



# Impact of 2008 SNA changes on GDP

Regional Course on 2008 SNA (Special Topics):  
Improving Exhaustiveness of GDP Coverage

31 August-4 September 2015  
Daejeon, Republic of Korea

United Nations Statistics Division



## Outline of presentation

- Overview of 2008 SNA changes affecting GDP
- Regional and country experiences
- Conclusions
- Questions



## Overview of 2008 SNA changes affecting GDP



## Overview of 2008 SNA changes affecting GDP

### Capitalization of research and development (R&D)

#### Change

- The activity of R&D is no longer treated as ancillary
- Expenditure on R&D is treated as capital formation

#### Impact

- R&D is re-classified from intermediate consumption to gross fixed capital formation. This changes GDP by the same amount
- Consumption of R&D fixed capital stock is added to non-market output: increase GDP



## Overview of 2008 SNA changes affecting GDP

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### Output for own final use by households and corporations is valued with a return to capital

#### Change

- Applies to valuation of market producers only
- Not applicable to non-market producers like government and NPISH

#### Impact

- Output valued by cost increases by an imputed value of return to capital (Need total stock of assets for the calculation of return to capital)
- GDP increases by the same amount of imputed value

5



## 2008 SNA changes affecting GDP

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### Capitalization of weapons systems

#### Change

- Expenditure on military weapons systems (vehicles, warships, submarines, military aircraft, tanks, missile carriers, launchers, etc.) is capitalized
- Change in inventories (bullets, bombs, etc.)

#### Impact

- Reclassification of expenditure on military equipment from final consumption to gross capital formation: This does not change GDP
- Adding consumption of military fixed capital stock to government output: increase GDP

6



# Overview of 2008 SNA changes affecting GDP

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## Method for calculating FISIM refined

- | Change   | Impact   |
|--|--|
| <ul style="list-style-type: none"> <li>▪ FISIM applies only to loans and deposits and only when those loans and deposits are provided by or deposited with financial institutions</li> <li>▪ Loans from own funds are also included</li> <li>▪ FISIM to be allocated between all users</li> <li>▪ Implicit service charge of money lenders recognized</li> </ul> | <ul style="list-style-type: none"> <li>▪ Depending on the structure of financial instruments, output of FISIM could increase</li> <li>▪ For example, loans made from own funds will increase FISIM</li> <li>▪ FISIM allocated to final demand and exports will increase GDP</li> <li>▪ Implicit service charge of money lenders will increase GDP</li> </ul> |



# Overview of 2008 SNA changes affecting GDP

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## Method for calculating FISIM refined

**THE WALL STREET JOURNAL**  
WSJ.com

ASIA MARKETS | Updated April 22, 2010, 7:53 a.m. ET

### Consumer Loans Surge Across Asia

Banks From Around the World Target Middle Class With Financing for Autos, Home Appliances

By KATHY CHU

**HONG KONG**—Lenders from around the world are fueling a boom in short-term loans across Asia, helping push debt to record levels as a burgeoning middle class strives for a better lifestyle and banks look to diversify away from the slow-growing West.



Companies ranging from Citigroup Inc. to Japan's big banks to a Dutch consumer-finance provider that built its business in Central and Eastern Europe are issuing credit cards or stepping up lending for cars, motorcycles and home appliances from India to Indonesia.

Nonmortgage consumer credit in Asia outside of Japan rose 67% in the past five years to \$1.66 trillion by the end of 2012, according to data provider Euromonitor International. In the U.S. the rise was only 10% during the same period as consumers cut back on debt following the financial crisis.

The lenders are targeting Asia's middle class, which is expected to grow by an average of more than 100 million people each year. They are pitching everything from credit cards to short-term installment loans for motorcycles and appliances. Interest rates can range from 15% for secured auto loans to as much as 40% for unsecured loans, appliances and electronics, driven by high demand for loans and little or no credit history for the borrowers. Loans are typically paid back over six months to five years.

As China's middle class grows, so does their debt. Shaun Rein from China Market Research talks about what Chinese consumers are buying with the 320 million credit cards currently in circulation in China.

- Rising consumer loans validates 2008 SNA decision to remove option not to allocate FISIM to all users



## Overview of 2008 SNA changes affecting GDP

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### Unfunded pension funds

#### Change

- There is a cost to administering pension schemes, including non-autonomous and unfunded ones
- Output to be determined using sum of costs and consumed by employees holding the pension entitlements

#### Impact

- Change household consumption and exports
- Change GDP

9



## Overview of 2008 SNA changes affecting GDP

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### Treatment of employee stock options

#### Change

- Recognized as compensation of employees represented by value of stock option
- Counterpart entry in financial account

#### Impact

- Increase in compensation of employees of corporations and, thus, household income
- Fall in operating surplus of corporations
- No change in GDP

10



## Regional and country experiences



## Regional and country experiences

- 58 Member States have switched over to 2008 SNA
- This section presents an overview of the impact for
  - Eurostat members
  - OECD members
  - United States
  - Kenya
  - South Africa
  - Australia
  - Indonesia
  - Republic of Korea
  - Singapore



## Regional and country experiences

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### Eurostat members

- Switched over to the European System of Accounts 2010 (ESA 2010), the sister of the 2008 SNA on 17 October 2014, with a press briefing

	Impact on EU GDP 2010
1 Research and development	1.86%
2 Expenditure on weapon systems	0.17%
3 Inexpensive tools for common operations	0.07%
4 Government, public/private sector delineation	0.0%
5 Employers' pension schemes	0.0%
6 Other methodological changes	0.0%
T Total	

13



## Regional and country experiences

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### Eurostat members

- Exercise comprised
  - Methodological changes in ESA 2010
  - Statistical improvements such as new or improved data sources

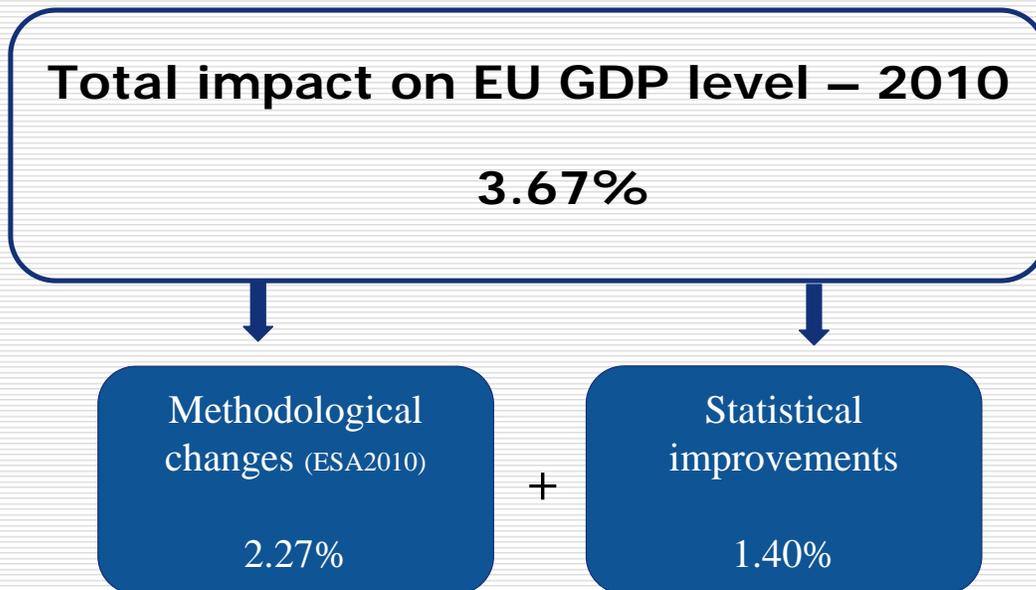
14



## Regional and country experiences

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### Eurostat members – impact on nominal GDP



15



## Regional and country experiences

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### Eurostat members – impact on nominal GDP

	Methodological changes (ESA2010)	Impact on EU GDP 2010
1	Research and development	1.86%
2	Expenditure on weapon systems	0.17%
3	Inexpensive tools for common operations	0.07%
4	Government, public/private sector delineation	0.06%
5	Employers' pension schemes	0.06%
6	Other methodological changes	0.05%
<b>T</b>	<b>Total</b>	<b>2.27%</b>

16



## Regional and country experiences

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### Eurostat members – impact on nominal GDP

	Statistical improvements	Impact on EU GDP 2010
1	New or improved data sources	0.45%
2	Exhaustiveness and improvements related to GNI reservations: illegal activities	0.38%
3	Exhaustiveness and improvements related to GNI reservations: other	0.37%
4	Other statistical changes	0.20%
<b>T</b>	<b>Total</b>	<b>1.40%</b>

