PAPER:

Investment and Growth on Canadian Farms 2001 - 2009

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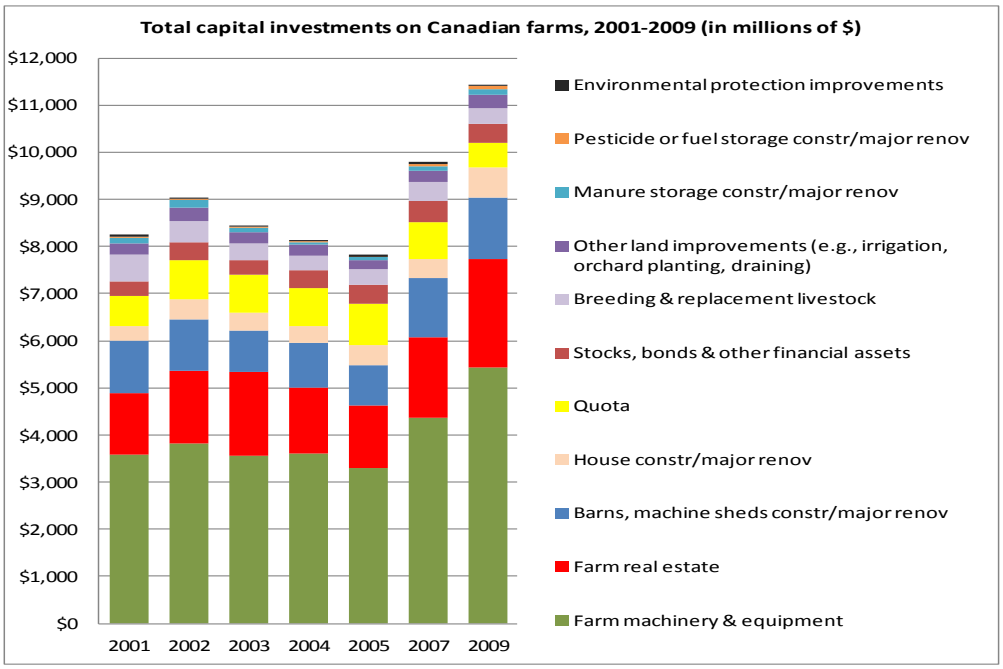
Executive summary

Capital investment is critical to the ability of Canadian farms to survive in the ever increasingly competitive market place. It is also vital to take advantage of the opportunities created by increasing world population, accelerated growth and changing consumption in countries like China and India, and the expansion of biofuel production. This paper examines the main trends and patterns in capital investment on Canadian farms from 2001 to 2009, and suggests potential factors underlying these changes and ways in which future agricultural policy can enhance farm investment, growth and competitiveness.

Overall investment

As a group, Canadian farmers invest significant amounts of money in their farms, more money than they are making. In 2009, in the midst of an economic recession, total investments on Canadian farms exceeded $11.4 billion – 3.3 times their net operating income. This is up from $8.2 billion or twice the net income in 2001. The differences in farm investment between the beginning and the end of the decade (Figure 1) likely reflect the tough economic situation faced by the grains and oilseeds, and beef sectors early in the decade, and the recovery in the grains and oilseeds sector after 2006.

Figure 1. Distribution of total investments on Canadian farms, **2001-2009**



Source: Statistics Canada, Farm Financial Survey 2001 to 2005, 2007, and 2009

The rise in total investments is even more significant given that the propensity of Canadian farmers to invest decreased over the past decade. While 60.2% of farms used to make capital investments in 2001,

by 2009 only 52.7% invested. Fewer farmers were investing more. Unprecedented volatility of farm income could be one reason for this decline.

Size matters – The difference between small and large farms

There are strong relationships between farm size and both willingness to invest and the level of investment (Table 1). Large farms with sales over $500,000 were more likely to invest and invested more than small and medium farms (sales of $10,000-249,999 and $250,000-499,999, respectively). Also, while small farms exhibited pronounced declines in their propensity to invest over the 2001-2009 period, large farms were more consistent. Moreover, average investments by large farms increased almost continuously over the past decade and especially after 2005, while average investments by small and medium farms decreased or increased slightly.

Table 1. Propensity to invest and average investment, by sales class, **2009**

Sales Class	Number of farms	Total investments (in $ Million)	% of farms investing	Average investments across all farms[i]
$10,000 - 99,999	73,210	$1,104	39.0%	$15,076
$100,000 - 249,999	31,560	$1,439	56.7%	$45,608
$250,000 - 499,999	22,540	$1,927	67.0%	$85,511
$500,000 - 999,999	14,210	$2,541	76.7%	$178,799
$1,000,000 - 2,499,999	7,065	$2,699	74.3%	$382,020
$2,500,000+	2,095	$1,731	83.5%	$826,108

Source: Statistics Canada, Farm Financial Survey 2009

Note: i – calculated as total investments divided by total number of farms, including farms that did not invest.

Investment financing

Large farms relied mainly on net operating income to finance investment, while small farms that lost or barely made any money from the farm business invested their off-farm income (Table 2). Apart from net income, government payments were a major source of investment financing for large farms and especially for the million-dollar farms – payments as a percentage of sales decreased over the past decade for all farms but the farms selling over $1 million.

Table 2. Potential sources of investment financing – average across all farms, by sales class, **2009**

	$10,000 -99,999	$100,000-249,999	$250,000-499,999	$500,000-999,999	$1,000,000-2,499,999	$2,500,000+
Net operating income	-$7,295	$7,375	$37,521	$86,750	$138,472	$350,765
Government payments	$3,328	$10,582	$19,858	$31,603	$69,518	$197,821
Off-farm income	$44,210	$28,782	$21,857	$23,290	$26,525	$25,517
Change in debt from previous year	$2,441	$4,804	$25,639	($54,489)	$160,872	$118,316
Capital sales	$7,213	$17,503	$27,994	$45,681	$100,138	$239,912

Source: Statistics Canada, Farm Financial Survey 2009

Revenues from the sale of farm assets might also have been used to finance investment on Canadian farms, but we do not know whether the farms that invested were the same with those that sold (there definitely is a huge turnover of assets in Canadian agriculture). Also, we do not know how much of the additional debt that farms took on was for working capital and how much was for investment in farm assets.

What are Canadian farmers buying?

In aggregate, farmers love machinery, while environmental investments remain relatively low and unchanging (Figure 1). Large farms invested more in farm machinery and equipment, farm real estate, and stocks, bonds and other financial assets, while small and medium farms invested proportionately more in house construction and environmental protection. As a result, large farms will likely enjoy increased productivity and competitiveness, which will mean more incentives and resources to invest in the farm. In contrast, the productivity and competitiveness of small farms will likely continue to erode.

Sector trends

Investment patterns are driven by sector experiences (Table 3) – the beef and pork industries were challenged by the higher Canadian dollar and their slowing investment patterns reflected that; in contrast, the grains and oilseeds sector ramped up investment in response to the dramatic turnaround in that sector after 2006. The likelihood of investment and average investments were highest in the potato and dairy sectors.

Table 3. Trends in sector structure, propensity to invest, and average investments, **2001-2009**

	Trends		
Sector	Sector structure	Propensity to invest	Average investments across all farms
Oilseed & grain	Some consolidation, still predominantly small farms	Low, flat until 2004, dropped in 2005, recovered slowly afterwards	Low and relatively stable until 2005, increasing thereafter and especially in 2009
Potato	Move from predominantly small to predominantly large farms	High, increasing until 2004, decreasing afterwards, shy recovery in 2009	Highest, fastest growing
Other vegs (exc. potato) & melon	Some consolidation, still predominantly small farms	Low, variable	Low, decreasing
Fruit & treenut	Some consolidation, however small farms dominate	Low, variable	Low, increasing continuously
Greenhouse, nursery & floriculture	Share of small farms (already predominant), increased at the expense of	Low, decreasing until 2004, increasing afterwards	Decreasing

	large farms		
Other crops	Share of small farms (already dominant) increased at the expense of large farms	Low, decreasing almost continuously over the period, shy recovery in 2009	Lowest, increasing until 2003, relatively stable thereafter
Beef cattle, including feedlots	Almost no change, small farms dominate	Relatively high in 2001, decreasing ever since, shy recovery in 2009	Low, relatively stable
Dairy cattle & milk	Significant consolidation – move from predominantly small to predominantly medium and large farms	Highest across all sectors, relatively stable	High, increasing
Hog & pig	Some consolidation, relatively equal share of small and large farms	High and relatively stable until 2005, but dropped significantly afterwards	High, variable
Poultry & egg	Some consolidation, predominantly large farms	High in 2001, decreasing ever since	High, variable
Other animal production	Almost no change, small farms dominate	High in 2001, decreased continuously until 2009 when it recovered partially	Low, decreasing

The factors behind the structural change (small to big and livestock to crops) were apparent in the investment and disinvenment decisions made by farmers.

