


# Food Balance Sheets (FBS) - Module7

## 1. Module 7

### 1.1 Welcome

Suggested Data Sources and Imputation: Stocks/stock changes



**Food Balance Sheets (FBS)**

Lesson 7  
Suggested Data Sources and Imputation:  
**Stocks/stock changes**

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**Notes:**

## 1.2 Lesson objective

Suggested Data Sources and Imputation: Stocks/stock changes

Lesson objective

In this lesson we will learn about the Food Balance Sheet (FBS) with respect to:

1. Different data sources for stock and stock changes
2. Recommended approach for imputation and estimation of stock changes



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Notes:

## 1.3 Outline

Suggested Data Sources and Imputation: Stocks/stock changes

Outline

- Official data sources
- Alternative data sources
- Imputation and estimation.



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Notes:

## 1.4 Official data sources

Suggested Data Sources and Imputation: Stocks/stock changes

Official data sources

Data coverage of total stocks estimates is, at present, extremely limited. This is partially due to the complexity of measuring stock levels, as they can be held anywhere along the supply chain.

It is strongly recommended that country FBS compilers first assess the stock situation in their country by speaking with industry experts and relevant government officials to determine which commodities are being stocked and how those stocks are organized (including which stakeholders are keeping those stocks, and the size of stockholdings among the different stakeholders).



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## 1.5 Official data sources


Suggested Data Sources and Imputation: Stocks/stock changes

Official data sources

Official government agricultural surveys are the preferred mechanism through which to collect data on stock levels, as surveys can target the supply chain actors most likely to hold stocks. Governments may also be large stockholders of certain of food commodities.

If countries are able to collect data on stocks held at the farm level, in the private sector (processors, manufacturers, exporters, or distributors), and in the public sector, then an overall picture of the country's stocks situation should be mostly complete and provide a solid estimate for FBS compilation purposes.

Two particular efforts are suggested. The first of these is the adding of a stocks module to periodic agricultural production surveys. The second action is the reporting of government-held stock levels.



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## 1.6 Alternative data sources


**Suggested Data Sources and Imputation: Stocks/stock changes**

**Alternative data sources**

Countries are encouraged to develop strategies to survey overall stock levels in an official capacity rather than rely on incomplete estimations from one segment of the supply chain.

For some supply chains, however, reports of stock levels from processors or industry could account for the majority of stockholdings, and thus be invaluable to estimating total stock levels.

Compilers may also wish to consult the AMIS database, which estimates closing stock levels for maize, wheat, rice, and soybeans for more than 20 of the world's largest producers and consumers of those commodities. Similarly, estimates on global sugar stocks can be accessed from F.O. Licht, and stocks estimates for numerous oils and fats can be sourced from Oil World.



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### Notes:

Note: See the AMIS database, available at: <http://statistics.amis-outlook.org/data/index.html#HOME>.

Both the Licht's data and the Oil World data are behind a paywall. Further information is available on their respective websites-For Licht's, see: <https://www.agra-net.com/agra/international-sugar-and-sweetener-report/>;

For Oil World, see: <https://www.oilworld.biz/t/publications/data-base>.

## 1.7 Imputation and estimation

Suggested Data Sources and Imputation: Stocks/stock changes

Imputation and estimation

**Suggested Approach**

Because most domestic utilizations tend to change little from year to year, changes in stock positions tend to be correlated with changes in production net of trade (that is, production plus imports, minus exports)

As such, changes in stocks can be modeled as a function of changes in production net of trade, as follows:

$$\Delta Stocks_t = f(\Delta ProdNT_t) + \varepsilon_t$$

Where:  
 $\Delta Stocks_t$  is equivalent to  $Closing Stocks_t - Closing Stocks_{t-1}$ ,  
 $\Delta ProdNT_t$  is equivalent to  
 $[Production + Imports - Exports]_t - [Production + Imports - Exports]_{t-1}$ , and  
 $\varepsilon_t$  is an error term.

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## 1.8 Imputation and estimation

Suggested Data Sources and Imputation: Stocks/stock changes

Imputation and estimation


**Suggested Approach**

FBS compilers can estimate this relationship using regression analysis and choose the functional form most appropriate for their situations.

Compilers may wish to add additional variables in their regressions, but the basic approach should remain the same.

Imputation of stock changes through this suggested approach relies on countries having historically measured stock levels for the commodity in question.

Estimates of stock changes derived from regressions must be checked against a constraint for cumulative stock levels. That is, a negative stock change in any given year may not exceed the previous level of stocks and over several successive years, cumulative stock changes should sum to approximately zero



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## 1.9 Imputation and estimation

Suggested Data Sources and Imputation: Stocks/stock changes


Imputation and estimation

**Alternative Approach**

In the absence of historical data on stock levels for grains, pulses, sugar, and oilseeds, compilers can preliminarily use stocks to “balance” the supply and demand equation

This approach should only be utilized in instances where there is some measured data used to derive estimates for food and any other relevant utilizations

Compilers must check cumulative changes against a running estimate of stock levels to ensure that estimated changes are feasible.



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## 1.10 Imputation and estimation

Suggested Data Sources and Imputation: Stocks/stock changes


Imputation and estimation

**Alternative Approach**

For some perishable products, stock changes can be used to smooth supply fluctuations from year-to-year. In these cases, compilers should be aware that stocks accumulated in one year should in most cases be entirely or nearly entirely used in the following year.

Compilers should also consider adjusting loss to account for any stocks not allocated to some other utilization in the following year.

However, before this approach is followed, compilers should have a solid understanding of the supply chain for the respective product—in particular, whether or not it is feasible to hold stocks of that good through the following year, and if so, what quantity of stocks is feasible.



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## 1.11 Quiz 1

(Multiple Choice, 10 points, 1 attempt permitted)

Suggested Data Sources and Imputation: Stocks/stock changes

Quiz

Q 01

Data coverage of total stocks estimates is, at present, extremely limited. This is partially due to the complexity of measuring stock levels, as they can be held anywhere along the supply chain.

Select one that apply.

☒ True

☐ False

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## 1.12 Quiz 2

(Multiple Choice, 10 points, 1 attempt permitted)

Suggested Data Sources and Imputation: Stocks/stock changes

Quiz

Q 02

If countries are able to collect data on stocks held at the farm level and in the private sector (processors, manufacturers, exporters, or distributors), then an overall picture of the country's stocks situation should be mostly complete and provide a solid estimate for FBS compilation

Select one that apply.

☐ True

☒ False

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### 1.13 Quiz 3

(Multiple Choice, 10 points, 1 attempt permitted)

Suggested Data Sources and Imputation: Stocks/stock changes

Quiz

**Q 03** A negative stock change in any given year may not exceed the previous level of stocks and over several successive years, cumulative stock changes should sum to approximately zero.

Select one that apply.

☒ True

☐ False

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### 1.14 Conclusion


Suggested Data Sources and Imputation: Stocks/stock changes

Conclusion

You have finished lesson 7.

In this lesson, we have discussed:

1. Different data sources for stock and stock changes
2. Recommended approach for imputation and estimation of stock changes



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Notes:



## 1.15 Thank You

Suggested Data Sources and Imputation: Stocks/stock changes



Food Balance Sheets (FBS)

Thank You!

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Notes: