UNITED NATIONS

E

Economic and Social Council

Distr.
GENERAL

CES//AC.68/2004/15
23 March 2004

ENGLISH ONLY

STATISTICAL COMMISSION and ECONOMIC COMMISSION FOR EUROPE

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT (OECD)

CONFERENCE OF EUROPEAN STATISTICIANS

COMMISSION OF THE EUROPEAN COMMUNITIES (EUROSTAT)

Joint UNECE/Eurostat/OECD Meeting on National Accounts
(Geneva, 28-30 April 2004)

COMPILATION OF FINLAND'S FLASH ESTIMATE OF GDP ON QUARTER

Paper submitted by Statistics Finland[1]

ABSTRACT

More timely production of short-term macroeconomic statistics has become an ever more important goal for the European Union. To that end, Eurostat has developed a quarterly Flash estimate of GDP for the EU/Euro area. The Flash GDP describing the EU and Euro areas is published within 45 days from the end of the quarter. For two decades, Statistics Finland has been producing a Monthly Indicator of GDP, which is used to anticipate the development of the subsequently published quarterly gross domestic product. As far as possible, the same basic data published monthly in Finland are used for both the main industries of the Monthly Indicator of GDP and the calculation of quarterly GDP. More extensive data are available for calculation of quarterly national accounts. The objective of the Flash estimate of GDP is to produce a first preliminary view of the development of domestic production in the quarter.

INTRODUCTION

1. From November 1986, Finland has been one of the few countries in the world to publish a Monthly Indicator of GDP that follows and anticipates the development of the volume of GDP. The Monthly Indicator of GDP can be used to anticipate quarterly GDP at basic prices. Until 2001, the release delay of the monthly indicator was about 60 days from the end of the

[1] Paper prepared by Arto Kokkinen.

month examined.

2. However, more timely production of short-term macroeconomic statistics has become increasingly important for the European Union. To attain that target, Eurostat has developed a quarterly Flash estimate of GDP for the EU/Euro area. The Flash GDP describing the EU and Euro areas is published within 45 days from the end of the quarter. The EU Flash GDP based on Flash GDP data by country was released for the first time in May 2003.

3. In Finland it was natural to develop the Flash estimate of GDP on quarter by speeding up the publication of the monthly indicator of GDP for the third month of a quarter. The purpose is to support the data basis of the EU's Flash GDP and at the same time make it possible to follow the development of Finland's economy in relation to the corresponding short-term economic data of the EU/Euro area. Statistics Finland accelerated the production of trade statistics (incl. motor vehicles, wholesale trade and retail trade), the data for which are completed last for the monthly indicator. As a result, the monthly indicator and the data on the quarterly Flash estimate of GDP were supplied to Eurostat for the first time in under 45 days in November 2003. A Flash GDP was first officially released in Finland in February 2004.

4. Anticipating the development of GDP based on total output volumes may be put to the test at the end of 2005, when annual accounts in GDP calculation will adopt a supply and use table-based volume calculation method (deflation by product) and performance measures in volume calculations of services produced by the general government sector. This may also create pressure on the basic statistics used in short-term national accounts.

DATA CONNECTION OF THE MONTHLY INDICATOR OF GDP AND QUARTERLY GDP

5. For two decades, Statistics Finland has been publishing an internationally exceptional monthly indicator of GDP. How has it been possible to produce such a monthly indicator in Finland? This has much to do with the source data: most of the key data used in volume calculation of quarterly GDP are already published monthly in Finland. Another reason could be the fact that administration, education, health and social services are mostly produced by the public sector which, with its steady development of value added, makes it easier to evaluate the development of these service industries.

6. One way to calculate the Gross Domestic Product at basic prices[2] is to calculate the output (or sales) of producers and extract the intermediate consumption bought from other producers from the output. In the short term (monthly, quarterly), the share of intermediate consumption does not change quickly, especially on the industry level of the whole economy. For that reason, the development of GDP at basic prices can be approximated by using the volume of output (or sales, e.g. in trade) in the economy. This method is used in the Monthly Indicator of GDP and quarterly Flash GDP of Finland.

