

**Comments on draft SNA chapter:
Chapter 28: Input-output and other matrix-based analyses**

**Deadline for comments: 1 November 2008
Send comments to: sna@un.org**

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This template allows you to record your comments on draft SNA chapter 28 “Input-output and other matrix-based analyses” and, at the same time, makes it easy for us to use your comments in considering revisions to the draft chapter. You may complete any or all parts of the template.

There is no file comparing existing text with draft text for this chapter because the draft is largely new text.

Save this template and send it as an attachment to the following e-mail address:
sna@un.org

Note

The chapter does not attempt to describe IO tables at any length. There are many other documents that do this including the newly released Eurostat manual. The chapter concentrates only on the process of converting the supply and use tables to a symmetric format.

The material in section B was suggested at a stage too late for incorporation in chapter 14 but was felt to be useful to include in this chapter.

There are two large tables needed for the chapter that are still under preparation; these are the table showing the supply and use table with the cross-classification of intermediate inputs by industry and institutional sector and the symmetric IO table. They

will be posted as soon as they are available but should not be a cause for delaying the comment on the chapter.

Part I: General comments

In the space below, please provide any general comments. This may cover e.g. the structure of the chapter, issues missing and (lack of) consistency with other chapters of the 2008 SNA.

General comments:

General comment	<ul style="list-style-type: none"> • This chapter is provides an initial draft, however, the structure and coverage of the chapter does not flow well. Much more needs to be done to provide a well-rounded and structured chapter more focussed on the primary topic, Input-Output Tables. This chapter should clearly describe the steps required to produce them. The text should be separate from the Supply and Use Tables (SUTs) as these have already been covered in Chapter 14 of Volume 1. • Overall comment on SNA 2008 Volume 2. Having now read, and commented on, all the chapters in Volume 2 to date, the sequence of the chapters in Volume 2 should be reviewed and changed. For example, chapters on specific sectors, followed by the Input-Output chapter, and then the others, which are rather mixed and more distant from the core national accounts. An alternative proposal, including a chapter on SAMs, which provides a better, and more logical, flow for Volume 2 is provided below: <ul style="list-style-type: none"> ○ Elaborating the accounts ○ The Government and Public Sectors ○ Households ○ Non-Profit Institutions in the System ○ The Rest of the World Account ○ Input-Output and associated analyses ○ Social Accounting Matrices ○ Satellite Accounts and other extensions of the System ○ Role of capital services in the National Accounts ○ Population and labour inputs ○ The informal sector ○ Links to monetary and financial statistics ○ Measuring corporate activity • Various changes are needed to Section B. However, more importantly, Section B should be removed from this chapter, and included with amendments (see Section B comments) in Chapter 14 of Volume 1. It is not good practice or helpful to the reader of the SNA to have changes/additions in Volume 2 that should appear in appropriate chapters in Volume 1. • Similarly, Section E should be removed from this chapter. The present text on SAMs is not adequate and does not fit well in this chapter. SAMs are important enough to deserve, and would be better served by, having a separate chapter in Volume 2 or added to Chapter 29 Satellite Accounts.
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- A proposed structure to this chapter which will help to address all of my concerns, and be covered in less than 15 pages, could be as follows:
 - Introduction (proposed version provided in the specific comments section below)
 - Structure/basis of SUTs (with reference to Chapter 14 and use of a simplified diagram showing a SUT set-up, and no more than 1 or 2 paragraphs of text, thereby avoiding duplication but still setting the scene for the I-O Tables).
 - Transformation of SUTs (product by industry) balanced at purchasers' prices to SUTs (product by industry) balanced at basic prices. The transformation will generate Domestic Use Table, Imports Use Table and valuation matrices. Three key steps being:
 - Removal of taxes (less subsidies) on products.
 - Re-allocation of distributors' trading margins and transport margins.
 - Removal of imports of goods and services.
 - Different types of technology assumptions used to move asymmetric tables to symmetric tables. In each case provide a 3x3 numeric example to demonstrate the steps.
 - Product by product tables using:
 - Product technology
 - Industry technology
 - Hybrid assumption (as used in the UK)
 - Industry by industry tables using:
 - Fixed industry sales structure
 - Fixed product sales structure
 - Benefits and drawbacks of each type of assumption
 - Particular issues such as:
 - Negatives (what they mean and how they can be removed).
 - Institutional units (benefits and merits of KAU's as opposed to reporting units as used in business surveys).
 - I-O Tables in volume terms (constant prices).
 - Matrix of coefficients.
 - Leontief Inverse.
 - Examples of multiplier analysis and impact analysis with references to direct affects, indirect affects and induced affects.
 - Links to associated I-O analyses, for example, Extended Input-Output Tables (and their applications), Monetary Input-Output Tables, Physical Input-Output Tables.
 - Links to a range of satellite systems and links to extended parts of the National Accounting framework including:
 - Regional Accounts;
 - Environmental Accounts; and
 - Social Accounting Matrices.

All of which can be referred to other documents and SNA 2008 Volume 2 Chapter 29, as appropriate.
- In various places, to avoid lots of detail, references could be used to the *Eurostat Manual of Supply, Use and Input-Output Tables*, as and wherever appropriate.

- Under Section B specific comments below, please note our concerns over the treatment of goods for processing in SUTs and I-O Tables. This is driven, in essence, by the reconciliation of imported parts (classified to certain CPC or CPA products) which are completely transformed into final products (classified to other CPC or CPA products) and exported. Although legal ownership does not change, the economic ownership does change.
- The comments requested in the specific sections below are limited due to the above issues and concerns. I am happy to provide comment on a revised SNA draft of this chapter before the next phase of user comments.

Style and consistency points for this chapter and/or across SNA chapters

This section is evolving and expanding through the process of the feedback provided on earlier SNA chapters. This should be considered as a check list reflecting various issues identified through the chapters to date but the issue(s) may or may not occur in each and every chapter, or in this chapter.

These are a number of specific points which you may wish to consider for “consistency” in the editing of the revised SNA as a whole publication. Examples include:

- There are various occurrences of American spelling and English spelling of words. I do not know which approach you are applying but consistency within each chapter, and across the chapters, is necessary. I would recommend the English spelling (not surprisingly!). For example, “organized” should be “organised”.
- There is an important style point which increases the usefulness for the reader. Many of the cross-paragraph references, for example, if there are exclusions in a list of examples, to know where the exclusions are included elsewhere in the SNA in the same text reference is extremely helpful. Although it is time and resource intensive to cross-check all such references, this needs to be balanced against the value and usefulness for the reader as well as ensuring consistency across the SNA.
- The separation of either a list of examples or list of bullet points need to be consistent across, e.g. “;” followed by for the penultimate point with “and” or use full stops for each point. Whichever the approach, it needs to be the same across the SNA. Also the beginning of a bullet point should start with a capital letter or a lowercase letter, again consistency is needed.
- In the text, reference to tables should be “Table x.x” and not as “table x.x”.
- Use of Latin phrases or the English equivalent written in full? Again, consistency is the underlying theme, I am happy with either approach.
- “Et cetera” when abbreviated should be “etc.” with the full stop, this is often missed.

	<p>Terminology and reference to GDP and GVA</p> <ul style="list-style-type: none"> • There is a need for consistency and correctness in the way references are made to GDP. There is one estimate of GDP and there are three approaches to measuring GDP, production, income and expenditure. When using reference to one approach, it should be written as production approach to measuring GDP and not the production measure of GDP – same applies when referring to the other approaches. In terms of GDP, reference should be to production and not output, however in terms of the industry, output is valid. This approach needs to be used in this chapter and other chapters. • Reference to “current values” should be replaced with “current price values” or “values in current prices”, either version is much clearer. • When referring to value added, it should be made clear whether it is gross value added or net value added. Without the clarification, the text can be misinterpreted.
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Part II: Comments on specific draft paragraphs and sections

All comments on specific draft paragraphs are welcome. They can be about e.g. scope, content and clarity. Proposing a concrete alternative text or table is also possible. For the paragraphs in separate sections, separate forms are used for providing and collecting comments (see below).

