

## Value-added (at market prices) for a given set of locations, and for a given set of residents. From SNA1968 to SNA1993 to SNA2008

### Abstract:

*This paper will argue that the name of the now obsolete concept gross national product (GNP) was a more precise name (at the level of principles) for the most widely used of National Accounts' concepts: "Value-added for residents of the economic area covered, at market prices". Today it is still unfortunately called "Gross Domestic Product", with the acronym GDP.*

*If too much confusion is risked using GNP onwards, then "Gross Residents' Product", with acronym GRP, is suggested as this would be precise.*

*In order to reduce potential confusion in naming components of gross product across combinations of geographic locations and resident-groups it is suggested that names of products and incomes follow this template:*

*{location delimiter}{Gross/Net}{resident-group delimiter}{Product/Income}*

*The names of other National accounts concepts could follow this template:*

*{(location delimiter)}{(resident-group delimiter)}{Concept}*

*Reinventing such a parallel set of location-based Value-added concepts should also enable National Statistical Institutes to ensure that at least for that set of concepts they are (still) able to attain the high/complete coverage which their statistical means make possible.*

---

<sup>1</sup> Latest revision: May 10, 2017. Version v0r15. Printed: May 16, 2017, at 10:09:05.

eMOL09317

Keywords: GNP, GDP, national accounts

## 1. Introduction<sup>2</sup>

Globalization has been on the agenda of National Statistical Institutes (NSIs) for a number of years. Companies have spread their internal and external supply-chains over many countries for more than twenty years which has challenged the statistical description of national economies.

After many deliberations and consultations the international national accounts community has decided to adopt many changes to the rules of the old manual *System of National Accounts 1993* (SNA1993) and in doing so created the new *System of National Accounts 2008* (SNA2008) as the basis of which all countries are expected to make their national accounts data conform.

Over the last five years many countries have published figures conforming to the new manual. This required many revisions of their statistical production systems which produce their national accounts. For countries which are members of the European Union (EU), the transition has been between the European versions: from ESA1995 to ESA2010.

This paper will argue that the name of a different obsolete concept *gross national product* (GNP) has become more relevant than ever before and yet it has been dropped from the latest manual. In fact it should replace the name “Gross Domestic Product”, with the acronym GDP, for the concept of “Value-added for residents of the economic area covered, at market prices”. If too much confusion is risked using GNP, then “Gross Residents’ Product”, with acronym GRP, would be more precise.

Actually two templates are proposed for the names of national accounts’ aggregates to make it possible to talk precisely about the concepts we have and the concepts we need.

The structure of the paper is as follows. First some observations are made about definitions of some of the most important aggregate concepts of the manuals. Second the relations between these concepts are clarified, and illustrated. Third some consequences are argued, and finally conclusions are drawn.

The paper is written for a reader who is comfortable with national accounts’ terminology and discussions of manual issues, yet not an expert in all areas.

## 2. Preliminary observations

Describing the economic activity taking place in an economy statisticians use two different kinds of unit: the *institutional unit* and the *local kind-of-activity unit* (lkau). The former is generally speaking a decision-making unit, owning

---

<sup>2</sup> This paper continues the author’s investigation of the manuals of national accounts in order to bring out the essential structures. The first result of which was presented at the IARIW-OECD-conference “W(h)ither the SNA?”, Paris 2015: Osterwald-Lenum (2015).

its own resources and directing their use, whereas the latter is subdivided sufficiently for it to have a well-defined geographic location and a well-defined kind-of-activity to be classifiable using (international) industrial classifications like ISIC.

Every institutional unit has at least one local kind-of-activity unit, but often has more.

Every institutional unit is deemed to be resident to some economic area, according to a center-of-economic-activity criterion.

To each country a well-defined specific economic area is assigned.

Thus it is well-defined to talk about the residents of a specific economic area or country.

It is also well-defined to talk about the activity taking place on the territory of a country or economic area.

This motivates the illustration in table 1 which brings out the necessary and sufficient underlying structure of the concepts of Gross Domestic Product (GDP), Gross National Income (GNI), and Gross National Product (GNP), which the following discussion will relate to.

**Table 1 of combinations of elements of concepts of activity/value added<sup>3</sup>**

| Relative to a country<br>/ an economic area | Economic territory       |          |     |     |
|---|--------------------------|----------|-----|-----|
|   | Production / Value added | Domestic | RoW | Sum |
| Institutional units                         | Residents                | A        | B   |     |
|   | non-residents            | C        | D   |     |
|   | Sum                      |          |     | GWP |

*Note: RoW is Rest-of-the-World, GWP is an acronym for GrossWorldProduct*

*What would be appropriate acronyms, and associated concepts, be for each of the empty cells of this table?*

This is the focus of the following analysis and discussion. An additional bonus would be to have easy-to-remember and -use acronyms for the cells marked A-D also.

<sup>3</sup> The terms “residents” and “non-residents”, for the tables rows’ headings, are used as defined according to the latest manuals, as the progression in sophistication in the treatment of institutional units has greatly increased over time, especially as NSIs have had to grapple with the statistical consequences of fragmented supply-chains across countries.

### 3. Analysis

The analysis will take its departure from the concepts of SNA1968, as these are rich enough to encompass those of the SNA1993 and SNA2008, at exactly this level of aggregation, even if their valuation principles differ.

The 1968-manual uses two concepts which are related to these issues: “domestic”, in gross *domestic* product, and “national”, in gross *national* income. How are these defined?

- What does *domestic* mean?
- What does *national* mean?

*In this discussion we take one specific country as the country in focus.* Its economic area is referred to as (geographically) “Domestic”, and all other areas are referred to as (geographically) “Rest-of-the-World” (RoW), relative to it.

“National” seems to have been used consistently in connection with incomes in order to refer to “of residents” or “residents”<sup>4</sup>.

#### a. SNA1968

For the purposes of accounting for the economic activity taking place in the domestic territory in SNA1968 the residence concept was extended to even non-domestic residents, confer §5.96 and the definitions quoted in Appendix 1 concerning other type of institutional units.

§5.96 “... . *Resident producers are defined so that all, and solely, production taking place on the domestic territory of the given country is encompassed. The production accounts of the system therefore relate to the activity of resident producers, and not to the return to resident factors of production. In other words, the concept of domestic production is used.*”

“Domestic territory” was used for the domestic economic territory, in a way which does not differ substantially from the later definitions, which has and had a well-defined geographic delimitation.

“Residents” as a label was defined to include the activities of units which from an institutional unit point of view would be non-residents, by the standards of the later manuals. Like a foreign directly owned branch factory local kind-of-activity unit.

---

<sup>4</sup> SNA1968, §7.4 and §7.5, which are quoted in appendix 1.

**Table 2 of combinations of elements of concepts of activity/value added for SNA1968**

| Relative to a country<br>/ an economic area | Economic territory       |          |                |       |
|---|--------------------------|----------|----------------|-------|
|   | Production / Value added | Domestic | RoW            | Sum   |
| Institutional units                         | Residents                | A        | B              | ?     |
|   | non-residents            | C        | D              | ?     |
|   | Sum                      | "GDP"    | RoW's<br>"GDP" | [GWP] |

*Note: RoW is Rest-of-the-World, GWP is an acronym for GrossWorldProduct*

Table 2 presents the place where GDP actually fits the coverage in terms of SNA1968, even if the classification of “resident” has involved relabeling of all non-resident units’ which are producing on the Domestic territory (of the country in focus). But notice also that the GDP for all other countries’ economic territory will have a similar coverage. Thus ensuring that the sum of GDP of the country in focus and GDP of all other countries, add up to Gross World Product (GWP). This relabeling (of producing units) has made it difficult to label the sums of the upper two rows of Table 2 properly.

The analysis has shown that the use of “Domestic” in GDP was ensured by the associated relabeling of non-resident units producing on the “Domestic” territory (of the country in focus).

This relabeling of non-resident units producing on the country’s territory or economic area into (notional) resident unit, *and* the respective relabeling of the country’s resident units’ production overseas (i.e. on the economic area of all other countries) from “resident” into “non-resident” (as seen from the country in focus) requires a modification of table 1, which is given in table A.4.1 in appendix 4.

### **b. SNA1993**

The intention of how GDP should be defined is stated very clearly in §1.28:

*“the GDP of a country is equal to the sum of the gross values added of all resident institutional units engaged in production (plus any taxes, and minus any subsidies, on products not included in the value of their outputs).”*

And to make the distinction clear about its relation to a location-based concept of value-added, the quote continues:

*“This is not exactly the same as the sum of the gross values added of all productive activities taking place within the geographical boundaries of the national economy. Some of the production of a resident institutional unit may take place abroad - for example, the installation of some exported machinery or equipment or a consultancy project undertaken by a team of expert advisers working temporarily abroad. Conversely, some of the production taking place within a country may be attributable to foreign institutional units.”*

The concept of residence was applied more rigorously in SNA1993, as evidenced in the following quotes:

*§2.22 ... “The concept of residence in the System is not based on nationality or legal criteria. An institutional unit is said to be a resident unit of a country when it has a centre of economic interest in the economic territory of that country - that is, when it engages for an extended period (one year or more being taken as a practical guideline) in economic activities on this territory.”*

Location adjectives. “Domestically” is used as the opposite of “from abroad” (SNA1993, §6.238, p.192).

