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Structural Change in Canadian Agriculture and the Impacts on Canadian Farm Income and Farm Households

**by
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1. Introduction

Canadian agriculture is changing rapidly in terms of farm structure. The structural changes occurring in the Canadian agriculture are driven by many factors such as technological advances, trade liberalization, environmental and health concerns. This paper will examine the changes that are occurring in the structure of Canadian agriculture. Factors that will be considered in examining structural changes in Canadian agriculture include the number of farms, exit and entrance rates, value of production, specialization, and demographic characteristics between 1986 and 2006. The structural changes in agriculture have important implications for the development of agricultural policies and programs in Canada. Changing in farm structure also has important implications for both farm income and farm household income which are examined in this paper.

2. Data Sources

Canada has a rich source of both farm and farm household data for undertaking analysis related to structural change. The major source of data used in this paper is the Census of Agriculture which is conducted in Canada every five years. The Census of Agriculture covers all farms in Canada which produce agricultural products with the intent for sale. The Census gives a complete picture of the farm including types of production and production practices. A longitudinal linkage of the Censuses of Agriculture provides information on the entry and exits of farms as well as how farms have changed between Census periods.

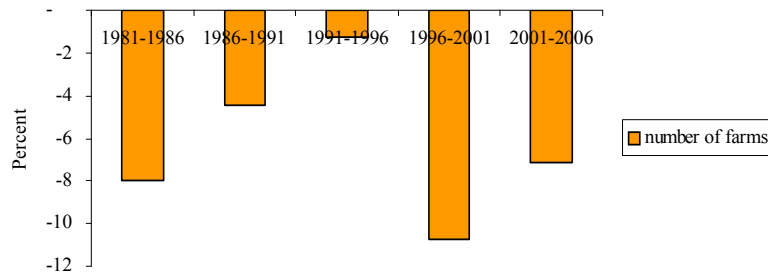
The Census of Agriculture is linked to the Census of Population which is carried out at the same time period. The linkage of the two Censuses provides more complete information on the farm household income as well as characteristics of farm operators such as level of education. The paper also uses data from the Farm Financial Survey (FFS) which is an annual survey of 14,000 farms in Canada. The FFS provides more details on the farm balance sheets as well as details of government payments.

Canada also has a rich source of longitudinal data provided by the Longitudinal Administrative Database (LAD). This database is a longitudinal individual tax records and tax records of families. This database provides financial data on farms and farm families since 1982.

3. Trends in Farm Numbers and Exit Rates

During the 20-year period between 1986 and 2006, the total number of farms in Canada fell by 21.7 percent, from 293,089 to 229,373. This is a continuation of the long term decline in farm numbers in Canada. As Figure 1 shows, number of farms declined by 8 percent in 1981-1986, 4.5 percent in 1986-1991, 1.2 percent in 1991-1996, 10.7 percent in 1996-2001, and 7.1 percent in 2001-2006.

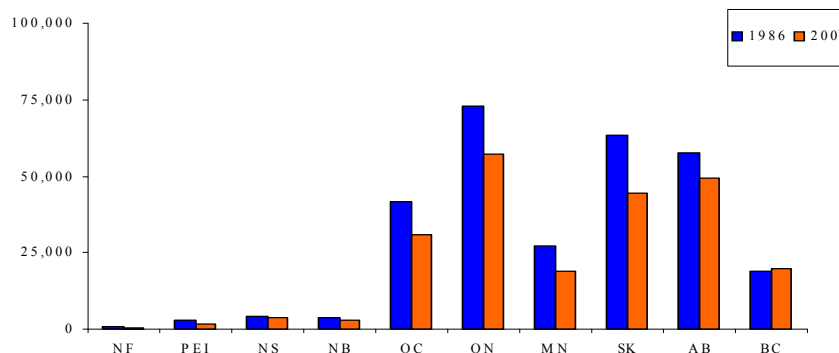
Figure 1: Rate of decline in the number of farms in Canada, from 1981-1986 to 2001-2006



Source: 1981, 1986, 1991, 1996, 2001, and 2006 Census of Agriculture, Statistics Canada.

Among provinces, as Figure 2 illustrates, most of the decline in the number of farms occurred in Prince Edward Island (40 percent) followed by Manitoba (30.3 percent), Saskatchewan (30.1 percent) and Quebec (26 percent). In general, the decline in the number of farms was mostly as a result of decline in the number of small and medium-sized farms while the number of large farms has increased. Specifically, there has been a decline in the number of farms with sales less than \$100,000 from 256,028 in 1986 to 159,592 in 2006. In contrast, the number of farms with sales \$100,000 and over rose from 37,061 in 1986 to 69,781 in 2006. Declining farm numbers during this period reflects technological advances and growing productivity in agriculture, which led to increasing scale of operations and farm consolidation.

Figure 2: Number of farms in Canadian provinces, 1986 and 2006

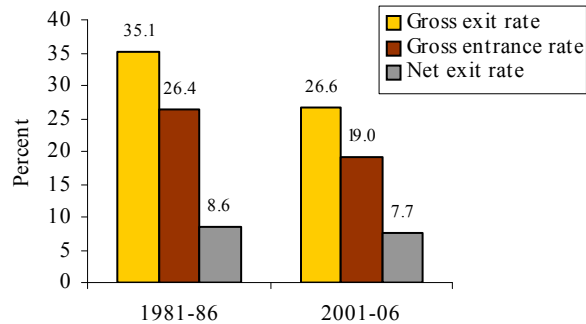


Source: 1986 and 2006 Census of Agriculture, Statistics Canada.

Although the total number of farms fell between 1986 and 2006, this change does not account for the dynamic changes occurring in the industry. At the same time farmers are exiting the industry many people are seeing opportunities and entering agriculture. For example, about 61,030 (102,750) farms in Canada exited the business between 2001 (1981) and 2006 (1986). But the total number of farms declined by only 17,555 (25,270) because the number of entrants, 43,475 (77,480) farms, nearly equalled exiters. Figure 3 illustrates the gross exit rate, gross entrance rate and net exit rate calculated from the longitudinal census database for two inter-census periods,

1981-1986 and 2001-2006. Although the gross exit and entrance rate decreased in 2001-2006 relative to 1981-1986 period, the net exit rate was low and close to each other in both inter-census periods. This implies that, during the two inter-census periods, farm entry and exit rates have been close to each other.

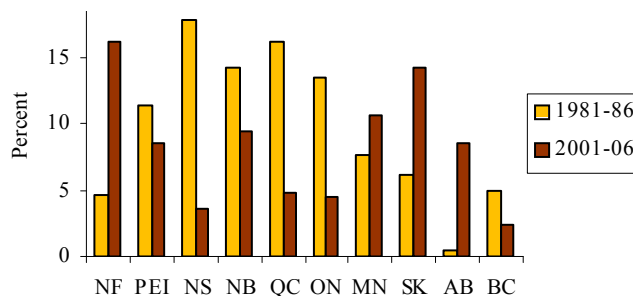
Figure 3: Five-year gross exit rate, gross entrance rate, and net exit rate, 1981-1986 and 2001-2006



Source: Census of Agriculture, Statistics Canada (longitudinal database, 1981, 1986, 2001 and 2006). Note that in calculating the exit and entry rates, the denominator is the number of farms at the end of the period.

The net exit rate varies across provinces. Figure 4 shows the provincial net exit rate in 1981-1986 and 2001-2006. Net exit rate rose in Newfoundland, Saskatchewan, Alberta and Manitoba while it fell in the other provinces, particularly in Nova Scotia, Quebec and Ontario between 1981-1986 and 2001-2006. This at least in part reflects the type of production in each province.

