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## Integrated frameworks for economic accounting standards

**PAUL McCARTHY (1)** 

**Abstract**: the origins of national accounting can be traced back to the 17th century. However, modern national accounts have largely developed since the late 1940s, although some initial forays commenced a couple of decades earlier. The three most important standards for the economic accounts are those for the 'family of macro-economic accounting' — national accounts themselves, the balance of payments and government finance. They were initially established separately from each other, although the nature of the subject matter meant that there was a significant degree of overlap in the concepts described. However, harmonising these three standards took some time to achieve and some minor consistency issues still exist.

The origins of national accounting have been described in detail by Bos (2017). Details about the development of international statistical standards for national accounts (*System of National Accounts*, or SNA), balance of payments (*Balance of Payments Manual*, or BPM) and government finance statistics (*Government Finance Statistics Manual*, or GFSM) are provided in this article. It also looks at the extent to which the SNA (particularly the 1993 and 2008 versions) provides the detailed data required to analyse current economic developments using the outcomes of two high-level enquiries as evidence of the suitability of the SNA as an international statistical framework.

The SNA has evolved since its beginnings in the mid-20th century, with successive versions refining the concepts underlying the accounts while simultaneously updating the system to take into account new economic developments (for example, more complex financial derivatives). Items are added to the SNA research agenda as they emerge to ensure the SNA maintains its relevance. For example, in the past decade the importance of globalisation has increased as has its complexity, while rapid advances in technology have also brought 'digitalisation' into the national accounts research agenda.

Finally, the efforts that have been put into harmonising the SNA, BPM and GFSM have been very successful with consistency being achieved in the latest versions apart from some subtle differences in wording that could lead to inconsistent interpretations, particularly with regard to some financial sector issues. Is it now time to integrate these three important international statistical standards into a single over-arching standard for economic accounts?

#### JEL codes: B00, E01, E60

**Keywords:** national accounts, balance of payments, government finance, satellite accounts, globalisation, digital economy

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## **1. Introduction**

Over the past century, the range of economic statistics available has been expanded considerably in response to demands from government, economic analysts and academic researchers. Not only has the range of data increased but much more detailed data are now available on many topics. Many datasets, such as national accounts and government finance, can be related to each other because they are produced using harmonised standards. In addition, comparisons between countries are possible because most countries compile their statistics largely in accordance with internationally-accepted statistical standards.

Collecting statistics is not a new undertaking. References can be found to population counts by the ancient Greeks and Romans, with the main reasons being either to assess the numbers of suitably-aged males available to conduct a war or for taxation purposes. Population censuses have continued through the many centuries since. Statistics relating to other topics can also be found quite readily through the Middle Ages, particularly those relating to agricultural products (for example, the production of crops or wool).

Charles and Daudin (2015) refer to some initial attempts at measuring foreign trade in the early 17th century and to England and Ireland systematically recording the balance of trade from 1696 using data from their ports. Some rudimentary government accounts were available in the 15th century, recording revenue collected and government expenditures financed by this revenue (Arslan (2017)). These elements of an economic accounting system developed independently of each other, partly as a function of the information available and partly the inclinations of those involved in improving them over time.

It was also in the 17th century that statistics emerged which attempted to provide an overview of a country's entire economy (what we now refer to as national accounts). Like the population counts made by the ancient Greeks and Romans, the underlying reason for their development was related to conducting wars; in this case to assess the ability of an economy to raise the revenue to sustain the war effort. Although their creators described the concepts they were measuring and the methods they used, at that time no-one developed a set of standards for compiling these accounts.

Such standards are now available for the national accounts and related statistics (in particular, balance of payments and government finance statistics). Several organisations have been involved in drawing up and refining these standards since the middle of the 20th century. They have developed to the point where they are almost completely consistent, even though different organisations have been responsible for producing them.

This paper examines the emergence of the statistical standards for the national accounts and those for its two most closely related datasets (balance of payments and government finance) and looks at possible future directions for these standards.

## 2. Development of national accounts

National accounts provide the broadest available statistical record of an economy. They draw together economic statistics that are generally collected separately from each other and present them as a detailed, consolidated set of data. The national accounts present details of production, income and expenditures for the major domestic economic sectors (households, government, corporations, non-profit institutions) as well as for the external (rest of the world) sector.

Detailed statistical standards for national accounts have evolved since the middle of the 20th century, along with more comprehensive frameworks for two of the sectors — government and the rest of the world — and guidelines for various other economic statistics (for example, money and banking, input-output, prices). A point often overlooked is that the concepts underlying national accounts provide a conceptual framework for the collection of economic statistics. It is particularly important that the statistical surveys that provide data for the accounts are either based directly on the national accounts concepts or can be readily related to them.

Some elements of national accounting can be traced back to the second half of the 17th century. Petty, King and Davenant devised the first national income estimates for England, while Boisguillebert and Vauban produced similar statistics for France (Bos (2017)).

The development of the modern national accounts started in the late 1920s, along with the idea of establishing international standards for compiling the accounts. The League of Nations convened an international conference in 1928, with the final report highlighting the desirability of countries compiling economic statistics and encouraging the development of uniform presentation methods to enable international comparisons. In 1939, the *World Economic Survey*, published by the League of Nations, included estimates of national income for 26 countries, with a time series of about 10 years (at that time, national income was considered by economists to be the single most important indicator of an economy's performance). Progress on developing international standards then stalled because of World War 2, although some countries continued to produce national accounts for their own purposes, particularly to monitor the impact of the war on their economies.

The modern era for national accounts developed from this initial step by the League of Nations, hastened by the economic stresses associated with World War 2 and the recovery efforts afterwards. In addition, the conceptual foundation provided by Keynes' General Theory highlighted the need for a statistical framework to support analysis of the factors underpinning countries' economic activity. Developing an economic analysis framework became even more critical with the post-war recovery programmes stretching the resources of all the countries involved. The United Nations (UN) was formed in 1945 and, via its newly-established Statistical Commission, became involved in setting standards for statistics. In 1947, the first meeting of the UN Statistical Commission emphasised the need for international statistical standards for compiling a wide range of statistics, including national accounts, for policy purposes.

A further important development in macroeconomic statistics during the 1930s was the input-output tables, which were devised by Professor Wassily Leontief. In 1941, Leontief published the results of almost a decade's work in *The structure of American economy, 1919-1929: An empirical application of equilibrium analysis*. Leontief had analysed the input-output structure of the American economy for 46 industries for two years (1919 and 1929). He updated this analysis in 1951 by extending it to 1939. Professor Leontief was awarded the Nobel Prize in Economic Sciences in 1973 'for the development of the input-output method and for its application to important economic problems. Professor Leontief is the sole and unchallenged creator of the input-output technique' (<sup>2</sup>).

