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ISSUE NOTE: Action point A.8: Consistency in the Application of the Sum of Costs Approach

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Purpose

1 The purpose of this Issue Note is to address three related issues regarding the application of the sum of costs approach when this approach is used to value output and in turn gross value added. The sum of costs approach is used to value the output of for own final use (in the absence of reliable market prices) and for the value of non-market output provided free of charge, or at prices that are not economically significant, to other institutional units or the community as a whole.

2 The first issue is consistency in the application of the approach – whether a return to capital on assets used in production should be included. In the 2008 SNA, there are different approaches, depending on whether the producer is market or non-market.[2]

3 The second issue is to determine the scope of assets for which a return on capital should be applied if a return on capital is included in the sum of costs approach.

4 The third issue relates to the scope of costs to be included. In particular, the initial draft of GN AI.2 Treatment of Rent raises the issue of whether rent costs should be included. In the 2008 SNA, these costs are excluded.[3]

5 This Issue Note addresses action point 8 from the paper SNA/M4.22/4 *An Assessment of the SNA Research Agenda*, which was discussed at the October 2023 AEG meeting.[4] [5] The meeting agreed that the application of the sum of cost approach should be addressed as part of the process of updating the 2008 SNA.

Issue 1: Consistency in the application of the sum of costs approach[6]

6 The use of the sum of costs approach to value particular types of output has been long-standing in the SNA. In the 2008 SNA a change was made to include a net return to fixed capital in

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[1] This Note has been updated to reflect the discussion at the AEG meeting as summarised in https://unstats.un.org/unsd/nationalaccount/aeg/2023/M22/M22_AEG_Conclusions.pdf.
[2] The key paragraphs from the 2008 SNA are reproduced at the end of this Issue Note.
[3] This issue is of direct relevance to GN DZ.6 Recording of data in the National Accounts. Regarding the purchases of observable phenomena, the GN recommends that they be treated as rent "if the general guidance is changed to include such as costs" in the sum of costs approach.
[4] See https://unstats.un.org/unsd/nationalaccount/aeg/2022/M21/M21_4_Assessment_RA.pdf.
[5] While the second issue was not raised explicitly, it follows from the first. It has been raised in other contexts relating to the update of the SNA and its inclusion in this Issue Note brings all the issues regarding the sum of costs approach into one document.
[6] A note on terminology – in this section of the paper the terms 'return on capital', 'capital services' and 'cost of capital' are used. Capital services are equal to the sum of the return on capital and consumption of fixed capital (or depletion in the case of non-produced assets). If an asset is not subject to consumption of fixed

the valuation of output for own final use by market producers as part of the sum of costs when this approach is used for estimating output and the corresponding estimates of gross value added and gross fixed capital formation.[7] However, this change was not made to the valuation of output produced by non-market producers (i.e., by government and NPISHs) for the valuation of both output produced for their own final use and that provided free of charge, or at prices that are not economically significant, to other institutions and to the community as a whole.

7 In the lead-up to the 2008 SNA, the AEG was asked to consider whether a return to capital should be included in valuing the output for non-market producers.[8] The AEG concluded "*After extensive discussion, reflection and wide consultation, it is proposed that a return to fixed capital owned and used by non-market producers should be included in the estimation of the output of those producers in addition to estimates of consumption of fixed capital. The restriction to fixed assets is a compromise between what might be conceptually desirable and what is likely to be implementable in practice. For the rate of return, it is suggested to use the expected real rate on government bonds if necessary supplemented by other indicators of the cost of borrowing to government*."[9]

8 However, when the consolidated list of recommendations was circulated for comment, there was some disagreement with the recommendation and the ISWGNA decided that further consultation was required. While many countries agreed with the recommendation, some countries argued that the issue of a return to capital for non-market producers raises conceptual and implementation difficulties. The conceptual issues raised mainly related to the choice of the discount rate. The ISWGNA noted the lack of consensus and recommended that the SNA continue with the 1993 SNA's recommendations regarding the estimation of non-market output – that is, to continue to exclude the return to capital.

