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Canada's beef cattle sector and the impact of BSE on farm family income

2000-2003

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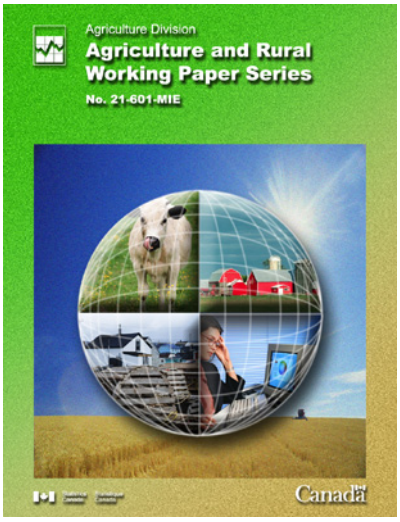

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Note of appreciation

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Note of appreciation: Canada owes the success of its statistical system to a long-standing partnership between Statistics Canada, the citizens of Canada, its businesses, governments and other institutions. Accurate and timely statistical information could not be produced without their continued cooperation and goodwill.

Executive summary

The beef cattle sector is important to the Canadian agricultural industry and to the overall Canadian economy**.** Currently, one in three Canadian farm families operates a single unincorporated beef cattle farm that derives at least half of its agricultural sales from the sale of beef cattle and calves. In 2002, farm cash receipts from cattle and calves totalled nearly $8 billion, 21% of the total $36 billion farm cash receipts.

The growth in the Canadian beef cattle sector over the past decade has been fuelled by exports in both live animals and meat products, especially to the United States. For the overall Canadian economy, using Statistics Canada's national input-output model, it is estimated that for each $100 million in exports by the cattle sector, $80 million is added to the national gross domestic product (GDP) (at market prices), $228 million is generated in total output, $41 million is added to labour income, and 3,000 jobs are created.

The impact of the international trade ban on Canadian farm families operating beef cattle farms due to the discovery of bovine spongiform encephalopathy (BSE) in May 2003 has been significant. In 2003, Canadian farm cash receipts from cattle and calves were estimated at $5.2 billion, a sharp drop of $2.5 billion (33%) from 2002.

This analysis estimates the potential short-term financial implication of the BSE situation on farm family income in Canada using data for 2000. It assesses the financial impact of BSE for families operating a single unincorporated beef cattle farm using the scenario of annual cattle and calf revenues per farm declining 35%. The adjustment made to operating costs is that of a 20% reduction in the replacement cost of beef animals as fewer head were expected to move into feedlot operations. No other adjustments are assumed (e.g., changes in farm practices, off-farm income and government support payments) in order to show the financial hurt from BSE.

Given these assumptions, families operating a single unincorporated beef cattle farm would have lost an average $20,000 due to the BSE situation. Average total income for families on beef cattle farms in 2000 would have declined by 33% from $60,000 to $40,000.

The farm families hardest hit from the BSE fallout will obviously be those operating large intensive cattle operations. The impact of the assumed scenario translates into a decline of $220,000 for the net farm operating income (before capital cost allowance) of families associated with unincorporated beef cattle farms with gross revenues of $500,000 or more. The calculated family income, assuming no other adjustments, would be negative $140,000.

For families on large unincorporated beef cattle farms (revenues of $100,000 to $499,999), the average farm income loss from BSE is estimated at just over $36,000. Total family income for this group would have declined from $69,000 under the status quo to $33,000 under the BSE scenario.

Overall, 27% of families operating a single unincorporated beef cattle farm would have experienced total family income below $20,000 under the BSE scenario.

BSE impacts Canadian livestock sector

The announcement of bovine spongiform encephalopathy (BSE) — commonly called mad cow disease — in one cow in northern Alberta on May 20, 2003 led to a decision by more than 40 countries to immediately impose import restrictions on live ruminant animals (cattle, sheep, goats, bison, elk, deer), meat products and animal by-products from Canada.

The economic implications for the livestock sector, meat and animal feed manufacturers, and the vast array of service sectors, such as trucking, sales yards and brokers, which provide support to the livestock industry, are widespread. For the overall Canadian economy, it is estimated that for each $100 million in exports by the cattle sector, $80 million is added to the national gross domestic product (GDP) (at market prices), $228 million is generated in total output, $41 million is added to labour income, and 3,000 jobs are created.[i] Therefore, the potential negative impact on the Canadian economy from a $2.5 billion loss in cattle and calf exports due to BSE translates into a $2 billion loss in GDP, a $5.7 billion decline in total output in the Canadian economy, a $1 billion decline in labour income and a loss of 75,000 jobs.

According to a report prepared for the Canadian Animal Health Coalition, the direct economic cost to the Canadian livestock industry by early 2004 was estimated at nearly $3.3 billion. An additional loss in equity to the cow-calf sector was estimated at $3.0 billion, for a total economic impact from BSE of $6.3 billion.[1]

The US government announced a partial lifting of the ban on August 8, 2003 which allowed boneless beef products from cattle less than 30 months of age, along with other selected ruminant-derived products to enter the American market under import permits beginning September 10.[2] Exports of beef meat ground to a halt from June through August 2003 under the full embargo. With the partial lifting of the ban, exports of meat products to the United States did recover. However, the January to November 2003 exports of beef meat of $1.3 billion are estimated to be 36% lower than during the same period of 2002.[3] Canada is the first country with an indigenous case of BSE to regain access to the US market.

On August 11, 2003, Mexico followed with a similar decision as the United States on beef product imports. However, it was not until October 2, 2003 that Mexico actually lifted the ban on imports of fresh, refrigerated, frozen and processed beef from Canadian cattle less than 30 months of age.

On October 31, 2003, the United States Department of Agriculture (USDA) published a notice in the US Federal Register proposing that Canadian cattle less than 30 months of age be allowed to enter the US market.[4] However, before the 60-day public comment period ended, the first case of BSE in a single Holstein dairy cow in Washington State was announced on December 23, 2003. DNA testing confirmed that the cow was born on a farm in northern Alberta. On January 6, 2004, the USDA continued the live animal ban introduced the previous May. This export embargo contributed to a record 14.7 million head of cattle on Canadian farms as of January 1, 2004, 1.2 million head more than at the same time a year earlier.[5]

Although science-based international standards exist for avoiding trade disruptions when BSE is discovered, inconsistent application has resulted in restrictive import policies. To improve the management of BSE within a North American context, Canada, the US, and Mexico committed in January 2004 to harmonize policies and regulations relating to BSE. In addition, Canada is reviewing its own import policy to take into account the potential new International Office of Epizootics (OIE) guidelines.

In early March 2004, the USDA reopened a 30-day comment period based on a rule, that if finalized, would allow live Canadian cattle under 30 months, other live animals and a broader range of animal products to enter the United States for the first time since May 20, 2003.[6] This comment period ended on April 7, 2004 but no action had been taken as of the end of May.

In 2002, Canada's exports of beef (live animals and meat products) amounted to $4.1 billion, with about 90% destined to the US market. The corresponding farm value (excluding all other costs such as processing and

[i] Estimates are based on the economic multipliers generated using the Statistics Canada, 2000 National Open Input-Output Model, System of National Accounts / Input-Output Division. Total output refers to GDP plus intermediate inputs.

transportation) amounted to $3.6 billion. This was nearly one-half of the total farm cash receipts for cattle in 2002.[7]

Study Objectives

This paper provides an overview of the beef cattle farm structure in Canada and an analysis on the impact of the international trade ban on the total income of families operating single unincorporated beef cattle farms. The scenario-based analysis assumes a 35% decline in beef cattle and calf revenues and a 20% decline in beef cattle replacement costs. This scenario is applied to 2000 personal income tax returns to indicate the size of the impact to which beef cattle farms have had to adjust.

Data came from Statistics Canada's Whole Farm Database – Net Income Stabilization Account and Taxation Data Program (NISA/TDP). The analysis includes farm families operating a single unincorporated farm with at least $10,000 in gross farm operating revenues. Beef cattle farms are defined as those that derived at least 50% of their total agricultural sales from the sale of cattle and calves in 2000.

Cattle on farms hit record high while receipts plunged

The number of cattle on Canadian farms on January 1, 2004 reached a record high 14.7 million head as the trade ban resulted in reduced marketings.

Total Canadian cattle and calf receipts for 2003 were $5.2 billion, down 33% from $7.7 billion in 2002, as marketings and prices tumbled in the wake of the trade ban (Table A). This caused the largest percentage decline in total livestock receipts in more than a decade.[8]

Receipts from international exports of live cattle and calves plunged 67% to $585 million, as almost all exports go to the United States and this market has collapsed.

Furthermore, receipts for slaughter cattle dropped 23% to $3.4 billion, as marketings and prices both fell because of reduced international demand for Canadian beef products following the ban. Receipts for slaughter calves declined 17% to $189 million due to lower prices.

The full impact of BSE on farm cash receipts can be best illustrated by considering the decline in cattle and calf receipts in the second half of 2003. Between July and December, 2003 these receipts fell 48%, compared with the same period in 2002.

Government program payments partially offset the economic hit in 2003. However, the estimated $582 million in government assistance to help offset the impact of the BSE-related ban in 2003 still resulted in a 25% decline in cattle and calf revenues compared to 2002. (Refer to Appendix A and Appendix B for information on program payments related to BSE).

