Land: distinguishing volume changes from holding gains

Introduction

1. The joint Eurostat-OECD Task Force on Land and other Non-financial Assets is currently working on a compilation guide of land estimation. The primary purpose of this manual is to provide guidance in the compilation of estimates for the balance sheet item land.[1] The impetus for the work of the Task Force is in response to the G20 Data Gaps Initiative recommendation 15 that recommends "a strategy to promote the compilation and dissemination of the balance sheet approach (BSA), flow of funds, and sectoral data more generally, starting with the G-20 economies."

2. The concept of compiling national balance sheets for countries is not new, but there is increasing demand, also in view of the causes of the economic and financial crisis, for complete balance sheets of countries. Yet data, especially data on non-financial assets, total and by institutional sector, are often not available. Because of this, initially under the umbrella of the G20 DGI, a template had been developed for institutional sector accounts, among which minimum and encouraged stocks of non-financial assets by asset type and by sector.[2] This template has been discussed and agreed in various other groups (OECD Working Parties on Financial Statistics and National Accounts, Advisory Expert Group on National Accounts). In response to interest on balance sheet data, the revised transmission programme for the European System of Integrated Economic Accounts (ESA 2010) also requires additional mandatory items for table 26 "Balance sheets for non-financial assets". Most importantly the total value of land in the combined sector of households and non-profit institutions serving households (S.14 + S.15) are required for EU Member States to be transmitted to the European Commission (Eurostat) by 2017. In addition, the OECD collects information related to balance sheet items and is the primary data collector for non-European member countries of the OECD.

3. Since the compilation guide addresses land as a balance sheet item it is necessary to deconstruct the change in the value of land between opening and closing balance sheets into changes due to transactions, other changes in volume, and revaluations (due to changes in price).

4. This issue paper discusses the challenge of differentiating changes in the value of land between balance sheets into other changes in volume versus revaluations. First, the conceptual issues are briefly described and then some scenarios are discussed on what constitutes a change in quality. Since the Task Force believes the 2008 SNA is not entirely clear on whether changes in the value of land can be recorded in other changes in volume, if the land did not change economic use we would like the AEG to advise on what should be the guiding principle.

[1] While the role of land as an asset that provides a flow of capital services and the role of land as an environmental asset are important and interesting topics they will not be discussed in this manual.

[2] IMF (2012-7), Templates for Minimum and Encouraged Set of Internationally Comparable Sectoral Accounts and Balance Sheets available at http://www.imf.org/external/np/sta/templates/sectacct/index.htm

Description of issue

5. Differentiating between non-transaction related value changes driven by price "revaluation" and changes driven by "other changes in volume" (quantity/quality) may be difficult to implement in practice. Not all land included in the geographic surface area of a country is necessarily within the asset boundary of the 2008 SNA/ESA 2010. Land may make its economic appearance when it is transferred from a wild or waste state to one in which ownership may be established and the land can be put to economic use.[3] In such cases, the national accountants may be able to observe an increase in the *quantity* of land (number of squared meters) of the economy as a whole and be able to record such an increase as a change in volume.

6. In cases where the total quantity of land within the asset boundary remains the same for the economy as a whole it may be more difficult to identify the changes in the use of land if all that is observed is a change in value. In this instance, one might attribute a change in value solely to changes in price.

Conceptual issues in identifying quality changes

7. This section discusses some of the conceptual issues that arise when trying to differentiate between value changes driven by *revaluation* and those driven by *other changes in volume*. A basic principal of the 2008 SNA is that different use values are reflected as differences in quality. Therefore changes in economic use of land that lead to a change in classification should be recorded as a change in volume and any excess in the value due to the change in classification should be recorded as a change in the volume of the relevant assets.

Change in Use

8. Table A describes a common scenario where the use of the land has changed, leading to a change in classification. Suppose at the beginning of the time period 1 000 square kilometres of agricultural land valued at 20 per km^2 are re-zoned for residential use valued at 100 per km^2. The changes in value of the land for each asset type should be recorded as *other changes in volume*. However, there are several entries that occur. The change in classification from agricultural to residential use should be recorded as *changes in classification of assets and liabilities* (k62). The change in classification (k62) is an offsetting adjustment in that agricultural land shows a negative value of -20 000 (1 000 * 20) and land underlying dwellings shows a positive value of 20 000. Because the price of the agricultural land is lower than the price of the land underlying dwellings the total value of the land increased, this excess value (80 000) should be recorded as an economic appearance of assets (k1).