Another significant development in international statistical standards in the mid-20th century that had a beneficial spin-off for the national accounts was in the field of balance of payments. The International Monetary Fund (IMF) was established in 1945 as an outcome of the Bretton Woods Conference in July 1944, attended by 44 countries. They had agreed that it was essential to develop a model for international economic cooperation to avoid any repetition of the currency devaluations that contributed to the Great Depression of the 1930s. The IMF's primary mission is to ensure the stability of the international monetary system — the system of exchange rates and international payments that enables countries and their citizens to transact with each other (<sup>3</sup>). It also facilitates international trade, promotes employment and sustainable economic growth, and helps to reduce global poverty. Given its special interest in international transactions, the IMF has been at the forefront of producing the international standards for balance of payments statistics. Another factor that impinges on a country's ability to support particular levels of foreign trade is its financial system, including government finance. As a result, the IMF has also produced the international standards for government finance statistics and for money and banking statistics.

Until the 1990s, a separate national accounting standard was used by countries in the Soviet Union's sphere of influence. It was known as the *Material Product System* (MPS) which, like the SNA, attempted to measure a country's overall economic activity. The first steps in its development were in the 1920s when it became the statistical standard for the Soviet Union. The MPS was also implemented as the standard for national accounts from the 1950s in the 15 countries that came into the Soviet system after World War 2 (4). In practice its production boundary was narrower than that of the SNA because the MPS measured only the production of goods, excluding services from its definition of production.

## 3. Standards for economic accounts

One of the most important developments in statistics since the mid-20th century has been the comprehensive set of statistical standards produced by international organisations. Several classifications (for example, industry, external trade, functions of government) are defined within these standards. They are now compatible across all the economic statistics frameworks and statistical collections.

- (2) See: https://www.nobelprize.org/prizes/economics/1973/press-release/.
- (3) IMF, see: https://www.imf.org/en/About.

<sup>(\*)</sup> Albania, Bulgaria, China, Cuba, Czechoslovakia, the German Democratic Republic (or East Germany), Hungary, Cambodia, the Democratic People's Republic of Korea (or North Korea), Laos, Mongolia, Poland, Romania, Vietnam and Yugoslavia.

Currently, the main economic accounting standards directly relevant to the national accounts are:

- System of National Accounts, 2008 (2008 SNA);
- European System of National and Regional Accounts, 2010 (ESA 2010);
- Balance of Payments and International Investment Position Manual, Sixth edition (BPM6), 2009;
- Government Finance Statistics Manual, 2014 (GFSM);
- Monetary and Financial Statistics Manual and Compilation Guide, 2018;
- various satellite accounts manuals (for example, for the environment or for tourism).

Other statistical standards cover subjects such as price indexes and labour force (employment) data. In addition, a large number of 'how to do it' guides have been produced, covering various aspects of the national accounts (explaining, for example, how to compile quarterly accounts or supply-use tables) as well as other topics such as compiling balance of payments estimates.

There was a large degree of overlap between these standards even though they were largely developed independently of each other. Initially, some differences arose between early editions of the SNA and the BPM. Over the past few decades a considerable amount of effort has been put into ensuring that these standards are aligned. The result is that they are consistent apart from minor subtle differences in detail or wording that could lead to inconsistent interpretations of some parts of these standards.

The question that should be asked now is whether it is possible to integrate the various economic accounting standards into a single overarching standard incorporating the SNA, BPM and GFSM. This article examines the feasibility of such an approach. Its starting point is to look at the history of the development of international standards for economic statistics.

#### 3.1 Early versions of economic accounts frameworks (up to 1964)

In 1950, the Organisation for European Economic Co-operation (OEEC), in conjunction with the National Accounts Research Unit at Cambridge University (headed by Richard Stone <sup>(5)</sup>) produced a statistical framework for the national accounts titled *A Simplified System of National Accounts*. Based on some country studies and comments from economic statisticians, this standard was revised significantly and was published in 1952 as *A Standardised System of National Accounts*.

While the UN had similar aims as the OEEC in measuring activities across the whole economy, its emphasis was to ensure that the concepts underlying the national accounts were applicable to all countries, including developing economies in particular. The UN emphasised issues related to the comprehensiveness of the accounts such as including imputations for subsistence production within the production boundary. The first national accounting standard produced by the UN was published by the UN Statistical Office in 1953 as part of their 'Studies in Methods' series and was titled *A System of National Accounts and Supporting Tables*. It was updated in 1960 to take account of the experiences of countries in implementing its guidelines and again in 1964 to improve its consistency with the IMF's *Balance of Payments Manual*.

<sup>(3)</sup> Richard Stone and James Meade had produced Britain's first national accounts in 1941 to measure the resources available to Britain's war-time economy.

### 3.2 Economic accounts frameworks (1968-1993)

These early attempts to produce a statistical framework for the national accounts were not formally coordinated. Some members of the teams overlapped but the different organisations involved had their own priorities at the forefront of their efforts so the emphasis in the various manuals was different (for example, as noted above, the UN considered the application of national accounts to developing economies as a high priority). In 1968, *A System of National Accounts* (SNA) was coordinated and published by the UN and was the first version in which the competing priorities for the national accounts were fully taken into account.

The *Balance of Payments Manual* (BPM) was produced by the IMF (as is still the case). The concepts in the SNA's overseas transactions (rest-of-the-world) account were largely, but not completely, consistent with the BPM. For example, at that time reinvested earnings of direct foreign enterprises were treated differently in these two international standards.

#### 3.3 Economic accounts frameworks (1993-1998)

A revised version of the SNA was released in 1993. It both updated and expanded the 1968 SNA. The impetus for the update of the 1968 SNA came from some significant changes in the structure of economies, the availability of more sophisticated price deflators, the broader range of financial instruments that had become available, and various topics of interest that were related to economic activity but which were outside the boundary of production, particularly unpaid household work and environmental issues.

An Inter-secretariat Working Group on National Accounts (ISWGNA) was established to coordinate the revision/update of the 1968 SNA. The ISWGNA consisted of Eurostat, the IMF, the Organisation for Economic Co-operation and Development (OECD), the UN and the World Bank. An important reason for forming the ISWGNA was to ensure that the concepts for the main economic accounting standards were harmonised with each other by having better coordination amongst the agencies involved in producing those standards.

In 1995, the European Union (EU) produced an updated version of the *European System of National and Regional Accounts*, which is commonly known as the 1995 ESA. It was largely consistent with the statistical concepts described in the 1993 SNA but included some refinements to specific definitions that were designed to cater specifically for requirements of the EU.

### 3.4 Economic accounts frameworks (1998-2008)

During the 1990s, several economic developments impacted on the applicability of some of the standards in the 1993 SNA. In 1999, the UN Statistical Commission agreed to proposals by the ISWGNA to update the 1993 SNA's recommendations on financial derivatives. However, several other economic developments at the turn of the century (mobile phone licences, payments by stock options, non-performing loans, emissions trading schemes) were not explicitly treated adequately in the 1993 SNA, so in 2003 the ISWGNA recommended to the UN Statistical Commission that a comprehensive update of the SNA was necessary. An advisory expert group was established by the Commission to advise the ISWGNA. The group's first meeting was in February 2004 and it met six times during the 1993 SNA update.