Table A: Farm cash receipts for cattle and calves and program payments related to BSE, Canada and provinces

	January to December 2002[r]	January to December 2003[p]	Jan.-Dec. 2002 to Jan.-Dec. 2003	July to December 2002[r]	July to December 2003[p]	July-Dec. 2002 to July-Dec. 2003	Program payments[1] 2003[p]
	$ thousands		% change	$ thousands		% change	$ thousands
Canada	7,707,063	5,190,396	-32.7	3,920,455	2,022,917	-48.4	581,714
Newfoundland and Labrador	1,609	1,006	-37.5	633	427	-32.5	2
Prince Edward Island	24,978	17,194	-31.2	11,680	4,412	-62.2	3,456
Nova Scotia	27,561	18,177	-34.0	11,454	5,838	-49.0	2,707
New Brunswick	29,353	19,102	-34.9	11,484	4,532	-60.5	1,516
Quebec	549,877	382,974	-30.4	273,437	138,349	-49.4	68,826
Ontario	1,171,941	860,208	-26.6	555,036	296,694	-46.5	130,627
Manitoba	560,338	345,209	-38.4	291,799	142,040	-51.3	34,142
Saskatchewan	1,154,022	768,159	-33.4	623,391	333,404	-46.5	55,500
Alberta	3,869,421	2,547,137	-34.2	1,972,949	970,167	-50.8	278,162
British Columbia	317,963	231,230	-27.3	168,592	127,054	-24.6	6,776

[r] revised (as of February 24, 2004)

[p] preliminary

[1] Program payments include the BSE Recovery Program, Cull Animal Program (BC), Alberta Fed Cattle Competitive Bid Program, Fed Cattle Competitive Market Adjustment Program (Alberta), Alberta Winter Feed Program, Saskatchewan Fed Livestock Competitive Market Adjustment, Saskatchewan Set-Aside Program, Manitoba BSE Feeder Assistance Program, Manitoba Slaughter Deficiency Program, Manitoba Drought Assistance Program, Ontario BSE Recovery Initiatives, Programme de soutien à l'industrie bovine suite à l'ESB, NS Beef Producer Assistance, PEI Cattle Marketing Initiative.

Source: *Statistics Canada, Farm Cash Receipts Unit Data Base .*

Beef Cattle Farm Structure

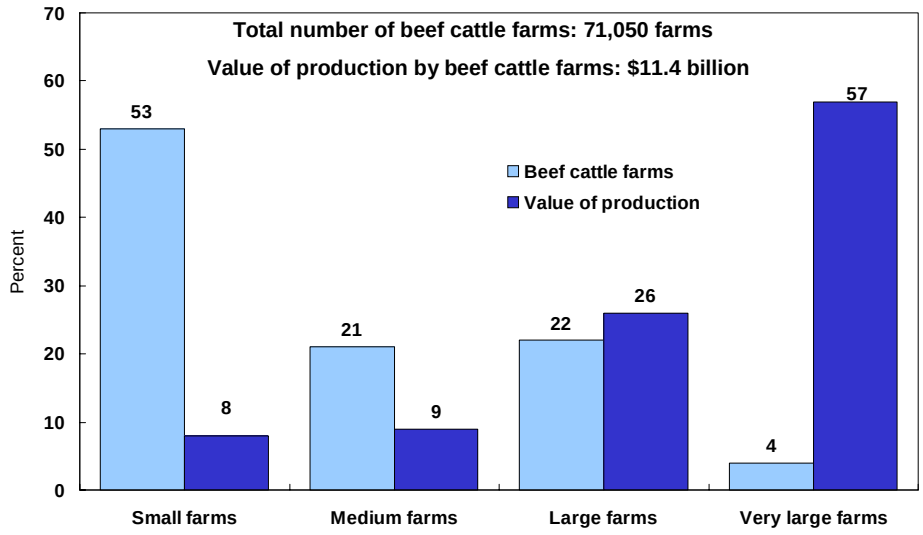
Beef cattle farms represent an important segment of Canadian agriculture. In 2000, an estimated 71,050 farms or 32% of all farms with revenues of $10,000 or more were classified as beef cattle farms, according to taxation records.[ii] In 2000, beef cattle farms accounted for $11.4 billion (29%) of the nearly $40 billion Canadian total agricultural production[iii] by all farms with revenues of $10,000 and over.

Production on beef cattle farms is highly concentrated in the very large farms (revenues $500,000 and over). In 2000, only 4% of beef cattle farms were very large farms but they generated 57% of the value of production. At the other end of the spectrum, small farms (revenues under $50,000) represented 53% of all beef cattle farms and generated less than 10% of the value of production (Figure 1).

[ii] In the Net Income Stabilization Account and Taxation Data Program, the classification of farms is based on the percentage of sales of the major commodity or commodity group. The commodity or commodity group that makes up 50% or more of the sales determines the primary farm type that is assigned to an individual farm.

[iii] Value of production corresponds to total operating revenues excluding program payments and insurance proceeds (used in calculation of concentration). Total operating revenues refers to revenues from the sale of agricultural commodities as well as agricultural program payments and insurance proceeds. Revenues from custom work and machine rental, rental income and miscellaneous revenues are also included.

Figure 1: Very large farms contributed 57% of the value of production by beef cattle farms in 2000

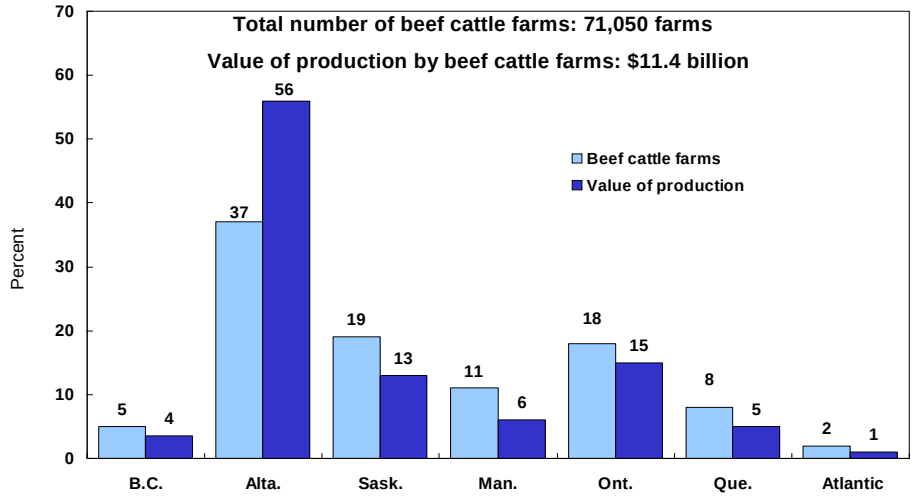


Source: *Statistics Canada, Whole Farm Data Base.*

In this analysis, revenue class defines farm size:	
Size Category	Revenue Class
Small farms	$10,000 to $49,999
Medium farms	$50,000 to $99,999
Large farms	$100,000 to $499,999
Very large farms	$500,000 and over

Two-thirds of Canada's beef cattle farms are located in the Prairie Provinces. The highest concentration of beef cattle farms and production is located in Alberta. In 2000, 37% of beef cattle farms were located in Alberta, accounting for 56% of the value of production (Figure 2).

Figure 2: Beef cattle farms in Alberta contributed 56% of the value of production in 2000



Source: *Statistics Canada, Whole Farm Data Base.*

In 2000, 118,680 farms reported some revenues from the sale of cattle and calves, amounting to $10.8 billion[iv]. The 71,050 beef cattle farms generated $9.3 billion in cattle and calf revenues. About 5% of the beef cattle farms were incorporated in 2000. This group produced $3.9 billion in cattle and calf revenues or 42% of the total for beef cattle farms (Table B).

Table B: Total revenues from the sale of cattle and calves generated by farms with gross operating revenues of $10,000 and over, Canada, 2000

	Number of farms	Sales
	number	($'000)
Beef cattle farms	71,050 A	9,334,835 A
■ unincorporated farms	67,755 A	5,422,566 A
■ incorporated farms[1]	3,300 A	3,918,389 A
Other farm types	47,625 A	1,424,436 A
All farms	118,680 A	10,759,745 A

Of these 67,755 unincorporated farms, 49,830 are included in the scenario analysis presented in this paper.[2] These farms generated $4.0 billion in cattle and calf revenues.

[1] Including communal farming organizations.

[2] The NISA/TDP estimates on income of farm families exclude "non-family persons" (household members who do not belong to a husband-wife family or a lone-parent family) and families in which members are involved in more than one farming operations.

Source: *Statistics Canada, Whole Farm Data Base* .

[iv] Revenues from the sales of cattle and calves are higher in the NISA/TDP than in the farm cash receipts series given the inclusion of inter-farm sales within a province in the NISA/TDP.

