

Input Document Unit 7

Note on the issue of double- counting capital formation and consumption of fixed capital in SHA

Summary

This short note aims to shed some light on the issue of double counting of either Capital Formation or Consumption of fixed capital in the System of Health Accounts using the Leontief-type input-output approach. The note aims to stimulate the discussion on the issue.

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Note on the issue of double-counting capital formation and consumption of fixed capital in SHA

1. This short note aims to shed some light on the issue of double counting of either Capital Formation or Consumption of fixed capital in the System of Health Accounts.

The Leontief-type input-output approach

2. To illustrate our reasoning we use the Leontief-type input-output approach. Table 1 below represents a very simplified version of a symmetric input output table for the whole economy. For simplicity, we considered a closed economy which includes only three sectors of economic activities:
 1. Providers of health care services and goods,
 2. Producer of Capital goods, and
 3. Rest of the economy.

Rows in Table 1 represent the value of sectors' outputs: Providers of health care services and goods produce health products for final use only (consumption= 50)¹. Producer of Capital goods produce assets for final use only (Gross fixed capital formation = 5). The output of the Rest of the economy (45) is used as intermediate consumption only: 35 is purchased by the Providers of health care services and goods; 3 by the Producer of Capital goods, and 7 by the Rest of the economy. Therefore, total supply accounts for 100 (50+5+45) which equals the total demand. A part of the total demand is used for final uses (55) broken down between Consumption (50) and Gross fixed capital formation (5).

Columns in Table 1 represent the inputs: Providers of health care services and goods purchase 35 from the rest of the economy as input. Hence, their gross value added is 15. A part of the value added (10) is used to remunerate the employees, while the rest (5) is saved. Saving is in turn, used to purchase capital goods, which is the output of the sector producing capital goods. The other columns can be read similarly. For simplicity the other sectors do not purchase capital goods.

3. Considering now the equations:

$$Y=C+I \Rightarrow 55=50+5$$

Eq. 1

$$Y=C+S \Rightarrow 55=50+5$$

Eq. 2

¹ We are also assuming that health good and services are the only products available in the economy for final consumption.

where Y is the income², C the consumption, I the Gross fixed capital formation, and S the saving. Solving the system of equations gives

$$S=I=5.$$

Eq. 3

The “Double-counting capital formation” is a false issue

4. Each of the equations mentioned above shows that in the system there is no double counting. Indeed, from the first equation above (demand side) the sum of the value of the consumption with the value of the gross capital formation does not pose any problem of double counting: Indeed, the two aggregates represent two components of final uses and as such do not overlap, since each product produced in the economy is included either in the consumption or in the gross capital formation. The same conclusion can be reached using the second equation above where the income is split between consumption and saving: the two aggregates complement each other with no overlap.
5. The information included in Table 1 can be reported in a typical SHA HCx HP table. In Table 2 Current expenditure is the value of consumption taken from Table 1 and broken-down by providers and function, while HC.R.1 represents the value of Gross fixed capital formation also taken from Table 1 and broken-down by providers. Therefore, the sum of Current expenditure on health plus the HC.R.1 implies no double counting.

Why the doubt?

6. Readers may wonder at this point why we are debating double counting of capital formation in the System of Health Accounts. A possible source of confusion is based on the following reasoning: Final users spend 50 to purchase health products. The health providers use a part (5) of those 50 to purchase the capital goods. Therefore, summing up 50 and 5 implies counting 5 twice. As shown above, the answer to this apparent paradox can be found in the equation $Y=C+S$. Indeed the amount used to purchase the capital goods is the part of the income not used for the consumption ($S=Y-C$). In other words, the whole economy disposes of an income of 55. Of this 5 are used to purchase capital goods, the remaining 50 are distributed to the consumers in the form of remuneration of employees. Consumers spend all the 50 to purchase the products of the providers of health care services and goods.

What about Consumption of Fixed capital?

7. If we focus our attention on the consumption of fixed capital³ rather capital formation, we can reason along the same lines and arrive to the same conclusion. As consumption of fixed

² In this example, as there are no transfers from either the rest of the economy nor from the rest of the world, income coincides with value added.

³ Consumption of fixed capital is a cost of production. It may be defined in general terms as the decline, during the course of the accounting period, in the current value of the stock of fixed assets owned and used by a producer as a result of physical deterioration, normal obsolescence or normal accidental damage.... Its value may deviate considerably from depreciation as recorded in business accounts or as allowed for taxation purposes, especially when there is inflation. [SNA 6.179]

Consumption of fixed capital does not represent the aggregate value of a set of transactions. It is an imputed value whose economic significance is different from entries in the accounts based mainly on market transactions. [SNA6.202]

capital can be considered as a cost of production, it could be subtracted from the gross value added (15 in our example), to obtain the net value added (14), or can be subtracted from the saving. As for the issue of double counting, the same conclusions can be reached. Indeed, the two equation equations become:

$$Y^* = C + I^* \Rightarrow 54 = 50 + 4 \quad \text{Eq. 4}$$

where the asterisk indicates that the aggregates are net of consumption of fixed capital.

Evaluation of non-market output.

8. Some confusion has arisen when dealing with the estimation of the output of non market⁴ providers in the System of Health Accounts. As the SNA suggests estimating the value by summing all costs incurred in the production, which include also the consumption of fixed capital, it has been argued that the sum of consumption plus gross capital formation includes the consumption of fixed capital twice. Firstly, it is worth noting that capital formation is included in the sum of the costs for reasons of consistency, which mean that output always “includes” the consumption of fixed capital regardless of whether the production is market or non-market.

Two case studies.

Surcharge of LTC accommodation services

9. In country A, patients in long-term care institutions (LTCI) paying “out-of-pocket” for the accommodation costs are also charged an explicit item to cover investment. Currently, country A reports the value of the surcharge as a component of capital formation only (therefore excluding it from the current expenditure) and allocates the whole amount as funded by households. As the surcharge is an integral part of the cost of the lodging services paid by recipients, it cannot be separated from the rest of the expenditure and, in our view, should be entirely recorded under current expenditure (accommodation should be reported as a health expenditure or excluded according to the guidelines on LTC). Moreover, the surcharge can be seen as a saving of the LTC institution which uses it to purchase capital goods. Hence, the financing source is the LTC institution itself and not the households.

Breakdown of capital goods by provides

10. Country B is currently reporting the whole value of Capital formation in the health care sector under HP.0 n.e.c. because health providers do not produce the capital goods acquired by the same health producers. The input-output approach shows that capital formation in SHA has to be recorded according to the owner and not to the producer of the good.

⁴ ...non-market services produced by government units and NPISHs ... are all valued in the System of National Accounts by the sum of the costs incurred in their production: that is, as the sum of:

- Intermediate consumption;
- Compensation of employees;
- Consumption of fixed capital;
- Other taxes, less subsidies, on production.

The net operating surplus on the production of non-market goods or services produced by government units and NPISHs is assumed always to be zero. [SNA 6.91]

Issues linked to double counting of gross capital formation.

11. There exist a number of issues strictly linked to the one analysed here. To mention just a few, we have the estimation techniques to be employed to breakdown the total expenditure on capital goods by providers; the techniques to estimate consumption of fixed capital (i.e. the perpetual inventory method); the inclusion/exclusion of capital formation from the functional classification of SHA. Each of these items is addressed in other units of the SHA Manual 2.0 and is therefore outside the scope of the present note.

Conclusion:

12. The present note intends to stimulate the discussion on the issue of double counting either gross fixed capital formation or consumption of fixed capital in the System of Health Accounts. To shed some light on the issue and to move towards a final solution, we referred to the Leontief-type-input-output approach. When analysed in the context of a complete accounting framework, it becomes evident that neither gross fixed capital formation nor consumption of fixed capital are double-counted.