Let us look at the definitions of GDP according to the SNA1993, §2.171. The definitions are listed in the appendix of the paper for easy reference.

“Gross domestic product (GDP) at market prices represents the final result of the production activity of resident producer units.”

The dilemma of the use of the adjectives “domestic” and “national” is admitted in §7.17

*“... GDP at market prices is also essentially a production measure as it is obtained by summing the gross values added of all resident institutional units, in their capacities as producers, and adding the values of any taxes, less subsidies, on production or imports not already included in the values of the outputs, and values added, of resident producers.”*

*“GNI is obtained by summing the balance of primary incomes of the same resident institutional units.”*

*“It follows that the difference between the numerical values of GNI and GDP is equal to the difference between the total primary incomes receivable by residents from non-residents and the total primary incomes payable by residents to non-residents (i.e., net income from abroad).”*

*“However, as both GDP and GNI are obtained by summing over the same set of resident institutional units, there is no justification for labelling one as “domestic” and the other as “national”.”*

*“Both aggregates refer to the total economy defined as the complete set of resident institutional units or sectors. The difference between them is not one of coverage but the fact that one measures output while the other measures income.”*

***“Both have an equal claim to be described as domestic or as national.”***

*“However, as the terms “domestic” and “national” are deeply embedded in economic usage, it is not proposed to change them but to*

*emphasize the fact that GNP is actually an income concept by renaming it GNI.”*

***A preliminary conclusion is that at the level of principles the big shift from a location-based definition of “GDP” to a sum-over-residents-based definition happened with the change from SNA1968 to SNA1993.***

Some of the details of how strictly this change was implemented is a subject which should be studied more closely. This will require an investigation into not just the concept of value-added but also of all the components from which value-added is defined<sup>5</sup>, and which are closely related to the supply-use and commodity-flow frameworks.

**Table 3 Relations between SNA1993 concepts of activity/ value added**

| Relative to a country<br>an economic area | Economic territory |          |     |                             |
|---|--------------------|----------|-----|-----------------------------|
|   | Production         | Domestic | RoW | Sum                         |
| Residents                                 |                    | A        | B   | “GDP”                       |
| Institutional units                       |                    |          |     | RoW-<br>residents’<br>“GDP” |
| non-residents                             |                    | C        | D   |                             |
| Sum                                       |                    | E        | F   | GWP                         |

Where

GDP(SNA1993) = Gross Domestic Product (according to SNA1993)  
= Residents part of Gross World Product

RoW-residents’ GDP (SNA1993) = Gross Domestic Product for non-residents  
= Non-residents’ part of Gross World Product

GWP (SNA1993)= Gross World Product = GDP + RoW-residents’ GDP

A = Gross Product of Residents on Domestic economic area  
= Domestic part of GDP (SNA1993)

B = Gross Product of Residents on RoW economic area  
= Rest-of-World part of GDP (SNA1993)

C = Gross Product of Non-residents on Domestic economic area  
= Domestic part of Non-residents’ GDP (SNA1993)

D = Gross Product of Non-residents on RoW economic area  
= Rest-of-World part of Non-residents’ GDP (SNA1993)

E = Gross Product on Domestic economic area<sup>6</sup>

<sup>5</sup> I.e. production value and intermediate consumption, as well as their breakdown on domestically produced versus imported products.

<sup>6</sup> Of residents and of non-residents.

= Domestic part of GWP

F = Gross Product on RoW economic area<sup>7</sup>  
= Rest-of-World part of GWP

From the above analysis of SNA1968 definitions it was apparent that also in the context of SNA1993 *we need to be acutely aware of the de facto non-resident activity which is relabeled “resident” for the purposes of the definition of which activity on the domestic area which is included in GDP.*

Extensions of the label “resident” to (otherwise defined) non-resident units for the purpose of inclusion of activity in GDP is most precisely defined in the chapter XIV, section “B. Residence”, pp.402-407, §§14.7-14.34. Especially on Attribution of production the many “exceptions” are stated clearly:

*§14.23: “Production undertaken by the personnel (and plant and equipment) of a resident unit outside its economic territory is to be treated as part of the production of the host country and the unit treated as a resident unit (branch or subsidiary) of that country if it meets the conditions noted above (see paragraph 14.22 above).”<sup>8</sup>*

*§14.24. “ “Offshore” units engaged in manufacturing processes (including assembly of components manufactured elsewhere) are residents of the economy in which they are located.”<sup>9</sup>*

These “exceptions” show that, at the practical level of compiling the figures of GDP, the idea of “Domestic” to have a geographic connotation was still strong.

*The problem with the statement emphasized by bold and italics above (in §7.17) is that the author of these lines either*

- a) makes the big mistake of not recognizing that “domestic” has a specific geographical dimension, widespread in the SNA manual text, where “national” everywhere refers to sums over resident institutional units, and thus ignoring that these two terms are not equal, or*
- b) tries to lead the reader to believe that domestic and national mean the same,*

*both of which, the present discussion has indicated, is/are wrong.*

*Such misperception may not be unusual for economists of almost closed economies (as the error they would make would be minor), but would be very visible for economists of small, open economies.*

**Gross national income (GNI)**, i.e. the gross income of all residents of the economic area. Thus “national” here means “of residents, no matter from

<sup>7</sup> Of residents and of non-residents.

<sup>8</sup> Excerpt, full quote in appendix 3.

<sup>9</sup> Excerpt, full quote in appendix 3.



where in the world it comes". A more precise term would be *Gross Residents' Income*, if we have to avoid "national" altogether.

Also instead of *GNP* (which is the better term for the concept currently called "GDP") we might call the concept *Gross Residents' Product* (GRP).<sup>10</sup> Then the (new) GDP would be the sum of the domestic part of GRP and the domestic part of G(nR)P, making (new) GDP explicitly location based value-added at market prices. I.e. gross value added at market prices for all activity taking place on the economic territory of the country.

In table 4 the suggested terms are given.

**Table 4 Recommended labels for concepts of activity/ value added**

| Relative to a country<br>/ an economic area | Economic territory       |          |         |                   |
|---|--------------------------|----------|---------|-------------------|
|   | Production / Value added | Domestic | RoW     | Sum <sup>11</sup> |
| Institutional units                         | Residents                | A        | B       | GRP               |
|   | Non-residents            | C        | D       | G(nR)P            |
|   | Sum <sup>12</sup>        | GDP      | G(RoW)P | GWP               |

Where

GDP = Gross Domestic Product = Domestic part of Gross World Product

GRoWP = Gross Rest-of-the-World Product =

GRP = Gross Residents' Product

GnRP = Gross non-Residents' Product

GWP = Gross World Product = GDP + R(RoW)P = GRP+GnRP

GDP = Gross Domestic Product

= Domestic part of Gross World Product

G(RoW)P = Gross Rest-of-the-World Product

= Rest-of-the-World part of Gross World Product

GRP = Gross Residents' Product

= Residents' part of Gross World Product

G(nR)P = Gross non-Residents' Product

= Non-residents' part of Gross World Product

GWP = Gross World Product = GDP + R(RoW)P = GRP+G(nR)P

A = Gross Product of Residents on Domestic economic area

= Domestic part of GRP

= Residents' part of GDP

<sup>10</sup> Also here we need continually to remind ourselves that "Residents" is relative to the country in focus.

<sup>11</sup> Horizontal.

<sup>12</sup> Vertical.

- B = Gross Product of Residents on RoW economic area  
 = Rest-of-World part of GRP  
 = Residents' part of G(RoW)P
- C = Gross Product of Non-residents on Domestic economic area  
 = Domestic part of G(nR)P  
 = Non-residents' part of GDP
- D = Gross Product of Non-residents on RoW economic area  
 = Rest-of-World part of G(nR)P  
 = Non-residents' part of G(RoW)P

The elegance of this naming convention is that it extends easily, in a straight forward manner, also to geographic subdivisions of the economic area as well.

What would this require of the classification of SNA1993?

For a start replace the word "National" with "Residents"<sup>13</sup>.

### **SNA2008**

At the level of principles not much changed in the definition of GDP from SNA1993 to SNA2008, but at the practical level the transition of GDP from location-based concept to a residents-based concept was made even more complete.

This is reflected in the missing geographic locational dimension of activity which shows up as very modest ambitions in the section on regional accounts<sup>14</sup>, which has been reduced:

§.18.50:

"Assigning the transactions of national institutional units by region raises even more complex issues to the point where the usefulness of attempting to do so may be questioned." ...

§.18.51:

"These conceptual difficulties partly explain why no country establishes the complete SNA accounts for every region. In most cases regional accounts are limited to recording production activities (with conceptual problems arising for locating some of them, such as transportation and communication) by industry and more complete accounts for institutional sectors composed of regional units, such as households and local and state government. Establishing accounts for goods and services and input-output tables by region does not raise insoluble conceptual issues, though it involves treating deliveries to and from other regions as exports and imports. However, the practical difficulties of doing so are very considerable in the absence of a sophisticated system of transport statistics."

<sup>13</sup> Exceptions are noted here: ... .

<sup>14</sup> SNA2008, chapter 18, , pp.399-402. Covering just 10 paragraphs 18.45-18.54.

**Table 5 Relations between SNA2008 concepts of activity/ value added**

| Relative to a country<br>an economic area | Economic territory |          |     |        |
|---|--------------------|----------|-----|--------|
|   | Production         | Domestic | RoW | Sum    |
| Institutional units                       | Residents          | A        | B   | GDP    |
|   | non-residents      | C        | D   | G(nR)P |
|   | Sum                | ?        | ?   | GWP    |

The result of this transition is that “Domestic” has lost its location connotation completely. At the level of communication and clear speaking this transition has raised obstacles which need not be there.

GDP looks like a wrong acronym for the actual concept as it is defined in the SNA2008.

Gross value added at market prices of value added for all resident institutional units.

Illustration of the bad choice of name and acronym of the most central National Accounts-concept comes out loud and clear in the conceptually meaningful but somewhat linguistically odd statement: “please define the domestic part of Gross Domestic Product (GDP)”.

## Consequences

Covering all economic areas with figures for their respective economic areas in order to add them up to the Gross World Product has been the objective of the UN and other institutions of global reach.

With the manual SNA1968, every country would just have to derive figures for GDP (as defined in that manual) to achieve global coverage. I.e. figures which only had to cover their own economic area.

On the basis of the (SNA1993 and) SNA2008 achieving the same objective has become somewhat more difficult. Partly taking GDP at its face value (defined in SNA2008) all countries would have to cover all its (economic) residents. With economic activities spread globally and ownership relations partly opaque even the most advanced countries would have a hard time, and it would need to rely on reports from the National Statistical Institutes/agencies (NSIs) of other countries in order to piece together their own report.

However good-intentioned this may have been. Problems have mounted and the resulting figures have surprised even the most hardened economists.

Perhaps it is time to roll back a little, rather than risk undermining the otherwise hard-earned reputation of the figures of the national accounts?

In appendix 3 consequences of a few changes of the new manual over SNA1993 for other components of the national accounts are analyzed.

#### 4. A patch? Two suggestions

Here I present two different sets of names which would be more exact and lead fewer people astray.

##### a. The shortest names

Relative to the SNA2008 the simplest patch would be to rename the concepts used according to their actual meanings, drawing on table 4:

##### **The concept “Gross Product of residents of an economic area”:**

should have its name changed  
from the present “Gross Domestic Product” (GDP)  
to “Gross Residents’ Product” (GRP), or “Gross National Product”  
(GNP)

##### **Location-based concepts should be (re-)invented:**

Domestic part of World Gross Product should be called  
“Gross Domestic Product” (GDP)

With these suggested name there is a risk that people who know a little of previous NA manuals get confused.

##### b. The most systematic and logical names

Confusion among people with knowledge of older manuals would be contained by ensuring that none of the new ones coincide with any of the old exactly.

A set of new names are defined which follow this template:

***{location delimiter}{Gross/Net}{resident-group delimiter}{Product/Income}***

Fore example:

- “Domestic Gross Product” would be (if the country in focus is the USA)
  - Gross Product of Residents or non-residents on the US economic territory; which would be
  - Gross Product on US economic territory.
- “Gross Residents’ Product” would coincide with
  - the currently defined GDP.
- “Domestic Gross Residents’ Product” would be
  - the part of the currently defined GDP, located on the US territory.

##### c. Discussion

The set of shortest names has the advantage that they would be easier to remember and use in speech. Their drawback would be the lack of the highest degree of systematic nomenclature. From practical experience a nomenclature

is better if it conforms to a strictly systematically structured nomenclature, which allows users to decode the meaning of the underlying concept from its name, rather than have to remember its definition.

The second set of suggested names has the advantage of easily being decoded by a reader, but at the expense of simplicity of their spoken name. One additional advantage is that this set of names is constructed according to a template guideline which should generalize and yields a conceptually seamless variety of other location-based concepts, like those which are relevant for regional accounts and for supra-national accounts at every level of aggregations.

For those reasons the latter set of suggested concepts are preferred. Embrassing this recommendation this author hopes that only the difficulties of getting data should challenge statisticians, not an unhelpful conceptual nomenclature.

A patch repair of the SNA2008- manual could be implemented most simply in a brief addendum to the manual, like the addendum to the SNA1993 treating financial derivatives among other issues.<sup>15</sup>

---

<sup>15</sup> See list of references: SNA1993update.

## 5. Conclusion

The investigations of the meaning of the labels “domestic”, “resident” and “national” required us to return to the SNA1968 to understand “domestic” in GDP (Gross Domestic Product). There it matched the location connotation of the word due to reclassification of non-resident units which produced anything into “resident” units.

In SNA1993 the general definition of resident was made even more fundamental, but still resident notional units were defined to remove any major production by non-resident units on the domestic area. This was mostly apparent in the definition of imports and exports.

With the SNA2008 the concept of resident units (for corporations and enterprises) was brought completely in line with BOPM6. Only few exceptions of reclassification are left. Consequently non-resident production on the domestic area is not zero by construction anymore. Like with SNA1993 this is most apparent in the definition of imports and exports which now has all but lost change-of-location connotation to a change-of-ownership criterion between the involved institutional units.

The risks of this new approach is that no NSI can be sure it is actually including and excluding what it is required by the manual to include respectively exclude for the statistical purposes, and the locational anchoring of value-added concepts has been lost.

Despite these changes this paper has provided a set of concepts which can help us speak sensibly about the concepts we have, and the concepts we need.

Drawing on quotes from the later manuals, SNA1993 and SNA2008, it becomes apparent *that the “domestic” of GDP, as the concept is defined today is a misnomer*. The problem is acutely apparent in the quite sensible question “What is the domestic part of GDP for a given country?”<sup>16</sup>

From the discussions in this paper it seems most useful to abandon the use of the label “national” from national accounts’ concepts’ names, due to potentially confounding associations to citizenship.<sup>17</sup>

We should retain the labels which most closely and directly are associated with the two important relationships of units to economic areas:

- the actual geographic location of activities, and
- the economic residence of the agent/unit (relating to a unit’s associated institutional unit).<sup>18</sup>

---

<sup>16</sup> Meaning: “what is the part of GDP for the country which takes place on the economic territory of the country?” The answer might be 80% in some specific instance. The question is a perfectly sensible question, but the correct answer brings out the misnaming character of the “domestic” part of GDP.

<sup>17</sup> Citizenship (and holding a passport from a country) is not a mapping onto countries, as some are citizens of more than one country.

For components of gross product (or income) across combinations of geographic locations and resident-groups it is suggested that names follow this template:

*{location delimiter}{Gross/Net}{resident-group delimiter}{Product/Income}*

The names of other National accounts concepts could follow this template:

*({location delimiter})({resident-group delimiter}){Concept}*

**Table 6 of combinations of elements of concepts of activity/value added<sup>19</sup>**

| Relative to a country<br>/ an economic area | Economic territory       |          |       |                   |
|---|--------------------------|----------|-------|-------------------|
|   | Production / Value added | Domestic | RoW   | Sum <sup>20</sup> |
| Institutional units                         | Residents                | A        | B     | GRP               |
|   | Non-residents            | C        | D     | GnRP              |
|   | Sum <sup>21</sup>        | DGP      | RoWGP | WGP or GWP        |

Where

DGP = Domestic Gross Product = Domestic part of Gross World Product

RoWGP = Rest-of-the-World Gross Product

GRP = Gross Residents' Product

GnRP = Gross non-Residents' Product

GWP = Gross World<sup>22</sup> Product = DGP + (RoW)GP = GRP+GnRP  
= WGP = World<sup>23</sup> Gross Product

A = DGRP = Domestic part of GRP  
= Residents' part of DGP

B = (RoW)GRP = Rest-of-World part of GRP  
= Residents' part of (RoW)GP

C = DGnRP = Domestic part of GnRP  
= Non-residents' part of GDP

D = (RoW)GnRP = Rest-of-World part of GnRP  
= Non-residents' part of (RoW)GP

<sup>18</sup> Even the national accounts' concept of resident requires an agreement between NSIs across countries to avoid double counting. This becomes evident from the expanded version of Table 1 which is presented in appendix 4 as Table A.4.1.