# 4. What do the national accounts measure?

The OECD defines national accounts as follows:

'National accounts are a coherent, consistent and integrated set of macroeconomic accounts, balance sheets and tables based on a set of internationally agreed concepts, definitions, classifications and accounting rules. National accounts provide a comprehensive accounting framework within which economic data can be compiled and presented in a format that is designed for purposes of economic analysis, decision-taking and policy-making.' (<sup>6</sup>)

In practice, GDP is the broadest measure of economic activity presented in the national accounts and, consequently, the most widely used measure. GDP is frequently used as a proxy for economic well-being. While there is often a correlation between the level of a country's well-being and its GDP, many factors affect well-being and not all are included in GDP. For example, many environmental issues are considered to be outside the SNA's boundary of production (for example, the intrinsic value of having clean water available, although the costs of purifying water supplies are included in GDP).

The effectiveness of the national accounts as a tool for economic analysis, decision-taking and policymaking depends on a number of factors:

- how well does the SNA framework capture all economic activity?
- how well can the SNA framework be applied in practice?
  - are the data available to produce all the accounts completely?
  - what assumptions have to be made?
  - are the data consistent over time?
- how well are the national accounts understood by economic analysts and commentators?

For over half a century the statistical framework provided by the SNA has proven to be resilient to changing economic circumstances, technological change and the increased inter-connections between economies. In fact, the usefulness of the SNA has driven increased scrutiny of national accounts as well as the balance of payments and government finance. While the national accounts are the broadest set of economic statistics, there is a range of other important standards for economic statistics. Even though these standards have been developed by different agencies, the statistics based on them can be completely reconciled with each other, which is important for economic analysts and commentators.

## 5. Complementary standards

National accounts are designed to measure the whole economy so they depend on virtually the whole range of economic statistics collected by national statistics offices. Two of the most important datasets that feed into the national accounts are the balance of payments,

<sup>(6)</sup> OECD Glossary of Statistical Terms.

which record transactions between an economy's residents and the rest of the world, and government income and expenditure (government finance statistics). Both are important in their own right for policy purposes, so the statistical standards for these sets of statistics evolved independently of the national accounts, at least initially. Early versions of these standards were not completely consistent with the SNA, although the latest versions have become consistent because of the coordination through the ISWGNA. In particular, until recent years the major data sources for government financial transactions were cash accounts. As a result, the initial standards for government finance statistics were cash-based rather than accruals-based (as required for the national accounts). The 2008 SNA explains the reason for accruals-based accounting being preferred to cash-based as follows (paragraph 3.166):

'Accrual accounting records flows at the time economic value is created, transformed, exchanged, transferred or extinguished. This means that flows that imply a change of ownership are entered when the change occurs, services are recorded when provided, output at the time products are created and intermediate consumption when materials and supplies are being used. The SNA favours accrual accounting because:

a. The timing of accrual accounting is in full agreement with the way economic activities and other flows are defined in the SNA. This agreement allows the profitability of productive activities to be evaluated correctly (that is, without the disturbing influence of leads and lags in cash flows) and a sector's net worth to be calculated correctly at any point in time;

b. Accrual accounting can be applied to non-monetary flows.'

Early versions of national accounts standards dealt with this cash/accruals problem by recommending some adjustments to the cash-based government accounts to bring them more closely into line with an accruals-based set of accounts. For example, assessments of the amount of income tax payable are often based on the earnings in the preceding year so the cash amounts of income tax received do not relate to the same period as that in which the income was earned. Including cash estimates of income tax directly in the national accounts would cause discrepancies in annual percentage changes and potentially between the three alternative measures of GDP (income, expenditure and production). The SNA therefore recommended some adjustments so that government finance statistics, such as income tax, would more closely approximate accruals-based estimates.

The shortcomings of cash-based government accounts led the governments in some countries to move to accruals-based government accounts in the 1990s, at least as an adjunct (supplementary source of information) to their cash-based accounts. It was not until the 2001 issue of the *Government Finance Statistics Manual* (GFSM) that it recommended that government finance statistics should be compiled on an accruals basis.

Historically, the national accounts used information mainly from the current account of the balance of payments but at a more aggregated level of detail than analysts of the balance of payments data required. In principle, exports and imports of goods and services should be recorded in both the national accounts and the balance of payments at the time that the ownership of the goods or services changes hands. However, the most commonly used data source for exports and imports of goods is an administrative system recording trade as the goods physically pass through a country's customs boundary. The time of change of ownership and that of crossing the customs boundary can differ significantly and both

the SNA and BPM suggested making adjustments to more closely align the values obtained from customs data with the time at which ownership actually changed. A simple example of the impact of not reflecting the correct timing in exports of goods would be a large grain shipment that was exported during the first week of a year but which had actually changed ownership the previous week (in other words, in the previous year). In the customs data, the export would be recorded in one year but the business selling the grain would have reported the sale, and a rundown in inventories, during the previous year leading to a discrepancy within the expenditure-based estimates of GDP.

# 6. The big steps forward for national accounts standards

It is instructive to examine in more detail the evolution of the economic accounts standards. Not only have definitions, concepts and processes been refined but the scope of GDP has also changed over time.

#### 6.1 1968 SNA

In 1968, the United Nations Statistical Office released an updated framework for the accounts ----- A System of National Accounts (SNA). It was more comprehensive and detailed than the earlier versions and included guidelines for producing input-output tables, flow-of-funds accounts and balance sheets. The accounts were presented in a matrix format, which was designed to show how an economy's transactions fitted neatly into an input-output format. Individual cells of the matrix could be elaborated to provide more detail on various aspects of the accounts. At its broadest level the matrix presentation provided an organised overview of the way in which the full set of accounts related to each other and how the current accounts related to the balance sheets. It was a useful way of presenting the linkages between the various components of the accounts but did not readily lend itself to the more practical issues involved with compiling them.

One chapter within the UN's *System of National Accounts* was devoted to the issues associated with constant price estimates, recognising their importance for economic analysis. The treatment of financial institutions (the imputed service charge) was changed significantly. Reflecting the UN's desire to improve the quality of economic statistics in developing countries, a section (Chapter IX) was devoted to the issues associated with the 'Adaptation of the full system to developing countries'. It covered the problems caused by so-called 'dualism', which is the existence, side-by-side, of traditional and more modern modes of living and economic organisation in an economy. The chapter emphasised the importance of accounting for subsistence production because its share of GDP will decline as an economy develops and becomes more market orientated. Omitting subsistence production will cause GDP growth to be overstated as this change occurs. This chapter also highlighted the importance of some export industries, based on the availability of mineral or agricultural resources, and the potentially large impact of the public sector in influencing growth in these (developing) countries. The chapter included a number of ways in which data on the most

important drivers of a developing country's economy could be presented, via such means as expanding classifications for key industries and presenting supplementary tables showing the market/non-market split of activities. It also set out priorities for compiling the various tables in the accounts.

