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**National Accounts and Economic Statistics**

**ISSUE PAPER: THE TREATMENT OF LAND IMPROVEMENTS**

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## ISSUE PAPER: THE TREATMENT OF LAND IMPROVEMENTS

### A. Executive summary

1. At the October 2003 meeting of the Canberra II Group on the Measurement of Non-financial Assets (Canberra II), Robin Lynch presented a paper on the treatment of land, and in particular land improvements. While there was no agreement at the meeting as to what the preferred treatment of land and land improvements should be, there was very little support expressed for the current treatment. This led the chairman, Peter Harper, to propose that a paper be prepared setting out the issues and members be asked to vote on the alternative treatments discussed at the meeting. The vote was taken at the March 2004 meeting of Canberra II, and a substantial majority of members supported the treatment recommended in this paper. The treatment of the costs of ownership transfer of land (COTL) was not discussed by Canberra II, and the recommendation presented below is that of the author.

2. The 1993 SNA recommends that land improvements be classified as gross fixed capital formation (GFCF) while at the same time recommending that they be regarded as part of land and recorded as non-produced assets on the balance sheet. The decline in value of land improvements is recorded as consumption of fixed capital (CFC). Hence, in the flow accounts land improvements and their consumption are treated as produced assets, but on the balance sheet they are recorded as being part of land, a non-produced asset. The same is true of COTL.

3. It is recommended that these treatments be changed such that land improvements are treated in the same way as buildings and structures and COTL is treated in the same way as COT on other assets. Thus,

- i. GFCF of land improvements should be treated like other GFCF and result in the creation of either produced fixed assets or an addition to produced fixed assets. The resulting assets should be termed land improvements.
- ii. Land should be valued at its present unimproved value.
- iii. In some cases the value of unimproved land is directly available, but in cases when it is not a disaggregation of the combined value of the unimproved land and land improvements is required. In such cases the principles described in the 1993 SNA for dealing with land under buildings (paragraph 13.57) should be adopted. Namely, when suitable data are available a disaggregation should be imputed, but when the value of unimproved land cannot be separated from land improvements the composite asset should be classified in the category representing the greater part of the value.
- iv. Rentals payable on land improvements should be treated as purchases of services. In practice, however, a single payment will often cover both the rent for the unimproved land and the rental for the land improvements and buildings sitting on the land. When this occurs the principle described in the 1993 SNA for dealing with land under buildings (paragraph 7.131) should be adopted. Namely, if there is no objective basis on which to split the payment between rent on unimproved land and rentals for the remainder then the whole amount should be treated as rent if

the value of unimproved land is believed to exceed the combined value of buildings and land improvements, and as a rental otherwise.

Note: another issue being dealt with by the Canberra II Group concerns rent and rentals for produced and non-produced assets. It is therefore possible that the Group will propose changes to the 1993 SNA that would impinge on this recommendation. However, as such proposals would affect a much wider class of assets than land improvements, it is best that the two issues be considered separately. The essence of the current proposal is that land improvements should be treated in the same way as buildings and structures.

- v. COTL should be treated in the same way as COT on other types of asset and be recorded as a fixed asset on the balance sheet. It is proposed that it all be allocated to land improvements.
- 4. It is considered by the majority of Canberra II members that the recommended treatment for land improvements has conceptual and practical advantages over the current treatment, and would not impose any extra burden on compilation. The recommended treatment for COTL is consistent with that for land improvements. Together they will have no impact on GDP, NDP or net worth.
- 5. Does the AEG agree to these recommendations?

## **B. Background and reasons for change**

### *The current SNA*

- 6. Paragraphs 10.51 to 10.54 of the 1993 SNA explain how improvements to tangible non-produced assets should be treated in the system. Paragraph 10.51 reads as follows:

*10.51 Acquisitions that lead to major improvements in the quantity, quality or productivity of land, or prevent its deterioration, are treated as gross fixed capital formation. They consist of acquisitions related to the following kinds of activities:*

- a) Reclamation of land from the sea by the construction of dykes, sea walls or dams for this purpose;*
- b) Clearance of forests, rocks, etc. to enable land to be used in production for the first time;*
- c) Draining marshes or the irrigation of deserts by the construction of dykes, ditches or irrigation channels;*
- d) Prevention of flooding or erosion by the sea or rivers by the construction of breakwaters, sea walls or flood barriers.*

- 7. While improvements to land are classified as gross fixed capital formation (GFCF) land, including land improvements, is classified as a non-produced asset. The 1993 SNA's justification for the inclusion of land improvements as part of a non-produced asset, rather than being treated as a separate produced asset, is that land improvements are not in themselves used directly to produce other goods and services in a way that most structures are. Rather, land improvements are undertaken to obtain more or better land, and it is the services of land which contribute to the production of goods and services.

