ** $p < 0.05$, *** $p < 0.1$
2) ( ) is t-value

V-2. Empirical Results

- ***Estimated results for extension of deduction limit :*** **Model 2 (DID method)**
- **TG (PrPF >3.0 m KRW)**

$\hat{\beta}^{DID}$	Model 2		
	2010	2012	DID
Total Sample	-5.129* (-3.86)	-3.872** (2,52)	1.257 (0.62)
Low Income	-9.369* (-4.29)	-1.864 (0.70)	***7.505**** ***(2.18)***
Middle Income	-9.367* (-3.98)	-7.205* (2.65)	2.162 (0.60)
High Income	-4.293** (-2.18)	-5.825** (2.50)	-1.532 (0.50)
Low Age	-5.129* (-3.86)	-3.872** (2.52)	1.257 (0.62)
High Age	-5.129* (-3.86)	-3.872** (2.52)	1.257 (0.62)

Notes 1) * p < 0.01, ** p < 0.05, *** p < 0.1
2) ( ) is t-value

Control Variables

	coeffcient
old	0.0998*** (1.91)
old^2	-0.0010 *** (-1.89)
school	0.0073 (0.29)
family	-0.0235 (-0.34)
home	0.2927*** (1.86)
payment	-0.0116** (-1.24)

V-2. Empirical Results

Estimated results for extension of deduction limit : Model 2 (QDID method)

$\hat{\beta}^{DID}$	Model 2			
	20th	40th	60th	80th
Total Sample	-0.606 (0.33)	-0.086 (0.04)	-2.095 (0.91)	-2.320 (0.84)
Low Income	***8.994***** ***(2.17)***	5.568 (0.96)	4.915 (0.82)	0.061 (0.990)
Middle Income	-0.132 (0.03)	1.576 (0.42)	-0.866 (0.18)	1.206 (0.22)
High Income	-2.753 (0.78)	-2.307 (0.45)	-2.862 (0.58)	***-9.362***** ***(2.24)***
Low Age	-0.606 (0.33)	-0.086 (0.04)	-2.095 (0.91)	-2.320 (0.84)
High Age	-0.606 (0.33)	-0.086 (0.04)	-2.095 (0.91)	-2.320 (0.84)

Notes 1) * $p < 0.01$, ** $p < 0.05$, *** $p < 0.1$
2) ( ) is t-value

V-3. Empirical Results

- ***Estimated results for extension of deduction limit :*** **Model 3 (DID method)**
- **TG (PrPF >3.0 m KRW)**

$\hat{\beta}^{DID}$	Model 3		
	2010	2013	DID
Total Sample	-5.342* (-3.79)	-7.845* (4.70)	-2.503 (1.15)
Low Income	-4.900* (-2.89)	-6.268* (3.13)	-1.369 (0.52)
Middle Income	-9.512* (-3.78)	-8.710* (2.90)	0.801 (0.20)
High Income	-5.748** (-2.48)	-5.056*** (0.19)	0.691 (0.19)
Low Age	-4.900* (-2.89)	-6.268* (3.13)	-1.369 (0.52)
High Age	-7.061* (-2.85)	-10.550* (3.61)	-3.488 (0.91)

Notes 1) * $p < 0.01$, ** $p < 0.05$, *** $p < 0.1$
2) ( ) is t-value

Control Variables

	coeffcient
old	0.0975*** (1.76)
old^2	-0.0008 (-1.51)
school	-0.0049 (-0.20)
family	0.0277 (0.40)
home	0.2196 (1.40)
payment	-0.0149 (-1.56)

V-3. Empirical Results

Estimated results for extension of deduction limit : Model 3 (QDID method)

$\hat{\beta}^{DID}$	Model 3			
	20th	40th	60th	80th
Total Sample	-1.950 (1.14)	***-4.720**** ***(1.70)***	***-5.498**** ***(2.51)***	-2.908 (0.71)
Low Income	-1.457 (0.54)	-1.629 (0.41)	-3.616 (1.15)	2.553 (0.43)
Middle Income	-2.419 (0.58)	-6.242 (1.39)	-4.024 (0.81)	***10.615**** ***(2.02)***
High Income	-3.360 (1.42)	-4.781 (1.11)	-8.404 (1.57)	-0.411 (0.07)
Low Age	-1.457 (0.54)	-1.629 (0.41)	-3.616 (1.15)	2.553 (0.43)
High Age	-1.432 (0.54)	***-9.352**** ***(2.30)***	***-7.925***** ***(1.80)***	-2.638 (0.46)

Notes 1) * $p < 0.01$, ** $p < 0.05$, *** $p < 0.1$
2) ( ) is t-value

V-4. Empirical Results

- ***Estimated results for extension of deduction limit :*** **Model 4 (DID method)**
- **TG (PrPF >0 KRW) :** ***New entry or additional payment***

