



Symposium on Evaluation of Foreign Japonica Rice by Taste-tests  
and the Competitiveness in the Global Markets  
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# Structural Changes and Challenges of Korean Rice Economy

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1. Introduction
2. Structural changes of the Korean rice economy
3. Interrelationship and long-run equilibrium between Korean rice price and global rice prices
4. Consumers' WTP to Korean rice and imported rice
5. Challenges and implication for the Korean rice economy after the tariffication



# Introduction

- Rice has been the most important staple crop and a major source of farm income in Korea.
  - **61%** of farms cultivates rice (2013)
  - Revenue from rice: **21%** of total farm revenue (2013)
  - **27%** of the caloric intake (2013)
- Korean rice market opened as the result of the URAA in 1995. However, the rice tariffication was postponed in the URAA for 10 years(1995~2004) and extended MMA another 10 years (2005~2014) through the 2004 rice negotiation with the WTO member countries.



# Introduction

- Korea imported rice only for processing use from 1995 to 2004. According to the 2004 rice negotiation, the MMA import of rice has increased from 4% to 8% of average consumption of the year 1986-88. Also, rice for food use has been imported from 10% to 30% of total imported rice since 2005.
- As the second tariffication waiver expired in 2014, Korean government decided to import rice by tariff since January 1<sup>st</sup>, 2015. It implies that Korean rice market will meet new challenges from competitive high-quality foreign rice.
- Therefore, we should identify the international competitiveness of domestic rice and consumers' preference for domestic and imported rice after the tariffication in 2015.



# Introduction

- Particularly, it is expected that imported rice will increase significantly in the near future since Korea opens rice market with tariff in 2015.
- Korea and exporting countries should identify
  - 1) the feasibility of marketing both domestic and imported rice
  - 2) which rice from specific countries Korean consumers prefer
  - 3) consumers' preference and valuation for a rice product's country of origin and food miles information
  - 4) whether consumers identify the quality of domestic and imported rice



# Introduction: Rice Loyalty

The New York Times

July 19, 2012

## Japanese Consumers Reconsidering Rice Loyalty

By HIROKO TABUCHI

TOKYO — In the four months that Walmart has been selling low-cost Chinese rice here, the big American retailer has struggled to keep shelves stocked at some stores. A Japanese chain, Beisia, also sold Chinese-grown rice for the first time this year but quickly ran out.

Kappa Create's sushi restaurants have started to serve rice grown in California, while Matsuya, one of Japan's biggest beef and rice bowl chains, has introduced a blend of Japanese and Australian rice. Daikokuten Bussan, which runs discount stores across the country, says it would carry foreign rice if it could get a stable supply.



# Objectives

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- 1) Structural changes of Korean rice economy focusing on the post-URAA in 1995
- 2) Interrelationship and long-run equilibrium between Korean rice price and global rice prices
- 3) Competitiveness and product differentiation between domestic and imported rice from China, US and others.
- 4) Challenges of Korean rice economy after the rice tariffication in 2015.



# Current Status of Korean Rice Economy

- Rice consumption has decreased due to diversified food consumption and income growth.
- Domestic rice supply has also decreased significantly, but import amount has increased by MMA import continuously since 1995. Thus, carryover stock has increased dramatically.
- After the rice market opening in 1995, Korean government has introduced 'Rice Income Direct Payment System' to stabilize rice income.
- In spite of government support, there are still 55% of farm families who own under 1 ha farms and 65% of farmers who are over 65 years old.



# Structural Changes in Production: Yield, Planted Acreage and Production

- Domestic production decreased about 32% from 5,898 thousand MT in 1990 to 4,006 thousand MT in 2013.
  - Yield increased about 13%.
  - Planted acreage decreased about 35% from 1,244 ha in 1990 to 833 thousand ha in 2013.
- Recent uncertain climate change and policy failure, the fluctuation of rice production has been enlarged.



# Table. 1 Change in Rice Yields, Planted Acreage and Production

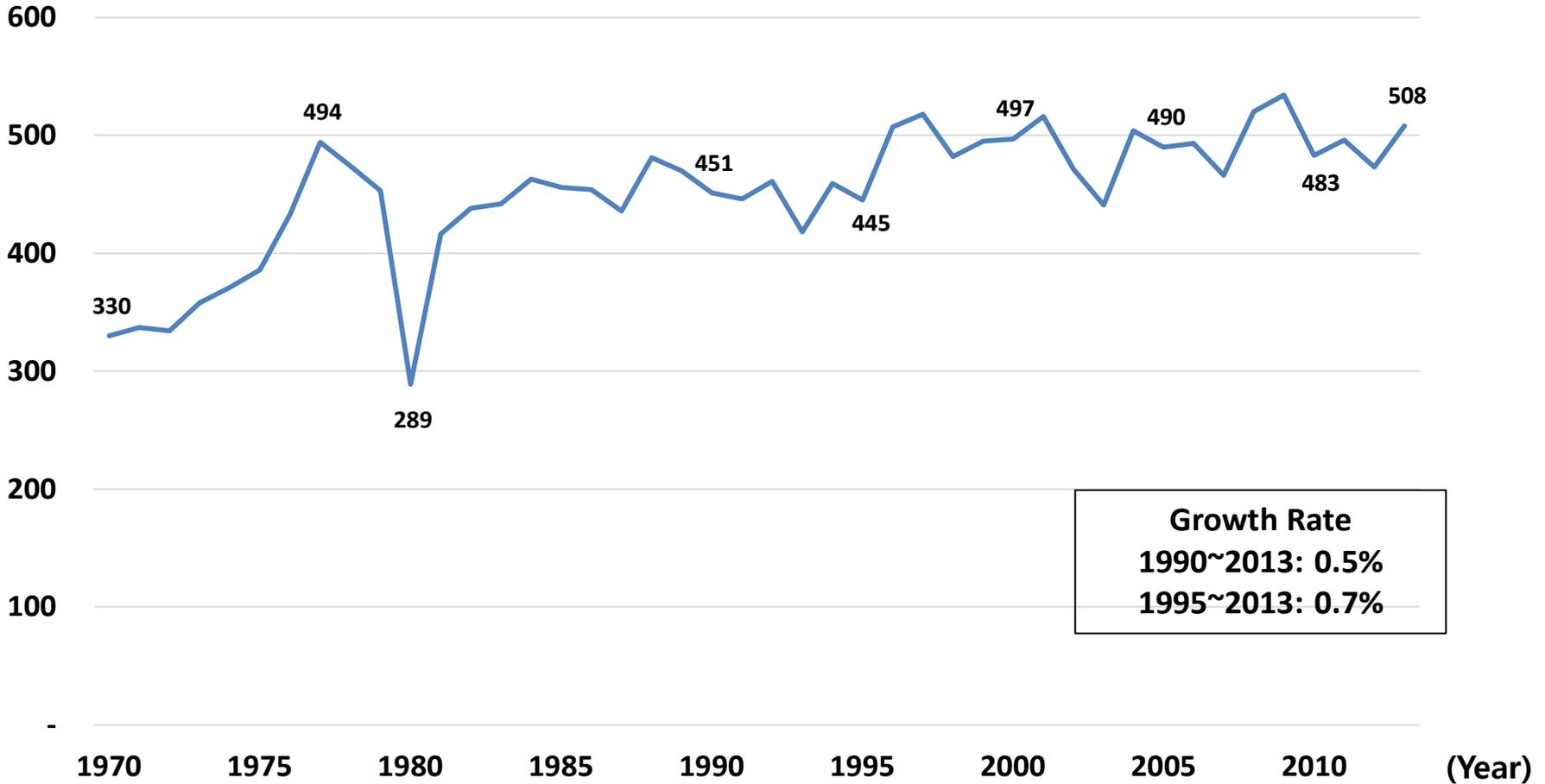
	Yields (Average, M/T/ha)	Planted Acreage (Total, 1,000ha)	Production (1,000M/T)
<b>1970</b>	330	1,203	4,090
<b>1975</b>	386	1,218	4,445
<b>1980</b>	289	1,233	5,136
<b>1985</b>	456	1,237	5,682
<b>1990</b>	451	1,244	5,898
<b>1995</b>	445	1,056	5,060
<b>2000</b>	497	1,072	5,263
<b>2005</b>	490	980	5,000
<b>2010</b>	483	892	4,916
<b>2013</b>	508	833	4,006

Source: Ministry of Agriculture & Forestry(MAF)



# Figure. 1 Change in Rice Yield

(Average, M/T/ha)

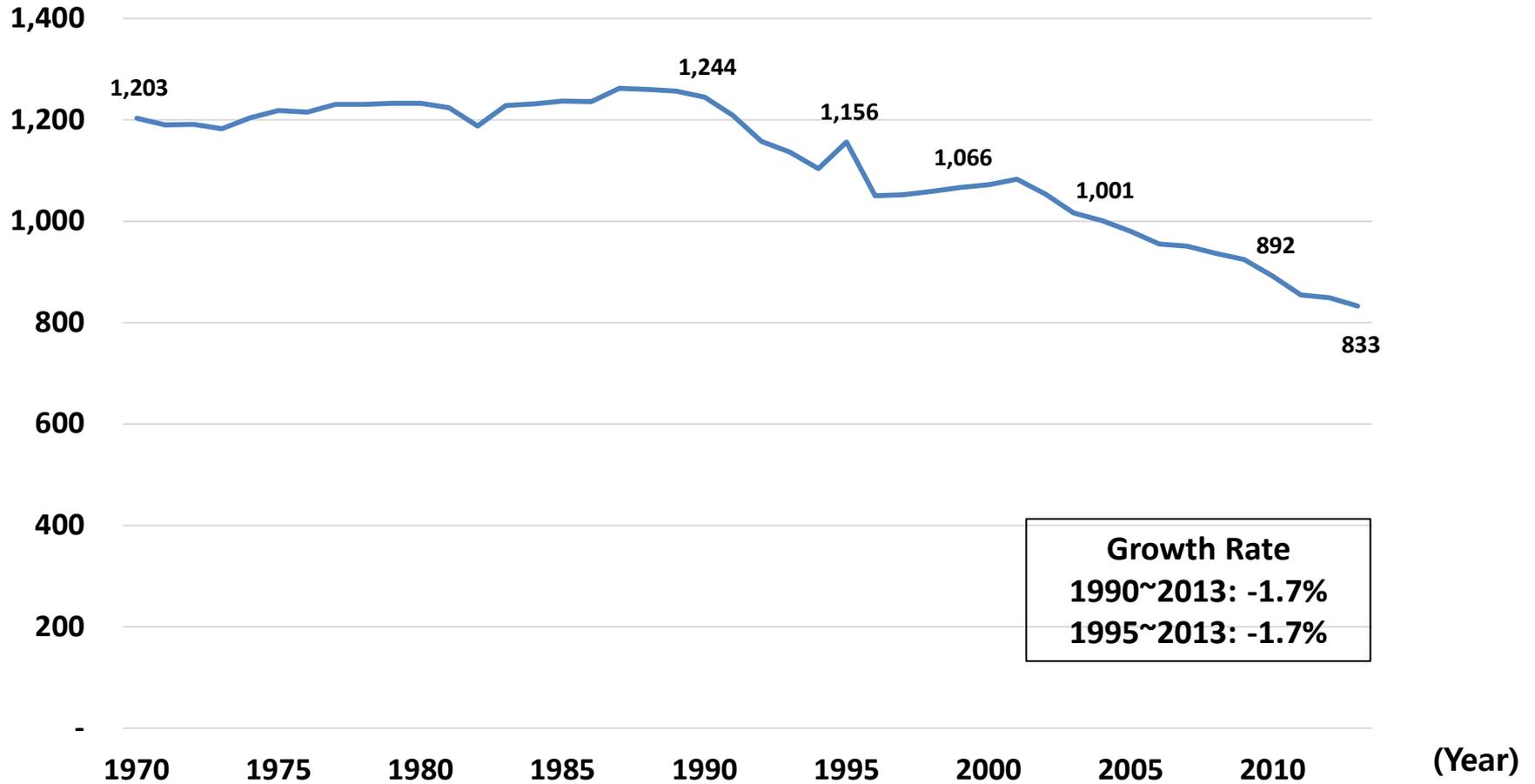


Source: Ministry of Agriculture & Forestry(MAF)



