Calculation of Standard Gross Margins in Austria
A Description

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CONTENTS

1 Introduction

1.1 Standard Gross Margins (SGMs)

To make it easier to analyse the structural characteristics and economic results of farms of different types, a classification or "typology" of farms has been developed (Commission Decision 85/377/EEC of 7 June 1985, published in OJ L 220 of 17 August 1985) and amended several times, most recently in OJ L291 of 11 November 1999 (Commission Decision 1999/725/EC). The typology may be applied to data from the Farm Structure Survey (FSS) or Community statistical censuses as well as to data from the Farm Accountancy Data Network (FADN). It thus constitutes a link between these sources of information.

The Community typology of agricultural holdings is based on their type of farming and economic size, two elements which are based on the standard gross margins of the various types of agricultural production. The "standard gross margin", or SGM, is the balance between the standard value of output and the standard value of certain direct costs, i.e. by convention the proportional (variable) costs which can easily be allocated to this output. The SGM is expressed in monetary terms per hectare of utilised agricultural area in the case of crop farming or per head of livestock in the case of livestock farming. Member States calculate regional SGM coefficients for each farming category as average values over a reference period.

The "economic size of a holding" is the value of its total standard gross margin. This is the sum of the individual standard gross margins of each farming category on the holding, expressed as a European Size Unit (ESU). Since Commission Decision 99/725/EC of 22 October 1999, there have been ten economic size classes.

The "type of farming on a holding" is the production system of a holding which is characterised by the relative contribution of different enterprises to the holding's total standard gross margin. Depending on the amount of detail required, there are three overlapping levels of type of farming: 9 general types, 17 principal types and 50 particular types.

1.2 Calculation of SGMs in Austria

The Standard Gross Margin (SGM) for any one year is calculated as the average of gross margins for that year, the previous year and the following year. The description of methodologies refers to the calculation of gross margins for any one of the 3 years on which the SGMs are based.

Unless stated otherwise, different SGMs are calculated for each of the 9 NUTS-2 regions of Austria (see table 1).

Table 1: SGM regions in Austria

SGM region code	SGM region label
AT11	Burgenland
AT12	Niederösterreich
AT13	Wien
AT21	Kärnten
AT22	Steiermark
AT31	Oberösterreich
AT32	Salzburg
AT33	Tirol
AT34	Vorarlberg

Each livestock SGM relates to the annual throughput or production from one animal place, with the exception of those for poultry, which are per 100 bird places. One animal place is supporting the production of one or more animals during the year, the precise number of animals varying according to the type of animal concerned.

Each crop SGM relates to the annual production per hectare of one crop, with the exception of certain horticultural crops where multiple cropping is practised, and with the exception of mushrooms, which relates production per ar (= 100 square metres).

For all enterprises gross margin equals gross production less specific costs. Gross production is the sum of the value at the first sale of the principal product(s) and of the secondary product(s) excluding VAT. It also includes EU subsidies linked to area and/or livestock.

For livestock, gross production is the sum of the following items:

(i) The value of the slaughtered animals; for breeding livestock the value of the culled animal, multiplied by the assumed annual culling rate; for reared livestock the sales receipts for finished animals or the estimated value of the unfinished animal for those enterprises in which the animals have not yet reached the finished stage.

(ii) The value of the other main product; this only applies to breeding livestock. With dairy and dairy goats it is the value of the milk net of co-responsibility levy and super levy. For all other breeding animals it is the value of the offspring or eggs in the case of hens laying eggs for consumption.

(iii) The value of any secondary product; for sheep this is the total value of wool plus subsidies; for dairy cows and dairy goats it is the value of the offspring; for beef animals it is the value of any corresponding subsidies.

For livestock, specific costs are the sum of the following items:

(i) Expenditures for the replacement animal; for breeding livestock this is the cost of the replacement breeding animal adjusted according to the assumed replacement rate which should be consistent with the assumed culling rate in paragraph 0.6(i) above. An allowance for mortality should be made unless the cost of mortality is incorporated into the costs of production elsewhere i.e. under miscellaneous costs.

(ii) Concentrated feed.

(iii) Coarse fodder (including forage variable costs i. e. seed, fertiliser and plant protection).

(iv) iIt is assumed that all fodder is consumed by the grazing livestock on the holding and, as intermediate consumption, does not need to be valued: its individual SGM is zero-rated.

(vi) Miscellaneous (including veterinary expenses, artificial insemination service, performance testing, specific marketing and processing costs).

For crops, gross production is the sum of:

(i) The value of the main product, e. g. grain in the case of cereals (net of co-responsibility levy).

(ii) The value of the secondary product is assumed to be zero; this applies only to cereals in respect of the value of straw which is not harvested.

(iii) The value of any subsidies, paid by the EU in respect of the crop grown.

For crops, specific costs are the sum of:

(i) Seeds and seedlings

(ii) Fertiliser

(iii) Plant protection

(iv) Miscellaneous including water for irrigation purposes, heating, drying (including contract drying), specific marketing and processing costs (e.g. grading, cleaning, packaging) and specific insurance costs.

Fixed costs of production i. e. labour, machinery, buildings, rent, fuel and lubricants, maintenance and depreciation for machinery and equipment, contract work (except that related to renewal and removal of permanent crops and to crop drying) and other fixed costs are excluded.

Economic data (prices and values) in 1999-2001 are in Austrian Schillings (ATS). However, the final results of the calculations - Standard Gross Margins for 1999 – 2001 - are also expressed in Euro (using the official exchange rate of 13.7603 ATS/Euro).

2 Data sources

The following sources have been used to calculate Standard Gross Margins:

(1) Bundesministerium für Land- und Forstwirtschaft Umwelt und Wasserwirtschaft (**BMLFUW**):
Allgemeines Land und Forstwirtschaftliches Informationssystem (ALFIS).

The time series data base of the Federal Ministry of Agriculture, Forestry, Environment and Water contains data from public and administrative sources, in particular data on agriculture from surveys and other sources collected by Statistik Austria and AMA.

(2) Bundesministerium für Land- und Forstwirtschaft Umwelt und Wasserwirtschaft (BMLFUW):
Standarddeckungsbeiträge und Daten für die Betriebsberatung 1999/2000/2001 (**DBKAT**).
Two editions: Ausgabe Westösterreich; Ausgabe Ostösterreich. Wien 2000.

This catalogue of gross margins is produced periodically in cooperation with personnel from extension services, agricultural colleges and federal institutes including Bundesanstalt für Agrarwirtschaft. More recently, catalogues and their supplements with data on gross margins for farming enterprises have been published on the internet, f.i.

Ergänzungshefte zum Katalog von Standarddeckungsbeiträgen für die konventionelle Landwirtschaft 2002/03.

There are five supplements (for conventional agriculture):

data on the calculation of machinery costs,
feed costs,
forestry,
fruits, vegetables and alternative crops, and
direct marketing and farm tourism.