Figure 4: Net exit rate across provinces, 1981-1986 and 2001-2006



Source: Census of Agriculture, Statistics Canada (longitudinal database, 1981, 1986, 2001 and 2006)

As illustrated in Figures 5 and 6, net exit rate varies also by farm size. In 1981-1986, the net exit rate in farms with sales less than \$250,000¹ was 8.8 percent while it was 1.6 percent for farms with sales \$250,000 and over. The corresponding numbers were 8.5 and 2.2 percent in 2001-2006. Thus, net exit rate was at least four times larger in farms with sales less than \$250,000 at any given period. This reflects that a number of small farms are hobby/lifestyle farms as opposed to business oriented farms.

¹ All sales classes are in current U.S. dollars.

Figure 5: Five-year gross exit rate, gross entrance rate, and net exit rate by farm size, 1981-1986

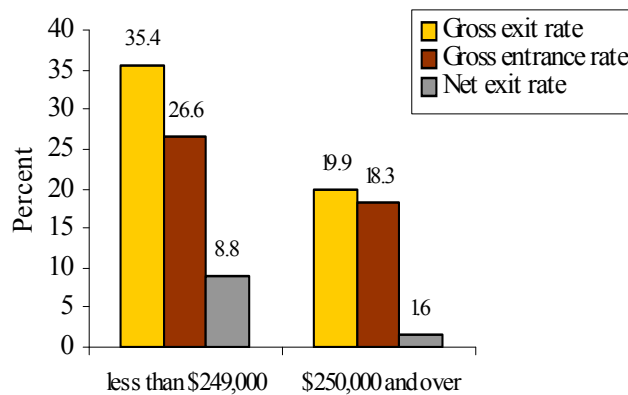
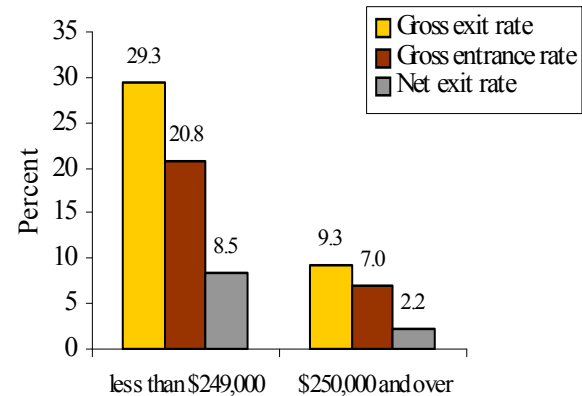


Figure 6: Five-year gross exit rate, gross entrance rate, and net exit rate by farm size, 2001-2006



Source: Census of Agriculture, Statistics Canada (longitudinal database, 1981, 1986, 2001 and 2006)

4. Trends by Farm Size

After reviewing the changes in the number of all farms and its dynamic aspects (exit and entry), it is essential to investigate the change in farm numbers and the characteristics of farms by farm size as the overall change in the number of farms obscures different trends for small and large farms. This paper will examine, in detail, the change in farm numbers and the characteristics of farms in Canada by farm size. Many relevant features of farm performance vary with sales and total farm area. Therefore, these are two potential measures to classify farms. The level of farm sales, however, might be a better indicator of farm size. It measures farm production for the market in dollars, in comparison to the level of one input (land). The number of acres necessary to produce a given dollar amount of farm product varies with the characteristics of the land and the products produced. Cow-calf operations, for example, may have low sales, but many acres of pasture. Other farm types such as poultry tend to have high value and small amount of land. Thus, not all farms that are large in acreage have high sales. As a result, although the provided tables in appendix (Tables 1A, 2A, 3A and 4A) show figures by both sales and total area classes, in our analysis, we will focus on farm performance and characteristics by gross sales class.

4.1. Farm Numbers and Farm Sales by Farm Size

As Table 1A indicates, in 2006, the number of farms with \$250,000 to \$999,999 and \$1,000,000 and over sales increased, respectively, four times (26,394 compare to 6,738) and seven times (4,405 compare to 635) compared to 1986¹. The number of farms with \$100,000 to \$249,999 sales rose by 31.3 percent. In contrast, between 1986 and 2006, the number of farms with less than \$10,000 sales and with \$10,000 to \$99,999 sales declined, respectively, by 40.5 and 35.9 percent. Figures 7 and 8 illustrate the distribution of farm numbers and farm sales by sales class in 1986 and 2006. As can be seen in Figure 7, farms with sales \$100,000 or more increased their share of farms between 1986 and 2006 (from 12.6 to 30.4 percent). Particularly, large farms (with sales \$1,000,000 and over)' share of all farms grew, from 0.2 percent in 1986 to 1.9 percent in 2006. In terms of share in farm sales (from \$18 billion in 1986-in 2006 constant dollars-to \$35 billion in 2006), as Figure 8 illustrates, small farms (with sales less than \$250,000) accounted for

¹ Agricultural commodity prices were 18 percent higher, on average, in 2006 than they were in 1986, based on Farm Product Price Index. Here, sale classes are not stated in constant dollar. Therefore, the changes in the number of farms might be affected by 1986-2006 price increases.

30.6 percent of farm sales in 2006, down from 72.9 percent in 1986. The share of farm sales attributed to large farms (with sales at least \$250,000) rose to 69.4 percent by 2006 from 27.1 percent in 1986.

Figure 7: Distribution of farm numbers by sales class, 1986 and 2006

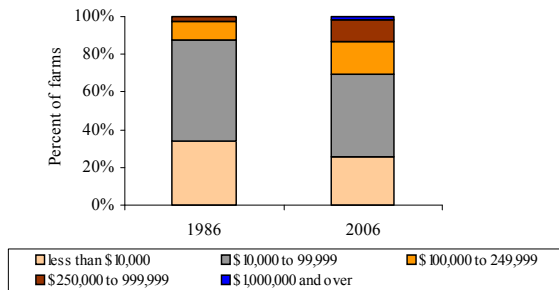
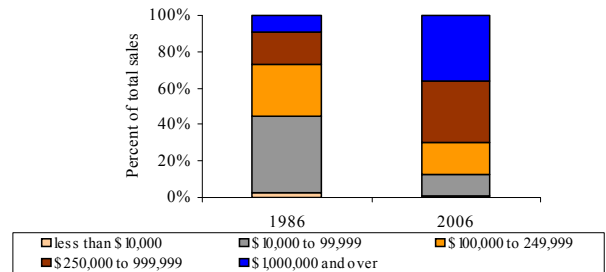


Figure 8: Distribution of farm sales by sales class, 1986 and 2006

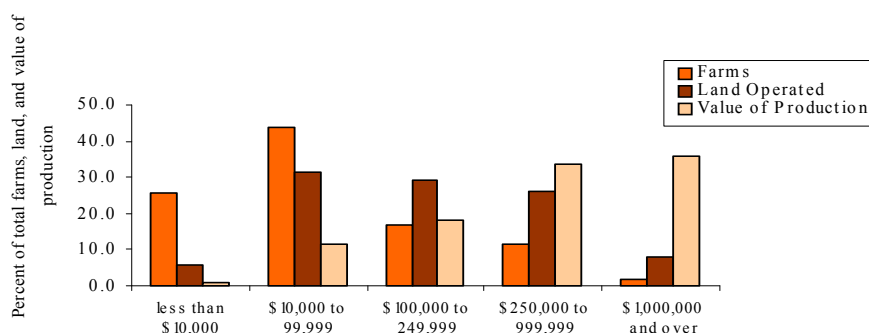


Source: 1986, 2006 Census of Agriculture, Statistics Canada.