# Figure. 2 Change in Planted Acreage

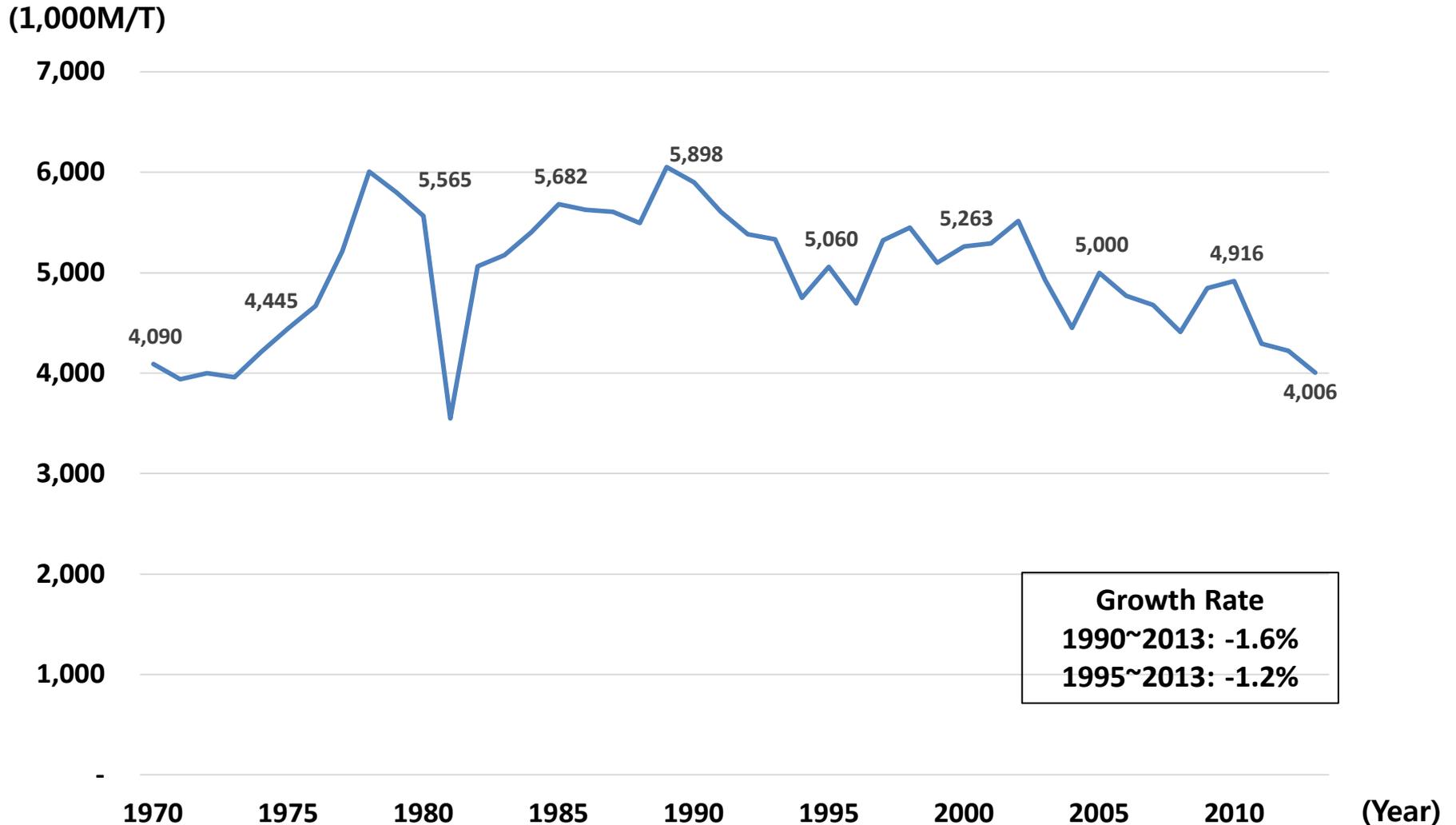
(Total, 1,000ha)



Source: Ministry of Agriculture & Forestry(MAF)



# Figure. 3 Change in Rice Production



Source: Ministry of Agriculture & Forestry(MAF)



# Increasing Rice Import

- Permanent rice import under the MMA after UR. This is a big burden on balancing supply and demand as rice consumption has decreased fast since 2000.
  - MMA increased from 51,000 tons (1%) in 1995 to 205,000 tons (4%) and 408,700 tons (8% of average 1986-88 consumption) in 2014.
  - The amount of MMA in 2014 is about 13% of rice consumption and should be imported after tariffication as current access.



## Table. 2 Volume of the MMA by the UR Agreement (1995~2004)

Unit: 1,000 M/T

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
<b>Volume (% of food consumption)</b>	51 (1)	64 (1.3)	77 (1.5)	90 (1.8)	103 (2)	103 (2)	128 (2.5)	154 (3.0)	180 (3.5)	205 (4.0)

Source: Ministry of Agriculture & Forestry(MAF)



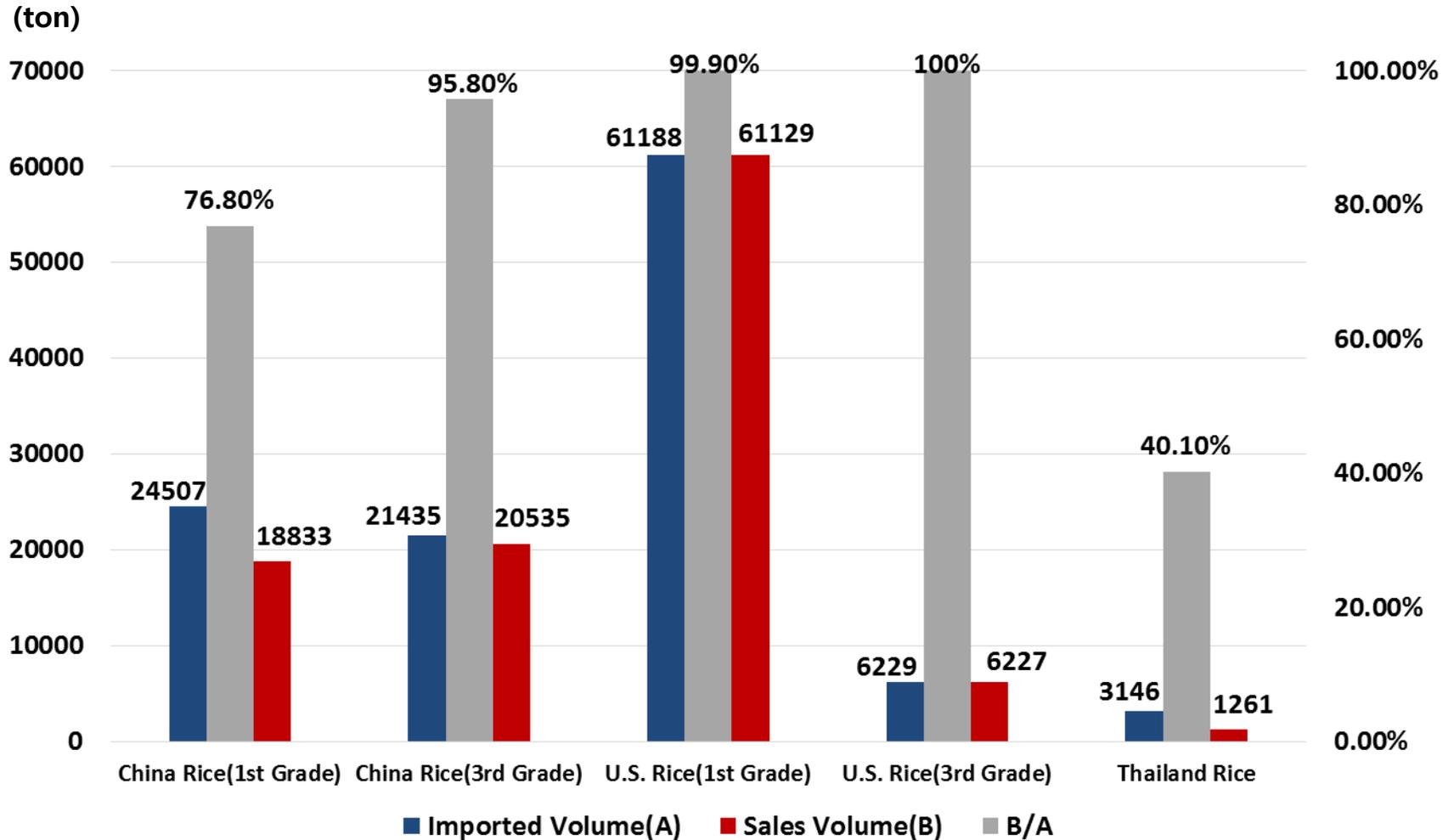
# Table. 3 Volume of the MMA (2005~2014)

Unit :1,000 M/T

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
<b>Total Volume of MMA</b>	225.6	246.0	266.3	286.6	307.0	327.3	347.7	368.0	388.4	408.7
<b>Table Use (%)</b>	22.6	37.7	52.8	67.9	83.1	98.2	104.3	110.4	116.5	122.6
	(10)	(15)	(20)	(24)	(27)	(30)	(30)	(30)	(30)	(30)
<b>Non-Table Use (%)</b>	203.0	208.2	213.5	218.7	223.9	229.1	243.4	257.6	271.8	286.1
	(90)	(85)	(80)	(76)	(73)	(70)	(70)	(70)	(70)	(70)