See http://www.lebensministerium.at/publikationen/

A catalogue for organic farming enterprises is also available but has not been used:

Standarddeckungsbeiträge und Daten für die Betriebsberatung im biologischen Landbau 2002/03. Wien 2002.
See http://gpool.lfrz.at/gpoolexport/media/file/Bio-DB_Katalog_2002-2003_Endfassung.pdf

(3) Statistik Austria (STAT):
Schnellbericht Land- und forstwirtschaftliche **Erzeugerpreise** (Erzeugerpreisstatistik).
Wien … (monthly and annually).

This report is produced in line with producer price statistics of Eurostat.
See ANNEX 5 for an example.

(4) Bundesministerium für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft (BMLFUW):
Grüner Bericht .... (year).
Wien …. (annually).

The Green Report is the most comprehensive report on agriculture and agricultural policies in Austria. It records data from administrative acts (f.i. IADN), Statistik Austria, the Farm Accounts Data Network, Agrarmarkt Austria, Federal and Länder Budgets, Eurostat, producer organisations etc.. It is also published on the internet:

http://www.lebensministerium.at/publikationen/

(5) **LBG**-Wirtschaftstreuhand:
Landwirtschaftlicher Paritätsspiegel. ... (quarterly).
Wien (quarterly).

The company LBG runs the Farm Accountancy Data Network in Austria also reports data on prices received by producers of agricultural goods, and calculates price indexes. In terms of farm inputs, these refer to the following:

Price indexes 1995=100	year 2001	year 2002
seeds	103,1	101,8
fertilizer	109,0	103,5
plant protection	85,9	86,4
feeds	101,4	98,0
livestock acquisition	110,7	100,7
livestock costs	107,3	107,9
materials	105,9	103,5
energy	111,8	110,9
maintainance of buildings	111,8	114,1
maintainance of machinery	116,1	118,9
insurance	114,5	117,5
administration	110,2	111,1

Source : http ://www.lbg.at/WT/html/_subs/Pari/Pari_04_03.pdf

(6) Erzeugergemeinschaften; Viehverbände; Arbeitskreise
For some commodities which are less important to Austrian agriculture, data on production, inputs, outputs and finance are not as easily obtainable. However, Bundesanstalt für Agrarwirtschaft maintains close cooperating relationships with farm extension services and farmers associations. Thus it has access to and goodwill with producer organisations and husbandry associations. It also participates in working groups of farmers who share interest in particular enterprises and contribute production related data for comparative analysis.

(7) Betriebsverbesserungspläne 1999-2001

Bundesanstalt für Agrarwirtschaft has developed and is supporting a software product which helps farmers to apply for investment grants and interest concessions. The software incorporates data from BMLFUW (2) to allow farmers to set up a farm improvement plan which is part of the application for support.

(8) Kuratorium für Technik und Bauwesen in der Landwirtschaft (**KTBL**):
Datensammlung für Heil- und Gewürzpflanzen mit CD-ROM.
ISBN: 3-7843-2135-6. Darmstadt 2001. http://www.ktbl.de/

This is data collection on in the production of herbs and spices in Germany.

(9) (Kuratorium für Technik und Bauwesen in der Landwirtschaft (KTBL):
Datensammlung Freilandgemüsebau mit CD-ROM.
ISBN: 3-7843-2146-1. Darmstadt 2002. http://www.ktbl.de/

Data collection on the production of vegetables in open fields in Germany.

(10) Kuratorium für Technik und Bauwesen in der Landwirtschaft (KTBL):
Betriebsplanung Landwirtschaft 2002/2003 mit CD-ROM zu Produktionsverfahren in der Außenwirtschaft. Datensammlung.
ISBN: 3-7843-2141-0. Darmstadt 2002. http://www.ktbl.de/

Data collection on gross margins in the production of crops and livestock in Germany.

(11) Landesanstalt für Entwicklung der Landwirtschaft und der ländlichen Räume mit Landesstelle für landwirtschaftliche Marktkunde (**LEL**):
Kalkulationsdaten Marktfrüchte Ernte 2002.
73535 Schwäbisch Gmünd. http://www.landwirtschaft-mlr.baden-wuerttemberg.de/la/lel/

Data collection on gross margins in the production of crops in Baden-Württemberg, Germany.

(12) Expert knowledge.
Data or information given by an expert in the field.

(13) Own estimate.

(14) LBG-Wirtschaftstreuhand:
Weinbaubericht .... (year).
Wien (annually). http://www.lbg.at/WT/html/_subs/Wb/Wb_2001.pdf

A report on the economics of wine growing, produced by the company which runs the Farm Accountancy Data Network in Austria. These data are published in:

(15) LBG-Wirtschaftstreuhand:
Die Buchführungsergebnisse aus der österreichischen Landwirtschaft im Jahr 2001.
Wien 2002. http://www.lbg.at/WT/html/_subs/Be/Be_2001.pdf

(16) Statistik Austria:
Ergebnisse der landwirtschaftlichen Statistik ... (year). Wien (annually).

This report contains data on acreage, livestock, production, slaughter on regional levels (national, Länder, districts), hunting, producer prices, sources and uses accounts, and economic accounts for agriculture.

(17) Bundesministerium für Land- und Forstwirtschaft Umwelt und Wasserwirtschaft:
Die Österreichische Saatgutwirtschaft.
Wien 1999.
http://gpool.lfrz.at/gpoolexport/media/file/SAATGUTWIRTSCHAFT_2001_.doc

A report on the Austrian seed economy.

3 SGMs for crops

3.1 Arable crops

SGM Code '2000'	FSS code *)	Characteristic
10	D01	Wheat
30	D03	Rye
40	D04	Barley
50	D05	Oats
60	D06	Grain maize
80	D08	Other cereals
90	D09	Protein crops
100	D10	Potatoes
110	D11	Sugar beet
161	D26	Rape
162	D27	Sunflower
163	D28	Soybeans
160	D30	Other oil-seed crops
20	D02	Durum wheat
271	I08AD22	Fallow land subject to set-aside incentive schemes with no economic use

*) Farm Structure Survey

Protein crops (D09) are peas and field beans, weighted with their respective shares in the area harvested.

Potatoes (D10) are early and late potatoes, weighted with their respective shares in area harvested.

An overview of activities and data sources (footnotes (1) – (13) is given in ANNEX 1.

Details on the SGM-calculation and their results are shown in ANNEX 2.

The following paragraphs outline the methodology used, including major assumptions and data sources.

Yields in dezitonnes (dt) per hectare (ha) are taken from ALFIS (1) for the appropriate years for each NUTS-2 region of Austria. The data are collected and estimated by Statistik Austria (14). Prices (in € per dt) net of co-responsibility levies where applicable are taken from the farmgate-price-statistics of Statistik Austria (3, 14). All by-products (straw, leaves etc.) are assumed to be ploughed under after harvest. The plant nutrients which emanate from them are considered in the fertiliser costs.