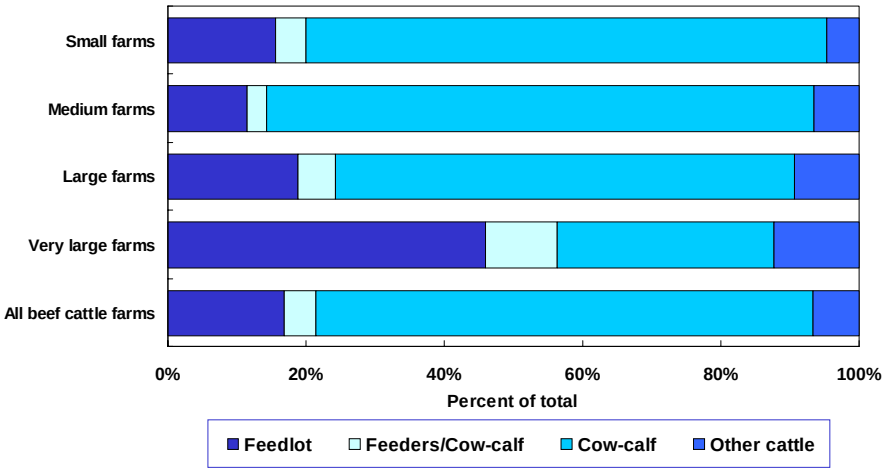
Beef cattle farms have two distinct types of production systems: the cow calf operation and the feedlot (or feeding) operation. Cow-calf operations breed cattle and raise calves to be sold as feeder calves in the fall or backgrounded through the winter to be sold early in the following year. By comparison, feedlot operations buy calves and heavier feeder cattle that are fed to slaughter weight.

According to the 2003 Farm Financial Survey (FFS)[v], the majority of beef cattle farms were cow-calf operations in 2002[vi]:

- 72%—cow-calf operations
- 17%—feedlots
- 4% —a combination of the two
- 7%—other types of cattle farms

Cow-calf operations are concentrated on smaller farms, representing 75% and 79% of small and medium farms respectively. Feedlots are concentrated on very large farms representing 46% of these farms (Figure 3).

Figure 3: Distribution of the major types of beef cattle operations by size category, Canada, 2002



Source: *Statistics Canada, Whole Farm Data Base, Farm Financial Survey.*

Financial Structure

An aggregate financial profile of the Canadian beef cattle sector is presented in Table 1 and Table 2. Appendix C provides definitions for the financial ratios and financial terms used in the tables.

[v] The Farm Financial Survey excludes all farms with less than $10,000 in gross farm receipts and multi-holding operations.

[vi] Data derived from the NISA/TDP do not distinguish between cow-calf operations, feedlot operations or any combination of the two. Data from the Farm Financial Survey distinguish between four types of cattle operations: cow-calf, combination feeder and cow-calf, feedlot and other cattle systems.

The very large beef cattle farms in Canada (with gross revenues of $500,000 and more) had an average net worth of $2.8 million in 2002. This group of farms are financially structured with a larger proportion of their liabilities as current liabilities (due and payable within one year) and a larger proportion of their assets as current assets (cash received within one year) compared with the other groups. In addition, the very large farms had a much higher than average debt-asset ratio (0.27 compared to 0.16 for all beef cattle farms). According to the current ratio and debt-asset ratio, about 25% of very large farms in 2002 were found to be in a higher risk financial situation. This implies that the very large farms are the most vulnerable to the BSE market shock as beef cattle prices, sales and overall equity dropped.

The large beef cattle farms (gross revenues of $100,000 to $499,999) had a total net worth in 2002 of just under one million dollars. Compared to the very large beef cattle farms, this group of farmers held a higher proportion of long-term assets and liabilities. The debt-asset ratio (0.16) for this group of farms was equivalent to the national average. Roughly 15% of the large beef cattle farms were found to be in a higher risk financial situation.

There are more similarities within the beef cattle sector when segmenting the farms by type of operation (i.e., cow-calf, feeder-cow-calf, feedlot) (Table 2). The average net worth of all beef cattle farms was $675,708 and ranged from $634,500 for cow-calf operations to $827,513 for feeder-cow-calf operations.

A combination of the net operating income and farm debt-asset ratio can also provide an indication of the financial stability of the farms. In 2002, 55% of beef cattle farms were classified as financially ‘favourable’, while 11% were ‘marginally solvent’ or ‘vulnerable’ (Table C). In comparison, 62% of all farms were classified as ‘favourable’ and 14% were ‘marginally solvent’ or ‘vulnerable’.

What may be most concerning from this financial breakdown is that 26% of the very large farms were classified as being financially ‘marginally solvent’ or ‘vulnerable’ in 2002, with 14% of feedlot operations in Canada falling into these categories.

Table C: Distribution of beef cattle farms by financial stability class, Canada, 2002

	Favourable[1]	Marginal income[2]	Marginal solvency[3]	Vulnerable[4]	Total
	%				
Total - Beef cattle farms	55.0	34.3	5.2	5.6	100.0
Total - All farms	62.0	23.9	9.0	5.0	100.0
By size category					
Small farms	45.7	47.2	1.5	5.7	100.0
Medium farms	62.7	27.0	5.4	4.9	100.0
Large farms	63.2	22.6	9.0	5.2	100.0
Very large farms	55.1	19.4	15.5	10.0	100.0
By type of cattle operations					
Cow-calf	56.0	34.4	4.5	5.1	100.0
Feeder - Cow-calf	44.5	46.3	5.5	F	100.0
Feedlot cattle	56.3	29.5	7.0	7.3	100.0
Other cattle	48.2	37.1	7.7	6.7	100.0
By province					
Atlantic	45.8	48.1	2.3	2.3	100.0
Quebec	58.7	27.2	8.9	5.3	100.0
Ontario	49.2	42.1	4.1	4.6	100.0
Manitoba	60.0	28.4	6.0	5.7	100.0
Saskatchewan	57.4	32.9	4.7	5.1	100.0
Alberta	56.1	31.5	5.6	6.7	100.0
British Columbia	50.5	43.6	1.6	4.3	100.0

[1] Favourable: positive net income and debt-to-asset-ratio less than 0.4.

[2] Marginal income: negative or zero net income and debt-to-asset ratio less than 0.4.

[3] Marginal solvency: positive net income and debt-to-asset-ratio greater than or equal to 0.4.

[4] Vulnerable: negative or zero net income and debt-to-asset ratio greater than or equal to 0.4.

Source: *Statistics Canada, Whole Farm Data Base, Farm Financial Survey* .

BSE impact: A scenario for farm family income

The Canadian beef cattle farm structure analysis above indicates a relatively healthy sector. However, the structural and financial adjustments that the beef cattle sector is being forced to address due to the BSE shock are very significant to the farming operations and to the families involved.

Farm family income for beef cattle operators in Canada is obviously a serious question for the short- to medium-term. Therefore, this study estimates the potential short-term financial implication of the BSE situation on farm family income.

Obviously, farmers will adjust their operations to the reality of the trade ban (and removal of the ban), as economics dictate and as the market moves to an equilibrium state of supply and demand. Consequently, any assumptions made in this paper provide only an indication of what might have occurred to the distribution of average farm family income by size category, depending on the level of reliance on cattle production implicated in the ban.

Farm cash receipts from cattle and calves to the end of 2003 were down 33% (Table A above). This paper assesses the financial impact of BSE on the basis of annual cattle revenues per farm declining by 35%. The adjustments made to operating costs is that of a 20% reduction in the replacement cost of beef animals as fewer head were expected to move into feedlot operations.[vii] No other adjustments are assumed (e.g., changes in farm practices, off-farm income and government support payments) in order to show the financial hurt from BSE.

Definitions

Total income of farm families is derived from 2000 personal income tax returns of family members. The estimates refer to the income of families involved in a single unincorporated farm, showing a gross operating revenue of $10,000 and over for the reference year.

Families are defined as husband and wife, legal or common law, with or without children at home; or lone parent, of any marital status, with at least one child living at home. There is no restriction on the age of the children. Children must report a marital status other than "married" or "living common-law" and have no child living in the household.

Off-farm income refers to the sum of employment income (wages and salaries, and net self-employment income excluding farming income), investment income, pension income (including net federal supplements), government social transfers (Employment Insurance benefits, Workers' compensation benefits, social assistance payments, Canada Child Tax Benefit and provincial family benefits) and other off-farm income (such as registered retirement savings plan income of people aged 65 or older and Net Income Stabilization Account [NISA] payouts).

Net farm operating income refers to the profit (or loss) from the performance of the farm operation based on total operating revenues, including all program payments, less total operating expenses, *before capital cost allowance* and before other adjustments, for tax purposes.

The estimates presented in this paper are based on before-tax income.

One-third of farm families derived at least half their total farm sales from cattle

An estimated 147,680 farm families in Canada operated a single unincorporated farm with at least $10,000 in gross farm operating revenues in 2000, according to taxation records.

These farm families averaged $66,000[viii] in total income in 2000. About 73% of total income ($49,000) was generated from non-farm income, while the remaining 27% ($18,000) came from net farm operating income.

