

# The Implementation of 2008 SNA for Korean Regional Accounts

Sim, Sangwook

## 1. Introduction

### ● Two main issues in 2008 SNA implementation

#### 1. The capitalization of R&D expenditures

- R&D expenditures in Korea account for more than 4% of GDP

#### 2. The capitalization of weapons systems purchased

- 10% of national budget is spent on national defense

### ● Capitalization of R&D and weapons systems may have a considerable impact on GDP

## 2. The Capitalization of R&D expenditures

### ● The changes in R&D treatment

< 1993 SNA >					< 2008 SNA >				
	industry A	industry B	R&D	GFCF		industry A	industry B	R&D	GFCF
industry A	a	e	i		industry A	a	e	i	
industry B	b	f	j		industry B	b	f	j	
R&D	c	g	k	0	R&D				c+g+k
VA	d	h	l		VA	c+d	g+h	k+l	
Output	a+b+c+d	e+f+g+h	i+j+k+l		Output	a+b+c+d	e+f+g+h	i+j+k+l	

### ● Capitalization of R&D will increase GDP and GFCF

## ● Estimating R&D output

### 1. Put together all the items forming R&D output

+/-	Items	Data Sources
+	labor cost, operating cost	Survey of R&D
-	cost for S/W produced on own account	Survey of R&D
+	purchase of R&D services by businesses specializing R&D	Survey of R&D
+	cost for capital services	Input-Output Table
+	other taxes on production	Tax data

\* Survey of R&D is conducted annually by Ministry of Science, ICT and Future Planning on an annual basis

### 2. The output is produced through a cost approach

## ● Estimating GFCF using R&D output

1. To produce GFCF from R&D activities a production balance can be used

output + imports = intermediate consumption + final consumption + gross fixed capital formation + changes in inventories + exports

2. The above formula can be modified for calculating GFCF

gross fixed capital formation = (output + imports) – (intermediate consumption + final consumption + changes in inventories + exports)

- \* To make the output at market prices taxes on products are added
- \* Net purchase from other institutional sectors is added

## 3. Put together all the items forming GFCF

+/-	Items	Data Sources
+	output	produced in the previous process
+	taxes on products	Tax data
+	net imports(imports-exports)	Input-Output Table
+	net purchase from other institutional sectors	Survey of R&D
-	intermediate consumption	produced in the previous process (purchase of R&D services by businesses specializing R&D)

## 4. GFCF of each institutional sector is produced

- \* Final consumption and changes in inventory in R&D activities are considered as 0

## 5. Allocation of GFCF to regions

- GFCF of government and NPISHs is allocated to the region where the output took place
- GFCF of corporations is allocated to industries, first, and then the share of each industry is allocated to regions

	R&D		GFCF of the whole		industry A		GFCF of industry A
industry A	a		$Z \times (a/z)$		region 1	a'	$Z' \times (a'/z')$
industry B	b		$Z \times (b/z)$		region 2	b'	$Z' \times (b'/z')$
industry C	c		$Z \times (c/z)$		region 3	c'	$Z' \times (c'/z')$
.....	.....		.....		.....	.....	.....
Total	z		Z		Total	z'	Z'

## 3. The Capitalization of Weapons Systems

### ● The changes in the treatment of WS

< 1993 SNA >

	industry A	manufacturing of WS	Government	GFCF
industry A	a	c	e	
manufacturing of WS			c+d	
Government				
VA	b	d	f	
Output	a+b	c+d	e+(c+d)+f	

< 2008 SNA >

	industry A	manufacturing of WS	Government	GFCF
industry A	a	c	e	
manufacturing of WS				c+d
Government				
VA	b	d	f+z	
Output	a+b	c+d	e+f+z	

\* z = consumption of fixed capital formation

- Capitalization of R&D will increase GDP by the amount of Consumption of Fixed Capital on WS

## ● Estimating GFCF caused by expenditures on WS

1. Directly use the data from Government Budget Report (the purchase of military equipment)
2. GFCF is allocated to regions based on the wages paid to military personnel

	wages for military personnel		GFCF of WS
region 1	a		$Z \times (a/z)$
region 2	b	→	$Z \times (b/z)$
region 3	c		$Z \times (c/z)$
.....	.....		.....
Total	z		Z

## ● Estimating Consumption of Fixed Capital on WS

1. CFC is produced in the process of estimating capital stock on the basis of Pertetual Inventory Method
2. GFCF is allocated to regions based on the regional proportion of GFCF caused by WS expenditures

	GFCF		CFC
region 1	A		$z \times (A/Z)$
region 2	B	→	$z \times (B/Z)$
region 3	C		$z \times (B/Z)$
.....	.....		.....
Total	Z		z

## 4. The Result

- Capitalizing R&D and WS causes regional GDP in 2010 to rise by 3.9%

1. With the capitalization of R&D RGDP increases by 3.6%

2. With the capitalization of WS RGDP increases by 0.3%

(trillion won, %)

		2008	2009	2010	2011	2012
Regional GDP	After rebasement (a)	1,105.7	1,151.4	1,265.1	1,330.9	1,377.0
	Before rebasement (b)	1,028.5	1,065.7	1,172.7	1,241.6	1,275.0
	Base-up(a/b)	7.5	8.0	7.9	7.2	8.0
Increase of GDP by R&D capitalization	Amount (c)	32.3	36.1	42.2	44.8	51.9
	Increase rate (c/b)	3.1	3.4	3.6	3.6	4.1
Increase of GDP by weapons system	Amount (d)	2.8	3.2	3.3	3.5	3.8
	Increase rate (d/b)	0.3	0.3	0.3	0.3	0.3