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**REPORT OF 2004 OECD SOFTWARE SURVEY**

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**English - Or. English**

## REPORT OF 2004 OECD SOFTWARE SURVEY

### Introduction

1. One of the changes made in the 1993 SNA was the recognition of software as a fixed asset if it met the standard criteria. While this was a welcome development it led to problems in international comparability because countries implemented the change differently. Countries have had different concepts of what software is, what constitutes capital formation and intermediate consumption, and have adopted different approaches to measurement.

2. In October 2001 an OECD task force was set up to address the issue, and one of its first actions was to conduct a survey of member countries. The survey had several aims:

- a) to identify what the conceptual treatments were in countries and the rationale for them,
- b) to determine the different methods being used to quantify the various software flows (GFCF, trade in software, etc.) and what might constitute best practice,
- c) to determine how countries compiled price indexes for deflating software and what might constitute best practice, and
- d) to quantify the differences in estimates.

3. A Eurostat task force worked in parallel, and together the two task forces developed a common set of recommendations. In 2002, at the National Accounts Expert Meeting, the OECD task force presented its report, which can be found on the OECD website. The report showed that in some cases the differences between country practices and estimates were quite dramatic.

4. Have countries taken note of the recommendations made by the task force? Have things improved in the last two years? In order to shed some light on this matter, a small follow-up survey was conducted in mid-2004 to determine whether country practices have changed over the last few years and, if so, what has been the impact. 16 member countries replied to the survey and provided data.

### Results

#### *Questions 1 and 3*

*Have you changed the way you derive your estimates of software gross fixed capital formation (GFCF), exports and imports since 2001? If so, in what way have they changed?*

*Do you intend to change the way you derive your estimates of software GFCF, exports and imports? If so, could you please describe what you intend to do and when.*

**Table 1. Changes made to estimates since 2001**

Country	Changes made	No changes made but some are planned	No changes made and none are planned
Belgium		Changes to own account	

		are to be introduced in 2005. They comprise including a mark-up for GOS and including intermediate consumption.	
Canada			X
Czech Republic	Mark-up factor for GOS introduced for estimating own account. Further changes planned.		
Finland		Work on revising the estimates, as per the TF recommendations, is underway. Substantial revisions to own account production and exports are likely.	
Germany			X
Greece			X
Italy	Some changes made, but more substantive changes with the incorporation of the new benchmark are planned for 2005		
Japan	Some changes already made. Will review estimates with the shift to the new benchmark year (2000)		
Korea	Adopted the TF recommendations in 2003		
Mexico			May make changes in the future
Netherlands		Will introduce new methods for estimating GFCF with the forthcoming benchmark revision	
New Zealand		Preliminary estimates applying the TF recommendations result in very substantial changes – see the report	
Poland		Currently there are no separate estimates of software GFCF –they	

		are included in aggregate intangibles. From 2003, the GFCF survey will separately identify software purchases (data available later this year). Plans to estimate own account production.	
Slovak Republic			X
Sweden		Minor change made, but more substantive changes are in train for estimating own account production.	
US	Substantial improvements made.		

5. It would appear that the work of the OECD and Eurostat task forces has had a considerable impact. It is evident that it has inspired the 11 countries (of the 16 responding to this survey) that have either made changes in their methods or have firm plans to do so.

### ***Question 2***

*If you are able to quantify the changes you have made, please do so.*

6. Two countries, New Zealand and the US, that have made, or are intending to make, changes to the way they estimate software have reported the size of the impact.

7. Preliminary estimates for New Zealand, made as per the TF recommendations, lead to an estimate of GFCF of software for 2002 of \$1,716.5 million compared to the currently published estimates (derived using the demand approach) of \$666.9 million. The new estimate is 1.39 per cent of GDP.