17

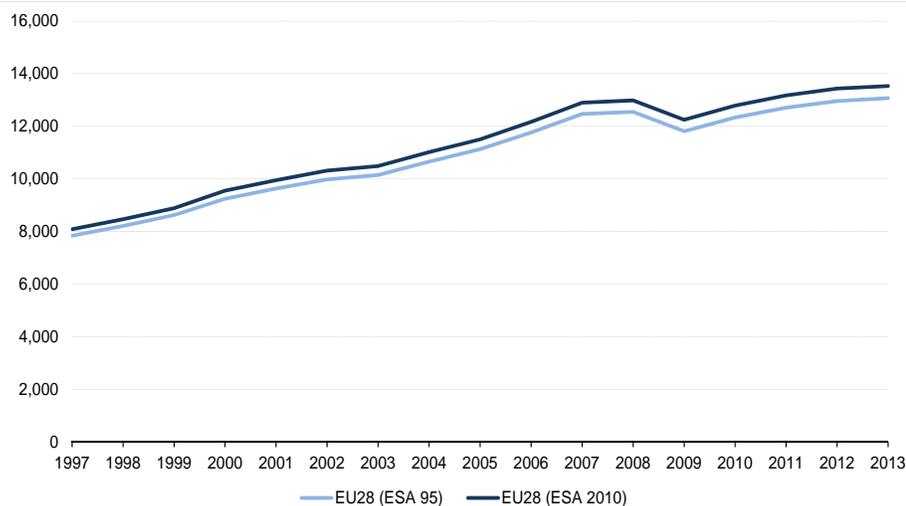


## Regional and country experiences

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### Eurostat members – impact nominal GDP

(€ billions)



- Average annual difference in nominal GDP between 1997 and 2013 = 3.7%

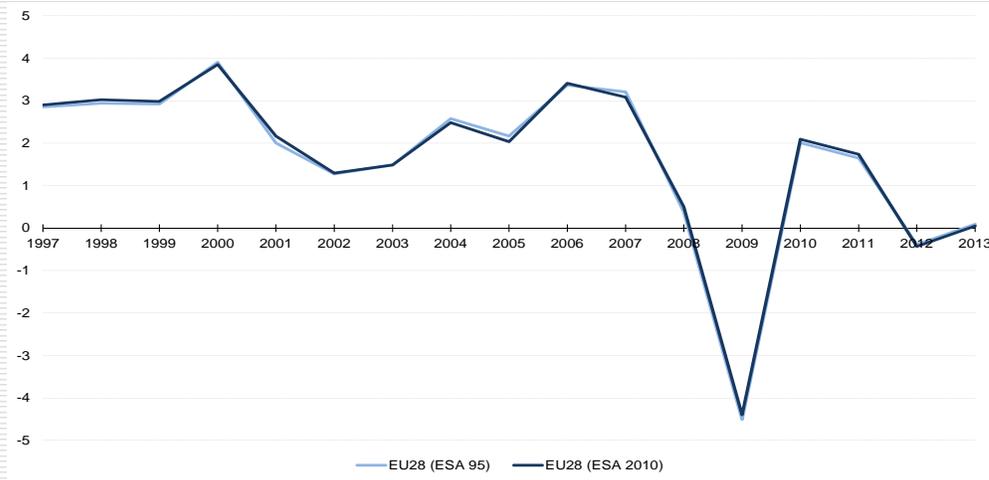
18



## Regional and country experiences

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### Eurostat members – impact on real GDP growth (% change)



- Change in annual GDP growth rates over the years 1997-2013 was around +/-0.1 percentage points

19



## Regional and country experiences

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### OECD members

- By December 2014, most OECD members had implemented the 2008 SNA
- Actual implementation varied depending on country circumstances
- Exercise generally comprised
  - Adoption of 2008 SNA conceptual changes
  - Statistical benchmark revisions
    - New/enhanced data sources
    - Improved methodologies

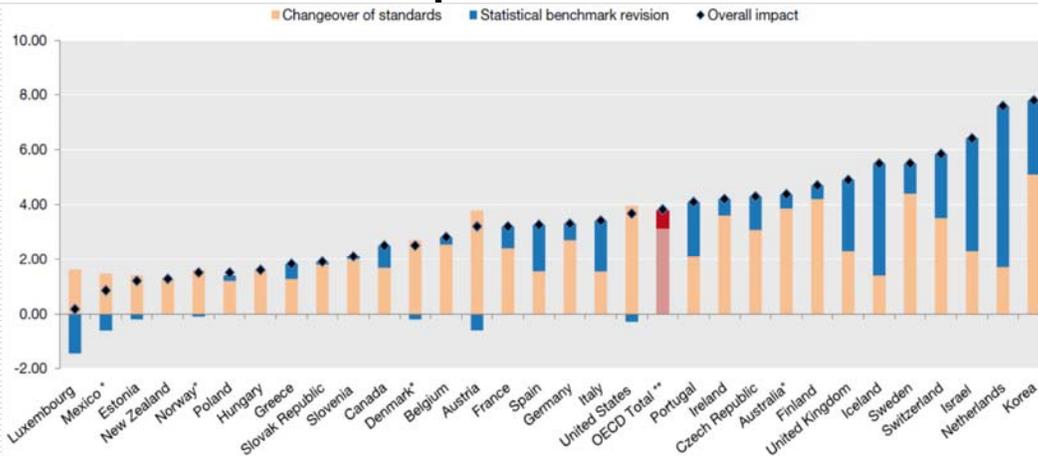
20



## Regional and country experiences

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### OECD members – impact on nominal GDP in 2010



\*Australia: 2007 data; Denmark: 2008 data; Mexico: 2008 data; Norway: 2011 data.  
 \*\*OECD Total corresponds to available countries.

