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CANBERRA II GROUP – TERM OF REFERENCE

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CANBERRA II GROUP

ON THE MEASUREMENT OF NON-FINANCIAL ASSETS FIRST MEETING, 15-17 APRIL 2003, VOORBURG, NETHERLANDS

6 DECEMBER 2002

I. Background

1) In 2001, the OECD published *Measuring Capital*¹, a manual on the measurement of capital stocks, consumption of fixed capital and capital services. This manual was a product of the Canberra Group on Capital Stock Statistics. The manual - along with another one on productivity measurement² - goes a long way to describing capital measurement but also leaves open a number of issues, many of which are stated in the Research Agenda (Annex 4 of the manual). About the same time, the international community of national accountants saw a lively debate about the statistical treatment of the receipts from mobile phone licences. The Inter-Secretariat Working Group on National Accounts (ISWGNA), released a report on 21 December 2001 recommending a treatment of mobile phone licences that was consistent with SNA93 (under appropriate conditions mobile phone licences are to be treated as a non-produced intangible assets). However, it was recognised in this report that the recommended treatment should not be seen as preempting the outcome of a more broad-based discussion of the treatment of intangible assets in the national accounts. There have also been international discussions about the measurement and international comparability of estimates for software and a specific OECD/Eurostat task force has finalised its report which drew a support of a large majority of member countries in the recent October 2002 OECD National Accounts Expert Meeting (NAEM). However, during this discussion, a so-called “double-counting” issue of GFCF in intangibles was raised and member countries recommended this issue to be further discussed. Many other examples exist of issues related to the treatment of non-financial assets in the SNA, as illustrated by two papers presented during the August 2002 IAOS conference³. It is in this context that the United Nations Statistical Commission created a city-group named “**Canberra II Group on non financial assets**” with the objective of proposing clarifications or changes of the SNA.

2) At its meeting of October 2002 in Paris, the ISWGNA has prepared a related list of issues that should be discussed in the process of the preparation of SNA93, Rev1, targeted for publication in 2008. Following the request of the ISWGNA, the Canberra II group will submit for its review all updates of national accounts that it could recommend, in order to ensure coordination with other SNA review issues. By 2005, proposals to the list of issues should be ready for consideration of the ISWGNA and forwarded to the Statistical Commission. All approved updates will be integrated in SNA93 Rev1 and/or implemented

¹ OECD (2001); *Measuring Capital: OECD Manual*, Paris.

² OECD (2001); *Measuring Productivity: OECD Manual*, Paris.

³ See room documents 6 and 7 on the OECD 2002 NAEM web site:
<http://www.oecd.org/EN/document/0,,EN-document-424-15-no-20-31122-0,00.html>

immediately. Clearly, this timing sets the deadline for the Canberra II recommendations to the end of 2004.

II. Organisation and mandate

3) The group is chaired by Peter Harper from the ABS. The OECD offered to organise its secretariat and opened an EDG:

<http://webdomino1.oecd.org/COMNET/STD/Canberra.nsf/Welcome?openframeset>⁴

4) Considering the very large number of issues to be discussed, the Canberra II group will share its work between three sub-groups, dealing each with specific issues. The first will cover conceptual issues mainly linked to intangible assets. Its secretary will be François Lequiller, from the OECD. The second is the task force set up by the NESTI (the working party of National Experts in Science and Technology Indicators of the OECD). It will cover measurement issues related to research and development in the framework of the national accounts, relying on the joint expertise of R&D statisticians and of national accountants. Its secretary will be Dominique Guellec, also from the OECD. The third will cover measurement issues associated with obsolescence, capital input and constructing data series of the stocks, depreciation, and capital services of tangible and intangible fixed assets. Its secretary will be Paul Schreyer, from the OECD. The EDG will be formatted long these three sub-groups and the agenda of the meetings of the Canberra II group will be clearly separated between the three sub-groups.

5) This paper presents the final list of issues that the Canberra II group should cover in its mandate.