9 The 2008 SNA notes that the exclusion of capital from the estimation of output from non-market producers is 'by convention.'[10] The 2008 SNA does not provide a conceptual reason for the exclusion. This exclusion is clearly the result of the lack of consensus on the issue in the development of the 2008 SNA, leading to the continuation of the 1993 SNA treatment.

10 As noted, this has led to an inconsistency in the 2008 SNA in the valuation of output using the sum of costs approach between market and non-market producers. The question is, should this inconsistency be continued in the 2025 SNA, or should it be resolved?

11 Turning first to the issue of the conceptual appropriateness of including a return to capital in the estimation of output produced by non-market producers, it would seem difficult to argue on conceptual grounds that the cost structures faced by non-market producers are different to those faced by market producers. When capital assets are used in production, this clearly adds value to the production beyond the depreciation of these assets. The use of capital assets is not costless – they typically need to be financed by borrowings, which incur interest costs, or by the accumulation of cash, where there is an opportunity cost of using the cash to acquire assets rather than investing the

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capital/depletion, then capital services equal the return on capital. The term 'cost of capital' is synonymous with return to capital.

[7] See SNA 2008 paragraphs A3.41 and A3.42.

[8] Issue 16 considered in the update of the 1993 SNA.

[9] See https://unstats.un.org/UNSDWebsite/statcom/session_38/documents/bg-sna-E.pdf.

[10] See paragraph 6.94 of the 2008 SNA.

cash in financial instruments. These capital costs are incurred regardless of whether a producer is market or non-market.

12 Furthermore, if, rather than producing output on their own account, a non-market producer was to procure the output from a market producer, then the price of procuring the output would include a return to capital, as the producer would seek to recover the capital costs that they face in producing the output. This would lead to an odd result where GDP would increase if a government decided to outsource an activity, if the cost of capital continues to be excluded from the estimation of non-market output.

13 An issue that is sometimes raised is that including a return to capital in the sum of costs for non-market producers would lead to a net operating surplus for these producers, which some see as incongruous with the not-for-profit nature of these producers. However, as explained in SNA paragraph 4.83 (which defines non-profit institutions), non-profit institutions can generate either surpluses or deficits; however, any surpluses they make cannot be appropriated by other institutional units. The inclusion of a return to capital in the sum of costs does not violate the SNA's consideration of what constitutes a non-profit institution. Furthermore, having an operating surplus which is equal to the cost of capital does not make a unit 'profitable'.

14 The issue of an appropriate rate of return is sometimes raised as a concern. However, as noted in the AEG recommendation, the suggestion is to use the expected real rate on government bonds supplemented if necessary by other indicators of the cost of borrowing.[11] This does not seem contentious and is in line with capital theory, as well as with business accounting where the cost of capital is typically defined along the lines of "*the cost that a business incurs to finance its operations. It measures the cost of borrowing money from creditors, or raising it from investors through equity financing*".[12]

15 Turning to issues of the practicality of including the costs of capital in the estimation of output, a key input is to have a balance sheet – in current prices – showing the value of assets used in production.[13] In the lead-up to the decision taken in 2006 not to include the cost of capital for non-market producers, comprehensive balance sheets were a relatively new feature of national accounting. They were formalised for the first time in the 1993 SNA. Furthermore, they were only introduced into government finance statistics in the 2001 edition of the IMF's *Government Finance Statistics Manual and Compilation Guide (GFSMCG)*, so from the perspective of government balance sheets were still very much in the infancy.

16 However, balance sheets are now well-established in both the SNA and GFS. While it is recognised that not all countries compile balance sheets, it should be noted that the absence of balance sheets also makes it difficult to compile estimates of consumption of fixed capital (which is non-controversially included in the sum of cost approach for both market and non-market producers). Furthermore, GN CM.4 advocates that net income and savings measures should be given greater prominence in the 2025 SNA. It notes that, to achieve this, estimates of consumption of fixed capital need to be improved, which would lead to better balance sheets and the ability to more easily calculate a return on capital for non-market producers. The GN recommends that further

[11] For NPISHs, a real rate of return appropriate to the borrowing costs faced by these types of institutions would be used.