Key policy implications

First, it is encouraging to see that more than half of Canadian farms made capital investments in 2009, in the midst of an economic recession. The question is did they spend the money in the most effective way? Large farms put the largest share of their investments in machinery. Also, small farms invested a significant portion of their money in house construction – an unproductive asset. Programs that assist farmers in optimizing their investments may prove useful.

Second, the declining propensity to invest among Canadian farms (especially small and medium farms) raises questions about the effectiveness of Business Risk Management (BRM) programs and their impact on farm investment. Did they reduce volatility of farm income and allow farms to use cash or take on more debt than they otherwise would to finance investment, hence facilitating investment and growth on all Canadian farms? Or did they put even more money into the pockets of the large and profitable farms, hence speeding up consolidation in Canadian agriculture? The latter argument is supported, to some extent, by some of the results in this paper which suggests that the effectiveness of BRM programs needs to be improved.

Third, the fact that investments in environmental protection improvements remained relatively low and unchanging suggests that the incentive structure underlying the environmental cost-share programs needs to be improved. Also, given the importance of small farms for the environment and the well-being of rural communities, it is critically important that the programs that are meant to increase the competitiveness of Canadian farms are designed so that small farms can also take advantage of them. If designed properly, such programs could help break the downward spiral of profitability and investment on small farms.

Fourth, programs that support struggling sectors like beef and hog in their efforts to modernize and remain competitive seem to be needed.

Finally, the horizon problem suggests that older farmers are less likely to continue to invest in their businesses, while new farmers need assistance getting into the business of agriculture.

Introduction

Canadian farmers are making more money, possibly more than ever before, and that will likely continue into the future, as discussed in our paper *Six Years that Changed Agriculture*. What are they doing with that money and how have their investment patterns changed in the last decade? The nature of farm-level investments will affect the future competitiveness and sustainability of Canada's agricultural industry. However, very little analysis has examined how Canadian farmers actually invest in their farms. In 2009, the total investment on Canadian farms exceeded $11.4 billion – that's 25% of farm sales and 3.3 times net operating income. Drawing on results from the Future of Agriculture Policy survey of their agri-business members, Canadian Federation of Independent Business concluded that it is imperative that future government policies encourage growth and competitiveness of Canadian farms (CFIB, 2012). An analysis of farmers' past investment decisions may suggest ways in which agricultural policy can enhance farm investment, growth and competitiveness.

Farmers' capital investments are tracked in the Statistics Canada Farm Financial Survey.[1] This paper uses data from the Farm Financial Surveys for the years 2001 to 2005, 2007, and 2009[2] to examine the main trends and patterns in capital investment on Canadian farms from 2001 to 2009, in aggregate and by sales class and farm type. The sales classes used in this analysis include: $10,000 to $99,999, $100,000 to $249,999, $250,000 to $499,999, $ 500,000 to $999,999, $1,000,000 to $2,499,999, and $2.5 million and over. Throughout the paper, the farms in the two smallest sales classes will be referred to as small farms, those in the $250,000-499,999 category as medium farms, and farms with more than $500,000 in annual sales as large farms. The analysis by sector was done for all farms in the sector and did not differentiate between sales categories due to the data limitations.

The propensity of Canadian farmers to invest

Of the estimated 150,680 farms with sales over $10,000 in 2009, only 79,425 invested in at least one type of farm asset[3] – that's just 52.7%, down from 60.2% in 2001. As with all aggregate numbers, this estimate hides some interesting patterns in investment on Canadian farms. The following sections provide more details on the propensity of Canadian farmers to invest over the past decade.

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[1] Information on the concepts, methodology, data quality and survey questionnaire can be found online at http://www5.statcan.gc.ca/bsolc/olc-cel/olc-cel?catno=21F0008XWE&lang=eng.

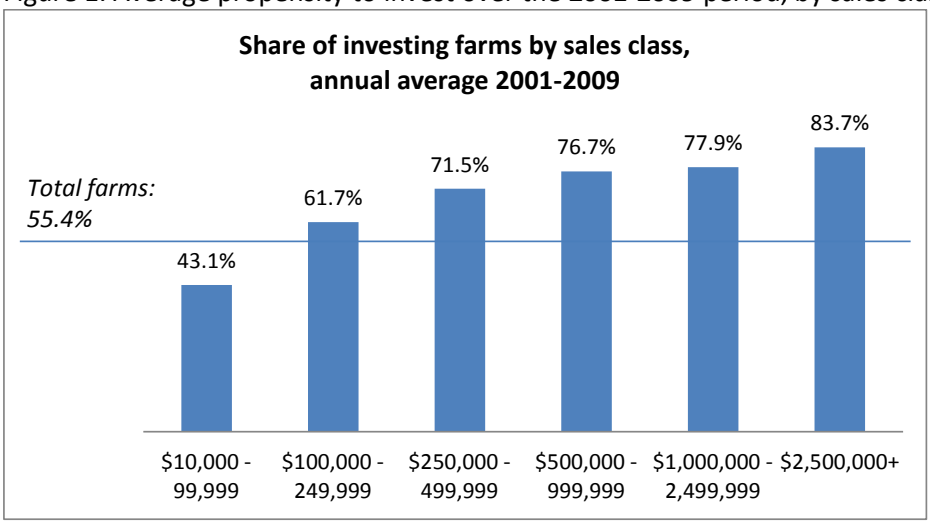
[2] Capital investment data are not available for 2006 and 2008, as they are collected biennially beginning in 2005. Also, the results of the 2011 Survey are not available yet.

[3] Included are farm real estate, land improvements, house construction, manure storage construction, pesticide, chemical and fuel storage construction, other building (e.g., barns, silos, sheds or garages) construction, environmental protection improvements, breeding and replacement livestock, quota, farm machinery and equipment, and stocks, bonds and other financial assets.

The likelihood of investing increases with size

The propensity to invest generally increases with sales class (see Figures 1 and 2). The annual average of the share of investing farms over the 2001-2009 period varied from 43.1% for the smallest farms to 83.7% for the largest. However, the increase was not progressive, but showed significant jumps between the $10,000-99,999 and $100,000-249,999 classes (i.e., 43.1% versus 61.7%) and another jump to the $250,000-499,999 class (i.e., up to 71.5%). The increases were more moderate after that point. Given the large number of farms in the two smallest sales classes (i.e., 120,795 farms or 77.1% of total Canadian farm population in 2001 and 104,770 farms or 69.5% of total farm population in 2009), these classes drag down the share of investing farms for the total farm population.

Figure 1. Average propensity to invest over the **2001-2009** period, by sales class

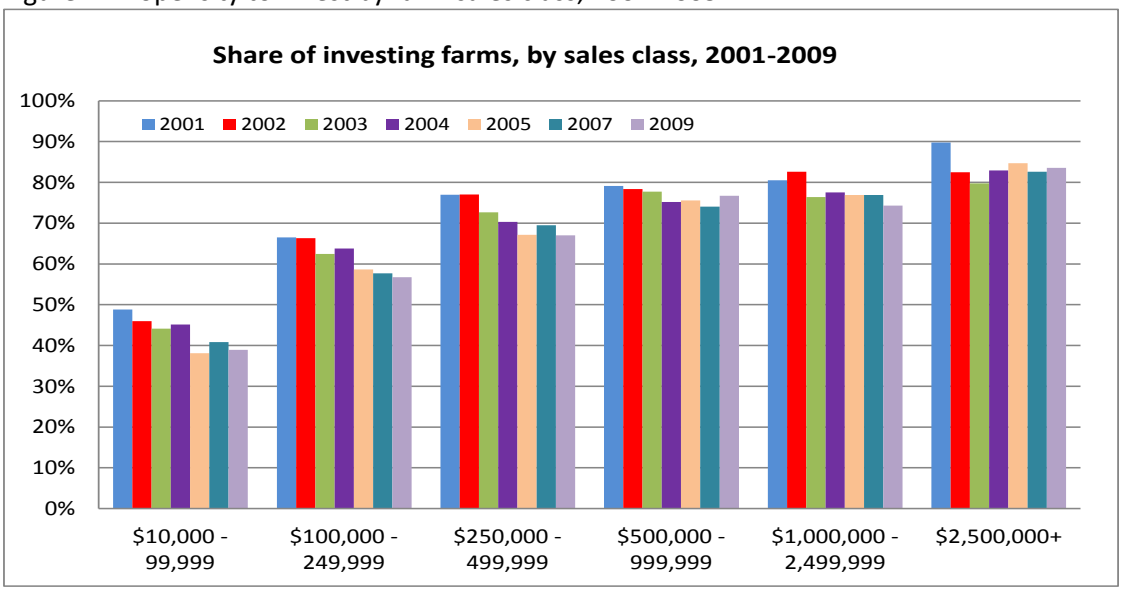


Source: Statistics Canada, Farm Financial Survey 2001 to 2005, 2007, and 2009

The proportion of farms investing is dropping - but primarily among small and medium-sized farms