<sup>19</sup> This table presents the suggested names which are in accordance with the second alternative patch mentioned under section 4.b.

<sup>20</sup> Horizontal.

<sup>21</sup> Vertical.

<sup>22</sup> Here it is a shorthand for "all economic areas of the World".

<sup>23</sup> Here it is a shorthand for "all residents of the World".

In appendix 0b the same template used above has been applied for constructing names for similar subdivisions of all the concepts of the supply-use identity.

## References

Commission of the European Communities:

- “*European System of (regional and) national accounts*”, Luxembourg, 1995. (**ESA1995**)
- “*European System of (regional and) national accounts*”, Luxembourg, 2010. (**ESA2010**)

Commission of the European Communities, IMF, OECD, United Nations and World Bank:

- “*System of national accounts*”, United Nations, New York, 1993. (**SNA1993**)
- “*Updates and Amendments to the System of national accounts*”, Studies in Methods, Series F/2.Rev.4, Addendum 1, United Nations, New York, 2004. (**SNA1993update**)
- “*System of national accounts*”, United Nations, New York, 2008. (**SNA2008**)

International Monetary Fund:

- *The Balance of Payments and International Investment Position Manual*, sixth edition. Washington, D.C., 2009. (**BOPM6**)

Osterwald-Lenum, Michael:

- “*Sketch of Elements of a Measurement Theory of Economics as an Extension of the Current Sequence of SNA Manuals*”, OECD-IARIW conference paper, April 2015.

## Appendix 0a: more structure from SNA1993

We may expand the illustration by reminding ourselves of some basic identities which are basic for a system of national accounts based on a commodity flow system:

$$(A.1)^{24} \quad Y = X - V + Spxz$$

$$(A.2)^{25} \quad Y + M = Cp + Cg + Ip + Ig + E$$

$$(A.3)^{26} \quad X + M + Spxz = V + Cp + Cg + Ip + Ig + E$$

Y- GDP in market prices

X – production value, in basic prices

---

<sup>24</sup> SNA1993, table 2.4, “Equations”, page 55: (1)

<sup>25</sup> SNA1993, table 2.4, “Equations”, page 55: (2), slightly modified.

<sup>26</sup> A.1 substituted into A.2.



M – imports, in basic prices  
Spxz – product taxes less product subsidies  
V – intermediate consumption, in market prices  
Cp – private consumption, in market prices  
Cg – government consumption, in market prices  
Ip – private gross capital expenditure, in market prices  
Ig – government gross capital expenditure, in market prices  
E – exports, in market prices

The Table 1 of the main text of this paper may actually be repeated not just for the value added (in market prices), but for all the components mentioned in equation (A.3).

## Appendix 0b: Template names of different parts of other concepts

We are now able to generate names for all the cells, column sums and row sums of the tables following the recommended template-structure.

*Unfortunately a lot of parentheses are needed in making sure the structure of each name is unambiguous, which in practice should be dispensed as far as possible without creating ambiguity.*

**Table A.1 of combinations of elements of concepts of production value**

| Relative to a country<br>/ an economic area | Economic territory           |          |       |          |
|---|------------------------------|----------|-------|----------|
|   | <i>Production value (PV)</i> | Domestic | RoW   | Sum      |
| Institutional units                         | Residents                    | A        | B     | RPV      |
|   | non-residents                | C        | D     | nRPV     |
|   | Sum                          | DPV      | RoWPV | World PV |

Where

(D)(.)PV = Domestic part of Production Value  
= Domestic part of World residents' Production Value

(RoW)(.)PV = Rest-of-the-World part of Production Value  
= Rest-of-the-World part of World residents' Production Value

(.)(R)PV = Residents' Production Value

(.)(nR)PV = non-Residents' Production Value

(W)(.)PV = (World<sup>27</sup>)(.)Production Value = (D)(.)PV + (RoW)(.)PV  
= (.)(R)PV + (.)(nR)PV  
= (.)(W)PV = (.)(World<sup>28</sup>) Production Value

A = (D)(R)PV = Domestic part of RPV  
= Residents' part of DPV

B = (RoW)(R)PV = Rest-of-World part of RPV  
= Residents' part of (RoW)(.)PV

C = (D)(nR)PV = Domestic part of (.)(nR)PV  
= Non-residents' part of (D)(.)PV

D = (RoW)(nR)PV = Rest-of-World part of (.)(nR)PV  
= Non-residents' part of (RoW)(.)PV

<sup>27</sup> Here it is a shorthand for "all economic areas of the World".

<sup>28</sup> Here it is a shorthand for "all residents of the World".

**Table A.2 of combinations of elements of concepts of “imports”**

| Relative to a country<br>/ an economic area | Economic territory                                      |          |      |         |
|---|---|----------|------|---------|
|   | <i>“Imports” (M): positive<br/>flows into each cell</i> | Domestic | RoW  | Sum     |
| Institutional units                         | Residents   | A        | B    | RM      |
|   | non-residents   | C        | D    | nRM     |
|   | Sum   | DM       | RoWM | World M |

Where

(D)(.)M = Domestic part of Imports  
= Domestic part of World residents’ Imports

(RoW)(.)M = Rest-of-the-World part of Imports  
= Rest-of-the-World part of World residents’ Imports

(.)(R)M = Residents’ Imports

(.)(nR)M = non-Residents’ Imports

(W)(.)M = (World<sup>29</sup>)(.) Imports = (D)(.)M + (RoW)(.)M = (.)(R)M + (.)(nR)M  
= (W)(.)M = (World<sup>30</sup>)(.) Imports

A = (D)(R)M = Domestic part of (.)(R)M  
= Residents’ part of (D)(.)M

B = (RoW)(R)M = Rest-of-World part of (.)(R)M  
= Residents’ part of (RoW)(.)M

C = (D)(nR)M = Domestic part of (.)(nR)M  
= Non-residents’ part of (D)(.)M

D = (RoW)(nR)M = Rest-of-World part of (.)(nR)M  
= Non-residents’ part of (RoW)(.)M

<sup>29</sup> Here it is a shorthand for “all economic areas of the World”.

<sup>30</sup> Here it is a shorthand for “all residents of the World”.

**Table A.3 of combinations of elements of concepts of product taxes, net of subsidies**

| Relative to a country<br>/ an economic area | Economic territory                               |          |        |              |
|---|--|----------|--------|--------------|
|   | <i>Product taxes, net of<br/>subsidies (PTn)</i> | Domestic | RoW    | Sum          |
| Institutional units                         | Residents  | A        | B      | RPTn         |
|   | non-residents                                    | C        | D      | nRPTn        |
|   | Sum  | DPTn     | RoWPTn | World<br>PTn |

Where

(D)(.)PTn = Domestic part of Product taxes, net of subsidies  
= Domestic part of World residents' Product taxes, net of subsidies

(RoW)(.)PTn = Rest-of-the-World part of Product taxes, net of subsidies  
= Rest-of-the-World part of World residents' Product taxes, net of subsidies

(.)(R)PTn = Residents' Product taxes, net of subsidies

(.)(nR)PTn = non-Residents' Product taxes, net of subsidies

(W) (.)PTn = (World<sup>31</sup>)(.) Product taxes, net of subsidies  
= (D)(.)PTn + (RoW) (.)PTn  
= (.) (R)PTn + (.) (nR)PTn  
= (.) (W)PTn = (.) (World<sup>32</sup>) Product taxes, net of subsidies

A = (D)(R)PTn = Domestic part of (.) (R)PTn  
= Residents' part of (D)(.)PTn

B = (RoW)(R)PTn = Rest-of-World part of (.) (R)PTn  
= Residents' part of (RoW) (.)PTn

C = (D)(nR)PTn = Domestic part of (.) (nR)PTn  
= Non-residents' part of (D)(.)PTn

D = (RoW)(nR)PTn = Rest-of-World part of (.) (nR)PTn  
= Non-residents' part of (RoW)(.)PTn

<sup>31</sup> Here it is a shorthand for "all economic areas of the World".

<sup>32</sup> Here it is a shorthand for "all residents of the World".