[12] See, for example, https://www.investopedia.com/terms/c/costofcapital.asp.

[13] If a balance sheet is available, the calculation is straightforward.

practical guidance on capital measurement should be provided, for example by way of establishing an international 'capital measurement internet-based information hub'.

17 Likewise, at time of the 2008 SNA, the notion of capital services was still relatively new, having only being introduced to the broad international statistical community in 2001 with the publication of the first edition of the OECD's *Measuring Capital Handbook*. In 2009 an updated version of the Handbook was produced. The revised edition built on the original version, by taking account of new developments in capital measurement and ensuring consistency with the 2008 SNA. The Handbook provides conceptual and methodological guidance on compiling estimates of capital services in a way that achieves consistency with balance sheet measures and measures of consumption of fixed capital.

18 On the other hand, if the 2025 SNA were to continue to exclude the cost of capital from the value of output produced by non-market producers, it is difficult to see when the 'right time' to make a change would be. This could potentially lead to the inconsistency in approaches continuing indefinitely into the future.

19 Including a return on capital for non-market producers will increase GDP. The authors of this note have done some 'back of the envelope' calculations using data available for Australia and have estimated that the increase to GDP would be about 1.3% (with only a negligible impact on estimates of movements in GDP).[14] It will also increase the value of output for the General Government and NPISH sectors. However, it will not impact the net borrowing/lending for these sectors, as the increase in the value of output will be offset by a commensurate increase in collective consumption expenditure for these sectors.

Issue 2: The scope of capital services to be included in the sum of costs approach

20 For market producers, the 2008 SNA recommends including a net return to fixed capital when the sum of costs approach is used.

21 However, returns from other non-financial assets – inventories (both work-in-progress and other inventories), valuables, non-produced non-financial assets – are excluded. Financial assets and liabilities are also excluded.

Fixed assets

22 If a return to capital is included in the sum of costs for non-market producers, a question arises of whether all fixed assets should be included. For the most part, non-market producers will be using similar assets to those used by market producers (for example, buildings, equipment etc.) However, there are some fixed assets that are typically used only by non-market producers in the production of collective services. These include historical monuments and city parks (which are type of land improvement). When the issue of including a return to capital for non-market producers was considered by the AEG in the development of the 2008 SNA, the inclination was to exclude historical monuments and city parks by convention, as data for these assets is generally poor or non-existent,

[14] If this recommendation is accepted, further work on estimating the impact on GDP of including a return to capital for non-market producers will be undertaken as part of the preparation for implementation.

and recognizing that their exclusion does not affect comparability with market producers who do not use these types of assets.[15]

23 Another example of fixed assets used by non-market producers relates to infrastructure assets (such as roads) that are owned by non-market producers but could also be owned by market producers (for example a private road on a mining site). Here, the majority of the AEG at the time considered that these should be included, also recognizing that at least conceptually consumption of fixed capital should also be calculated for these assets.

Inventories

24 Regarding inventories other than work-in-progress, it seems conceptually appropriate that the cost of capital associated with any such inventories used in own-account production should be included, as the producer incurs a capital cost in financing the holding of inventories. However, in practice, the extent to which these inventories are used in own-account production is likely to be small and there are likely to be practical difficulties of measurement – in particular, being able to separate out inventories used in own-account production and knowing how long the inventories had been held.[16] Accordingly, it is proposed that the conceptually preferred treatment of including capital services on inventories (other than work-in-progress) should only be applied in cases where it is materially significant.

25 Regarding work-in-progress, the 2008 SNA is conflicting in its advice. As noted, the standard formula for compiling estimates using the sum of costs method does not include a return on capital for work-in-progress. However, chapter 20 – in particular, paragraph 20.63 – suggests that a return to capital for work-in-progress undertaken in previous years should be included in the valuation of own-account output. Again, this is in line with the notion that work-in-progress needs to be financed and that these costs are part of the value of production. Also, it is likely that, at least in certain cases, considerable capital could be tied up in work-in-progress, so the return to that capital may be significant. Accordingly, it is proposed that, for the production of fixed assets for own final use, the cost of capital for previous periods' work-in-progress be explicitly shown as part of the standard formula for the sum of costs approach.[17]

26 More generally regarding inventories, for market producers the price charged for output will take account of the capital costs associated with inventories; otherwise, the business will run at a loss. Retail enterprises, for example, will include the not insignificant costs of holding inventories in their mark-ups. Including capital services on inventories for non-market producers would ensure that their output is valued on a similar basis to market producers.

