



Comparison between agricultural holdings in the Farm register and agricultural holdings in the Business register

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ABSTRACT

In Sweden and in the EU there are two main sources for statistics about number of agricultural holdings and their type of farming. One is the Farm register (FR) and one is the Business register (BR). The aim of this paper is to examine and compare these two sources to find out if there is a possibility to use the BR as a source in the next agricultural census and as a consequence reduce the response-burden for some agricultural holdings and lower the total administrative cost of the census.

To achieve the aim of the study, micro level data from the FR and the BR in Sweden have been merged by the social security number or organisation number. All agricultural holdings in the FR were included and all economic activities classified as agriculture were included from the BR.

The resultsshow that the number of agricultural holdings differ between the registers and not all of the holdings in the FRare possible to match with the BR. The Swedish typology for classification of type of farming does not fully harmonize with the NACE codes (Statistical classification of economic activities in the European Community)in the BR, which complicates the comparison.

The main conclusion of the research is that the FR and the BR have different purposes and are regulated in different EU legislations which makes the use of the BR in the agricultural census difficult. However, the results show that it is possible to reduce the response-burden for someagricultural holdings in the FR and also possibilities to improve the quality in both registers.

Keywords: Farm register, Business register, agricultural holdings

1. Introduction

In Sweden and in the EU there are two main sources for statistics about number of agricultural holdings and their type of farming. One is the Farm register (FR) and one is the Business register (BR). Depending on which source is used, the number of agricultural holdings and the characteristics of the holdings differ, which makes statistics on agriculture incoherent and difficult to use. This paper explains the differences between these sources and investigates the possibilities of exchanging information between the registers.

In Sweden, an agricultural holding is seen as an entrepreneurial activity just like any other entrepreneurial activity. That means for example that they are taxed in the same way. Also both farmers and other businesses have the same type of identifiers (social security- or organisation numbers) that would imply that the possibilities to coordinate the registers are good. According to Wallgren, A., Wallgren, B. (2014) the use of registers will “reduce the costs for both respondents and statistics producers” and also registers have “almost complete coverage of population”. Watt (2010) has studied the possibility to use the New Zealand (NZ) business frame for agricultural statistics. Watt points out that for NZ there are some significant benefits, like cost-efficiency and use of the frequently updated information in the BR, but also some challenges.

Both the FR and the BR are widely used by policymakers in Sweden. Also for research, in public debates and in decision making. There is a need for coherent statistics on the number of agricultural holdings and their type of farming. In the agricultural census, the agricultural holding is defined in (EC) No 1166/2008 as “a single unit both technically and economically which has a single management”. The threshold is based on number of hectares of arable land and animals and the type is decided in a typology especially developed for agricultural activities. The concepts of the agricultural census are in line with the guidelines in the World Programme for the Census of Agriculture (WCA) provided by the Food and agriculture organization of the United Nations (FAO). In Sweden the census results are used to form a FR. The BR is regulated in (EC) No 177/2008. The register consists of “all enterprises carrying on economic activities contributing to the gross domestic product (GDP) and their local units”. The agricultural activities are classified in accordance with the NACE classification comparable to other entrepreneurial activities. In this paper micro level data from the FR and the BR have been merged to examine and compare the differences of the registers. Initially, it was not expected that all agricultural holdings would match between the FR and the BR, nor that the number of agricultural holdings would be equal between the registers.

This paper will discuss if:

- the BR can be used as a source in the next agricultural census round to possibly get faster, cheaper and more complete data
- the information in BR can improve the quality in the FR and vice versa
- the response-burden can be reduced in the agricultural census.

2. Concepts and definitions

Each member state in the European Union (EU) shall carry out surveys on the structure of agricultural holdings, the Farm Structure Survey (FSS), according to Regulation EC No 1166/2008. The aim of the FSS is to provide statistics on the structure of agricultural holdings and enable the study of trends at the European Community level. Since the results from the FSS are in line with the guidelines in WCA, the statistics are comparable in all FAO member states. WCA has a key role in the system of integrated agricultural statistics. According to EC No 1166/2008 the surveys shall cover all agricultural holdings reaching one of the physical thresholds specified below:

- More than 2.0 hectares of arable land
- More than 5.0 hectares of agricultural land
- At least 200 m² under glass
- At least 2500 m² outdoor horticultural cultivation
- Possessed at least: 10 cattle or 10 sows or 50 pigs or 20 ewes or 1000 poultry (incl. chickens) on the reference day in June

The FSS is the main source to form the Swedish Farm register (FR). The information in the census is collected both through postal questionnaires and administrative registers. In the FR information about the holder, the area of different crops and number of animals is included. Other information is also included in the census regarding other gainful activities directly related to the holding (OGA) and people working on the agricultural holding.