The 1968 SNA was not completely consistent with the IMF's *Balance of Payments Manual*, although steps had been taken by the UN and the IMF to better align these two standards.

#### 6.2 1993 SNA

The 1993 SNA built on the 1968 version by refining many of the concepts and dealing with practical issues that had arisen when national statistics offices were implementing the 1968 SNA.

The oil crises in the 1970s resulted in major structural changes in many economies and introduced some difficult issues for the national accounts deflators and constant price (in other words, volume) estimates. Most countries compiled their constant price estimates for a base year that was fixed for several years. Typically, rebasing to a more recent base year occurred once every 5 or 10 years. The massive price increases for oil during 1973 and 1974 were reflected in the price deflators for oil products, which resulted in different growth rates in GDP and its major aggregates being recorded depending on which year was chosen as the base year. There were also huge changes in the structure of economies with oil-exporting countries having a large increase in nominal GDP while oil-importing countries generally suffered varying degrees of balance of payments problems and a slowdown in their economic activity which impacted on various components of their national accounts.

Another major change was the introduction of personal computers and their rapid spread through economies in the early 1980s. The 'matched model' method of measuring prices over time was not appropriate for computers because of the rapid changes in technology and so hedonic (<sup>7</sup>) price indexes were developed for computers. In the mid-1980s, the United States Bureau of Economic Analysis started estimating deflators for computers in the US National Income and Product Accounts using hedonic price indexes. However, another problem arose with fixed base estimates because the rapid spread of computers was associated with huge falls in their price. Therefore, the fixed base method tended to overweight the volumes of computers as the time series moved forward from the base year.

The 1993 SNA introduced the concept of 'chain volumes' to ameliorate the problems associated with the shocks from the oil price increases and falls in the price of computers. In essence, the simplest means of estimating chain volumes is by changing the base year every year instead of every 5 or 10 years. In this way, each year's volume changes are estimated using the previous year as the base year instead of having a base year that is several years out of date.

<sup>(?)</sup> The OECD glossary of statistical terms defines a hedonic method as 'a regression technique used to estimate the prices of qualities or models that are not available on the market in particular periods, but whose prices in those periods are needed in order to be able to construct price relatives. It is based on the hypothesis that the prices of different models on sale on the market at the same time are functions of certain measurable characteristics such as size, weight, power, speed, etc. and so regression methods can be used to estimate by how much the price varies in relation to each of the characteristics'.

One of the regularly occurring criticisms of the production boundary defined by the 1968 SNA was that it excluded unpaid household work. The issue of including unpaid household work as part of GDP was considered during the deliberations on the changes being introduced in the 1993 SNA, but it was rejected. However, this concern did lead to the concept of 'satellite accounts', which has proved to be an important innovation. They are accounts compiled using the same concepts as the core accounts but which are kept separate from them. Satellite accounts can be used for a wide variety of purposes, with those for the environment, tourism and unpaid household work being amongst the most prominent. The advantage of satellite accounts is that statistics can be produced that are as consistent as possible with the data in the main (or core) accounts but without affecting the consistency or continuity of the core accounts themselves.

Another significant change to national accounts for the 1993 SNA was in relation to the treatment of the output of financial corporations. The way that financial institutions, such as banks, operate is as an intermediary between lenders and borrowers of funds. Part of a bank's receipts for its operations comes from direct charges levied on those either depositing or borrowing funds but a substantial part comes from the difference in the lower interest rates paid to depositors and the higher rates charged to borrowers. This difference in interest rates provides a major source of income for banks and is known in national accounting jargon as 'financial intermediation services indirectly measured' (FISIM). Introducing FISIM to replace the 1968 SNA's imputed service charge for financial institutions was a very contentious issue. Ultimately, the 1993 SNA recommended FISIM as the preferred method for estimating the output of financial corporations but it also allowed the 1968 SNA's approach to be used if a country thought it better suited its situation. One of the important considerations was that estimating FISIM increased GDP because the 1968 SNA's treatment allocated the whole of the service charge as intermediate consumption of a nominal industry so it did not have to be allocated across those industries using the service. When FISIM was allocated, part of it went to final consumption expenditure of households and government, so it increased GDP.

The effect of all the changes introduced in the 1993 SNA was to raise the level of GDP in many countries by about 2-3 %, although the impact on changes in GDP volumes was much smaller. FISIM was a significant component of this increase in GDP.

The EU's standard for national accounts at that time was the 1995 *European System of National and Regional Accounts* (1995 ESA), which was a legal document under EU legislation. The EU uses national accounts data for several important administrative purposes:

- in 1992, the EU specified criteria (commonly known as the 'Maastricht criteria') that EU Member States had to meet to be able to adopt the euro as their currency (two of these were based on national accounts data — the ratio of the government deficit to GDP and the ratio of government debt to GDP);
- the national accounting aggregate gross national income (GNI) is a component of the formula used in determining the contributions of EU Member States to the EU's budget;
- the term regional accounts in the ESA title is significant because regional accounts are used to allocate regional cohesion and support funds.

Using national accounts criteria in these ways depended on the consistency of the relevant data across EU Member States, which the 1995 ESA was designed to ensure.

#### 6.3 2008 SNA

In 1999, the UN Statistical Commission agreed to two ISWGNA proposals for one-off changes to the 1993 SNA. One was an elaboration of the classifications of expenditures according to purpose, which had not been fully articulated when the 1993 SNA was released. The second was a change in the treatment of financial derivatives, which was required because of the extent of the innovations in this type of financial instrument during the 1990s. An important point to note is that the IMF proposed the financial derivatives revision but the ISWGNA was responsible for reviewing the proposals. Identical changes were made to the 1993 SNA and the fifth edition of the IMF's *Balance of Payments Manual* (BPM5) and it was agreed to make the same changes in the forthcoming IMF *Manual on Monetary and Financial Statistics*. The updating process was an example of successful cooperation between the five international organisations with major responsibility for economic accounts frameworks and standards. It ensured consistency on these issues between the 1993 SNA and BPM5.

At its meeting in 2002, the Statistical Commission agreed to establish an advisory expert group to assist the ISWGNA by providing advice on some of the emerging economic issues that required clarification in economic accounts. At that time some difficult issues had arisen whose treatment was not explicitly covered by the 1993 SNA (for example, how to treat mobile phone licences, stock options, non-performing loans, emissions trading schemes). While some interim recommendations had been accepted, the Statistical Commission agreed that further research was required on these, as well as some other issues that had been discussed when the 1993 SNA was being drafted.

By 2003 a sufficient number of changes had been identified for a major revision of the SNA and the 2003 UN Statistical Commission 'endorsed the scope of the updating process with a view to maintaining the fundamentals of the current *System of National Accounts, 1993* (1993 SNA) and its consistency with related publications like the *Balance of Payments Manual*, 5th ed., the *Government Finance Statistics Manual, 2001*, and the *Monetary and Financial Statistics Manual*. In total, 44 items were identified for consideration by the advisory expert group. Some were important emerging issues, some were required to take account of changes in the ways in which economies operated and some were refinements to make the SNA less prescriptive so that different institutional arrangements in different countries could be better catered for. The UN Statistical Commission emphasised that no fundamental changes would be made to the 1993 SNA during the process. Rather, the update was designed to refine concepts in the 1993 SNA that had proved problematical for some countries in implementing it and to take account of emerging economic circumstances that either did not exist or were relatively unimportant when the 1993 SNA was being formulated.