Even more interesting are the trends in propensity to invest over the past decade. Figure 2 depicts the percentage of farms investing, by sales class, over the 2001-2009 period. The three smallest classes exhibited pronounced declines in their propensity to invest. For example, the proportion of investing farms in the $10,000-99,999 class dropped from almost 49% in 2001 to 39% in 2009, and that class made up just under half of all Canadian farms in 2009. In contrast, the three largest classes were more consistent in their propensity to invest.

Figure 2. Propensity to invest by farm sales class, **2001-2009**

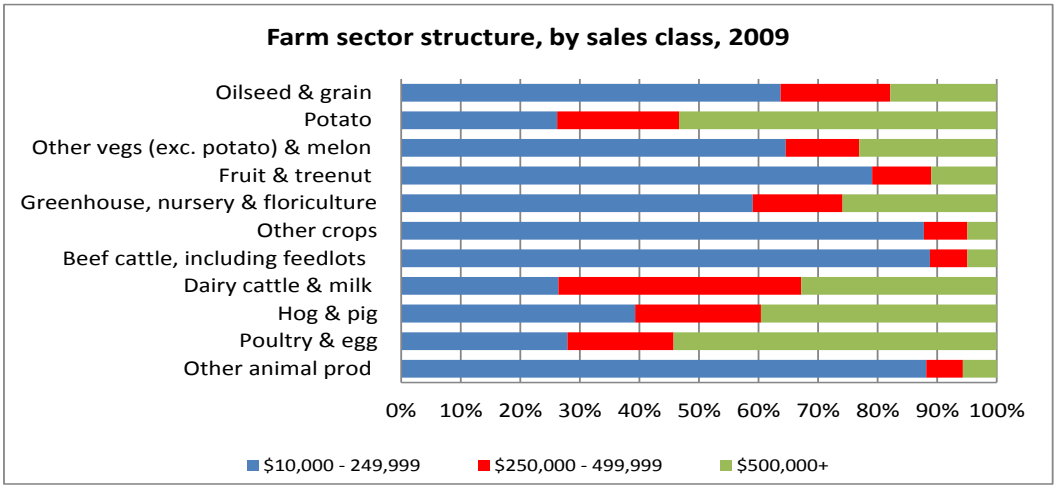


Source: Statistics Canada, Farm Financial Survey 2001 to 2005, 2007, and 2009

Sectors exhibit different investment patterns

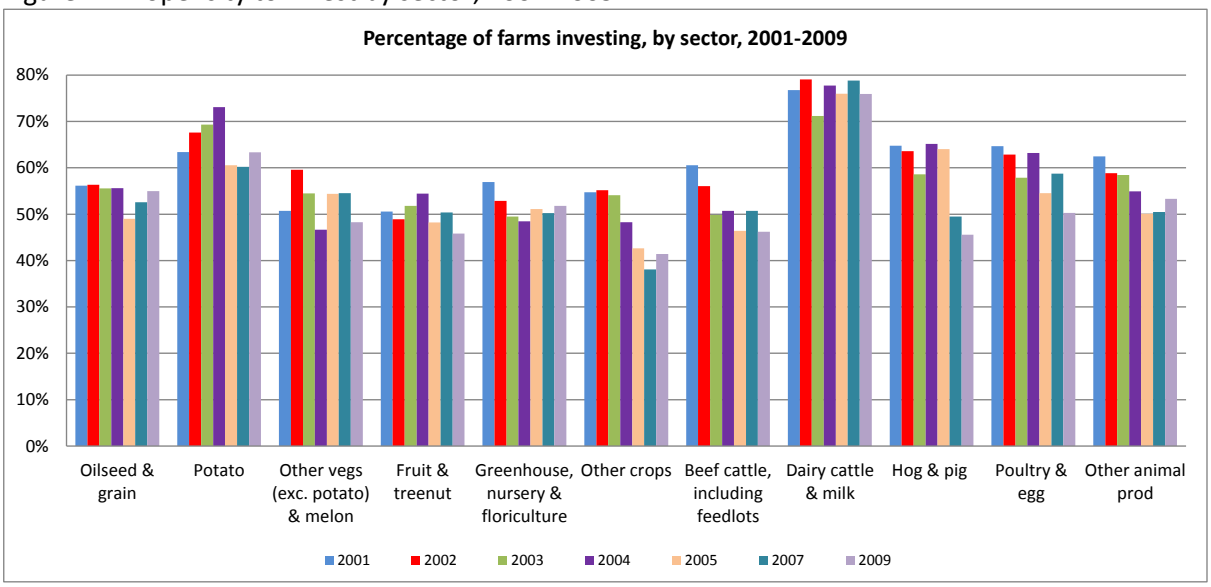
The sectoral analysis is affected, at least in part, by sector structure; particularly among sectors like grain and beef, which had higher percentages of small farms (see Figure 3 for the share of farms of different sizes in 2009 and Appendix 1 for the number and percentage of farms in different sales classes in 2009 compared to 2001) and as a consequence lower shares of investing farms (Figure 4). In contrast, sectors like potato and dairy, which had a higher proportion of medium and large-sized farms, exhibited some of the highest propensities to invest, as expected from the analysis by sales class above.

Figure 3. Sector structure in **2009**



Source: Statistics Canada, Farm Financial Survey 2009

Figure 4. Propensity to invest by sector, **2001-2009**



Source: Statistics Canada, Farm Financial Survey 2001 to 2005, 2007, and 2009

While the share of investing farms declined across the industry, hogs, beef, poultry, and other crops showed the largest drop in propensity to invest between 2001 and 2009. For instance, the proportion of investing farms dropped from 60.5% to 46.2% in the beef sector, which was challenged by the rise in the Canadian dollar and the BSE outbreak in 2003. Hog producers were also challenged by the higher dollar and their propensity to invest also dropped. What is less clear is why the share of investing farms in the supply-managed poultry and egg sector kept falling, while remaining relatively constant in the other supply managed sector – dairy. The decline in propensity to invest in the poultry and egg sector is even more striking given the increase in the share of large farms from 46.2% in 2001 to 54.2% in 2009.

Overall investment is up – but only since 2005

In 2009, Canadian farmers had total sales of $45.9 billion and total net operating income of $3.5 billion, and invested $11.4 billion (i.e., 24.8% of sales and 3.3 times net income) back into their businesses (Table 1). In absolute terms, this is a 38.8% increase in investment from 2001 when they sold $32.7 billion, made $4 billion in net income, and invested $8.2 billion (i.e., 25.1% of sales and 2 times net income) into their businesses. However, the increase was far from evenly distributed through the decade. Investment actually slipped to $7.8 billion in 2005 before picking up rather dramatically in 2007 and again in 2009 (Figure 13). This is likely a reflection of the tough economic situation faced by the grains and oilseeds and beef sectors early in the decade, and the recovery in the grains and oilseeds sector after 2006.