- Average impact of 2008 SNA is to 3.1%-points
- Average impact of statistical benchmark revision is 1.7%-points

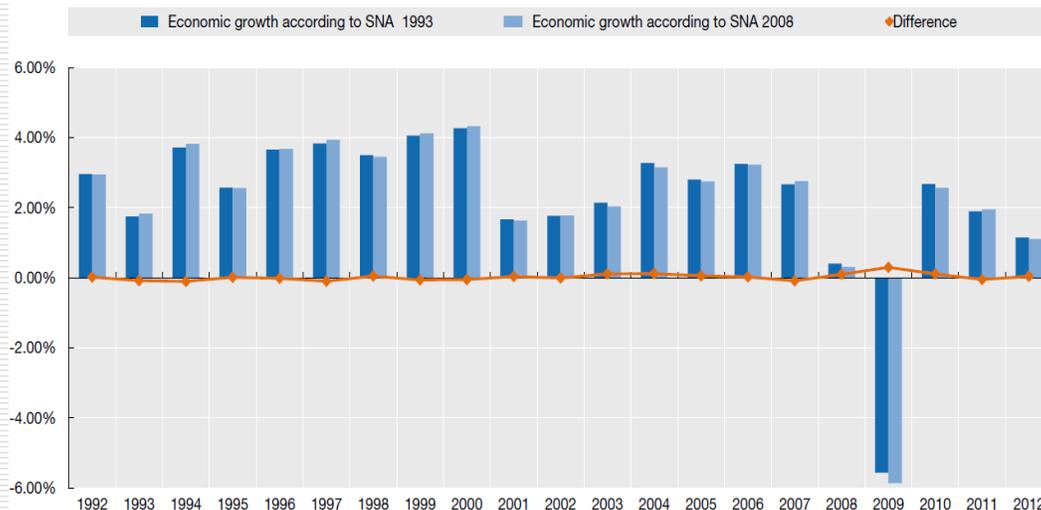
21



## Regional and country experiences

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### OECD members – impact on real GDP growth



- Real growth rates are generally affected to a much lesser extent

22



## Regional and country experiences

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### United States of America

- Switched over to the 2008 SNA on 31 July 2013
- Changeover comprised
  - Definitional changes
  - Statistical changes

23



## Regional and country experiences

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### United States of America – impact on nominal GDP

#### Revision in level (US\$billion)

	2008	2009	2010	2011	2012
Gross domestic product	428.8	444.2	459.4	458.1	559.8
Definitional	485.4	469.9	503.4	512.0	526.0
Capitalization of research and development	352.7	345.9	362.5	380.6	396.7
Capitalization of entertainment, literary, and artistic originals	67.2	65.1	72.2	73.8	74.3
Expanded set of ownership transfer costs for residential fixed assets	40.6	37.5	36.8	36.9	42.3
Accrual accounting for defined benefit pension plans	24.9	21.4	31.8	20.8	12.6
Statistical	-56.6	-25.7	-44.0	-53.9	33.8
Improved measurement of financial services	-44.3	-42.0	-55.4	-50.1	-50.3
Other statistical	-12.3	16.3	11.4	-3.7	84.2

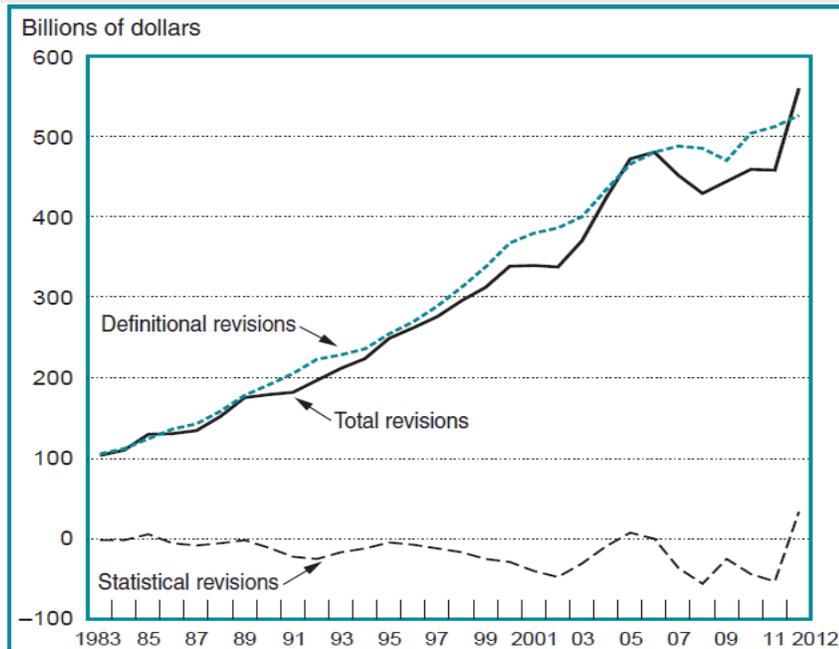
24



## Regional and country experiences

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### United States of America – impact on nominal GDP