- 8. The decline in the value of land improvements is recorded as consumption of fixed capital (CFC).

*Conceptual issues*

9. Land is classified in the 1993 SNA as a tangible non-produced non-financial asset – AN.21. This classification makes it difficult to record the flows from opening to closing balance of the value of the stock of land. Land improvements are classified under GFCF as a produced asset (AN.11). The resulting change in value to the land must be re-routed in the accounts so that the increase in value due to capital formation under AN.11 can be reflected in the value of the stock of land (AN.21) through an adjustment item.

10. In the 1993 SNA, GFCF of land improvements results in an increase in a tangible non-produced asset, i.e. production results in an increase in a non-produced asset. All other GFCF results in either a corresponding produced asset (e.g. the formation of new equipment, new buildings and new roads) or the augmentation of an existing produced asset where the latter's productive capacity is increased.

11. An odd feature of the current recommendation is that there is consumption of fixed capital (CFC) of something now reclassified as a non-produced asset. In order to correctly account for CFC the SNA recognises that part of land (a non-produced asset) is in fact produced (land improvements).

12. The explanation given in the 1993 SNA for the treatment of land improvements as non-produced assets (paragraph 10.52) is that they do not of themselves contribute to the production of goods and services, rather they enable or improve the land's ability to do so. In effect, the SNA argument is that the capital services produced by land improvements flow to the land and do not flow directly to the production of other goods and services. By contrast, the SNA recommends that buildings and other structures should be treated as separate assets because they are used separately from the land on which they sit. But do they? The location of a building (a property of land) is often critical to a building's function, and it is the combination of a building and land that produces capital services.

13. According to the 1993 SNA, similar kinds of structure should be classified as produced assets or part of land depending on their purpose. The SNA gives the example of a dam built to produce electricity (a produced asset) and one to keep out the sea (a non-produced asset) in paragraph 10.52. The argument being that a dam used for electricity is used separately from the land, while a dam to keep out the sea is a land-enabling asset. Presumably, a dam built to supply water for a city should be classified as a produced asset because it is not land enabling, but a dam built to supply water for animals on a farm is land enabling and therefore should be classified as part of (non-produced) land. The SNA says it is worth making this distinction, but the distinction is well made by classifying GFCF by industry of activity. In this way all capital formation intended to support agricultural production, such as water storage for animals and crops, land clearing, draining, dykes, etc. is classified to the agriculture industry and there is no need to have the produced/non-produced dichotomy to achieve it.

14. The argument made by the 1993 SNA that land improvements enhance the land and therefore should be subordinated to land appears to ignore the possibility that for a lot of land the value of land improvements exceed the value of the land in its unimproved state by a substantial margin. Such is likely to be the case where land improvements have been very extensive: the terracing of hilly land, the building of dykes and the draining of land in the Netherlands and eastern England, irrigation systems in dry areas of Australia, the US and the Middle East. In cases such as these, it is likely that the land improvements (i.e. produced assets) are contributing much more to production than the unimproved land.

15. In the 1993 SNA lease payments for land are generally treated as rents – a form of property income – while lease payments for produced assets are generally treated as rentals - purchases of services. Hence lease payments for agricultural land are treated as rents, even though in almost all cases part of the

capital services produced by land is produced by land improvements, and in some cases the bulk of capital services is produced by land improvements.

16. In the 1993 SNA the cost of ownership transfer of land (COTL) is treated in a similar way to land improvements, namely: it is recorded as GFCF, it is combined with land on the balance sheet and CFC is recorded. This treatment suffers from the same difficulties as land improvements. It is proposed, therefore, that its treatment be changed, and that it be recorded as a fixed asset on the balance sheet. To be consistent with other fixed assets, only that part of COTL associated with land improvements should be attributed to land improvements. This would mean splitting COTL into two parts: one part attributable to land improvements and the other part attributable to unimproved land. Such a split, however, does not appear to serve any purpose, and so it is therefore proposed to attribute the whole of COTL to land improvements.