7. The data of the monthly indicator of GDP (output) extend to the anticipation of GDP at basic prices (the sum of value added of industries). From GDP at basic prices, we can obtain GDP at market prices by adding taxes on production and imports received by the Government and by deducting subsidies on products paid by the Government. Most of the development of

[2] GDP at basic prices refers to the sum of value added of the industries of the economy.

GDP at market prices is formed through value added by industry.

8. In quarterly national accounts GDP is examined, in addition to calculation through output, through (net) demand components:

gdp = private final consumption expenditure + government final consumption expenditure + gross fixed capital formation + ? inventories + (exports - imports),

This naturally influences the released GDP. However, Finland has a long history of compiling short-term statistics on output volumes. Reliance on data measured through output may be slightly higher in the balancing process as well, because demand components are usually subject to greater revision in Finland. The balancing presented above nevertheless has an effect on the released quarterly GDP[3].

9. Table 1 shows the data connection of the monthly indicator of GDP (output) and Flash GDP to the calculation of GDP at basic prices through output in quarterly national accounts. The Flash GDP data cover around 60 per cent of the data of the first published quarterly GDP. When taxes on products minus subsidies on products are taken into account, the Flash GDP data cover around 51 to 53 per cent of quarterly GDP at market prices (as we will see below, however, the size, category and direction of GDP development can usually be captured well with these data. This is because development in those industries which are important in determining GDP variations is described with almost the same data as in the calculation of quarterly GDP).

CONNECTION OF THE RESULTS OF THE MONTHLY INDICATOR OF GDP, FLASH GDP AND QUARTERLY GDP

10. We will first examine, using a time series from 1995 onwards, how the sum of three months' output volumes calculated through the data of the monthly indicator of GDP has corresponded, by its level and changes, to quarterly GDP at market prices. After this, we will study the actual Flash GDP results on GDP change starting from the first quarter of 2002.

11. It can be seen in Figures 1 to 4 that the monthly indicator of GDP has followed directly, both in its level and development, the volume of GDP at market prices in the quarterly national accounts. In Figures 1 and 2, the index point figures for the quarter of the monthly indicator of GDP on three months are summed up and the sum is divided by three[4].

[3] In quarterly national accounts, GDP is also presented through income components but because the operating surplus is usually derived as a residual, balancing mainly occurs through the output and (net) demand components measures of GDP. In addition, quarterly accounts also release national income, employment and hours worked data.

[4] This is simply because the level of each month's figure already confirms the level of quarterly GDP. Summing up the 3 months of the calendar quarter will raise the level of index points multiplied by three. It is a question of simply scaling the 3 month's sum of the quarter back to the original level to help the comparison with quarterly GDP series (not any kind of "moving average").

The euro denominated GDP volume is converted simply into the index form: average of quarters of 2000 = 100.

12. The correlations of both the original series and the seasonally adjusted series with the quarterly series are as high as 0.99. In the sense of time series analysis, both time series may contain at least one unit root and so the correlation of differenced series need to be examined. Figure 3 looks at changes from the corresponding quarter of the previous year (correlation 0.94) and Figure 4 looks at changes from the previous quarter (correlation 0.91). The correlations of the differenced series (changes from level series) are particularly good when viewing the dependencies of time series in general.

13. Tables 2 and 3 examine the results of test calculations for the Flash estimate of GDP from the first quarter of 2002 to the second quarter of 2003. The test calculations were made for each quarter with three months' basic data available when calculating each period. The results are compared with the first release quarterly GDP volume of each quarter, because anticipation of this is the main goal of both the monthly indicator of GDP and Flash GDP.

14. Tables 2 and 3 similarly show Flash data on the third and fourth quarters of 2003, which were supplied to Eurostat in the periods in question. In Finland, a Flash estimate of GDP was first officially published in February 2004 for the fourth quarter of 2003.

15. Table 2 indicates that quarterly changes from the previous year calculated through the monthly indicator have usually closely followed changes in quarterly GDP at basic prices. The greatest difference with the volume change of GDP at market prices from the previous year's corresponding quarter was 0.6 percentage points. This difference concerns the data on the fourth quarter of 2003 when taxes on products received by the Government underwent exceptional growth, also producing some differences to changes in GDP at basic prices and market prices in the quarterly national accounts. For this reason, it has to be considered whether we could in some way combine partial data with the Flash estimate at least on accrued taxes on products.