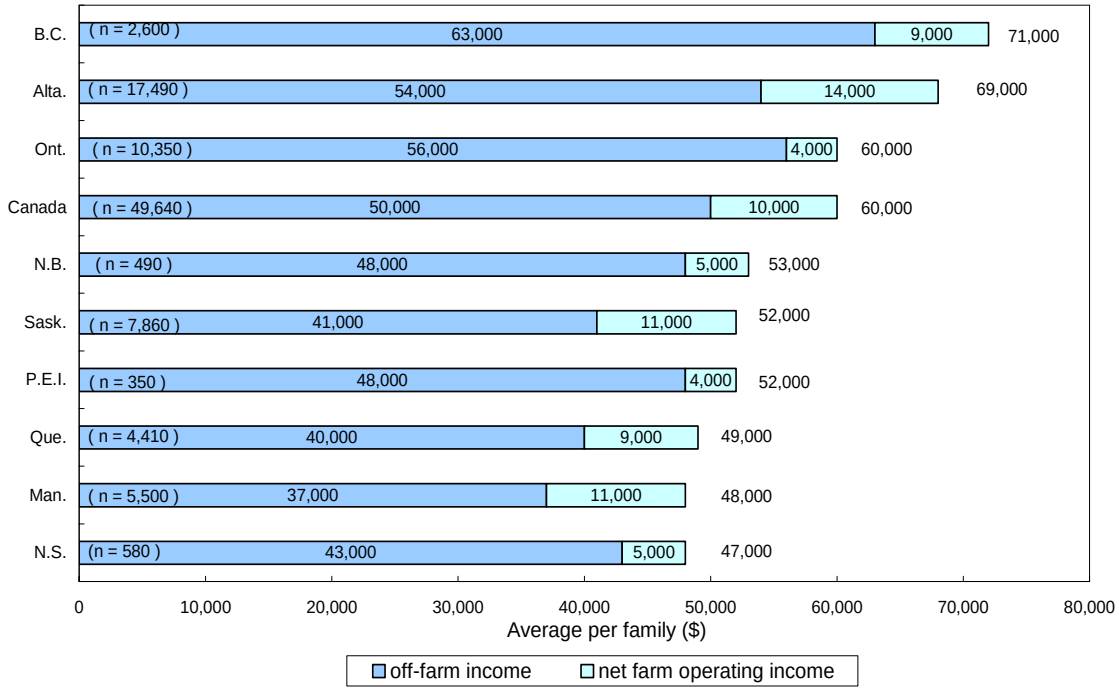
Of these 147,680 farm families, 49,640 or about one-third operated a single unincorporated farm that derived at least one-half of its total agricultural sales from the sale of cattle and calves. The farms operated by these families generated $4.0 billion in cattle and calf revenues—43% of the total cattle and calf revenues generated by beef cattle farms in Canada.

[vii] The assumption of a 20% decline in beef cattle replacement costs is based on indicators obtained from Agriculture and Agri-Food Canada and the Agriculture Division of Statistics Canada.
[viii] Average income figures are rounded to the nearest thousand dollars.

The average total income of farm families which specialized in beef cattle ranching and farming (including feedlots) in Canada amounted to just under $60,000 in 2000, 10% lower than the national average for all farm families (Table 3).

Average total incomes for families operating beef cattle farms were highest in British Columbia and Alberta, and lowest in Quebec, Manitoba and Nova Scotia. Only families in the three Prairie provinces reported net farm operating incomes above the national average of $10,000 (Figure 4).

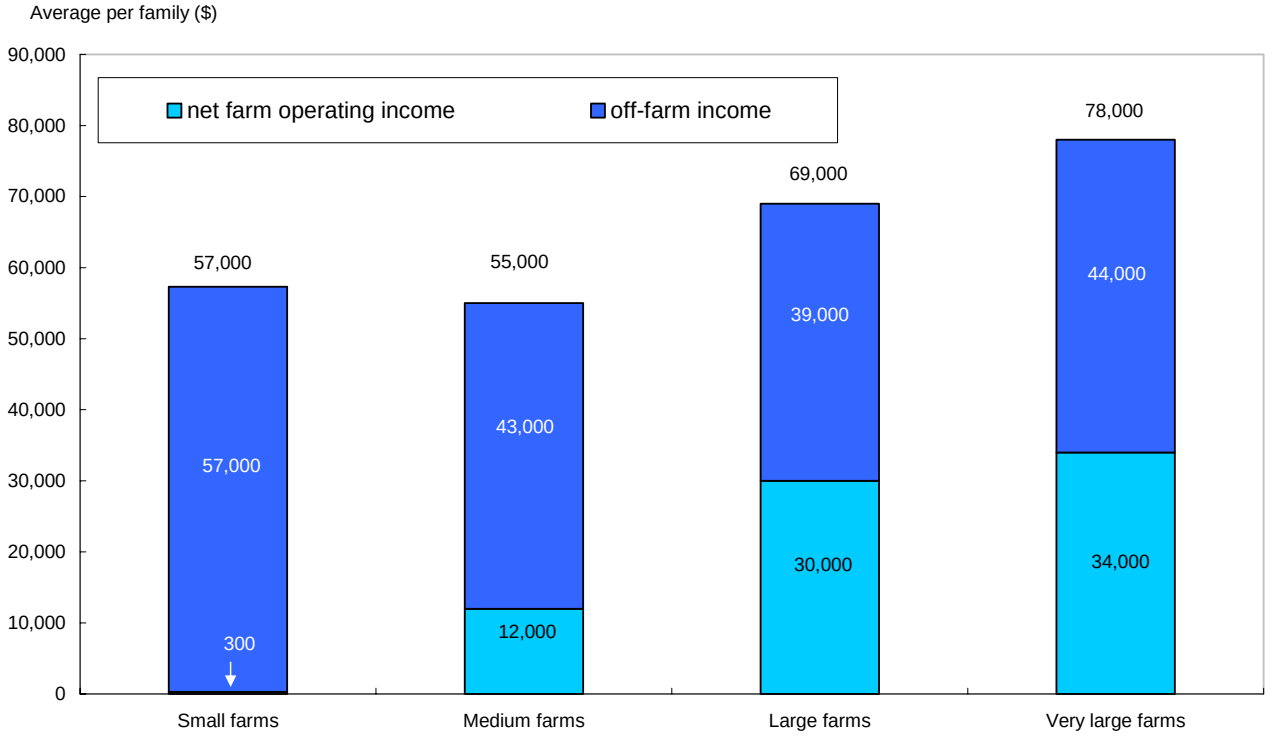
Figure 4: Families operating beef cattle farms in British Columbia and Alberta earned the highest average total income in 2000



Source: *Statistics Canada, Whole Farm Data Base.*

Average total farm family incomes were highest for families operating the very large farms ($78,000) and lowest for families operating the medium-size farms ($55,000) (Table 4 and Figure 5).

Figure 5: Families operating medium-size beef cattle farms earned the lowest average total income in 2000



Source: *Statistics Canada, Whole Farm Data Base.*

Scenario: 35% drop in cattle revenues

Farm families on large cattle operations hardest hit from the BSE fallout

Under the scenario of a 35% decline in cattle and calf revenues and a 20% decline in beef cattle replacement costs, families operating a single unincorporated beef cattle farm would have lost an average $20,000 due to the BSE situation. Average total income for these families would have declined by 33% from $60,000 to $40,000 (Table 4).

The farm families hardest hit from the BSE fallout will obviously be those operating large intensive cattle operations. It is estimated that farm income losses on the very large unincorporated beef cattle farms would have approached $220,000 due to the BSE situation. Without additional off-farm income or government financial support, total family income for this group would have plummeted to negative $140,000 (Figure 6).

Figure 6: Average total income for families on the very large beef cattle farms would have plummeted drastically under the BSE scenario

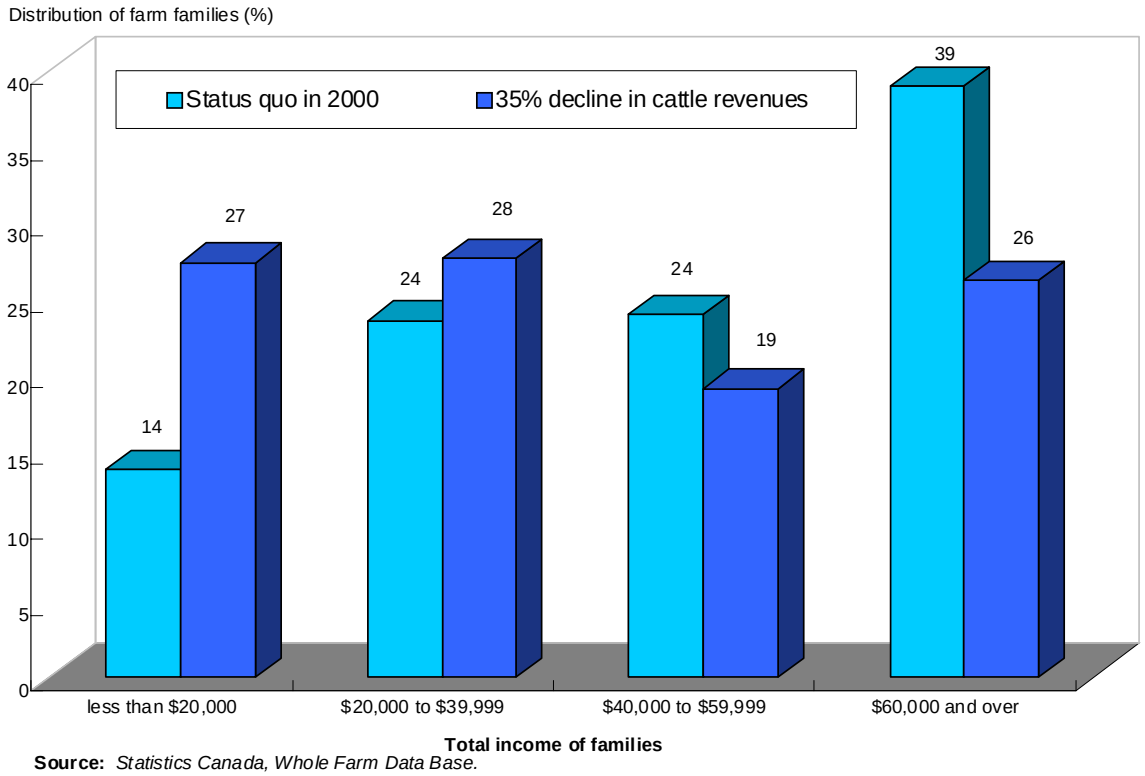
Source: *Statistics Canada, Whole Farm Data Base.*

For families on large unincorporated beef cattle farms, the average farm income loss from BSE is estimated at just over $36,000. Total family income for this group would have declined from $69,000 under the status quo to $33,000 under the BSE scenario.