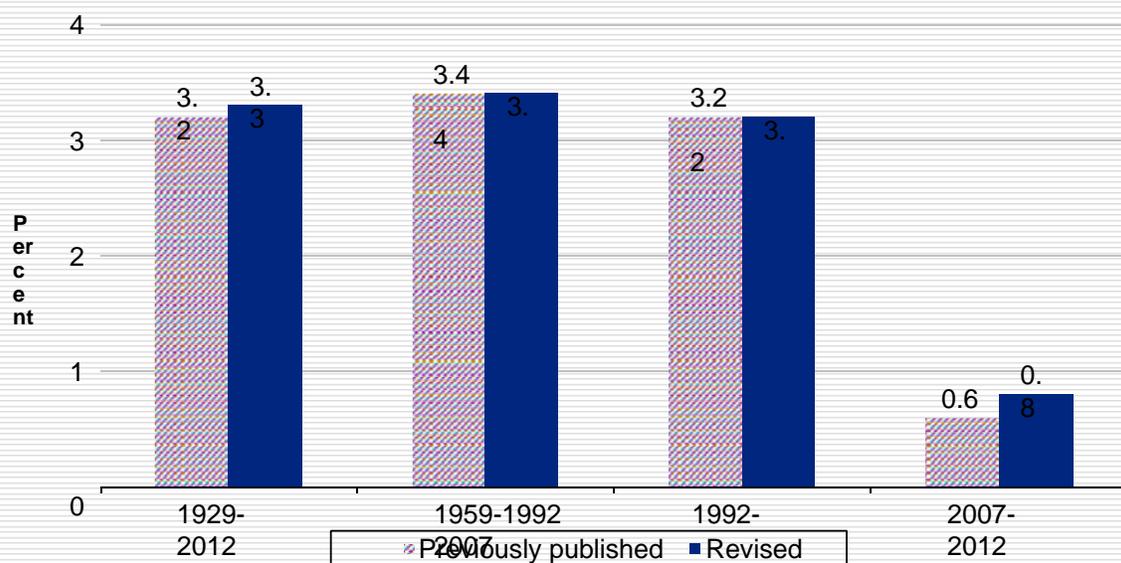
25



## Regional and country experiences

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### United States of America – impact on real GDP growth



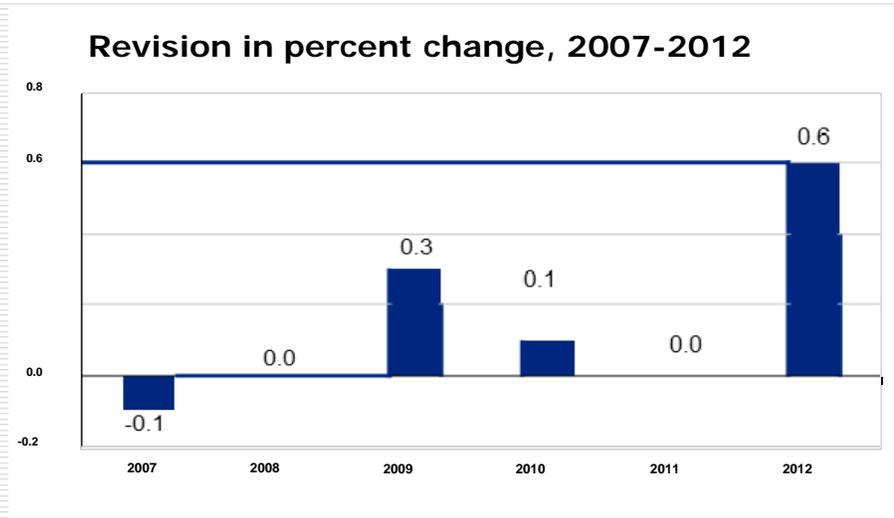
26



## Regional and country experiences

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### United States of America – impact on real GDP growth