Output data for protein crops (D09), potatoes (D10) and oil-seed crops (D30) have been weighted with the total area of the respective types of crops in each NUTS-2 Region (taken from ALFIS) to yield output for each region.

For wheat and rye weighted average prices of milling and feed quality were used, with the wheat price referring to 67 % and the rye price to 50% of milling quality.

The value of output is valued with prices at the first point of sale and includes EU payments based on Reg. 1251/99 (4).

The sum of variable costs incorporates costs of

seed
fertiliser
plant protection
other crop costs esp. hail insurance
drying.

The source for variable costs data is BMLFUW (2). The respective annual or biannual catalogues have been produced for and used by the Austrian agricultural extension services network for more than 20 years to support farm management decisions of farms all over Austria. These catalogues list detailed calculations of gross margins for a substantial range of agricultural activities, differentiated by yield levels. Data are from different sources, depending on acceptance by extension service personnel.

For SGM, input costs are based on data for the lowest and highest levels of yields in the catalogue and applied to observed yields through linear interpolation.

For some commodities (i.e. D01, D03, D04, D05, D08, D10) seed costs are calculated on the assumption that some 50% of seeds are supplied by the farmer himself from his previous crop.

The formation of nitrogen in the soil through protein crops (D09) and soybeans (D28) are taken into account via reduced fertilizer input coefficients (kg N = 0).

Other costs originate with hail insurance and drying. In cereal production, drying is assumed to be necessary every other year, in protein crops and oilseeds production every year.

For durum wheat (D02), Statistik Austria records data on yields for only three Länder. In this case, an average yield for Austria was assumed.

In the case of potatoes, the catalogue lists gross margins for food and starch potatoes; these varieties are assumed to correspond to early and late potatoes, respectively.

In the case of fallow land (set aside) (I08AD22), to simplify computation, gross production was taken to be the area premium according to Reg. 1251/99 only. Variable costs include a seed mixture of 15 kg per ha at an average price.

3.2 Hops and tobacco

SGM Code '2000'	FSS code *)	Characteristic
140	D23	Tobacco
145	D24	Hops

Details on the SGM-calculation and their results are shown in ANNEX 2.

Yield in dt/ha and prices in €/dt are taken from producer organisations and working groups in the regions Styria (AT22) and Upper Austria (AT31).

Gross production includes EU payments according to Reg. 2075/92 and 1098/98 (4).

Data for the calculation of SGM for tobacco originate with the producer organization of tobacco in Feldbach. Variable costs of hops production were estimated with data for 1998, updated using the price indices for fertilizer, pesticides etc. recorded by LBG. The useful life for a hop installation was assumed to be 20 years. Start-up costs (plants, fertilizers, plant protection, masts and wires) were considered in the SGMs in terms of annuities.

3.3 Fresh vegetables, melons, strawberries - in open fields

SGM Code '2000'	FSS code *)
180	D14A

Details on the SGM-calculation and their results are shown in ANNEX 2.

SGM of field grown vegetables is a weighted average of the SGMs of the following crops:

white cabbage
white cabbage, fresh
lettuce
chinese leaves
carrots
cucumber small
field tomatoes
field green peppers
summer onions
green peas
broad beans
strawberry.

For each type of vegetable one gross margin is calculated for the whole of Austria for each of the relevant three years.

The weighting factors are based on results from the land use surveys of Statistik Austria (reported by ALFIS). The same source also reports the yields which are the basis for the estimation of variable costs via interpolation (as for cereals).

Product prices are taken from producer price statistics (3), weighted by Statistik Austria for the year (15).

Besides hail insurance, the other costs include processing and marketing costs. The input costs for cabbage, onions, and strawberries are taken from (2) (*BMLFUW*: *DBKAT)*. For tomatoes and green peppers, the various entries of variable costs were inflated with the indexes given in (5). The variable costs of the remaining field vegetables correspond to the data in KTBL (9).

3.4 Vegetables and flowers in gardens or under glass, nurseries, mushrooms

SGM Code '2000'	FSS code *)	Characteristic
185	D14B	Fresh vegetables, melons, strawberries market gardening
200	D15	Fresh vegetables, melons, strawberries - under glass
210	D16	Flowers outdoor
220	D17	Flowers under glass
400	G05	Nurseries
437	I02	Mushrooms

Details on the results of the SGM-Calculation see ANNEX 2.

The calculation of SGMs for individual cultures of horticulture is not practicable at present. This is due to a lack of factual calculations such as those published by (2) (BMLFUW) and a lack of results from working groups. An additional problem is that a considerable share of the total SGM is due to trading activities and/or services. A reasonable alternative to calculate SGMs for the purpose of business classification appeared to be anonymous data from a survey of 53 horticulture businesses which was conducted by the Federal Ministry of Agriculture.

Estimation of gross production was based on the average turnover (excluding trading activities) per surface unit. The share of revenue from field crops was assumed to be 10 percent for vegetables and 12 percent for ornamental plants.

Variable costs are subdivided into seeds and plants, fertilizer and substrates, energy and water, and other costs (packaging, sale, promotion, appliances).

For mushrooms, SGMs are calculated for 100 m² and gross production of 30 kg/m², assuming 5 harvests per year. The producer price is given in Statistik Austria (3, 15).

Variable costs of producing mushrooms are based on data from a particular producer. They consist of substrates including seeds, water and energy, and other costs (packaging, sale, promotion, small appliances).

3.5 Flax and Hemp

SGM Code '2000'	FSS code *)	Characteristic
167	D31	Flax
168	D32	Hemp

For details and results of the SGM-calculation see ANNEX 2.

Yield, producer price and variable costs of flax have been estimated using empirical evidence of recent years reported by experts involved in producer organisations. In this case, other costs are only the costs of hail insurance.

Data for the calculation of SGM of hemp are given in LEL (Landesanstalt für Entwicklung der Landwirtschaft): Kalkulationsdaten Marktfrüchte Ernte 2002; Schwäbisch Gmünd. From three profit levels (low, middle and high) the first was taken to valid for practical purposes. Other costs include hail insurance.

The acreage premiums according to Reg. 1672/00 were taken from *BMLFUW: Grüner Bericht 2001, page 288* (4).

3.6 Aromatic plants

SGM Code '2000'	FSS code *)	Characteristic
166	D34	Aromatic plants, medicinal and culinary plants

For details and results of the SGM-calculation see ANNEX 2.

Aromatic plants were assumed to be cumin (90 %) and peppermint (10 %) in Austria.

Data for the SGM-calculation were taken from KTBL (8).

Gross production is weighted revenue per ha and year.

Other costs are cleaning and packaging in the case of cumin and preparation, desiccation and sacks in the case of peppermint.

3.7 Seeds

SGM Code '2000'	FSS code *)	Characteristic
250	D19	Seeds and seedlings

For details and results of the SGM-calculation see ANNEX 2.

KTBL (10) provides calculations of gross margins for the production of seeds for grass varieties. The following seven varieties were used for the calculation of SGM:

perennial ryegrass
italian ryegrass
ryegrass
meadow lescue
creeping red fescue
timothy
cock's - foot

Gross production is the average yield in tons/ha.

Price is the average price of the seven grass seed varieties.

Support is given according to Reg. 2358/71. Premiums for grass seed varieties are published in a report of the Austrian Federal Ministry of Agriculture (15), pages 17 and 9).

Other costs include hail insurance and cleaning.

3.8 Fruit plantations

SGM Code '2000'	FSS code *)	Characteristic
310	G01	Fruit and berry plantations - total

For details and results of the SGM-calculation see ANNEX 2.

The SGM of fruit plantations is a linear combination of the Gross Margins for the following fruits:

Winter apples
Summer apples
Peaches
Black Current

The weighting factors are based on land use data extracted from ALFIS (source: *Statistik Austria* (15)).

Product prices are producer prices from *Statistik Austria* (3, 15).

Yields are also taken from ALFIS[11] and used to estimate variable costs through interpolation. In that respect, the following tree densities have been asumed:

Apples	3000 trees / ha
Peaches	420 trees / ha
Black current	1700 bush / ha

There are three cost components: fertilizer, plant protection and other costs; the latter are

hail insurance
promotion tax
setting up costs, consisting of plants, fertiliser and plant protection expenses, distributed as an annuity with 5 % interest over 13 years.

3.9 Vineyard

SGM Code '2000'	FSS code *)	Characteristic
360	G04	Vineyard

For details and results of the SGM-calculation see ANNEX 2.

The reports on farm management information for wine-growing in Austria issued by LBG (12) were used as sources for the calculation of SGM's in 1999-2001 for three NUTS-2 regions.

Due to a lack of data it is currently not possible to weigh wine output with the types of sale (grapes, wine in barrels, bottles, inhouse sales); revenue from sales was used for weighting.

Gross production was assumed to equal annual revenues per ha vineyard; farmer's own consumption and changes in stocks were not taken into account.

Other costs are expenses for

planting and growing
supporting appliances
insurance
promotion fee
sale.

4 SGMs for livestock

4.1 Horses

SGM Code '2000'	FSS code *)	Characteristic
600	J01	Equidae

For details and results of the SGM-calculation see ANNEX 3 and ANNEX 4 Example 1.

The SGM covers non-thoroughbred brood mares who produce weaned foals (70 %) and saddle horses (30 %).

Gross production of keeping brood mares is the sum of revenues from the sale of foals and the mare for slaughter. The following assumptions seem reasonable: 0,6 foals with a liveweight of 270 - 300 kg are sold per mare and year. The mare lives 13 years. The prices and the weights per livestock are averages from the records of the horse breeding association in Salzburg.

The lifespan of saddle horses is 12 years of which 8 years are used for riding. It was assumed that the cost of a four-year-old trained horse is 4.360 €, the price for riding is 8 €/h, and 300 hours are sold per year (outdoors).

Other variable costs include
mineral feeds,
veterinary expenses and medicine,
insemination of mares,
hoof care,
dues for the saddle horse,
bedding and water.

4.2 Bovine animals, under one year old

SGM Code '2000'	FSS code *)	Characteristic
610	J02	Bovine under one year old

For details and results of the SGM-calculation see ANNEX 3 and ANNEX 4 Example 2.

SGM was calculated as a combination of gross margins of male and female cattle, weighted with their share in the stock of cattle (0,46 for female and 0,54 for male). Adjustment of the characteristic 'under one year' to the calculation period of one calendar year requires the application of corresponding coefficients; in that respect, the lifespan of female cattle was assumed to be 29 and that of male cattle 15,8 months (see ANNEX 4 example 2).

Gross production of male cattle includes EU-payments according to Reg. 1254/99 (4).

Prices received for female and male cattle were taken from Statistik Austria (producer price statistics[3]) for each of the nine NUTS-2 regions per year.

The costs of fodder (hay, pasture, grass- and corn silage) were taken from *BMLFUW* (2). They include the costs of seed, fertilizer, plant protection and silage additives and are reduced by taking account of the value of nutrients in manure.

The costs of concentrate feeds were calculated on the assumption that they are produced directly on the farm. The corresponding mixtures are taken from supplement 2 of *BMLFUW* (2).

Other costs consist of
mineral feeds
veterinary expenses and medicines
insemination
water and energy.

4.3 Bovine animals under two years old

SGM Code '2000'	FSS code *)	Characteristic
630	J03	Bovine under two year - males
640	J04	Bovine under two year - females

For details and results of the SGM-calculation see ANNEX 3 and ANNEX 4 Example 3.

Data and assumptions for the calculation of gross margins for these two enterprises are the same as for bovine animals under one year old except for weighting factors which are not applicable here.

Gross production of male cattle include EU payments according to Reg. 1254/99[4].

4.4 Bovine animals two year old and over

SGM Code '2000'	FSS code *)	Characteristic
650	J05	Bovine two years and older - males
660	J06	Heifers two year and older

For details and results of the SGM-calculation see ANNEX 3 and ANNEX 4 Example 4.

For male cattle over 2 years SGM is based on the additional (carcass) weight attainable through fattening and the expenditure for feed required to achieve the additional weight.

Gross production of male cattle takes account of EU payments according to Reg. 1254/99 including extensification premium (4).

For heifers with two years of age and more, the same SGM applies as for those under two years since the market value for both breeds is the same.

4.5 Dairy cows

SGM Code '2000'	FSS code *)	Characteristic
670	J07	Dairy Cows

For details and results of the SGM-calculation see ANNEX 3.

Data from *BMLFUW* (2) are used to produce direct estimates of output, variable costs and gross margin per cow for each NUTS-2 region. The milk price recorded in the calculation is from the farm gate price statistics (3).

Gross production is the sum of:

The value of the main product: this is the value of the culled cow, adjusted according to the annual replacement rate for a productive life of five years.
The value of the other main product: this is the value of the milk produced, disregarding compensation payments and super levies.
The value of any secondary product: this is the value of the calf.

The cost of replacement cows is the price of the replacement animal multiplied by the replacement rate assumed in the value of the main product. Mortality is allowed for in the price received for slaughtered cows.

Since the productive life of a milk cow lasts for 5 years, the annual replacement rate is 20 percent. At a liveweight of 650 kg, the annual yield of carcass weight is 74 kg. Calves are sold 50:50 as female and male.

In regard of the costs for fodder, concentrates and other costs see "Bovine animals under one year old".

4.6 Other cows

SGM Code '2000'	FSS code *)	Characteristic
680	J08	Bovine two years and over – other cows

For details and results of the SGM-calculation see ANNEX 3 and ANNEX 4/ Example 5.

SGM calculation for this characteristic refers to the enterprise of keeping suckler cows for the production of unfinished cattle.

Gross production is the sum of production of cows for replacement, production of unfinished cattle on the basis of 45 kg calves, and the sale of old cows for slaughter; respective producer prices are taken from Statistik Austria (3).

Gross production also takes account of EU payments according to Reg. 1254/99 which include suckler cow premiums (4).

Feed costs consist of fodder (hay, pasture, grass silage) and 30 kg of concentrate.

Other costs are:
mineral feeds
veterinary and medical expenses
insemination
energy and water.

4.7 Sheep

SGM Code ‘2000’	FSS code *)	Characteristic
690	J09	Sheep total

For details and results of the SGM-calculation see ANNEX 3 and ANNEX 4/ Example 6.

Gross production has two components: the increase in mutton 33 kg (from 12 kg - 45 kg liveweight), and wool as a by-product.

It takes account of EU payments according to Reg. 2467/98 which includes the ewe premium (4).

Feed costs consist of 50 kg concentrate and fodder (hay, pasture) on the assumption that finishing takes place in stables.

Other costs consist of
salt lick
veterinary and medical expenses
ram depreciation
association fee
energy and water.

4.8 Goats

SGM Code ‘2000’	FSS code *)	Characteristic
710	J10	Goats total

For details and results of the SGM calculation see ANNEX 3 and ANNEX 4/ Example 7.

Gross production includes the sale of cheese, kids and goats. Milk yield per animal and year is assumed to be 400 kg. Replacement of goats occurs through the purchase of a breeding goat for a useful lifetime of six years.

Gross production includes EU payments according to Reg. 2467/98 which specifies a goat premium (4).

Feed costs consist of 146 kg concentrate and fodder (hay and pasture) to achieve the milk yield.

Other costs are
salt lick
starters
veterinary and medical expenses
ram mating
dues (producer association, yield monitoring)
bedding
energy and water

4.9 Pigs

SGM Code '2000'	FSS code *)	Characteristic
730	J11	Pigs – piglets under 20 kg
740	J12	Pigs – breeding sows over 50 kg
750	J13	Pigs – others

For details and results of the SGM calculation see ANNEX 3 and ANNEX 4/ Example 8.

In order to project production data to a calculation period of one calendar year, a coefficient of 2,6 production cycles per pig place was applied for activities J11 and J13.

Gross production in J11 and J13 is based on the assumption of a carcass weight of 94 kg per slaughtered pig and producer prices in the respective NUTS-2 regions (3). Gross production of sows (J12) consists of the sale of 17 piglets per year with a weight of 30 kg each and 64 kg carcass weight of the sow per year.

Replacement of a breeding sow (J12) takes place at 2,5 years of age through acquisition of a young sow. In the case of pig fattening (J11 and J13), a piglet of 30 kg is bought for each production cycle and pig place.

Feed costs for breeding sows consist of 765 kg piglet feed and 1130 kg of sow feed including mineral additives. Other variable costs are

veterinary and disinfection,
insemination,
energy,
promotion charges;
the value of nutrients retrieved from manure is taken into account in other variable costs.

The costs of concentrate feeds for pig fattening (J11 and J13) were calculated on the assumption that they are produced directly on the farm. The corresponding mixture consists of barley, soya bean oil meal, dried sugar beet pulp and mineral additives.

Other costs are

veterinary and medical expenses
promotion fee
energy and water.

4.10 Poultry - broilers

SGM Code '2000'	FSS code *)	Characteristic
760	J14	Poultry - broilers

For details and results of the SGM calculation see ANNEX 3 and ANNEX 4 Example 9.

The unit of the SGM calculation is 100 broilers; per calendar year, six production cycles are possible.

Gross production refers to broilers with a slaughter weight of 1,4 kg and a feeding interval of 35 - 45 days. The same producer price was applied to all NUTS-2 regions; the amplitude of fluctuation from year to year was almost negligible.

For the purchase of chicks a loss of 5 percent was assumed.

Feed costs are based on the purchase of 27 kg feed concentrates per unit.

Other variable costs net of the value of nutrients recovered from manure are

veterinary and medical expenses
disinfection
energy and water
insurance
animal hygiene
promotion fee
producer association fee
bedding and removal of manure

4.11 Laying hen

SGM Code '2000'	FSS code *)	Characteristic
770	J15	Laying hens

For details and results of the SGM calculation see ANNEX 3 and ANNEX 4 Example 10.

The unit the SGM calculation is 100 laying hen with a productive life of 12 months.

The yield per hen is 270 eggs. The producer price (given per 1000 eggs) is a weighted average price for commercial and direct sales with a ratio of 70:30.

At the purchase of young layers for replacement, a loss of 7 percent has been assumed.

Feed costs are based on the purchase of 4 347 kg feed concentrates per unit.

Other variable costs net of the value of nutrients recovered from manure are

veterinary and medical expenses
disinfection
energy and water
insurance
producer association fee
promotion fee
bedding.

4.12 Turkey

SGM Code '2000'	FSS code *)	Characteristic
781	J16A	Turkey

For details and results of the SGM calculation see ANNEX 3 and ANNEX 4 Example 11.

The unit the SGM calculation is 100 turkeys. Two production cycles are possible per calendar year.

Gross production are turkeys at a weight of 12 kg which require a feeding period of 16 - 22 weeks. In all NUTS-2 regions the same producer price was used; it fluctuated only negligibly from year to year.

No losses were assumed at the purchase of turkey chicks for fattening.

Feed costs are valued on the basis of purchase of concentrate feed and requirement of 3 368 kg per unit.

Other variable costs net of the value of nutrients recovered from manure are

veterinary and medical expenses
heating
electricity, water and disinfection
bedding
insurance
promotion fee
producer association fee.

4.13 Ducks

SGM Code '2000'	FSS code *)	Characteristic
782	J16B	Ducks

For details and results of the SGM cCalculation see ANNEX 3 and ANNEX 4 Example 12.

The unit the SGM calculation is 100 ducks; per calendar year, 5.2 production cycles are possible.

Prices (purchase and sale) were estimated using indexes from LBG (5) and the prices in 1998 (12).

Gross production are ducks with a carcass weight of 2 kg (the share of carcass is 74 percent). The same producer price was used in all NUTS-2 regions.

At the purchase of duck chicks for replacement, a loss of 2 percent has been assumed.

Feed costs are based on the assumption that the mixture (consisting of starters, protein concentrate and cereals) is produced at the farm, and 824 kg per unit and year are fed.

Other variable costs net of the value of nutrients recovered from manure are the following:

veterinary and medical expenses
bedding
light and heating
water, cleaning
marketing.

4.14 Geese

SGM Code ‘2000’	FSS code *)	Characteristic
783	J16C	Geese

For details and results of the SGM calculation see ANNEX 3 and ANNEX 4 Example 13.

The unit the SGM calculation is 100 pasture geese; one production cycle is possible per calendar year.

All data were obtained from the extension service of the Chamber of Agriculture in Freistadt.

Gross production consists of geese at a carcass weight of 3.7 kg where the share of carcass is 70 percent, and 0.2 kg of feathers per goose. The same producer price was used in all NUTS-2 regions.

Feed costs derive from the use of 2000 kg per unit of starters and cereals.

Other variable costs net of the value of nutrients recovered from manure are the following:

Veterinary and hygiene expenses
bedding
light and heating
tending to the pasture
fence.

4.15 Beehives

SGM Code ‘2000’	FSS code *)	Characteristic
800	J18C	Beehives

For details and results of the SGM calculation see ANNEX 3 and ANNEX 4 Example 14.

The unit the SGM calculation is a bee swarm from a beehive.

The producer price for honey is given in the producer price statistics (3). The source for the calculation of input costs was *BMLFUW* (2) and assumed valid for all NUTS-2 regions.

Gross production consists of 30 kg honey and 1 kg honey wax per beehive and year.

Maintainance of the stock requires the purchase of a queen bee for replacement of a loss of 5 percent due to coldness in winter.

Other variable costs are the following:

sugar
electricity and water
middle walls
medication
jars
association fee
other utensils.

4.16 Other animals

SGM Code ‘2000’	FSS code *)	Characteristic
810	J19	Fallow deer

For details and results of the SGM calculation see ANNEX 3 and ANNEX 4 Example 15.

The unit of the SGM calculation is 1 fallow deer and her offspring. The productive life of the female was assumed to be 16 years, that of the stag's 5 years.

The price of a deer with approximately 31 kg carcass weight was assumed to be the price of roe deer in (3).

Gross production per year consists of 0.9 young animals at a carcass weight of 31 kg, the hide and a share of the sale of the old female. The same producer price was applied to all NUTS-2 regions.

Basic feed is hay which is fed for 140 days, supplemented with 45 kg of purchased concentrate.

Other variable costs are the following:

Salt lick
veterinary and medical expenses
insurance
stag husbandry.

5 Analyses

5.1 Impact of changes in prices and yields

To allow for economic analysis it is important to distinguish between quantities and prices of inputs and outputs of agricultural activities. This distinction is not necessarily available in the data for the calculation of SGMs where the focus is on values rather than quantities. In Austria this distinction is actually available for outputs and the more important items in variable costs. For these inputs it is possible to calculate the impact of changes in their prices on SGMs.

In respect of quantities, the assumption adopted in Austria that input costs depend on yield is crucial; input costs are calculated through linear interpolation between data on input costs for a low and a high level of yield. This method results in different levels of input costs for different yields although in fact input costs depend on expected rather than observed yields which deviate from expected yields due to (unpredictable) wheather conditions. Thus yields may fluctuate from year to year, and from region to region, independently of the quantity of inputs used which are, however, estimated on the basis of this fluctuation. The impact of a fluctuation in yields on estimated input use is greatly reduced by averaging SGMs over a couple of years, f.i. for 1999-2001, but is apparent in annual SGMs where changes in yield imply changes in inputs due to the assumption adopted above. Thus there will be a difference between input quantities calculated through aggregation of SGM data for a region and the aggregate observed for that same region if observed yields deviate from expected yields.

Keeping this caveat in mind, the quantities of inputs (X) are determined as a function of yield (y)

$$x = a + b\,y$$

where the coefficients (a, b) are determined by solving for them using data (x_1, x_2) from SGMs for a low and a high level of yield (y_1, y_2).

The list of inputs into crop production for which quantitative data are available is shown in table 2; the corresponding data is shown in Annex 6. Annex 6 does not include data on animal production because the list of variable cost items which appear in the original SGM data set (2) is much longer and had to be aggregated; the results yield feedingstuffs, veterinary expenses and other direct costs of livestock activities as shown in Annex 3. These tables are fundamental for the calculation and aggregation of variable input quantities and costs.

Table 2: Input coefficients for crop production

item	coefficient	coefficient
seeds	a	
nitrogen fertilizer	a	b
phosphorous fertilizer	a	b
potassium fertilizer	a	b
calcium fertilizer	a	
bor fertilizer	a	
plant protection	a	b
hail insurance	a	b
machincery costs	a	b
wage costs	a	b
drying	a	b
other costs	a	b

5.2 Aggregation over regions

SGMs are available for the most important and widely used production systems in a country. Quantities of inputs depend on the particular level of yield of a particular area or livestock unit. They can be aggregated for particular utilised areas and livestock units which are produced in a particular spatial setting, i.e. farm holdings (the original goal of calculating SGMs), communities, districts, provinces, NUTS regions or any other classification of regions, and the nation state.

A prerequisite for this aggregation of SGMs for a particular area is the availablility of data on the number of hectares and livestock units in the respective region(s) per year. These data are available from Statistik Austria (14) (1) and have been used to disaggregate national Economic Accounts for Agriculture (EAA) into regional EAA for NUTS-2 regions. A reasonable alternative would be to aggregate SGM data for these regions. However, there is no guarantee that these two approaches converge to the same results.

In the following chapter we are estimating agricultural output and input use in Austria on the basis of the SGM data described above. This exercise was done in cooperation with *Martin Gau, Martin Kniepert and Christina Mayer of Statistik Austria* and is going to lead to a more extensive study for Eurostat titled "TAPAS (2002): Vorleistungseinsatz in der Landwirtschaft". Here we report on the overall results for Austria, compare them to the corresponding results from EAA, and draw conclusions from this comparison.

6 Comparison of SGM and EAA results

In this section an attempt is made to compare the results of SGM-calculations with results of the Economic Accounts for Agriculture (EAA) on the national level. In principle, there is no reason why these two concepts of a statistical representation of the agricultural sector would lead to different results. Even though animal production is treated differently (SGM takes replacement explicitly into account, the EAA does not), the overall results should be equivalent. However, the SGM-calculations, and particularly the SGM-catalogues, are first of all designed for and used by the extension services. Their use as a source of data for sector analysis is only a secondary one. Given these different priorities, a comparison of SGM and EAA data requires a detailed investigation of assumptions, a clarification of weighting factors used for different activities, and a comprehensive harmonisation of sources for the selection of raw data. In practical terms, this turns out to be fairly demanding as the number and range of assumptions, the need for and detail of raw data etc. is considerable.

EAA and SGM calculations for Austria have not only been designed for different purposes and thus according to different priorities, they also have been maintained by different institutions. There was no acute requirement or demand to embark on the harmonisation of the two systems. Neither is this the objective of the current study. However, it should be interesting to find out to what extent the results of EAA and SGM calculations deviate, and to try to identify the prime sources for these deviations. This section will give an overview of what has been done to achieve these goals, and what results have been obtained; more detailed information is provided by the tables in Annex 7 and the footnotes there; the interested reader is referred to the study "TAPAS (2002): Vorleistungseinsatz in der Landwirtschaft" (by *Gau, Kniepert and Mayer, Statistik Austria*) for Eurostat.

