

**STATISTICS DIRECTORATE
COMMITTEE ON STATISTICS**

Cancels & replaces the same document of 27 September 2006

Working Party on National Accounts

**SURVEY OF OECD MEMBER COUNTRY PRACTICES IN DERIVING CONTRIBUTIONS TO GDP
VOLUME GROWTH AND QUARTERLY CHANGES IN INVENTORIES**

**To be held on 10-12 October 2006
Tour Europe, Paris la Défense
Beginning at 9:30 a.m. on the first day**

This document has been prepared by Charles Aspden, OECD - Statistics Directorate

**For further information, please contact:
Charles Aspden
E-mail: charles.aspden@oecd.org**

JT03216026

**Document complet disponible sur OLIS dans son format d'origine
Complete document available on OLIS in its original format**

SURVEY OF OECD MEMBER COUNTRY PRACTICES IN DERIVING CONTRIBUTIONS TO GDP VOLUME GROWTH AND QUARTERLY CHANGES IN INVENTORIES

Introduction

1. A joint OECD-Eurostat questionnaire titled *Questionnaire on contributions to GDP volume growth and on quarterly changes in inventories* (see Attachment 1) was sent to OECD and EU Member countries in April 2006, and 23 OECD countries responded. As the covering note to the questionnaire explains, the introduction of quarterly chain-linking has made the calculation of contributions to quarterly GDP growth less straightforward, and whereas it was simple for users to derive the estimates themselves from constant price data, it is not the case for chain-linked data. As contributions to growth are not included in the OECD-Eurostat questionnaire and they are not generally supplied by countries to the OECD and Eurostat, they are therefore not disseminated by either Eurostat or the OECD (at least by the Statistics Directorate (SD)). This has led to an unmet demand, with users being obliged to either go to individual country sources or, like the OECD's Economics Department, to derive approximate estimates themselves.

2. It is also an opportune time to do a stocktake of country practices with respect to the methods used by countries to derive chain-linked volume estimates. The questionnaire pays particular attention to changes in inventories, an important statistic for analysing business cycles, but also one that is difficult to measure accurately in current prices and poses special problems when deriving volume estimates.

Chain linking and its implications for deriving contributions to growth

3. All OECD Members publish volume estimates of their national account statistics. Until quite recently, most of them derived these estimates as fixed-weighted indexes referenced to a base year. In effect, Laspeyres indexes were derived from the base year to each subsequent period, and the resulting values were referenced to the current price value in the base year. The base year was generally reselected every five or ten years. Members often linked the estimates derived for the latest base year with estimates derived for earlier periods on earlier base years to obtain long, continuous time series.

4. Over the last few years the situation has changed, and now most OECD Members derive their volume estimates of national accounts aggregates by annual or quarterly chain-linking, and others are in a process of transition. With a few exceptions, they are using the Laspeyres formula and rebasing annually. In essence, they are doing what they did before, except they are rebasing annually, rather than five-yearly or ten-yearly. Hence, while in the past the links in the chain may have been five or more years long they are now generally one year long.

5. The reason for deriving volume estimates is to be able to derive growth rates from one period to another that are free of the direct effects of price change, and the new chain-linked volume estimates generally provide better estimates of growth than the old infrequently chain-linked estimates. When price relativities are changing rapidly the improvement can be substantial, and the improvements tend to get larger the further away one goes from a base year of the infrequently chain-linked estimates. However, the latter did have a useful property: if the latest base year and reference year coincided and the Laspeyres

formula was used then the accounting relationships evident in the current price data held for the volume estimates in the periods following the reference year.

6. As the *raison d'être* for volume estimates is to derive growth rates, additive volume estimates should be regarded as being of secondary importance. Nevertheless, the loss of additivity has made some things that used to be very straightforward more complicated. One such case is the calculation of the contributions of components to the growth of their aggregate. The contributions of the components, particularly the expenditure components, to the growth in volume of GDP are widely used by analysts, including the Economics Department of the OECD.