Table 1. Number of farms and total sales, net income and investments, by sales class, **2009 vs. 2001**

Sales Class	2009 Number of farms		Total sales		Total net operating income[4]		Total investments	
	number	%	$ Million	%	$ Million	%	$ Million	%
$10,000 - 99,999	73,210	48.6%	$2,887	6.3%	-$534	-15.3%	$1,104	9.6%
$100,000 - 249,999	31,560	20.9%	$4,818	10.5%	$233	6.7%	$1,439	12.6%
$250,000 - 499,999	22,540	15.0%	$7,468	16.3%	$846	24.2%	$1,927	16.8%
$500,000 - 999,999	14,210	9.4%	$9,410	20.5%	$1,233	35.3%	$2,541	22.2%
$1,000,000 - 2,499,999	7,065	4.7%	$9,812	21.4%	$978	28.0%	$2,699	23.6%
$2,500,000+	2,095	1.4%	$11,476	25.0%	$735	21.1%	$1,731	15.1%
Total	150,680	100%	$45,871	100%	$3,490	100%	$11,441	100%

Sales Class	2001 Number of farms		Total sales		Total net operating income		Total investments	
	number	%	$ Million	%	$ Million	%	$ Million	%
$10,000 - 99,999	79,345	50.7%	$3,150	9.6%	$125	3.1%	$1,269	15.4%
$100,000 - 249,999	41,450	26.5%	$6,110	18.7%	$840	20.8%	$1,829	22.2%
$250,000 - 499,999	22,515	14.4%	$6,988	21.4%	$1,018	25.2%	$2,224	27.0%
$500,000 - 999,999	8,710	5.6%	$5,385	16.5%	$703	17.4%	$1,336	16.2%
$1,000,000 - 2,499,999	3,440	2.2%	$4,759	14.6%	$694	17.2%	$863	10.5%
$2,500,000+	1,175	0.8%	$6,275	19.2%	$663	16.4%	$725	8.8%
Total	156,635	100%	$32,666	100%	$4,042	100%	$8,246	100%

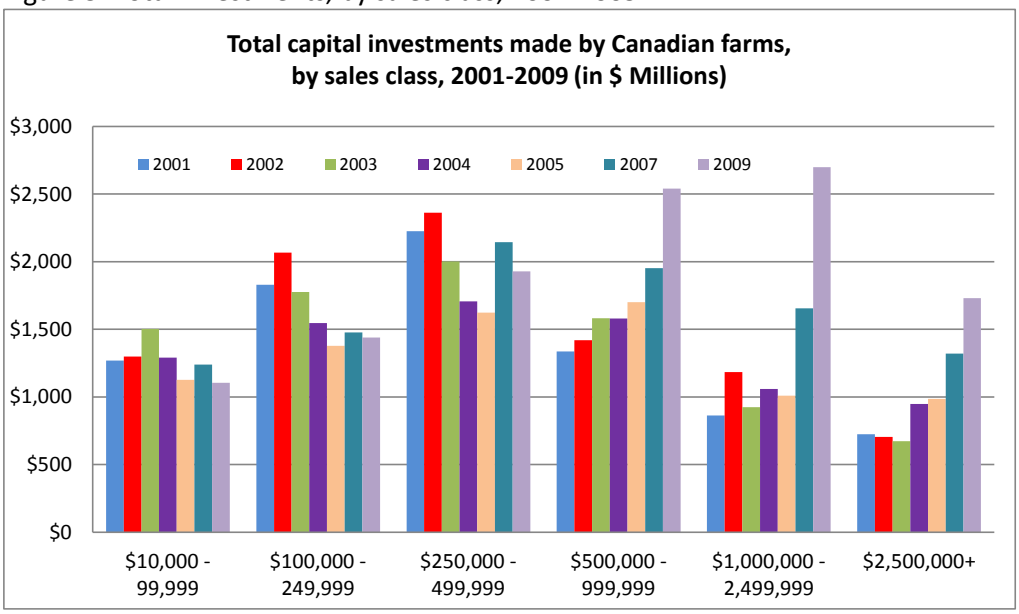
Source: Statistics Canada, Farm Financial Survey 2001 to 2005, 2007, and 2009

It is important to note that the increase in total investments over the past decade is due solely to the large farms (sales over $500,000). As Figure 5 shows, aggregate investments by large farms increased almost continuously over the past decade and especially after 2005, while aggregate investments by small and medium-sized farms fell over the period, despite the slight recovery post 2005. Figure 6 depicts the average annual growth rate of aggregate investments by sales class over the past decade, and, for comparative purposes, the growth rate over the 2005-2009 period. While aggregate investments by farms in the three smallest sales classes declined over the 2001-2009 period at average annual rates of -1.6%, -3.4%, and -1.1%, respectively, aggregate investments by farms in the three largest sales classes increased at average annual rates of 11.7%, 25.4%, and 17.1%, respectively. When we consider the period post 2005, investment growth rates skyrocketed for the three largest sales

[4] Net operating income is defined as farm sales minus operating expenses.

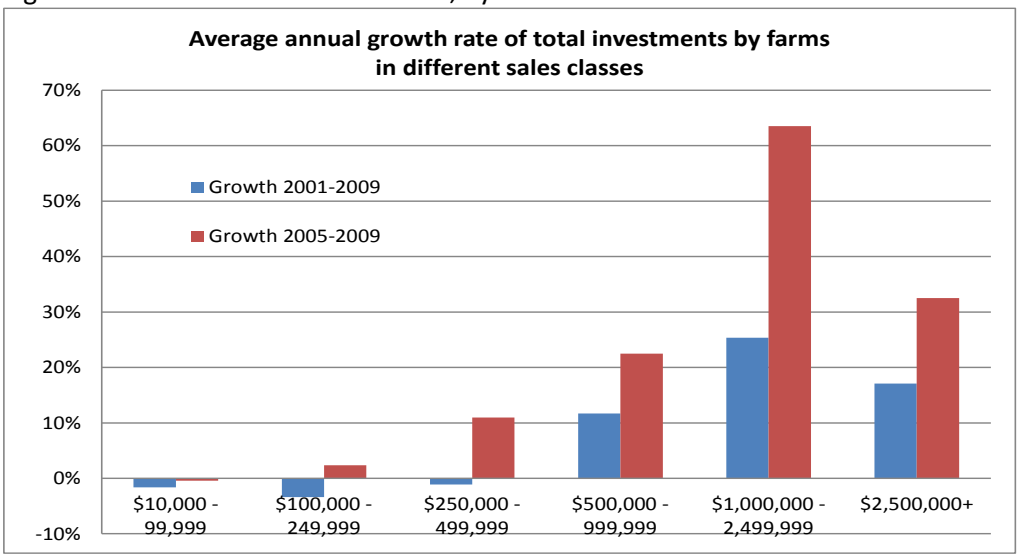
classes, turned positive for the $100,000-249,999 and $250,000-499,999 sales categories and, while still negative, they improved for the smallest sales class.

Figure 5. Total investments, by sales class, **2001-2009**



Source: Statistics Canada, Farm Financial Survey 2001 to 2005, 2007, and 2009

Figure 6. Growth of total investments, by sales class



Source: Statistics Canada, Farm Financial Survey 2001 to 2005, 2007, and 2009

As a result of these trends, the contribution of large farms to total investments in Canadian agriculture rose from less than 36% in 2001 to 61% in 2009, while that of small and medium farms dropped from

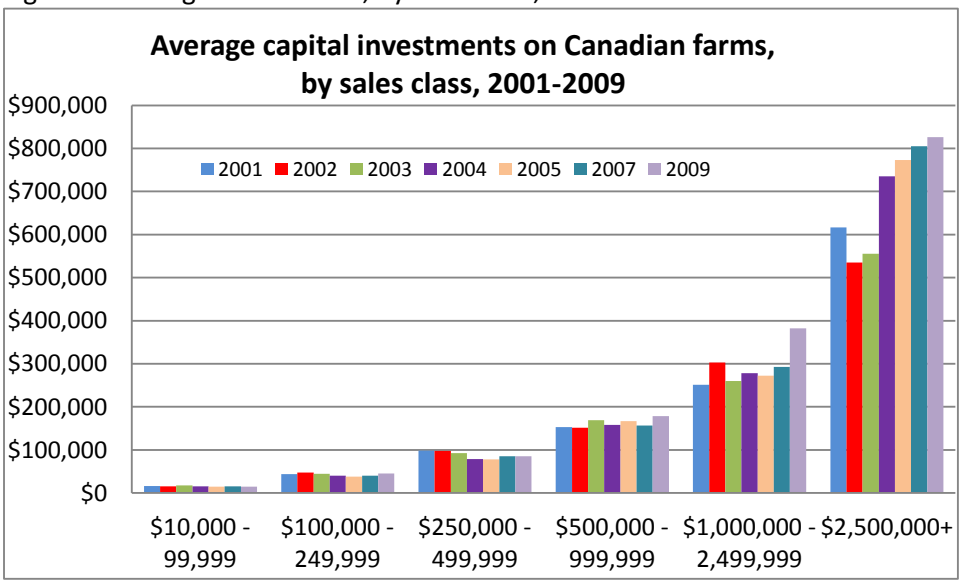
more than 64% to 39% (Table 1). That is, large farms collectively invested $7 billion into their businesses in 2009 up from $2.9 billion in 2001, while investments on small and medium farms amounted to only $4.4 billion down from $5.3 billion in 2001. The large farms also went from generating the same amount of sales and net income as the small and medium farms in 2001 to double the sales and 5.4 times the net income of the small and medium farms in 2009.

