Next Generation
of Agriculture and Agri-Food Policy

Economic Backgrounder:
Changing structure of primary agriculture

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The Next Generation of Agriculture and Agri-Food Policy –
A Federal, Provincial, and Territorial Initiative

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Changing structure
of primary agriculture

INTRODUCTION

This report examines the structural change occurring in Canada's primary agriculture sector, including:

- the decline in farm numbers and its impact on overall production
- the increase in concentration of production by very large farms
- the increase in diversity among farms
  - by typology
  - by farm organization
- the use of contracts
- the increase in asset values, along with increases in net worth and total liabilities
- the increase in net investment
- the increase in debt as a percentage of total assets.

FARM NUMBERS AND PRODUCTION

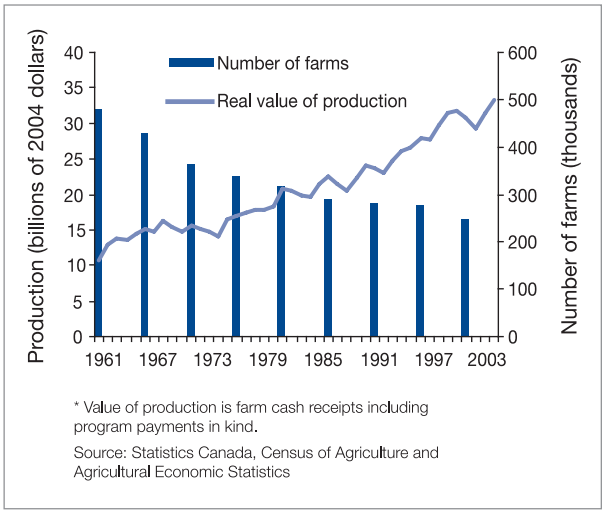
Canadian agriculture has experienced significant structural adjustment.

Between 1961 and 2001, the number of farms in Canada declined from approximately 500,000 farms to 250,000 farms. The rate of decline in farm numbers has slowed in recent years: between 1961 and 1981 farm numbers dropped by 34%, whereas between 1981 and 2001 farm numbers dropped 22%. Each year, farms exit and enter at a rate of 3 to 4% (the rate is higher for smaller farms)[1]. This annual turnover rate is low compared to small and medium sized businesses in other sectors of the Canadian economy.

In spite of the decline in farm numbers, agricultural production has steadily increased over time.

The real value of agricultural production tripled between 1961 and 2001, from about $12 billion to $35 billion. Wheat production increased by 173% between 1961 and 2001[2]. During the same period, production of poultry increased by 273% and that of pork by 318%.

Figure 1: Real value of agricultural production and number of farms, 1961-2004



* Value of production is farm cash receipts including program payments in kind.

Source: Statistics Canada, Census of Agriculture and Agricultural Economic Statistics

PRODUCTIVITY

Canada's agriculture sector has experienced rapid productivity growth over the past forty years.

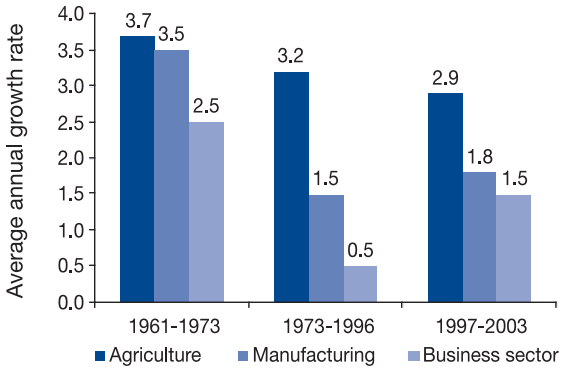
Significant investments in public and private research have resulted in large productivity gains for Canadian agriculture. These gains have been in both crop and livestock production.

[1] Bollman, R.D. 1994. "Agriculture's Revolving Door." Canadian Agriculture at a Glance. Statistics Canada. Ottawa.

[2] Using three year averages.

As a result of advances in plant breeding and production management, crop yields have shown steady growth. Due to larger litter sizes, more litters per year, and heavier carcass weights, pork production per sow has increased by 38% since 1990, and beef carcass weights have increased by 34% over the last 20 years.

Figure 2: Multifactor productivity by industry in Canada, 1961-2003



Source: Statistics Canada

Multifactor productivity grew at a higher average annual rate in agriculture than in the manufacturing and business sectors.[3] Between 1997 and 2003, the rate was 2.9%.

Labour productivity in agriculture grew by 23% between 1997 and 2001.

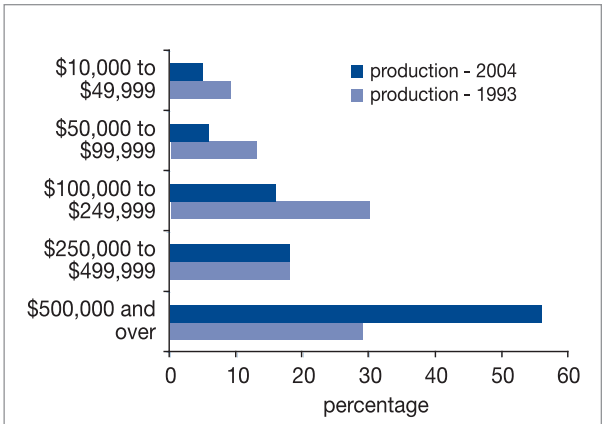
CONCENTRATION OF PRODUCTION

Production is becoming significantly more concentrated on very large farms.

Production is becoming increasingly concentrated on commercial size farms with gross revenues of $250,000 and over, particularly farms with more than $500,000 in gross revenues, which the AAFC farm typology calls very large farms (see Figure 3). In the past 10 years, the share of total agricultural production by very large farms has increased considerably, from 29% to 55%, even though the share of very large farms is less than 10%.

This increase is in sharp contrast to the declining share of production by farms with revenues of less than $250,000, which declined from 52% to 27% between 1993 and 2003.

Figure 3: Distribution of production* by revenue class, 1993 and 2004



* Total operating revenues including program payments

Source: Statistics Canada, Whole Farm Database, Taxfiler Series.

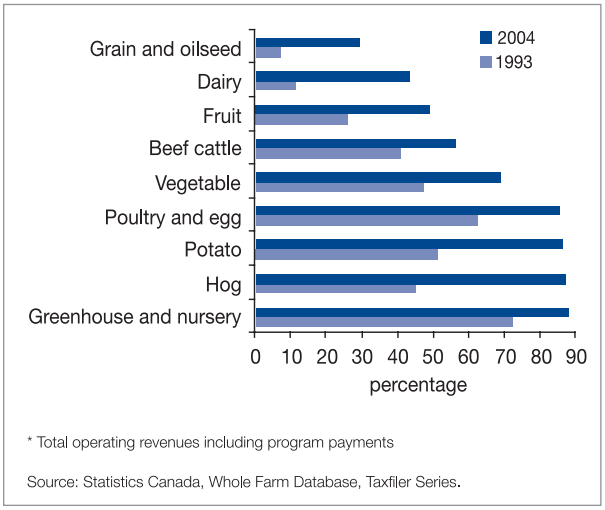
This trend toward increased concentration on very large farms is occurring for every farm type.

For most farm types, production is concentrated on very large farms, in particular greenhouse and nursery farms, hog farms, potato farms and poultry and egg farms. In 2003, these very large farms produced close to 85% of agricultural production for these farm types.

Even for farm types typically less concentrated, namely grain and oilseed farms and dairy farms, production is becoming much more concentrated on very large farms. In 2003, these very large farms produced close to 28% and 39% of agricultural production of all farms of these farm types.

[3] Multifactor productivity measures the ratio of output produced per combined bundle of inputs.

Figure 4: Degree of concentration of production* by very large farms by farm type, 1993 and 2004

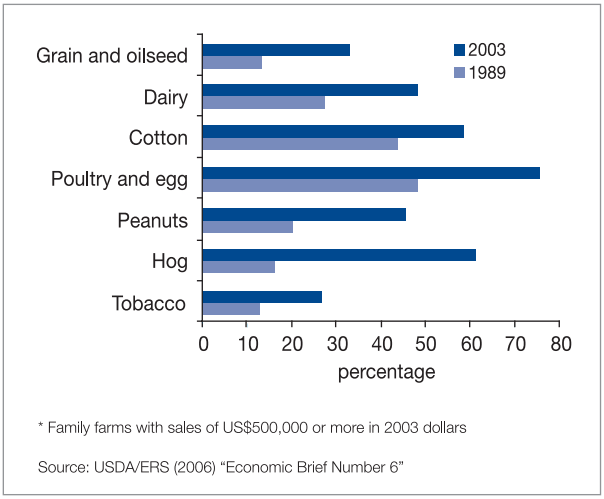


* Total operating revenues including program payments

Source: Statistics Canada, Whole Farm Database, Taxfiler Series.

The increase in the share of production by larger farms is not unique to Canadian agriculture. For instance in the U.S., the share of grain and oilseed production produced by farms with sales of US$500,000 or more has almost tripled between 1989 and 2003, from 13% to 33%. The trend was even more pronounced for hog production, with the share of production by very large farm increasing from 16% in 1989 to 61% in 2003.

Figure 5: Degree of concentration of production by very large farms* by farm type, 1989 and 2003



* Family farms with sales of US$500,000 or more in 2003 dollars

Source: USDA/ERS (2006) "Economic Brief Number 6"

DIVERSITY AMONG FARMS

Diversity among farms is increasing as a share of farms in the retirement, lifestyle, and very large business focussed groups continue to grow.

The AAFC farm typology is a useful tool for analyzing the differences between farms of the same size. Decisions regarding the farm operation are affected by the characteristics of the farm, farm operator, spouse and farm household.[4] The four main categories used to categorize farms in the AAFC typology are: retirement, lifestyle, low income and business-focussed.

In 2004, 18% of farms fell into the retirement group compared to 14% in 1993. The share of older operators has increased since 1981 as improvements in health care increased life expectancy.

The share of lifestyle farms increased from 12% to 20%, as the importance of non-farm employment increases among families with smaller farms.

The share of farms in the low income group has declined dramatically for those operating farms with less than $250,000 in gross revenues. The share of low income farms with gross revenues of $250,000 and over increased slightly over the same period.

The share of business-focussed farms in the small, medium and large categories decreased. This trend "away from the middle" is also being experienced in the U.S.[5]

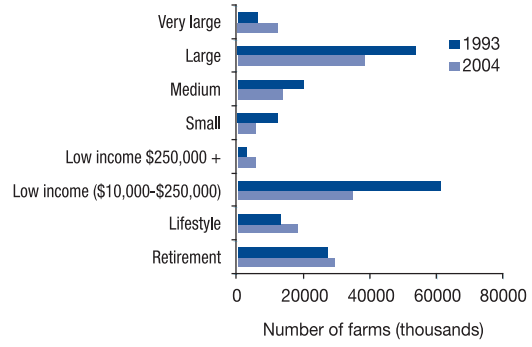
The share of very large business-focussed farms more than doubled between 1993 and 2004. Despite accounting for a significant share of agricultural production in 2004, only 8% of farms were in this category. In 1993, the share was 3%.

[4] Mishra, Ashok Kl, et al (2002) Income, Wealth, and the Economic Well-Being of Farm Households.
[5] American Farm Bureau Federation (2005) Making American Agriculture Productive & Profitable.

Table 1

Typology	Definitions
Retirement	Family farms (revenues of more than $10,000) Oldest operator is 60 years or older and receiving pension income No children involved in the day-to-day operation of the farm
Lifestyle	Small sized family farms (revenues of $10,000 to $49,999) and off-farm income of $50,000 plus
Low income	Total family income below $35,000; (a) Revenues of $10,000 to $249,999 (b) Revenues of $250,000 and more
Business-focussed farms:	
Small	Revenues $10,000 to $99,999
Medium	Revenues $100,000 to $249,999
Large	Revenues $250,000 to $499,999
Very large	Revenues $500,000 or more

Figure 6: Number of farm families by farm typology, 1993 and 2004



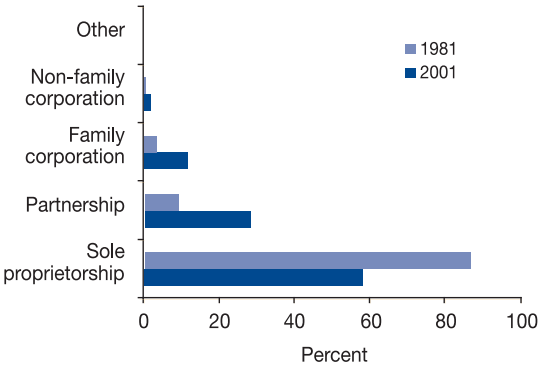
Source: Farm Financial Survey
Note: Prior to 1998, the question on the ownership share of the family completing the survey was not asked. Therefore, we assume for 1993 that 100% of farm income accrues to the family completing the survey. As well we assume that all reported wages and salaries to family members are paid to members of the family unit completing the survey. As a result, the 1993 number of low income families might be underestimated.

FARM ORGANIZATION

Partnerships and family corporations are becoming increasingly popular business arrangements.

The share of farms operating as partnerships and farm corporations has increased considerably over time. Between 1981 and 2001, the share of partnerships more than doubled from 9% to 28% and the share of family corporations quadrupled from 3% to 12%. This trend does not indicate a significant decline of family ownership of Canadian farms, as the vast majority (98%) of Canadian farms are still family owned.