7. When the Laspeyres formula is used and the base year and reference year coincide there is additivity in subsequent periods, and the contribution by a component to the growth of GDP between two periods can be readily obtained by subtracting the volume estimate of the component in the first period from its value in the second period and dividing the result by the volume estimate of GDP in the first period. But when these conditions are not met and there is no additivity in the volume estimates, contributions to growth that sum to the growth rate of GDP have to be derived in a different way.

8. Countries have adopted different ways of creating the circumstances for additivity of growth rates. The problem is to obtain suitable weights that can be applied to the growth rates of the components such that they sum to the growth rate of GDP between the two periods of interest. When the Laspeyres formula is used to calculate the growth rates, the weights should reflect the relative magnitudes of the components in the first of the two periods and sum to 1.

9. Two countries, Australia and the UK, simply reference their Laspeyres chain-linked volume estimates to the latest base year, thereby ensuring additivity for the latest periods. They can then use the simple formula (described in paragraph 7) to derive the contributions to growth in GDP for the latest periods, which are the ones of primary interest. This approach entails re-referencing the chain-linked volume estimates every year. While this changes the levels of the volume estimates it does not change the growth rates, and the users in these countries do not seem to mind.

10. Other countries using the Laspeyres formula calculate contributions to growth using data expressed in the prices of the previous year. These data are additive and so the simple formula can be used. But if these data are not published it is not easy for users to derive their own estimates of contributions to growth.

11. The two countries using the Fisher formula, Canada and the US, take advantage of the fact that the Fisher formula is the (geometric) average of the Laspeyres and Paasche formulae. They obtain weights that are themselves weighted averages of the values of the components in the first and second of the two periods in question¹. These weights are then applied to the growth rates of the chain-linked component data to obtain contributions to the growth of GDP that are additive.

Deriving chain-linked volume estimates of data that can take positive or negative values

12. Particular difficulties arise in linking quarterly data when annual base years are used and when linking data that can take positive, negative or zero values. These difficulties existed when rebasing was done infrequently, but they have become much more acute with the move to annual rebasing. It has become apparent that countries have adopted different ways of addressing these difficulties.

¹ See *Chain Fisher Volume Index Methodology* by Michel Chevalier, Statistics Canada, Catalogue no. 13-604-MIE –No.42, and for the US page M-18 of the *National Income and Product (NIPA)* guide at <http://www.bea.gov/bea/an/nipaguid.pdf>.

13. Chain-linking volume estimates when the frequency of the data is the same as that of the base periods presents no problem. Linking annual volume data derived using annual base years or linking quarterly volume data derived using quarterly base quarters is simply a matter of compounding the year-to-year or quarter-to-quarter growth rates, as shown in chapter 16 of the 1993 SNA. But when annual base periods are used to derive quarterly volume estimates matters are not so straightforward, and there are several ways of linking estimates on different base years. The advantages and disadvantages of the alternatives are described in the *Quarterly National Accounts Manual*, IMF 2001, and the paper *The situation of quarterly national accounts data transmission to the OECD* (item 17) describes the alternatives and provides details of which one has been chosen by Member countries.

14. Index number formulae are not applicable to time series that can take positive, negative and zero values. Nevertheless, there are ways of deriving pseudo chain-linked estimates of such series. The most commonly used approach is to identify two associated time series that take only positive values and are such that when differenced yield the target series. Chain-linked series are non-additive and so it is evident that this is an imperfect method, since by construction an additive relationship is produced. It follows that the series to be differenced should be as closely aligned in terms of price and volume composition as possible with the target series. Hence, a chain-linked series of the external balance should be derived as the difference between chain-linked exports and chain-linked imports, and chain-linked changes in inventories should be derived as chain-linked closing inventories less chain-linked opening inventories. Sometimes public gross fixed capital formation can take negative values as a result of the sale of assets to the private sector, in which case one could difference the chain-linked estimates of acquisitions and sales.