# Figure.4 Sales of Imported Rice(Table Use), 2013

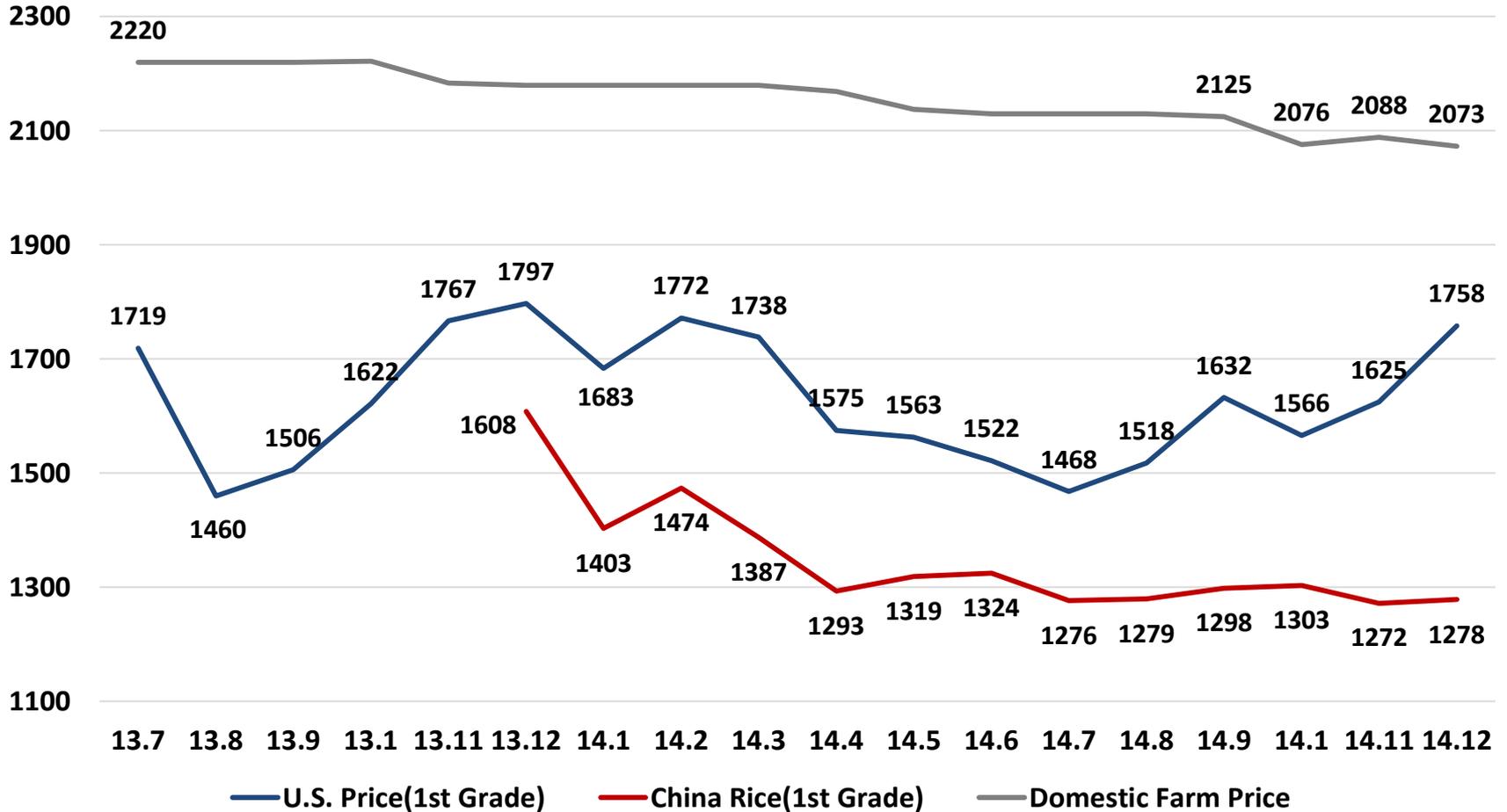


Source: aT(Korea Agro-Fisheries& Food Trade Corporation)



# Figure.5 Domestic Farm Price and Winning Bid Prices of Imported Rice for Table Use

(won/kg)



Source: Ministry of Agriculture & Forestry(MAF)



# Final Decision of Rice Tariffication

- Korea government submitted the WTO the rice amendment to the schedule of concessions on September 30, 2014. It plans to impose a tariff of up to 513% on rice import.
- The government has announced other safety measures for the opening-up of the market, including SSG.
- The tariff rate underwent a verification process by WTO member countries. Five countries, US, China, Australia, Thailand and Vietnam, expressed the objections on the tariff calculation on January 5, 2015.
- The government has decided to exclude rice from the list of items subject to tariff concession in its negotiations for additional FTA or TPP.



## Table. 4 Calculating Tariff Equivalent

- Domestic price is calculated by the average wholesale price of medium and 1<sup>st</sup> grade rice and international price is calculated by Chinese imported rice price in the years of 1986-88.
- Tariff, 513%, is the 10% reduction of tariff equivalent.

	Unit	1986	1987	1988	Average
<b>Domestic Price</b>	won/kg	906	938	1,035	-
<b>International Price</b>	won/kg	138	122	176	-
<b>Tariff Equivalent</b>	%	557	669	488	571

Source: KREI



# Serious Problem of Oversupply

- Per capita rice consumption decrease about 45% since 1990.
  - Rice consumption per capita was about 121.4kg in 1990, this has decreased to under 67.2kg in 2013.
- Rice import increased from 51,000 tons in 1995 to 408,700 tons in 2014.
  - MMA in 2014 is about 13% of rice consumption in Korea.
- From 2000 to 2013, rice carryover is from 832,000 M/T (16%) to 1,509,000 M/T (32% of demand).



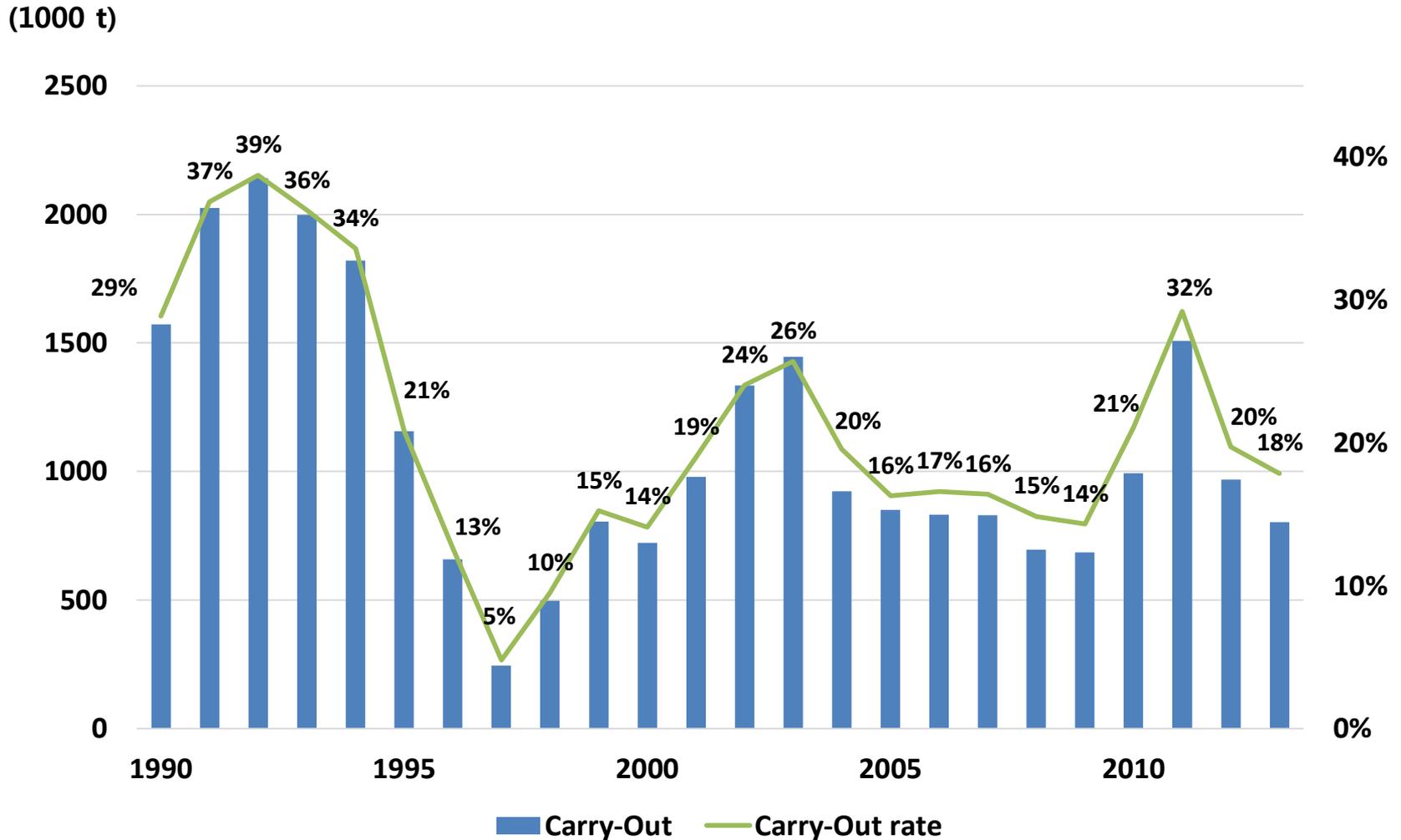
# Table. 5 Current Status of Rice Supply and Demand

Unit: 1000t

	Supply				Demand						Carry-Out	Self-Sufficiency ratio(%)
	Production	Import	Carry-In	Total	Food	Manufacture	Seed	Export	Loss Etc.	Total		
<b>1970</b>	4,090	541	88	4,719	-	-	-	-	-	4,394	325 (7.4)	93.1
<b>1975</b>	4,445	481	488	5,414	-	-	-	-	-	4,699	715 (15.2)	94.6
<b>1980</b>	5,136	580	752	6,468	5,057	36	44	0	265	5,402	1,066 (19.7)	95.1
<b>1985</b>	5,682	0	1,247	6,929	5,259	43	45	0	154	5,501	1,428 (26.0)	103.3
<b>1990</b>	5,898	0	1,572	7,470	5,127	80	45	0	194	5,444	2,025 (37.2)	108.3
<b>1995</b>	5,060	0	1,156	6,216	4,777	228	38	0	514	5,557	659 (11.9)	91.4
<b>2000</b>	5,263	107	722	6,092	4,425	175	46	0	468	5,114	978 (19.1)	102.9
<b>2005</b>	5,000	192	850	6,042	3,815	324	42	0	1,029	5,210	832 (16.0)	102.0
<b>2010</b>	4,916	307	993	6,216	3,678	549	39	4	438	4,707	1,509 (32.1)	104.6
<b>2013(P)</b>	4,006	526	762	5,294	3,435	526	36	2	492	4,491	803 (17.9)	89.2