8. For the US several improvements have been made since 2001 (values in parentheses indicate the estimated revision to GFCF of software attributable to the change in selected years):

- Software originals used for reproduction are now capitalized. (\$19.4B in 2001, \$7.8B in 1997, \$3.2B in 1992, \$1.1B in 1987.)
- More direct method for estimating own-account software. (\$-14.9B in 1997, \$-6.1B 1992, \$-3.5B in 1987, \$-1.8B in 1982.)
- Estimates of intermediate consumption of software (embedded or bundled with other equipment) were improved for pre-packaged software and introduced for the first time for custom software. (\$-8.0B to pre-packaged software in 1997 and \$-3.9B to custom software in 1997.)
- Coverage of international trade in software was expanded to include trade in services (\$-3.7B and \$-6.4B to pre-packaged software in 1997 and 2001, respectively. \$-0.2B and \$0.3B to custom software in 1997 and 2001, respectively.)
- Improved price index for own-account. Price now reflects weighted average of input-cost index and PPI for packaged software. (The average downward revision in percent change was 3.5 percentage points.)

**Question 4**

Please provide estimates of total (business and government) GFCF and intermediate consumption of software for 2001, 2002 and 2003, with estimates of GFCF broken down, if possible, into purchased software and own-account software.

**Table 2. Estimates of GFCF and intermediate consumption as a percentage of GDP, 2003**

Country	Own account	Purchased	Total GFCF	Intermediate consumption
Belgium	0.6	0.2	0.8	n.a.
Canada	0.4	0.8	1.2	0.05
Czech Republic	n.a.	n.a.	1.1	0.7
Finland	0.5	1.3	1.8	0.2
Germany	0.3	0.6	0.9	1.9 (2002)
Greece	n.a.	n.a.	0.5	0.1
Italy	0.3	1.1	1.5	3.6
Japan (1)	0.0	1.5 (2002)	1.5 (2002)	0.3 (2002)
Korea	n.a.	n.a.	1.5	0.2
Netherlands	0.5	0.9	1.5	1.6
New Zealand	n.a.	n.a.	0.5	n.a.
Sweden	0.5 (2001)	1.9 (2001)	2.1	0.4 (2001)
US	0.7	1.0	1.7	n.a.

(1) At present, only custom-made software is recorded as GFCF in the Japanese national accounts. Purchases of general purpose software are recorded as intermediate consumption and own account software is not estimated.

9. It would appear from Table 2 that there remain substantial differences between countries in their estimation of software expenditures, demonstrating a need for further investigations and improvements .

**Question 5**

Please provide annual values of the implicit price deflator of software GFCF from 1995. If possible, show the deflators for purchased software and own-account software, separately.

**Table 3. Price indexes for software GFCF (1995 = 1.0)**

Country	1995	1996	1997	1998	1999	2000	2001	2002	2003
Belgium	1.0	1.03	1.05	1.06	1.08	1.10	1.10	1.06	0.98
Canada	1.0	0.98	0.96	0.94	0.93	0.96	0.99	0.97	0.92
Czech Republic	1.0	1.04	1.07	0.99	0.91	0.94	0.92	0.95	n.a.
Finland	1.0	1.05	1.07	1.10	1.13	1.25	1.29	1.26	1.18
Germany	1.0	0.96	0.94	0.91	0.87	0.86	0.85	0.85	0.83
Italy	1.0	1.03	1.06	1.07	1.10	1.14	1.19	1.19	1.19
Japan (1)	1.0	1.00	1.03	1.06	1.07	1.07	1.08	1.09	n.a.
Korea	1.0	1.04	1.12	1.21	1.17	1.17	1.18	1.20	1.22
Netherlands	1.0	1.05	1.05	1.03	1.03	1.03	1.04	1.04	1.03
New Zealand	1.0	0.97	0.96	0.96	1.01	1.02	1.09	1.12	1.08
Sweden	1.0	1.04	0.96	1.01	0.98	1.00	1.00	0.98	0.91
US	1.0	0.98	0.95	0.92	0.93	0.96	0.96	0.95	0.93

(1) The Japanese price index relates to the output of the Japanese software industry.