6) The paper builds on the two papers⁵ that were presented in the first discussion of the mandate of the Canberra II group, at the end of the October 2002 OECD NAEM in Paris. These two papers voluntarily presented a very broad agenda. The discussion that followed mainly focused on restricting these first very large lists of proposal to a limited amount of priority issues. The present paper presents these final priority issues. An area that was given low priority (or considered too much ambitious) was the measurement of human capital. This item has been therefore dropped in this final agenda. Also ISWGNA members recommended that any change in the treatment of consumer durables be restricted to memorandum items or satellite accounts. This item is therefore also omitted here. The treatment of research and development expenditures as investment got mixed support. However, the SNA 93 discussion on R&D showed that the main difficulties came from practical implementation issues. The proposal by the OECD NESTI group to explore if there are practical solutions was considered an opportunity to re-open this issue on new grounds.

7) The present mandate is circulated together with a proposed agenda for the first meeting of the Canberra II group. The Netherlands Central Bureau for Statistics (CBS) accepted to host this first substantive meeting, during April 15-17, 2003, in its headquarters in Voorburg. The present final mandate will be submitted as a room document to the 2003 meeting of the UNSC, as well as an oral progress report. The group will then report back to the OECD 2003 NAEM, in October 2003. A further progress report will be delivered to the 2004 meeting of the UNSC. All recommendations for clarifications or changes to the SNA will be forwarded to the ISWGNA by the end of 2004.

III. Sub group 1: conceptual issues mainly linked to intangible assets

8) *The treatment of originals and copies*: the recent OECD/Eurostat task forces on the measurement of software investment recommended capitalising originals for reproductions in the balance sheet of software

4. This EDG is password protected. Please contact marie.viriat@oecd.org for registration.

⁵ These papers STD/NA(2002)35 and STD/NA(2002)4 are available on the OECD 2002 NAEM web site.

editors as well as copies of these originals in the balance sheet of purchasers of software. This recommendation raised concerns that this led to a double counting of GFCF. Several OECD member countries suggested that, while the practical recommendations of the task force should be implemented as soon as possible, a more general conceptual discussion took place on this double counting issue. The issue concerns the definition of originals and copies. It is more general than software, and concerns other intangible assets (evidently, research and development).

9) *Patented entities - research and development expenditure.* In his article in *SNA News and Notes, Issue 6, July 1997*, Peter Hill provided a strong argument for changing the treatment of research and development expenditure and patented entities. Patented entities would cease being separately identifiable non-produced assets and be replaced by scientific originals and inventions that would be classified as produced intangible assets. The patents would then be regarded as merely the legal recognition of the underlying asset. As foreshadowed in that article, acceptance of a change in SNA93 along these lines is likely to depend on the development of workable guidelines for valuing scientific originals and inventions as gross fixed capital formation on intangible produced assets. For such a far reaching change to SNA93 to be supported, it is likely that practical recommendations would need to be developed concerning how to define and value R&D, to treat unsuccessful R&D, the choice of the rate of depreciation, and how to deflate R&D (investment) expenditure and how to value the 'knowledge' assets. These issues are to be treated by the second sub-group (see below).

10) *Leases and other transferable contracts.* The Group should consider whether the existing SNA93 treatment of the assets which make up this component is appropriate. The Annex to Chapter XIII, SNA93 provides the following definition for this category of non-produced intangible assets:

"Leases or contracts where the lessee has the right to convey the lease to a third party independently of the lessor. Examples include leases of land and buildings and other structures, concessions or exclusive rights to exploit mineral deposits or fishing grounds, transferable contracts with athletes and authors and options to buy tangible assets not yet produced. Leases on the rental of machinery are excluded from non-financial intangible assets."

11) Mobile phone licences (when assets) are included in this component in line with the recent ISWGNA report on this issue. However, while the ISWGNA considered the treatment of mobile phone licences in the context of the SNA93 treatment of similar legal constructs, the reconvened Canberra Group might like to consider whether these legal constructs should be treated differently in the national accounts. Some have raised concerns about the treatment of taxi licences, casino licences and other similar licences issued by general government, which limit the extent to which particular types of economic activity can be undertaken, as assets and therefore as contributors to a nation's wealth. Lynch and Jenkinson (2002) and Pitzer (2002) argue that mobile phone licences are taxes, presumably, other taxes on production. They argue that the unusual features of these "taxes" are, first, that they have been paid many years in advance, so that the asset that is involved is a financial asset - prepaid other taxes on production, and second, that an auction may be held to maximise the quantum of the tax and to allocate the licence, rather than the government specifying the level of the tax and using other criteria to allocate the licence.