The Business register (BR) is regulated in (EC) 177/2008 aiming at “a common framework for business registers for statistical purposes in the European community”. According to Council Regulation (EEC) No 696/93 the register shall be compiled of “all enterprises carrying on economic activities contributing to the gross domestic product (GDB), and their local units”. In Sweden this means that the register contains all legal persons and natural persons who fulfill at least one of the following criteria, and estates of deceased persons fulfilling at least one of the first two of the following criteria:

- Registered for VAT
- Registered as employer
- Having a registered firm
- Registered for F-tax (business tax)

The Swedish BR is a part of Statistic Sweden's (SCB) business database. It is mainly used as a population register, sample frame and as a co-ordination tool within Statistics Sweden. The BR is mainly updated with information from the Swedish National Tax Board, other administrative registers, statistical surveys and external users.

2.1.1 *Type of farming*

In the FR, type of farming and the size of the agricultural holding are defined by the Swedish typology. The typology is based on standard labour requirement. These estimates are based on hectares of different crops and number of animals. The holdings are then differentiated by the scale of production.

In the BR, the economic enterprises are classified in accordance with the Standard for Swedish Classification of Economic Activities (SNI 2007). The classification is in line with NACE and generally with International Standard Industrial Classification of All Economic Activities (ISIC), which makes the register comparable with other EU and UN member states.

2.1.2 *Other gainful activity directly related to the holding (OGA)*

In the FR, OGA is an economic activity, but not an agricultural activity, in which the resources from the agricultural holding are used. The resources could for example be land, buildings, machines or products. Forestry is not an OGA.

In the BR, each firm can register several economic activities. In this research, activity one through five are included. The first (primary) activity has the most economic importance to the firm. The definition is therefore wider in the BR compared to the FR.

2.1.3 Employment

All persons, 15 years or older, who worked at least one hour on the agricultural holding during one year are classified as employed in the FR, regardless of economic compensation. They can be either family members, or other permanently or temporarily persons.

In the BR, the number of employees does not have a key role. It is only used to decide the size of the company based on employment. Due to this, the register of Labour statistics based on administrative sources (RAMS) was merged with the FR. RAMS is the main source of labour statistics in Sweden. It contains all enterprises which have at least one employed person. To be classified as employed at a specific enterprise, the activity at the enterprise must be that person's main employment, i.e. no other employment that generates a higher income for that person in November. It can be either the business owners, such as sole traders that has declared an active firm, or employed persons according to the income statement (KU). Persons between 16 – 74 years old can be classified as employed. This means that the definition is narrower in RAMS than in FR.

3. Method

3.1 Input

In this research all agricultural holdings in the FR were included for year 2010 and 2013. In the BR, all economic activities classified within NACE A1 Crop and animal production, hunting and related service activities, except 1.7 Hunting, trapping and related service activities, are included. A company can register several economic activities and the first through fifth activity are included. The micro level data pertains to year 2010 and 2013.

As mentioned above, RAMS was used in the matching process. All enterprises classified as agricultural holdings (NACE 1.1–1.6) with at least one employed person are included.

3.2 Data processing

To achieve the aim of the study, micro level data from the FR and the BR have been merged using the social security number or organisation number. This unique identifier is essential in order to link the information successfully. In the FR an agricultural holding can contain several persons, for example several family members. Primarily it is the holder that has been used in the merging and secondarily it is some other person, e.g. wife/husband, family member or other persons. Due to this, there is no one-to-one match between the registers. If several family members are registered as sole traders, this will result in two or more enterprise units in the BR but only one holding in the FR. This challenge also corresponds to the findings of Watt (2010).

4. Result

4.1 Number of units and matching result

The total number of agricultural holdings in the FR was 67 146 in 2013. That is a decrease by 6 % in number of holdings compared with 2010.

The number of agricultural holdings in the BR includes all economic enterprises classified within an agricultural activity (NACE 1.1–1.6), first activity through fifth activity. The total number were 130 242 in 2013. That is an increase by 10 % compared with 2010.