27



## Regional and country experiences

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### Kenya

- Switched over to the 2008 SNA on 30 September 2014
- Changeover comprised
  - Adoption of 2008 SNA recommendations
    - Capitalization of R&D and weapons systems
    - Calculation of FISIM
    - Calculation of insurance output
  - Incorporation of improved and new data sources
  - Development of supply and use tables
  - Adoption of ISIC Rev. 4
  - Change in base year from 2001 to 2009

28



## Regional and country experiences

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### Kenya - impact on nominal GDP

	2006	2007	2008	2009	2010	2011	2012	2013
GDP (old) KSh. Bn	1,622.6	1,833.5	2,107.6	2,376.0	2,570.3	3,047.4	3,403.5	3,798.0
GDP (new) KSh. Bn	1,862.0	2,151.3	2,483.1	2,863.7	3,169.3	3,726.1	4,254.8	4,757.5
% Change in level	14.8	17.3	17.8	20.5	23.3	22.3	25.0	25.3

- Major reasons for upward revision included use of better data, improved coverage and revised I/O production structures, and incorporation of recent census and survey data
- No quantitative breakdown of revisions available

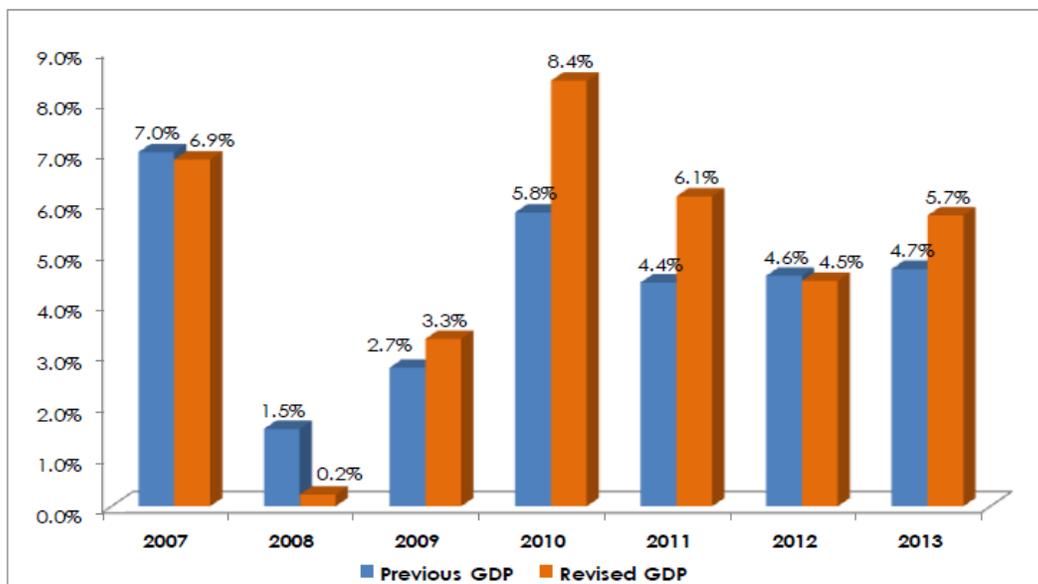
29



## Regional and country experiences

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### Kenya - impact on real GDP growth



30



## Regional and country experiences

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### South Africa

- Switched over to 2008 SNA on 25 November 2014
- Changeover comprised
  - Adoption of 2008 SNA definitional and conceptual changes
    - Capitalization of research and development
    - Treatment of employment stock options as compensation of employees
    - Capitalization of expenditure on weapon systems
    - Refined method for calculating FSIM
  - Incorporation of more recent census and survey data
  - Change in base year from 2005 to 2010

31



## Regional and country experiences

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### South Africa - impact on nominal GDP

	R billions	Percentage of 2010 GDP
Level of 2010 gross domestic product before revisions	2673.77	100.0
Plus: Implementation of 2008 SNA		
<b>Research and development</b>	<b>16.47</b>	<b>0.6</b>
Gross fixed capital formation	13.33	0.5
Consumption of fixed capital	3.14	0.1
<b>Weapons systems</b>	<b>8.47</b>	<b>0.3</b>
Consumption of fixed capital	8.47	0.3
<b>Livestock</b>	<b>2.47</b>	<b>0.1</b>
Gross fixed capital formation	2.47	0.1
<b>FISIM</b>	<b>5.72</b>	<b>0.2</b>
Final consumption expenditure	5.72	0.2
<b>Total, 2008 SNA implementation</b>	<b>33.13</b>	<b>1.2</b>
<b>Plus: Enhanced measurement of economic activity</b>	<b>41.11</b>	<b>1.6</b>
<b>Equals: Level of 2010 gross domestic product after revisions</b>	<b>2748.01</b>	<b>102.8</b>
<b>Memo: Impact of overall revision</b>	<b>74.24</b>	<b>2.8</b>

