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BASIC STATISTICS NEEDED FOR MEASURING FOOD SUPPLY AND FOOD QUALITY

Invited paper submitted by Statistics Finland*

Summary: Food consumption in Finland is depicted by a total calculation in the form of a food balance sheet that enables us to monitor changes in consumption in the long term. The calculation establishes the production, changes in stocks, foreign trade and domestic utilisation of foodstuffs. Domestic utilisation is further divided into use of seeds, animal feed and food, and manufacture for food and non-food uses. The information for the balance sheet is assembled from various sources. The reliability and completeness of the final data are thus largely dependent on the quality of the basic statistics used.

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1. The main sources of information for the food balance sheet are the foreign trade statistics kept by the National Board of Customs and various statistics compiled by the Information Centre of the Ministry of Agriculture and Forestry. These include statistics on dairies, slaughterhouses and the use of cereals by domestic industry; data collected for the Integrated and Administration Control System (IACS) and the Horticultural Enterprise Register; and the findings of two sample surveys - the harvest survey and the biannual survey of the use and storage of cereals and potatoes on farms, home slaughtering and egg production. Information is also obtained from statistics kept by the Finnish Food and Drink Industries' Federation and the Finnish Game and Fisheries Research Institute.

2. The quality of these basic statistics is reflected in the quality and reliability of the data in the food balance sheet. Changes in the manner in which statistics are compiled also affect the usefulness of the information obtained and its comparability in terms of the balance sheet.

Measuring food consumption

3. Food production, domestic utilisation and consumption are depicted by a total calculation made annually in the form of a balance sheet to cover all Finland. This **Balance Sheet of Food Commodities** starts with the production of food and ends with its consumption. The balance sheet, which uses the same division as FAO, has been prepared for about 50 years. In the early years it was compiled by harvest year, but since 1970 by calendar year. The calculation covers the production, changes in stocks, imports and exports, and domestic utilisation of various food commodities. Domestic utilisation is further divided into use of seeds (cereals) and animal feed, use by the non-food and food industries, and consumption (gross consumption of food). The idea of the balance sheet is twofold: first, to illustrate the movement of food from production through to consumption, and second, to provide a means of calculating consumption unless it is recorded at the consumption stage.

4. The amount of food consumed is calculated from food production statistics. First exports are deducted from domestic production, then imports are added, and changes in stocks are taken into account when such information is available. For some commodities, production is estimated starting with consumption. In that case domestic utilisation, too, is calculated with consumption as the starting point. In other words, domestic utilisation = food (gross) + non-food industry + food industry + seed use + animal feed use.

5. The food balance sheet comprises 11 food groups and beverages:

1. Cereals
2. Potatoes
3. Sugar
4. Pulses
5. Vegetables
6. Fruits and berries
7. Meat
8. Eggs
9. Fish
10. Milk and products
11. Oils and fats
12. Beverages

6. These groups are subdivided into individual commodities, which had a total of 78 headings in 2000. About 1500 headings are entered from the import and export statistics, which means that each of the 78 headings has several subheadings as well.

7. The food balance sheet is prepared at macro and micro levels. The macro level gives the figures for the whole country, and the micro level the average quantity of food consumed by an inhabitant of Finland yearly or daily. The micro level also gives the caloric value, and the protein, fat and carbohydrate contents of food as calculated with the aid of certain coefficients from the per capita quantity of each commodity consumed.

8. The information in the balance sheet data is collated from various sources. The main sources are the statistics kept by the Information Centre of the Ministry of Food and Agriculture (IC of MAF), the Finnish Food and Drink Industries' Federation, the National Board of Customs and the Finnish Game and Fisheries Research Institute. The completeness of the balance sheet depends on the data available. Certain figures are only estimates, for example, those for output from kitchen gardens and use of wild berries and mushrooms.

9. Due to the way in which they are made, food consumption calculations based on balance sheets do not give the exact amount of food consumed. For example, to take account of food waste and of cultivation for home consumption when compiling statistics we have to rely on certain estimates. Balance sheets can be used, however, to monitor trends in food consumption over longer periods because the calculations are made and the information is collected in more or less the same way every year.

10. Food consumption can also be measured by **Household Budget surveys**. In Finland these are conducted by Statistics Finland. The focus of these surveys, however, is on the expenditure of households on consumption; questions about quantities consumed were asked for the first time only in 1998. Previously, such information had been requested in 1990, when the survey went by the name of a household survey, and before that at five-year intervals. Nowadays the survey is conducted every three years; so the next one is due in 2001. However, questions about food quantities will not be asked until the 2003 survey. This means that we cannot use the survey to monitor the annual consumption of food. Moreover, consumption surveys measure only household consumption. The figures obtained do not therefore show the contribution of meals served in institutions and work place canteens.

The basic statistics needed to compile the balance sheet

11. Production data on arable plants (cereals, potatoes, peas, turnip rape) are obtained from the annual harvest statistics. These are based, for surface area, on the Integrated Administration and Control System (IACS) and, for yield, on the sample survey conducted by the Information Centre of the Ministry of Agriculture and Forestry (IC of MAF) in October-November. The information is collected from the farmers direct, partly as a postal questionnaire and partly as a computer-assisted telephone interview. Last year, for example, we received responses from around 8000 farms.