**Table A.4 of combinations of elements of concepts of intermediate consumption**

| Relative to a country<br>/ an economic area | <i>Intermediate consumption (IC)</i> | Economic territory |       |          |
|---|--------------------------------------|--------------------|-------|----------|
|   |                                      | Domestic           | RoW   | Sum      |
| Institutional units                         | Residents                            | A                  | B     | RIC      |
|   | non-residents                        | C                  | D     | nRIC     |
|   | Sum                                  | DIC                | RoWIC | World IC |

Where

(D)(.)IC = Domestic part of Intermediate consumption  
= Domestic part of World residents' Intermediate consumption

(RoW) (.)IC = Rest-of-the-World part of Intermediate consumption  
= Rest-of-the-World part of World residents' Intermediate consumption

(.)(R)IC = Residents' Intermediate consumption

(.)(nR)IC = non-Residents' Intermediate consumption

(W)(.)IC = (World<sup>33</sup>)(.) Intermediate consumption = (D)(.)IC + (RoW)(.)IC  
= (.)(R)IC + (.)(nR)IC  
= (.)(W)IC = (.)(World<sup>34</sup>) Intermediate consumption

A = (D)(R)IC = Domestic part of (.)(R)IC  
= Residents' part of (D)(.)IC

B = (RoW)(R)IC = Rest-of-World part of (.)(R)IC  
= Residents' part of (RoW) (.)IC

C = (D)(nR)IC = Domestic part of (.)(nR)IC  
= Non-residents' part of DIC

D = (RoW)(nR)IC = Rest-of-World part of (.)(nR)IC  
= Non-residents' part of (RoW) (.)IC

<sup>33</sup> Here it is a shorthand for "all economic areas of the World".

<sup>34</sup> Here it is a shorthand for "all residents of the World".

**Table A.4 of combinations of elements of concepts of private consumption**

| Relative to a country<br>/ an economic area | Economic territory                  |          |       |             |
|---|-------------------------------------|----------|-------|-------------|
|   | <b>Private consumption<br/>(PC)</b> | Domestic | RoW   | Sum         |
| Institutional units                         | Residents                           | A        | B     | RPC         |
|   | non-residents                       | C        | D     | nRPC        |
|   | Sum                                 | DPC      | RoWPC | World<br>PC |

Where

(D)(.)PC = Domestic part of Private consumption  
= Domestic part of World residents' Private consumption

(RoW)(.)PC = Rest-of-the-World part of Private consumption  
= Rest-of-the-World part of World residents' Private consumption

(.)(R)PC = Residents' Private consumption

(.)(nR)PC = non-Residents' Private consumption

(W)(.)PC = (World<sup>35</sup>)(.) Private consumption = (D)(.)PC + (RoW)(.)PC  
= (.)(R)PC + (.)(nR)PC  
= (.)(W)PC = (.)(World<sup>36</sup>) Private consumption

A = (D)(R)PC = Domestic part of (.)(R)PC  
= Residents' part of (D)(.)PC

B = (RoW)(R)PC = Rest-of-World part of (.)(R)PC  
= Residents' part of (RoW)(.)PC

C = (D)(nR)PC = Domestic part of (.)(nR)PC  
= Non-residents' part of (D)(.)PC

D = (RoW)(nR)PC = Rest-of-World part of (.)(nR)PC  
= Non-residents' part of (RoW)(.)PC

<sup>35</sup> Here it is a shorthand for "all economic areas of the World".

<sup>36</sup> Here it is a shorthand for "all residents of the World".

**Table A.5 of combinations of elements of concepts of government consumption**

| Relative to a country<br>/ an economic area | <b>Government consumption (GC)</b> | Economic territory |       |          |
|---|------------------------------------|--------------------|-------|----------|
|   |                                    | Domestic           | RoW   | Sum      |
| Institutional units                         | Residents                          | A                  | B     | RGC      |
|   | non-residents                      | C                  | D     | nRGC     |
|   | Sum                                | DGC                | RoWGC | World GC |

Where

(D)(.)GC = Domestic part of Government consumption  
= Domestic part of World residents' Government consumption

(RoW) (.)GC = Rest-of-the-World part of Government consumption  
= Rest-of-the-World part of World residents' Government consumption

(.)(R)GC = Residents' Government consumption

(.)(nR)GC = non-Residents' Government consumption

(W) (.)GC = (World<sup>37</sup>)(.) Government consumption = (D)(.)GC + (RoW)(.)GC  
= (.) (R)GC + (.) (nR)GC  
= (.) (W)GC = (.) (World<sup>38</sup>) Government consumption

A = (D)(R)GC = Domestic part of (.) (R)GC  
= Residents' part of (D) (.)GC

B = (RoW)(R)GC = Rest-of-World part of (.) (R)GC  
= Residents' part of (RoW) (.) GC

C = (D)(nR)GC = Domestic part of (.) (nR)GC  
= Non-residents' part of (D) (.)GC

D = (RoW)(nR)GC = Rest-of-World part of (.) (nR)GC  
= Non-residents' part of (RoW) (.) GC

<sup>37</sup> Here it is a shorthand for "all economic areas of the World".

<sup>38</sup> Here it is a shorthand for "all residents of the World".

**Table A.6 of combinations of elements of concepts of private gross capital expenditure**

Relative to a country / an economic area

|                     |               | Economic territory                           |          |         |            |
|---------------------|---------------|--|----------|---------|------------|
|                     |               | <i>Private Gross cap. expenditure (PGCE)</i> | Domestic | RoW     | Sum        |
| Institutional units | Residents     |  | A        | B       | RPGCE      |
|                     | non-residents |  | C        | D       | nRPGCE     |
|                     | Sum           |  | DPGCE    | RoWPGCE | World PGCE |

Where

(D)(.)PGCE = Domestic part of Private Gross cap. expenditure  
= Domestic part of World residents' Private Gross cap. expenditure

(RoW)(.)PGCE = Rest-of-the-World part of Private Gross cap. expenditure  
= Rest-of-the-World part of World residents' Private Gross cap. expenditure

(.)(R)PGCE = Residents' Private Gross cap. expenditure

(.)(nR)PGCE = non-Residents' Private Gross cap. expenditure

(W) (.)PGCE = (World<sup>39</sup>)(.) Private Gross cap. expenditure  
= (D)(.)PGCE + (RoW)(.)PGCE  
= (.)(R)PGCE + (.)(nR)PGCE  
= (.)(W)PGCE = (.)(World<sup>40</sup>) Private Gross cap. expenditure

A = (D)(R)PGCE = Domestic part of (.)(R)PGCE  
= Residents' part of (D)(.)PGCE

B = (RoW)(R)PGCE = Rest-of-World part of (.)(R)PGCE  
= Residents' part of (RoW)(.)PGCE

C = (D)(nR)PGCE = Domestic part of (.)(nR)PGCE  
= Non-residents' part of (D)(.)PGCE

D = (RoW)(nR)PGCE = Rest-of-World part of (.)(nR)PGCE  
= Non-residents' part of (RoW)(.)PGCE

<sup>39</sup> Here it is a shorthand for "all economic areas of the World".

<sup>40</sup> Here it is a shorthand for "all residents of the World".



**Table A.7 of combinations of elements of concepts of government gross capital expenditure**

| Relative to a country / an economic area | Economic territory                              |          |         |            |
|--|---|----------|---------|------------|
|  | <i>Government Gross cap. expenditure (GGCE)</i> | Domestic | RoW     | Sum        |
| Institutional units                      | Residents                                       | A        | B       | RGGCE      |
|  | non-residents                                   | C        | D       | nRGGCE     |
|  | Sum   | DGGCE    | RoWGGCE | World GGCE |

Where

(D)(.)GGCE = Domestic part of Government Gross cap. expenditure  
= Domestic part of World residents' Government Gross cap. expenditure

(RoW)(.)GGCE = Rest-of-the-World part of Government Gross cap. expenditure  
= Rest-of-the-World part of World residents' Private Gross cap. expenditure

(.)(R)GGCE = Residents' Government Gross cap. expenditure

(.)(nR)GGCE = non-Residents' Government Gross cap. expenditure

(W)(.)GGCE = (World<sup>41</sup>)(.) Government Gross cap. expenditure  
= (D)(.)GGCE + (RoW)(.)GGCE  
= (.)(R)GGCE + (.)(nR)GGCE  
= (.)(W)GGCE = (.)(World<sup>42</sup>) Government Gross cap. expenditure

A = (D)(R)GGCE = Domestic part of (.)(R)GGCE  
= Residents' part of (D)(.)GGCE

B = (RoW)(R)GGCE = Rest-of-World part of (.)(R)GGCE  
= Residents' part of (RoW)(.)GGCE

C = (D)(nR)GGCE = Domestic part of (.)(nR)GGCE  
= Non-residents' part of (D)(.)GGCE

D = (RoW)(nR)GGCE = Rest-of-World part of (.)(nR)GGCE  
= Non-residents' part of (RoW)(.)GGCE

<sup>41</sup> Here it is a shorthand for "all economic areas of the World".

<sup>42</sup> Here it is a shorthand for "all residents of the World".