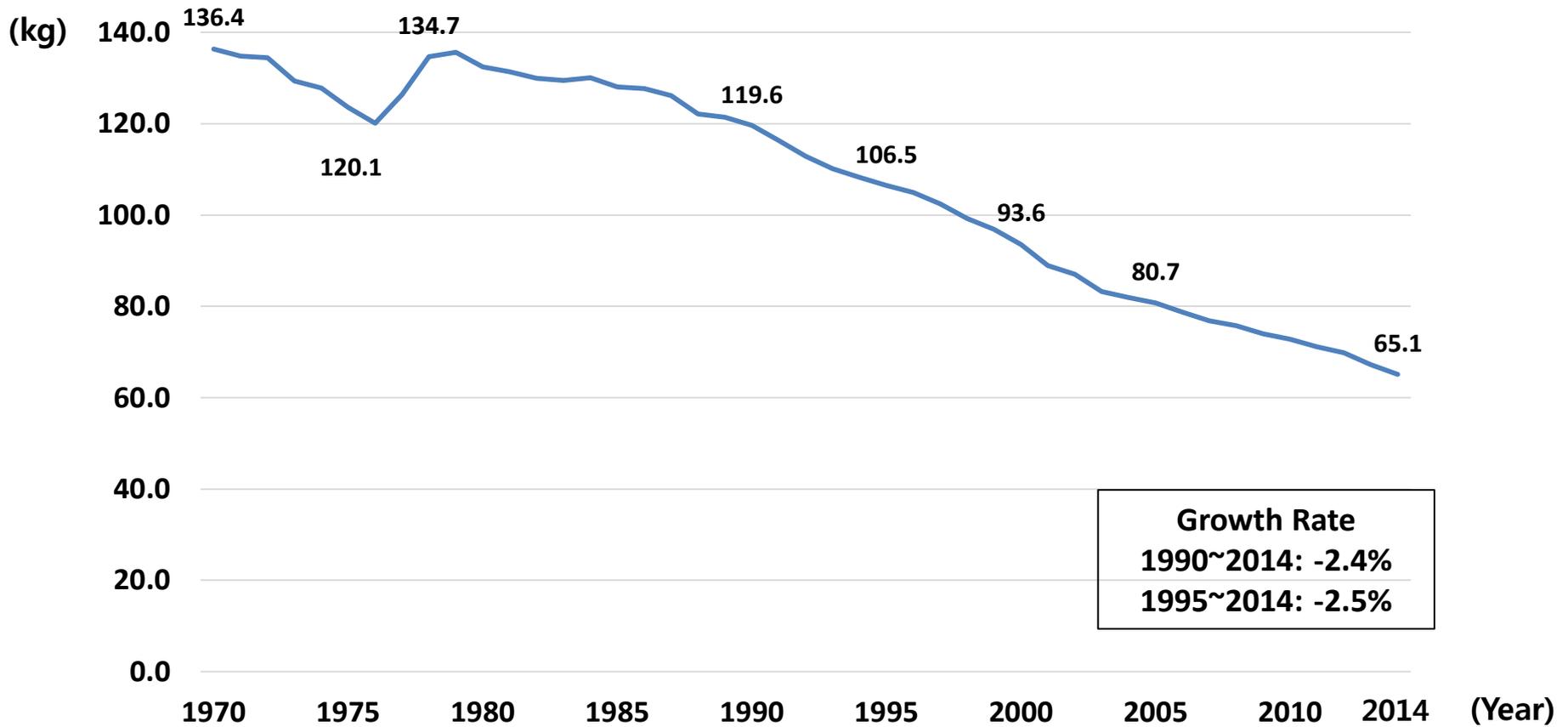
Source: Ministry of Agriculture & Forestry(MAF)

# Figure.6 Change in Rice Carry-Out





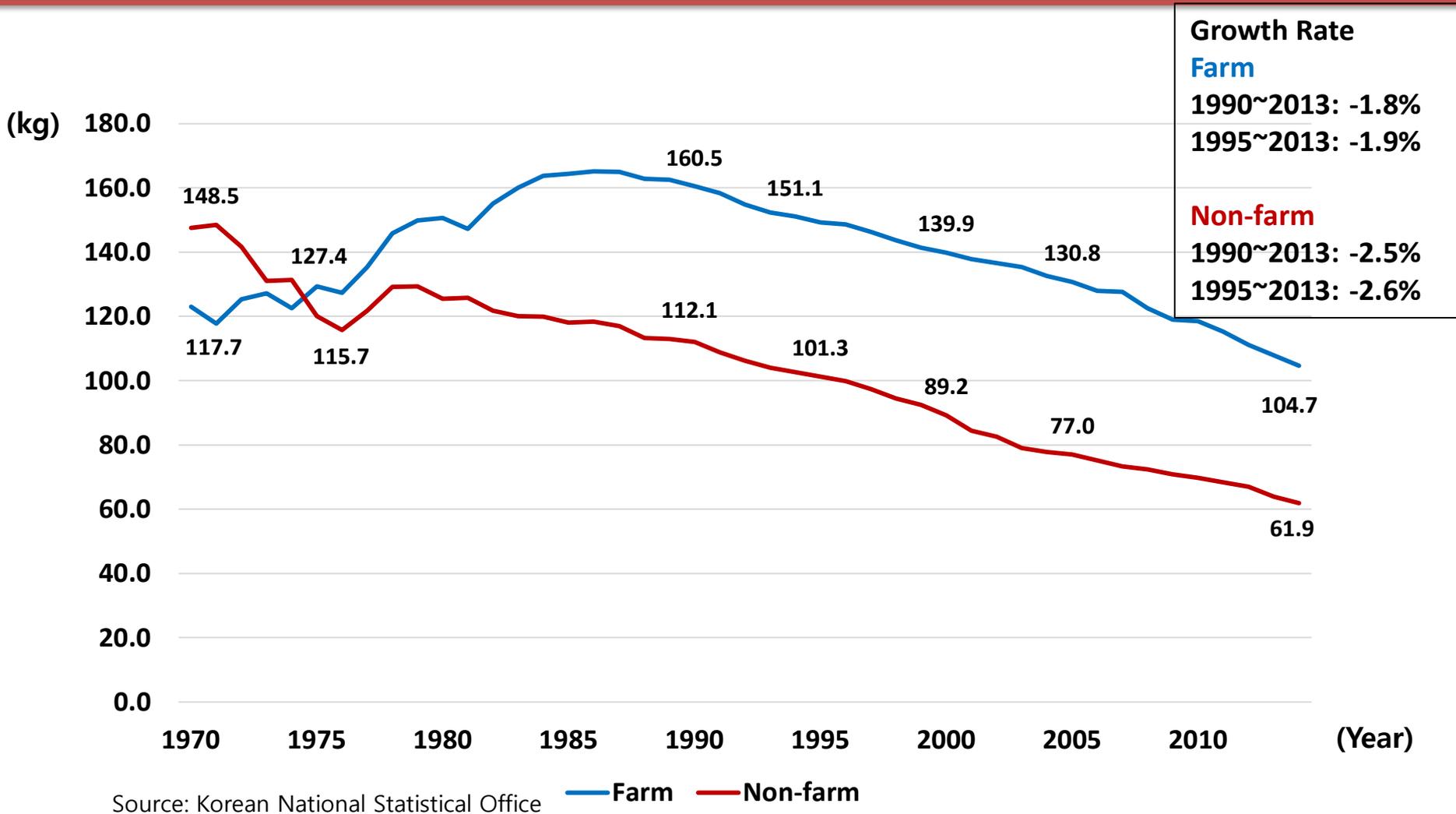
# Figure. 7 Annual Rice Consumption Per Capita



Source: Ministry of Agriculture & Forestry(MAF)



# Figure. 8 Annual Rice Consumption per Capita in Farm and Non-farm Households





# Government Programs for Balancing Supply and Demand of Rice

- 1. Strengthening school lunch program**
- 2. Encouraging rice consumption through various campaigns**
- 3. Production adjustment program**
  - Encouraging other crops and fallow compensation in paddy field
- 4. Farmland Bank to help rice farmers to retire**
  - To reduce the capitalization of government subsidy
- 5. Encouraging high quality rice production**
  - Traceability system, a country of origin labeling, etc.
  - ⇒ Differentiating domestic rice from imported rice



# Rapid Depression of Rice Economy after the URAA

1. The proportion of rice farm from total farm household decreased from 86% in 1990 to 61% in 2013.
2. The proportion of planted acreage for rice decreased from 59% in 1990 to 49% in 2013.
3. The proportion of rice from total farm revenue decreased from 48% in 1990 to 21% in 2013.
4. Real value of rice production also revenue decreased from 10 trillion won in 1990 to 7.2 trillion won in 2013.
5. The proportion of energy intake from rice per day decreased from 44% in 1990 to 27% in 2013.



# Table. 6 Rice Farm, Planted Acreage and Rice Revenue

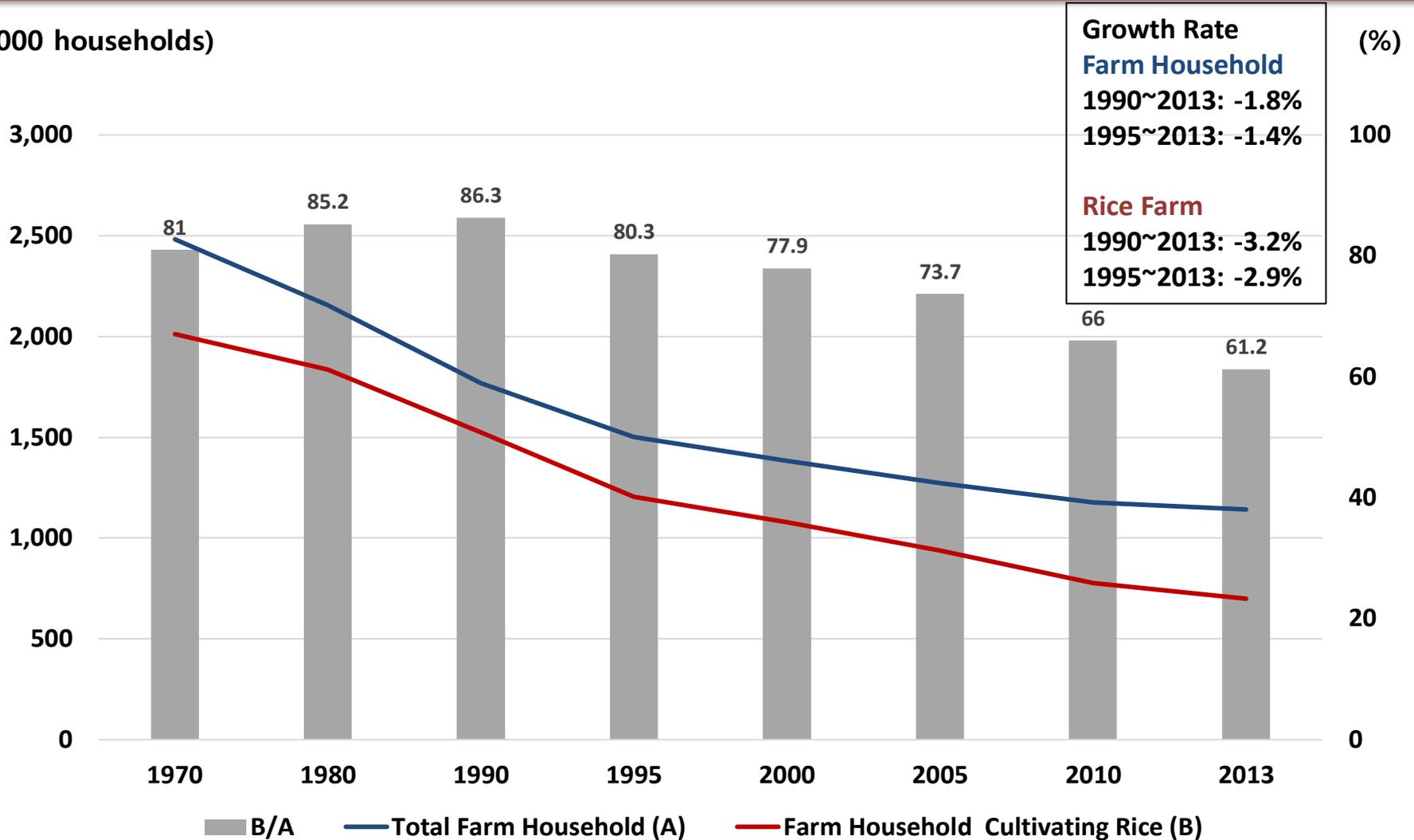
	1970	1980	1990	1995	2000	2005	2010	2013
<b>Total Farm (1000 households, A)</b>	2,483	2,155	1,767	1,501	1,384	1,273	1,177	1,142
<b>Farm Household Cultivating Rice (1000 households, B)</b>	2,011	1,837	1,525	1,205	1,078	938	777	700
<b>B/A (%)</b>	81.0	85.2	86.3	80.3	77.9	73.7	66.0	61.2
<b>Total Arable Land (1000ha, C)</b>	2,298	2,196	2,109	1,985	1,889	1,824	1,715	1,711
<b>Rice Planted Acreage (1000ha, D)</b>	1,203	1,233	1,244	1,056	1,072	980	892	833
<b>D/C (%)</b>	52.3	56.1	59.0	53.2	56.7	53.7	52.0	48.9
<b>Total Farm Revenue (1000Won, E)</b>	248	2,342	9,078	16,012	19,514	26,496	27,221	30,648
<b>Revenue from Rice (1000won, F)</b>	138	1,140	4,380	5,450	7,758	7,264	5,368	6,315
<b>F/E (%)</b>	55.6	48.7	48.2	34.0	39.8	27.4	19.7	20.6