$\hat{\beta}^{DID}$	Model 4		
	2013	2014	DID
Total Sample	-4.968* (-11.58)	-5.128* (11.50)	-0.160 (0.26)
Low Income	-7.257* (-8.01)	-6.862* (7.54)	0.394 (0.31)
Middle Income	-6.447* (-8.73)	-8.047* (10.34)	-1.600 (1.49)
High Income	-7.327* (-9.68)	-6.402* (8.07)	0.925 (0.84)
Low Age	-5.649* (-7.89)	-6.164* (8.27)	-0.514 (0.50)
High Age	-4.075* (-7.44)	-3.887* (6.81)	0.188 (0.24)

Notes 1) * $p < 0.01$, ** $p < 0.05$, *** $p < 0.1$
2) ( ) is t-value

Control Variables

	coeffcient
old	0.0337 (1.49)
old^2	-0.0007* (-3.02)
school	0.0250** (2.50)
family	0.0592** (2.08)
home	0.2528* (3.58)
payment	0.0007 (0.60)

V-4. Empirical Results

Estimated results for extension of deduction limit : Model 4 (QDID method)

$\hat{\beta}^{DID}$	Model 4			
	20th	40th	60th	80th
Total Sample	***-0.645**** ***(5.22)***	0.096 (0.25)	-0.132 (0.12)	-0.713 (0.38)
Low Income	6.173 (0.00)	***4.439**** ***(78.07)***	***1.508**** ***(8.65)***	0.555 (0.09)
Middle Income	***-1.408**** ***(2.31)***	-1.202 (0.69)	-1.199 (0.55)	-1.715 (0.60)
High Income	0.157 (0.13)	0.048 (0.03)	0.360 (0.23)	-0.121 (0.09)
Low Age	-0.554 (0.45)	-1.483 (1.16)	-0.669 (0.41)	-0.737 (0.36)
High Age	0.000 (0.00)	***1.656**** ***(5.42)***	2.090 (1.46)	1.852 (0.69)

Notes 1) * $p < 0.01$, ** $p < 0.05$, *** $p < 0.1$
2) ( ) is t-value

V-5. Empirical Results

- ***Estimated results for extension of deduction limit :*** **Model 5 (DID method)**
- **TG (PrPF >0 KRW) :** ***New entry or additional payment***

$\hat{\beta}^{DID}$	Model 5		
	2013	2015	DID
Total Sample	-4.946* (-11.36)	-4.930* (10.71)	0.016 (0.03)
Low Income	-7.463* (-7.34)	-3.933* (4.06)	***3.531***** ***(2.51)***
Middle Income	-5.882* (-8.22)	-6.844* (9.13)	-0.961 (0.93)
High Income	-7.157 (-9.29)	-6.733 (8.10)	0.425 (0.37)
Low Age	-5.941* (-8.18)	-6.389* (8.29)	-0.448 (0.42)
High Age	-3.585* (-6.49)	-3.077* (5.30)	0.508 (0.63)

Notes 1) * $p < 0.01$, ** $p < 0.05$, *** $p < 0.1$
2) ( ) is t-value

Control Variables

	coeffcient
old	0.0228** (2.26)
old^2	-0.0008* (-3.67)
school	0.0275* (2.75)
family	0.0660** (2.32)
home	0.2055* (2.94)
payment	0.0007 (0.58)

V-5. Empirical Results

Estimated results for extension of deduction limit : Model 5 (QDID method)

$\hat{\beta}^{DID}$	Model 5			
	20th	40th	60th	80th
Total Sample	*-0.583** *(5.77)*	0.119 (0.28)	-0.452 (0.41)	-0.436 (0.25)
Low Income	-	-	-	-
Middle Income	-0.369 (0.86)	0.909 (0.52)	-0.603 (0.29)	-0.510 (0.20)
High Income	-1.302 (1.19)	-1.447 (0.94)	0.670 (0.44)	-0.493 (0.21)
Low Age	*-1.915**** *(1.82)*	-1.238 (0.87)	0.741 (0.38)	0.023 (0.01)
High Age	0.000 (0.00)	*2.128** *(5.63)*	1.766 (1.29)	0.845 (0.30)

Notes 1) * p < 0.01, ** p < 0.05, *** p < 0.1
2) ( ) is t-value

VI. Conclusion

First, it is the effect of expansion of the deduction limit.

- In the case of the low-income group, we expanded the current savings rather than the pension after the deduction limit was extended.

- Groups with high-level savings in high-income class have increased pensions after expanding the deductible limit.

- In groups with middle-level savings, the savings rate declined and pensions expanded, the decline is particularly large in the elderly.

Second, the impact of the change in the deduction type.

- In the case of low-income class, we increased the savings after changing the deduction type.

- Groups with low-level savings have lowered savings rates and expanded pensions.

Thank you !