Table 1: Changes in inventories

Comparison between published estimates and those obtained as GCF – GFCF

Reference year 2000, national currency, millions

Year	Canada		Netherlands		United Kingdom		United States	
	<i>Published</i>	<i>GCF - GFCF</i>	<i>Published</i>	<i>GCF - GFCF</i>	<i>Published</i>	<i>GCF - GFCF</i>	<i>Published</i>	<i>GCF - GFCF</i>
1971	739	-7,696	1,381	3,589	2,627	1,610	21,100	3,500
1975	3,863	-6,204	1,073	2,299	-4,712	-6,375	-11,000	-28,100
1980	2,643	-9,834	1,773	3,783	-4,667	-5,696	-6,500	-22,200
1981	2,237	-9,285	498	434	-4,431	-5,372	39,100	27,600
1982	-19,224	-20,646	97	-632	-1,772	-2,637	-14,600	-25,800
1983	-8,826	-10,078	508	390	1,879	1,296	-3,400	-14,700
1984	-93	-806	139	-548	1,499	744	71,600	61,600
1985	-496	-1,559	-180	-1,368	1,137	222	25,800	14,200
1990	-3,980	-6,288	1,213	1,548	-2,211	-3,545	14,400	6,500
1995	7,679	7,228	1,024	988	4,512	4,774	29,800	23,900
2000	11,529	11,529	430	430	5,274	5,274	56,500	56,600
2005	13,367	13,364	-510	-484	2,056	2,049	19,400	23,900

15. Countries deriving their chain-linked estimates of changes in inventories in the recommended way include Canada, the UK and the US. Table 1 presents the published estimates of chain-linked changes in inventories (and valuables) and estimates derived by differencing the published estimates of chain-linked gross capital formation (GCF) and gross fixed capital formation (GFCF). For most of the time for all countries, the difference between the two estimates gradually grows the further they are from the reference period, year 2000. When they get as far as 30 years from the reference year, the bias can be of greater magnitude than the typical change in inventories as measured by the recommended approach. But there can be occasions when the difference grows so abruptly, such as between 1981 and 1982 for Canada, that it could lead to quite a different interpretation of what has occurred at that point. This demonstrates the importance of differencing the chain-linked estimates of the time series most closely associated with the

target series in order to minimise the inclusion of ‘discrepancies’ arising from changes in price and volume relativities.

16. For those countries that do not have estimates of the levels of inventories but do have changes in inventories by component, then one possibility is to generate opening and closing level series by accumulating the changes. If estimates of levels exist at some point in time then they can serve as the starting points for the accumulation. For those commodities for which no point estimates of level exist then it may be possible to make an estimate by such means as making inquiries with experts in the field or imputing a level by assuming the same inventory to sales ratio as similar commodities.

17. A lack of chain-linked estimates for changes in inventories, or any other variable that can take positive or negative values, is no barrier to deriving the variable’s contribution to growth of GDP. For those countries using the Laspeyres formula, it is simply a matter of deriving estimates of changes in inventories in the prices of the previous year and then calculating the contribution to growth in GDP using the simple formula described in paragraph 7.

18. Estimates of the contributions to growth of GDP, however, should not be seen as a substitute for deriving chain-linked estimates of the changes in inventories. Both have their analytical uses and complement each other. Suppose a change in inventory of 1000 in one period is followed by change of zero in the next period, or 500 is followed by -500, or zero is followed by -1000. In all three scenarios there is exactly the same contribution to the growth of GDP from the first to the second period, but the three scenarios are portraying quite different pictures of stock building.

19. At the onset of an economic slowdown it is common for stock building to occur until businesses react by reducing production or imports. So an inventory build-up can be a precursor of a future decline or slowdown in production. Conversely, a rundown in inventories can herald an increase in production or imports. If, for example, there is a change in inventories in three successive periods of zero, 1000, 1000, then there is a contribution to the growth of GDP between the first and second period but none between the second and third. On their own, the contributions to growth do not tell the full story of what is happening, and if there are no volume estimates of changes in inventories then economists and other analysts are not being given an important piece of information.