Source: Ministry of Agriculture & Forestry(MAF)



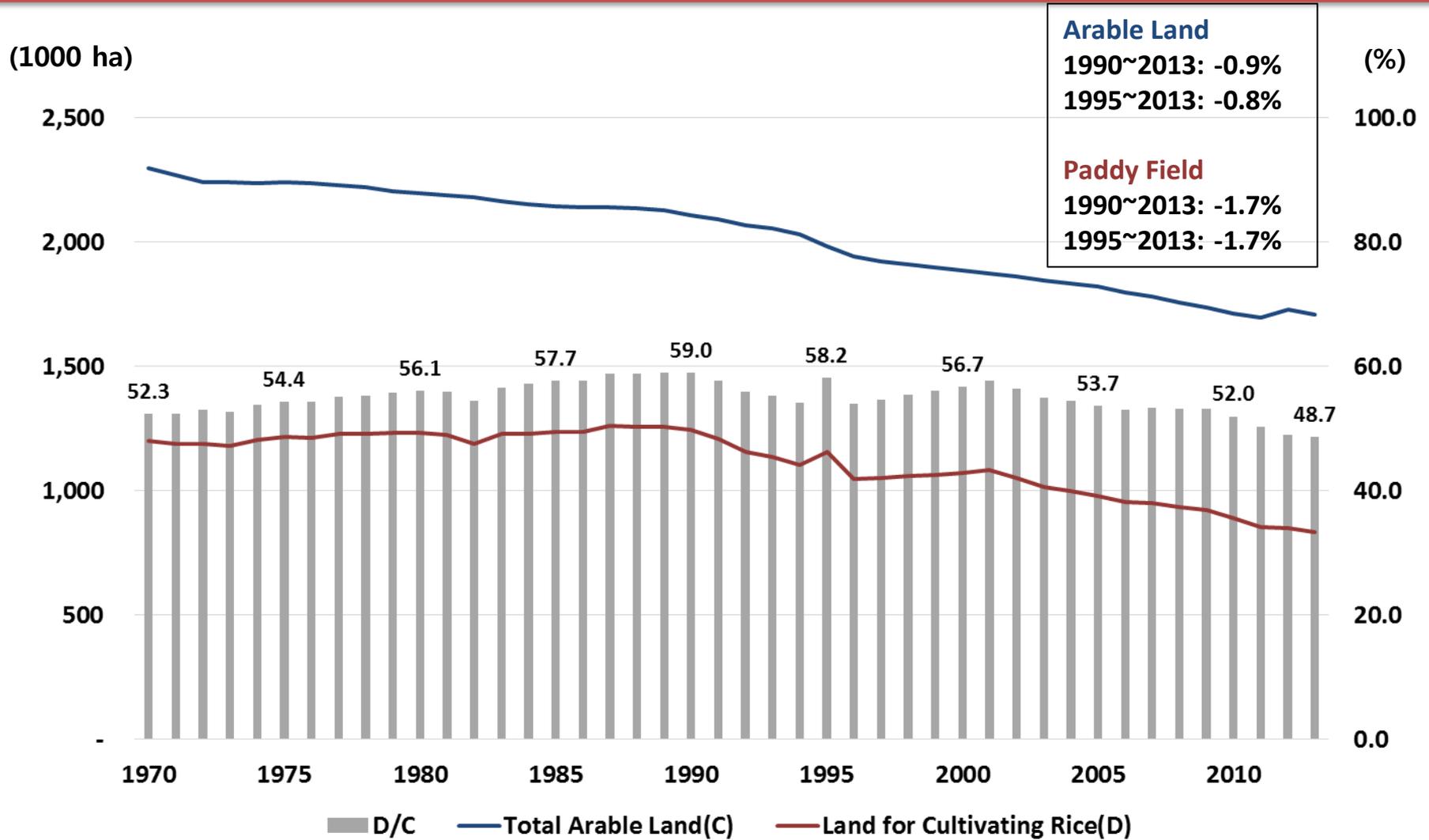
# Figure. 9 Number of Total Farm Household and Rice Farm

(1000 households)





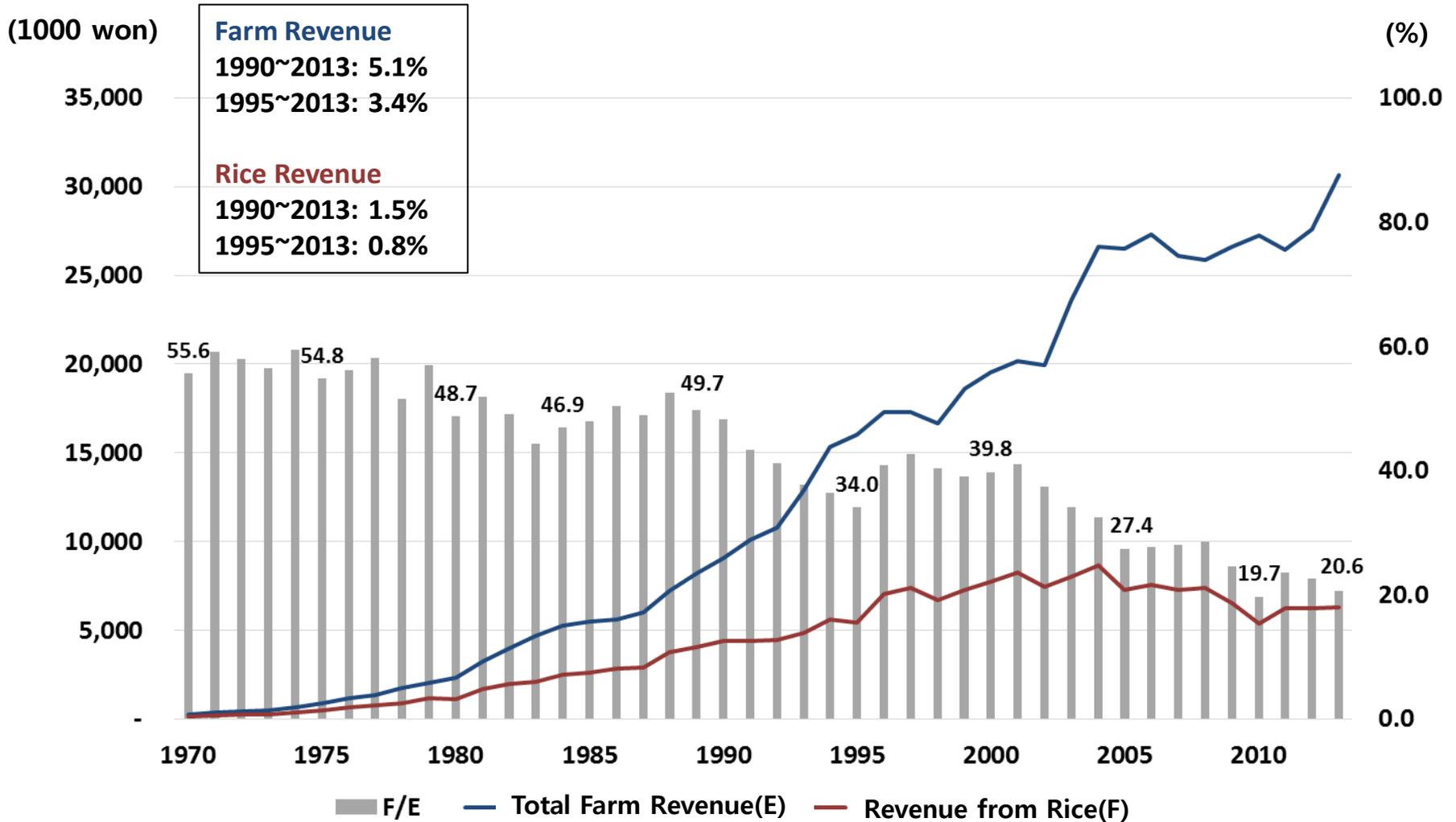
# Figure. 10 Total Arable Land and Rice Planted Acreage



Source: Ministry of Agriculture & Forestry(MAF)