12) It can be argued that many leases and transferable contracts do not have a value in their own right until there is a change in market conditions. For example, a long term lease on office premises which allows the rental to be determined in line with market conditions each year would not qualify as an asset. However, if such a lease involved predetermined rentals for the whole period of the lease and market rentals for office accommodation subsequently increased, then the lease could be regarded as an asset for the lessee. Anne Harrison (2001) has suggested the following qualifying condition for a lease of this type to be regarded as an asset: "A lease or contract should be considered an asset for the lessee if it can be sold by the lessee to a third party for a sum greater than the sum payable under the terms of the lease or contract from the lessee to the lessor." Intangible assets of this type appear to have some unusual characteristics. First, the asset seems to arise because the lessee has locked in lower operating expenses in future periods. Second, assuming that the lessee is engaged in an ongoing business, there would be no incentive for him to realise

this holding gain, since he would incur relocation costs if he was to sub-lease his existing office space and move to other similar accommodation. Third, if market rentals fall below the predetermined rentals in the lease agreement should not the lease be regarded as a liability of the lessee. Does this suggest that these assets should be treated as a special category of financial assets rather than non-financial assets? It could be argued that if the lessor sold the building he would really be selling both the structure itself and also any unexpired leases with existing tenants. The value of this latter component would be negative (positive) if the rentals on the premises were locked in at lower (higher) levels than the market was currently yielding. SNA93 discusses the difficulty of distinguishing the land and building components when buildings are sold, but it would appear that there is also a need for guidelines on how to treat unexpired rental contracts on commercial buildings when a sale of the building occurs.

13) Another issue that is not totally clear in SNA93, is whether such leases (and transferable contracts) should be recognised (a) when first written, (b) when market conditions change, or (c) only when a partly expired lease is sold by the original lessee to another lessee for a sum greater (or lesser) than the sum payable under the terms of the lease or contract. Under a section concerning the appearance of intangible non-produced assets, SNA93 (paragraph 12.21) states:

"...They make their appearance in the System when entities are patented, transferable contracts are written, or enterprises are sold at prices that exceed the net worth of the enterprise in question, etc.... The writing of transferable contracts consists of the coming into force of a binding agreement that provides some economic benefit that can be passed on to a third party independently of the provider of that benefit."

14) Despite this extract from SNA93, which seems to suggest that transferable contracts "appear" when the agreement comes into force, a number of authors including Harrison (2001), Magniez (2001) and Pitzer (2002) would appear to rule out option (a). While it could be argued that the existence of a long-term lease for office accommodation is worth something to the original lessee, even without any change in market rentals - a degree of certainty, convenience, etc. - such values would generally be relatively small.

15) *Licences to use intangible fixed assets.* As mentioned previously, licences are legal constructs that are often used in conjunction with intangible assets. Several questions arise with licences to use intangible fixed assets. One is whether such licences themselves (as a legal entity) can constitute an intangible asset or whether they cannot be dissociated from the underlying asset. The task force on software, for example, recommended that there be only one product and asset category "software", broken down between originals and reproductions, the latter *including* licences. On the other hand, in the case of mobile phone licences, the ISWGNA recognised two assets, the spectrum and the licence, but acknowledged that the treatment might be different in the case of produced assets. Thus, there is a question whether licences concerning produced assets can be treated differently from those concerning non-produced assets, and if so, how? This has some importance, because SNA treats flows related to produced assets quite differently from those related to non-produced assets. To reduce the scope for confusion in future, it would be useful to clarify the treatment of all types of licences whether associated with produced assets, with non-produced assets or in cases where there are no underlying assets.