Two of the changes that the advisory expert group considered during the SNA update were whether to capitalise defence expenditures and to capitalise research and development (R & D) costs. Historically, all defence expenditures were considered to be current expenditures. In the 1993 SNA, a partial change was made, with capital items that were commonly available in the non-defence sectors of the economy (for example, housing) being classified as fixed capital formation. However, expenditures on 'defence-only' products such as weapons, missile carriers and launchers, military aircraft or warships, were still classified as current expenditures. The 2008 SNA made a change by recommending that expenditures on all these types of weapons systems should be classified as fixed capital formation because

they '.... provide an ongoing service of deterrence against aggressors and therefore meet the general criteria for classification as fixed assets'. The advisory expert group also decided to capitalise R & D costs.

The experience of most countries in implementing the 2008 SNA was that the levels of GDP were increased by at least 1.5 % and by as much as 4.0 % but the period-to-period (for example year-on-year) changes were not significantly affected in most cases. The two largest influences on the changes in the level of GDP were capitalising defence weapons systems and capitalising expenditures on R & D. The impacts from other changes were generally less significant but, nevertheless, were important in some countries. In addition, given the status of implementing the 2008 SNA in a country's accounts as being a 'major revision', the opportunity was taken in many countries to put through accumulated revisions (for example, from new or revamped economic surveys), which partly obscured the effects of the changes from implementing the 2008 SNA.

Introducing new concepts into a country's national accounts is a major task because the changes/additions have to be backcast through the entire national accounts time series to maintain consistency in the accounts, particularly for one of the most important uses — estimates of economic growth as measured by changes in the volume of GDP. The need to maintain consistency occurs no matter how large (or small) the change being implemented so backcasting is always required.

The 1995 ESA was updated a couple of years after the 2008 SNA and was released as the *European System of National and Regional Accounts* (ESA 2010).

## 7. Balance of Payments Manual

Historically, the International Monetary Fund (IMF) has been responsible for the statistical framework and standards relating to international transactions. The IMF released the first edition of the *Balance of Payments Manual* (BPM) in 1948. The latest version was issued in 2008 and is titled *Balance of Payments and International Investment Position Manual, Sixth edition,* commonly known as BPM6.

The early editions of the SNA and the BPM were produced independently, although an updated version of the 1960 SNA was released by the United Nations Statistical Office in 1964 with the aim of improving the consistency of the SNA and the BPM. The fourth edition of the BPM was released in 1977. Some inconsistencies between BPM4 and the 1968 SNA remained, particularly with respect to reinvested earnings.

The 1993 SNA was produced under the auspices of the ISWGNA. The fifth edition of the BPM was also released in 1993 by the IMF. The concepts in the 1993 SNA and the BPM5 were harmonised with each other regarding units, valuations, time of recording, conversion procedures, coverage and financial assets and liabilities (similarly with the 2008 SNA and BPM6, which were updated from their previous versions at the same time as each other). However, some differences in presentation still remain, which are a function of the different aims of the two standards and the requirements of their users.

The SNA is based on the principle of quadruple entry accounting. Transactions are generally between two institutional units and each of the units records the two sides of the transaction, in other words, as a resource and as a use. On the other hand, the BPM6 identifies only the resident party and so each transaction has only two entries at this time.

A major difference in presentation is that the balance of payments is shown from the point of view of resident units while the rest of the world accounts in the SNA present the same accounts, including the same transactions, from the point of view of non-resident units. The classifications are consistent but the ways in which the estimates are presented differ because of the different requirements of their major users. For example, the BPM6 presents financial details classified by functional category (direct investment, portfolio investment, financial derivatives, etc.) whereas the SNA prefers a classification according to the financial instrument (monetary gold, special drawing rights, currency and deposits, etc.). The important point, though, is that the details provided in both the SNA and the BPM allow both sets of data to be completely reconciled with each other.

One final point of difference is that the level of detail presented in the balance of payments tends to be greater than that in the national accounts, reflecting users' requirements for the data (for example, information on counterparty countries in the balance of payments).

The 2008 SNA contains a chapter providing details of the non-resident sector (*Chapter 26: the rest of the world accounts and links to the balance of payments*). It provides sufficient detail for those involved in compiling the national accounts to produce estimates for the rest of the world accounts, given that the balance of payments estimates have already been compiled. However, the much more detailed presentation contained in the BPM6 is necessary for someone to compile the balance of payments and international investment statistics from scratch.

## 8. Government Finance Statistics Manual

The statistical framework for compiling government finance statistics is the IMF's *Government Finance Statistics Manual* (GFSM). Both the 2001 and 2014 versions of the GFSM recommend that government accounts should be compiled on an accruals basis and should present the full range of financial statements, including balance sheets. Many countries still have cash-based government accounts, which need to be adjusted to more closely reflect the accruals basis on which the national accounts are compiled.

The government finance statistics system provides the data that are used in compiling the national accounts so these two data systems have many concepts in common. The SNA differs from the government finance statistics system in that the SNA's central focus is on economic concepts such as production and consumption of goods and services, whereas the government finance statistics system concentrates mainly on fiscal concepts such as revenue, expenditures, borrowing, etc.

In principle, the government finance statistics system includes all government entities, whether they are part of the general government sector or a publicly-owned enterprise ('public corporation'). Typical examples of public corporations include railways, airlines or utility companies, but the extent of public ownership and control of enterprises differs across countries. In government finance statistics, public corporations are identified separately from general government units because their functions differ from those of such agencies. The public sector consists of general government units plus public corporations.

In the national accounts, the public sector is just one of several sectors that make up the whole economy. Accordingly, the accounts for general government and public corporations are presented separately but with the same structure as the accounts for the other sectors so that aggregates and balancing items are consistent across all sectors. However, a different presentation is provided by the GFSM to analyse the public sector in detail. It includes items such as total revenue, total expense, tax burden and net operating balance, which are all important items for analysing government operations. Some national accounts aggregates (for example, government final consumption expenditure) are not shown in government finance statistics but all the data required to estimate them are collected.

While it is desirable to record government flows on an accrual basis, information on the sources and uses of cash is also important for assessing the liquidity of the general government sector. The statement of government operations is accruals-based. However, as its name suggests, the statement of sources and uses of cash reflects a cash basis of recording. As a result, transactions are recorded when cash is received or when cash payments are made but the cash payment may not take place until a subsequent accounting period. Similarly, revenue can be received in cash before it is earned by the delivery of goods or provision of services to the purchaser.

The result is that alternative presentations are desirable for analysing the public sector, particularly the general government component. The GFSM goes much further than the SNA in providing details of the types of tables required specifically for analysts interested in examining the details of the general government sector.

