Understanding National Accounts
Second Edition

Chapter 14

International systems of national accounts: Past and future

This chapter presents the history of systems of national accounts, from the 17th century to today. After a look at the earliest accounts, it offers in-depth analysis of the 1953, 1968, 1993 and 2008 systems of national accounts (SNAs). It also looks at the 1995 and 2010 European System of Accounts (ESA). For both, it clearly explains what aspects of SNAs and ESAs have evolved across the years, with helpful boxes outlining the changes in each iteration, in particular the latest one (SNA 2008/ESA 2010).

There are four relatively recent studies of the history of national accounts. The preface to the *1993 System of National Accounts* describes the development of the 1953, 1968 and 1993 versions of the SNA. André Vanoli, the French expert in national accounts, provides an impressive overview in *A History of National Accounts* (Vanoli, 2005). Angus Maddison in the introduction of *The World Economy: Historical Statistics* (OECD, 2003), describes the very earliest attempts to measure national income. A very entertaining history of national accounts, linking it to the early development of bookkeeping and business accounting in the golden age of Venice merchants, is provided in *Double Entry* (Gleeson-White, 2011). Maddison is the main source for the next section.

1. From the very beginnings…

Historically, wars and threats of war have provided the main impetus for the development of national accounts. They were seen as a quantitative framework for devising policies to mobilise a nation's resources to fight wars or to repair the subsequent damage. The first national accounts were developed in the 17th Century by William Petty. His *Verbum Sapienta* (1665) presented a set of national accounts for England and Wales designed for resource mobilisation during the second Anglo-Dutch war from 1664 to 1667. In 1694, Charles Davenant published a crude set of national accounts in *Essay upon Ways and Means of Supplying the War* (war of the League of Augsburg from 1668 to 1697), and this encouraged his friend Gregory King to produce a more detailed set of economic and demographic accounts in *Natural and Physical Observations and Conclusions on the State and Condition of England* (1696). In 1707, Sebastien le Prestre de Vauban published estimates of French national income in *La dîme royale*. Vauban's interest in the topic came from his experience in mobilising resources for the construction of military forts on the northern and eastern borders of France.

2. …to the first modern accounts

Jumping ahead a few centuries to the modern era, the first official national income statistics were published in the United States (1934) by Simon Kuznets (Nobel Price 1971) and in the United Kingdom (1941) by Richard Stone (Nobel Prize 1984). The impetus was again to provide quantitative frameworks for war-time resource mobilisation and peacetime reconstruction.

In 1947, Richard Stone wrote a report, *Definition and measurement of the national income and related totals,* for the Sub-Committee on National Income Statistics of the League of Nations Committee of Statistical Experts. This was the first step toward an international accounting system. Stone was subsequently invited by the Organisation for European Economic Co-operation (OEEC, later to become the OECD) to develop a system of national accounts that could be used by its member countries to monitor post-war reconstruction under the Marshall Plan. The Marshall Plan, named after a United States Secretary of State, was an extensive programme of financial aid from the United States and Canada to the European countries that had been devastated by World War II. The result of Stone's work, *A Standardised System of National Accounts* published by the OEEC in 1952, can fairly be described as the first international system. The following year, the United Nations published a revised version of the OEEC system as *A System of National Accounts and Supporting Tables*. This is referred to below as the *1953 SNA*.

3. The 1953 SNA

The principal author of the *1953 SNA* – Richard Stone – noted that attempts to quantify the national economy had hitherto followed four separate paths:

1. measuring the national income;
2. constructing input-output tables;
3. flow-of-funds analysis; and
4. compiling balance sheets.

Stone saw the four approaches as being closely related and hoped that eventually they could be combined into a single system. The *1953 SNA,* however, confined itself to the first of these. Another limitation noted by the authors was that there were no tables at constant prices, and this was identified as another area for future development.

The *1953 SNA* consists of a simple set of six accounts: final expenditure on the GDP; national income; domestic capital formation; disposable income and net borrowing of households and government; and the external account. These accounts were supplemented by a set of standard tables that countries were to use in reporting national accounts statistics to the United Nations. In addition to establishing the basic accounting relationships – which have essentially remained in place to the present time – the *1953 SNA* was notable for having finally resolved a number of issues that were still under debate at that time. For example:

- Production was defined to include two important types of own-use production: subsistence farm production and housing services produced by owner-occupiers. Other services produced for consumption within the household – cooking, cleaning and child rearing – were, however, excluded from the production boundary.