16. The fourth quarter is the most difficult one for the Flash estimate because annual data are used for the first time for the quarterly national accounts. Annual preliminary data are published in Finland in connection with the fourth quarter at the end of February. The results of the fourth quarter of 2003 were influenced by taxes on products as well as by the fact that the development of value added in financial intermediation and insurance services became specified when annual data were used.

17. Table 3 presents the results of test calculations for the Flash estimate on the development of quarterly GDP from the previous quarter. Due to seasonal variation within the year, original series have to be seasonally adjusted to produce these results. The seasonal adjustments shown are carried out both in quarterly national accounts and the monthly indicator with the X11Arima method. The seasonal adjustment methods for the monthly indicator and quarterly national accounts must be similar in order to attain results which are as uniform as possible (Tramo/Seats will be introduced in the course of 2004).

18. It can be generally said about the results that the development of quarterly GDP from the previous quarter can be anticipated well with the Flash estimate and the monthly indicator as far as its size, category and direction are concerned. The results are good with respect to all the

factors related to the original series and seasonal adjustment methods. The biggest differences in the results of the seasonally adjusted series with the change in GDP at market prices from the previous quarter have been 0.4 percentage points.

19. On the other hand, it must be noted that, despite their similarities, the results do differ by a few decimals at various points. Therefore, if the development of the quarter is close to zero, the Flash estimate of the development from the previous quarter can also give an erroneous sign to the direction of the change (cf. such situations in Figure 4). Therefore when publishing the results of the Flash estimate users need to be cautioned, especially in such cases where the results are interpreted with an accuracy of 3 decimal places.

20. To sum up, the results of Tables 2 and 3 show that the main objective, the anticipation of the size, category and direction of change of quarterly GDP, has been achieved fairly well by Flash estimates calculated from monthly GDP indicator data.

Table 1. Data connection of Flash GDP (monthly indicator) and QNA GDP volume (at basic prices)

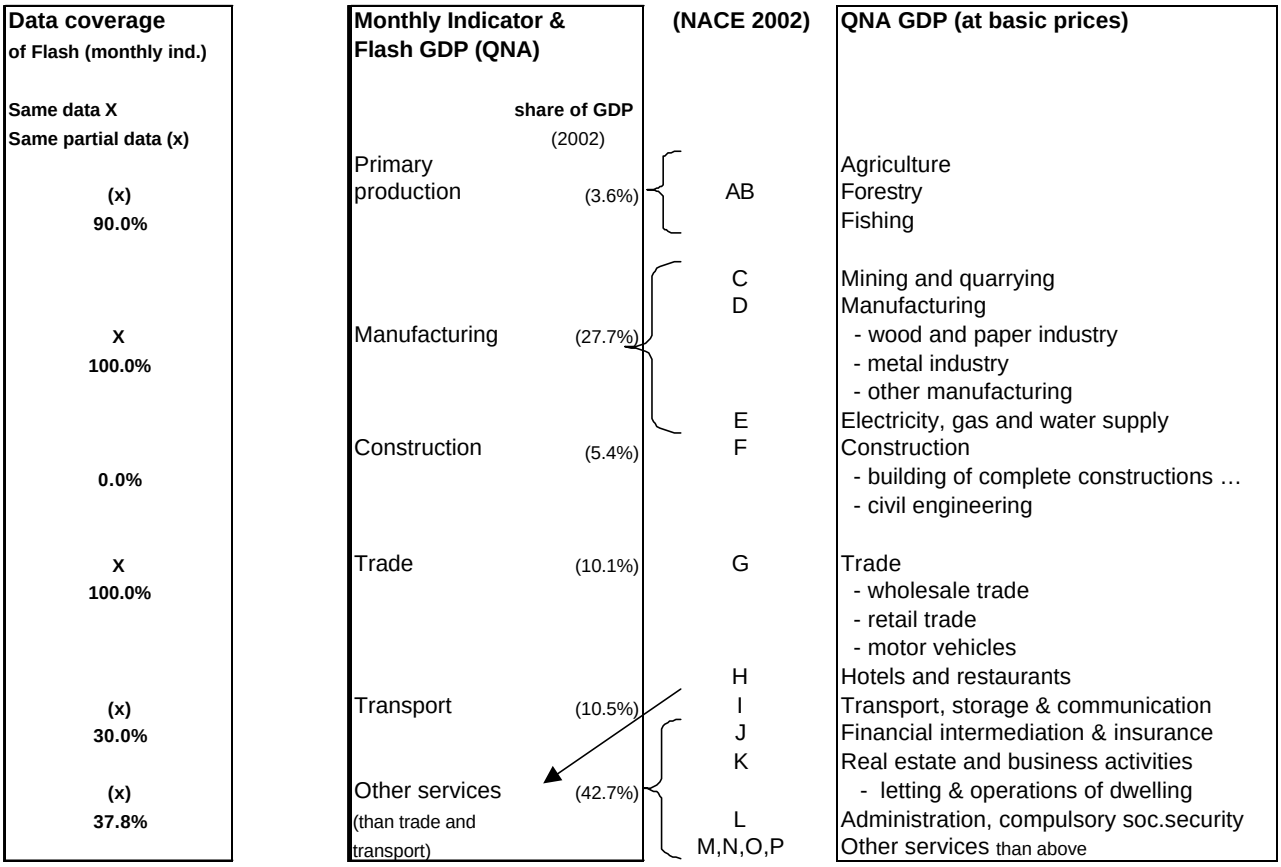


Table 2. The results of Flash estimate and QNA GDP (1st release), changes from the previous year's same quarter (original series)

		FLASH estimate	First release of QNA GDP on quarter GDP basic p	GDP market p
2002	**I**	**-2,3**	-2,4	**-2,0**
	II	**2,6**	2,5	**2,5**
	III	**2,2**	2,3	**2,3**
	IV	**3,1**	2,7	**2,7**
2003	**I**	**1,5**	0,9	**1,2**
	II	**0,6**	0,2	**0,7**
	III	**1,4**	2,1	**1,6**
	IV	**1,1**	1,3	**1,7**

Table 3. The results of Flash estimate and QNA GDP (1st release), changes from the previous quarter (seasonally adjusted series)

		FLASH estimate	First release of QNA GDP on quarter GDP	
			basic p	market p
2002	**I**	**-1,0**	-0,6	**-0,7**
	II	**2,5**	2,2	**2,1**
	III	**0,4**	0,5	**0,5**
	IV	**0,5**	0,7	**0,7**
2003	**I**	**-0,9**	-1,5	**-1,3**
	II	**0,4**	0,5	**0,6**
	III	**1,0**	1,3	**0,8**
	IV	**0,1**	0,4	**0,3**

Table 4. The basic source statistics for the Monthly Indicator of GDP and Flash Estimate of GDP on quarter (in addition to these, quarterly data are used in administration, education, health and social services, which are mainly produced by the public sector in Finland)

Series	**Publisher**
Milk received by dairies	Information Centre of the Ministry of Agriculture and Forestry
Meat production	Information Centre of the Ministry of Agriculture and Forestry
Plant production	Information Centre of the Ministry of Agriculture and Forestry
Fellings	Finnish Forest Research Institute
Volume index of industrial output	Statistics Finland
Index of construction materials	Confederation of Finnish Construction Industries RT
Employment of construction industry	Statistics Finland
Volume index of sale of motor vehicles	Statistics Finland
Volume index of wholesale trade	Statistics Finland
Volume index of retail trade	Statistics Finland
Hauled freight in gross ton-kilometres in rail goods transport	VR Group (Finnish Railway Company)
Sale of diesel oil	Finnish Oil and Gas Federation

Figure 1. Three months' sum of the quarter of the monthly indicator of GDP and the volume of quarterly GDP, original series. CORRELATION 0.99.