10. The table indicates quite a wide dispersion in the growth rates of the software price indexes, with those of Korea, Italy and Finland showing growth averaging about 2.3% a year. At the other extreme is Germany with its price index declining by 2.3% a year on average. In between these extremes, the indexes of the US and Canada show a slow decline, while that of the Netherlands shows a slow rise. In making such comparisons it should be borne in mind that general inflation rates vary between countries, and there could also be exchange rate movements that influence the prices of imported pre-packaged software.

11. Table 4, below, shows price indexes for purchased software and own account produced software for Canada, Italy and the Netherlands. The US data are more detailed, with price indexes for pre-packaged software, custom-made software and own account software for business, federal government and state and local government, respectively. The US BEA has recently revised how it derives its price indexes for own account software such that they are now a weighted average of the input cost index for the sector and the PPI for pre-packaged software. This methodological revision led to the annual growth rate being revised down by 3.5 percentage points on average.

**Table 4. Price indexes for components of software GFCF (1995 = 1.0)**

Country	1995	1996	1997	1998	1999	2000	2001	2002	2003
Canada purch	1.0	0.96	0.93	0.9	0.88	0.90	0.91	0.89	0.82
Canada own	1.0	1.02	1.07	1.08	1.09	1.15	1.21	1.23	1.26
Italy purch	1.0	1.06	1.10	1.08	1.10	1.13	1.21	1.18	1.21
Italy own	1.0	1.02	1.05	1.06	1.10	1.14	1.18	1.20	1.19
Netherlands purc	1.0	1.03	1.01	1.03	1.03	1.03	1.04	1.04	1.03
Netherlands own	1.0	1.07	1.06	1.02	1.04	1.03	1.03	1.03	1.03
US prepackaged	1.0	0.94	0.86	0.8	0.78	0.78	0.76	0.73	0.67
US custom made	1.0	0.99	0.99	0.98	1.01	1.05	1.07	1.06	1.07
US bus own	1.0	0.99	0.99	0.98	1.02	1.06	1.08	1.07	1.08
US Fed gov own	1.0	1.02	1.03	1.06	1.08	1.13	1.17	1.20	1.23
US S&L gv own	1.0	1.01	1.02	1.03	1.05	1.09	1.12	1.13	1.16

**Question 6.**

*Do you capitalize expenditure on databases? If so are they just large databases or all databases? Are the estimates separable from your software estimates? If so can you please provide estimates of GFCF for 2001, 2002, and 2003.*

12. The reporting countries fell into two groups: those that exclude databases from their estimates of GFCF (group A) and those that make combined estimates of GFCF of software and databases (group B).

13. The group A countries comprise Belgium, Canada, Czech Republic, Finland and Italy.

14. The group B countries comprise Germany, Greece, Japan, Korea, the Netherlands, Slovak Republic, Sweden, New Zealand and the US.

15. Several countries in group B indicated that they included databases in GFCF in principle, but had little idea of the extent.

**Question 7.**

Are you able to provide annual estimates of:

- a) exports of software, and
- b) imports of software?

If so, please provide estimates for 2001, 2002 and 2003.

Note - software trade may be taken to have three significant components:-

- i. software goods - approximately represented by the standard grouping of HS codes 852431, 852440, 852491, 852499
- ii. software in computer services - (all or most of) BOP code 263
- iii. software royalties and license fees - part of and to be separately identified from royalties and license fees - BOP code 266

**Table 5. Exports and imports of software as a percentage of GDP, 2003**

Country	Exports	Imports
Canada	0.22	0.17
Czech Republic	0.07	0.19
Finland	0.27	0.33
Germany	0.27	0.30
Greece	0.15	0.36
Italy	0.06	0.18
Japan (2002)	0.006	0.01
Korea	0.08	0.14
Netherlands	0.12	0.15
Slovak Republic	0.02	0.03
Sweden	0.50	0.30
US	0.10	0.02

16. The substantial variation in the data reported by countries and the metadata reported by some of them suggests that some countries, at least, are unable to quantify all the components of exports and imports described in the question.

**Conclusion**

17. It is encouraging that many OECD countries are endeavouring to improve their estimates of software GFCF and following the OECD and Eurostat task force recommendations. However, it is clear that there remains much to be done before software statistics can said to be truly comparable.