- No distinction was made between legal and illegal production. Provided goods or services were being traded between willing producers and willing buyers, the activities concerned were deemed to be productive. Despite this early recommendation, it is interesting to note that not all OECD countries include full estimates of illegal production in the GDP.
- Governments were treated as producers, but because the services they produce are not sold, their output was to be measured as the total of the costs of production – compensation of employees, intermediate consumption and consumption of fixed capital. The same approach was to be used for non-profit institutions. However, this feature was not implemented in all countries immediately. For example, France included government in its accounts only in 1976.
- Capital formation was defined as expenditure on physical objects – buildings, machinery, roads – that would provide productive services over a number of years. Other types of expenditure that could also be expected to produce a stream of future services but which had no *physical* embodiment, advertising and research and development, for example, were treated as current consumption. Expenditure on education, or investment in human capital as it is sometimes termed, was also excluded from capital formation "because human beings are not capital assets".

In the decade that followed publication of the *1953 SNA*, about 60 countries began to publish some kind of national accounts on a regular basis. Many OECD countries were able to complete all the supporting tables of the *1953 SNA*, but other countries published only estimates of GDP obtained by adding up the value added of different industries with a summary breakdown by final expenditure. Even these simple national accounts proved useful for monitoring economic developments and for fiscal and monetary policy. Equally important, the national accounts were increasingly used as a framework for organising other economic statistics, such as indices of industrial output, price statistics, retail sales and labour force data. The definitions and classifications of the *1953 SNA* were applied to these related areas.

4. The 1968 SNA

By the early 1960s, there was a consensus among national accountants that it was time to revise the *1953 SNA* to take into account developments in input-output tables (in France and the Netherlands, for example), in flow of funds statistics (in the United Kingdom) and in balance sheets (in the United

States). In addition, most OECD countries had been developing accounts at constant prices and had also started publishing much greater detail than suggested in the 1953 system.

There had also been a shift in economic policymaking. Starting from using the national accounts to understand what had happened in the recent past and to forecast what could be expected in the near term, policymakers became increasingly drawn to the idea of actively planning the future course of the economy. Detailed five-year plans were being drawn up in India and Egypt, for example, while a looser form of "indicative planning" was being implemented by France and other western European countries. The new system was designed to support this growing interest in economic planning.

The *1953 SNA* was described in 46 pages, and the accounts were shown on 2 pages, whereas the *1968 SNA* (titled *A System of National Accounts,* United Nations, 1968) required 250 pages and the accounts alone filled 12 pages. This is because the 1968 SNA not only provided a more in-depth description of the various transactions and their sources as well as extra detail – such as input-output tables and balance sheets – but also a number of innovations (see Box 14.1). However, it did not change the accounting identities, the size of the production boundary or the distinction between capital formation and current expenditure, all of which were inherited from the earlier system.

Box 14.1. **What was new in the 1968 SNA?**

- All entities participating in monetary transactions were assigned to **institutional sectors**. In the 1953 SNA, only households and government had been explicitly identified. In the 1968 System, corporations were split into financial and non-financial sectors, and non-profit institutions were identified as a separate sector.
- The accounts for institutional sectors were expanded to include: a production account; an income and outlay account with saving as the balancing item; a capital finance account with net lending as the balancing item; and a financial account showing the acquisition of financial assets and incurrence of liabilities.
- Distinction was made between **market** and **non-market producers**. The former (termed "industries") sold goods and services at a profit, while the latter (termed "other producers"), typically government and non-profit institutions, provided services and sometimes goods for free, or at nominal prices. A similar distinction was made between "commodities" (sold at a profit) and "other goods and services".