16) *Purchased goodwill* The Group should consider whether the existing SNA93 treatment of this component is appropriate. Should more uniform guidelines be provided on how to amortise this item? The concept of purchased goodwill is somewhat different in relation to sales of unincorporated enterprises and corporations. For unincorporated enterprises purchased goodwill is the difference between identified net assets and the sale price, but for corporations it equals the difference between the share price immediately before the sale and the actual sale price per share, multiplied by the number of shares. Consequently, in the case of unincorporated enterprises (but not necessarily corporations) internally generated goodwill is included in the measure of purchased goodwill. In the case of corporations it is likely that the share price before the sale will reflect at least some internally generated goodwill. In practice the share price of a company, which is the subject of a take-over offer that is above its current market price, may well increase to approximate the offer price, so that immediately before the sale there may be very little difference between the two, and hence a very low value would be recorded for purchased goodwill. SNA93 does not

discuss the possibility of negative purchased goodwill, but it is certainly possible for the sale price of shares in a corporation to be below its current market price (e.g. if an expected higher offer for the target corporation from a rival bidder does not eventuate). Commercial accounting standards for purchased goodwill adopt a similar treatment to that outlined in SNA93 in relation to unincorporated enterprises, for both corporations and unincorporated enterprises.

17) *Other intangible non-produced assets.* Presumably this category includes brand names, trademarks and franchise formulae, although this has to be deduced from paragraph 69 in Appendix 1, SNA93. Similar arguments to those relating to R&D and patented entities can be advanced in relation to these intangible assets. However, there are additional problems in trying to determine which expenditures should be capitalised in relation to brand names, trademarks and franchise formulas. First, for those categories of expenditure that can be directly linked to developing a brand name, such as advertising, it would be necessary to distinguish between short term advertising (impact predominantly limited to one year or less) and long term advertising (impact predominantly longer than one year). Making this distinction would be extremely difficult and subjective. Second, a significant part of the value of brand names etc. relates to more general actions and qualities of the corporation, including quality of its products, standards of customer service, staff/customer relations and whether the corporation is a good corporate citizen. In most cases it would be virtually impossible to identify particular spending decisions that could be attributed to a new category of gross fixed capital formation in relation to brand names, etc. Despite these difficulties Van de Ven (2000) suggests that at least long-term marketing advertising should be treated as part of gross fixed capital formation.

18) *Borderline between rental and sale.* Following the discussion on mobile phones, the ISWGNA established a set of criteria to determine whether a transaction relating to mobile phone licences should be considered the sale of an asset or rent on a non-produced asset. The ISWGNA has explicitly requested that the Group fully investigate the consequence of the introduction of this set of criteria in the case of other assets. In addition, work should be conducted to elaborate a broader set of criteria to aid decision making between the treatment of payments for leases or licences as rent or as the sale of an asset. A similar issue arose in the software task force regarding the difference between annual licences and “unlimited” licences. The task force on software identified one economic specificity of (software) intangibles: they are economic assets that can be reproduced at very low cost. A consequence of this characteristic is that the borderline between rental and sale is blurred. In the case of software, there is not even the need for a specific rental industry, as is the case for rentals of tangible assets. Also, it seems that the difference between payment for multiple year licences (treated as investment) and payment for annual licences, often called “royalties”, (treated as intermediate consumption) reduces more or less to a difference in the mode of payment that – according to the SNA – should not *in itself* determine the treatment as investment or intermediate consumption. In the case of software “licences to use” the nature of the original agreement between the lessor and the lessee could take precedence over the frequency of the software licence payments when determining whether particular transactions are gross fixed capital formation or intermediate consumption.

19) *Asset boundary for intangible non-produced assets.* There are also policy-relevant questions regarding the boundary of intangible non-produced assets, some of them arising from discussions in Europe concerning the recording of certain general government transactions. Some national accountants have proposed that transactions in instruments involving the securitisation of future receipts of government be treated as sales of intangible non-produced assets. However, this type of asset is not mentioned in SNA93. The general definition of intangible non-produced assets in the SNA is “legal constructs”, so more precise criteria may be needed before including different kinds of new ‘legal constructs’ as intangible non-produced assets in the national accounts.

20) *Amortisation of intangible non-produced assets.* Paragraphs 14 to 16 of the final report of the ISWGNA on mobile phone licences includes a brief discussion of the issue of the amortisation of such intangible non-produced assets. The Group will consider this issue further.

21) *Entertainment, literary or artistic originals.* Annex 4 of the capital stock manual mentions the need to clarify the treatment of artistic originals. SNA paragraphs 6.144 and 10.95 indicate that the discounted value of the future income flows is the preferred basis for valuing capital formation for this item, with cost of production being only a fall back option. However, SNA93 paragraph 13.45 seems to offer contrary advice. There are various practical issues associated with how to estimate the expected future income stream for artistic originals. In practice it may be necessary to use ex-poste data when calculating the discounted value of future earnings even though this may involve significant revisions to initial estimates for gross fixed capital formation on artistic originals.