### *Measurement issues*

17. The treatment in the 1993 SNA requires estimates of GFCF for land improvements and requires the use of the perpetual inventory method (PIM), along with all the required information (such as asset lives), to calculate CFC. Hence, the proposal described here imposes no additional burden in respect of measuring GFCF and CFC.

18. Several countries (Germany and Canada) have reported that they have data for the GFCF of land improvements but none for the value of land. In such cases, the proposal to record land improvements as produced assets fits perfectly with data availability.

19. While it may be the case that some national statistical offices may lack the data to separately identify the value of unimproved land directly, it could be derived indirectly by subtracting an estimate of the capital stock of land improvements (derived using the PIM) from the composite value of unimproved land and land improvements, if such estimates are available.

20. Some land improvements (e.g. clearing land of trees and stones, and draining of marshes) occurred a long time ago in many countries and the lack of GFCF data for such work might make it impracticable to derive separate estimates of the asset values of land improvements and unimproved land. If it is not possible to estimate the contribution of improvements to the composite value of land, then the land could be considered to be either wholly produced or wholly non-produced depending on whether the produced component or the non-produced component is judged to be making the biggest contribution to the value of the composite asset. This would be consistent with the recommendations given in paragraph 13.57 of the 1993 SNA in respect of land and buildings. But making such judgements only need apply in respect of land improvements made in time periods prior to the availability of GFCF data of land improvements.

21. If it is not possible to split land improvements from unimproved land because the land improvements were made long ago and the composite asset is judged to be produced then, in principle, there should be CFC. But improvements made to land long ago must necessarily have low values of CFC now, and if it is not possible to estimate them they could be assumed to be zero.

22. Leases for agricultural land are for the composite asset, including land improvements, in the same way that leases for buildings generally include the land as well. By using estimates of GFCF of land improvements (and buildings sitting on the land if necessary) and the value of unimproved land, estimates of the capital service flow could be derived for the produced and non-produced components for all the land in each institutional sector. If it were assumed that the relative size of these components was representative of land subject to leases then they could be used to apportion lease payments into rent

payable for unimproved land and rentals payable for land improvements (and buildings). If, however, it is not possible to split the payment between rent on unimproved land and rentals for the remainder then an extension of the recommendation in paragraph 7.131 of the 1993 SNA in respect of land buildings should apply, namely that the whole should be treated as rent if the value of the unimproved land is believed to exceed the combined value of buildings and land improvements, and as a rental otherwise.

23. A significant practical drawback with the treatment of land improvements in the 1993 SNA is that it requires that the GFCF of land improvements be separately identifiable from that of other construction work, because the former are classified as part of land (a non-produced asset) and the latter are classified as leading to produced assets. Thus, the construction of a dam to provide water for animals and the construction of an access road on agricultural land need to be classified separately. Or, if one regards farm access roads as land improvements, then such roads need to be classified separately from access roads to mines and public roads. Such precision imposes a heavy burden on building and construction surveys, because the degree of precision with which the demarcations can be measured determines the relative sizes of the aggregates of produced and non-produced assets on the balance sheet. If, instead, GFCF of land improvements resulted in the creation or increase of produced fixed assets, then any imprecision regarding the distinction of GFCF on land improvements vis à vis other construction would work would have no bearing on the size of the capital stock of produced and non-produced aggregates.

### **C. Recommendations for change**

24. It is recommended that the treatment of land improvements be changed such that land they are treated in the same way as buildings and structures and COTL is treated in the same way as COT on other assets. This implies that:

- i. GFCF of land improvements should be treated like other GFCF and result in the creation of either produced fixed assets or an addition to produced fixed assets. The resulting assets should be termed land improvements.
- ii. Land should be valued at its present unimproved value.
- iii. In some cases the value of unimproved land is directly available, but in cases when it is not a disaggregation of the combined value of the unimproved land and land improvements is required. In such cases the principles described in the 1993 SNA for dealing with land under buildings (paragraph 13.57) should be adopted. Namely, when suitable data are available a disaggregation should be imputed, but when the value of unimproved land cannot be separated from land improvements the composite asset should be classified in the category representing the greater part of the value.
- iv. Rentals payable on land improvements should be treated as purchases of services. In practice, however, a single payment will often cover both the rent for the unimproved land and the rental for the land improvements and buildings sitting on the land. When this occurs the principle described in the 1993 SNA for dealing with land under buildings (paragraph 7.131) should be adopted. Namely, if there is no objective basis on which to split the payment between rent on unimproved land and rentals for the remainder then the whole amount should be treated as rent if the value of unimproved land is believed to exceed the combined value of buildings and land improvements, and as a rental otherwise.