For families on small- and medium-size farms, the average farm income loss from BSE is estimated at $6,000 and $15,000 respectively.

Also under this scenario, about one in every four farm families specialized in beef cattle production would have experienced a total farm family income less than $20,000 in 2000 (Table 5 and Figure 7).

Figure 7: A decline in cattle revenues due to BSE would have a significant effect on the income of farm families operating a beef cattle farm



Source: *Statistics Canada, Whole Farm Data Base.*

The drop in cattle and calf revenues would have also translated into a larger number of farm families with negative total income or losses from farming activities.

In 2000, 4% of farm families running beef cattle farms reported a negative total income. Under the 35% scenario, this proportion would have almost tripled to 10% of families (Table D).

Table D: Percent distribution of farm families operating beef cattle farms by income, Canada, 2000

	Status quo	35% decline in cattle revenues
	%	
Families with positive total family income	96.2	89.8
Net farm operating income:		
■ negative or nul	30.6	51.7
■ positive (less than 50% of total family income)	44.6	29.5
■ positive (equal to or greater than 50% of total family income)	20.9	8.7
Families with negative total family income	3.8	10.2
Total	100.0	100.0

Source: *Statistics Canada, Whole Farm Data Base* .

Among farm families that reported positive total income in 2000, slightly over 30% posted losses from farming activities. An additional 45% of families received less than 50% of their total income from farming.

Under the 35% scenario, slightly more than one-half of families with positive family income would have reported losses from farming activities, and almost 30% would have earned less than one-half of their total income from farming.

Losses in farm income much more important for farm families earning at least half of their total income from farming

In this section, farm families operating single unincorporated beef cattle farms are sorted into two groups based on their dependence on farm income. The first group encompasses families who earned 50% or more of their total income from farming activities. The second group represents families who received less than 50% of their total income from farming activities.

Only 25% of the estimated 49,640 families running beef cattle farms earned 50% or more of their total income from farming activities. The average total income of these families amounted to just over $50,000 in 2000, $13,000 less than the average total income for families who received less than 50% of their income from the farm (Table 6).

Under the scenario of a 35% drop in cattle and calf revenues, farm families in the first group would have incurred a bigger loss in farm income, an estimated $43,000. Their average total income would have plunged by 86%, from $50,000 under the status quo to only $7,000 under the BSE scenario.

Farm families in the second group would have lost significantly less ($12,000 on average). Their average total income would have fallen by 19%, from $63,000 to $51,000.

Farm income losses on the very large beef cattle operations would have approached $240,000 for families in the first group and $170,000 for those in the second group. With all else holding constant (i.e. no additional

off-farm income or government financial support), total family incomes would have dropped to negative $167,000 for the first group and to negative $73,000 for the second group.

The average farm income loss from BSE on the large beef cattle farms is estimated at $40,000 for the first group of families and to $32,000 for the second group. Total family income would have declined to $25,000 and $42,000 respectively.

The average farm income losses for farm families on small- and medium-size farms in both groups would have tracked quite similarly.

Also under this scenario, almost one in two farm families who earned at least half of their total income from farming activities in 2000 would have experienced a total income less than $20,000 in 2000. Families who received less than half of their income from farming would have fared better with one in every five families falling in that range (Table 7).

For the purposes of this analysis, beef cattle farm families were divided into four groups according to their total income, with each group representing 25% of all farm families.

As shown in Table 8, farm families who are the most reliant on farming income would be significantly more affected by the BSE shock. The 25% of farm families with the lowest total incomes reported average total income of -$28,000 in 2000. Under the BSE scenario, the group of families with the lowest incomes would have reported -$91,000.[ix] The next 25% of farm families would have also faced very low income with only $12,000 on average.

For families who are the least reliant on farming income, only the bottom 25% of farm families would have reported very low income ($4,000 on average) under the BSE scenario.

Impact on number of beef cattle farm families

The impact of BSE and the subsequent decline in revenues from cattle and calves will have an impact on total income estimates of farm families for 2003. That, in turn, will have an impact on the statistical count of farm families operating beef cattle operations.

The decline in the prices of cattle relative to other agricultural products along with lower marketings of cattle will result in farms receiving a lower share of revenues from cattle compared with other agricultural commodities. As a result, many farms will be reclassified from the beef cattle category to another type of production. The more diversified the beef cattle farm, the greater the likelihood that the farm would be reclassified to another type of production when prices and marketings of cattle relative to other agricultural commodities decline.

Under the assumption that revenues from other products remain unchanged, a 35% decline in revenues from cattle would result in a reclassification of about 8% of farm families specialized in beef cattle ranching and farming to other types of production. These types would include oilseed and grain farming, and other crop farming (such as hay farming).

[ix] Under the BSE scenario, farm families are redistributed based on their ‘new’ total income and may fall in a different group or quartile.

Challenges and opportunities

The continued safety of the North American food supply is a priority for governments and the agricultural industry. Animal disease (not unlike human disease) is an unfortunate reality and new strategies to address issues such as BSE will be required.

In January 2004, the Minister of Agriculture and Agri-Food Canada met with the US Agriculture Secretary and the Mexican Secretary of Agriculture to discuss strategies to address the BSE issue. It was agreed that all three countries would work towards the harmonization of BSE regulations within a North American framework. In addition, tracking systems are being developed in North America with the goal of monitoring the movement of animals from the farmgate to the consumer plate. Discussions and actions towards opening the border within North America to live animals are continuing.

The financial support announced by federal and provincial governments since June 2003 assisted to offset a portion of the financial hurt to the livestock industry. However, as indicated in this study, significant financial consequences to livestock producers as a result of BSE in Canada are expected. Farm families in Canada reliant on livestock sales are dealing not only with lost income and markets, but also a "new future" of market risks and regulations which will take time, money, and new management processes at the farmgate. More accurate measures of the BSE impact will only be known in a few years time. This is little solace to an industry that is requiring immediate adjustments.

Note to readers: Exclusion from estimates

Although the Whole Farm Data Base can be used to produce estimates regardless of the revenue level, the base was primarily structured to provide data for farms with reported annual revenues of $10,000 and more. Lower revenues from the sale of cattle and other ruminants will push below the $10,000 threshold the gross operating revenues of many small farms. These small farms will be excluded from the estimates.

Based on the 2000 statistics, with revenues from other products being equal, about 10% of families running beef cattle farms would see their gross operating revenues fall below $10,000 should cattle and calf revenues drop by 35%.

The following standard symbols are used in this analysis:

[p] preliminary
[r] revised
x suppressed to meet the confidentiality requirements of the *Statistics Act*
[E] use with caution
F too unreliable to be published

With the exception of Table A, the estimates contained in the other tables have been assigned a letter to indicate their coefficient of variation (CV) – expressed as a percentage – or degree of reliability. The letter grades represent the following CVs:

CV Range	Symbol	Meaning
0.00% to 4.99%	A	Excellent
5.00% to 9.99%	B	Very good
10.00% to 14.99%	C	Good
15.00% to 24.99%	D	Acceptable
25.00% to 34.99%	E	Use with caution
35.00% and more	F	Too unreliable to be published

The quality of the estimates not accompanied by a data quality symbol is assessed to be "acceptable or better".

Throughout the article, totals may not add due to rounding procedures used to protect the confidentiality of the respondents.

Table 1

Financial structure of beef cattle farms by size category, unincorporated and incorporated sectors, Canada, 2002

		Size categories				
		Small farms	Medium farms	Large farms	Very large farms	Total
Number of farms	No.	22,145 [A]	11,755 [A]	14,240 [A]	2,195 [B]	50,335 [A]
Average number of cattle per farm	No.	44 [A]	96 [A]	220 [A]	1,098 [B]	152 [A]
Average current assets	$	18,622 [A]	41,510 [A]	129,558 [A]	1,052,575 [B]	100,398 [A]
Average long-term assets	$	374,442 [A]	562,722 [A]	1,033,844 [A]	2,725,091 [A]	707,356 [A]
Average total farm assets	$	393,064 [A]	604,233 [A]	1,163,403 [A]	3,777,666 [A]	807,753 [A]
Average current liabilities	$	4,857 [C]	13,691 [B]	39,446 [A]	523,477 [B]	39,300 [A]
Average long-term liabilities	$	33,769 [B]	67,351 [B]	144,628 [A]	487,612 [B]	92,745 [A]
Average total farm liabilities	$	38,625 [B]	81,042 [B]	184,074 [A]	1,011,090 [B]	132,045 [A]
Average total net worth	$	354,438 [A]	523,191 [A]	979,329 [A]	2,766,576 [A]	675,708 [A]
Percent of farms reporting liabilities	%	53.7	76.9	82.0	87.2	68.6
Current ratio		3.83	3.03	3.28	2.01	2.55
Debt structure ratio		0.13	0.17	0.21	0.52	0.30
Debt asset ratio (debt ratio)		0.10	0.13	0.16	0.27	0.16
Net worth ratio		0.90	0.87	0.84	0.73	0.84
Debt-to-equity (leverage) ratio		0.11	0.15	0.19	0.37	0.20
Distribution of farms by current ratio						
Good to superior[1]	%	87.6	79.1	83.2	75.4	83.8
May constitute risk[2]	%	F	F	1.8	3.9	1.3
Low to inferior[3]	%	11.8	19.6	15.0	20.7	14.9
Distribution of farms by debt ratio						
Good to superior[4]	%	92.8	89.6	85.8	74.3	89.3
May constitute risk[5]	%	4.6	6.0	8.5	14.4	6.4
Low to inferior[6]	%	2.6	4.4	5.7	10.9	4.3
Distribution of farms by debt-to-equity ratio						
Good[7]	%	95.8	94.1	92.3	88.8	94.1
Low[8]	%	4.2	6.0	7.7	10.9	5.9
Distribution of farms reporting average net operating income						
Negative or null	%	52.8	31.9	27.8	29.2	39.8
Positive	%	47.2	68.1	72.2	70.6	60.2