To have a more comprehensive comparison, Figure 9 illustrates the distribution of farms, land area, and value of production by gross sales in 2006. In 2006, farms with gross sales of \$10,000-\$99,999 had the largest share of all farms (43.9 percent) but they accounted for just 11.6 percent of the total value of production. These farms had the largest share of all farms (53.6 percent) and total production (41.9 percent) in 1986. In 2006, 69.6 percent of all farms were with gross sales of less than \$100,000, but they accounted for just 12.4 percent of the total value of production. Although farms with sales of less than \$100,000 accounted for a small percent of production, they did account for 37 percent of the land operated in Canada. These farms, therefore, are important in terms of environmental and land use policies. At the other end of the size spectrum, farms with gross sales of \$1,000,000 and over accounted for only 1.9 percent of farms and 7.8 percent of land area, but 35.7 percent of production. Previous study by the Agriculture and Agri-food Canada¹ show that million-dollar farms are more likely to produce greenhouse products, hogs or poultry. These commodities utilize relatively little land while they have considerably higher value. Farms with gross sales of \$250,000 to \$999,999 accounted for 11.5 percent of farms and 33.7 percent of the value of production. Overall, in 2006 (1986), 87 percent (97.5 percent) of all farms were with the sales of less than \$250,000, they held 66 percent (92.3 percent) of farm land, and accounted for 30.6 percent (73 percent) of production. But farms with sales more than \$250,000 accounted for 13 percent (2.5 percent in 1986) of all farms, 34 percent (7.7 percent in 1986) of the land in farms and 69.4 percent (27 percent in 1986) of agricultural production.

¹ Million-dollar Farms in Canadian Agriculture, Agriculture and Agri-food Canada (November 2007).

Figure 9: Distribution of farms, land operated and value of production, by gross sales class, 2006



Source: 2006 Census of Agriculture, Statistics Canada.

When we classify farms by farm area, farms with 1,000 hectare or more in 2006 accounted for only 6.2 percent (2.8 percent in 1986) of farms, but provided 22.5 percent (11.2 percent in 1986) of production. Tables 1A and 2A summarize number of farms, total farm area and total gross sales by sales class and area class in 1986 and 2006.

4.2. Farm Types by Farm Size

There are large differences in the farm type by farm size. Certain farm types cut across farm size while other types of production are more suited to a particular farm size. Share of farms allocated to different commodities for the year 2006 is provided in Table 1 by sales class. As it can be observed, in every farm size class, farms devoted to three commodities accounted for at least sixty percent of all farms, but the three commodities vary across classes. Field crop and other specialty crop, other specialty animal and other livestock, and cattle farms accounted for 76 percent of farms with sales less than \$10,000. Among farms with sales of \$10,000-\$249,999, cattle, grain and oilseed, and field crop and other specialty crop farms accounted for 69.3 percent of farms. For farms with sales of \$250,000 and more, grain and oilseed and cattle farms remained important, but dairy played an important role with 21.6 percent of farms. These patterns indicate that farms in each sales class have specialized in some specific commodities. The major result of comparing farm types in 1986 to 2006 is that wheat and dairy farms decreased from 16.5 and 12 percent of all farms in 1986 to 5.2 and 6.5 percent in 2006, respectively. But field and other crop specialty farms, and other animal specialty farms increased, respectively, from 5.1 and 4.1 percent of all farms in 1986 to 14.3 and 10.8 percent in 2006.

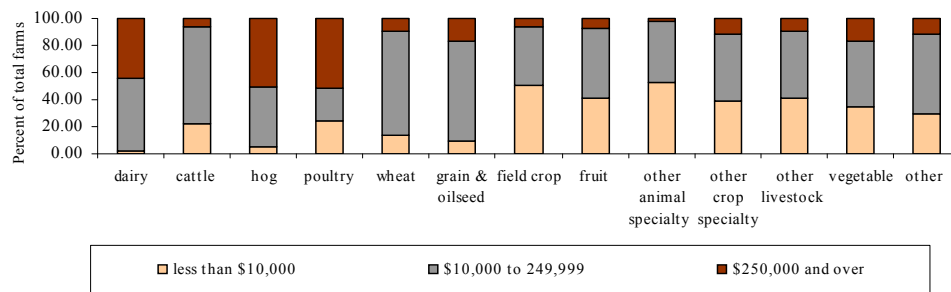
Table 1: Share of farms by farm type¹ and by sales class, 2006

Sales class	Percent of farms									
less than \$10,000	Field crop & Other specialty crop (25.7)	Other specialty animal & Other livestock (25.6)	Cattle (24.6)	Grain & oilseed (8.4)	Fruit & Vegetable (7.9)	Wheat (2.9)	Poultry (1.9)	Other (1.9)	Dairy (0.6)	Hog (0.5)
\$10,000 to 249,999	Cattle (32.7)	Grain & oilseed (26)	Field crop & Other specialty crop (10.6)	Other specialty animal & Other livestock (9.9)	Wheat (6.5)	Dairy (5.7)	Fruit & Vegetable (4.3)	Hog (1.9)	Other (1.6)	Poultry (0.8)
\$250,000 and over	Grain & oilseed (26.5)	Dairy (21.6)	Cattle (12.5)	Hog (9.7)	Field crop & Other specialty crop (9.4)	Poultry (7.6)	Wheat (3.8)	Fruit & Vegetable (3.9)	Other specialty animal & Other livestock (3.5)	Other (1.4)

Source: 2006 Census of Agriculture, Statistics Canada.

Since farms with sales below \$250,000 are concentrated in cattle, grain and oilseed, and field crop and other specialty crop, it is likely that they would be major providers of those products and minor providers of hog, dairy and poultry. As it is illustrated in Figure 10, in 2006, more than 90 percent of other animal specialty, cattle, field crop, fruit, other livestock combination, and wheat farms were farms with sales less than \$250,000. About 90 percent of other crop specialty, grain and oilseed, vegetable and other combination farms were also farms with sales less than \$250,000. By contrast, about 50 percent of hog, dairy, and poultry farms were farms with sales of at least \$250,000.

Figure 10: Distribution of farm types by sales class, 2006



Source: 2006 Census of Agriculture, Statistics Canada.

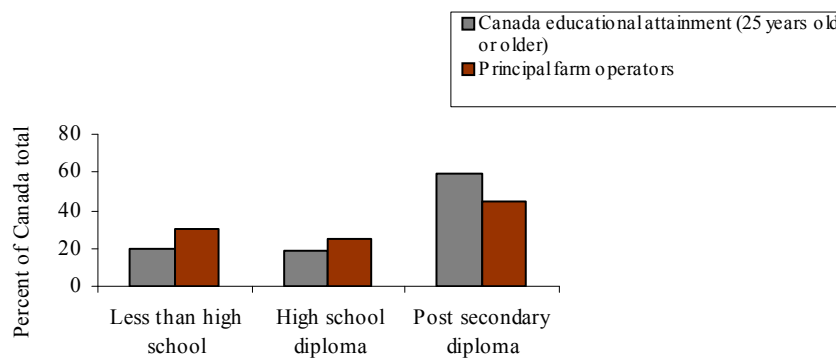
4.3. Farm Operators Characteristics by Farm Size

Farm ownership and operating arrangement and some demographic characteristics like principal operator's gender and education are other measures that can provide a better understanding of farm structure. In terms of land ownership, full ownership in Canada accounted for 59 and 57 percent of the total number of farms and part owners accounted for 34 and 39 percent in 1986 and 2006, respectively (6 percent in 1986 and 4 percent in 2006 was full renter). In 2006, 56 percent of all farms were operated as sole proprietorship farms, while this share was 74 percent in 1986. The number of farms with more than one operator increased from 47 percent of all farms in 1986 to 54 percent in 2006. In 2006, among small farms (with sales less than \$250,000), 50 percent

¹ Farm type classification is based on the commodity (or commodity group) that makes up more than fifty percent of farms total agricultural sales.

have at least two operators. The share of farms with two or more operators increases with farm size (reflecting the type of large farms activities which require more labour). Seventy percent of large farms (with sales above \$250,000) have at least two operators. Primary operators were largely male. Female operators made up only 5 and 9 percent of primary operators in 1986 and 2006, respectively. In 2006, female share of primary operators was highest for the farms with sales of less than \$10,000 (15 percent). For farms with sales of at least \$250,000, almost all primary operators were male (95 percent). In 2006, farm operators have reported higher levels of educational achievement compared to 1986. Share of high school graduates for farm operators rose from 40 percent in 1986 to 70 percent in 2006, comparing to 78 percent for persons 25 years old or older in Canada in 2006. Post secondary diploma was the highest educational attainment for farm operators in 2006 same as for 25 years old or older in Canada (Figure 11). Table 3A summarizes some farm characteristics by sales class and area class in 1986 and 2006.