A. Introduction (paragraphs 28.1-28.4)

General comment	<p>In line with comments made in the General Comments section, the introduction should be re-focused and a proposed draft is below:</p> <p>Introduction</p> <p>The Input-Output (I-O) framework brings together components of Gross Value Added (GVA), industry inputs and outputs, product supply and demand, and the composition of uses and resources across institutional sectors for a particular economy. This framework breaks the economy down to display transactions of all goods and services between industries and final consumers in the economy for a single period (e.g. quarter or a year). Information can be presented in various analyses but the two key products are:</p> <ul style="list-style-type: none"> • Supply and Use Tables, as covered in Chapter 14, and • Input-Output Tables (Analytical Tables or Symmetric Input-Output Tables). <p>It is worth noting, Input-Output represents a family of associated products,</p>
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	<p>such as Supply and Use Tables, I-O Tables (or Analytical Tables, Symmetric Input-Output Tables), Extended Input-Output Tables (and their applications), Monetary Input-Output Tables, Physical Input-Output Tables, and a range of satellite systems and links to extended parts of the National Accounting framework including Regional Accounts, Environmental Accounts and Social Accounting Matrices.</p> <p>This chapter concentrates on the I-O Tables (also known as I-O Analytical Tables or Symmetric I-O Tables or Derived Tables). The I-O Tables are derived from the Supply and Use Tables data, and other additional sources, forming the theoretical basis for subsequent analyses. These tables contain symmetric (product by product or industry by industry) tables, Leontief Inverse and other diagnostic analyses such as output multipliers. The I-O Tables show separately the consumption of domestically produced and imported goods and services, providing a theoretical framework for further structural analysis of the economy, the composition and the effect of changes in final demand on the economy.</p> <p>Could add a paragraph on the role and purpose of I-O Tables and how they are used, for example, impact analyses, environmental accounts, etc. Then go on to briefly describe the separate sections in the chapter.</p>
28.1	See above comments.
28.2	<ul style="list-style-type: none"> • See above comments. • Section B is not appropriate in this chapter.
28.3	<ul style="list-style-type: none"> • 1st sentence, replace “a pair of” with “the”.
28.4	<ul style="list-style-type: none"> • See above comments. • Section D and E do not fit well in this chapter.

* Insert rows in this Word table for each paragraph on which you wish to comment.

B. Further discussion of the supply and use tables (paragraphs 28.5-28.20)

General comment	<ul style="list-style-type: none"> • See comments in General Comment section, in particular that this section should be in Chapter 14 in Volume 1. • Goods for processing We cannot provide generic guidance for all the cases, as a result, it will be confusing three key aspects: <ul style="list-style-type: none"> (1) no change of ownership has taken place as no transaction has taken place; (2) goods are physically moving across borders and have a value, affecting the trade data; and (3) the goods have changed their characteristics (i.e. parts classified to different products assembled into a different final product, which is a significant transformation).
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The SNA update and the new Balance of Payments Manual suggest that imports and exports should be recorded on a change of ownership basis. However, there is further clarification needed distinguishing economic ownership versus legal ownership. Goods processed in one country on behalf of another will no longer be recorded as imports and exports in the balance of payments and SNA. It is proposed that instead an import and export of a service be shown in the country respective balance of payments. Where the goods are valued and recorded in the country's trade in goods statistics, it is proposed that the imports be recorded alongside the corresponding later exports so that a processing service can be derived from the difference and recorded appropriately in balance of payments and national accounts.

However, this proposal works well where the goods are clearly goods for processing in the original definition. In other words, the goods do not undergo a transformation, but remain essentially the same goods by name, but having undergone some kind of marginal transformation. An example would be car bodies imported for painting and then returned to the car assembly line/sale in the originating country. The appropriate product description and trade classification code would not change, but the returned bodies would be of higher value reflecting the paint finishing service provided. Ownership has not changed, and so the proposed recording of a service charge for painting would be recorded in the balance of payments and national accounts.