[1] 1.2 and over
[2] 1.1 to 1.2
[3] Less than 1.1
[4] Less than 0.4
[5] 0.4 to 0.55
[6] 0.55 and over
[7] Less than 1
[8] 1 and over

Source: *Statistics Canada, Whole Farm Data Base, Farm Financial Survey.*

Table 2

Financial structure of beef cattle farms by type of cattle farm, unincorporated and incorporated sectors, Canada, 2002

		Type of cattle farm				
		Cow-calf	Feeder-Cow-calf	Feedlot cattle	Other cattle	Total
Number of farms	No.	36,155 A	2,290 C	8,505 B	3,380 B	50,335 A
Average number of cattle per farm	No.	126 A	212 C	261 B	121 B	152 A
Average current assets	$	59,539 A	157,293 C	263,184 B	89,226 B	100,398 A
Average long-term assets	$	674,557 A	880,121 B	771,153 A	780,788 B	707,356 A
Average total farm assets	$	734,096 A	1,037,414 B	1,034,337 A	870,013 B	807,753 A
Average current liabilities	$	18,710 B	71,374 D	117,584 B	40,805 C	39,300 A
Average long-term liabilities	$	80,886 A	138,528 D	113,829 B	135,556 B	92,745 A
Average total farm liabilities	$	99,596 A	209,902 D	231,413 B	176,362 B	132,045 A
Average total net worth	$	634,500 A	827,513 B	802,924 A	693,651 B	675,708 A
Percent of farms reporting liabilities	%	69.1	65.9	66.3	70.0	68.6
Current ratio		3.18	2.20	2.24	2.19	2.55
Debt structure ratio		0.19	0.34	0.51	0.23	0.30
Debt asset ratio (debt ratio)		0.14	0.20	0.22	0.20	0.16
Net worth ratio		0.86	0.80	0.78	0.80	0.84
Debt-to-equity (leverage) ratio		0.16	0.25	0.29	0.25	0.20
Distribution of farms by current ratio						
Good to superior[1]	%	84.2	85.2	84.7	77.2	83.8
May constitute risk[2]	%	1.0	F	2.5	x	1.3
Low to inferior[3]	%	14.8	13.1	12.8	x	14.9
Distribution of farms by debt ratio						
Good to superior[4]	%	90.4	90.6	85.7	85.4	89.3
May constitute risk[5]	%	6.2	F	7.8	7.5	6.4
Low to inferior[6]	%	3.4	F	6.6	6.8	4.3
Distribution of farms by debt-to-equity ratio						
Good[7]	%	94.7	93.7	92.9	91.3	94.1
Low[8]	%	5.3	F	7.1	8.6	5.9
Distribution of farms reporting average net operating income						
Negative or null	%	39.5	49.8	36.7	43.9	39.8
Positive	%	60.5	50.2	63.3	55.9	60.2

[1] 1.2 and over
[2] 1.1 to 1.2
[3] Less than 1.1
[4] Less than 0.4
[5] 0.4 to 0.55
[6] 0.55 and over
[7] Less than 1
[8] 1 and over

Source: *Statistics Canada, Whole Farm Data Base, Farm Financial Survey.*

Table 3

Distribution of farm families operating beef cattle farms by total income and province, with selected average incomes [1], unincorporated sector, 2000

Status quo

Province		Total income of families				
		Less than $20,000	$20,000 to $39,999	$40,000 to $59,999	$60,000 and over	Total
Canada						
Number of families	No.	6,830 A	11,670 A	11,860 A	19,290 A	49,640 A
Average off-farm income	$	19,421 A	25,936 A	39,382 A	80,864 A	49,591 A
Average net operating income	$	-25,845	5,363	10,905	25,498	10,217
Average total income	$	-6,424	31,299	50,286	106,362	59,809
Newfoundland						
Number of families	No.	x	x	x	x	x
Average off-farm income	$	x	x	x	x	x
Average net operating income	$	x	x	x	x	x
Average total income	$	x	x	x	x	x
Prince Edward Island						
Number of families	No.	40 D	100 C	100 B	100 B	350 A
Average off-farm income	$	18,864 B	27,798 B	42,043 A	83,701 B	47,550 B
Average net operating income	$	-21,009	1,069	6,022	15,766	4,130
Average total income	$	-2,144	28,866	48,066	99,467	51,679
Nova Scotia						
Number of families	No.	130 D	140 C	130 D	170 C	580 B
Average off-farm income	$	14,407 C	24,437 A	46,967 B	74,950 A	42,825 B
Average net operating income	$	-6,045	5,629	3,661	13,371	4,669
Average total income	$	8,362	30,066	50,628	88,321	47,493
New Brunswick						
Number of families	No.	80 D	120 C	120 C	160 C	490 B
Average off-farm income	$	18,215 C	26,219 A	45,674 A	83,119 B	48,081 A
Average net operating income	$	-7,139	4,507	3,531	11,240	4,506
Average total income	$	11,076	30,726	49,205	94,359	52,587
Quebec						
Number of families	No.	720 C	1,440 B	960 B	1,300 B	4,410 A
Average off-farm income	$	16,330 B	24,854 A	38,079 A	70,950 A	39,863 A
Average net operating income	$	-17,698	6,295	12,084	23,237	8,669
Average total income	$	-1,368	31,149	50,163	94,187	48,531

[1] Average per family.

Source: *Statistics Canada, Whole Farm Data Base.*

Table 3

Distribution of farm families operating beef cattle farms by total income and province, with selected average incomes [1], unincorporated sector, 2000 (concluded)

Status quo

Province		Total income of families				
		Less than $20,000	$20,000 to $39,999	$40,000 to $59,999	$60,000 and over	Total
Ontario						
Number of families	No.	1,510 C	2,250 B	2,220 B	4,370 B	10,350 A
Average off-farm income	$	20,384 B	30,281 A	43,709 A	88,418 A	56,248 A
Average net operating income	$	-18,818	1,209	6,263	12,664	4,201
Average total income	$	1,566	31,489	49,972	101,082	60,450
Manitoba						
Number of families	No.	810 A	1,720 A	1,430 A	1,530 A	5,500 A
Average off-farm income	$	17,478 A	24,833 A	36,677 A	61,472 A	37,050 A
Average net operating income	$	-18,990	6,549	13,058	29,621	10,849
Average total income	$	-1,512	31,382	49,735	91,094	47,899
Saskatchewan						
Number of families	No.	980 B	2,130 B	2,180 B	2,570 B	7,860 A
Average off-farm income	$	19,355 A	23,437 A	38,831 A	66,746 A	41,374 A
Average net operating income	$	-25,509	7,612	11,637	26,285	10,743
Average total income	$	-6,154	31,048	50,468	93,031	52,117
Alberta						
Number of families	No.	2,220 B	3,170 B	4,120 B	7,980 A	17,490 A
Average off-farm income	$	21,138 B	25,509 A	37,646 A	83,104 B	54,095 A
Average net operating income	$	-38,595	6,161	13,069	33,145	14,457
Average total income	$	-17,457	31,670	50,714	116,249	68,552
British Columbia						
Number of families	No.	350 B	580 B	600 B	1,100 A	2,600 A
Average off-farm income	$	17,632 B	26,424 A	42,395 A	106,626 D	62,641 C
Average net operating income	$	-21,810	4,139	7,835	20,965	8,584
Average total income	$	-4,178	30,564	50,229	127,591	71,225

[1] Average per family.