Note: another issue being dealt with by the Canberra II Group concerns rent and rentals for produced and non-produced assets. It is therefore possible that the Group will propose changes

to the 1993 SNA that would impinge on this recommendation. However, as such proposals would affect a much wider class of assets than land improvements, it is best that the two issues be considered separately. The essence of the current proposal is that land improvements should be treated in the same way as buildings and structures.

- v. The cost of ownership transfer of land should be treated in the same way as COT on other asset types of asset and be recorded as a fixed asset on the balance sheet. It is proposed that it all be allocated to land improvements.

#### **D. Business accounting standards**

25. In some respects the proposed changes would better concord with business accounting standards and in other respects they would not. For measuring GFCF the proposed changes would achieve greater alignment, as it would not be as important to distinguish between GFCF associated with land improvements and other GFCF. Likewise, a split of COT would not be as important. But on the balance sheet side the proposed treatment, at least in concept, would see some assets split into "produced" and "non-produced" components -- a split that would probably never be of interest to businesses. But the paper proposes a practical solution to this problem, and the problem already exists with regard to buildings and structures. Furthermore, it is unlikely that national accountants would use business accounting balance sheets to produce balance sheets for national accounts purposes.

#### **E Impact on the accounts and GDP**

26. Many of the accounts are affected by the proposed changes, but in a fairly straightforward way. For simplicity only the directly affected entries are shown for the accounts of the whole economy. Entries, as they are shown in Annex V of the 1993 SNA, are made using a normal font while proposed changes are made using italics. Explanations are given in brackets.

##### Account 0: Goods and services account

###### Resources

P.1 Output	3604
(Payments for use of land improvements treated as rentals, not rents)	<i>3611</i>

###### Uses

P2. Intermediate consumption	1883
(Payments for use of land improvements treated as rentals, not rents)	<i>1890</i>
P5111. Acquisitions of new tangible fixed assets	305
(GFCF of land improvements and COT of land now included in this item)	<i>327</i>
P5131. Major improvements to non-produced non-financial assets	5
(Now included in P5111)	<i>0</i>
P5132. Costs of ownership transfer on non-produced non-financial assets	17
(COT now included in P5111)	<i>0</i>

##### Account 11.1.1: Allocation of primary income account

D.45 Rent	65
(Payments for use of land improvements treated as rentals, not rents)	<i>58</i>

Account: 11.1.2.1: Entrepreneurial income account

D.45 Rent	45
(Payments for use of land improvements treated as rentals, not rents)	38

Account 111.1: Capital accountChanges in assets

P5111. Acquisitions of new tangible fixed assets	305
(GFCF of land improvements and COT of land now included in this item)	327
P5131. Major improvements to non-produced non-financial assets	5
(Now included in P5111)	0
P5132. Costs of ownership transfer on non-produced non-financial assets	17
(Now included in P5111)	0

Account 111.3.2: Revaluation accountChanges in assets

AN.11 Fixed assets	111
(Land improvements and COT of land now included in this item)	114
AN.21 Tangible non-produced assets	152
(Land improvements and COT of land now excluded from this item)	149

Account IV.1: Opening balance sheetAssets

AN.11 Fixed assets	5 544
(Land improvements and COT of land now included in this item)	5 644
AN.21 Tangible non-produced assets	3 809
(Land improvements and COT of land now excluded from this item)	3 709

Account IV.2: Changes in balance sheetTotal changes in assets

AN.11 Fixed assets	239
(Land improvements and COT of land now included in this item)	264
AN.21 Tangible non-produced assets	193
(Land improvements and COT of land now excluded from this item)	168

Account IV.3: Closing balance sheetAssets

AN.11 Fixed assets	5 783
(Land improvements and COT of land now included in this item)	5 808
AN.21 Tangible non-produced assets	4 000
(Land improvements and COT of land now excluded from this item)	3 975

27. The proposed changes have no impact on GDP.