20. While the latest volume estimates of changes in inventories are important statistics for understanding what is happening in the economy now and what might happen in the near future, historic estimates spanning previous business cycles are useful for studying what happened in the past and identifying the relationships between different economic variables.

Results of the survey

21. The important results of the survey are summarised in tables 2 and 3. Table 2 presents results for contributions to growth and table 3 focuses on changes in inventories.

Table 2: Contributions to growth in GDP

Country	Annual or quarter chain-linking?	Quarterly chain-linked estimates benchmarked to annual? Original and seasonally adjusted?	Release contributions to growth Quarter on quarter?	Release contributions to growth Quarter on same quarter of previous year?	Contributions sum to GDP growth rate?	Is one component derived residually?
Australia	A	Yes, both	Yes	No	Yes	No
Austria	A	Yes	Yes	No	Yes	Inventories
Belgium	Forthcoming		Yes	Yes		
Canada	Q, Fisher	No	Yes	No	Yes	Statistical discrepancy
Czech Rep.	A		No	No		
Denmark	A	Yes, original	No	No		
Finland	A	No	Intend to			
Germany	A	No	Yes	Yes	Yes	No
Greece	A		No	No		
Hungary	Forthcoming		No	No		
Iceland	A	No	No	No		
Italy	A	Yes, both	Yes	No	Yes	Inventories
Japan	A	Yes, original	Yes	Yes	Yes	No
Korea	No		Yes	Yes	Yes	Statistical discrepancy
Netherlands	A	Yes, original	No	Intend to	Yes	No
Norway	A ¹	Yes	Yes	Yes	Yes	Inventories
Poland	A ²	No	No	Yes	Yes	No
Portugal	A ³	Yes, seasonally adjusted	No	Yes	No ³	
Spain	A	Yes, both	No	Yes	Yes	External balance
Sweden	A	No	No	Yes ⁴	Yes	No
Switzerland	A	No	No	No		
UK	A	Yes, original	Yes	Yes	No	No
US	A, Fisher	Yes, both	Yes	No	Yes	No

1 Quarterly estimates are not annually rebased, but are benchmarked to annually chain-linked annual data.

2. Poland reports quarterly data at previous year prices, and the OECD Secretariat applies the annual overlap method to calculate chain-linked estimates.

3. Quarterly national accounts are derived from chain-linked annual accounts using an indirect method. Contribution of changes in inventories to GDP growth is not calculated.

4. Due to the high share of imports in consumption and capital formation their contributions to growth are adjusted accordingly.

Contributions to growth

22. Many users rely on multi-national databases, such as the OECD's, to obtain their data, and the lack of contributions to growth on these databases causes difficulties for them. As described earlier, they must either go to national sources or they can estimate them themselves. But countries use different ways to derive their chain-linked volume estimates, which makes it difficult, if not impossible, for users of multi-national data to derive accurate estimates of contributions to growth themselves. Approximately half of the countries already release contributions to growth in GDP: quarter on quarter, quarter on same quarter of the previous year, or both. Hence, for those countries that release such data there is the real risk that users' approximate estimates will differ from the official ones. In these circumstances it is highly desirable that all countries derive these estimates and supply them to the OECD and Eurostat.

23. Changes in inventories and the external balance (i.e. exports of goods and services *less* imports of goods and services) are two important variables for which the accurate calculation of contributions to growth of GDP are particularly problematic for users, because quite a few countries either do not release volume estimates or do not supply them to the OECD and Eurostat. Clearly, contributions to growth can be derived for both residually, but by doing so there is more risk of deriving an estimate that differs from the official estimate. For this reason priority should be given to supplying the contributions to growth of these two variables to the OECD.

Quarterly changes in inventories

24. About half of the 23 OECD countries that responded to the survey derive chain-linked volume estimates of changes in inventories. Most of them derive their estimates by differencing the chain-linked estimates of the closing and opening inventory levels. Two countries, Denmark and Iceland directly chain link the changes in inventories in the prices of the previous year, and make adjustments if the outcomes are odd. This is not a conceptually valid approach.