Box 14.1. **What was new in the 1968 SNA?** *(cont.)*

- A full chapter was devoted to "The System as a Basis for Quantity and Price Comparisons" – i.e. national accounts at **constant prices**. Although it gave some practical guidance for national accountants and price statisticians, the discussion was mainly theoretical. One important contribution was to identify the limits to constant price measurement. Final expenditures can be converted to constant prices by deflating them with the relevant price indices. And value added can be expressed in constant prices by the ingenious method (apparently invented by the Irish statistical office) of deflating gross output and intermediate consumption by their own price indices and deriving constant price value added as the difference between them. Both of these statistics can be expressed in constant prices because the underlying flows can be decomposed into price and quantity components. Other entries in the accounts – compensation of employees, property income, taxes, operating surplus, etc. – cannot be broken down in this way. They can be expressed in constant purchasing power – how much of a fixed basket of goods can this year's salary buy compared to last year – but constant purchasing power is a different concept from constant prices.
- The 1968 SNA was a major step toward integrating the four approaches to national economic measurement that Stone had identified in 1953. **Input-output** tables were integrated into the production accounts; the financial accounts included a **flow of funds** table showing both parties to transactions in various financial instruments; and the links were explained (partially) between the opening and closing **balance sheets** and the transactions recorded in the accounts during the year.

5. The 1993 SNA

The *1968 SNA* represented a major step forward in macroeconomic measurement, but no system could possibly remain relevant for all time. Economies evolve and international accounting systems must adapt to reflect new realities. The decision to revise the 1968 SNA was made in the early 1980s, largely as a result of discussions at the annual meetings organised by the OECD for national accountants from member countries, and at the biennial conferences of the International Association for Research in Income and Wealth. The archives of the meetings of the OECD are available on the Web site of the OECD.

The *1953 SNA* had been written by a committee of five and the *1968 SNA* by a group of about fifteen. For the 1993 SNA, it was decided to involve a much wider group of experts and more than 50 statisticians and economists were involved in the revision process. A wider group of international agencies also took part. The two earlier versions had been published by the United Nations alone, but the *1993 SNA* was a joint publication of the OECD, Eurostat, the World Bank, the International Monetary Fund and the United Nations. Other international agencies were also consulted, including the International Labour Office, United Nations regional commissions and the Commonwealth of Independent States.

While the revision was already under way, the internationalist aspirations of the *1993 SNA* received a further boost from the fall of the Berlin Wall. The Soviet bloc countries had previously used their own system of national accounts – the *Material Product System* – but in the early 1990s, these countries announced that they would switch to the *SNA*. China, Mongolia and Vietnam followed suit. At the present time, only two countries have not formally adopted the *1993 SNA* as the basis for their official national accounts – Cuba and North Korea.

An important feature of the *1993 SNA* is that it is consistent with other international data systems, such as the OECD Guidelines on Foreign Direct Investment, the IMF's manuals on Balance of Payments and Government Finance Statistics. Clearly, this is a considerable advantage to both the users of these data and to national statistical offices. The *1993 SNA* is also much more explicit in dealing with issues that had been known to create difficulties for many countries, such as: insurance transactions; imputed bank-service charges (financial intermediation services indirectly measured, or "FISIM", as they are now termed); financial versus operating leasing; and consumption of fixed capital. In addition, there are separate chapters on satellite accounts and on social accounting matrices, or "SAMs". All this of course had a cost in terms of page inflation, and the *1993 SNA* has over 700 pages. Box 14.2 identifies the main innovations.

Box 14.2. **What was new in the 1993 SNA?**

- **Balance sheets** are fully incorporated into the system. Linking the opening and closing stocks of assets with the flow transactions during the year requires not only a revaluation account (as had been introduced in the 1968 SNA) but an additional account that records changes in the volume of assets. These may arise from new discoveries of mineral reserves, natural growth of cultivated forest and catastrophic losses due to earthquakes or tempests, depletion of oil reserves, and so on. The awkwardly named "Other Changes in the Volume of Assets Account", to distinguish these changes from volume changes due to investments for example, was introduced to record these events.