12. The information on vegetable production is based on the Horticultural Enterprise Register kept by the IC of MAF. Since 1984 data for selling purposes have been collected for this register from businesses engaging in horticultural production. The register includes all enterprises producing garden plants for sale on a regular basis. In 2000 the register held the names of 8300 businesses. The information is requested in a postal questionnaire sent out at the end of October every year. The same statistics also provide information on industrial contract production. This depicts the amount of vegetables processed by the food industry rather well.

13. Virtually the only fruit cultivated in Finland is the apple. The production figure is based on the amount of apples produced by professional growers and on an estimate of the amount produced in home orchards. The statistics are compiled by the **Finnish Association of Fruit and Berry Growers**.

14. The figures for meat and milk production are based on data collected monthly by the IC of MAF from dairies and slaughterhouses. These constitute the dairy and slaughterhouse statistics. The figures for home slaughtering and the use of milk on farms and for animal feed are based on the findings of sample surveys conducted on 1 June and 1 December. The surveys cover 10 000 farms, which are interviewed mainly by telephone. The same survey provides information on the home use of eggs. Previously the statistics also included egg production. Farms were asked about egg production in the week before the survey and the number of hens on 1 May and 1 December. Egg production was then estimated from these figures at six-monthly intervals. Starting in 2001 the information on egg production is obtained from egg packers, who are asked to submit their monthly egg production figures four times a year. The figures for direct sales and home use of eggs are still obtained by sample survey.

15. Information on stocks is available only on cereals, potatoes, sugar, meat and dairy products. The figures for cereal stocks are based on a sample survey of farm stocks, intervention stocks and emergency supply stocks; those for industrial stocks are collected monthly by the IC of MAF from mills, feed mills, seed firms, malt producers and other enterprises using cereals. As well as information on stocks, these statistics on the use of cereals by domestic industry provide data on the amount milled for human consumption and used by the food and non-food industries. Information on stocks of meat and dairy products (butter, cheese, milk powder) are obtained from the above dairy and slaughterhouse statistics. Sugar stocks (sugar industry, trade and other industry) and other information related to sugar are based on the sugar industry's own statistics.

16. The foreign trade figures are based largely on the foreign trade statistics kept by the National Board of Customs. The Household Budget survey currently made by Statistics Finland every three years provides information on the home use of berries and potatoes, which is difficult to obtain otherwise. The problem for the food balance sheet is the long interval between surveys, as the consumption trend in the intervening years has to be estimated from other sources.

17. In addition to the above statistics, the food balance sheet is based on information collected by the Finnish Food and Drink Industries' Federation from its members on domestic sales and use of food commodities for the food industry. The Finnish Game and Fisheries Research Institute provides statistics on the production of venison and game and on the production and use of fish. Information on honey production is based on the statistics of the Finnish Beekeepers' Association, and that on reindeer meat

production on the statistics of the Reindeer Herders' Association. Information on the use of industrial raw materials not recorded in statistics is solicited from the enterprises concerned direct.

The quality of statistics and problems caused by changes in the way statistics are compiled

18. The reliability of the information in the food balance sheet depends very much on the quality of the basic statistics available and on how well they represent the sector under consideration. Any inconsistencies in the basic statistics will immediately be reflected in the quality of the information in the balance sheet. Official statistics are on the whole both good and comprehensive. Difficulties often arise, however, when the manner in which statistics are compiled changes or some item is no longer recorded.

19. An example of a major change was the new procedure for compiling foreign trade statistics required by Finland's accession to the EU in 1995. Previously goods were classified by the Harmonized Commodity Description and Coding System (HS). With EU membership, however, this was replaced by the CN (Combined Nomenclatura) for use in intra-Community trade. As a result the number of headings multiplied: in the food balance sheet alone the increase in foreign trade headings was threefold. At the same time, the manner in which the data were collected changed markedly. Until the end of 1994, foreign trade statistics were based on export declarations and import duty declarations submitted by businesses to the National Board of Customs on all goods exported or imported. These provided virtually all-inclusive statistics on foreign trade. The INTRASTAT (intra-EC trade statistics) system introduced with accession to the EU requires only enterprises with annual exports and imports exceeding a certain threshold to make customs declarations.

20. This change reduced the coverage of the statistics for trade within the EU to some extent because enterprises shipping only small volumes are no longer included. The effect of this has been seen in product groups imported by a large number of enterprises in small volumes, for example, vegetables and fruit. The number of such enterprises was particularly high in the transition year, 1995, which means that some of the data for that year are not fully comparable with those of previous years. The situation has improved somewhat since that first year, however, and the coverage of the statistics is now better than it was to start with.

Concluding remarks

21. A computation based on a wide variety of statistics, such as that used in the food balance sheet, provides a convenient way of monitoring the consumption of all food groups together with the consumption of total energy and nutrients. A balance-sheet type tabulation reveals any statistical inconsistencies, and so the balance sheet also serves as a measure of the quality of the statistics. When estimated from a food balance sheet, changes observed in food consumption tend to be logical, and there are no particularly large unexplained changes between the years. The quality of the statistics is thus relatively good.

22. Using basic statistics in the compilation of other statistics shows clearly how important it is that the data should be both accurate and sufficiently comprehensive. The growing volumes of imports and increasing internationalisation of businesses have, however, made it more difficult to acquire information in recent years, in particular for any but the basic statistics. The greater range of products, for example, of those based on milk or vegetable fat, presents its own challenge to compilers of statistics and the use of the statistics for other purposes.