25. Two other countries, the Czech Republic and the Netherlands, obtain their volume estimates of changes in inventories by differencing two larger aggregates that include and exclude changes in inventories. The Czech Republic does it by differencing GCF and GFCF and the Netherlands does it by differencing total final expenditures (GDP + imports) including changes in inventories and excluding changes in inventories. In the latter case, the resulting estimate of changes in inventories includes all the 'discrepancy' arising from changes in price and volume relativities between the major aggregates.

26. Table 1 compares the published estimates and estimates derived as the difference between GCF and GFCF for the Netherlands. As can be seen, they differ substantially when the values are many years from the reference period, but neither is derived in the preferred way. The Netherlands does not compile quarterly estimates of changes in inventories at current prices directly, rather they are derived residually, and the same approach has been adopted for the volume estimates. While one can therefore appreciate the rationale for deriving the volume estimates in this way, it does raise the question of how valid the volume estimates for periods many years from the reference year are.

27. Sweden calculates changes in inventories in the prices of the previous year and then calculates them at reference year prices by assuming that their relative size to GDP is the same in previous year's prices as it is in reference year prices. This is equivalent to deflating the estimates at previous year's prices by the GDP implicit price deflator. This approach therefore rests on the assumption that the price growth of GDP is the same as that of changes inventories

Table 3: Quarterly changes in inventories

Country	Publish changes in inventory volumes?	Publish inventory volume levels	Publish inventory levels at current prices?	Directly derive estimates of changes in inventories at current prices?	Changes in inventories play a prominent role in balancing GDP?
Australia	Yes	Yes	Yes	Yes	Yes
Austria	No	No	Yes	No	Yes
Belgium	Yes, but not chain-linked	Yes	Yes	No	Yes
Canada	Yes	Yes	Yes	Yes	Yes
Czech Rep.	Yes, GCF-GFCF	Yes	Yes	Yes	Yes
Denmark	Yes ¹	Yes	Yes	Yes	No
Finland	No	No	Yes	Yes	No
Germany	No	No	Yes	Yes ²	Yes
Greece	No	No	No		
Hungary		Yes, but not chain-linked	Yes	Yes	No
Iceland	Yes ¹	Yes	Yes	Yes	No
Italy	No	Yes, at prices of previous year	Yes	No	Yes
Japan	Yes	Yes	Yes	Yes	No
Korea	Yes, but not chain-linked	Yes	Yes	Partial	Yes
Netherlands	Yes ³	Yes	Yes	No	No?
Norway	Yes, but not chain-linked	Yes, index	Yes	Only manufacturing	Yes
Poland	Yes	No	No	Yes	No
Portugal	Yes ⁴	Yes	Yes	Yes	No
Spain	Yes	Yes, index	Yes		
Sweden	Y ⁵	Yes	Yes	Yes	No
Switzerland	No	No	Yes	No	Yes
UK	Yes	Yes	Yes	Yes	Yes
US	Yes	Yes	Yes	Yes	No

1. Directly chain link the changes in inventories and make ad hoc adjustments when odd results are obtained.
2. A model is used to make quarterly estimates of changes in inventories using annual data and monthly indicators.
3. Volume estimates of changes in inventories are derived as the difference between the chain-linked estimates of total final expenditures (GDP + imports) and total final expenditures excluding changes in inventories.
4. Quarterly national accounts, including changes in inventories, are derived from chain-linked annual accounts using an indirect method.
5. Changes in inventories are calculated in the prices of the previous year. They are then deflated by the GDP implicit price deflator to obtain estimates at reference year prices.

28. Most countries derive quarterly estimates of changes in inventories directly from monthly or quarterly surveys. A few derive direct estimates of some components and the rest derive their estimates residually. Of the first group, there is diversity in the extent to which the direct estimates are subject to amendment after confrontation with the other data on the expenditure side and supply-side estimates. In order to avoid the loss of additivity due to rounding, some countries make a minor adjustment to one variable, but other countries, such as Australia and the UK, do not bother.