Figure 11: Educational attainment of principal farm operators and Canada, 2006



Source: 2006 Census of Agriculture (20% agriculture-population linkage database) and CANSIM Tables 051-0001 and 282-0004, Statistics Canada.

5. Government Payments

In Canada, over the past 20 years, governments have made significant payments to farm operators. Direct government payments on aggregate increased from \$3.4 billion in 1986-1991 (in 2006 constant dollars) to \$4.4 billion in 2001-2006. Government policies have taken different forms due to the combined effects of government budget constraints, international trade negotiations, and economic and social objectives and pressures. The result has been a move from commodity specific programs towards programs that are intended to stabilize farm gross margin. For all farms, between 1986 and 2006, there was 173 percent growth in all government payments on average (from \$7,509 in 1986 to \$20,479 per farm in 2006). The amount of government payments increases by farm size. For example, farms with sales of \$250,000 and more received, on average, \$58,804 (\$28,773) in 2006 (1986), while farms with sales between \$10,000 and \$249,999 received \$11,607 (\$6,585). Figures 12 and 13 illustrate share of total government payments and total production by sales class in 1986 and 2006. As can be seen, production explained the distribution of government payments. Moreover, government payments were shifted toward large farms with sales above \$250,000 between 1986 and 2006. This pattern is consistent with the earlier findings on changes in the structure of Canadian agriculture. In other words, changes in government payments resulted from structural changes in farming that are driving production to larger farms.

Figure 12: Distribution of all program payments and value of production by sales class, 1986

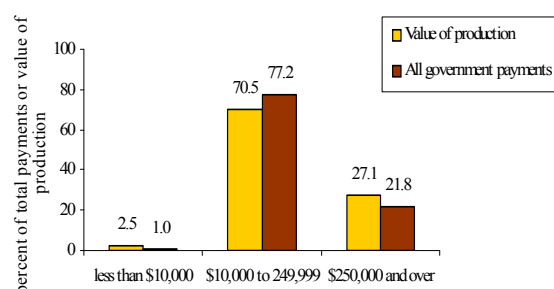
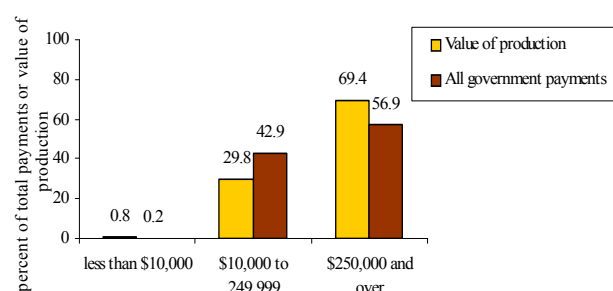


Figure 13: Distribution of all program payments and value of production by sales class, 2006



Source: 1986 and 2006 Census of Agriculture, Statistics Canada and Farm Financial Survey, 1991¹ and 2006.

In 1986, more than 82 percent of all farms received some type of government payments. Among farms with sales less than \$10,000, 64.5 percent, with sales \$10,000-\$249,999, 83.5 percent and with sales above \$250,000, 88.8 percent of farms received some type of government payments. In 2006, 70 percent of all farms received some type of government payments. Among farms with sales less than \$10,000, 22 percent, with sales \$10,000-\$249,999, 70 percent and with sales \$250,000 and more, 80 percent of farms received some type of government payments. More than 64 percent of all farms participated in the Canadian Agriculture Income Stabilization (CAIS) in 2006. Participation rate in the CAIS increased by farm size from 22 percent in farms with sales less than \$10,000 to 77.3 percent in farms with sales at least \$250,000. Eight percent of farms with sales less than \$10,000, 37 percent of farms with sales \$10,000-\$249,999, and 40 percent of farms with sales above \$250,000 received government payments from the CAIS.

6. Farm Income

The structural change in Canadian agriculture in terms of number of farm, farm type, farm operating arrangement, and operator's education should have impacts on farm income and farm household income. Here, we attempt to provide some information about changes in farm income and its distribution across sales classes. First, it might be useful to look at the negative net farm income and its persistency for individual farms by sales class using longitudinal tax data. One measure of persistence is the share of farms with consecutive years of negative net farm income previous to the base year. Table 2 shows the share of farms that experienced negative net farm income between 1998 and 2007. Five or more years of negative net farm income out of ten years is considered chronic. As can be seen, 25 percent of all farms did not report negative net farm income in any of the ten years between 1998 and 2007. Forty four percent, however, experienced chronic negative net farm income. Across farm sizes, negative net farm income appears to be inversely related to farm size. Between 1998 and 2007, 69 percent of farms with sales less than \$10,000 and 53 percent of farms with sales \$10,000-\$49,999 had chronic negative net farm income. This compares to 15 and 13 percent of farms with chronic negative net farm income among farms with sales \$250,000-\$499,999 and \$500,000 and over, respectively.

¹ Since the FFS is not available for 1986, we used the FFS in 1991 to calculate the distribution of all government payments.

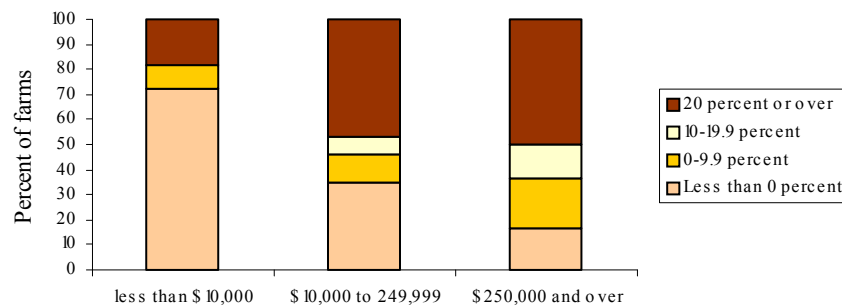
Table 2: Persistence of negative net farm income between 1998 and 2007, by sales class (in CAN\$)

	Negative Net Farm Income (percent)			
	0 years	1 to 2 years	3 to 4 years	5 to 10 years (chronic)
Less than \$10,000	10	12	10	69
\$10,000 to \$49,999	17	16	13	53
\$50,000 to \$99,999	25	23	14	38
\$100,000 to \$249,999	39	24	13	23
\$250,000 to \$499,999	50	23	12	15
\$500,000 and more	46	27	13	13
All Farms	25	19	13	44

Source: Statistics Canada, Longitudinal Administrative Databank 20% (LAD). Total may not sum to 100% due to rounding.