Source: *Statistics Canada, Whole Farm Data Base.*

Table 4

Average income of farm families operating beef cattle farms by size category, unincorporated sector, Canada, 2000

Status quo and scenario with exclusion of 35% of cattle revenues and 20% of cattle expenses[2]

		Size categories				
		Small farms	Medium farms	Large farms	Very large farms	Total
Status quo						
Number of families	No.	26,870 [A]	10,720 [A]	10,780 [A]	1,290 [A]	49,640 [A]
Percent of families	%	54.1	21.6	21.7	2.6	100.0
Average off-farm income	$	56,619 [A]	43,485 [A]	38,763 [A]	44,338 [A]	49,591 [A]
Cattle revenues	$	18,407	50,980	138,776	1,132,267	80,607
Average total operating revenues	$	25,235	71,951	193,954	1,305,879	105,337
Cattle revenues/Average total operating revenues	%	72.9	70.9	71.6	86.7	76.5
Cattle expenses	$	4,558	14,335	59,785	892,607	41,799
Average total operating expenses	$	24,908	60,125	163,535	1,272,102	95,120
Cattle expenses/Average total operating expenses	%	18.3	23.8	36.6	70.2	43.9
Average net operating income	$	327	11,825	30,420	33,777	10,217
Average total income[1]	$	56,946	55,310	69,182	78,115	59,809
35% of cattle revenues excluded **20% of cattle expenses excluded[2]**						
Average off-farm income	$	56,619 [A]	43,485 [A]	38,763 [A]	44,338 [A]	49,591 [A]
Average net operating income	$	-5,204	-3,151	-6,195	-183,995	-9,635
Average total income	$	51,415	40,334	32,568	-139,658	39,956
Total loss in net operating income based on the BSE scenario[3]	$	5,531	14,976	36,615	217,772	19,852

[1] Average net operating income plus average off-farm income.

[2] Purchase of replacement animals.

[3] Difference in absolute value between average net operating income in status quo and average net operating income based on the BSE scenario.

Source: *Statistics Canada, Whole Farm Data Base.*

Table 5

Distribution of farm families operating beef cattle farms by total income and size category, unincorporated sector, Canada, 2000

Status quo and scenario with exclusion of 35% of cattle revenues and 20% of cattle expenses [1]

		Size categories				
		Small farms	Medium farms	Large farms	Very large farms	Total
Status quo						
Distribution of families by total income						
Less than $20,000	%	13.6	12.7	13.9	25.6	13.8
$20,000 to $39,999	%	28.8	22.1	13.7	8.5	23.5
$40,000 to $59,999	%	23.6	29.1	20.8	11.6	23.9
$60,000 and over	%	34.0	36.2	51.5	55.0	38.9
35% of cattle revenues excluded						
20% of cattle expenses excluded [1]						
Distribution of families by total income						
Less than $20,000	%	20.0	27.6	38.1	75.2	27.0
$20,000 to $39,999	%	29.7	30.1	22.9	5.4	27.7
$40,000 to $59,999	%	21.0	20.1	15.7	5.4	19.2
$60,000 and over	%	29.3	22.2	23.4	14.0	26.1

[1] Purchase of replacement animals.

Source: *Statistics Canada, Whole Farm Data Base.*

Table 6

Average income of farm families operating beef cattle farms by size category and importance of farming income, unincorporated sector, Canada, 2000

Status quo and scenario with exclusion of 35% of cattle revenues and 20% of cattle expenses [1]

		Size categories				
		Small farms	Medium farms	Large farms	Very large farms	Total
Families with less than 50% of their income from farming						
Status quo						
Number of families	No.	24,760 [A]	7,510 [A]	4,730 [A]	370 [A]	37,380 [A]
Percent of families	%	66.2	20.1	12.7	1.0	100.0
Average off-farm income	$	60,466 [A]	55,445 [A]	61,328 [A]	87,103 [A]	59,835 [A]
Average net operating income	$	-71	7,564	12,501	8,202	3,134
Average total income	$	60,396	63,009	73,829	95,305	62,968
35% of cattle revenues excluded 20% of cattle expenses excluded[1]						
Average off-farm income	$	60,466 [A]	55,445 [A]	61,328 [A]	87,103 [A]	59,835 [A]
Average net operating income	$	-5,554	-6,940	-19,494	-159,790	-9,126
Average total income	$	54,913	48,506	41,834	-72,687	50,708
Total loss in net operating income based on the BSE scenario[2]	$	5,483	14,504	31,995	167,992	12,260
Families with 50% or more of their income from farming						
Status quo						
Number of families	No.	2,100 [B]	3,210 [A]	6,040 [A]	920 [A]	12,270 [A]
Percent of families	%	17.1	26.2	49.2	7.5	100.0
Average off-farm income	$	11,335 [B]	15,399 [A]	21,094 [A]	26,972 [A]	18,377 [A]
Average net operating income	$	5,017	21,811	44,600	44,110	31,816
Average total income	$	16,352	37,210	65,695	71,082	50,193
35% of cattle revenues excluded 20% of cattle expenses excluded[1]						
Average off-farm income	$	11,335 [B]	15,399 [A]	21,094 [A]	26,972 [A]	18,377 [A]
Average net operating income	$	-1,080	5,728	4,183	-193,772	-11,187
Average total income	$	10,255	21,126	25,277	-166,800	7,190
Total loss in net operating income based on the BSE scenario[2]	$	6,097	16,084	40,418	237,882	43,003

[1] Purchase of replacement animals.

[2] Difference in absolute value between average net operating income in status quo and average net operating income based on the BSE scenario.

Source: *Statistics Canada, Whole Farm Data Base.*

Table 7

Distribution of farm families operating beef cattle farms by total income, size category and importance of farming income, unincorporated sector, Canada, 2000

Status quo and scenario with exclusion of 35% of cattle revenues and 20% of cattle expenses [1]

		Size categories				
		Small farms	Medium farms	Large farms	Very large farms	Total
Families with less than 50% of their income from farming						
Status quo						
Distribution of families by total income						
Less than $20,000	%	10.4	10.5	13.1	16.2	10.8
$20,000 to $39,999	%	28.2	17.7	17.3	16.2	24.6
$40,000 to $59,999	%	24.6	27.2	20.3	21.6	24.5
$60,000 and over	%	36.9	44.6	49.3	48.6	40.1
35% of cattle revenues excluded 20% of cattle expenses excluded[1]						
Distribution of families by total income						
Less than $20,000	%	16.4	21.7	37.2	81.1	20.8
$20,000 to $39,999	%	29.5	26.4	20.9	x	27.6
$40,000 to $59,999	%	22.3	22.5	15.0	x	21.2
$60,000 and over	%	31.8	29.4	27.1	10.8	30.6
Families with 50% or more of their income from farming						
Status quo						
Distribution of families by total income						
Less than $20,000	%	51.4	17.4	14.6	29.3	22.7
$20,000 to $39,999	%	35.7	32.1	10.8	4.3	20.2
$40,000 to $59,999	%	x	33.6	21.4	7.6	21.9
$60,000 and over	%	x	16.5	53.3	57.6	35.1
35% of cattle revenues excluded 20% of cattle expenses excluded[1]						
Distribution of families by total income						
Less than $20,000	%	61.4	41.1	38.7	72.8	45.9
$20,000 to $39,999	%	32.9	38.9	24.7	5.4	28.3
$40,000 to $59,999	%	F	14.3	16.1	6.5	13.1
$60,000 and over	%	x	5.3	20.7	15.2	12.7

[1] Purchase of replacement animals.

Source: *Statistics Canada, Whole Farm Data Base.*

Table 8

Average income of farm families operating beef cattle farms by quartile and importance of farming income, unincorporated sector, Canada, 2000

Status quo and scenario with exclusion of 35% of cattle revenues and 20% of cattle expenses[1]

		Quartiles[2, 3]				
		Q1	Q2	Q3	Q4	Total
Families with less than 50% of their income from farming						
Status quo						
Average off-farm income	$	24,920 A	39,523 A	58,031 A	116,653 A	59,835 A
Average net operating income	$	-4,515	2,540	5,339	9,154	3,134
Average total income	$	20,405	42,063	63,370	125,807	62,968
35% of cattle revenues excluded 20% of cattle expenses excluded[1]						
Average off-farm income	$	26,501 A	38,455 A	57,061 A	117,317 A	59,835 A
Average net operating income	$	-22,642	-6,425	-4,009	-3,427	-9,126
Average total income	$	3,859	32,030	53,053	113,890	50,708
Families with 50% or more of their income from farming						
Status quo						
Average off-farm income	$	15,017 B	10,340 A	17,449 A	30,683 A	18,377 A
Average net operating income	$	-42,832	26,300	41,950	101,638	31,816
Average total income	$	-27,816	36,640	59,399	132,321	50,193
35% of cattle revenues excluded 20% of cattle expenses excluded[1]						
Average off-farm income	$	17,889 A	9,439 A	16,331 A	29,836 A	18,377 A
Average net operating income	$	-109,342	3,055	15,499	46,027	-11,187
Average total income	$	-91,453	12,494	31,829	75,863	7,190

[1] Purchase of replacement animals.

[2] Quartiles are a measure of the distribution of total income. Average total income is calculated within these four quartiles: Q1 (0% to 25%), Q2 (26% to 50%), Q3 (51% to 75%), Q4 (76% to 100%).

[3] Under the BSE scenario, farm families are redistributed based on their 'new' total income and may not fall in the same quartile as under the status quo.

Source: *Statistics Canada, Whole Farm Data Base.*

Appendix A

BSE support programs

A federal/provincial BSE Recovery Program was introduced in Canada on June 18, 2003. Under the program, producers who owned cattle as of May 20, 2003 and sold their fed cattle for slaughter were entitled to compensation (on a sliding scale) equal to the difference between a reference price based on market values in the United States and an average weekly market price. Producers covered a minimum of 10% of cattle price declines, while the balance of the price decline was cost-shared between the federal government (60%) and the provinces (40%).