[3] 2008 SNA 12.21

Table A: Change in use of land from agricultural land to land underlying buildings									
	Beginning			Ending					
	Quantitiy	Unit Price	Value	Quantitiy	Unit Price	Value	Revaluation	Other changes in volume	Notes
Land (AN211)	1,000	20	20,000	1,000	100	100,000	0	80,000	
Land underlying buildings and structures				1,000	100	100,000	0	100,000	
Land underlying dwellings	0	100	0	1,000	100	100,000	0	100,000	
								80,000	*Economic appearance of assets (k1)*
								20,000	*Changes in classification of assets (k62)*
Land underlying other buildings and structures									
Land under cultivation	1,000	20	20,000	0	20	0	0	-20,000	
Agricultural land	1,000	20	20,000	0	20	0	0	-20,000	
								-20,000	*Changes in classification of assets (k62)*
Forestry land									
Surface wates used for aquaculture									
Recreational land and associated surface water									
Other land									

Apparent "Quality" Changes?[4]

9. An example of changes in the apparent "quality" of land that may be less clear to national accountants is when the value of a tract of land changes because the surrounding land now has another use. The market value of two identical buildings can be quite different depending on location and amenities such as being close to parks, highways, job opportunities, etc. However, the 2008 SNA seems to be less clear whether this should be reflected as a *revaluation* or as *other change in volume* for that particular tract of land.

10. Table B illustrates a scenario where a park is re-zoned and is therefore reclassified as land on which dwellings can be built. Under such a scenario, the value of the residential properties overlooking the park land is likely to decrease. There is an increase in the value of the reclassified park land because land underlying dwellings generally have a higher price. It is fairly clear according to the 2008 SNA that the reclassified park land is a change in use and represents a change in quality. What might be less clear is how to record the change in value of the tract of land that is not reclassified.

11. Two arguments can be made on how to value the tract of land that is not reclassified. The first argument (shown in table B) can be thought of as follows. Since the change in value of the residential properties overlooking the park is not due to a change in use (i.e., the land is still classified as land underlying dwellings), the decrease in the value of the dwellings overlooking the park has to be recorded as a price change (revaluation).

[4] Mick Silver a specialist in price statistics at the IMF contributed to the discussion on price theory.

Table B: Reclassification of surrounding land for another use									
	Beginning			Ending					
	Quantity	Unit Price	Value	Quantity	Unit Price	Value	Revaluation	Other changes in volume	Notes
Land (AN211)	2,000	70	140,000	2,000	80	160,000	-20,000	40,000	
Land underlying buildings and structures	1,000	100	100,000	2,000	80	160,000	-20,000	80,000	
Land underlying dwellings	1,000	100	100,000	2,000	80	160,000	-20,000	80,000	
Existing dwellings near park	1,000	100	100,000	1,000	80	80,000	-20,000		
Park land reclassified for residential use				1,000	80	80,000		80,000	
								40,000	*Economic appearance of assets (k1)*
								40,000	*Changes in classification of assets (k62)*
Land under cultivation									
Agricultural land									
Forestry land									
Surface waters used for aquaculture									
Recreational land and associated surface water	1,000	40	40,000	0	40	0		-40,000	
Park land	1,000	40	40,000	0	40	0		-40,000	*Changes in classification of assets (k62)*
Other land									

12. Proponents of this argument point to the keyword “economic use”. The following passage from the 2010 ESA that describes the various scenarios of what can be considered as an economic appearance of an asset is used to support this argument :

    Economic appearance of assets is the increase in the volume of produced and non-produced assets that is not the result of production. Included are…

    Quality changes in natural assets due to changes in economic uses. Changes in quality are recorded as changes in volume. The quality changes recorded here occur as the counterpart of the changes in economic use that are shown as changes in classification (see paragraph 6.21). For example, the reclassification of cultivated land to land underlying buildings may result in an increase in value as well as a change in classification. In this case the asset is already within the asset boundary and it is the change in quality of the asset due to the change of economic use that is regarded as the appearance of an asset. (2010 ESA 6.06f)

13. In addition, there are relevant passages from the 2008 SNA as well.

    12.23 The SNA, in general, treats differences in quality as differences in volume. As explained with respect to goods and services in chapter 15, different qualities reflect different use values (and in the case of goods and services, different resource costs). Different qualities are, therefore, economically different from each other. The same principle applies to assets. The quality changes recorded here occur as the simultaneous counterparts of the changes in economic use that are shown as changes in classification, as described below. For example, the reclassification of cultivated land to land underlying buildings may result in a change of value as well as a change in classification. In this case, the asset is already within the asset boundary, and it is the change in quality of the asset due to changes in its economic use that is regarded as the appearance of additional amounts of the asset. Another example is that of

livestock treated as capital formation, for example, dairy cattle, if they are sent to slaughter earlier than expected.

12.29 The changes recorded here are the negative equivalent of the upward changes in volume associated with the changes in classification. For example, if a change in land use leads to reclassifying some land from cultivated land to communal grazing land, there well may be a resulting change in the value of the land.