Average investment by size and type of farm

Large farms invested to grow even larger

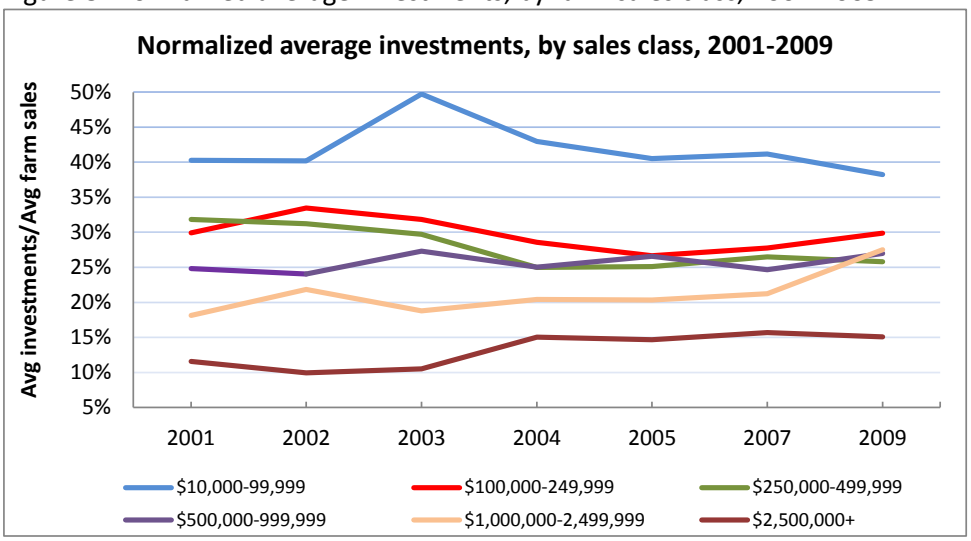
As Figure 7 shows, average investments increase with sales class. The annual average over all Canadian farms (investing and non-investing) over the 2001-2009 period varied from $15,664 for the smallest farms to $692,481 for the largest ones, with the Canadian annual average at $57,120. Interestingly, when investments are normalized with respect to farm sales, smaller farms invested a larger proportion of sales back into their businesses (Figure 8). However, (normalized) investments by small and medium farms had been decreasing or barely rising over the past decade, while (normalized) investments by large farms had been increasing.

Figure 7. Average investments, by sales class, **2001-2009**



Source: Statistics Canada, Farm Financial Survey 2001 to 2005, 2007, and 2009

Figure 8. Normalized average investments, by farm sales class, **2001-2009**

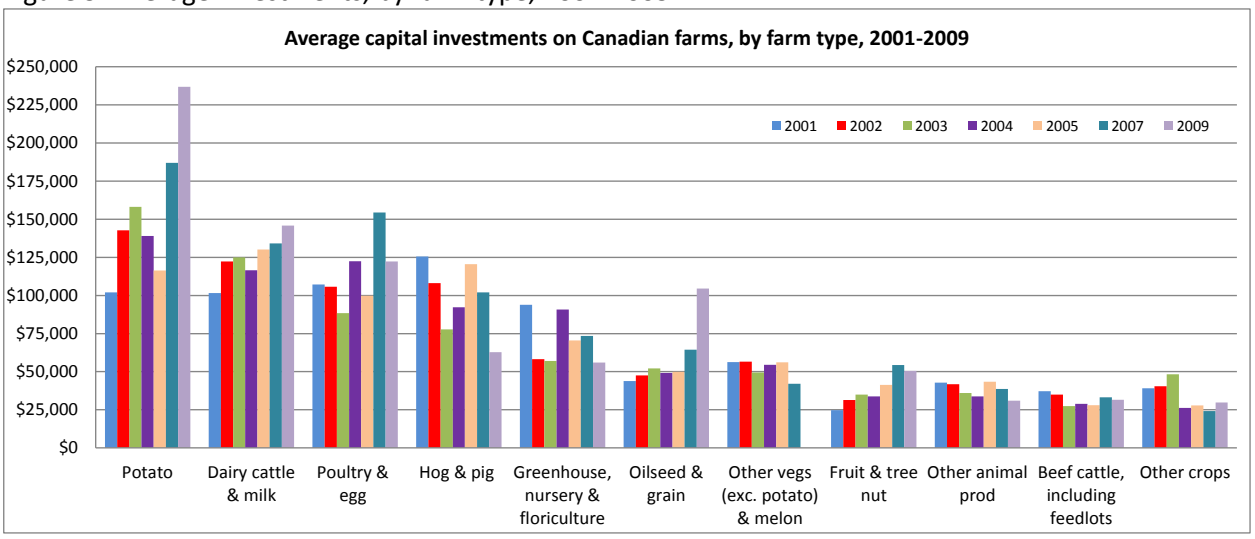


Source: Statistics Canada, Farm Financial Survey 2001 to 2005, 2007, and 2009

Potato farms and farms in the supply-managed sectors invested the most in their business, on average; potato and oilseed and grain were the fastest-growing farms

Figure 9 illustrates average investments for farms in different sectors over the 2001-2009 period.

Figure 9. Average investments, by farm type, **2001-2009**



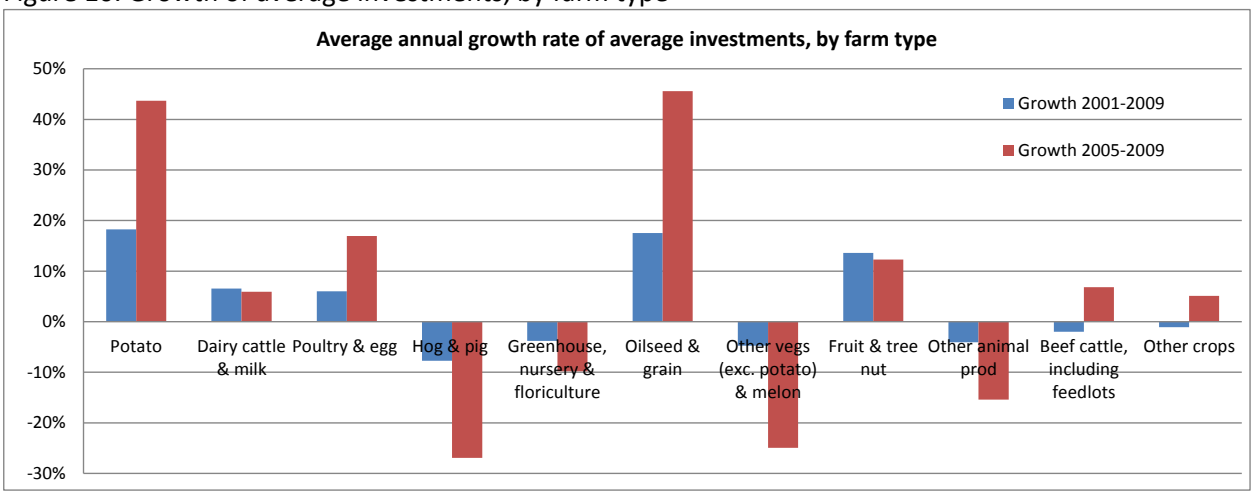
Source: Statistics Canada, Farm Financial Survey 2001 to 2005, 2007, and 2009

Potato, dairy, and poultry and egg farms invested the most in their business, on average – i.e., average annual investments over the 2001-2009 period were $154,569 for potato, $125,045 for dairy, and $114,331 for poultry and egg producers (remember that the Canadian annual average was $57,120). In

contrast, beef cattle farms invested only $31,603 in their business, on average. The numbers generally reflect the structure and capital intensity of the sector. Moreover, farms in the supply-managed sectors need to invest in an additional asset – quota (as the analysis in the following section will show, this additional investment requirement is significant). However, these farms also benefit from more certainty of income and easier access to credit.