Table 1: *Number of agricultural holdings*

Farm register		71 091	67 146	-3 945
Business register		118 599	130 242	11 643
- of which:	active ¹	116 440	128 456	12 016
	primary activity ²	102 923	109 774	6 851

The number of agricultural holdings in the BR that could be matched with the FR was 61 370 or 47 % in 2013. In the FR, 79 % of the agricultural holdings could be matched with the agricultural holdings in the BR in 2013.

Table 2: Number of units distributed by matching result

Register	Hit against								Total	
	Physical person		Legal person		Wife/ husband		Other persons		2010	2013
	2010	2013	2010	2013	2010	2013	2010	2013	2010	2013
FR in BR	47 355	46 702	4 018	4 096	1 483	1 483	1 011	869	53 867	53 150
BR in FR	56 304	57 083	4 196	4 287	60 500	61 370

4.2 Type of farming

The agricultural holdings in the FR and BR are divided by type of farming. In the FR, type of farming is based on the Swedish typology which is not fully consistent with the types in the SNI/NACE. In the FR almost 24 500 holdings or 36 % are classified as Small farms in 2013. Small farm means that standard labour requirement is less than 400 hours per year. In the BR about 50 % of the enterprises are classified as Mixed farming which includes a combined production of crops and animals but no specialised production.

Table 3: Type of farming in the Farm register and in the Business register

The Farm register				The Business register			
Main-, basic-, Detailed type (Swedish typology)	2010	2013	Diff.	Division, Group, Class (SNI/NACE)	2010	2013	Diff.
1. Crop production	20 310	18 668	-1 642	1.1 Growing of non-perennial crops	24 174	23 703	-471
- 11 Field crops	18 596	16 753	-1 843	1.2 Growing of perennial crops	682	791	109
- 12 Vegetables- ornamental- and nursery plants	741	885	144	1.3 Plant propagation	509	534	25
- 13 Fruit and berries	370	403	33	1.4 Animal production	27 564	28 103	539
- 14 Mixed crop production	603	627	24	Including			
2. Animal husbandry	20 687	19 679	-1 008	- 1.41 Raising of dairy cattle	6 693	6 574	-119
- 21 Cattle	15 459	13 770	-1 689	- 1.42 Raising of other cattle and buffaloes	8 958	8 892	-66
211 Dairy cows	5 032	4 042	-990	- 1.43 Raising of horses and other equines	4 162	4 199	37
212 Beef cattle	10 060	9 307	-753	- 1.44 Raising of camels and camelids	16	36	20
213 Mixed	367	421	54	- 1.45 Raising of sheep and goats	3 016	3 231	215
- 22 Sheep	2 874	3 597	723	- 1.46 Raising of swine/pigs	1067	1 000	-67
- 23 Pigs	599	501	-98	- 1.47 Raising of poultry	501	538	37
- 24 Poultry	194	180	-14	- 1.49 Raising of other animals	3 151	3 633	482
- 25 Mixed animal husbandry	1 561	1 631	70	1.5 Mixed farming	60 450	70 093	9 643
3. Mixed farming	5 048	4 301	-747	1.6 Support activities to agriculture and post-harvest crop activities	5 220	7 018	1 798
9. Small farms	25 046	24 498	-548	Total	118 599	130 242	11 643
Total	71 091	67 146	-3 945				