6.1 Data

The results of SGM and EAA calculations will be compared at the national level. Data used for the SGM-calculations are given in tables in Annex 2 and 3 of this study, i.e. the “Determination of Standard Gross Margins for Crop Production” and “Determination of Standard Gross Margins for Livestock Production”. These tables refer to the reference year 2000, which means they are based on averages over the calendar years 1999, 2000 and 2001. They show SGM results for every “Bundesland” (i.e. Nuts II-Level) and activity. These results were aggregated to the national level using acreage and animal stocks, respectively, for each of the crop and livestock activities represented in the tables.

The aggregate results of the SGM-calculations are compared with EAA averages for the years 1999, 2000 and 2001. The comparison involves the following positions of EAA: value of production and of intermediate consumption at both producer and basic prices, subsidies and levies on products.

Stocks, acreage, yields and prices needed for the comparison where taken from the data set with which the EAA tables have been calculated. As with the other data, averages for 1999, 2000 and 2001 have been used.

6.2 Problems of compatibility

In order to make a comparison of EAA and SGM results possible, their nomenclatures have to be brought in line to make them compatible as much as possible on this (relatively high) level of aggregation.

This concerns i.a. the problem that the EAA are organised along the lines of commodity classifications whereas the SGM are organised along the lines of activities. This would of course not really be a cause for concern if the level of the respective activities with two or more products would strictly be the same in the EAA as in the SGM-calculations. But contrary to what one could reasonably expect, the levels in the data set of the EAA diverge for product groups like sheep wool, sheep milk and sheep meat. There might be different reasons for that: Maybe "sheep" is not as clear cut a description as one might think of at first thought (f.i. there might be various types of sheep - milk sheep, mutton sheep, wool sheep, other?); maybe the underlying problem is in fact just a data quality problem. In any case the positions sheep and goat etc. are separate positions in the SGM tables and refer to different products.

Another point to take into consideration is that animal production is not comparable at the lower levels of aggregation. Whereas the SGM calculation covers the birth of animals and replacement of slaughtered animals explicitly, the EAA covers animal production essentially at the border of the agricultural sector, namely as animals sold for slaughter (plus exports, minus imports). Neither the generational nor the vintage change from younger to older animals is represented in the EAA. Thus the value of production attributed e.g. to dairy cows including the birth of calves does not exist in the EAA. For the EAA this value only exists in terms of animals slaughtered at old age. Still, taking all generations together, the production value should be equivalent. The implication is that in the context of the EAA it is not directly possible to calculate intermediate consumption and gross margins for just one generation of animals.

In the case of crop production a problem arises with vegetable and flowers. These groups are quite heterogeneous; even more problematic is the separation according to the criteria of “under glass”, “market gardening”, and “open fields” or “outdoor, respectively”. Whereas for “vegetable in open fields” there is an explicit list of vegetables in the SGM (cf. section 3.3), this is not the case for the other categories. Since the distinction between “Feldanbau” (open field, as part of arable production) and “Gartenbau” (horticulture) was dropped in the last horticultural survey, the EAA did not maintain this distinction either. As a consequence it is not straightforward to attribute respective parts of the EAA to SGM positions. The attribution is now made according to estimated shares.

For a tabular comparison of SGM and EAA results, the SGM-tables from Annex 2 and 3 where used in principle as a starting point. In order to accommodate the differences mentioned above these tables were extended and re-arranged to also include the corresponding EAA-figures. Thus they now include data on the levels of activities, yields and slaughter weights as well as cycles for animals. In some cases the latter cannot be interpreted directly but have to be considered as technical figures; explanations for this can be found in the footnotes to the tables. To complete the tables in this sense not only EAA data were introduced but also information on SGM from sections 3 and 4.

6.3 Differences between SGM and EAA in more detail

Crop and animal production as defined by the EAA are covered practically completely by the SGM. The most notable exception is fodder crops: Similar to the former EAA – based on the national farm – non- or hardly marketed fodder is not considered as part of crop production in the SGM. A possible internal surplus from fodder production is directly attributed to the animals, namely dairy cows. This implies that SGM-calculations do not have to consider this fodder as an input in dairy cow production explicitly. To make SGM-calculations comparable with the results in the EAA, we add the value of fodder given in the EAA to the SGM results for production and input, getting column SGM+ in table 3. This amounts to double counting of the value of fodder in

the value of agricultural production: It is explicitly contained in crop production and implicitly in animal production. Only through the calculation of value added double counting is removed.

In the same way as there is double counting of fodder in the EAA, there is double counting of animals in the SGM calculations, which this repsect is not the case for the EAA. Again, in order to make the results of the two concepts comparable, we introduce a "correction" for this difference in column SGM+: The production of young animals is deducted from animal production and also from inputs. This correction shows up a difference in the value of animals: The input value is higher than the output value. Various explanations could be made accountable for this result, f.i. assumptions on birth rates, losses of animals, pricing of animals etc.. Based on the detailed tables (Annexes 2 and 3, from which table 3 is calculated) a more thorough investigation of the likely causes for these deviations could be undertaken. At this stage it is only possible to draw a first conclusion: It appears to be difficult to aggregate SGM – as was done here – in a way which ensures overall consistency with respect to the change of animals from one generation to the next. This is even more significant when we consider that consistency should be ensured for both numbers *and* values.

Additional deviations in coverage of crop or animal production appear to be negligible. Examples for theses differences are the wax originating with bee-keeping which is included in the SGM but not the EAA. The same can be said for feathers from geese. On the other hand, in the SGM calculation there is no sheep milk which is included in the EAA. Even though it is clear that the two systems could – or should – be harmonised also in terms of the commodities covered, the deviations are hardly important for an overall comparison.

As can be seen in the more detailed tables for arable crops and livestock in Annex 7, physical yields are in line for both systems (with the exception of milk; and n.b.: live weights and cycles are not always comparable but rather technical figures to be interpreted in the whole chain of the calculation).

What appears to be more relevant is the question of prices attributed to the commodities. There are differences; an extreme example – even though not really important for the overall result – is goats milk. The underlying assumption for pricing this commodity is that goats milk is processed and sold as cheese, whereas in the EAA it is sold as milk. Obviously the values diverge. As the EAA concept provides for the possibility to cover both – fluid and processed milk – the two data sets could easily be harmonised with respect to this particular and also to other similar points.

As with the former concept of the EAA, agricultural services and secondary (non-separable) activities are not covered by the SGM-calculations. In table 3 they have been added in the column SGM+, again using values taken from the EAA, to make the comparison at the same level. As with fodder, agricultural services are not only provided by farms but also used by them; thus the respective value has to be added on the input side as well[1]. For secondary activities a gross margin of 30% has been assumed, so that also in this case additional inputs can complete the evaluation.