Although farm profitability increases by farm size, financial performance varies among small farms and many small farms are profitable (Figure 14). In 2006 (1986), 18 percent (48 percent) of farms with sales of less than \$10,000 had operating profit margins of at least 20 percent—where margins are calculated as net operating income divided by gross farm revenue. In contrast, 47 percent (66 percent in 1986) of farms with sales of \$10,000-\$249,999 and more than 50 percent of farms with sales above 250,000 had margins of at least 20 percent. In 2006, 72 percent of farms with sales below \$10,000 had operating profit margins of less than zero percent, but they did not necessarily exit farming. Families operating these farms can benefit financially from capital appreciation of assets, reduced property taxes and expensing items such mortgage and vehicle expenses. A number of these farms are also lifestyle farms and are living on the farm for non financial reasons.

Figure 14: Distribution of farms by operating profit margin, by sales class, 2006



Source: Farm Financial Survey, 2006. Note that margins are calculated as net operating income divided by gross farm revenue. Average operating profit margins was -86 percent for farms with sales below \$10,000, and 3 and 13.7 percent for farms with sales \$10,000-\$249,999 and above \$250,000, respectively, in 2006.

The distributions of total value of production and net operating income, as another indicator for farm financial performance, in 1986 and 2006 are shown in Figures 15 and 16. In 1986, farms with sales \$10,000-\$249,999, accounted for 63.7 percent of all farms, generated 70.5 percent of total operating revenue (value of production) and 87 percent of total net operating income. Farms with sales above \$250,000, accounted for 2.5 percent of all farms, generated 27 and 26.8 percent of total operating revenue and total net operating income, respectively. In a sharp contrast, farms with sales \$10,000-\$249,999, accounted for 60.9 percent of farms, generated only 29.8 percent of total operating revenue and 27.4 percent of total net operating income in 2006. On the other hand, farms with sales \$250,000 and over, accounted for only 13.4 percent of all farms, generated 69.4

percent of total operating revenue and 79.6 percent of total net operating income. This pattern is consistent with the structural changes in Canadian agriculture, with the share of total farms and value of production increasing towards larger farms, driving net operating income to larger farms.

Figure 15: Distribution of value of production and total net operating income by sales class, 1986

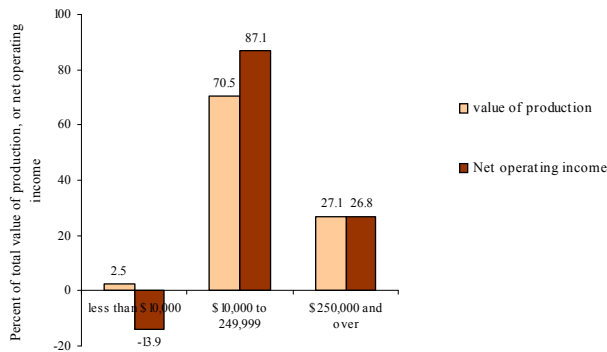
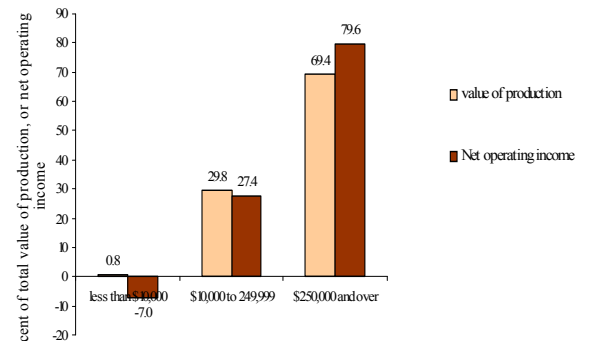


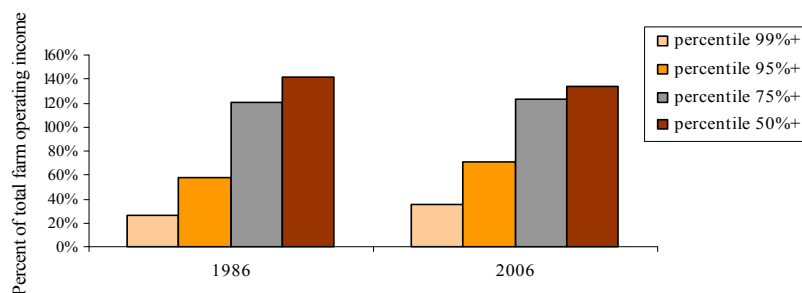
Figure 16: Distribution of value of production and total net operating income by sales class, 2006



Source: 1986 and 2006 Census of Agriculture, Statistics Canada.

The data on top contributors net farm operating income also provides important information for income distribution. Total net operating income increased by 131 percent (in 2006 constant dollars) for one percent of farms with the highest income in 2006 relative to 1986. Total net operating income growth for 5, 25 and 50 percent of farms with the highest income was 113, 78, and 65 percent, respectively. Figure 17 shows the distribution of total net operating income in 1986 and 2006. As can be observed, among all farms, one percent of farms with the highest income had 35 percent of total net operating income in 2006 comparing to 26.5 percent in 1986. Correspondingly, 5, 25 and 50 percent of farms with the highest income had 70.6, 122.8, and 134.2 percent of total net operating income in 2006 (comparing to 57.8, 120.1, and 141.8 percent in 1986)¹. These trends indicate that the income was more concentrated in groups with higher income in 2006 relative to 1986.

Figure 17: Top contributors net farm operating income, 1986 and 2006



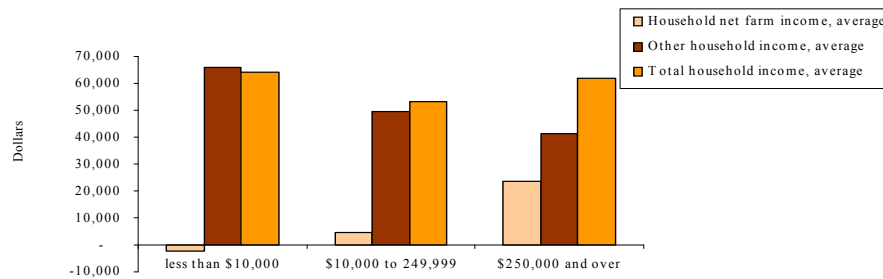
Source: 1986 and 2006 Census of Agriculture, Statistics Canada.

¹ If the percentage in one specific group is more than 100, it implies that there are some farms with negative net operating income in some groups. For example, total farm operating income was \$ 4,840,200,380 in 2006. Half of farms with the highest income had total farm operating income of \$6,495,759,351 while 50 percent of farms with the lowest income had total farm operating income of \$(-1,655,558,971).

7. Farm Family Income

Farm families receive income from other sources than farm. Other sources of income provided farm families with 94 percent of their total household income in 2006, up from 78 percent in 1986. Operators of large and small farms earned, in general, the same household incomes in 2006. On average, small and large farm household income corresponded closely to average household income in Canada with the amount of \$69,548 in 2006. The level and share of other household income vary by sales class. Households in farms with gross sales of less than \$250,000 relied more heavily on income from other sources. Even for farms with sales above \$250,000, other household income contributed to total household income more than farm earnings in 2006 (Figure 18).

Figure 18: Average farm household income, by source and sales class, unincorporated farms, 2006



Source: 2006 Census of Agriculture (20% agriculture-population linkage database), Statistics Canada.

One major concern regarding farm household income is to what extent farm families might experience low income and, more importantly, persistent low income. The persistence of low income is a better measure of well-being than an annual measure which may be fluctuated by commodity prices and other factors. Table 3 shows the share of farm families who experienced low family income¹ between 1998 and 2007. As can be seen, 59 percent of farm families experienced no year of low family income, while 14 percent of farm families lived in chronic low family income. Between 1998 and 2007, the share of families with chronic low family income was lower among farms with sales less than \$10,000 and \$10,000-\$49,999 than among farms with sales \$250,000-\$499,999 and \$500,000 and over, 10 and 13 percent compared to 15 and 18 percent.