The Federal-Provincial BSE Recovery Program Agreement was expected to return about $460 million to the livestock industry in Canada. This included $276 million federal funds and $184 million provincial funds.[9]

On August 12, 2003, the Agriculture and Agri-Food Minister announced a $36 million extension to the federal government's commitment to the national BSE Recovery Program.[10] With provincial fund matching, this amount was expected to grow to $60 million. The additional funding was to ensure that cattle and other ruminants priced by August 17 and slaughtered by August 31, 2003 were covered by the program.

On November 21, 2003, the Agriculture and Agri-Food Minister announced the Cull Animal Program to help cattle producers deal with older animals that needed to be culled from herds.[11] The federal government committed $120 million as base funding and offered to cost share the program with provincial and territorial governments on a 60/40 basis, which would bring total program funding to $200 million.

On March 22, 2004, the Prime Minister and the Agriculture and Agri-Food Minister announced $995 million in assistance for Canadian farmers who have faced historic financial challenges brought on by circumstances beyond their control.[12] The federal government committed $930 million under the Transitional Industry Support Program and a further $65 million to cover the federal government's share of the shortfall for the 2002 claim year under the Canadian Farm Income Program (CFIP).[x] The first component of the Transitional Industry Support Program will provide a total of $680 million to producers of cattle and other ruminants who have faced a prolonged closure of the Canada-US border. Producers of cattle and other ruminants will receive a flat rate payment based on their herd inventories as of December 23, 2003. This component of the program is open to all farming operations with cattle, including feedlot, backgrounding and cow-calf operations. Producers with cattle will receive a payment of up to $80 per bovine animal on inventory as of December 23, 2003, including dairy heifers except for mature bulls and cows (cows that have calved and intact bulls older than one year). The second component of the program (general transition payments) will provide $250 million to producers of all eligible commodities, including the cattle industry, across Canada. The funding will be delivered as a direct payment to producers based on their past income information and will act as a bridge to the new Canadian Agricultural Income Stabilization (CAIS) program.

In addition, several provincial programs were introduced to assist cattle producers. Some of the programs introduced in the major beef cattle producing provinces are outlined in Appendix B.

[x] The Canadian Farm Income Program is a national program designed to target assistance to Canadian agricultural producers who have experienced a sudden and severe decline in their farming income for reasons beyond their control. The program is cost-shared on a 60:40 basis by federal and provincial governments. CFIP will end with the delivery of payments under the 2002 program. In the 2002 program year, claims to the program exceeded the amount available ($435 million was previously authorized), due in large part to drought conditions in western Canada.

Appendix B

BSE and provincial support programs

On July 25, 2003, the Alberta government announced $65 million of financial support in the Alberta Fed Cattle Competitive Bid Program which allowed buyers to purchase fed cattle for retention purposes, reducing the pressure on Alberta's beef markets. The initial sellers became eligible for payments on the same basis as cattle sold for slaughter under the federal-provincial compensation plan.

On August 22, the Alberta government announced the Fed Cattle Competitive Market Adjustment Program to compensate producers who sold their cattle in a competitive market sale for market deficiencies. On October 9, the Alberta Steer and Heifer Market Transition Program was introduced to address the balance of May 20, 2003 Alberta fed cattle inventory.[13]

On July 25, the Saskatchewan government announced a set aside option to the BSE Recovery Program. The Saskatchewan Set-Aside Program was introduced to allow producers to access the same level of compensation that was available under the slaughter element of the BSE Recovery Program without having to market their livestock for slaughter.

On September 12, Saskatchewan unveiled an assistance package of $20 million to extend its BSE Recovery Program. Finally, producers who sold their eligible cattle in a competitive market sale would be compensated for a portion of their market loss under the Saskatchewan Fed Livestock Competitive Market Adjustment Program.[14]

The Manitoba government introduced the BSE Feeder Assistance Program which provided feeding assistance payments on finished livestock that were on feed in Manitoba, and could not be marketed due to restricted slaughter capacity. Manitoba expanded its short-term action by extending the slaughter component of the BSE Recovery Program and by providing further assistance to livestock producers affected by drought.

The Manitoba Slaughter Deficiency Program added an additional $10 million in provincial funding for producers faced with depressed slaughter prices due to BSE. An amount of $12 million was committed under the Manitoba Drought Assistance Program to help livestock producers with the added expense of shipping hay and straw or animals.[15]

In Ontario, several provincial programs were announced. On August 25, the Ontario BSE Recovery Initiative (Phase 2 – Set-Aside) provided compensation to producers of slaughter weight steers and heifers that were market-ready and fully finished but that were set aside from slaughter due to constraints on abattoir capacity.

On August 29, the Ontario government introduced phase 3 of its strategy developed to support the competitiveness of Ontario's ruminant livestock industry. The Ontario BSE Recovery Initiative (Phase 3 a - Slaughter Component) addressed market-ready cattle (steers and heifers) and veal calves that had not been sold for slaughter and that were not eligible for a payment under either of the preceding BSE compensation programs.

As part of phase 3, Ontario also made available $20 million to producers of ruminant livestock who met the program criteria as an advance on future whole farm safety net programming for the 2003 taxation year. This assistance was covered under the Ontario BSE Recovery Initiative (Phase 3 b - 2003 Advanced Ontario Agricultural Payment, Ontario Farm Income Disaster Program).[16]

Appendix C

Financial ratios[17]

In this article, two ratios are used to determine liquidity, the current ratio and the debt structure ratio. Three ratios are used to determine solvency, the debt asset ratio, the net worth ratio and the debt-to-equity ratio. Liquidity is a measure of how much cash will be generated in the next accounting period in order to meet the financial obligations of the business. Asset values derived from the Farm Financial Survey are based on market values.

Liquidity

Current ratio = Current assets / Current liabilities

The current ratio measures a business' ability to meet financial obligations as they come due without disrupting normal operations. Ideally the current ratio should be much greater than 1 since a ratio of 1 would indicate the business may have difficulty in meeting its financial obligations. If the ratio is less than 1, the business may have a potential liquidity problem.

In the agriculture sector, the value of the current ratio can be interpreted as follows[18]:

Superior	More than 1.5
Good	Between 1.2 and 1.5
May constitute risk	Between 1.1 and 1.2
Low	Between 1.0 and 1.1
Inferior	Less than 1.0

Debt structure ratio = Current liabilities / Total liabilities

The debt structure ratio measures the proportion of total debt due and payable within the current year or within the next accounting period. A high debt structure ratio may indicate a shortage of working capital which is being met by higher than normal levels of operating credit. This ratio in conjunction with the current ratio provides information on the relative solvency of the business in the short term. A business with a relatively low value of long-term liabilities may have a high debt structure ratio but may in fact have no solvency problems. Therefore it is necessary to interpret this ratio in conjunction with the value of liabilities and cash flows from the operations.

Solvency

Debt asset ratio (debt ratio) = Total liabilities / Total assets

The debt asset ratio is a measure of the extent of credit used by the business. It measures the proportion of assets financed by debt. The higher the value of the ratio, the higher the financial risk. The desired value of the ratio will depend on the variability of the net income of the business and other factors, such as the risks associated with production. Farm operations in supply-managed sector experience much less variability in their revenue and can operate with a higher debt ratio.

In the agriculture sector, the value of the debt asset ratio can be interpreted as follows[19]:

Superior	Less than 0.1
Good	Between 0.1 and 0.4
May constitute risk	Between 0.4 and 0.55
Low	Between 0.55 and 0.7
Inferior	More than 0.7

Net worth ratio = Net worth / Total assets

This is a variation of the debt asset ratio. The net worth ratio is a measure of the extent to which the owners have financed the business. It measures the proportion of assets financed by equity. The higher the value of the ratio, the lower the financial risk.

Debt-to-equity (leverage) ratio = Total liabilities / net worth

The debt-to-equity ratio is a measure of the extent to which the creditors have financed the business compared to the owners. The greater the proportion of financing provided by creditors, the higher the value of the ratio. Ideally the debt-to-equity ratio should be less than 1 since a ratio of 1:1 means that there are equal proportions of debt and equity. (i.e., 50% equity). The desired value of the ratio will depend on the farm type and the resulting income variability of the business as well as other factors, such as the risks associated with production. A business with high-income variability such as beef, grain or hog would want to achieve a ratio significantly less than 1.

Definitions of financial terms[20]

Current assets: Unrestricted cash and any other asset that, in the normal course of operations, is expected to be converted into cash or consumed in the production process within one year or within the normal operating cycle (where the cycle is longer than a year). Included are cash, savings, accounts receivable, supply inventories, market livestock and crops for sale. All items are valued at current market value.

Long-term assets: An asset that has a useful life greater than one year. Such an asset, which can be either a tangible or intangible item, is usually not purchased for resale, but is to be used over time to produce saleable products. Included are land and buildings, machinery and equipment, quota and productive assets such as a breeding herd and investments (all money investments due to mature after December 31 of the reference year, such as bonds, shares, long-term Guaranteed Investment Certificates (GICs), mutual funds and co-operative shares. All items are valued at current market value. Also included is the value of producers' Net Income Stabilization Account (NISA Fund 1 and Fund 2), and Compte de stabilisation du revenu agricole (CSRA) accounts in Quebec.

Current liabilities: The portion of debt whose repayment period is less than 12 months and which is outstanding as of December 31. Not included are annual and semi-annual payments on long-term liabilities that will be due within the current year.

Long-term liabilities: That portion of a debt, with a maturity date beyond the current year or beyond the normal operating cycle (where the cycle is longer than a year), which is outstanding as of December 31.

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