It is not yet clear what is proposed for components supplied by a parent company to a group subsidiary or another producer unit in another country for assembly, and then returned to the originating country in assembled form. In the example of a truck, the goods imported to the assembling country would be components and classified as such in the trade in goods statistics. The final truck would be classified and described quite differently in the trade statistics, and the assembling country would want to show a production structure in the Supply and Use Tables whereby labour, capital and intermediate products are combined in the production of trucks. In this case, it seems more appropriate to continue to impute a change of ownership (need to distinguish economic ownership versus legal ownership) in the components and assembled trucks. If the only criterion applied is change of ownership, then we would be in danger of reducing the manufacturing process as historically recognised into a manufacturing service, with only labour and capital inputs recognised in the creation of the finished trucks, i.e. the loss of the production function. The truck would be considered to be produced in the country of the principal, benefiting from a service provided by the second country which actually manufactures the truck from components.

By not valuing the export of parts and imports of the assembled product separately, implies you cannot balance the products meaningfully. It is also worth noting that an assembly service is an industrial service and constitutes manufacturing output - some people have missed this point.

28.5 to 28.10	<ul style="list-style-type: none"> • The Tables 28.1, 28.2 and 28.3 should be shown with the off-sets in the transport and insurance columns, such that they should sum to zero. • The tables should show the other product headings thereby showing a complete picture. • Table 28.4, the sequence of products is incorrect, for example, Public administration should not be the last product, Class 91 should appear before Classes 92-93.
28.11 to 28.18	<ul style="list-style-type: none"> • Need to show the treatment of different types of examples including numerical examples in tabular form and not within the text, like: <ul style="list-style-type: none"> ○ All the activity by the principal and the producer working on the principal's materials is undertaken within the same resident economy; and ○ The principal is one resident economy and the producer working on the principal's materials is in another resident economy.
28.19 to 28.20	<ul style="list-style-type: none"> • See comments in General Comment section on "reference to GDP and GVA". • 1st sentence, the reference to "three estimates of GDP" is incorrect. There is one estimate of GDP but three approaches to measuring GDP: production, income and expenditure. • When balanced in an integrated form, the SUTs can provide coherent and consistent components which also provide the estimates in the Production Accounts and Generation of Income Accounts, both by industry and by institutional sector. • Last sentence, remove extra space in table reference, i.e. "table 28. 5".

* Insert rows in this Word table for each paragraph on which you wish to comment.

C. Deriving an input-output table (paragraphs 28.21-28.41)

General comment	<ul style="list-style-type: none"> • See comments in the General Comment section. • 3x3 numerical example would be useful in illustrating the product by product transformation, similarly for the industry by industry and hybrid transformations.
28.21 to 28.26	<ul style="list-style-type: none"> • See comments in the General Comment section. • This section needs to provide some diagrams to aid the reader in order to follow the sequence of steps. For example, Paragraph 28.23 assumes the reader knows how to get to this stage. • The quadrant references in Paragraph 28.21 are confusing, and may be wrong. It would be better to describe explicitly the part of the matrix being referred. • In Paragraph 28.22, need to explain that SUTs can be square or rectangular. However, Symmetric I-O Tables have to be square to allow for matrix inversion. • Need to refer to the measurement of direct, indirect and induced affects.
28.24	1 st sentence should be rewritten as Leontief led much of the thinking and development of the I-O framework but did not invent the idea.