22) *Databases.* An issue that remained unresolved in the report of the OECD task force on computer software is the treatment of databases. Conceptually, there is no difficulty in considering that databases are assets. However, the valuation of databases, which are essentially own-account production, remains an unresolved issue.

23) *Other intangible fixed assets.* The Annex to Chapter XIII in SNA93 includes an item "other intangible fixed assets" which is defined as "New information, specialised knowledge etc., not elsewhere classified, whose use in production is restricted to the units that have established ownership rights over them or to other units licensed by the latter." However, no mention of this component is made in paragraphs 10.89 to 10.95 in connection with the discussion of 'acquisitions less disposals of intangible fixed assets'. This definition could be interpreted to cover scientific originals underlying patents, although neither research and development expenditure nor scientific originals were treated as part of gross fixed capital formation in SNA93. Perhaps there are some other intangible fixed assets that are intended to be included under this item?

24) *Treatment of land.* In Annex 4 of the capital stock manual it is observed that the incorporation of gross fixed capital formation on improvements to land into the value of land itself seems unsatisfactory. Robin Lynch has raised various issues concerning land in his paper *Permits and Intangible Assets* for the 2001 OECD national accounts experts meeting. Issues relating to leases are also relevant here as the transfer (sale) of land by general government on long term leases (say 99 years) are generally treated as a change in ownership. The interrelationships between the treatment of land and long term leases on other types of intangible non-produced assets provides an additional justification for extending the scope of the work of the Canberra Group II beyond intangible assets.

25) *Treatment of Buy/Own/Operate/Transfer (BOOT) schemes* Anne Harrison has raised the possibility of introducing a concept of dual ownership in relation to mobile phone licences (Option 4 in her paper *Characteristics of Assets and the Consequences for the National Accounts* presented to the OECD Meeting of National Accounts Experts, Paris, 9-12 October 2001). In effect, ownership is split according to periods of time. It would be useful to explore whether this suggestion could be applied in the case of BOOT schemes. While there are many variations in the detail of these schemes, the basic situation is that general government contracts a private corporation to undertake a major infrastructure project (e.g. a toll road) on its behalf, on the condition that the asset which is created returns to general government ownership at the conclusion of the agreement period (usually somewhere between 15 and 25 years). In the meantime the private corporation is regarded as undertaking the capital formation involved, owning the asset until the transfer date, and operating the facility for its own economic benefit until the transfer date. General government may also give some guarantees concerning the income flow to the private corporation during all or part of the agreement period. A range of possible treatments for BOOT schemes is discussed in Pitzer (2002) and Donaghue (2002).

26) *Military assets* Many national accountants are concerned about the treatment of weapons-related military equipment as government final consumption expenditure. On this issue SNA93 recommendations seem to be inconsistent with economic reality. Moulton (2002) concludes that: "It appears that the decision to exclude weapons-related military equipment from fixed capital formation must be interpreted as an attempt to make an ideological point that is inappropriate for international guidelines that are intended to reflect technical expertise. National accountants should not be making value judgements on

what government expenditures contribute to welfare." Such value judgements are not made in other areas of general government expenditure. The fact that the Bureau of Economic Analysis treats weapons-related military equipment as fixed assets in the US national accounts, while most countries follow the SNA93 guidelines, reduces the international comparability of national accounts statistics. Given that almost 10 years have elapsed since the release of SNA93, it seems reasonable to reopen this issue, especially at a time when the treatments for other types of assets are being reviewed.

27) *Mineral exploration expenditure* Annex 4 of the capital stock manual mentions the need to review and clarify the treatment of mineral exploration expenditure and sub-soil assets, including dealing with a possible issue of double-counting. Chapter 8 of the draft revised SEEA Manual provides a number of options for dealing with this issue. It would be useful for Canberra Group II to review these options and to determine how the SNA93 text might be revised to incorporate these proposals. More appropriate guidelines could be developed for calculating consumption of fixed capital for mineral exploration expenditure, including the case of unsuccessful exploration. The SNA93 guidelines (paragraph 10.91) are somewhat vague recommending the use of average service lives similar to those used by corporations in their own accounts.