## 9. Satellite accounts

The concept of satellite accounts was introduced in the 1993 SNA. The objective of such accounts was to enable issues closely related to the national accounts to be analysed on a consistent basis with the accounts by using the same concepts as the core accounts. Satellite accounts could be linked directly to the core accounts even though they would be compiled separately from them. However, nothing from satellite accounts directly impacts on the core accounts and their major aggregates such as GDP. The types of issues of interest for satellite accounts often have valuation issues associated with them and also tend not to have consistent long-term time series available.

The most prominent satellite accounts are those for unpaid household work (which many argue should be part of GDP), environmental accounts, the 'tourism industry' (which is really a collection of activities undertaken in many industries, as defined in the national accounts), social protection, health, education and agriculture. Standards have been produced for most of these, together with manuals describing appropriate methodology.

Other experimental satellite accounts could be produced by applying different classifications, or extending the SNA's production boundary, or using alternative means of valuing some parts of the core accounts. For example, Eurostat experimented with new methods to estimate FISIM in satellite accounts before deciding how to incorporate estimates of FISIM in the national accounts of EU Member States.

The logic behind satellite accounts can be seen by examining some of the issues involved in producing estimates for unpaid household work and environmental accounts.

### 9.1 Unpaid household work

Producing estimates of unpaid household work involves a combination of data and valuation problems. One problem is defining what should actually be included as part of unpaid household work. A definition that is well supported is that unpaid household work should include any activities that someone else could have provided as a service to the household. Under this definition, it is clear that some activities are outside the scope of unpaid work. For example, sleeping or travelling to and from work would be excluded because it is not possible to hire someone to undertake these activities. On the other hand, activities such as cooking and shopping would be included as unpaid household work. However, in some cases, these activities may embody an element of leisure rather than work, so it is not clear how much, if any, of these activities should be included. Another contentious example is playing with children. A baby/child-sitter can be paid to look after and play with children. However, is it work or pleasure for the parents to do so? In practice, it is impossible to draw a clear dividing line between unpaid work and leisure, although some conventions can be followed.

Valuing unpaid work also presents some difficult decisions. One method is to record the time taken for the different activities and apply an hourly rate to them. The hourly rate could be the cost of hiring someone to undertake the activity (making the assumption that the quality of output and the productivity of both would be the same). Another method would be to measure the quantities of each service produced (for example, the number of meals rather than the time spent preparing those meals) and then to apply a price to the outputs. In practice, this method would be more difficult to apply because of the problems in obtaining all the data required. There are several variations on these valuation methods but they all have similar conceptual and practical problems associated with the assumptions underlying them.

#### 9.2 Environment

Environmental satellite accounts cover a broad range of activities but the main output is an estimate of environmentally-adjusted GDP (often referred to as 'green GDP'). The value of green GDP depends on the values estimated for the main environmental issues — clean air, clean water, national parks, land degradation, etc. Many physical indicators are available (for example, pollution readings, numbers of visitors to parks, tonnes of topsoil lost due to drought or floods). However, unlike most parts of the core accounts, there is no market (value) for most of these types of indicators, so no prices are available to value them. Various indirect methods of estimating prices have been suggested but, depending on the method selected, they can lead to quite different results, which reduces their usefulness.

One of the strengths of the SNA is that most of the transactions included in the production boundary are market-based and so values can be readily observed. Even where input methods must be used, such as for general government services, the value of the labour and materials inputs can be observed. In fact, the most contentious parts of the national accounts over the years have been those for which values have to be imputed (for example, FISIM, subsistence production, rent of owner-occupied housing). Satellite accounts enable alternative estimates to be produced and evaluated without affecting the integrity of the core accounts.

### 9.3 Changing the SNA's production boundary?

A question that arises from time to time is whether the production boundary should be changed to incorporate unpaid household production or to include environmental issues and estimate the so-called green GDP. On the side of making such changes, proponents argue that they would make the accounts more relevant for many policy decisions. On the other hand, they would potentially affect the continuity of the lengthy time series available in many countries because of the lack of data for these topics for earlier years. In addition, the difficulties involved in assigning a price to physical data affect the usefulness of the estimated values. Producing satellite accounts annually would show how feasible it would be to expand the production boundary to include these topics. It would also require the endorsement of policymakers as to whether such changes would improve the analytical content of the accounts.

# 10. The SNA and the global financial crisis

The first signs of the 2008 global financial crisis appeared in 2007, when the US housing market began to fall, with house prices at times becoming lower than the mortgage outstanding on many houses. The Dow Jones Industrial Average index peaked in late 2007 and fell steadily through 2008, with the decline becoming more pronounced in late 2008 following the collapse of the Lehmann Brothers investment bank. Questions asked by many commentators at this time included why the global financial crisis had not been predicted by economists and was the SNA a sufficiently robust framework to produce the data required for analysts to accurately assess the economic situation. In fact, in 2006 and 2007 a small number of economists had forecast the crisis, based on the economic data available at that time.

At its February 2008 meeting the UN Statistical Commission proposed that a High Level Forum should be convened to consider the long-term development of the SNA. The timing turned out to be providential with the global financial crisis highlighting the need for detailed economic statistics. The forum held its meeting in November 2008. A key outcome was that the national accounts and related statistics were seen by the forum as '... the proper policy response by the statistical community to provide adequate information on economic developments of a global interconnected nature' (<sup>8</sup>). The framework provided by the SNA

<sup>(\*)</sup> Paragraph 19 of the Report of the High Level Forum on the Long Term Development of the System of National Accounts to the UN Statistical Commission, 2009, see: https://unstats. un.org/unsd/statcom/40th-session/documents/doc09/BG-SNA2008-3-E.pdf.

would supply the data required to analyse the reasons for the crisis and, indeed, to have enabled the crisis to be forecast. However, few countries had fully implemented the entire SNA, including flow-of-funds accounts and balance sheets, which were critical inputs for economic forecasting.

The forum emphasised that it is essential for countries to produce balance sheets irrespective of their stage of economic development and to ensure that the balance sheets are fully integrated with the accounts of the real economy. However, even now, a decade after the crisis, many countries do not have a sufficiently well-developed statistical system to produce a full set of national accounts. In fact, many developing countries struggle to produce a consistent set of production, income and expenditure accounts each year. The key to analysing major changes in the global economy is for all countries to have strong links between the real accounts and the financial accounts. Such links are provided in the SNA framework so it is incumbent on countries to complete the data sets defined in the SNA.

## **11. Lessons from the Stiglitz report**

In February 2008 (just as the 2008 SNA was being endorsed by the UN Statistical Commission), the French President, Nicolas Sarkozy, established 'The Commission on the Measurement of Economic Performance and Social Progress', chaired by Joseph Stiglitz, a prominent American economist and a professor at Columbia University in the USA. The mandate of the Commission was to identify the limits of GDP as an indicator of economic performance and social progress. In addition to assessing the problems associated with accurately measuring GDP (as defined in the SNA), the Commission was asked to assess what would need to be added to, or changed in, the current definition of GDP to produce better indicators of social progress and how to present the statistics in a way that makes them more understandable for the general population.