¹ The low income measure is defined as half of median family income in Canada adjusted for family size and composition. For example, in 2007, the low income measure (before-tax) threshold was CAN\$17,200 for a single person. The relevant income threshold for a family is calculated by the relevant equivalized family size. For a family with two adults and two children less than 16 years, for example, the threshold income was CAN\$34,400 in 2007.

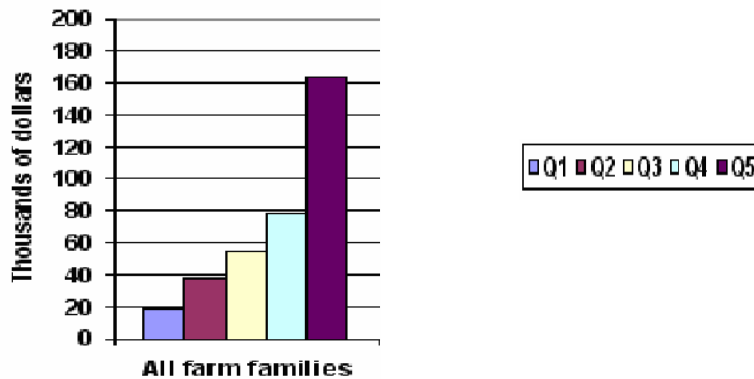
Table 3: Persistence of low family income between 1998 and 2007, by sales class (in CAN\$)

	Low family income (percent)			
	0 years	1 to 2 years	3 to 4 years	5 to 10 years (chronic)
Less than \$10,000	70	14	7	10
\$10,000 to \$49,999	62	17	8	13
\$50,000 to \$99,999	55	19	10	16
\$100,000 to \$249,999	51	21	12	17
\$250,000 to \$499,999	49	24	12	15
\$500,000 and more	45	24	13	18
All Farms	59	18	9	14

Source: Statistics Canada, Longitudinal Administrative Databank 20% (LAD). Total may not sum to 100% due to rounding.

From another point of view, it should be useful to look at the distribution of family income. Figure 19 illustrates the income distributions of families by dividing the family populations into income quintiles¹ based on total family income. In 2006, farm families in the highest quintile of family income (Q5) had average total family income of more than \$160,000 while farm families in the lowest quintile (Q1) had average total family income of less than \$20,000. Farm families in the highest quintile of family income accounted for approximately 47 percent of total family income, for farm families in the lowest quintile it was 5 percent (not shown).

Figure 19: Average total family income, by family income quintile, 2006

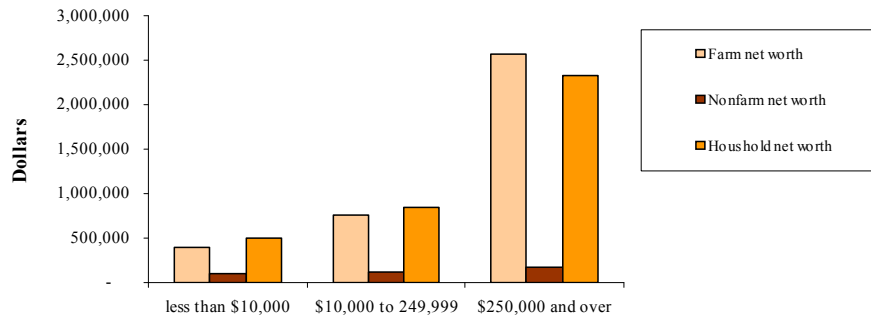


Source: Statistics Canada, 2006 Longitudinal Databases.

In addition to income, net worth (wealth) is another important indicator of financial performance of farm household. Compared with all households in Canada (with average wealth of \$364,295) in 2006, farm households, regardless of farm size, had significantly high wealth (with average net worth of \$1,124,013). As can be observed in Figure 20, household wealth is also strongly associated with farm size. Average net worth for households owning farms with sales at least \$250,000, in 2006, was about two times larger than that for operators of farms with sales less than \$250,000. Overall, in 2006, 98 percent of operator household net worth was based on the farm. Average farm net worth increased from \$456,213 in 2006 to \$1,102,537 in 1986.

¹ Income quintiles are created by sorting the population by total family income (before-tax) from lowest to highest and then dividing the population into five equal groups each representing twenty per cent of the population.

Figure 20: Average farm household net worth, by source and sales class, unincorporated farms, 2006



Source: 2006 Census of Agriculture, Statistics Canada.

8. Conclusion

Canadian agriculture is undergoing major transformations in structure. These transformations are driven by many forces such as technological advances, trade liberalization, environmental and health concerns. This paper examined changes that are occurring in the structure of Canadian agriculture between 1986 and 2006. Both total land area class and gross sales class data show a trend toward large farms, those farming at least 1,000 hectares or selling at least \$250,000 (in current U.S. dollars) in farm products. The growth in the number of large farms was accompanied by a shift in production to large farms. The share of production accounted for by farms with sales of at least \$250,000 grew from 27 percent in 1986 to 69.4 percent 2006. By 2006, farms with sales of more than \$1,000,000 accounted for 1.9 percent of farms, 7.8 percent of lands and 35.7 percent of sales, compared with 0.2 percent of farms, 1.3 percent of lands and 9.1 percent of sales in 1986. The concentration of production is occurring in the Canadian agriculture. The 1.9 percent of farms accounting for more than one-third of agricultural sales included 4,405 farm operations. The effects of concentration on the environment may actually be more of a concern than effects on market power, especially that million-dollar farms are more likely to produce hogs in addition to poultry and greenhouse products. The concentration of livestock production on fewer farms and less land can lead to environmental problems if farms raising livestock do not have enough land to absorb the manure produced.

Changing farm structure plays an important role in how the government payments are distributed. As a result of structural changes in farming that are driving production to larger farms, government payments were shifted toward large farms with sales above \$250,000. Large farms with sales above \$250,000 tended to be more profitable than small farms. Financial performance varied among small farms, however, and many small farms were profitable (18 percent of farms with sales less than \$10,000 had operating profit margins of at least 20 percent in 2006). Moreover, total net operating income was shifted toward large farms with sales above \$250,000 as the share of farms and production are increasing towards larger farms. In terms of farm income distribution, the income was more concentrated in groups with higher income. In 2006, one percent of farms with the highest income had 35 percent of total net operating income. Small-farm households depended heavily on off-farm income. Because of their off-farm income, average household income for each small farm sales class was comparable with the average household income in Canada. Farm families in the highest quintile of family income accounted for approximately 47 percent of total family income in 2006.

In the future it can be expected that farms will continue to increase in size and complexity. Large farms will be complex and will expand as new technologies are adopted and farmers respond to profit opportunities. Small farms will continue to be important in serving niche markets and providing value added products. Tax benefits and lifestyle preferences will contribute non profitable small farms remaining in production.