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[15] Weapon systems are another form of asset typically only used by non-market producers in the production of collective services. However, these assets are explicitly included on the balance sheet in the 2008 SNA and it could be argued that countries should be able to establish a return to capital for them.

[16] If the inventories had been held for less than a year, then the annual rate of return would need to be reduced to a rate of return commensurate for the time period for which the inventories had been held.

[17] The guidance in the 2008 SNA recommends recording stage payments for work-in-progress, and also own account work-in-progress, as gross fixed capital formation. This leads to an awkward inconsistency in accounting for work-in-progress when applying the sum of costs method. In a separate note that was presented at the March 2023 AEG meeting, it was recommended to record all work-in-progress, including stage payments and own account production, as inventories.

Valuables

27 The exclusion of capital services from valuables from own-account production is unlikely to have a significant impact for market producers. This, along with the difficulties in obtaining reliable estimates for valuables, is likely the reason that these capital services are excluded from the standard formula for market producers. For non-market producers, it could be argued that, for example, valuables in art galleries and museums contribute significantly to the value of their output. However, given the difficulties in establishing meaningful values for these types of valuables, it is recommended that capital services for valuables not be included for non-market producers either, which would maintain consistency with the approach for market producers.

Non-produced non-financial assets

28 Using the foregoing logic, when own-account or non-market production involves the use of non-produced non-financial assets, then a return on these assets should be included in the sum of costs approach, along with the cost of the depletion of natural resources.[18]

29 One exception could be considered, and this is undeveloped (that is natural) land, such as national parks. Such assets are generally not used by market producers in own account production.[19] Furthermore, almost without exception these assets are not recorded in government balance sheets due to problems in establishing appropriate valuations, so it is questionable whether a return on capital for undeveloped land should be used in the sum of costs approach.

Financial assets and liabilities

30 It is conceptually inappropriate to include a return to capital for financial assets in the sum of costs approach, as this is not a cost. Regarding liabilities (including equity), there is a cost of capital to producers. However, it is these liabilities that underpin the non-financial assets utilised in production, so the cost of capital to producers for liabilities is already reflected in the inclusion of the cost of capital for non-financial assets in the sum of costs approach. To also include a cost of capital on liabilities would double count this cost.[20]

[18] The cost of depletion of natural resources is analogous to the consumption of fixed capital and it has been proposed more generally that the cost of depletion of natural resources be shown as a transaction, to be included as a cost of production in the calculation of net measures, such as net operating surplus and net domestic product.

[19] Some market producers may use privately owned land for the provision of recreational services, but the value of this output will be typically determined by the fees paid and not by the use of the sum of costs method.

[20] It is sometimes argued that the cost of 'working capital' – that is, the capital required to finance a business's short-term commitments – should be included in the sum of costs approach. While conceptually it could be considered that a return on such capital should be included, in practice the amount of working capital is likely to be small relative to a business's total financial capital, with much of this likely to be invested by businesses in short-term investments thereby earning a return to capital. 'Pure cash' holdings of businesses are unlikely to be significant.

Issue 3: The scope of costs to be included in the sum of costs approach

31 As noted above, rent is currently excluded from the calculation of output using the sum of costs approach (for both market and non-market producers).

32 As mentioned, this issue is addressed in GN AI.2. The version of this guidance note that was discussed at the October 2023 AEG Meeting stated that "*there is general support for … including rent explicitly in the sum-of-costs approach for estimating the value of the production of GFCF for own final use and for estimating non-market output*."