Calculating changes in inventories from survey data

29. About half those Members that responded to the survey collect quarterly inventory level data which they use to derive estimates of the changes. A few countries provided extensive descriptions of how they do this.

30. It is very important to know how businesses value their inventories. According to the 1993 SNA (paragraph 6.69) it is common business accounting practice to value goods at the price they were recorded as entering inventory (i.e. historic cost) or current prices, whichever is the lower. But this may not always be the case. If inventory is valued at historic cost it is important to know the order in which businesses assume they are withdrawn. Is it assumed that inventory is withdrawn on a first in first out (FIFO) basis, a last in first out (LIFO) basis or some other way? If they are using LIFO and there is no depletion in the level of inventory, then withdrawals from inventory will be valued at current market prices, which is the value required by the SNA. However, if there is significant depletion then withdrawals could be valued at quite old prices. If businesses are using FIFO and valuing inventories at historic cost, then it is necessary to know the turnover rate so that the appropriate price adjustments can be made.

31. If businesses are valuing their inventories at historic cost in a period of rising prices then gross operating surplus will include holding gains equal to the selling price less the historic cost of goods withdrawn from inventory. It is therefore necessary to make an inventory valuation adjustment to exclude this effect from gross operating surplus. This is another reason why it is important to value changes in inventories as well as possible, which means understanding business practices.

Conclusion

32. The OECD-Eurostat national accounts questionnaire does not include contributions to GDP growth data, and they are not included in the data transmitted by countries to the OECD and Eurostat. As a result, there are no contributions to growth data on OECD databases and releases. When countries published volume estimates that were additive for the latest years, users of the OECD's data releases and databases, such as the Economics Department of the OECD (Eco), could easily and accurately derive the contributions to growth estimates themselves. That has all changed with the introduction of chain-linked volume estimates. While it is possible for these users to derive approximate estimates, they are unable to derive perfectly accurate estimates with the data available to them. This is a major concern for users, such as Eco, that need to have the same data as published by countries, and even for those countries that do not publish contributions to growth estimates it would be better if they made available accurate estimates. Therefore, the OECD and Eurostat request countries to begin to supply contributions to growth data for the quarterly tables 0101, 0102, 0104, and 0105 (only P51 and P52+P53 in table 0105) as per the current questionnaire (or tables 0101 and 0102 in the new questionnaire). Details are provided in Attachment 2, prepared by Eurostat. Top priority should be given to supplying the contributions to growth of GDP by changes in inventories and the external balance. Note that the contributions to growth should be calculated such that they are additive (other than through rounding errors).

33. It is suggested that countries that do not derive chain-linked volume estimates of changes in inventories may wish to review their position, as such data are particularly useful for business cycle analysis. Those countries that derive chain-linked volume estimates of changes in inventories in a way other than differencing the chain-linked volume estimates of the closing and opening levels may care to review their method.

34. Those countries that derive their estimates of changes in inventories from survey estimates need to be aware of the methods used by businesses to value their inventories so that appropriate models can be used to estimate changes in inventories and the inventory valuation adjustment to gross operating surplus.

Questionnaire on contributions to GDP volume growth and on quarterly changes in inventories

The introduction of chain-linking in Quarterly National Accounts has made the calculation of contributions to quarterly GDP growth less straightforward, in particular for changes in inventories and also the external balance. Quarterly changes in inventories and their contribution to GDP growth are subject to regular scrutiny by economists engaged in business cycle analysis. Data sources used for their compilation however vary between Member States, and with them reliability and meaningfulness of the figures.

This questionnaire has been triggered

- a) by the fact that from regular QNA data transmissions after the introduction of quarterly chain-linking OECD and Eurostat are not in a position to derive growth contributions as published by NSIs, and
- b) by IMF recommendations to single Member States to improve their sources for quarterly changes in inventories.