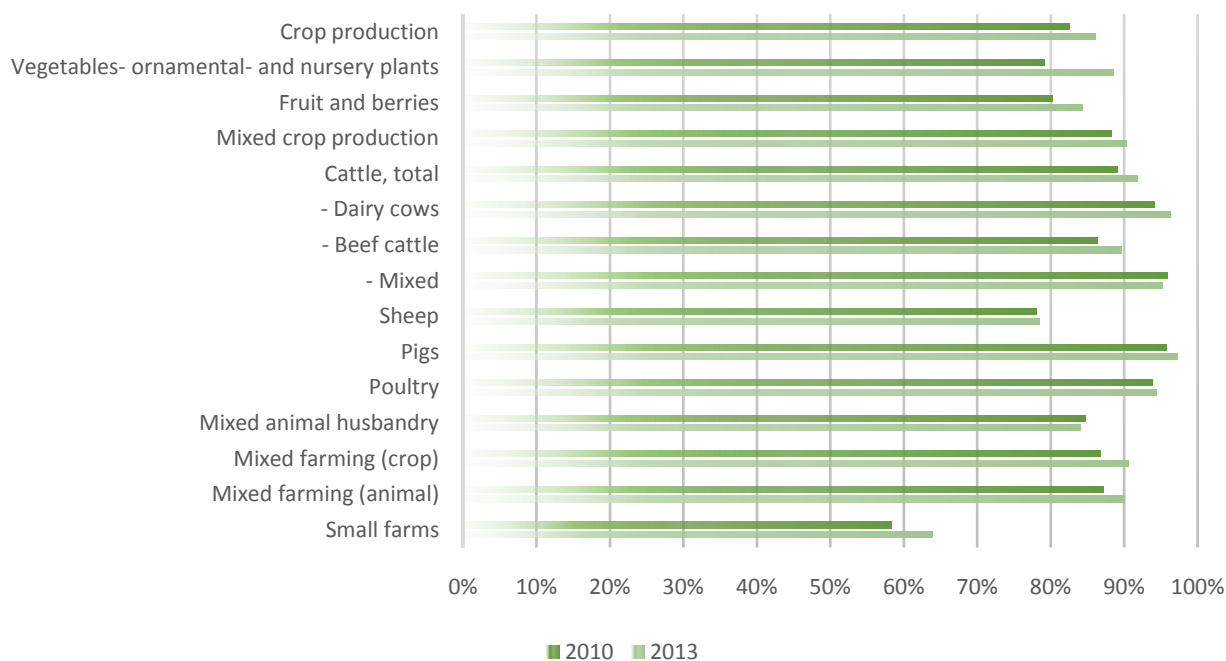
Figure 1 presents the share of agricultural holdings, in the FR, in each type of farming that is possible to match against the BR. Among the agricultural holdings with pig production or dairy

¹ In the Business Register an enterprise is regarded as active if it is registered for VAT and/or has employees and/or if it is registered for F-tax (business tax).

² The number includes both enterprises classified as active and not active.

cows, 97 % and 96 % respectively could be matched against the BR in 2013. Almost 24 500 agricultural holdings in the FR are classified as Small farms. Among this type of farming only 64 % was found in the BR.

Figure 1: The share of each type of farming in the FR, obtained by matching FR and BR

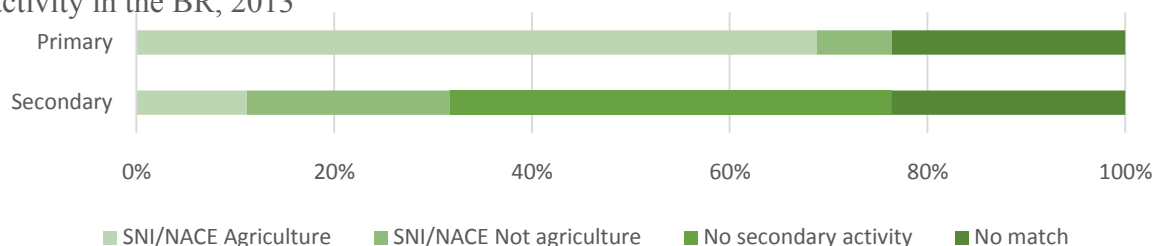


Type of farming may not be the same in the FR and in the BR due to the different classification methods. Among the 97 % holdings with pig production in the FR that could be matched with the BR, 64 % were found in the corresponding economic activity of 1.4.6 Raising of swine/pigs in the BR. 30 % of the holdings with pig production was classified as 1.5.0 Mixed farming. In total, 39 % of the agricultural holdings in the FR that could be matched against the BR are found in 1.5.0 Mixed farming in 2013. Bear in mind that the FR has several mixed farming types, see Figure 1. Among the 39 % of the agricultural holdings in the FR that were found in the economic activity of 1.5.0 Mixed farming, about 50 % are classified in some of the mixed farming types. However, the remaining part had a more specified type of farming in the FR compared with the BR.

4.3 Other gainful activities

In the BR, 55 165 agricultural holdings or 42 % had an activity that is not agriculture. The type of farming where the highest share had another activity was Raising of horses, 67 % of the holdings, followed by Support activities for crop production and animal production. In the FR, 25 059 or 37 % of the agricultural holdings had registered an OGA in 2013. Mixed crop production and Poultry had the highest share of holdings with OGA, 51 % each. Figure 2 presents the share of agricultural holdings in the FR without OGA distributed by primary or secondary activity in the BR. 76 % of the agricultural holdings *without* OGA in the FR could be matched with the BR. 69 % of the holdings have agriculture as primary activity and the remaining 7,5 % have a primary activity that is not agriculture.