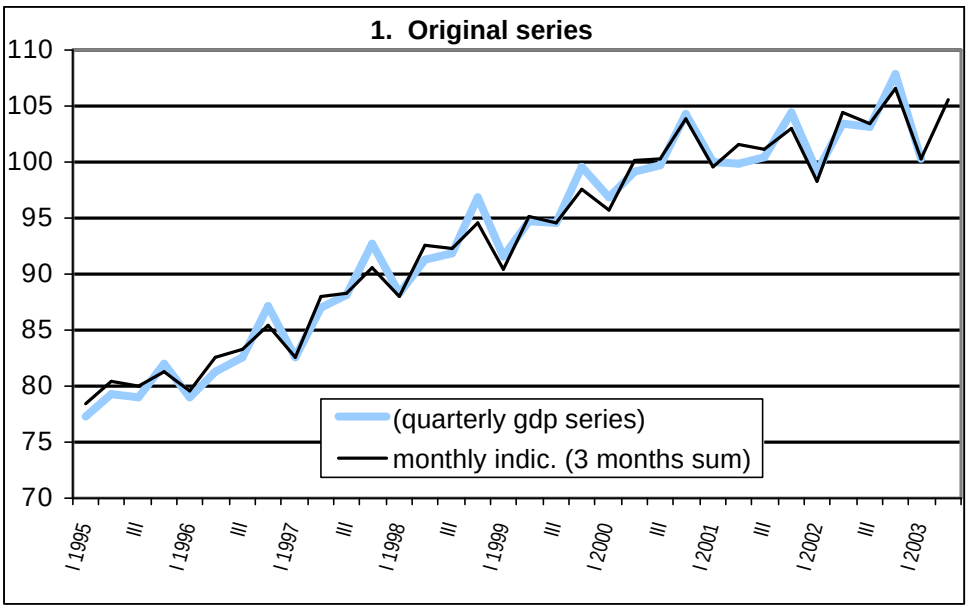


Figure 2. Three months' sum of the quarter of the monthly indicator of GDP and the volume of quarterly GDP, seasonally adjusted series. CORRELATION 0.99.

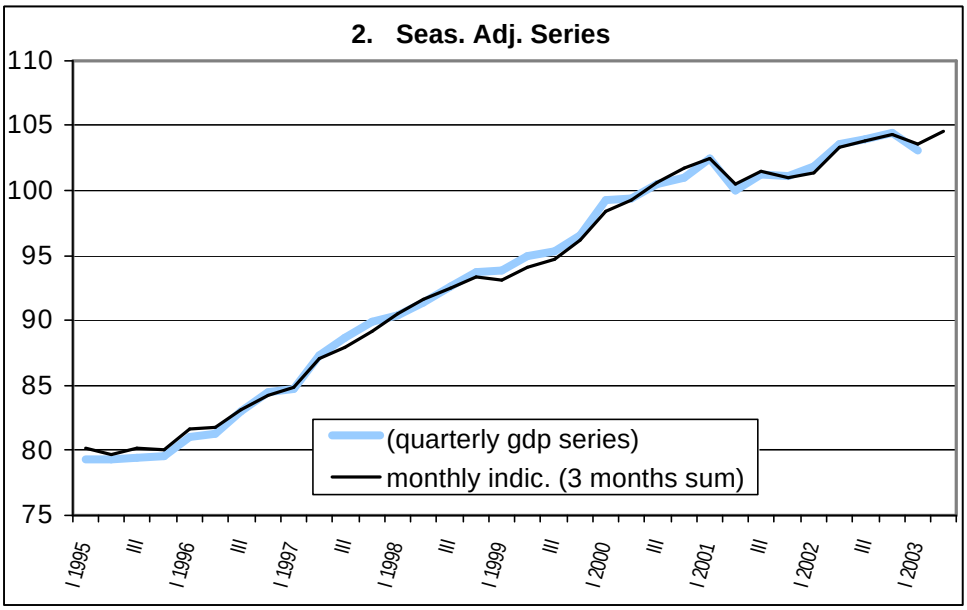


Figure 3. Three months' sum of the quarter of the monthly indicator of GDP and volume changes of quarterly GDP from the previous year's corresponding quarter (changes in original series). CORRELATION 0.94.