Appendix

Table 1A: Comparison of farm size distribution by gross sales (gross farm receipts plus forest product sold) class, 1986 and 2006, Canada

Year	gross sales (in current US\$)	No. of farms	% of total farms	% of total farms , exc. <\$10,000	total farm area in hectares	% of total area	% of total area , exc. <\$10,000	total gross sales (in current US\$)	% of total sales	% of total sales , exc. <\$10,000
2006	all farms	229,373	100.0	100.0	67,586,739	100.0	100.0	34,913,132,007	100.0	100.0
2006	less than \$10,000	58,913	25.7	-	3,791,756	5.6	-	268,321,930	0.8	-
2006	\$10,000 to 99,999	100,679	43.9	59.1	21,135,711	31.3	33.1	4,038,958,085	11.6	11.7
2006	\$100,000 to 249,999	38,982	17.0	22.9	19,707,565	29.2	30.9	6,368,637,942	18.2	18.4
2006	\$250,000 to 999,999	26,394	11.5	15.5	17,654,071	26.1	27.7	11,767,749,598	33.7	34.0
2006	\$1,000,000 and over	4,405	1.9	2.6	5,297,635	7.8	8.3	12,469,464,453	35.7	36.0
1986	all farms	293,089	100.0	100.0	67,825,755	100.0	100.0	15,278,898,474	100.0	100.0
1986	less than \$10,000	99,062	33.8	-	10,056,623	14.8	-	377,432,902	2.5	-
1986	\$10,000 to 99,999	156,966	53.6	80.9	39,303,281	57.9	68.0	6,406,617,944	41.9	43.0
1986	\$100,000 to 249,999	29,688	10.1	15.3	13,211,373	19.5	22.9	4,358,409,571	28.5	29.2
1986	\$250,000 to 999,999	6,738	2.3	3.5	4,402,468	6.5	7.6	2,752,790,078	18.0	18.5
1986	\$1,000,000 and over	635	0.2	0.3	852,010	1.3	1.5	1,383,647,979	9.1	9.3

Source: 1986, 2006 Census of Agriculture, Statistics Canada.

Table 2A: Comparison of farm size distribution by total farm area, 1986 and 2006, Canada

year	total farm area	No. of farms	% of total farms	% of total farms, exc. <4	total farm area in hectares	% of total area	% of total area, exc. <4	total gross sales (in current US\$)	% of total sales	% of total sales, exc. <4
2006	all farms	229,373	100.0	100.0	67,586,739	100.0	100.0	34,913,132,007	100.0	100.0
2006	less than 2 hectares	6,308	2.8	-	5,744	0.0	-	1,206,673,069	3.5	-
2006	2 to 3.9 hectares	6,859	3.0	-	17,562	0.0	-	692,544,750	2.0	-
2006	4 to 9.9 hectares	13,476	5.9	6.2	83,598	0.1	0.1	1,382,881,204	4.0	4.2
2006	10 to 49.9 hectares	46,414	20.2	21.5	1,335,691	2.0	2.0	3,953,012,228	11.3	12.0
2006	50 to 99.9 hectares	41,252	18.0	19.1	2,921,680	4.3	4.3	3,400,853,528	9.7	10.3
2006	100 to 499.9 hectares	78,519	34.2	36.3	18,296,321	27.1	27.1	11,187,367,094	32.0	33.9
2006	500 to 999.9 hectares	22,285	9.7	10.3	15,586,815	23.1	23.1	5,243,015,167	15.0	15.9
2006	1,000 hectares or more	14,260	6.2	6.6	29,339,329	43.4	43.4	7,846,784,967	22.5	23.8
1986	all farms	293,089	100.0	100.0	67,825,755	100.0	100.0	15,278,898,474	100.0	100.0
1986	less than 2 hectares	7,646	2.6	-	6,642	0.0	-	233,758,286	1.5	-
1986	2 to 3.9 hectares	7,033	2.4	-	17,955	0.0	-	248,655,824	1.6	-
1986	4 to 9.9 hectares	12,857	4.4	4.6	78,919	0.1	0.1	451,296,154	3.0	3.1
1986	10 to 49.9 hectares	54,058	18.4	19.4	1,626,216	2.4	2.4	1,544,094,448	10.1	10.4
1986	50 to 99.9 hectares	58,688	20.0	21.1	4,157,268	6.1	6.1	2,116,005,736	13.8	14.3
1986	100 to 499.9 hectares	119,576	40.8	42.9	28,149,539	41.5	41.5	6,634,283,796	43.4	44.8
1986	500 to 999.9 hectares	25,092	8.6	9.0	16,836,545	24.8	24.8	2,342,587,471	15.3	15.8
1986	1,000 hectares or more	8,139	2.8	2.9	16,952,671	25.0	25.0	1,708,216,758	11.2	11.5

Source: 1986, 2006 Census of Agriculture, Statistics Canada.

Table 3A: Structural characteristics, Canada, 2006

Gross sale (in current US\$), Farm area	less than \$10,000	\$10,000 to 249,999	\$250,000 and over	all farms	less than 10 hectares	10 to 99.9 hectares	100 to 499.9 hectares	500 hectares or more
Number of farms	58,913	139,661	30,799	229,373	26,643	87,666	78,519	36,545
Percent of all farms	25.7	60.9	13.4	100	11.6	38.2	34.2	15.9
Total farm area in hectares	3,791,756	40,843,276	22,951,706	67,586,739	106,903	4,257,371	18,296,321	44,926,144
Average farm area in hectares	64.36	292.45	745.21	294.66	4.01	48.56	233.02	1,229.34
Median farm area in hectares	33.18	129.90	285.30	101.17	4.05	46.54	196.68	843.77
Number of persons in households	164,775	412,190	136,705	713,665	82,360	261,800	229,835	139,670
Average farm household size	2.8	2.9	4.4	3.1	3.1	3.0	2.9	3.8
Median farm household size	2	2	3	2	3	2	2	3
Farm type								
Wheat farms % total farms	2.9	6.5	3.8	5.2	0.3	3.2	6.5	10.7
Grain & oilseed farms % total farms	8.4	26.0	26.5	21.5	1.0	14.8	25.7	43.7
Field crop farms % total farms	17.1	6.0	4.3	8.6	4.7	12.8	8.2	2.4
Other crop specialty farms % total farms	8.6	4.7	5.0	5.7	19.9	7.2	1.8	0.3
Dairy farms % total farms	0.6	5.7	21.6	6.5	0.8	6.0	11.4	1.5
Cattle farms % total farms	24.6	32.7	12.5	27.9	9.8	24.6	34.1	35.9
Hog farms % total farms	0.5	1.9	9.7	2.6	4.2	2.9	2.3	1.2
Poultry farms % total farms	1.9	0.8	7.6	2.0	8.2	1.9	0.8	0.2
Other animal specialty farms % total farms	22.1	8.0	2.0	10.8	27.2	15.7	4.2	1.4
Other livestock combination farms % total farms	3.5	1.8	1.5	2.2	2.6	2.8	1.8	1.3
Fruit farms % total farms	5.8	3.1	2.0	3.6	14.7	4.2	0.8	0.2
Vegetable farms % total farms	2.1	1.2	2.0	1.6	4.8	2.0	0.6	0.2
Other combinations farms % total farms	1.9	1.6	1.4	1.7	1.7	1.8	1.8	1.1
Farm government program participation rate*								
Provincial crop insurance program	14.6	49.8	67.8	51.8	7.2	42.2	66.0	85.9
Canadian Agriculture Income Stabilization (CAIS)	22.0	63.4	77.3	64.3	37.9	54.5	73.8	93.7
Number of operators/farmers								
1	3,283	54,972	8,626	66,880	7,876	26,606	25,468	6,931
2 or more	3,151	54,991	20,193	78,335	11,596	27,358	27,786	11,596
Gender of primary operators/farmers								
Male	85%	92%	95%	91%	80%	89%	94%	96%
Female	15%	8%	5%	9%	20%	11%	6%	4%