Box 14.2. **What was new in the 1993 SNA?** *(cont.)*

- The four accounts for institutional sectors of the 1968 SNA were expanded to a total of sixteen. Much of the increase came from a fragmentation of the 1968 SNA accounts. The 1968 income and outlay accounts were split into six separate accounts in order to identify new balancing items that were thought relevant for economic analysis.
- In the previous systems, government was shown as consuming its entire output. In the 1993 SNA, an important distinction is made between government services that are provided to households on an individual basis – health and education for example – and those that are provided on a collective basis to the community at large – security and defence, for example. While government pays for production of both collective and individual services, households can be regarded as the true consumers of the latter. A new concept, actual individual consumption of households, was introduced. This is the value of the individual services provided by government plus the goods and services that households buy with their own money.
- Volume estimates are given much more consideration. Recent developments in price index theory were used to show that the best measures of price inflation are obtained by using chained Fisher indices, with chained Laspeyres indices as a second best.
- The asset boundary was enlarged to include expenditures on software, mineral exploration, artistic originals and valuables. In earlier systems, software expenditure (generally insignificant before the 1970s) was treated as a current cost. But in the 1993 SNA, all software expenditures – off-the-shelf programmes, software written in-house and custom-designed software purchased from specialised companies – are treated as capital formation. Mining companies have usually treated exploration expenditures (money spent on looking for new deposits) as a capital outlay, and this same approach was adopted in the 1993 SNA. Note that the costs of exploration, whether anything is found or not, are treated as capital expenditures. Artistic originals relate to the production of the original films, sound recordings, manuscripts, etc. that give rise to future income earnings, for example in the form of royalties. Valuables are precious objects, such as paintings, antiques, jewellery and precious metals that are bought as "stores of value". In the earlier systems, most of these expenditures on valuables would have been included in household consumption expenditure

6. The 1995 ESA

In the 1960s, the fledgling Europe Union realised that it needed harmonised national accounts statistics for its member states. The first such system was published in 1970 as the *European System of Accounts,* and a revised version came out in 1979. This was then replaced by the *European System of Accounts 1995*, or *1995 ESA*, which is the European version of the *1993 SNA*.

The *1995 ESA* is 99% consistent with the *1993 SNA* and gives more precise guidelines on some border-line issues that were deliberately left open in the *1993 SNA*. For example, in the *1993 SNA* the distinction between "market" and "non-market" producers depends on whether they sell their output at "economically significant prices". In the *1995 ESA* a non-market producer is one whose output is sold at prices that cover less than 50% of the cost of production. All that has happened here is that the *1995 ESA* has defined an "economically significant price" as one that covers more than 50% of the production costs. These more precise guidelines are necessary because national accounts statistics are used by the European Commission to allocate regional development funds, calculate the contribution to the European budget, to monitor the sustainability of public finance (Maastricht criteria) and, more recently, macroeconomic imbalances.

The administrative use of national accounts in Europe has at the same time boosted the harmonisation and use of these statistics, but it has also made their production more rigid. The *1995 ESA* is embedded in EU legislation so that international harmonisation of national accounts is a legal requirement for EU member states, as well as for countries that have applied for future membership. The *1993 SNA* was designed to have sufficient flexibility so that it could be applied by countries with very different economic systems and at various stages of economic development. The *1993 SNA* is therefore somewhat less effective than the *1995 ESA* in ensuring international comparability.

7. The 2008 SNA

In 2009, it was decided to replace the *1993 SNA* by the *2008 SNA*. At the end of 2014, most OECD-countries had implemented the revised standards. Chile, Japan and Turkey having plans to implement the *2008 SNA* by 2015, were the exceptions. Looking at the differences between the *1993 SNA* and the *2008 SNA*, the main ones relate to an improved accounting for assets and liabilities, the inclusion of all kinds of new developments in the financial sector, issues related to the increasing globalisation of the economy, and better descriptions of government finance and the informal sector. Box 14.1 illustrates the change for France. The page inflation, mentioned above under the section on the *1993 SNA*, could be stopped, although only by using a two column format and putting more words on a page! With the completion of the *2008 SNA*, more than 50 changes to the *1993 SNA* had been introduced. The major changes include:

- *Treating Research and development (R&D) as an asset*. After decades of discussion, it has been decided to record R&D expenditures as GFCF (Gross Fixed Capital Formation) and not current costs, despite the difficulties associated with this change. One of the difficulties is that in most countries business accounting standards do not recommend the same (R&D is treated as current expenditure). As a consequence, it is more difficult to obtain satisfactory data. On the other hand however, many countries have a long history of collecting data on R&D according to the so-called Frascati Manual, which has proved to be an invaluable source of information. This change has increased the level of GDP, but hardly affected the level of NDP.
- *Treating expenditure on large military weapons as assets*. The new SNA also records large military weapons – warships, ballistic missiles and tanks, etc. – as fixed capital assets. This also raised the level of GDP, not because of the change in classification of these amounts from final expenditure to GFCF, but because a consumption of fixed capital is recorded and is added to the measure of government consumption.
- *The treatment of goods for processing*. The *1993 SNA* treated goods that were sent abroad for processing and then returned to the country from where they were dispatched as undergoing an effective change in ownership. The goods were therefore recorded in exports and imports. The *2008 SNA* on the other hand recommends that imports and exports are recorded on a strict change of ownership basis. This can have a substantial impact on the distinction between trade in goods and trade in services, especially for countries that are heavily involved in processing of goods. More generally, the *2008 SNA* has also triggered substantial discussions on the treatment of global production arrangements, e.g. how to account for so-called "factory-less producers".
- The valuation of government output and output for own final use. As explained in Chapter 4, the 1993 SNA was criticised for underestimating the cost of the government's use of capital because it did not add to capital consumption an estimated return on capital in order to reflect the full cost of "capital services". Unfortunately however, no agreement could be reached on the inclusion of a return on capital for government fixed assets. On the other hand, it was agreed to include such a return on capital for market-producers (households and corporations), when measuring output for own final use.
- *Extending the measurement of pension liabilities*. The *1993 SNA* only recorded pension liabilities for funded plans. The new SNA extended this to all

private employer pension schemes regardless of whether they are funded or unfunded, whereas in the case of government schemes for their own employees and social security plans some flexibility in the recording is allowed. To arrive at internationally comparable data for government related schemes, it has also been decided to introduce a "supplementary table", in which all pension schemes, whether funded or not, are accounted for. This extension could have a major impact on the measurement of the government debt, because unfunded retirement plans for government employees involve heavy liabilities in some countries. Another change, which for some countries can have a substantial impact on government deficit, relates to the recording of large one-off payments by public corporations to government, to compensate government for taking over pension liabilities of the relevant corporations. Whereas the recording of these payments was not that clear in the *1993 SNA*, and in Europe it was decided to treat them as capital transfers, the relevant transactions have to be treated as purely financial transactions, not affecting government deficit, in the *2008 SNA*.

- *Smoothing the measurement of non-life insurance output*. In the *1993 SNA*, the gross output of non-life insurance companies was essentially measured as the difference between premiums and claims. The terrorist attack of 11 September 2001 highlighted a problem with this approach that has troubled national accountants in several countries – namely, the sharp fluctuations in output, even becoming negative, that can occur when claims are unexpectedly large in a given year. In the *2008 SNA*, it has been agreed to deduct *expected* rather than *actual* claims in measuring output.
- *Including share options as part of compensation of employees*. During the stock market bubble of the late 1990s, employees in many hi-tech companies accepted low salaries in return for the chance to buy their company's shares at bargain prices. The logic of the *1993 SNA* required share options to be treated as financial transactions, and are therefore excluded from the compensation of employees. However, the employees receiving share options clearly regard them as part of their "compensation package". Thus, share options are included in compensation of employees in the new SNA.
- *Allocating holding companies to the financial corporations sector*. The *1993 SNA* recommended that holding companies were to be assigned to the institutional sector in which the main activity of the group of subsidiaries was concentrated. According to the *2008 SNA*, these holdings should always be allocated to the financial corporations sector.

Together with the revision of the SNA, the *European System of Accounts (ESA) 1995* has also been revised and replaced by the *ESA 2010* to keep the consistency between the worldwide set of standards and its European equivalent.

Box 14.3 illustrates the impact of the implementation of SNA 2008/ESA 2010 in the case of France.

In conclusion, the SNA is a system of statistics that is being constantly updated, more and more widely used, and evolving in parallel with new economic developments. One interesting feature is that the measurement of GDP has systematically been modified under the different SNAs into a broader concept, thus extending progressively the production frontier, and inflating GDP. This has once more happened with the SNA 2008, with the capitalisation of R&D and military weapon systems. It is probable that this process will continue. For example, the concept of human capital, which is not incorporated in the asset boundary of the 2008 SNA, will become more and more relevant to OECD economies in the future. Its incorporation in the national accounts would once more enlarge the production boundary. But this will not happen tomorrow…

Box 14.3. **Revisions of the national accounts for France due to implementation of SNA 2008/ESA 2010**