Whereas the values for crop production from EAA and SGM match by almost 100%, the value of animal production is higher in SGM calculations than in the EAA. The diffenrence originates mainly with bovine animals and pigs. Goats and sheep would have to be harmonised for obvi-

[1] The fact that the value of agricultural services provided by farms is much lower than the value of respective services consumed by farms is certainly a matter of concern. For the time being, this must be taken as it is.

ous reasons without major problems. Poultry and eggs match remarkably well (cf. detailed table in Annex 7).

Table 3: SGM and EAA results for 1999/2000/2001 averages in comparison

	SGM	SGM+*	EAA	SGM+/EAA
Crop output (exl. Fodder)	2,043.23	2,043.23		
fodder crops (as of the EAA)		498.90		
Crop output (incl. fodder from EAA)		2,542.13	2,560.99	0.99
Animal output (incl. fodder)	3,561.87	3,054.69	2,558.04	1.19
of which young animals	507.18			
Agricultural goods output	5,605.10	5,596.82	5,119.03	1.09
Agricultural services output	n.v.	140.56	140.56	1.00
Secondary activities (non separable)	n.v.	375.75	375.75	1.00
Output of the agricultural industry	5,605.10	6,113.13	5,635.34	1.08
Total Intermediate consumption	2,767.55	3,156.53	2,994.06	1.05
Seed	204.16	204.16	138.44	1.47
Fertiliser	342.23	342.23	121.48	2.82
Crop protection	144.74	144.74	95.02	1.52
Feeding stuffs	706.01	1,204.91	1,092.94	1.10
of which fodder crops (as of the EAA)		498.90		
Other	792.88	1,260.49	1,546.19	0.82
of which Agricultural services (as of EAA)		204.59		
of which assumption of 70% of output sec. Activities		263.03		
of which Energy			294.44	
of which Veterinary expenses			183.94	
of which Maintenance of materials			207.31	
of which Maintenance of buildings			54.66	
of which Agricultural services			204.59	
of which Other goods and services			601.25	
Replacement	577.54			
Gross value added at basic prices (about = SGM)	2,837.56	2,956.60	2,641.27	1.12

* SGM+ is SGM adjusted for conceptual differences with the EAA.

Whereas differences on the side of production can fairly easily be traced back to differences in assumptions, weightings etc., an analysis on the side of inputs is much more difficult. For the EAA, input data are derived either from sector data or from analyses of book keeping data (the Austrian variant of FADN). In contrast, the SGM concept is based on input requirements related to the levels of activities. SGM catalogues contain an enormous wealth of information on possible production technologies and their input requirements. SGM calculations can thus provide information on gross margins of each type of activity, whereas the EAA provides results only for the aggregate sector.

The detailed tables in annex 7 show the activity specific use of inputs as a documentation of the SGM calculations which have been used for the comparison above. Still, a discussion of these results in the context of this evaluation is possible only for the sector totals. It becomes clear that differences between the EAA and the SGM are much higher on the input than on the output side. To interpret these differences, or even to derive immediately convincing proposals for improved harmonisation, cannot be expected at a level of sector-wide aggregation.

Some hints can be given at least for seed and fertiliser: The SGM calculations do not only cover seed as bought from other sectors or farms (as does the EAA), but also include seed reproduced on farm. A similar claim can be made for fertiliser: The EAA covers only commercial fertil-

isers, whereas the SGM calculations also cover organic fertilisers. In each case this can explain why the indicated use of seed and fertiliser input is higher in the SGM calculation. Actually organic fertiliser is not only covered completely on the input side by the SGM calculations, it is also part of the gross margin of animal production (see 4.2). This fact then contributes to an explanation of the SGM value for animal production being higher than the EAA value.

The differences in feedstuff have in part been clarified above; the remaining difference can be considered as rather small, bearing in mind the problems for pricing of non marketable commodities. Neither should the deviation of 18% for “other costs” be considered as extreme, taking into account the complexity of the underlying data structure. Still it would seem to be rewarding to disaggregate this position. First because at least from the EAA there is a more detailed list of different items available which can be expected to be matched by a similar list of items of underlying SGM-data. Secondly, such an effort should be rewarding simply because of the large share that this position has in total intermediate consumption.

Due to the fact that the regionalisation of the EAA as well as the forecast for the annual agricultural income exercise suffer mainly from a lack of data on the input side, the EAA could make more use of the wealth of information provided the by the SGM system. However, in order to really go ahead with that, common standards would have to developed on a more detailed level for the respective data systems.

6.4 Conclusions

The foregoing calculation and comparison of aggregate SGM and EAA estimates yielded fairly similar results for the overall value of Austrian agricultural production. On the one hand this should have been expected as there is no principle conceptual reason why these two statistical systems would not be compatible. On the other hand their respective complexity and the considerable data requirements in either case would allow for quite a number of possible occasions to obtain results drifting apart.

Going into details, some of the deviations could be explained partly by conceptual differences which neutralize each other on the level of the overall result. Some other causes of deviations have been identified and might – if that is the intention – be used to achieve harmonisation of these aspects. But in general this evaluation has raised a number questions that call for continued scrutiny concerning assumptions, the selection and weighting of raw data, etc.. These questions might also be qualified to give direction to further work on the harmonisation of SGM and EAA calculations with respect to the formulation of common standards, namely for treatment of livestock production. As in this area the conceptual frameworks deviate considerably, the need for clarification is most acute.

The current implementation of calculating and aggregating SGMs and the corresponding input requirements is based on output quantities (in terms of the units of activities) and prices over a couple of years. For inputs, quantities are calculated using the approach mentioned above which is based on input coefficients which are interpolated from a fixed line; for longer time series, technical progress in input-output coefficients should be taken into account. In addition, some input prices might have to be estimated using price indexes. The major problem, however, is to determine the causes for deviations between results from aggregation and aggregate data.

7 Summary and conclusions

The aim of this study was firstly to provide a substantial and clear description of the sources and methods used to compile the SGMs for each activity in the type classification. Results for 1999-2001 have been included in Annexes.

Secondly, the feasibility of providing information for each of the following categories of input costs was explored:

Seeds and plants
Energy and lubricants
Fertilizers and soil improvers
Plant protection and pesticides
Veterinary and medical expenses
Animal feedingstuff
Other direct costs.

Thirdly, a proposal to calculate and aggregate input quantities over particular types of regions was put forward and implemented for Austria as a whole, using the SGM data for NUTS II regions described above. A comparison of its results with those of the Economic Accounts for Agriculture revealed deviations which could partly be explained by differences in concepts, scope and priorities. Since the EAA must rely on data for input use which are not easily available for individual agricultural products, the detailed information provided the by the SGM system could be used as a source for improving its estimates. In order to improve convergence of the two approaches, common standards would have to developed on a more detailed level for the respective data systems.