Gross sale (in current US\$), Farm area	less than \$10,000	\$10,000 to 249,999	\$250,000 and over	all farms	less than 10 hectares	10 to 99.9 hectares	100 to 499.9 hectares	500 hectares or more
Education of primary operators/farmers								
Less than high school	28%	33%	26%	30%	22%	31%	33%	30%
High school diploma	21%	26%	30%	25%	23%	22%	26%	33%
Post secondary diploma	51%	41%	45%	44%	55%	47%	41%	37%
Land tenure								
Full owner % of total farms	81.7	52.2	33.6	57.3	87.0	76.9	44.6	15.8
Part owner % of total farms	13.6	43.8	64.6	38.9	5.9	19.1	52.3	81.5
Full tenant/renter % of total farms	4.7	4.0	1.8	3.9	7.2	4.0	3.2	2.8
Government payments, dollars*								
All program payments								
Average	849.09	11,607.63	58,804.71	20,497.64	9,041.21	9,268.07	20,616.03	64,905.96
Median	0.00	4,000.00	24,000.00	5,000.00	0.00	2,000.00	9,000.00	32,000.00
Crop Insurance program								
Average	131.84	1,763.16	10,817.00	3,487.69	187.93	906.03	3,149.79	15,446.48
Canadian Agriculture Income Stabilization (CAIS)								
Average	389.04	5,153.07	23,151.47	8,513.93	4,369.02	3,895.56	8,613.74	26,035.12
Grains and Oilseeds Payment Program (GOPP)								
Average	183.77	2,008.57	8,123.01	3,141.18	247.12	824.05	3,037.10	13,231.00
Conservation program								
Average	1.32	73.24	265.17	108.14	14.38	57.22	111.48	345.45
Other programs (include private hail insurance, tax rebates, Business Risk Management, Farm Income Payment Program, BSE disease)								
Average	94.40	1,304.58	6,562.34	2,294.41	1,323.02	1,093.14	2,004.80	7,646.70
Household finances in unincorporated farms								
Share with non-farm earnings	100%	100%	100%	100%	100%	100%	100%	100%
Share with farm income loss	52%	37%	15%	40%	39%	46%	39%	26%
Share farms with zero farm income	28%	14%	13%	18%	35%	21%	13%	10%
Household net farm income, average	-2,342	4,379	23,724	4,191	998	2,612	5,063	8,249
Other household income, average	65,986	49,504	41,556	53,686	64,740	59,456	48,169	40,606
Total household income, average	64,277	53,180	61,938	57,037	65,278	61,455	52,513	47,986
Farm net worth, average*	397,838	757,754	2,575,407	1,102,537	786,492	816,922	1,178,071	2,049,484
Non-farm net worth, average*	110,545	113,713	179,234	126,414	146,425	123,726	109,512	162,334
Household net worth, average*	500,739	851,262	2,322,271	1,124,013	889,214	912,617	1,208,723	1,751,084

*Source: 2006 Census of Agriculture, Statistics Canada. * FFS, 2006.

Table 4A: Structural characteristics, Canada, 1986

Gross sale (in current US\$), Farm area	less than \$10,000	\$10,000 to 249,999	\$250,000 and over	all farms	less than 10 hectares	10 to 99.9 hectares	100 to 499.9 hectares	500 hectares or more
Number of farms	99,062	186,654	7,373	293,089	27,536	112,746	119,576	33,231
Percent of all farms	33.8	63.7	2.5	100	9.4	38.5	40.8	11.3
Total farm area in hectares	10,056,623	52,514,654	5,254,478	67,825,755	103,515	5,783,484	28,149,539	33,789,216
Average farm area in hectares	101.52	281.35	712.66	231.42	3.76	51.30	235.41	1,016.80
Median farm area in hectares	46.54	179.68	224.60	111.29	3.24	52.61	198.30	712.25
Number of persons in households	317,710	655,670	27,285	1,000,670	95,795	383,795	403,745	117,340
Average farm household size	3.2	3.5	3.9	3.4	3.4	3.4	3.4	3.6
Median farm household size	3	3	4	3	3	3	3	4
Farm type								
Wheat farms % total farms	9.9	20.5	4.9	16.5	0.7	6.6	24.0	36.1
Grain & oilseed farms % total farms	15.6	24.5	14.6	21.2	2.3	17.4	26.9	29.3
Field crop farms % total farms	2.2	2.3	3.9	2.3	0.8	3.1	2.2	0.9
Other crop specialty farms % total farms	4.6	1.7	6.2	2.8	13.7	3.3	0.6	0.1
Dairy farms % total farms	2.7	16.8	10.3	11.9	1.0	15.3	14.0	1.5
Cattle farms % total farms	31.7	18.7	17.7	23.1	13.4	25.7	22.1	25.5
Hog farms % total farms	1.8	5.1	15.5	4.3	7.3	5.9	2.9	1.0
Poultry farms % total farms	2.6	1.2	16.3	2.1	9.9	2.3	0.6	0.2
Other animal specialty farms % total farms	8.8	1.7	1.1	4.1	15.3	5.5	1.2	0.4
Other livestock combination farms % total farms	1.9	2.1	3.7	2.1	1.2	2.0	2.3	2.1
Fruit farms % total farms	4.7	2.0	1.5	2.9	16.7	3.0	0.3	0.1
Vegetable farms % total farms	2.1	1.3	2.5	1.6	5.4	2.4	0.4	0.1
Other combinations farms % total farms	11.5	2.2	1.8	5.3	12.3	7.4	2.4	2.8
Farm government program participation rate*								
Provincial crop insurance program								
Canadian Agriculture Income Stabilization (CAIS)								
Number of operators/farmers								
1	8,612	99,464	2,768	110,845	6,807	40,351	53,250	10,436
2 or more	4,428	84,513	9,120	98,062	5,990	34,402	43,675	13,994
Gender of primary operators/farmers								
Male	92%	97%	98%	95%	90%	94%	97%	98%
Female	8%	3%	2%	5%	10%	6%	3%	2%

Gross sale (in current US\$), Farm area	less than \$10,000	\$10,000 to 249,999	\$250,000 and over	all farms	less than 10 hectares	10 to 99.9 hectares	100 to 499.9 hectares	500 hectares or more
Education of primary operators/farmers								
Less than high school	59%	63%	53%	62%	50%	60%	65%	63%
High school diploma	11%	14%	17%	13%	13%	13%	13%	13%
Post secondary diploma	30%	23%	30%	26%	37%	27%	22%	24%
Land tenure								
Full owner % of total farms	77.8	50.4	42.9	59.5	84.3	77.5	48.3	18.2
Part owner % of total farms	13.6	44.0	53.9	34.0	4.2	16.1	45.8	77.0
Full tenant/renter % of total farms	8.6	5.6	3.3	6.5	11.4	6.4	6.0	4.8
Government payments, dollars*								
All program payments								
Average	1,158.33	6,585.51	28,773.84	7,509.49	2,796.65	6,450.07	7,528.52	13,144.29
Median	500.00	2,970.00	16,200.00	2,906.00	300.00	2,500.00	3,000.00	6,000.00
Household finances in unincorporated farms								
Share with non-farm earnings	98%	95%	96%	96%	98%	97%	95%	96%
Share with farm income loss	29%	16%	12%	21%	24%	23%	19%	17%
Share farms with zero farm income	33%	11%	13%	19%	35%	24%	13%	8%
Household net farm income, average	765	9,875	21,534	7,370	3,342	5,148	8,513	12,536
Other household income, average	24,701	16,284	15,921	19,290	25,504	22,175	16,407	13,792
Total household income, average	24,702	24,322	34,059	24,573	27,242	25,505	23,040	24,750
Farm net worth, average*	196,729	412,952	1,410,267	456,213	351,109	357,284	444,868	858,981
Non-farm net worth, average*								
Household net worth, average*								

Source: 1986 Census of Agriculture, Statistics Canada. * FFS 1991. Since the FFS is not available for 1986, we used the FFS in 1991.

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