**Table A.8 of combinations of elements of concepts of “exports”**

| Relative to a country<br>/ an economic area | Economic territory   |          |      |         |
|---|--|----------|------|---------|
|   | <i>“Exports” (E) : positive<br/>flows out of each cell</i> | Domestic | RoW  | Sum     |
| Institutional units                         | Residents  | A        | B    | RE      |
|   | non-residents  | C        | D    | nRE     |
|   | Sum  | DE       | RoWE | World E |

Where

(D)(.)E = Domestic part of Exports  
= Domestic part of World residents’ Exports

(RoW)(.)E = Rest-of-the-World part of Exports  
= Rest-of-the-World part of World residents’ Exports

(.) (R)E = Residents’ Exports

(.) (nR)E = non-Residents’ Exports

(W) (.)E = (World<sup>43</sup>)(.) Exports = (D) (.)E + (RoW) (.)E = (.) (R)E + (.) (nR)E  
= (.) (W)E = (.) (World<sup>44</sup>) Exports

A = (D) (R)E = Domestic part of (.) (R)E  
= Residents’ part of (D)(.)E

B = (RoW)(R)E = Rest-of-World part of (.) (R)E  
= Residents’ part of (RoW)(.)E

C = (D)(nR)E = Domestic part of (.) (nR)E  
= Non-residents’ part of (D)(.)E

D = (RoW)(nR)E = Rest-of-World part of (.) (nR)E  
= Non-residents’ part of (RoW)(.)E

<sup>43</sup> Here it is a shorthand for “all economic areas of the World”.

<sup>44</sup> Here it is a shorthand for “all residents of the World”.

## Appendix 1: quotes from SNA1968

### §2.12

Under the heading “The resident economic agents”

#### §5.95.

“This part of the chapter is devoted to defining the concept of resident economic agents that is used in the system. The accounts of the system for a given country all relate to the transactions of the same resident agents - industries and enterprises, producers of government services and organs of general government, producers of private non-profit services to households and the parent institutions, and households.”

#### §5.96 (emphasis is added by this paper’s author)

“The accounts in respect of the production of goods and services cover the transactions, for example, gross output, intermediate consumption, value added, of all resident producers, that is industries, the producers of government services and of private nonprofit services to households, and domestic service, only. *Resident producers are defined so that all, and solely, production taking place on the domestic territory of the given country is encompassed. The production accounts of the system therefore relate to the activity of resident producers, and not to the return to resident factors of production. In other words, the concept of domestic production is used.*”

Under the heading “Domestic territory” follows the paragraphs §5.100-5.102.

#### §5.100 (emphasis is added by this paper’s author)

*“Resident industries, corporate and quasi-corporate enterprises and similar producers are units which are engaged in production, and in transactions in land, on the domestic territory of a given country.*

The domestic territory of a country is defined to exclude the overseas territories and possessions and to include, in addition to the territory lying within its political frontiers, (i) ships and aircraft which resident enterprises of the country run entirely, or primarily, between two or more countries, (ii) fishing fleets, vessels and floating platforms which residents of the country operate wholly, or mainly, in international waters and (iii) fishing vessels, oil and natural gas rigs, and platforms engaged in extraction in areas in which the country has the exclusive rights of exploitation by virtue of international agreements or pronouncements. The political frontiers of a maritime country include her territorial seas. A maritime country may be recognized, or claim, to have exclusive fishing or other rights of exploitation (in other words, jurisdiction in respect of these rights) in international waters beyond her territorial seas. The extent of the territorial seas of a maritime country and the further area over which the country is recognized, or claims, to have exclusive rights of fishing or other forms of exploitation, may vary from one country to another. Ships and aircraft operated entirely, or primarily, within the political frontiers of a country for at least one year are considered to be resident units of the given country.”

Under the heading “Producers operating in several countries”

#### §5.103

“Problems of definition of residence arise where the operation of ships or aircraft is not concentrated in either international service or in one country. Similar difficulties occur in respect of railway, motor or pipe-line transport, electricity or gas services, or like activities which enterprises carry on in several countries. The principle adopted in these cases, in conformity with the practice of the International Monetary Fund, is that the production, and the income therefrom, should be ascribed to the country in which the production takes place.”

National income is according to the index defined in §7.4:

“Also shown on the income and outlay accounts are the employee compensation received by residents of a given country who are employed in other countries, and the distribution of operating surplus, in the form of transfers of property incomes and the entrepreneurial income of quasi-corporate enterprises. These transfers take place among the resident institutions of a country and between them and the rest of the world. The sum of the employee compensation and the net income from property and entrepreneurship, that is the distributed factor incomes, represents the national income (4.0) of the country.”

National disposable income is according to the index defined in §7.5:

“The income and outlay accounts also portray transactions in respect of casualty insurance, and the redistribution of incomes among institutional units. The latter transactions are unrequited current transfers. The net receipts of residents of a country of incomes from employment, entrepreneurship and property and from re-distributive transfers, make up their national disposable income (6.0). Finally, the income and outlay accounts show how residents apportion their disposable income between final consumption expenditure and saving.”

Under the heading “GLOSSARY OF MAIN TERMS”, pages 230-237.

Page 232:

*“Domestic territory.* In addition to the territory lying within the political frontiers of a country, excluding her overseas territories and possessions, (i) ships and aircraft operated by residents of the country entirely, or primarily, between two or more countries; (ii) fishing vessels, oil and natural gas rigs, and floating platforms operated by residents of the country wholly, or mainly, in international waters or engaged in extraction in areas in which the country has the exclusive right of exploitation by virtue of international agreements or pronouncements; and (iii) the embassies, consulates and military establishments of the country located abroad.”

*“Exports of goods and services.* In concept, all transfers of the ownership of goods from residents of a country to nonresidents and services provided by resident producers of the country to non-residents. In practice, the exports of goods may consist of the outward movement of merchandise across the customs frontier of a country and of other goods across the boundaries of her domestic territory, including the direct purchases in the country of extra-territorial organizations and non-resident persons. Since the imports of merchandise into a country are to be valued at c.i.f., the exports of services of the country should also include the charges in respect of the imports for the transport and insurance services provided by resident producers of the given country.”

Page 233:

*“Gross domestic product at purchasers’ values or producers’ values.* The producers’ value of the gross outputs of resident producers, including the distributive-trades and transport, less the purchasers’ values of their intermediate consumption (in other words, the producers’ values of the value added of the resident producers) plus import duties. Also equal to the total of the gross expenditure on the final uses of the domestic supply of goods and services valued at purchasers’ values less imports of goods and services valued c.i.f.; or the sum of the compensation of employees, consumption of fixed capital, operating surplus and indirect taxes, net, of resident producers and import duties.”

Page 234:

*“Imports of goods and services.* In concept all transfers of the ownership of goods from non-residents of a country to residents and services provided by non-resident producers to residents of the country. In practice, the imports of goods may consist of the inward movement of merchandise across the custom frontier of a country and of other goods across the boundaries of her domestic territory, including the direct purchases of the government services and residents of the country abroad. Since imports of merchandise are valued c.i.f., imports also include the charges of resident producers for transport and insurance services in respect of these imports.”

Page 236:

*“Resident government bodies.* Central, state and local government bodies of a country located in its domestic territory, and the embassies, consulates and military establishments of a country located abroad. International organizations located in the territory of a country are considered non-resident.

*Resident households und individuals.* All individuals living within the domestic territory of a country, except foreign visitors in the country for less than one year for purposes such as recreation, holidays, medical care, study tours, conferences, sport events; crew members of foreign vessels on lay-over; commercial travellers and seasonal workers in the country for less than one year; official, diplomatic and consular representatives and members of the armed forces of a foreign country; and employees of international bodies who are not citizens of the country and are on a mission of less than one year in duration.

*Resident industries, other producers and similar units.* Units engaged in production on the domestic territory of a country, including branches of foreign enterprises.

*Resident non-profit institutions.* Non-profit institutions located in the domestic territory of a country.”

## Appendix 2: quotes from SNA1993<sup>45</sup>

Under the heading “4. National boundaries”

§1.28

“The accounts of the System are compiled for resident institutional units grouped into institutional sectors and sub-sectors. The concept of residence is the same as that used in the Balance of Payments Manual of the International Monetary Fund (IMF). An institutional unit is said to be resident within the economic territory of a country when it maintains a centre of economic interest in that territory - that is, when it engages, or intends to engage, in economic activities or transactions on a significant scale either indefinitely or over a long period of time, usually interpreted as one year. As an aggregate measure of production, the

<sup>45</sup> Relations among the different concepts are given in table 2.4 “Equations”, on pages 69-70 (pdf: 93-94).

GDP of a country is equal to the sum of the gross values added of all resident institutional units engaged in production (plus any taxes, and minus any subsidies, on products not included in the value of their outputs). This is not exactly the same as the sum of the gross values added of all productive activities taking place within the geographical boundaries of the national economy. Some of the production of a resident institutional unit may take place abroad - for example, the installation of some exported machinery or equipment or a consultancy project undertaken by a team of expert advisers working temporarily abroad. Conversely, some of the production taking place within a country may be attributable to foreign institutional units."

§2.22:

"The total economy is defined in terms of institutional units. It consists of all the institutional units which are resident in the economic territory of a country. The economic territory of a country, although consisting essentially of the geographical territory, does not coincide exactly; some additions and subtractions are made (see chapter XIV). The concept of residence in the System is not based on nationality or legal criteria. An institutional unit is said to be a resident unit of a country when it has a centre of economic interest in the economic territory of that country - that is, when it engages for an extended period (one year or more being taken as a practical guideline) in economic activities on this territory. The institutional sectors referred to above are groups of resident units."

§2.171:

"Gross domestic product (GDP) at market prices represents the final result of the production activity of resident producer units."

Chapter VI. The production account.

3. Domestic production.

§6.238, p.194

"GDP is intended to be a measure of the value created by the productive activity of resident institutional units. Although for the kinds of technical reasons just given, it may not be identical with the sum of the gross values added of resident producers it nevertheless consists mainly of the latter."

§6.239, p.194

"It should be noted, however, that GDP is not intended to measure the production taking place within the geographical boundary of the economic territory. Some of the production of a resident producer may take place abroad, while some of the production taking place within the geographical boundary of the economy may be carried out by non-resident producer units. For example, a resident producer may have teams of employees working abroad temporarily on the installation, repair or servicing of equipment. This output is an export of a resident producer and the productive activity does not contribute to the GDP of the country in which it takes place. Thus, the distinction between resident and non-resident institutional units is crucial to the definition and coverage of GDP. In practice, of course, most of the productive activity of resident producers takes place within the country in which they are resident. However, producers in service industries which typically have to deliver their outputs directly to their clients wherever they are located are increasingly tending to engage in production in more than one country, a practice which is encouraged by rapid transportation and instantaneous communication facilities. Geographical boundaries between adjacent countries are becoming less significant for mobile service producers, especially in small countries bordered by several other countries."

§7.16, p. 201

"The aggregate value of the net balances of primary incomes summed over all sectors is described as net national income (NNI). Similarly, the aggregate value of the gross balances of primary incomes for all sectors is defined as gross national income (GNI). The latter is identical with gross national product (GNP), as hitherto understood in national accounts generally. However, conceptually, both NNI and GNI are measures of income and not product."

§7.17, p.201

"Gross value added is strictly a production measure defined only in terms of output and intermediate consumption. It follows that GDP at market prices is also essentially a production measure as it is obtained by summing the gross values added of all resident institutional units, in their capacities as producers, and adding the values of any taxes, less subsidies, on production or imports not already included in the values of the outputs, and values added, of resident producers. GNI is obtained by summing the balance of primary incomes of the same resident institutional units. It follows that the difference between the numerical values of GNI and GDP is equal to the difference between the total primary incomes receivable by residents from non-residents and the total primary incomes payable by residents to non-residents (i.e., net income from abroad). However, as both GDP and GNI are obtained by summing over the same set of resident institutional units, there is no justification for labelling one as "domestic" and the other as "national". Both aggregates refer to the total economy defined as the complete set of resident institutional units or sectors. The difference between them is not one of coverage but the fact that one measures output while the other measures income. Both have an equal claim to be

described as domestic or as national. However, as the terms “domestic” and “national” are deeply embedded in economic usage, it is not proposed to change them but to emphasize the fact that GNP is actually an income concept by renaming it GNI.”

Under the heading “B. Residence”, pp.402-407, §§14.7-14.34.  
Especially: “4. The residence of corporations and quasi-corporations”:

§§14.22-.24

“14.22. Corporations and quasi-corporations are said to have a centre of economic interest and to be resident units of a country (economic territory) when they are engaged in a significant amount of production of goods or services there, or own land or buildings located there. They must maintain at least one production establishment there which they plan to operate indefinitely or over a long period of time - a guideline of one year or more is suggested, to be applied flexibly - together with other considerations covered in paragraph 14.23. (For a detailed description of corporations, quasicorporations and other institutional units, see chapter IV.)”

“Attribution of production”

§14.23:

“Production undertaken by the personnel (and plant and equipment) of a resident unit outside its economic territory is to be treated as part of the production of the host country and the unit treated as a resident unit (branch or subsidiary) of that country if it meets the conditions noted above (see paragraph 14.22 above). Such a unit usually maintains a complete and separate set of accounts of local activities (i.e., income statement, balance sheet, transactions with the parent enterprise), pays income taxes to the host country, has a substantial physical presence, receives funds for its work for its own account, etc. The above considerations also apply to the particular case of construction activity carried out abroad by a resident producer. If they are not present, the activity should be classified as an export of services by the resident enterprise. Production can generate such an export only if the production is classified as domestic production (undertaken by a resident even though the physical process takes place outside the economic territory). Construction involved with major specific projects - bridges, dams, power stations, etc. - that often take several years to complete, and is carried out and managed by non-resident units through an unincorporated site office in an economy warrants special mention. In most instances, such a site office will meet the criteria that require its production to be treated as a resident unit and to be part of the production of the host economy (as would that of a branch or affiliate), rather than as an export of services to that economy (for further discussion and treatment of installation projects, see paragraphs 14.101 to 14.103 below).”

§14.24.

““Offshore” units engaged in manufacturing processes (including assembly of components manufactured elsewhere) are residents of the economy in which they are located. This statement applies regardless of location in special “zones” of exemption from customs or other regulations or concessions, and also applies to non-manufacturing operations (i.e., trading and financial enterprises), including so-called special purpose units.”

§14.36:

“Exports and imports of goods should be recorded at the market value of the goods at the point of uniform valuation, (the customs frontier of the economy from which they are exported), i.e., the goods are valued free on board (f.o.b.) at that frontier. The value includes that of the goods and of the related distributive services up to that point, including the cost of loading on to a carrier for onward transportation, where appropriate.”

§§14.55-.56

§§14.57-14.69

§14.60:

“The third exception is one in which a change of ownership may occur but is ignored in the accounts. The exception relates to merchants or commodity dealers who buy commodities or other goods from non-residents and then sell them again to non-residents within the same accounting period without the commodities actually entering the economy in which the merchants are resident. The difference between the receipts and the sales of such dealers is treated as measuring the value of the services they provide and recorded under exports or imports of services. If, however, the goods are not resold within the same accounting period, the purchases have to be recorded as imports of goods which are temporarily held in inventory; when they are sold abroad in a later period they should be treated as negative imports.”

§14.61

“The fourth and final exception to the change in ownership principle relates to goods which are sent for processing abroad. In general, the principle adopted in the System is that goods sent abroad temporarily

without change of ownership between resident and non-resident units are not to be counted as exports or imports. Goods sent abroad temporarily are to be understood as goods which return in more or less the same condition as they left, apart possibly from any maintenance, servicing or routine repairs carried out on them. However, these conditions are not satisfied when an enterprise engages or contracts with another enterprise to carry out certain manufacturing processes on the goods while abroad. In this case the enterprise may ship materials or semi-processed goods abroad, which become inputs into the foreign manufacturer's production processes, and then receive back the outputs from these processes, paying the manufacturer a fee for the production carried out. In these circumstances the goods originally sent abroad lose their identity by being transformed or incorporated into other goods. Similarly, the goods received back are essentially new goods produced abroad. The goods received back may well be classified quite differently, by customs authorities and in international trade statistics, from those which were sent. In these circumstances the System requires that the goods sent abroad be recorded as exports, even though they may not be sold to a non-resident, while the goods received back are recorded as imports, even though they were not purchased from a non-resident."

§14.62:

"Essentially, the treatment of processing involves two issues - whether to record certain flows on a gross or a net basis, and whether to classify those flows as goods or services. If the goods are excluded from exports and imports on the grounds that there has been no change of ownership, then it becomes necessary to identify and record separately as the import of a service the payment which the enterprise makes to the foreign producer for the value added by his processing. If, on the other hand, the flows are recorded gross, as the System requires, the difference between the value of the imports and the value of the exports should be equal to the payment made for the service provided by the foreign processor. The balance between total exports and imports of goods and services is the same in either case, the difference being whether the balance appears as a net import of goods or a net import of services."

§14.63.

"When goods are sent abroad temporarily to return in the same form as they left without change of ownership, their leaving the economy has no impact on the domestic economy and can, therefore, be ignored in the accounts. However, when the goods which return are different in form from those which left, the supply and disposition of goods or resources within the economy which sent the goods abroad for processing are changed and for this reason the export and import of the goods concerned cannot be ignored. Another relevant consideration is that it is often difficult to separate goods sent out for processing, and those returned after processing, from other movements of goods in records of international trade flows, so that the gross treatment required by the System is usually easier to implement in practice. However, when it is actually feasible to identify in the trade statistics goods intended for processing abroad and returned after processing, it is recommended that they should be shown separately in both exports and imports in the external account for goods and services in the System. When goods sent abroad for processing in one accounting period are not re-imported until a later accounting period, it is necessary to enter a counterpart financial claim (liability) in the financial accounts of the countries concerned."