This questionnaire aims to foster information exchange on best practices, and to obtain the information necessary to adequately compile and present growth contributions.

This questionnaire is sent out simultaneously by Eurostat (to EU Member States and other European countries) and OECD (to non-European OECD Member States). We would be grateful if you could answer the following questions as far as possible even if you have not introduced quarterly chain-linking yet. We would appreciate your reply by Friday, 21 April.

Part I (Quarterly) Contributions to GDP growth and related issues

1. Do you publish (or intend to publish) quarterly contributions to GDP growth?

Yes, do Yes, intend to No

If so, do you calculate contributions for quarter-on-quarter and/or for quarterly year-on-year growth rates?

Quarter-on-quarter Quarterly year-on-year Both

Do you give them prominence in your publications (i.e. do you include them in press releases or the main features of a publication) or do you make them available as additional information?

in press release/main features text in press release annex/footnote

only background

2. How do you calculate the quarterly contributions to GDP growth for "normal" variables, e.g. private consumption? (Please distinguish by quarter if necessary.)

How (if at all) for changes in inventories and the external balance?

Do published contributions add up to the published GDP growth?

Yes No

If so, is the contribution for one component derived as a residual item to GDP growth?

Yes (please specify: _____) No

3. What quarterly information related to changes in inventories and the external balance do you publish?
- | | | |
|--|------------------------|------------------|
| | changes in inventories | external balance |
|--|------------------------|------------------|

levels at current prices	<input type="checkbox"/>	<input type="checkbox"/>
levels at prices of the previous year	<input type="checkbox"/>	<input type="checkbox"/>
chain-linked volume levels	<input type="checkbox"/>	<input type="checkbox"/>
indices	<input type="checkbox"/>	<input type="checkbox"/>
other (please specify: _____)	<input type="checkbox"/>	<input type="checkbox"/>

4. Do you publish quarterly year-on-year growth rates from non-adjusted or from seasonally adjusted data?

From non-adjusted data from seasonally adjusted data Both

If both, is one of them given prominence?

Yes, non-adjusted Yes, seasonally adjusted No, equal

5. If you derive quarterly chain-linked data, please confirm which approach you use for “normal” variables.

Annual overlap

One-quarter overlap

Over-the-year

6. If you derive chain-linked changes in inventories, please describe the approach you use for both annual and quarterly data.

7. Do you benchmark quarterly chain-linked estimates to the corresponding annual chain-linked estimates to ensure that the former sum to the latter?

Yes No

If so, how?

Do you benchmark original and seasonally adjusted data separately, or do you seasonally adjust the benchmarked original data?

Benchmark both separately seasonally adjust benchmarked original data

8. Eurostat/OECD envisage including quarterly contributions to growth with the regular quarterly data transmissions for tables 0102, 0104, 0105 and 0106 (e.g. by adding a new price unit code to the standard questionnaire). Do your production systems allow inclusion of contributions with the regular transmissions?

Yes Yes, after modification No

Part II (Quarterly) Changes in inventories

1. Do you directly compile quarterly changes in inventories (P52), quarterly acquisition less disposal of valuables (P53), and/or their total (P52+P53)?

P52 P53 P52 + P53

Do changes in inventories play a prominent role in the balancing of GDP approaches?

Yes No (Please specify if necessary: _____)

2. What annual source statistics on inventories / on changes in inventories do you have available? What quarterly sources (if any) are available? How do you assess their coverage, reliability and appropriateness for use in national accounts?

3. Please describe how quarterly changes in inventories are compiled. Please detail any specific provisions taken to align quarterly P52 with the annual P52, and how (if at all) you use the quarterly source statistics mentioned above. If you use them, do they require extensive adjustments or modifications for use in the QNA?

Attachment 2

Transmission of quarterly contributions to GDP growth

In document CN 599 presented at the NAWG in May 2006, Eurostat had announced a framework for a voluntary transmission of data on quarterly contributions to growth. This note specifies the parameters for such transmissions to Eurostat and OECD.