Figure 7: Distribution of farms by operating arrangement in Canada, 1981 and 2001



Source: Census of Agriculture

Farm households choose corporate and partnership arrangements[6] for a variety of reasons, such as: tax strategy, response to liability questions, or operation a multi-family business. Incorporation is a common strategy for inter-generational transfer of larger farm operations.

Larger farms, in terms of gross revenues, are more likely to choose a corporate or partnership arrangement. Among farms with less than $250,000 in gross revenues, the vast majority of businesses (68%) are sole proprietorships, with the remainder equally divided between partnership and corporate arrangements.

[6] Spousal and non-spousal partnerships

Among farms with $250,000 or more in gross revenues, corporations are the preferred arrangement (46%), with the remainder divided equally between sole proprietorships and partnerships.[7]

PRODUCTION AND MARKETING CONTRACTS

Agriculture in Canada has also changed in that today a significant share of many agricultural commodities are produced under production and/or marketing contracts.

Farms utilize production and marketing contracts to reduce exposure to price risk and to increase market access, market power and quality control. Production and marketing contracts can also provide many benefits to the purchaser of agricultural products. These include a guaranteed supply, uniform quality and a known price.

The degree to which production occurs under pre-arranged contracts varies among agricultural products. Dairy, poultry and eggs are produced subject to production quotas as set out by the Canadian supply-management system. In the hog sector, legislated single-desk marketing continues in Ontario and Quebec, but ended in the Prairie provinces in the 1990s. Nonetheless, 90% of hogs are produced with some form of marketing or production contract, if not with a producer-controlled marketing agency, then with private marketing agents or directly with processors.

Among field crops, the degree of contracts varies significantly by commodity. The price of wheat and barley is set by the Canadian Wheat Board. However, for other field crops such as corn and soybeans, the farm operator markets the crop in the market. In the horticulture sector, 64% of growers produce with pre-arranged contracts.

In the U.S., the degree of production with marketing or production contracts also varies by commodity, ranging from only a small share for wheat, soybeans, and corn to virtually all production for sugar beets and poultry. Between 1994 and 2003, the greatest increase of contracts occurred in hog production and speciality crops, while its importance decreased for dairy and vegetable production[8].

EXAMPLES OF TRANSFORMATION OF THE SECTOR

The transformation of the hog and dairy sectors illustrate the significant change in farm structure that has occurred on Canadian farms.

The number of farms raising pigs declined significantly during the thirty years between 1971 and 2001, while Canadian total number of pigs almost doubled during the same period. As a result, the average pig inventory per farm has increased 14 fold. Animal productivity, measured in pork production per sow, has increased by over 20% due to improved genetics, animal nutrition and health, as well as improved animal handling. Farms have changed from mixed farms with farrow to finish operations to specialized farms with separate farrowing and finishing enterprises. Marketing has become more complex as 90% of hogs are produced under some contractual arrangement.

[7] Among smaller farms, those in the retirement group are the most likely to be sole proprietorships. Among larger farms, very large business-focussed farms and retirement farms are most likely to be incorporated.

[8] Hoppe, Robert A. and David E. Banker (2006). Structure and Finances of U.S. Farms: 2005 Farm Family Report (EIB-12). ERS/USDA

Table 2: Transformation of Hog Farms, 1971 to 2001

	1971	2001
Number of farms	122,500	15,500
Aggregate herd size (millions)	8.1	14.0
Pigs per farm	66	902
Productivity (hogs per sow per)	14.7	18.3
Business model	Mixed farms with farrow to finish hog enterprise	Specialized, farrowing, feeder or finishing operations
Vertical integration	More than 90% spot market	More than 90% on contract

Source: Statistics Canada, Census of Agriculture and AAFC calculations

The dairy sector has undergone a similar transformation but in contrast to the hog sector, total milk production has remained constant. Output per cow has increased dramatically resulting in the total dairy herd dropping in half. The trend toward larger and more specialized farms has occurred for all farm products.

Table 3: Transformation of Dairy Farms, 1971 to 2001

	1971	2001
Number of farms	145,000	21,900
Aggregate herd size (millions)	2.2	1.1
Cows per farm	16	48

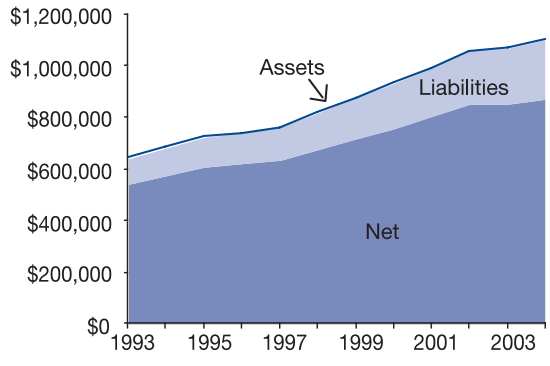
Source: Statistics Canada, Census of Agriculture and AAFC calculations

ASSETS, LIABILITIES AND TOTAL NET WORTH

Agriculture has become more capital-intensive. Asset values continue to increase as farms size increases.