28) *Costs of ownership transfer* Annex 4 of the Capital Stock Manual mentions the need to review the treatment of the costs of ownership transfer, particularly in respect of non-produced assets. Peter van de Ven recently acted as moderator for an Electronic Discussion Group which reviewed the treatment of ownership transfer costs. His final report found no justification for changes to SNA93. However, he made some practical suggestions which were considered to be within the spirit of SNA93. The Group may therefore wish to support the proposal in paragraph 2 of his report to use the expected average period for which the underlying assets are held when calculating consumption of fixed capital (the average should allow for speculative purchases held for short periods and other normal transactions - or alternatively the transfer costs on speculative purchases held for less than one year could be regarded as intermediate consumption?). This approach would appear to be more manageable than trying to apply the service life of the underlying asset to the costs of ownership transfer (which itself would need to be an average because the ages of the underlying assets at the time of ownership transfer would vary significantly) and calculating holding losses relating to the undepreciated portion of ownership transfer costs etc, as discussed in the Annex to Chapter 10 of SNA93.

IV. NESTI task force on R&D and SNA: measurement issues related to research and development in the framework of the national accounts

29) The task force R&D and SNA has been established in the framework of the NESTI group of OECD, and its purpose is twofold. On the one hand the purpose of the task force is to examine the methodological issues raised by an accounting of R&D in a SNA framework, to investigate the needed adaptation of data constructed in the Frascati framework, and estimate their impact on R&D figures. This will be done in order to improve comparisons between R&D accounts prepared in the framework of FM statistics and the macro economic figures prepared within the national accounts.

30) On the other hand, as explained above, the R&D accounts are of great importance for the national accounts. The TF will empirically explore the utilization of the FM data as a starting point to generate the R&D data required by the SNA standards. The TF will consider issues of coverage and valuation of production of R&D, as well as adjustments needed to put R&D in a supply and use framework. The needed adjustments and additions will be analyzed and implemented as far as possible. The task force will thus explore an initial list of issues that would need to be substantially resolved before the Canberra Group could recommend changes to the SNA93 treatment of R&D and patented entities

31) As a starting point it is worth noting that although the SNA does not have a general explicit definition of R&D, the coverage of R&D output given in par. 6.142, seems largely to coincide with the definition of R&D given in FM. It covers the R&D activities of market producers (for which a definition is given in the

SNA) and non-market producers. A very small number of countries have tried to prepare satellite accounts on R&D using SNA concepts. The experience of these countries may serve as useful background material for the work of the task force. The main expected statistical output of the task force will be R&D series for as many countries as possible, recalculated under certain NA standards, starting from data based on the FM (using the available business R&D series as primary source). To have such output bridge tables will be prepared. Based on the experience gained with the design and empirical application of the bridge tables, and the usefulness of the obtained estimates, the TF may wish to recommend to apply such tables as part of a regular programme for R&D statistics

32) *Price indices for R&D* Series on R&D output at constant prices are especially important for the use of R&D data in national accounts. The task force will examine the availability of market price indices and the implication of use of various cost price indices. Various methods for the preparation of estimates at constant prices will be investigated. The task force may also wish to review the preparation of estimates at international prices (in terms of PPP).

33) *R&D depreciation, obsolescence and stocks* Once bridge tables containing estimates of R&D output have been prepared, the task force will investigate some empirical implications of capitalizing R&D. Depreciation, obsolescence, and stocks of R&D will be estimated under various assumptions. Such estimates are important for the analysis of the role of R&D in economic growth, and may also serve as a basis for the decision on capitalization of R&D in the national accounts. The task force will recommend ways of preparing series of R&D capital stock and depreciation on a current basis.

34) *Capitalization of only some types/areas of R&D.* Some national accountants have argued that basic research should not be capitalized, since it might not give a stream of benefits to its owner. On the other hand one might argue that some R&D is similar to infrastructure such as roads. This would mean that although such R&D might be a public good, and not generate a stream of benefits to the owner, it may be used by business enterprises and bring benefits to the users and the economy as a whole. Others have argued that R&D in humanities does not result in any economic benefits. The task force will examine the different options.