Context: Transmission of contributions to growth is strictly voluntary. The motivation for this request is that for NSIs already publishing contributions, Eurostat and OECD need to re-disseminate exactly the same values.

Scope: Contributions are welcome for quarterly tables 0101, 0102, 0104 and 0105 (only P51 and P52+P53 in table 0105) of the current ESA95 transmission programme. Application to the corresponding annual tables is straightforward, but not strictly necessary because the reproduction of annual contributions is easily possible from the data already available.

Frequency: with every regular QNA transmission for tables 0101 to 0105.

Format: Transmissions can be done together with the standard transmission of QNA levels, in the same files or in separate files. We propose to distinguish the contributions by the following price assessment codes:

CNTY contribution to GDP volume growth compared to the same quarter of the previous year

CNTQ contribution to GDP volume growth compared to the previous quarter

These two codes can be used in GESMES messages or in the Excel-version of the questionnaire, in the place of CUP, COPPY etc. The seasonal adjustment status indicated shall be that of the source data from which the contributions were calculated.

Unit: Contributions are expressed in percentage points of GDP growth, i.e. the sum of contributions – provided they are constructed to be additive – shall be GDP growth in %. The unit code to be used is "POINTS". The unit multiplier shall be 1. Precision is at the discretion of sender, preferably two decimal digits.

Calculation: Document CN 599 gave an overview of approaches to the calculation of contributions to growth. There is however no general recommendation from Eurostat.

Example

For the euro area, quarter-on-quarter GDP growth in 2006Q2 was +0.88%, of which 0.23 can be attributed to growth in consumption, +0.58 to growth in investments, +0.52 to growth in exports and -0.44 to growth in imports.

A GESMES file for sending the contributions to quarter-on-quarter GDP volume growth in 2006Q2 would contain the following lines:

```
EUR12,TRB1*G,,,,CNTQ,6,POINTS,Q,MIX,S,TOT,,20062,0.88
EUR12,TRP3,,,,CNTQ,6,POINTS,Q,MIX,S,TOT,,20062,0.23
EUR12,TRP5,,,,CNTQ,6,POINTS,Q,MIX,S,TOT,,20062,0.58
EUR12,TRP6,,,,CNTQ,6,POINTS,Q,MIX,S,TOT,,20062,0.52
EUR12,TRP7,,,,CNTQ,6,POINTS,Q,MIX,S,TOT,,20062,-0.44
```

If sent using the Excel-questionnaire, the file would contain a sheet named Q-CNTQ-S:

Questionnaire "ESA 95"			
Table:	0102		
Sheet:	Q-CNTQ-S		
Label:	GDP Identity from the Expenditure Side		
KEY INFORMATION		SENDER	EUROSTAT FOOTNOTES
Reporting Country:	EUR12	Name:	Footnote 1:
Prices:	CNTQ	Telephone:	Footnote 2:
Field_1 (Transaction):	row 23	Fax :	Footnote 3:
Field_2 (Not used):		VERSION	Footnote 4:
Field_3 (Not used):		Version:	Footnote 5:
Field_4 (Not used):		Update:	SPECIFIC ELEMENTS
Time:	col 2	Date :	
Unit:	POINTS	DATA START	SENDER FOOTNOTES
Unit Multiplier:	1	Row :	25
Flag:		Column:	3
Adjustment Type:	S	CONTROL	Footnote 1:
Adjustment Meth.:	MIX	Row :	23
Observation Type:	TOT	Column:	2
			Footnote 2:
			Footnote 3:
			Footnote 4:

Quarter/Year	Time Code	Gross Domestic Product	Final Consumption Expenditure	Gross Capital Formation	Exports	Imports
Code of Transaction		TRB1*G	TRP3	TRP5	TRP6	TRP7
1	2	3=4+5+6-7+8	4	5	6	7
Second quarter	2006Q2	0.88	0.23	0.58	0.52	-0.44