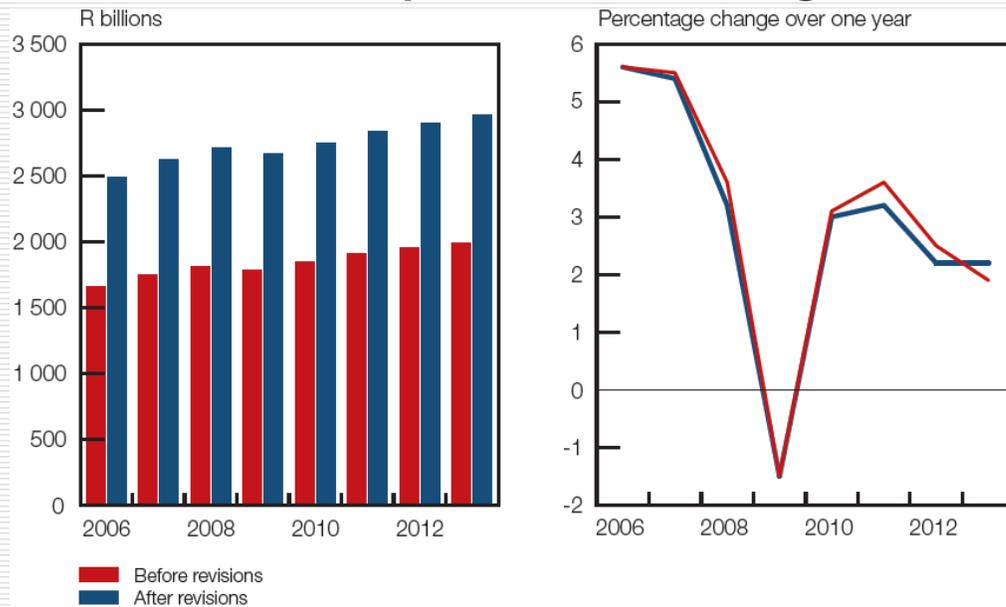
32



## Regional and country experiences

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### South Africa - impact on real GDP growth



33



## Regional and country experiences

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### Australia

- First country to switch over to 2008 SNA in December 2009
- Changeover comprised
  - Major conceptual changes
  - Major statistical changes

34



## Regional and country experiences

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### Australia – impact on nominal GDP

Impact of all changes to the level of nominal GDP in 2007-08	4.4%
Of which:	
Due to SNA 2008	1.6%
Made up of:	
R & D capitalization	1.3%
Weapons systems capitalization	0.3%
Not related to SNA 2008	2.8%
Made up of:	
Orchard and vineyard capitalization	0.1%
Improvements to data sources and industry components including the finance and insurance industry	Split not available

35

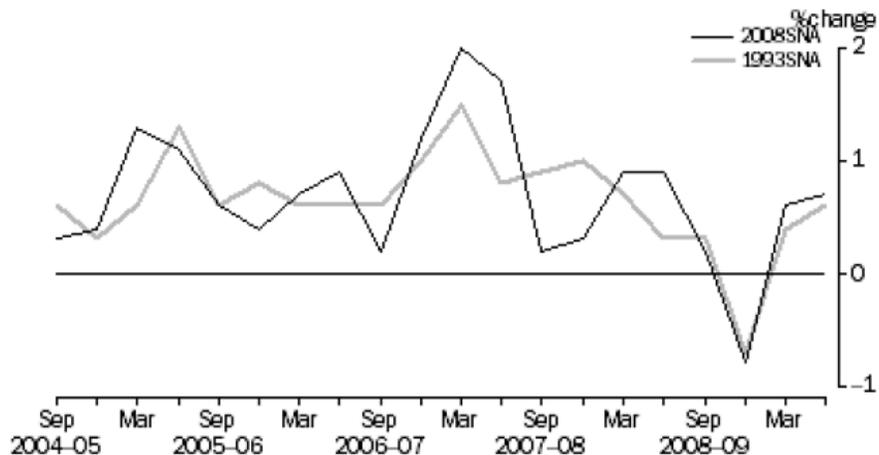


## Regional and country experiences

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### Australia – impact on real GDP growth

GDP SEASONALLY ADJUSTED SERIES, CVM—% change



36



## Regional and country experiences

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### Indonesia

- Switched over to 2008 SNA in February 2015
- Changeover comprised
  - Changes in concepts and scope
  - Changes in methodology
  - Changes in valuation
  - Changes in classification
- National accounts were also rebased from 2005 to 2010 base year
- Use of SUT 2010 as a consistency tool in compiling GDP by 3 approaches and also the Input-Output (I-O) table