35) *Treatment of unsuccessful R&D.* The successful outcome of R&D may be seen as a result of a trial and error process, so that unsuccessful R&D should be part of the capitalized R&D similar to unsuccessful oil explorations. On the other hand it might be argued that the results of unsuccessful R&D may not be known to other researchers or not be used as starting point for additional research, so that it has no value, and should not be included. Again the task force will examine the various possibilities.

36) *Treatment of exported R&D.* Part of exported R&D could be capitalized, since the created knowledge is still available for the domestic economy. On the other hand, some R&D may be exported and used only abroad by the new non-resident owner. The task force will examine the relative importance of the issue and possibilities of estimating the component that could be capitalized.

37) *Possible sources for the estimation of service lives of R&D and obsolescence.* The task force will review the relevant literature on this subject and examine the possibilities of implementing various methods (use of patent lives for example).

38) *Possible methods of estimating the rate of depreciation.* The task force could consider the various methods used for depreciation in the national accounts or business accounting, as well as methods for depreciation of R&D developed in various academic research papers and their suitability for R&D statistics.

V. Sub group II: Obsolescence, capital input and measurement issues associated with constructing data series of the stocks, depreciation, and capital services of tangible and intangible fixed assets.

39) *Obsolescence*. The price of a new asset changes over time in proportion to the price of the service it provides. The question is how to treat a fall in the price of the service provided by an asset, and hence a fall in the price of the asset itself, that is foreseen at the time that the decision to invest in the asset is made. Such price falls are to be expected when assets are subject to obsolescence as result of technical progress or changing tastes. In economics, and both national and business accounting, the traditional view has always been to treat foreseen obsolescence as depreciation, but this view has been challenged in recent years it being argued that price falls, whether foreseen or not, should be treated as real holding losses and not as depreciation. Consensus needs to be reached on the treatment of foreseen obsolescence.

40) *Capital inputs in the production account of the SNA*. Annex 4 of the capital stock manual includes a major section on the issue of restructuring the SNA production account to make it more useful for growth accounting and the measurement and analysis of productivity. The basic proposition is to combine the SNA93 production account with the generation of income account and then to identify the various inputs of capital services for fixed assets and natural assets alongside the inputs of labour (compensation of employees). The balancing item in this reconstituted account would be much closer to the economic concept of pure profit. One issue for consideration would be whether this work should be directed towards developing a satellite account along these lines or towards changing the core SNA93 accounts.

41) *Measurement issues concerning fixed assets*. Several well-identified measurement issues exist with regard to fixed assets. They are described in greater detail in Annex 4 of the OECD Manual, *Measuring Capital*, and are summarised below.

42) *Asset price indices*. A vital ingredient for reliable capital estimates is a set of price indices for capital goods that is detailed and long enough to reflect changes in relative prices between different types of capital goods and that correctly identifies quality and efficiency changes as shifts in volumes and not in prices. Failure to do so can seriously bias measures of capital stocks and capital services.

43) *Age-efficiency profiles*. Typically, capital stock estimates have to rely on assumptions about the service lives and about the retirement distribution of different types of assets. To date, the empirical basis for these parameters is weak. Often, capital stock measures rely on estimates that are dated or were used by other countries. There is also the more general issue about the treatment of maintenance – a factor that clearly shapes service lives but is rarely taken into account in empirical estimates. Another related issue concerns the relationship between major repairs and improvements and service lives and how such items should be treated in practice - eg. should such 'alterations and additions', as they are often called in relation to buildings, be treated as separate categories within the capital stock model with their own service lives? and what impact do alterations and additions have on the service life of the original asset?

44) *Age-price profiles*. Akin to age-efficiency profiles that reflect the physical characteristics of assets, there is a need for more broad-based evidence on the age-price profiles that reflect the price characteristics of assets. Age-price profiles, which should correspond to the associated age-efficiency profiles, feed directly into the calculation of depreciation, the loss of value of a capital good as it ages. This makes them important building blocks for the calculation of consumption of fixed capital and net domestic product.

45) *Decommissioning and demolition costs*. The last receipt in the service value profile should be the scrap value of the asset after it is retired less any decommissioning or demolition costs. These costs can be very large for some assets, such as nuclear reactors and offshore oil platforms. The possibility that the last item in the service value profile may be both large and negative raises conceptual problems. More attention needs to be paid to the implications of large decommissioning costs for the efficiency and price profiles and for the depreciation schedules derived from them.

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