# Figure. 11 Total Farm Revenue and Revenue from Rice

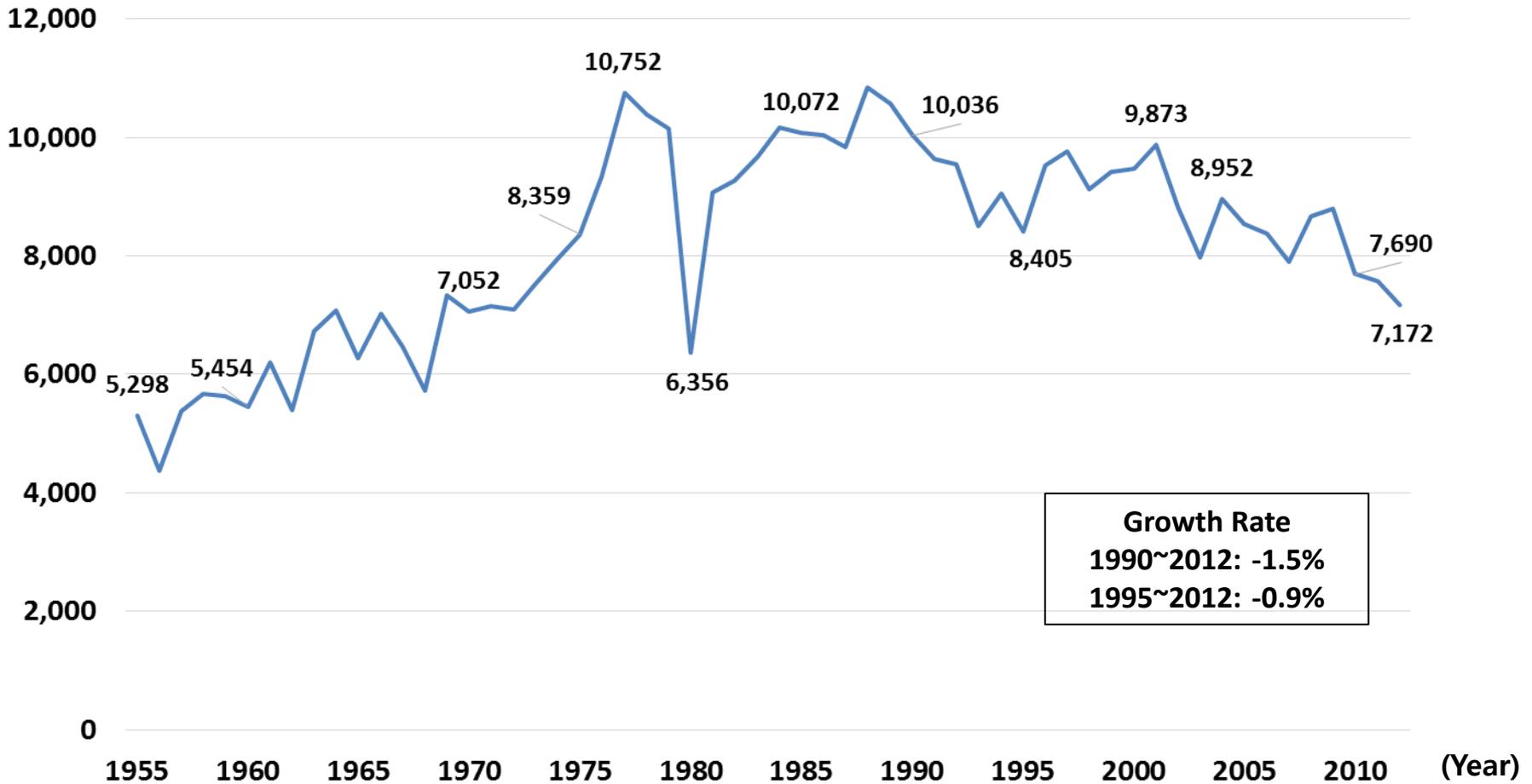


Source: Ministry of Agriculture & Forestry(MAF)



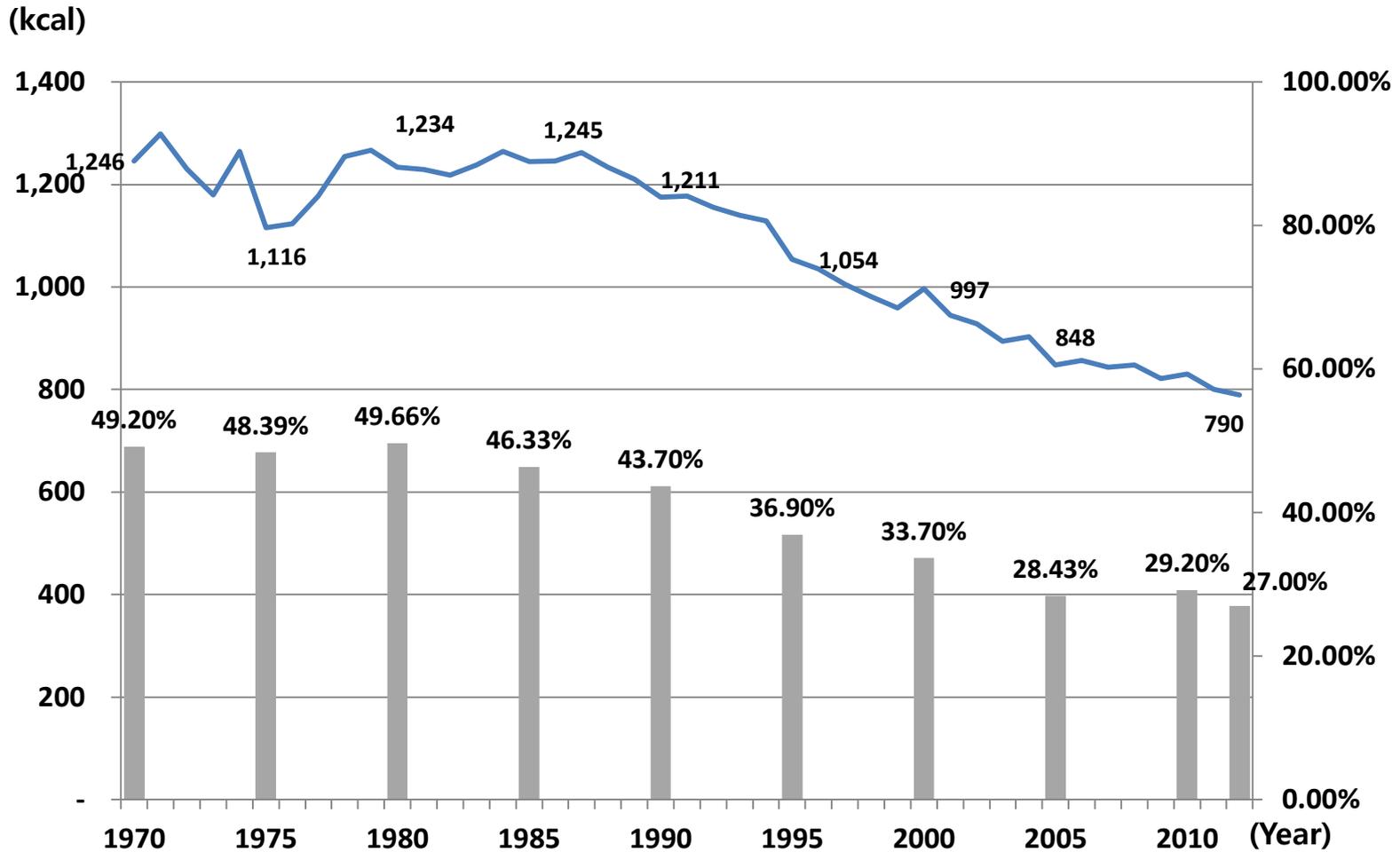
# Figure. 12 Value of Production on Rice

(1 billion won)



Source: Ministry of Agriculture & Forestry(MAF)

# Figure. 13 Annual Change in the Rice Energy Supply per capita per day, 1970~2012



Source : KREI(Korea Rural Economic Institute)



# Dilemma of 'Rice Income Direct Payment Policy'

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- Significant government budget allocated to direct payment for rice income.
- Small-size households could not get significant income benefits of variable payment since direct payment depends on the acreage.
- Debates and difficulties in continuing direct payment policy due to severe oversupply of rice.

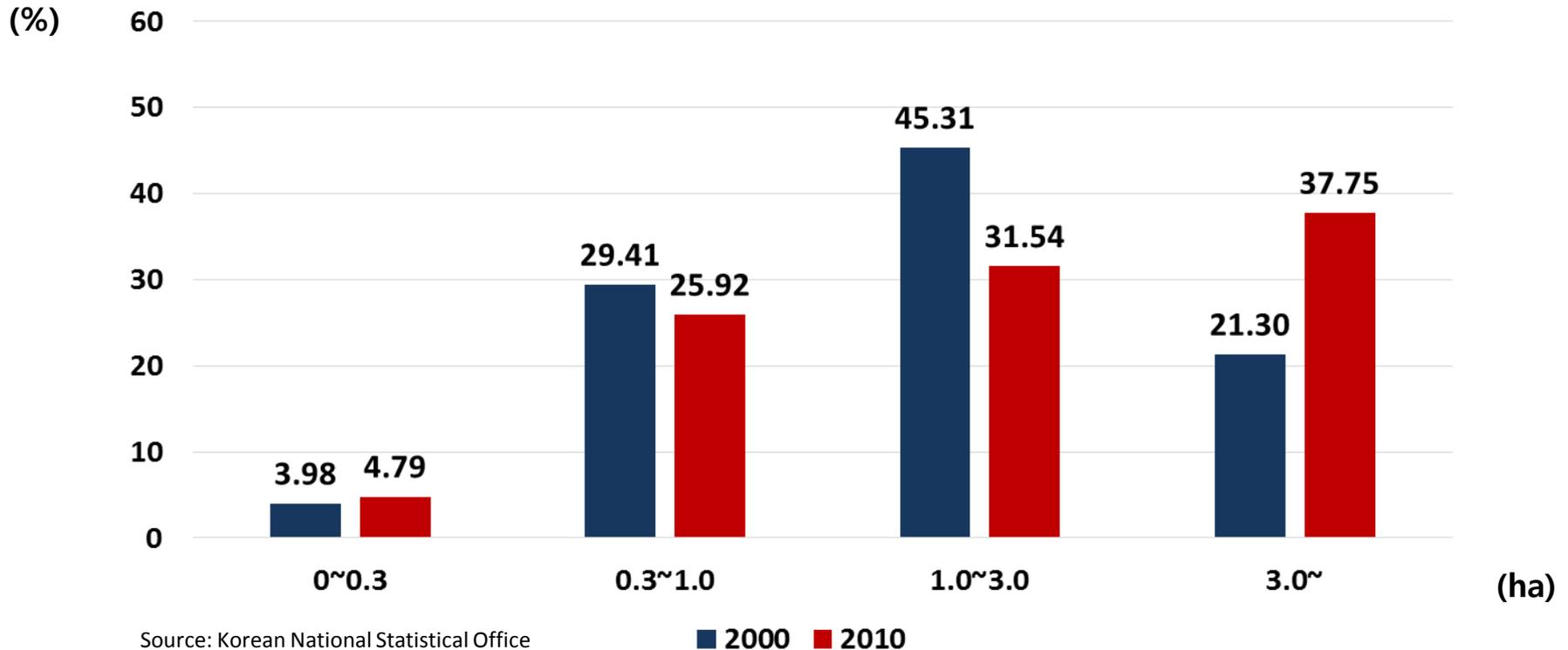


# Bipolarization of Rice Farming

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- As the depression of rice economy has continued, the bipolarization of rice farming has made rapid progress.
- Rice farm cultivating less than 0.3 ha increased from 3.98% in 2000 to 4.79% in 2010: rice farm cultivating more than 3 ha increased from 21.30% in 2000 to 37.75% in 2010.

# Figure. 14 Distribution of Planted Acreage by Rice Farm Size



- Rice planted acreage over 3.0 ha had increased from 21.30% in 2000 to 37.75% in 2010.



# Interrelationship between Domestic Price and International Price

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- Analyze the existence of the long-run relationship between international rice prices and Korean rice price to test the law of one price in rice after URAA.
- Cointegration tests and causality tests between global rice price and domestic rice price
  - Japonica rice price vs. Indica rice price
  - California rice price vs. Thai rice price
  - California rice price vs. Korean rice price
  - Thai rice price vs. Korean rice price



# Data Description

- Rice prices in California (median grain), Thailand and Korea (short grain).
- Data: California and Thailand prices from <http://worldfood.apionet.or.jp>, Korean wholesale price from Korea Agro-Fisheries & Food Trade Corporation.
- Monthly data from August 1987 to February 2014 are available for California median rice and Thailand rice.
- Korean rice price are available from January 1996 to February 2014. We analyzed data after the Asian financial crisis.
- All variables were transformed into natural logs before estimation and testing.