28.27 to 28.28	<ul style="list-style-type: none"> • For Point 28.28 a., should provide a supporting example. • In the last paragraph, need to also mention the hybrid option.
28.29 to 28.41	<ul style="list-style-type: none"> • 3x3 numerical example would be useful in illustrating the product by product transformation, similarly separate examples for the industry by industry and hybrid transformations.
28.32	<ul style="list-style-type: none"> • 1st sentence, need to show the evidence to support this statement. There are many users of product technology based outputs and many users of industry technology based outputs. • 2nd sentence, similarly, where is the evidence to support these comments.
28.33	1 st sentence, need to explain why and how this can occur.
Table 28.7	It is not clear how to establish this table, may be better to break it into the steps covering the different technologies.
28.37	1 st sentence, need to provide evidence to support this statement.
28.38	<ul style="list-style-type: none"> • Need to explain why and how the negatives can be generated? In addition, need to provide the different techniques to remove them, for example, r.A.s., Almon Method, etc. More importantly, the existence of negatives could imply a structural problem with any of the previous steps, SUTs at purchasers' prices, imports, margins, taxes or even all of them. • Penultimate sentence is wrong as negatives can be generated using a product technology assumption but not the industry technology assumption.
28.39	<ul style="list-style-type: none"> • The UK uses the hybrid option, and is also preferred by some countries, for example, I think the USA may do so. Although not easy, this approach produces a better quality coefficient matrix and in turn, Leontief Inverse. • This paragraph needs more detail and should provide examples why the hybrid approach is better. For example, the electricity industry puts up pylons (which is construction output). However, the inputs to produce this output are not the same as those needed to produce the principal product of the electricity industry. In addition, they are not the same as the inputs to producing a building or dwelling (i.e. construction output) but a small subset of the output of the construction industry which has a different input structure. Thus a hybrid approach is needed.
28.42	<ul style="list-style-type: none"> • Need to express the preferred approach is to start with SUTs balanced at purchasers' prices, which are then transformed to SUTs balanced at basic prices, in both cases these are asymmetric tables. The latter tables are then transformed to symmetric tables using the assumptions covered. • It should also be recognised, although some countries start with a symmetric I-O Table for many reasons, there are various problems, for example, survey data is not collected on this basis and the transformation of intermediate consumption from purchasers' prices to basic prices. • 2nd sentence, replace "...are analytical constructs," with "...is an analytical construct,".

* Insert rows in this Word table for each paragraph on which you wish to comment.

D. Expressing the sequence of accounts in matrix form (paragraphs 28.42-28.52)

General comment	<ul style="list-style-type: none"> This should start from paragraph 28.44? “E” would be better described as the “domestic economy” separate from the rest of the world.
Table 29.8	<ul style="list-style-type: none"> This table should be numbered 28.8? This schematic is rather confusing and provides an incomplete picture by mixing final consumption with use of income accounts. Supply components are incorrect. It would be better to use “part of” the simplified example from the <i>Eurostat Manual of Supply, Use and Input-Output Tables</i>.
Table 28.9	Again, this table is not clear to follow, and would be better to use the simplified example from the <i>Eurostat Manual of Supply, Use and Input-Output Tables</i> .
28.44	Should be labelled as part 1.
28.50	“Expanding the matrix” should be renumbered as part 2.

* Insert rows in this Word table for each paragraph on which you wish to comment.

E. Social accounting matrices (paragraphs 28.53-28.56)

General comment	See comments in the General Comment section.

* Insert rows in this Word table for each paragraph on which you wish to comment.

Part III. Other specific comments

You are welcome to make other specific comments. To assist you in doing so, the following points are provided as a guide to the types of points on which you might wish to comment. Note, though, that you are not restricted to commenting on only these points.

1. Is the alternative treatment of the CIF to FOB adjustment clear? No
2. Is the impact of the revised treatment of goods for processing on the SUT clear? No
3. Is the discussion on how to convert the SUT to IOT clear? No

4. Is the matrix presentation of the sequence of accounts clear? No
- 5 Are there references that should be added (especially for SAMs)? Yes

Specific comments:

Specific comments	
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You are also welcome to comment directly on the PDF file of the draft chapter. Please do so by using Adobe Acrobat Version 6 or 7.

If you don't have Adobe Acrobat Version 6 or 7 and would like to make detailed comments, please send a message to sna@un.org requesting a version of the draft chapter that permits you to comment. To optimize your commenting tools, please download Adobe Reader 7.0 for free from <http://www.adobe.com/products/acrobat/readstep2.html>