One of the main reasons for creating the Commission was the apparent widespread perception in the community that the standard measures of important statistics such as unemployment, economic growth or inflation do not reflect the reality faced by most of the population. One recurring example is for commentators to criticise the usefulness of employment and unemployment statistics because of the International Labour Organisation's standard definition that someone working one hour per week is classified as being employed. Other examples are the published growth in GDP may be much higher than most people believe, given their own circumstances, or the official inflation measures may be perceived by consumers as not reflecting what they 'know to be the case'. There may be legitimate reasons for the growth in GDP volumes being at odds with public perceptions. For example, the GDP volume could be growing strongly but, if a country's terms of trade have deteriorated markedly, then many businesses or individuals could be adversely affected by a loss in their income. In this case the problem is not any error in the statistics. Rather, it is the tendency for commentators to focus on the broadest and most easily recognisable indicator of economic conditions (GDP volumes) rather than another indicator (such as real gross domestic income) that may be more appropriate in the circumstances.

Stiglitz highlighted the role that any increasing inequality, particularly in income distribution, has on public perceptions of the accuracy of aggregate statistics such as GDP or changes in the overall consumer price index (CPI). In addition, while there is a correlation between the level of GDP and well-being, the growth in GDP does not necessarily reflect improvements in well-being. For example, Stiglitz gave the example of traffic jams, which may increase the use of petrol and therefore add to GDP, but they clearly do not improve the quality of life. If GDP is to more accurately reflect well-being, it needs to take account of environmental and social factors that affect the quality of life.

The report of the Stiglitz Commission reinforced the view of the High Level Forum on the Long Term Development of National Accounts that the global financial crisis was not forecast well because '.... many countries lack a timely and complete set of wealth accounts — the balance sheets of the economy — that could give a comprehensive picture of assets, debts and liabilities of the main actors in the economy'. In other words, despite the 1993 SNA framework providing the detail required to analyse the events leading up to and during the crisis, many countries (in fact, it was most countries) did not have the full set of accounts, particularly balance sheets, specified in the 1993 SNA.

Many of Stiglitz's recommendations relate to data that are outside the scope of the national accounts. Some of those that do relate to the national accounts (for example, 'Recommendation 1: when evaluating material well-being, look at income and consumption rather than production') do not require any data not already included in the accounts (net national income, household income and household consumption). Some others involve using the national accounts as a framework and adding data that provide extra information (for example, 'Recommendation 4: give more prominence to the distribution of income, consumption and wealth'). Some of the recommendations involve extensions to GDP, such as by taking environmental indicators into account.

Both the Stiglitz Commission and the 2008 High Level Forum on the Long Term Development of the System of National Accounts showed that many of the statistics that users require are already included in the accounts but they are not well known. There is scope for the data available in the accounts to be highlighted amongst users and particularly commentators such as journalists. Other recommendations in the Stiglitz report show that the 1993 SNA proposals for satellite accounts were far-sighted. The scope for developing satellite accounts is limited by data availability and valuation issues and, in some cases, the length of consistent time series of data. However, satellite accounts provide an ideal vehicle to emphasise the versatility and broad reach of the national accounts themselves.

## 12. Updating issues

Determining when to update the SNA and the other economic accounts standards is a difficult decision. Rapidly-changing technology, evolution in financial instruments and the effects of expanding globalisation have changed the ways that economies work and interact with each other. It is important that the SNA, the BPM and the GFSM meet the challenge of keeping abreast of the prevailing economic conditions. The issues that arise are whether incremental changes will be sufficient to maintain statistical standards that reflect the economic reality or whether a more extensive update and rewrite of the standards are required. Whichever is the case, one critical concern of economic statisticians is to ensure that all the time series are preserved. The effects of any changes that are introduced need to be backcast through the relevant periods in the time series.

It is not only the time series that need to be considered. In the EU, the levels of some national accounts aggregates are very important. For example, the Maastricht criteria specify particular levels for the ratio of government deficit and debt to GDP. If the level of GDP is raised or lowered by changes in the definition of GDP or its components then it has implications that are broader than those associated with statistical analysis.

One of the lessons from past SNA updates is that the changes tend to be reacting to events (for example, financial derivatives, emissions trading schemes, mobile phone licences). Some retrospectivity is inevitable, but dealing with these types of issues in a major revision is too late, which indicates there needs to be some process for incremental updates in certain circumstances.

There are always pluses and minuses in updating statistical methods and standards. The 2008 SNA provides a handy case study of whether or not the changes were worth the effort. The main pluses were that the 2008 SNA clarified some issues that were obscure or not properly catered for by the 1993 SNA. It reassured users that the national accounts are based on relevant concepts reflecting the current way in which economies operate (both the high level forum in 2008 and the report of the Stiglitz Commission verified that the SNA and related economic statistical standards were relevant and realistically reflected economic conditions). The 2008 SNA built on these perceptions by reassuring users that it was taking account of the latest economic developments and the ongoing national accounts research agenda ensures that it is remaining up-to-date.

The main negative effects associated with the 2008 SNA include the cost to national statistics offices of implementing the new standards. Economic analysts also incurred the costs of coming to grips with the new concepts, assessing their effects on the accounts and updating their models.

In between ('neutral' effects) were that the changes to the levels of GDP were relatively small and they led to very marginal differences in the rate of change in GDP volumes over time. The question then arises as to why the international statistical community should go through the very costly exercise of revising the standards for economic accounts and then for each country to revise its statistics to conform to the new standards if the impact is so small. The answer is that the credibility of economic statistics is at stake if they are based on outdated concepts and do not quickly take account of emerging economic issues. If the 2008 SNA and the BPM6 had not been produced, then it is inevitable that several 'one-off' revisions would have been required to cater for the emerging issues noted above.

## 13. 2008 SNA research agenda

Annex 4 in the 2008 SNA describes the issues that needed further investigation before they could be resolved. The list of items in the 2008 SNA research agenda is quite extensive. Most had arisen because of the changing nature of economies around the world, the growing importance of multinational corporations and the rapid developments in technology. In the decade since the 2008 SNA was released some of these issues have become more important for the national accounts because their share of GDP has grown (for example, the digital economy) while others have become much more important politically (for example, environmental issues, particularly valuing aspects of the environment).

There were 25 issues listed in the research agenda, grouped under four headings:

- basic accounting rules;
- the concept of income;
- issues concerning financial instruments;
- issues involving non-financial assets.

When the 2008 SNA was released some of these issues were 'on-hold' waiting on new international accounting standards to be developed (for example, for public-private partnerships). Others were relatively new economic phenomena (for example, tradeable emission permits) and further investigations were required to identify the full range of such permits and their characteristics so as to make a decision on their treatment in the national accounts. On the other hand, some issues were long-term problem areas for the SNA so no easy solution was likely, although it was important to consider these issues further (for example, including the value of human capital in the accounts).