# Table. 7 ADF Unit Root Test

Variable			ADF Statistic	P-value
Level		Period		
Rice	California (US \$)	1987.08~2014.02	-1.6156	0.4735
		1998.10~2014.02	-2.1052	0.5391
	Thailand (US \$)	1987.08~2014.02	-2.1405	0.2290
		1998.10~2014.02	-2.6790	0.2466
	Korea (won)	1998.10~2014.02	-1.8873	0.3377
	(US \$)	1998.10~2014.02	-2.2701	0.2751

- **Non-stationary process in price levels: all variables in level are not rejected the null hypothesis that there is unit root on all time-series data.**



# Table. 8 ADF Unit Root Test

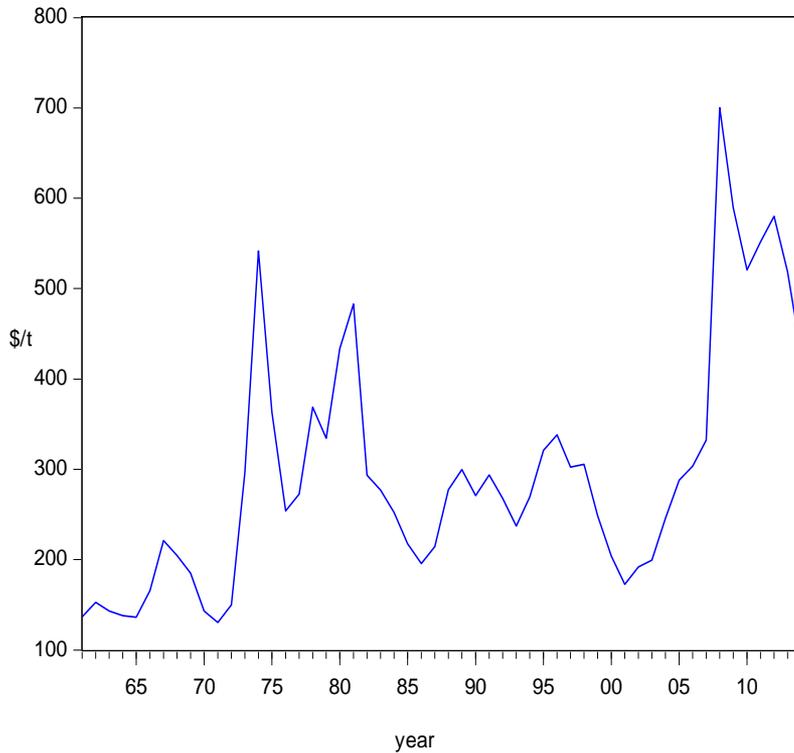
Variable			ADF Statistic	P-value
First Differenced		Period		
Rice	California (US \$)	1987.08~2014.02	-4.6145	0.000
		1998.10~2014.02	-3.9367	0.002
	Thailand (US \$)	1987.08~2014.02	-5.4940	0.000
		1998.10~2014.02	-3.1054	0.028
	Korea (won)	1998.10~2014.02	-3.3394	0.015
	(US \$)	1998.10~2014.02	-3.3272	0.015

- **Stationary process in differenced variables : all differenced variables are rejected the null hypothesis that there is unit root on all time-series data.**