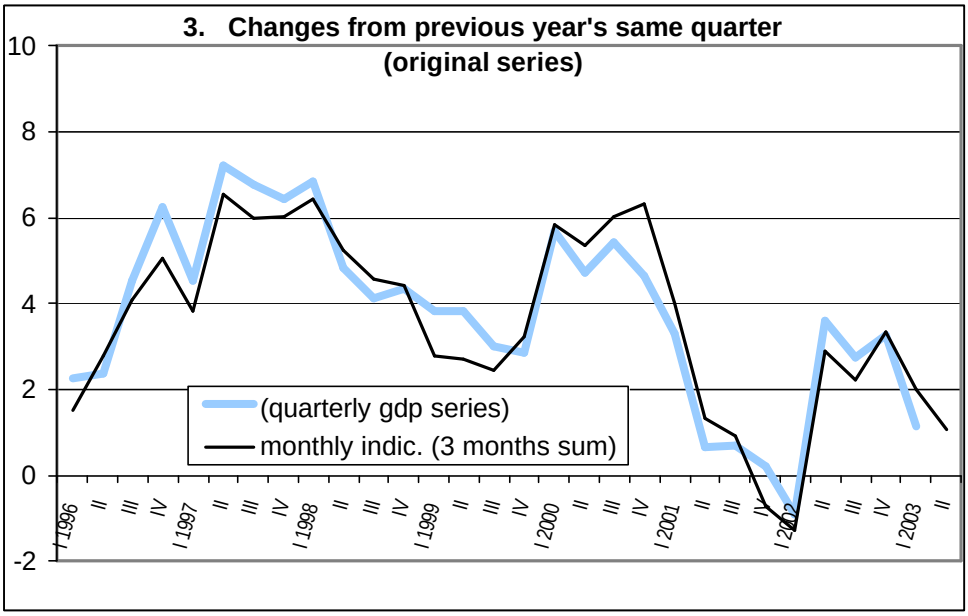
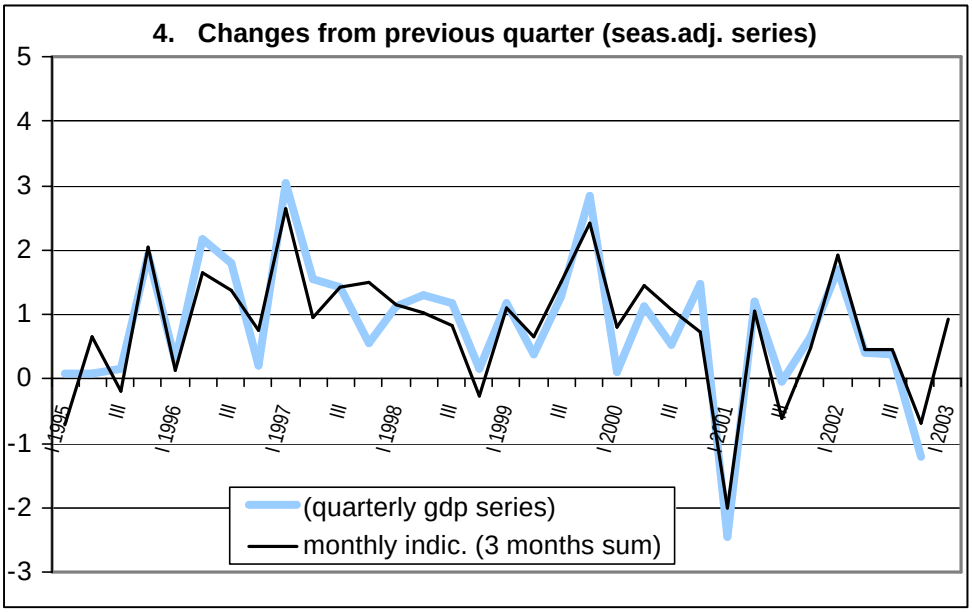


Figure 4. Three months' sum of the quarter of the monthly indicator of GDP and volume changes of quarterly GDP from the previous quarter (changes in seasonally adjusted series). CORRELATION 0.91.



APPENDIX: Releases of short term macroeconomic statistics in Finland,
e.g. the first quarter
(In addition, financial sectoral accounts quarterly and balance of payment data are published by the Bank of Finland)