12.30 All degradation of land, water resources and other natural assets caused by economic activity is recorded in the other changes in the volume of assets account. The degradation may be an anticipated result from regular economic activity or less predictable erosion and other damage to land from deforestation or improper agricultural practices.

14. It is definitely clear from both the 2010 ESA and the 2008 SNA that a change in value due to a change in economic use is to be recorded as a change in volume, but is that the only way a change in volume can occur?

15. The second argument (shown in table B alt) is that a change in volume can occur even if the land doesn't change economic use. This of course leads to the opposite conclusion of how the transaction should be recorded. Essentially the value of land is not only determined by the economic use, location, and size but also by surrounding amenities (such as parks, high quality schools, and access to public transportation, etc.) and these surrounding amenities should be considered as quality-characteristics. The argument is that any increase/decrease in value of the land as a consequence of activities in the vicinity should be recorded as economic appearance of assets / economic disappearance of non-produced assets. This seems to be in accordance with 2008 SNA 12.21 that states "*Not all land included in the geographic surface area of a country is necessarily within the asset boundary of the SNA… It may also acquire value because of activity in the vicinity, for example, land that becomes more desirable and thus more valuable because of a new development is established nearby or the creation of an access road.*"

Table B alt: Reclassification of surrounding land for another use									
	Beginning			Ending					
	Quantity	Unit Price	Value	Quantity	Unit Price	Value	Revaluation	Other changes in volume	Notes
Land (AN211)	2,000	70	140,000	2,000	80	160,000	0	20,000	
Land underlying buildings and structures	1,000	100	100,000	2,000	80	160,000	0	60,000	
Land underlying dwellings	1,000	100	100,000	2,000	80	160,000	0	60,000	
Existing dwellings near park	1,000	100	100,000	1,000	80	80,000	0	-20,000	*Other economic disappearance of non-produced assets (K22)*
Park land reclassified for residential use				1,000	80	80,000		80,000	
								40,000	*Economic appearance of assets (k1)*
								40,000	*Changes in classification of assets (k62)*
Land under cultivation									
Agricultural land									
Forestry land									
Surface waters used for aquaculture									
Recreational land and associated surface water	1,000	40	40,000	0	40	0		-40,000	
Park land	1,000	40	40,000	0	40	0		-40,000	*Changes in classification of assets (k62)*
Other land									

16. Under perfect competition and transparent markets, an argument can be made that price relatives at a particular point in time reflect differences in volume (quantities or qualities). According to this line of reasoning, having a higher price because of attributes in the vicinity (view on a park, high quality school in the neighbourhood) actually reflect differences in quality. Taking this point one step further, one could argue that a decline in the value of the land underlying the dwelling, because of a nearby park being changed into a residential area (or worse), reflects a quality decrease.

17. One can look at price theory to understand this line of reasoning. In principle, the price components should include changes arising solely from price changes, while all other changes (relating to quantity and quality and compositional changes) should be included in the volume components.[5] As a theoretical framework a "characteristics" approach is used to deconstruct the observed price movement into a ''pure'' price change and a change due to changes in characteristics.

18. In respect of the above theoretical considerations, it is also worth noting that in practice, this conceptual approach may not always be feasible in practice. What is apparent when one thinks about constructing constant-quality prices is that (i) too many quality characteristics exist for quality-mix changes to be considered adequately covered by different classifications; (ii) any price index used to deflate values belonging to a particular classification must be tailored to transactions and changes in quality-mix characteristics *within that classification*;

[5] Eurostat (2001) Handbook on price and volume measures in national accounts http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-41-01-543/EN/KS-41-01-543-EN.PDF

and (iii) while a detailed classification is analytically useful there are trade-offs because a too detailed classification will reduce the effective sample size.

Additional example- Irrigation channel

19. An irrigation channel is built on a particular tract of land that benefits many pieces of land within the vicinity. A piece of agricultural land in the vicinity that had a low value because it was dry increases in value because it is now more fertile due to the irrigation. The piece of land that benefited from the irrigation did not change economic use because it is still used for agricultural purposes. Should the rise in the value of the land (because it benefits from the presence of the irrigation channel) be considered as a *revaluation* change or an *other change in volume*?

Question for consideration by the AEG:

20. The Task Force could not find clear guidance from the 2008 SNA on whether to record the change in the value of land as an other change in volume or as a revaluation, when the change in the value of the land is due to changes in the surrounding amenities of the land instead of due to a change in the economic use of the land. The AEG is therefore requested to provide guidance on when to record changes in the value of land as other changes in volume.

21. What should be the guidance for recording changes in the value of land between balance sheets as other changes in volume?
    (a). To record such changes as other changes in volume only when the changes concern a change in economic use; or
    (b). To record such changes as other changes in volume when the changes concern one of the following conditions:
    - a change in economic use;
    - a change due to changes in surrounding amenities.