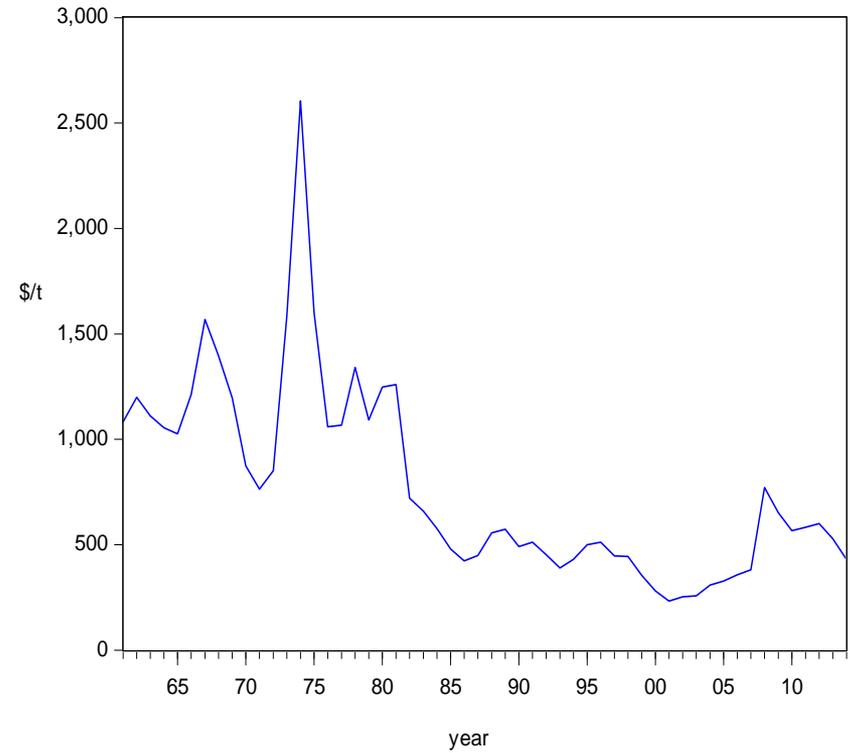


# Figure. 15 US Rice Price

Nominal US Price of Rice



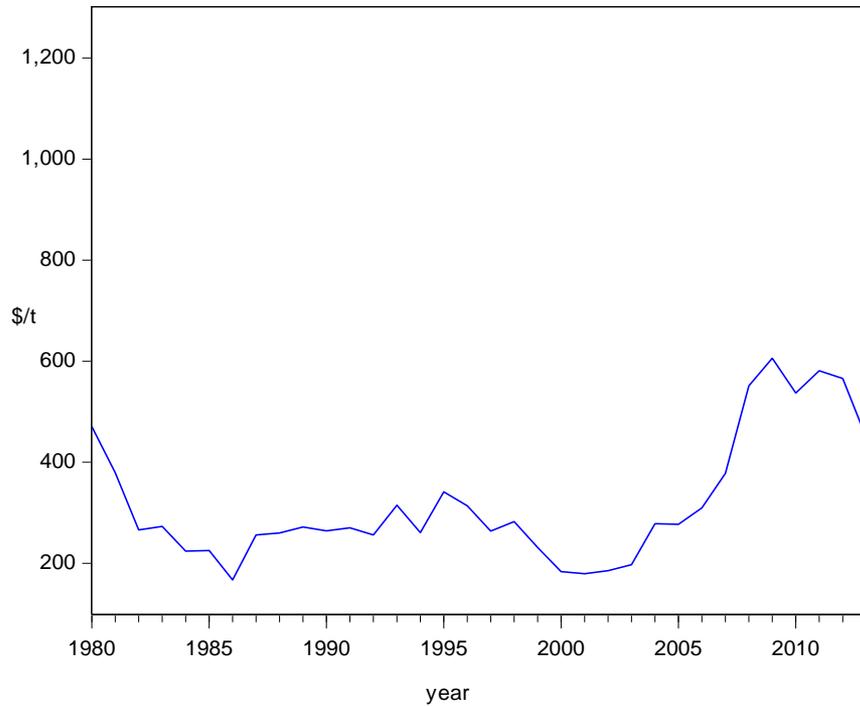
Real US Price of Rice



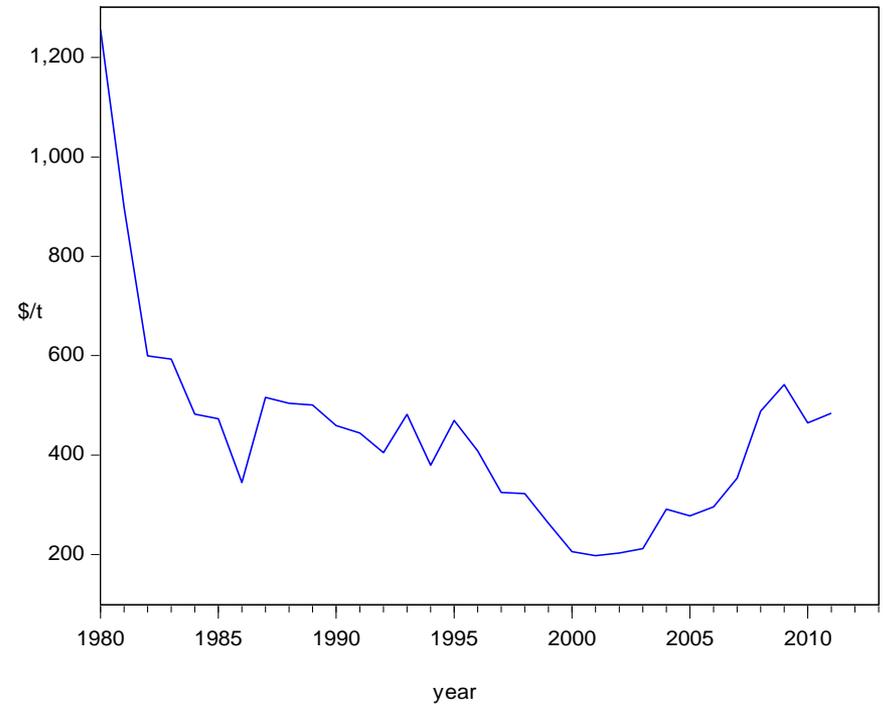


# Figure. 16 Thai Rice Price

Nominal Thailand Price of Rice



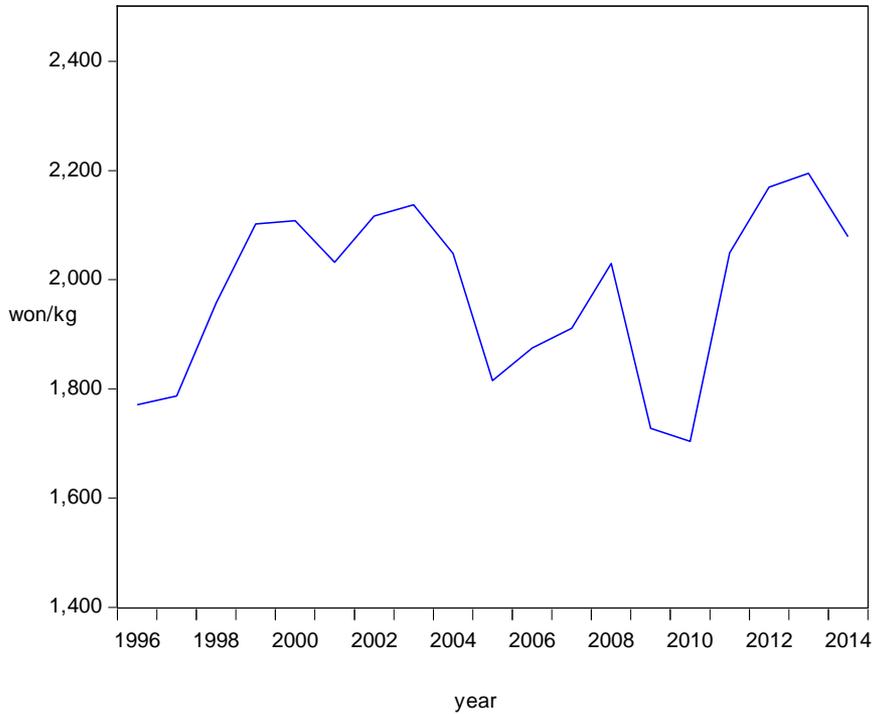
Real Thailand Price of Rice



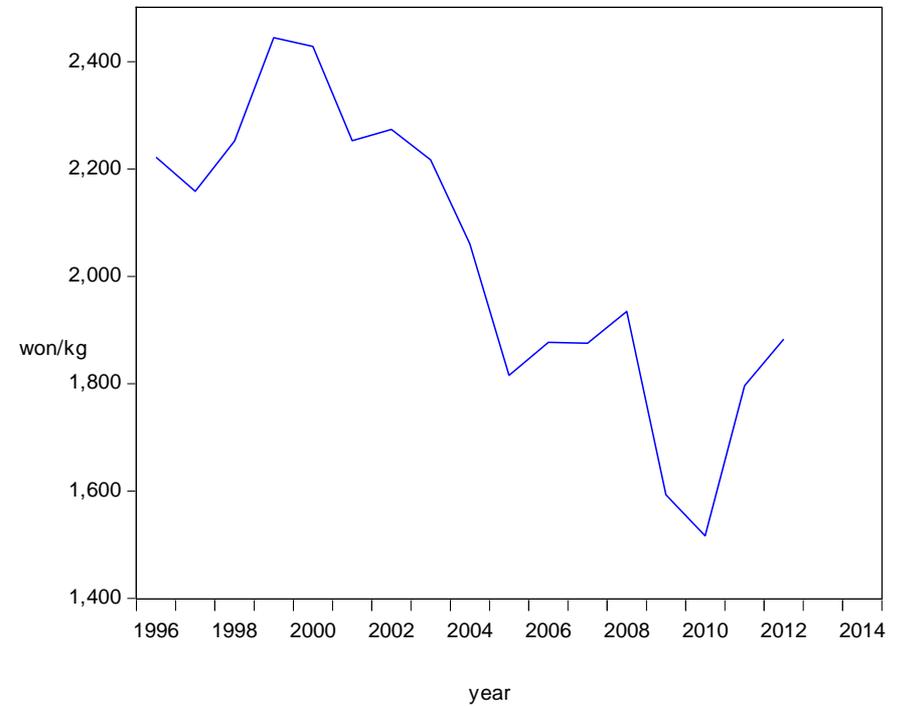


# Figure. 17 Korean Rice Price

Nominal Korea Price of Rice



Real Korea Price of Rice





## Table. 9 Granger Causality Test

- California (Thai) rice price causes Thailand (California) rice price, but Korea rice shows independent movement.

Variable	$H_0$	F-statistics	P-value
California Rice (CR) & Thailand Rice (TR) (1987.08~2014.02)	CR does not Granger Cause TR	20.1914	<b>0.0000</b>
	TR does not Granger Cause CR	3.9980	<b>0.0193</b>
California Rice (CR)& Korea Rice (KR, US \$) (1998.10~2014.02)	CR does not Granger Cause KR	0.0131	0.9870
	KR does not Granger Cause CR	0.1126	0.8937
Thailand Rice (TR)& Korea Rice (KR. US \$) (1998.10~2014.02)	TR does not Granger Cause KR	3.3388	<b>0.0417</b>
	KR does not Granger Cause TR	1.2379	0.2967



# Table. 10 Granger Causality Test

- Korea rice price shows independent movement.

Variable	$H_0$	F-statistics	P-value
California Rice (CR)& Korea Rice (KR, <b>won</b> ) (1998.10~2014.02)	CR does not Granger Cause KR	1.3285	0.3794
	KR does not Granger Cause CR	0.1171	0.9500
Thailand Rice (TR)& Korea Rice (KR, <b>won</b> ) (1998.10~2014.02)	TR does not Granger Cause KR	0.5928	0.6206
	KR does not Granger Cause TR	0.6503	0.5838



# Table. 11 Johansen Co-integration Test

- All prices measured in terms of US dollar

Variable	Hypothesized No. of CE(s)	Eigen Value	Trace Statistic	5% Critical value	P-value
CR &TR	Rank = 0	0.0453	16.65548	15.4947	<b>0.0333</b>
(1987.08~2014.02)	Rank $\leq$ 1	0.0063	1.9845	3.8414	0.1589

- **There is a long-run equilibrium or co-integration relationship among prices of California rice and Thailand rice.**



# Table. 12 Johansen Co-integration Test

- All prices measured in terms of US dollar

Variable	Hypothesized No. of CE(s)	Eigen Value	Trace Statistic	5% Critical value	P-value
KR & CR	Rank = 0	0.0291	7.4562	15.4947	0.5252
(1998.10~2014.02)	Rank $\leq$ 1	0.0116	2.1085	3.8414	0.1465

- **There is no long-run relationship ( no co-integration relationship) among prices of California rice and Korea rice.**



# Table. 13 Johansen Co-integration Test

- Using Local Currency won for Korea

Variable	Hypothesized No. of CE(s)	Eigen Value	Trace Statistic	5% Critical value	P-value
KR (won) & CR	Rank = 0	0.0297	6.9729	15.4947	0.5808
(1998.10~2014.02)	Rank $\leq$ 1	0.0084	1.5235	3.8414	0.2171

- **There is no co-integration (long-run) relationships among prices of California rice and Korea rice.**



# Table. 14 Johansen Co-integration Test

- All prices measured in terms of US dollar

Variable	Hypothesized No. of CE(s)	Eigen Value	Trace Statistic	5% Critical value	P-value
KR & TR	Rank = 0	0.0310	6.1982	15.4947	0.6721
(1998.10~2014.02)	Rank $\leq$ 1	0.0034	0.6096	3.8414	0.4349

- **This test indicates that there is no co-integration relationships among prices of Thailand rice and Korea rice.**



# Table. 15 Johansen co-integration test

- Using Local Currency won for Korea

Variable	Hypothesized No. of CE(s)	Eigen Value	Trace Statistic	5% Critical value	P-value
KR (won) & TR	Rank = 0	0.2368	5.4866	15.4947	0.7552
(1998.10~2014.02)	Rank $\leq$ 1	0.0063	1.1482	3.8414	0.2839

- **There is no co-integration relationships among prices of Thailand rice and Korea rice.**



# Implication of Co-integration Test

- The cointegration test results show that there is a long-run relationship between global rice prices: California rice and Thailand rice prices.
- However, there is no long-run relationship between Korean rice and global rice prices in California and Thailand at all.
- It means the Korean rice market has still isolated from global rice market even though it opened in 1995 and import amount reached about 13% of total consumption.
- It implies that the rice tariffication with less distortions than the MMA import system would be significant impact to isolated Korean rice economy.



# Consumers' WTP to Domestic and Imported Rice

- An experimental auction study on the mean of the bids from all treatments: 1) no information, 2) country of origin and 3) food mileage around Seoul in 2010.
- Subjects overall are willing to pay a 10.7 percent premium for domestic rice over the US rice, and a 5.7 percent premium for domestic rice against Chinese rice.
- Koreans have either a strong preference for or loyalty towards domestic rice with country of origin information.



# Table. 16 Mean Bids by Treatment

Unit: KRW/4kg

	Treatment			
	Round	No information	COOL	Food mileage
<b>China</b>				
	1	6760	6504	7508
	2	6624	7017	7650
	3	6592	7429	8086
	4	6894	8057	7518
	5	6984	8184	7546
	Mean	6783	7438	7662
<b>US</b>				
	1	7152	6784	6820
	2	7212	7032	6268
	3	7242	7433	6606
	4	7142	7577	6180
	5	6912	7653	6516
	Mean	7132	7296	6478
<b>Korea</b>				
	1	6748	7476	7172
	2	6620	8100	7760
	3	6568	8444	8460
	4	6956	8528	8628
	5	7244	8628	8340
	Mean	6827	8235	8072



# Consumers' WTP to Domestic and Imported Rice

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- Taste scores in each treatment are presented in Table 17.
- Subjects give the lowest score to domestic rice in the no information treatment, but give the highest scores to domestic rice with information on country of origin and food miles.
- Taste is not the reason for subjects' preference for domestic rice when given information about country of origin or food miles.



# Table. 17 Taste Scores across the Treatments

	Treatment		
	No information	COOL	Food Mileage
<b>China (25persons)</b>			
Mean	74	74	74
Median	80	80	70
Std.dev.	19	18	12
<b>US (25persons)</b>			
Mean	74	75	71
Median	75	80	70
Std.dev.	12	17	14
<b>Korea (25persons)</b>			
Mean	70	79	78
Median	70	80	80
Std.dev.	16	12	13



# Consumers' WTP to Domestic and Imported Rice

- Table 17 presents the mean bids across the three information treatments.
- Subjects do not value the domestic rice higher than either the US or Chinese rice when no information about the rice products is given to them. This is consistent with the results of the taste scores
- When given information about country of origin or food miles, subjects' bids are higher for domestic rice than for the two imported rice products.



# Table. 18 Mean Bids by Treatment

Unit: KRW/4kg

	Treatment			
	Round	No information	COOL	Food mileage
<b>China (25persons)</b>				
	1	6760	6504	7508
	2	6624	7017	7650
	3	6592	7429	8086
	4	6894	8057	7518
	5	6984	8184	7546
	Mean	6783	7438	7662
<b>US (25persons)</b>				
	1	7152	6784	6820
	2	7212	7032	6268
	3	7242	7433	6606
	4	7142	7577	6180
	5	6912	7653	6516
	Mean	7132	7296	6478
<b>Korea (25persons)</b>				
	1	6748	7476	7172
	2	6620	8100	7760
	3	6568	8444	8460
	4	6956	8528	8628
	5	7244	8628	8340
	Mean	6827	8235	8072



# Consumers' WTP by Experimental Auctions

- The estimated mean WTPs are statistically different between domestic and US rice in all information treatments.
- WTPs are not statistically different between domestic and Chinese rice in the no Information and food miles information.
- Kruskal-Wallis test shows that WTPs are different between domestic and imported rice with COOL or food miles.
- Consumers respond more sensitively to COOL information than no information and food miles information.



# Overall Results on Consumers' WTP

**1. According to revealed preference, Korean consumers are willing to pay a premium for domestic rice vis-à-vis imported rice products.**

- a 10.7 percent premium for domestic rice over the US rice, a 5.7 percent premium over the Chinese rice
- Premiums are lower than those from previous studies since we used a non-hypothetical experimental auction.

**2. Country of origin information provides higher valuation for domestic rice than food miles information.**

**3. Korean consumers have a positive preference for domestic rice, particularly when country of origin information is provided.**



# Policy Implication

## 1. Korea

- 1) a country of origin labeling policy,
- 2) improve the taste or sensory attributes of the domestic rice

## 2. U.S.

emphasize the taste/sensory attributes of their rice

## 3. China

potential to export more rice to Korea and need to implement marketing strategies that can improve the image of their rice in terms of quality and food safety.



# Future Directions of the Korean Rice Economy

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1. Promoting and diversifying rice consumption in the medium and long run perspectives: how to reduce the carryover of rice
2. Educate young people the importance of traditional Korean diet with rice as well as the multifunctionality of rice farming.
3. Long-run and consistent and long-run plans for sustainable rice economy



# Future Directions of the Korean Rice Economy

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4. Improving the quality of domestic rice and product differentiation through transparent labeling system.
5. Increasing the international competitiveness and finding global export market actively



**Thank You**