## 14. Current research agenda

Over the past decade, some new issues have been added to the SNA research agenda, with straightforward ones related to general updates that are required periodically (for example, keeping classifications up-to-date), but with more complex issues related to changing economic arrangements (for example, globalisation and global value chains) and financial innovation (for example, financial derivatives) and also with the ongoing problem of keeping up with the effects of rapidly changing technology (the digital economy or digitalisation). Globalisation and digitalisation have increased in importance over the past decade or so, particularly with respect to their potential effect on GDP. Their impact is particularly evident in the practical issues facing the statisticians running economic surveys which then impact on compliers of national accounts.

The word 'globalisation' did not appear in the 1993 SNA or the BPM5, even though the practice of a good or a service being processed in two or more countries within multinational corporations has existed for decades. The improvements in global transport and communications through the 1990s and onwards led to international production becoming more prominent and so 'globalisation' entered the terminology in both the 2008 SNA and the BPM6, although without being explicitly defined. The IMF describes globalisation as:

'Economic "globalization" is a historical process, the result of human innovation and technological progress. It refers to the increasing integration of economies around the world, particularly through the movement of goods, services, and capital across borders. The term sometimes also refers to the movement of people (labor) and knowledge (technology) across international borders.' (?)

Globalisation and the rapid expansion of the digital economy are problem areas for all economic statistics. From an economic statistics perspective, globalisation has implications for the concepts of residence, production units and remittances. The key issues in measuring globalised production are identifying the role that intangible assets play in production: who owns these assets and how (and how much) income from production is distributed to the owner. A further complication is determining the price component so that volumes can be estimated.

Globalisation also has some significant implications for data collection because of the complex company structures for multinationals. Statistical collections have to obtain data related to resident activities and deal with issues such as the valuation/pricing of products moving across borders but within the same multinational corporation, and with the associated foreign investment flows.

There is no formal definition of the digital economy in any of the economic statistics standards. However, it is possible to identify several different categories of activities in the digital economy:

- businesses selling goods or services via the internet (for example, Amazon);
- intermediary services in which a purchaser is matched with a provider (for example, Uber, eBay);
- products delivered directly to a purchaser via downloads (for example, software, statistical data/tables);
- 'free' services that are supported by advertising (for example, Facebook, Twitter).

Even after the difficult task of defining the relevant concepts has been completed, obtaining data from the providers of these types of services is also challenging. For example, they can be located anywhere in the world, so identifying them and dealing with issues related to their national accounts residence status is problematic. Even if output data can be collected, additional problems arise in constructing the deflators required to estimate volumes of digital products. Hedonic price indexes have been used in many countries to adjust prices for the quality changes in computers and so estimate the volumes of expenditures on computers but identifying the price component of digital services provides an extra complication that needs to be resolved.

(?) IMF (2008), Issues Briefs – Globalization: A Brief Overview, see: https://www.imf.org/external/ np/extr/ib/2008/053008.htm.

## 15. Conclusion

The current standards for economic accounts have evolved since the middle of the 20th century. Initially, they were developed without direct coordination between the responsible organisations which were focussing on their own specific requirements. However, it was not long before the advantages of harmonising the frameworks for national accounts and balance of payments became clear. In 1964, the UN released a special update of the SNA to bolster the consistency between these two standards. Over time, steps have been taken to coordinate changes to the SNA and BPM in particular. More recently, the SNA and GFSM have also been aligned.

The current situation is that the international standards for the national accounts and related economic statistics are robust and statistics based on them meet user needs, provided the complete set of national accounts data is produced. Emerging issues are being resolved as they arise. As has always been the case, the SNA and the BPM may need to be changed periodically on a one-off basis (as for financial derivatives in the late 1990s) and more extensively every couple of decades. It is important that the scope of the national accounts and related statistics is changed only infrequently to maintain the integrity of the major national accounting aggregates and the confidence of users.

One of the lessons from the 2008 global financial crisis was that many countries had not compiled the full range of accounts specified in the SNA, which hindered a full analysis of the emerging problems and the reasons for them. Both the French Government's *Commission on the Measurement of Economic Performance and Social Progress* (the Stiglitz Commission) and the UN Statistical Commission's *High Level Forum on the Long Term Development of National Accounts* endorsed the SNA framework as providing the information necessary to analyse economic developments. However, it is essential that all countries produce all the accounts specified, including balance sheets, to support such analysis.

Whenever a change is made to the economic accounts, whether a one-off change or a more major revision, it is critical that the time series of the data is preserved. Breaks (or steps) in the time series are poor statistical practice and are unacceptable to users.

The rapid changes in the structure of economies caused by globalisation and digitalisation mean that the main economic statistical standards (SNA, BPM and GFSM) will need to be revised to keep them up-to-date and relevant. It is also possible that the range of satellite accounts could be extended. For example, one possibility currently being examined is to develop a digital economy satellite account to test the impacts of different ways of treating the digital economy.

The questions that arise about periodic revisions are whether or not one-off changes should be made to these standards or whether a more major update, such as that from the 1993 SNA to the 2008 SNA, is required. The answer is that it really depends on the extent that any changes can be confined to one part of the national accounts or whether they spread through large parts of the accounts. In addition, the extent to which other standards may be affected needs to be considered. The 1999 update of financial derivatives provided an example of a successful one-off change because it was confined to a relatively selfcontained part of the overall national accounts. In addition, it provided an important lesson in coordination with the balance of payments and the national accounts standards having the same set of amendments flowing through to them simultaneously.

The final issue is the extent to which the SNA, BPM and GFSM could be integrated into a single standard. These three standards are now harmonised with each other, although some subtle differences in detail or wording between the 2008 SNA and the BPM6, mainly relating to the financial sector, could lead to inconsistent interpretations of these standards.

Two possibilities arise to ensure that future versions of the SNA, BPM and GFSM are completely consistent.

The first is for the ISWGNA to agree on the concepts to be included in a slightly larger version of the SNA. It would be a national accounts framework but with some balance of payments and government finance components, specified at a more detailed level than at present, to ensure consistency amongst all the overlapping elements. The BPM and GFSM could provide the very detailed description of supplementary data and alternative views they require (for example, alternative views of the data or cash-based accounts). In effect, all three standards would define the common core, which is backed up by more detailed standards for balance of payments and government finance statistics.

The second possibility could be implemented with the existing standards and has broader implications for economic statistics standards in general. It is to electronically link the SNA, BPM and GFSM. It could also be possible to extend such links to related documents such as implementation guidelines. As an example of the possibilities, useful links have been provided within the 2008 SNA. Clicking on items in the table of contents, the glossary or the index takes the reader directly to the relevant text in the body of that document. Developments in technology have made it possible to fully cross-reference items between documents such as the SNA, BPM and GFSM. In addition, links could be provided from these documents to the 'how to do it' guidelines such as Eurostat's *Handbook on Quarterly National Accounts*. Developing detailed electronic links between the various standards and implementation guidelines would be a very useful advance.

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