The value of the average farm in Canada has steadily increased. Asset values have increased by close to 70% due to capital purchases and increases in asset values on land and buildings. Today, the average farm in Canada has over $1 million in total assets. Along with the increase in total assets were increases in both net worth and total liabilities. Total liabilities more than doubled.

Figure 8: Average assets, total liabilities and net worth of all farms, 1993 to 2004

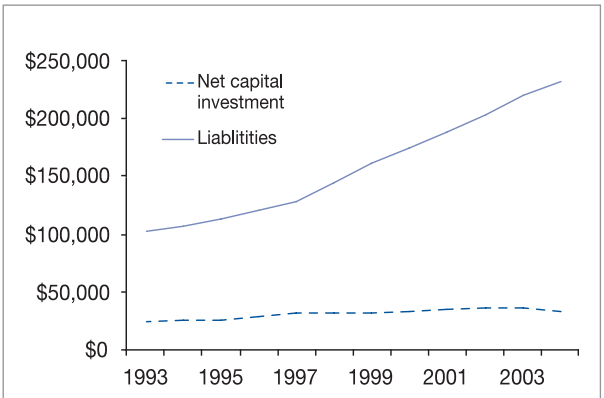


Note: 1994, 1996, 1998 and 2000 - AAFC estimates; Assets and liabilities include short-term and long-term farm assets and liabilities.
Source: Farm Financial Survey

In 2004, average net worth of Canadian farms was $897,600, compared to $551,500 in 1993. This represents a 63% increase. This increase in average net worth reflects both the increase in asset values and the increase in average farm size. Between 1993 and 2004, dairy and poultry farms had increases in net worth of 157% and 123%, respectively. These increases reflect in part the increased value of quota. The net worth of hog farms increased 138%. The average size of hog farms increased considerably from 1993 to 2004.

During this same period net capital investment increased close to 40%, from an average of $25,000 per farm to $35,000.

Figure 9: Average total liabilities and net capital investment, all farms, 1993 to 2004



Note: 1994, 1996, 1998, 2000 and 2004 - AAFC estimates
Source: Farm Financial Survey

NET INVESTMENT

Farm investment increases with farm size - as does the debt levels among typology groups.

Table 4: Investment variables by Typology Group, 2004 (dollar)

Retirement	8,000
Lifestyle	12,000
Low income ($10,000 to $250,000)	11,000
Low income ($250,000 +)	74,000
Business-focussed farms:	
Small	7,000
Medium	16,000
Large	45,000
Very large	164,000
Average of all farms	33,000

Source: Farm Financial Survey

Larger farms invest more in their farm business. In 2004, very large business-focussed farms, invested on average $164,000 compared to an average of $7,000 for the group of small-business focussed farms.

In 2004, potato farms had the largest capital investment at $108,304 per farm. Net capital investment was the second and third highest for greenhouse and nursery and dairy farms, respectively.

DEBT TO ASSETS

In recent years, debt as a percentage of total assets has increased somewhat. Nonetheless, the overall rate of debt as a percentage of assets is still relatively low.

Table 5: Debt Asset Ratio by Typology Group in Percent, 2004

Retirement	7
Lifestyle	20
Low income ($10,000 to $250,000)	20
Low income ($250,000 +)	38
Business-focussed farms:	
Small	12
Medium	18
Large	23
Very large	30
Average of all farms	19

Source: Farm Financial Survey

For Canadian farms in 2004, debt equalled, on average, 19% of total assets.

This ratio however, varies significantly among farms. Small business-focussed farms have on average a debt asset ratio of 13%. This ratio increases to 29% for very large business-focussed farms. The low income farm group with gross revenues of more than $250,000 has the highest average debt asset ratio. This same group also has the largest average net investment.

There are many reasons why debt has increased in recent years, these include; increased farm investments, farm expansion as farms have become larger and refinancing farm operations. Farm operators have generally benefited from increasing asset values and decreasing interest rates. Increases in interest rates could create some problems for those farms which took on significant debt in recent years and are highly leveraged.

SUMMARY

Production has shifted to larger operations, which are becoming increasingly complex and are requiring a high level of capital investment and management skill.

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