France published its new data based on SNA 2008/ESA 2010 in May 2014. As in all OECD member states, the result of the implementation of the new SNA 2008/ESA 2010 for France was an increase of the level of GDP, by 3.2% (61.8 bn euros), compared to the previous estimate. This number refers to the year 2010. However, as the change is structural, in the sense that GDP is more or less systematically revised upwards by the same percentage, it is representative. One consequence of this "level change" is that the growth of GDP is globally unaffected. Not all of this change is due to the new SNA. Part of this change is due to a revision from new sources for business statistics and other factors (inclusion of Mayotte island), for an amount of 0.8 percentage points (15.4 bn euros). Strictly speaking the impact of the conceptual changes in SNA 2008/ESA 2010 on GDP is therefore limited to 2.4% (46.4 bn euros). Table 14.1 below illustrates the change for some other variables. One interesting impact is that all ratios using GDP as a denominator structurally decrease, simply because of the increase of GDP. This is particularly the case of the ratio of public debt, which decreases by 1.5 p.p. This is less than the increase of GDP (+3.2%), because some reclassifications contributed to increase the public debt (the numerator).

Table 14.1. **SNA 2008/ESA 2010 revisions of national accounts. France. May 2014**

	2010 level revision in %	New level for 2010	Source of revision
GDP	+3.2%	1 998.5 bn EUR	Capitalisation of R&D (+41.5 bn), weapon systems (+3.3) and databases (1.2). New statistical sources on businesses.
GNI	+3.2%	2 039.3 bn EUR	Capitalisation of R&D (+41.5 bn), weapon systems (+3.3) and databases (1.2). New statistical sources on businesses.
Profit share of non-financial corporations	+1.5 pp	31.6%	Capitalisation of R&D and databases. New statistical sources on businesses.
Share of manufacturing in total value added.	+0.7 pp	13.5%	Capitalisation of R&D and databases. New statistical sources on businesses.
Total exports	+5.2%	520.5 bn EUR	Goods for processing (-9.9); New statistical source (+30).
Total imports	+3.7%	558.1 bn EUR	Goods for processing (-8.6); New statistical source (+30).
GFCF	+16.9%	441.1 bn EUR	Capitalisation of R&D (+41.5 bn), weapon systems (+3.3) and databases (1.2). New statistical sources on businesses.
Public deficit/GDP	-0.3 pp	6.8%	Variable impact depending on year due to new treatment of transfers of pension obligations and tax credits.
Public debt/GDP	-1.5 pp	80.8%	GDP increase (-3.1 pp); reclassifications (+1.6 pp)

Source: INSEE (2014), les comptes nationaux passent en base 2010, *www.insee.fr/fr/themes/comptes-nationaux/default.asp?page=base_2010/methodologie/methodo-b2010.htm*.

References

Gleeson-White (2011), Double Entry: How the merchants of Venice shaped the modern world – and how their invention could make or break the planet, ASIN: B005ZLZJ46.

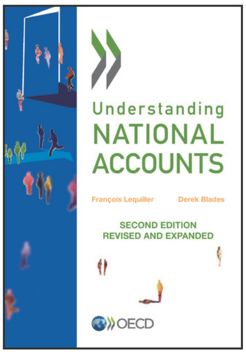
INSEE (2014), les comptes nationaux passent en base 2010, *www.insee.fr/fr/themes/comptes-nationaux/default.asp?page=base_2010/methodologie/methodo-b2010.htm*.

Maddison, A. (2003), The World Economy: Historical Statistics, Development Centre Studies, OECD Publishing, doi: *http://dx.doi.org/10.1787/9789264104143-en*.

SNA 1993, Commission of the European Communities, International Monetary Fund, Organisation for Economic Co-operation and Development, United Nations, World Bank (1993), System of National Accounts 1993, Brussels/Luxembourg, New York, Paris, Washington, DC, *http://unstats.un.org/unsd/nationalaccount/docs/1993sna.pdf*.

SNA 2008, European Commission, International Monetary Fund, Organisation for Economic Co-operation and Development, United Nations, World Bank (2009), System of National Accounts 2008, New York, *http://unstats.un.org/unsd/nationalaccount/docs/SNA2008.pdf*.

Vanoli (2005), *A History of national accounts*, IOS Press, ISBN-10: 1586034693, ISBN-13: 978-1586034696.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