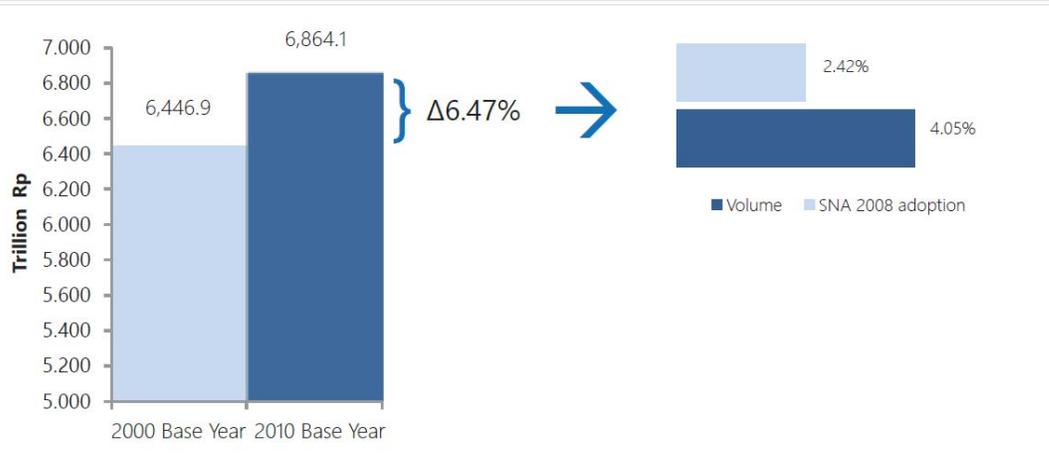
37



## Regional and country experiences

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### Indonesia – impact on nominal GDP



- Nominal GDP in 2010 (2010 base year) increased by 6.47% compared to 2000 GDP series

38



## Regional and country experiences

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### Indonesia – impact real GDP growth



39



## Regional and country experiences

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### Republic of Korea

- Switched over to 2008 SNA on 26 March 2014 with revised national accounts starting from 2000
- Revised national accounts data were next released on 15 December 2014 for
  - Annual data starting from 1953
  - Quarterly data starting from 1960
- Changeover comprised
  - Application of 2008 SNA guidelines
  - Changes in the definitions, source data and methodologies
  - Update of reference year from 2005 to 2010

40



## Regional and country experiences

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### Republic of Korea – impact on nominal GDP from capitalizing R&D and weapons systems

(Trillion won, %)		2008	2009	2010	2011	2012
Regional GDP	After rebasement (a) (NB: Korea rebased reference year from 2005 to 2010 at the same time as implementing 2008 SNA, in 2014)	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

- Impact of capitalization of weapons systems was not as significant as for R&D

41



## Regional and country experiences

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### Republic of Korea – impact on real GDP growth

- Annual growth rate of real GDP over the 1971 to 2012 period was 7.4%, up by 0.3 percentage points

42



### Singapore

- Switched over to 2008 SNA in May 2014
- Changeover comprised
  - Change in conceptual treatment
  - Refinement in methodology
  - Improvement in data sources



### Singapore – impact on nominal GDP from capitalizing R&D

Year	Revision (%)
2010	2.2
2011	2.1
2012	2.1
2013	2.1



## Regional and country experiences

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### Singapore – impact on nominal GDP from all changes

Year	Before (S\$Million) (a)	After (S\$Million) (b)	Percentage change [(b)-(a)]/(a)
2010	318096.0	322361.1	1.3
2011	342512.6	344712.4	0.6
2012	355281.2	358542.6	0.9
2013	370064.5	372813.9	0.7

45



## Regional and country experiences

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### Singapore – impact on real GDP growth from all changes

Year	Before (%)	After (%)
2010	15.1	15.2
2011	6.0	6.1
2012	1.9	2.5
2013	4.1	3.9

46



## Conclusions

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- Countries tend to introduce other statistical improvements when implementing the 2008 SNA
- It is not easy to disentangle the impact of introducing the 2008 SNA and other sources of revision
- Generally, the composition of the impact on nominal GDP differs across countries
  - In countries with more matured statistical systems, the impact of 2008 SNA changes tends to be greater
  - In countries with less matured statistical systems, the impact of statistical improvements tends to be greater
- Impact on real GDP growth rates is generally limited

47



## Questions

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- Has your country switched over to the 2008 SNA?
- If yes
  - When did your country make the changeover?
  - Which 2008 SNA changes were implemented?
  - What other statistical improvements were introduced?
  - How far back did you backcast your GDP data?
  - What was the impact on nominal GDP?
  - What was the impact on real GDP growth?
- If no
  - When does your country intend to switch over to the 2008 SNA?
  - What 2008 SNA changes do you intend to implement?
  - What challenges do you foresee when implementing the 2008 SNA?

48



**Thank you**