33 GN AI.2 notes that "*it is clear that these [i.e., rent costs] are actually an input to production, so it would make sense to include them in the costs. It is expected that the costs of leasing any non-produced non-financial assets (or any opportunity costs related to the use of these assets) will be reflected in market prices of similar goods and services.*" In other words, if rent costs are not included, then there is an inconsistency in the valuation of output using market prices and that using the sum of costs approach.

34 Furthermore, if rent is not included in the value of own-account production of gross fixed capital formation, then this could lead to negative net disposable income for at least that part of the relevant entities' activities, as there is no net operating surplus from which the rent amounts can be paid from. This would seem an odd result in a market context.

Summary of recommendations

35 It is recommended that a return to capital be included in the sum of costs approach for non-market producers, which would achieve consistency with the approach for market producers.[21] However, due to significant issues regarding data availability, it proposed that by convention city parks and historical monuments be excluded from the scope of assets to which a return to capital should be applied.

36 It is recommended that the scope of assets for which a return to capital should be recognized is expanded to include work-in-progress, other inventories (where significant), non-produced non-financial assets (except for natural land), along with fixed assets. Although valuables which are used in the production of goods and services should be conceptually included, it is recommended that they remain excluded on pragmatic grounds.

37 It is recommended that depletion of natural resources be added as a cost (where relevant) in the sum of costs approach.[22]

38 It is recommended that rent be explicitly included in the sum of costs approach.

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[21] As a consequence, there would be a positive net operating surplus for non-market producers, just as including a return to capital for market producers – either explicitly in sum of costs approach or implicitly by setting prices to cover the cost of capital – contributes to the net operating surplus of these units.

[22] This recommendation does not suggest that depletion be treated as intermediate consumption, but rather that it be put on par with consumption of fixed capital in deriving the value of non-market output.

Questions for Global Consultation

1. Do you agree with the recommendation to **include a return to capital in the sum of costs approach for non-market producers**?
   a. Do you agree with the exclusion of a return to capital for city parks and historical monuments on pragmatic grounds?
   b. Do you have any comments on this recommendation?
2. Do you agree with the recommendation that the scope of assets for which a return to capital should be recognized should be **expanded to include work-in-progress, other inventories (where significant) and non-produced non-financial assets that are used in production**?
   a. Do you agree with the exclusion of valuables and natural land on pragmatic grounds?
3. Do you agree that the **depletion of natural resources should be explicitly added as a cost (where relevant) to the sum of costs approach**?
   a. Do you have any comments on this recommendation?
4. Do you agree with the recommendation that **rent should explicitly be added to the sum of costs approach**?
   a. Do you have any comments on this recommendation?

Appendix

Key paragraphs from the 2008 SNA relevant to the sum of costs approach

Valuation of output for own final use

6.125 When reliable market prices cannot be obtained, a second best procedure must be used in which the value of the output of the goods or services produced for own final use is deemed to be equal to the sum of their costs of production: that is, as the sum of:

a. Intermediate consumption;
b. Compensation of employees
c. Consumption of fixed capital;
d. A net return to fixed capital;
e. Other taxes (less subsidies) on production.

By convention, no net return to capital is included when own-account production is undertaken by non-market producers.

Non-market output

6.130 The value of the non-market output provided without charge to households is estimated as the sum of costs of production, as follows:

a. Intermediate consumption;
b. Compensation of employees;
c. Consumption of fixed capital;
d. Other taxes (less subsidies) on production.

A clarification regarding insurance

Paragraph 17.29 of the 2008 SNA states "If the necessary accounting data are not available and the historical statistical data are not sufficient to allow reasonable average estimates of output to be made, the output of non-life insurance may be estimated as the sum of costs (including intermediate costs, labour and capital costs) plus an allowance for "normal profit". Paragraph 17.31 makes a similar comment about non-life insurance. It has been asked that these paragraphs be clarified in respect to the broader discussion on the sum of costs approach.

First, it should be noted that insurance producers are market producers, so 'capital costs' as mentioned in paragraph 17.29 should include both consumption of fixed capital and a return to capital, as specified in paragraph 6.125.

Second, in considering "normal profit", the part of an insurance enterprise's surplus that relates to the cost of capital should not be included in the calculation, otherwise double counting will result.