§14.64.

"When goods are returned after only a very small amount of processing abroad, such as storage or packaging, it can be argued that the net treatment should be adopted on the grounds that the processing is insignificant, so that it is preferable to record the small amount of value added abroad as an import of a service. It is difficult, however, to provide objective criteria as to what constitutes a significant amount of processing which would make it possible to delineate certain kinds of processes from others. It is suggested, therefore, that goods should be treated as being processed when the goods from abroad have to be classified in a different group (3 digit level) of the Central Product Classification (CPC) from the goods sent abroad out of which they have been processed. On the other hand, when the goods returned fall in the same group of the CPC as the goods sent abroad, they should not be included in exports and imports of goods, the processing being treated as a service activity."

Under the heading "National boundaries", pp.518-520: §§17.22-29.

§17.22

"The complications that arise from the existence of national boundaries must now be examined. (Similar complications arise for regional accounts from regional boundaries.) Conceptual clarity requires that the everyday concept of a person or firm in a country be replaced by the precise notion of an institutional unit being resident in an economic territory. Residence and economic territory are discussed at length and defined in chapter XIV, in a way which fits together with the concept of gross domestic product."

Under the heading "I. Regional accounts", pp. 549-550, §§19.88-19.96.

§19.92

"One could argue that the measurement problems for multi-regional corporations are very similar to those of multinational corporations. There is obviously some similarity between these two kinds of enterprises.

However, in the case of multi-national corporations, national legislation and other considerations generally lead to establishing different legal entities in different countries. Even if these legal entities are not fully independent and the valuation of their external transactions within the same multinational corporation are not based on true market values, these units fulfil the conditions necessary to be treated as institutional units in the System. Only foreign branches which are not established as separate legal entities are in more or less the same situation as establishments belonging to multi-regional corporations. However, in the accounts of the nation as a whole, they are few in number and play a marginal role. Conventions of measurement in their case do not have an important impact on national accounts results. Moreover they are generally obliged to submit certain data. In regional accounts, on the contrary, these units are very common.”

Footnote 2, p.434 (pdf:p.458)  
p.651, point 18  
p.665, point 95  
p.666, point 100

### Appendix 3: quotes from SNA2008

Under the heading “5. National boundaries”, pp.7-8, §§1.48-1.50.

§1.48 “The accounts of the SNA are compiled for resident institutional units grouped into institutional sectors and subsectors. The concept of residence is the same as that used in the Balance of Payments and International Investment Position Manual, Sixth Edition (International Monetary Fund (IMF), 2008), known as BPM6. An institutional unit is said to be resident within the economic territory of a country when it maintains a centre of predominant economic interest in that territory, that is, when it engages, or intends to engage, in economic activities or transactions on a significant scale either indefinitely or over a long period of time, usually interpreted as one year.”

§1.49 “The GDP of a country, viewed as an aggregate measure of production, is equal to the sum of the gross value added of all resident institutional units engaged in production (plus any taxes, and minus any subsidies, on products not included in the value of their outputs). This is not exactly the same as the sum of the gross value added of all productive activities taking place within the geographical boundaries of the national economy. Some of the production of a resident institutional unit may take place abroad, for example, the installation of some exported machinery or equipment or a consultancy project undertaken by a team of expert advisers working temporarily abroad. Conversely, some of the production taking place within a country may be attributable to nonresident institutional units.”

§1.50 “When GDP is derived from the expenditure side, allowance has also to be made for goods and services produced by non-residents but consumed by residents as well as for goods and services produced by residents but consumed abroad. For the SNA to be comprehensive in coverage, all transactions with the rest of the world have to be identified so their impact on measures relating to the resident economy is properly accounted for. The complete set of transactions with the rest of the world in the SNA matches exactly the set of transactions captured in the balance of payments.”

Under the heading “Delimitation of the total economy and the rest of the world”, p.17:

§2.19 “The total economy is defined in terms of institutional units. It consists of all the institutional units which are resident in the economic territory of a country. The economic territory of a country, although consisting essentially of the geographical territory, does not coincide exactly; some additions and subtractions are made (see chapter 26). The concept of residence in the SNA is not based on nationality or legal criteria. An institutional unit is said to be a resident unit of a country when it has a centre of predominant economic interest in the economic territory of that country; that is, when it engages for an extended period (one year or more being taken as a practical guideline) in economic activities on this territory. The institutional sectors referred to above include only resident units.”

§2.20 “Resident units engage in transactions with non-resident units (that is, units that are residents of other economies). These transactions are the external transactions of the economy and are grouped in the account of the rest of the world. Strictly speaking, the rest of the world is the account of transactions occurring between resident and non-resident units, but it may also be seen as the whole group of nonresident units that enter into transactions with resident units. In the accounting structure of the SNA, the rest of the world plays a role similar to that of an institutional sector, although non-resident units are included only in so far as they are engaged in transactions with resident institutional units.”

Under the heading “3. Residence”, pp.487-488, §§26.36-26.45.  
Especially: “Residence of enterprises”:



§26.40: “An enterprise is resident in an economic territory when the enterprise is engaged in a significant amount of production of goods or services from a location in the territory. Taxation and other legal requirements tend to result in the use of a separate legal entity for operations in each legal jurisdiction. In addition, a separate institutional unit is identified for statistical purposes where a single legal entity has substantial operations in two or more territories (for example, for branches, land ownership and multiterritory enterprises, as noted above). As a result of splitting such legal entities, the residence of each of the subsequently identified enterprises is usually clear. The implications of the residence of an enterprise for the recording of its flows and stocks are summarized in table 26.2. “

§26.41

”In some cases, the physical location of an enterprise is not sufficient to identify its residence because the enterprise has little or no physical presence, for example its administration is entirely contracted out to other entities. Banking, insurance, investment funds, securitization vehicles and some special purpose entities may operate in this way. Many trusts, corporations, or foundations that hold private wealth also have little or no physical presence. Similarly, with virtual manufacturing, all the physical processes are outsourced to other units. In the absence of any significant physical dimension to an enterprise, its residence is determined according to the economic territory under whose laws the enterprise is incorporated or registered. The incorporation and registration represent a substantial degree of connection to the economy, associated with jurisdiction over the enterprise’s existence and operations. In contrast, other connections such as ownership, location of assets, or location of its managers or administrators may be less clear-cut.”

§26.42

“In some rare cases, laws allow enterprises to change their economy of residence, such as within an economic union. In such cases, as for households, a change of residence means that their assets and liabilities change their status through other changes in volumes. More commonly, what is called “corporate migration” involves the conveyance of assets and liabilities from a corporation in one economy to a related entity in another economy recorded as a transaction rather than a change of residence of the entity.”

§26.50

“Goods that change location from one economy to another but do not change economic ownership do not appear in imports and exports. Thus goods sent abroad for processing, or returned after processing, do not appear as imports and exports of goods; only the fee agreed for processing appears as a service.”

## Appendix 4: The more explicitly realistic version of table 1

**Table A.4.1 of combinations of elements of concepts of activity/value added<sup>46</sup>**

| Relative to<br>a country / an<br>economic area | Economic territory  |          |     |     |
|--|---|----------|-----|-----|
|  | Production /<br>Value added   | Domestic | RoW | Sum |
| Institutional<br>units                         | Residents,<br><i>unreclassified</i> in the<br>accounts of<br>RoW economic areas     | A1       | B1  |     |
|  | Residents of DE,<br><i>reclassified</i> in the<br>accounts of<br>RoW economic areas | A2       | B2  |     |
|  | non-residents   | C2       | D2  |     |

<sup>46</sup> The terms “residents” and “non-residents”, for the tables rows’ headings, are used as defined according to the latest manuals, as the progression in sophistication in the treatment of institutional units has greatly increased over time, especially as NSIs have had to grapple with the statistical consequences of fragmented supply-chains across countries.

|   |    |    |     |
|---|----|----|-----|
| <b>reclassified</b> as residents<br>with respect to this<br>“Domestic” economy        |    |    |     |
| non-residents,<br><b>unreclassified</b><br>with respect to this<br>“Domestic” economy | C1 | D1 |     |
| Sum   |    |    | GWP |

*Note: RoW is Rest-of-the-World, GWP is an acronym for GrossWorldProduct*

The discussion should be focussed on

- a. the broad principles of the concepts, and
- b. the actual statistical reclassifications of actual units and the statistical production of notional units (of which type?) for statistical purposes, as recommended by the different manuals.