Figure 2: The share of agricultural holdings in the FR without OGA distributed by primary and secondary activity in the BR, 2013



4.4 Employment

In the FR, a total number of 105 543 persons were employed in 2013, not including the business owner. The total number of employees was 57 124 persons in 2013 according to RAMS.

Table 4: Number of employed in the Farm register and in RAMS

Number of	Farm register		RAMS	
	2010	2013	2010	2013
Agricultural holdings	71091	67 146	40060	39031
Employment	107837	105543	57487	57124
- of which:				
sole traders	92071	88463	41874	41049
limited company	15766	17079	15613	16075

5. Discussion and conclusion

5.1 Discussion

The results of this paper indicate that the populations in the FR and the BR differ. This is mainly due to the different purposes. The BR is supposed to contain all enterprises with economic activities. Meanwhile, in the FR, all agricultural holdings need to be within the specified thresholds to be in the register, regardless of economic impact. In Sweden, the number of agricultural holdings in the BR are significantly higher than in the FR. This indicates that there is a lot of enterprises with relatively small agricultural activities in the BR who are not meeting the minimum thresholds conditions of the FR. Also, a number of enterprises in the BR are, for example, enterprises that have an agricultural income from renting out land. Therefore, contrary to one of the challenges that Watt (2010) struggled with, the thresholds are lower in the BR than in the FR. In the BR, there are also enterprises that raise horses and other animals, including reindeer and pets, included but they are not in the FR. Also, one holding in the FR can be linked to several economic enterprises in the BR. Due to these differences, the number of agricultural holdings is not consistent. Table 1 shows that there is an increase in the number of agricultural holdings in the BR between 2010 and 2013. The main reason for this is methodology changes regarding activity status. In 2010 a large number of enterprises were disconnected from their economic activity (NACE). In 2011 the rules changed again meaning that most of the disconnected enterprises were reconnected to the economic activity, increasing their numbers. This indicates that a number of the enterprises contributes very little to GDP and that they are on the verge of being excluded from the BR.

Table 3 presents that a large share of the agricultural holdings in the BR are classified as Mixed farming (NACE 1.5). Also, 39 % of the holdings in the FR that could be matched against the BR were classified as Mixed farming while at least half of them had a more specified type of farming in the FR. This means that the NACE classification quality in the BR can be improved by using the FR data on type of farming. Table 3 also presents the number of holdings with dairy cows.

In the FR, the number of holdings with dairy cows is collected from administrative registers at the Swedish Board of Agriculture. These are extremely reliable because each head of cattle is labeled and belongs to a given place of production and the cattle register has been merged with registers of agricultural holdings delivering milk. Table 3 indicates that the BR probably overestimates the number of holdings with dairy cows, perhaps due to lack of updated NACE codes. Figure 1 presents that almost all of the holdings with milk cows in the FR are found in the BR. This example also indicates that the NACE classification quality in the BR can be improved by using the FR data.

Comparing the total share of holdings with OGA in the FR to economic activities beyond agriculture in the BR, there are no big differences between the registers. Figure 2 presents that 7.5 % of the agricultural holdings in the FR that did not report an OGA in the agricultural census did have a primary activity which was not agricultural in the BR. This indicates that there is a possibility to improve the OGA variable for some of these agricultural holdings. It also indicates that there is a possibility to reduce the response burden and improve the quality of OGA for each of the agricultural holdings in the FR that can be matched with the BR due to the information on primary and secondary activities.

Table 4 presents that the number of employees in limited companies are quite similar in FR and RAMS. This can be explained by the fact that limited companies to a greater extent are registered firms with payed employees. This makes it possible to reduce the response burden and increase the quality of the employment variable in limited companies.

5.2 Conclusion

In order to use information from the BR in the next agricultural census round, the ideal situation would be if the registers were completely harmonised. However, that is not realistic to expect due to:

- the FR and the BR having different purposes,
- different base regulations and thresholds and therefore
- the definition of an agricultural holding, type of farming etc. is not identical.

However, the results of this paper show that:

- It is possible to improve the quality in NACE classification of enterprises in the BR with the information from the FR and in that way facilitate the merging of the registers
- The information on non-agricultural activities in the BR can be used to reduce the response-burden regarding OGA for some agricultural holdings in the agricultural census and possibly reduce the non-response rate
- It is possible to use the number of employees in limited companies from RAMS to reduce the response-burden in the agricultural census

The results also show that users need to be aware of the differences between the registers in order to make evidence-based decisions on agriculture.

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