Potato and oilseed and grain were the fastest growing farms over the past decade – average investments by these farms grew at average rates of 18.3% and 17.5%, respectively, per year over the 2001-2009 period and 43.7% and 45.6%, respectively, per year post 2005 (Figure 10). In contrast, average investments by hog farms decreased at an average rate of -7.7% per year over the 2001-2009 period and -26.9% per year post 2005. While they recovered in the period post 2005, average investments by beef producers also decreased at an average rate of -2% per year over the past decade.

Figure 10. Growth of average investments, by farm type



Source: Statistics Canada, Farm Financial Survey 2001 to 2005, 2007, and 2009

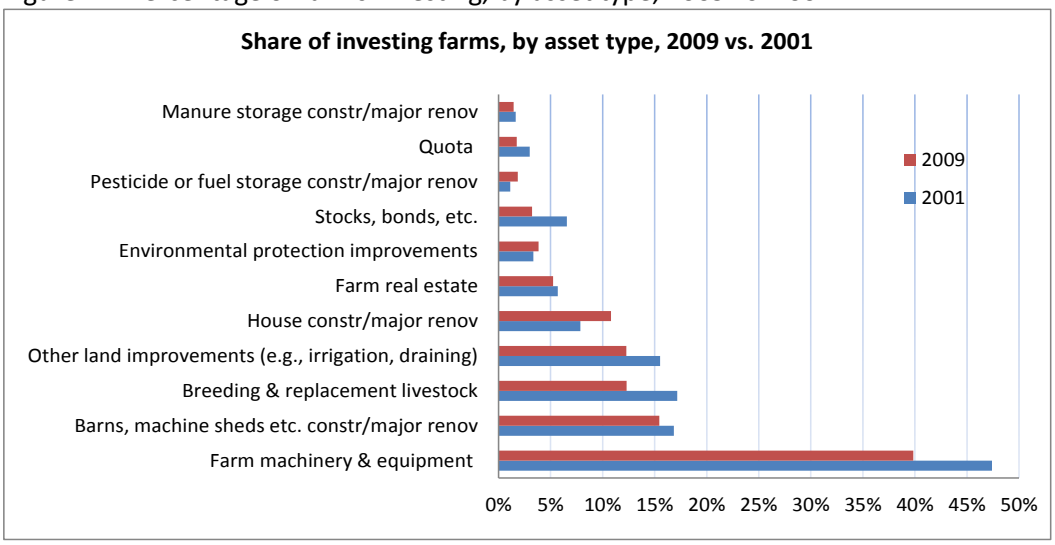
What are Canadian farmers buying?

Farmers love machinery, while environmental protection improvements are not top of mind

Farm machinery and equipment[5] represented the asset most often purchased – i.e., 39.8% of farms purchased farm machinery and equipment in 2009 (Figure 11). Farmers spent almost $5.5 billion on machinery and equipment that year – i.e., 47.6% of total investments, the largest share (Figure 12). Farm real estate also made up a large part of total investments in 2009 – i.e. $2.3 billion or 20% of total investments, although only 5.2% of farms invested in real estate.

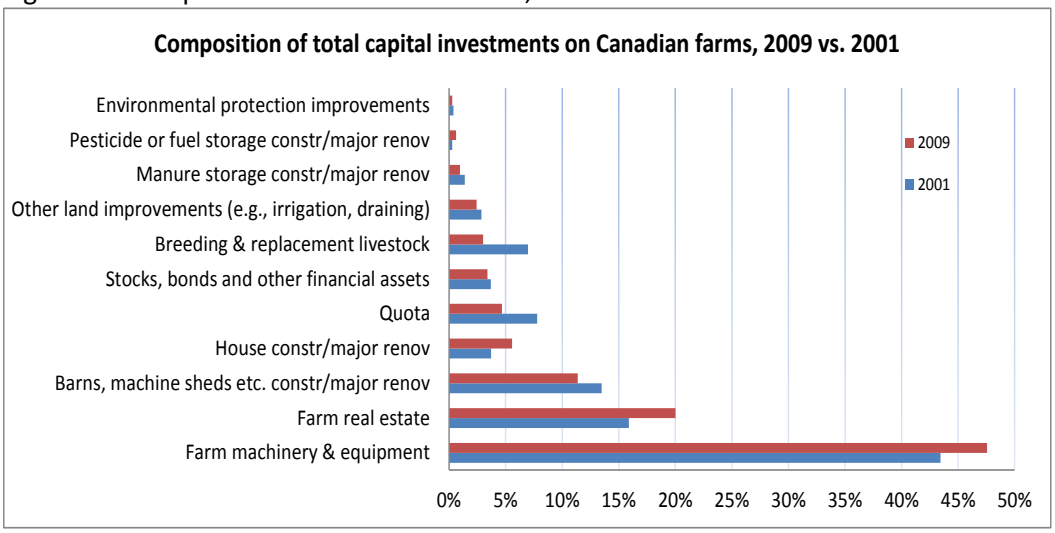
[5] Include leased farm machinery and equipment.

Figure 11. Percentage of farms investing, by asset type, **2009 vs. 2001**



Source: Statistics Canada, Farm Financial Survey 2001 and 2009

Figure 12. Composition of total investments, **2009 vs. 2001**



Source: Statistics Canada, Farm Financial Survey 2001 and 2009

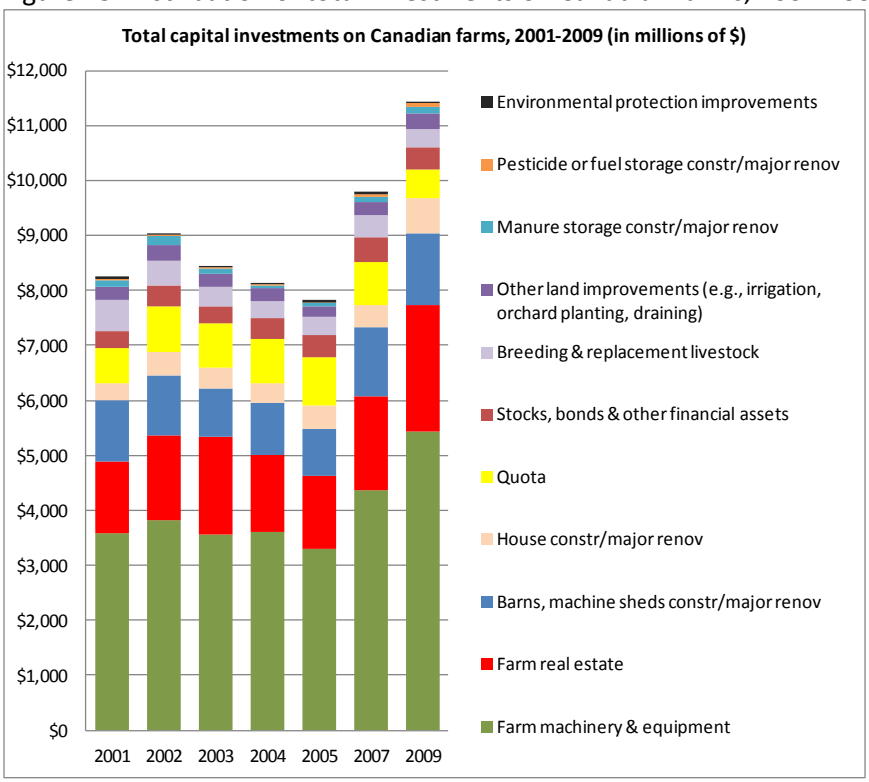
In contrast, only 3.8% of farms invested in environmental protection improvements in 2009. Investments in environmental protection improvements represented $34 million – that's just 0.3% of total investments, the smallest share. Similarly, only 3.2% of farms invested in stocks, bonds and other financial assets[6], with investments totalling $389 million – i.e., 3.4% of total investments.

[6] Exclude contributions to RRSPs.

Also interesting are the trends in investments in various farm assets. Over the past decade, propensity to invest decreased for all assets but environmental protection improvements, pesticide, chemical or fuel storage, and house construction or major renovation (see Appendix 2). Higher propensity to invest in pesticide, chemical or fuel storage may have been a reflection of the rapid rises in fertilizer and fuel costs and the desire by farmers for storage capacity to take advantage of attractive pricing opportunities. It may also have been a response to regulations or anticipated regulations. The proportion of farms investing in house construction or major renovation, an unproductive asset, decreased until 2005, recovered slightly in 2007 and in 2009 spiked to its highest level in the past decade.

In terms of the amount invested and their share in total investments, machinery and equipment, real estate, house, and pesticide, chemical or fuel storage saw their 'weight' increase at the end of the decade compared to 2001 (Figures 12 and 13). The shares of all other assets decreased over the period, with the share of breeding and replacement livestock dropping fom 7% in 2001 to only 3% in 2009 – this drop reflects the challenges facing the beef and hog industries. These trends in the composition of total investments are consistent with the findings of the last census that showed a shift in farming focus from the livestock sector toward crops (Statistics Canada, 2012).

Figure 13. Distribution of total investments on Canadian farms, **2001-2009**



Source: Statistics Canada, Farm Financial Survey 2001 to 2005, 2007, and 2009

What are farms of different sizes buying?

Appendix 3 illustrates the share of farms that invested in various assets, by sales class, in 2009 compared to 2001. Consistent with the earlier analysis, the larger sales classes had higher propensities to invest than the smaller sales classes for almost all assets. The two exceptions were investments in environmental protection improvements and stocks, bonds and other financial assets. Higher propensity to invest in stocks, bonds and other financial assets among small farms may reflect the different characteristics of these farms whose primary income source is off-farm.

Perhaps more interesting are the trends in propensity to invest in various assets, by sales class. For instance, propensity to invest in farm real estate decreased for the small and medium-sized farms and increased for the large farms and especially for farms selling more than $2.5 million whose share of investing farms rose from 17% in 2001 to 25.1 % in 2009. Not surprisingly, the propensity to sell land and buildings increased[7] for small farms, remained unchanged (at 2%) for medium farms and decreased[8] for large farms except for farms selling more than $2.5 million whose propensity increased from 3.8% in 2001 to 4.8% in 2009. These trends reflect the structural change toward larger farming businesses that continued over the past decade.

Propensity to invest in environmental protection improvements increased slightly for all sales classes except the $1,000,000-2,499,999 class, whose share of investing farms dropped from 8.7% in 2001 to 4.3% in 2009. Finally, under unprecedented volatility and the 2008 economic crisis, propensity to invest in stocks, bonds and other financial assets decreased for all sales classes except for the class of farms selling more than $2.5 million whose share of investing farms rose from 6.4% in 2001 to 11% in 2009. This may suggest that these farms had extra cash available.

Appendix 4 depicts average investments in various assets, by sales class, for the years 2001-2009. Average investment increased with farm size, but the differences between different farm sizes varied with the type of asset – e.g., farms selling over $2.5 million made considerably larger investments in farm machinery and equipment, barns, storage sheds, or machine sheds construction, pesticide, chemical, or fuel storage construction, and stocks, bonds, and other financial assets than smaller farms.

The dynamics of average investments in various assets, by sales class, also help to shed light on the investment priorities of farms in different sales classes. Large farms, particularly farms selling more than $1 million, had the highest growth rates of investments in farm machinery and equipment, farm real estate, and quota (Table 2). However, average investments in breeding and replacement livestock

[7] From 2.2% to 2.4% for farms with sales under $100,000 and from 1.2% to 2.6% for farms in the $100,000-249,999 category.

[8] From 2.3% to 1.6% for farms with sales of $500,000-999,999 and from 3.1% to 1.7% for farms in the $1,000,000-2,499,999 category.

decreased the most for farms selling over $2.5 million. As for the small and medium farms, they had some of the highest growth rates of investments in house construction or major renovation and environmental protection improvements.

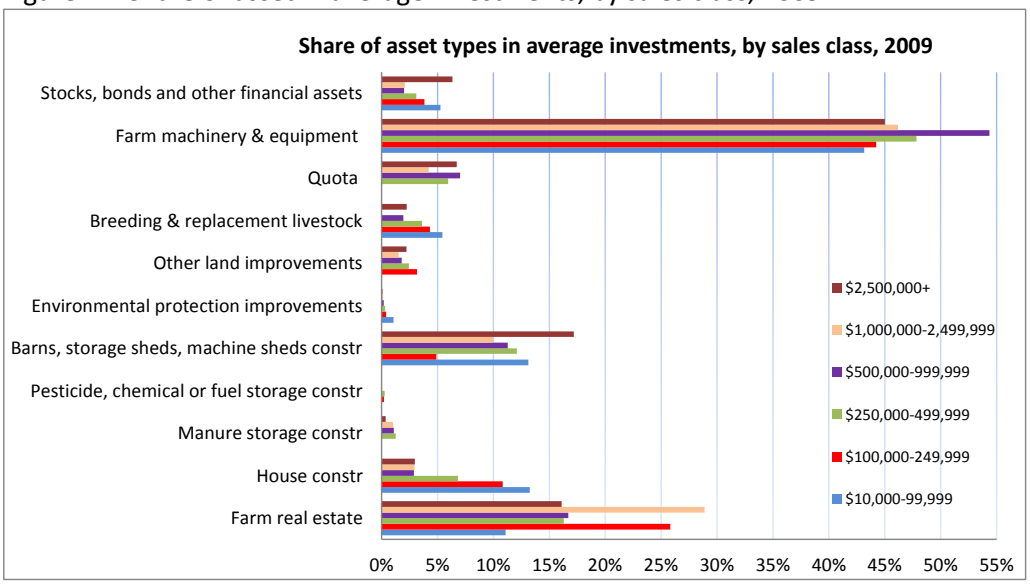
Table 2. Growth of average investments in various assets, by sales class, **annual average 2001-2009**

	$10,000 – 99,999	$100,000 – 249,999	$250,000 – 499,999	$500,000 – 999,999	$1,000,000 – 2,499,999	$2,500,000+
Farm real estate	7.9%	17.2%	-4.4%	4.5%	24.2%	15.6%
House constr/major renov	14.9%	49.7%	29.4%	8.8%	12.7%	10.9%
Manure storage constr/major renov	n.a.	n.a.	0.6%	-4.2%	38.8%	-4.3%
Pesticide, chemical or fuel storage constr/major renov	n.a.	n.a.	62.3%	0.0%	47.6%	32.8%
Other building constr/major renov	10.0%	0.3%	4.6%	-3.4%	-1.4%	-0.8%
Environmental protection	20.6%	10.0%	20.3%	17.8%	-14.1%	14.4%
Other land improvements	-14.5%	5.5%	-0.9%	-2.4%	5.4%	-0.3%
Breeding & replacement livestock	-7.3%	-7.6%	-6.7%	-7.1%	-0.1%	-14.2%
Quota	n.a.	-8.9%	-12.8%	-0.5%	5.3%	19.6%
Farm machinery & equipment	-3.5%	-1.3%	0.2%	9.2%	12.5%	13.5%
Stocks, bonds and other financial assets	n.a.	25.3%	-8.7%	9.1%	7.3%	15.0%

Source: Statistics Canada, Farm Financial Survey 2001 to 2005, 2007, and 2009
Note: n.a.= data was not reported by Statistics Canada – either was suppressed to meet the confidentiality requirements of the *Statistics Act* or had a large coefficient of variation.

As a result of these trends, investments in breeding and replacement livestock, environmental protection improvements and house construction or major renovation represented a larger share of average investments by small and medium farms than by large farms in 2009 (Figure 14). However, the portion of average investments represented by farm real estate and farm machinery and equipment was larger for medium and large farms than for small farms. Interestingly, the share of average investments represented by stocks, bonds and other financial assets was largest for the smallest and largest farms.

Figure 14. Share of asset in average investments, by sales class, **2009**



Source: Statistics Canada, Farm Financial Survey 2009

What are farms in different sectors buying?

Appendix 5 illustrates the share of farms that invested in various assets, by sector, in 2009 compared to 2001. The shares generally reflect the specificity of the sector. However, some interesting patterns are worth noting. For instance, potato exhibited the highest propensity to invest in farm real estate at both the beginning and the end of the past decade. Dairy had the largest share of farms investing in stocks, bonds, and other financial assets in 2001, but oilseed and grain took over by the end of the decade. Other animal production had the highest propensity to invest in environmental protection improvements in both 2001 and 2009.

In terms of trends, propensity to invest in farm real estate increased for the poultry and egg, oilseed and grain, and fruit and treenut sectors and decreased for the other sectors and especially for beef and hog. Propensity to invest in farm machinery and equipment increased for potato, remained unchanged for oilseed and grain and decreased for the other sectors and especially for hog.

Appendix 6 shows investments in different assets by the various farm sectors in 2009 compared to 2001. Oilseed and grain farms made the largest investments in farm real estate and farm machinery and equipment but they also had the largest shares of investments in stocks, bonds and other financial assets. The dairy sector had the largest shares of investments in quota and manure storage construction or major renovation. The beef cattle sector ranked first in investments in environmental protection improvements but also house construction, followed by oilseed and grain in 2001. By 2009, the two sectors switched positions. These results are not surprising in light of the fact that these two sectors have a disproportionate number of small farms relative to other sectors.

Investment financing: Farmers invested more than they earned – where did they get the money?

In 2009, total capital investment by Canadian farmers was $11.4 billion. Where did the money come from? Table 3 illustrates potential sources of investment financing (including net operating income) – their magnitude and trend over the past decade. Overall, Canadian farms had less operating income available but more off-farm income and capital sales. They also took on more debt; however information on the split between debt for working capital versus for investments in farm assets was not available for this analysis.

Table 3. Potential sources of investment financing, in $ Millions – aggregate picture, **2009 vs. 2001**

	2001	2009	Change Abs.	Change %
Total investments	$8,246	$11,441	$3,195	38.7%
Total capital sales	$2,555	$3,570	$1,015	39.7%
Total net operating income	$4,042	$3,490	-$552	-13.7%
Total government payments	$2,321	$2,380	$59	2.5%
Total off-farm income	$3,791	$5,209	$1,418	37.4%
Absolute change in total debt[9] from previous year	n.a.	$1,577	-	-
Total end-of-year debt	$30,547	$48,696	$18,149	59.4%
Total assets	$162,717	$255,462	$92,745	57.0%

Source: Statistics Canada, Farm Financial Survey 2001 and 2009

Note: n.a. = change in total debt could not be calculated due to the fact that debt for 2000 was not available – up until 2001, the Farm Financial Survey was conducted only every other year.

However, this is an aggregate picture. Table 4 presents the sources of investment financing for the average farm in different sales classes. Small farms relied mainly on off-farm income to finance investment, while operating income and government payments were key sources of investment financing for large farms. It is worth noting the drop in net income and the rise in the amount of government payments (both in absolute terms and as a percentage of farm sales) in 2009 compared to 2001 for the million-dollar farms, and especially for farms selling more than $2.5 million. Net income fell for farms in the other sales classes too, but the amount of government payments they received also dropped.

[9] Includes both short-term and long-term liabilities.

Table 4. Potential sources of investment financing - average farm, by sales class, **2009 vs. 2001**

	2009					
	$10,000-99,999	$100,000-249,999	$250,000-499,999	$500,000-999,999	$1,000,000-2,499,999	$2,500,000+
Avg investments	$15,076	$45,608	$85,511	$178,799	$382,020	$826,108
Avg capital sales	$7,213	$17,503	$27,994	$45,681	$100,138	$239,912
Avg net operating income	-$7,295	$7,375	$37,521	$86,750	$138,472	$350,765
Avg govt payments	$3,328	$10,582	$19,858	$31,603	$69,518	$197,821
Avg off-farm income	$44,210	$28,782	$21,857	$23,290	$26,525	$25,517
Absolute change in avg debt from previous year	$2,441	$4,804	$25,639	($54,489)	$160,872	$118,316
Avg end-of-year debt	$63,287	$182,695	$406,883	$733,103	$1,527,632	$3,778,283
Avg assets	$766,325	$1,304,122	$1,989,088	$3,287,765	$5,542,301	$13,122,394
Government payments/Sales	8.4%	6.9%	6.0%	4.8%	5.0%	3.6%

	2001					
	$10,000-99,999	$100,000-249,999	$250,000-499,999	$500,000-999,999	$1,000,000-2,499,999	$2,500,000+
Avg investments	$15,993	$44,118	$98,800	$153,366	$250,969	$616,756
Avg capital sales	$6,501	$14,035	$34,251	$42,417	$49,727	$124,338
Avg net operating income	$1,573	$20,259	$45,195	$80,748	$201,731	$563,972
Avg govt payments	$4,690	$14,961	$28,016	$44,714	$59,031	$89,939
Avg off-farm income	$32,116	$18,049	$14,519	$11,263	$14,204	$17,779
Absolute change in avg debt from previous year	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Avg end-of-year debt	$46,210	$160,732	$340,555	$649,766	$1,111,213	$2,611,192
Avg assets	$461,282	$978,183	$1,715,415	$2,523,483	$4,069,849	$9,334,847
Government payments/Sales	11.8%	10.2%	9.0%	7.2%	4.3%	1.7%

Table 4. Potential sources of investment financing - average farm, by sales class, **2009 vs. 2001** (continued)

	2009 vs. 2001											
	$10,000-99,999		$100,000-249,999		$250,000-499,999		$500,000-999,999		$1,000,000-2,499,999		$2,500,000+	
	Abs.	%	Abs.	%	Abs.	%	Abs.	%	Abs.	%	Abs.	%
Avg investments	($917)	-5.7%	$1,490	3.4%	($13,289)	-13.5%	$25,433	16.6%	$131,051	52.2%	$209,352	33.9%
Avg capital sales	$712	11.0%	$3,468	24.7%	($6,257)	-18.3%	$3,264	7.7%	$50,411	101.4%	$115,574	93.0%
Avg net operating income	($8,868)	-563.8%	($12,884)	-63.6%	($7,674)	-17.0%	$6,002	7.4%	($63,259)	-31.4%	($213,207)	-37.8%
Avg govt payments	($1,362)	-29.0%	($4,379)	-29.3%	($8,158)	-29.1%	($13,111)	-29.3%	$10,487	17.8%	$107,882	120.0%
Avg off-farm income	$12,094	37.7%	$10,733	59.5%	$7,338	50.5%	$12,027	106.8%	$12,321	86.7%	$7,738	43.5%
Absolute change in avg debt from previous year	-	-	-	-	-	-	-	-	-	-	-	-
Avg end-of-year debt	$17,077	37.0%	$21,963	13.7%	$66,328	19.5%	$83,337	12.8%	$416,419	37.5%	$1,167,091	44.7%
Avg assets	$305,043	66.1%	$325,939	33.3%	$273,673	16.0%	$764,282	30.3%	$1,472,452	36.2%	$3,787,547	40.6%
Government payments/Sales	-3.4%	-28.8%	-3.3%	-32.4%	-3.0%	-33.3%	-2.4%	-33.3%	0.7%	16.3%	1.9%	111.8%

Source: Statistics Canada, Farm Financial Survey 2001 and 2009

Note: n.a. = these numbers could not be calculated due to the fact that average debt for 2000 was not available – up until 2001, the Farm Financial Survey was conducted only every other year.

Revenues from the sale of farm assets increased for all sales classes but medium farms (sales of $250,000-499,999); however, the information on whether the farms that sold assets were the same with those that invested was not available for this analysis. There definitely is a huge turnover of assets in Canadian agriculture though. As regards debt, farms in the $500,000-999,999 sales class were the only ones that did not borrow money to finance investment, on average, in 2009. Instead, they paid back some of the debt they had been carrying on from previous years.

Why these trends and patterns in investment on Canadian farms?

Horizon problem affects propensity to invest on small and medium-sized farms

Table 5 illustrates the direction and strength of the relationship between the share of investing farms and the share of retired farmers, by sales class, over the 2001-2009 period (see Appendix 7 for a graphical representation). There is a negative relationship between propensity to invest and the share of retired farmers for all sales classes but the largest class. That is, the larger the proportion of farms owned by retired farmers in these classes, the smaller the percentage of investing farms. However, the relationship is stronger and statistically significant for the small and medium-sized farms. These results suggest that the horizon problem affected the propensity to invest of small and medium farms, which are typically managed by a single farm operator or by multiple operators of similar age, unlike large farms which tend to have multiple operators with different investment horizons.[10]

Table 5. Relationship between propensity to invest and share of retired farmers, by sales class, **2001-2009**

	$10,000 - 99,999	$100,000 - 249,999	$250,000 - 499,999	$500,000 - 999,999	$1,000,000 - 2,499,999	$2,500,000+
Correlation coefficient	-0.77*	-0.84*	-0.96*	-0.61	-0.48	0.11

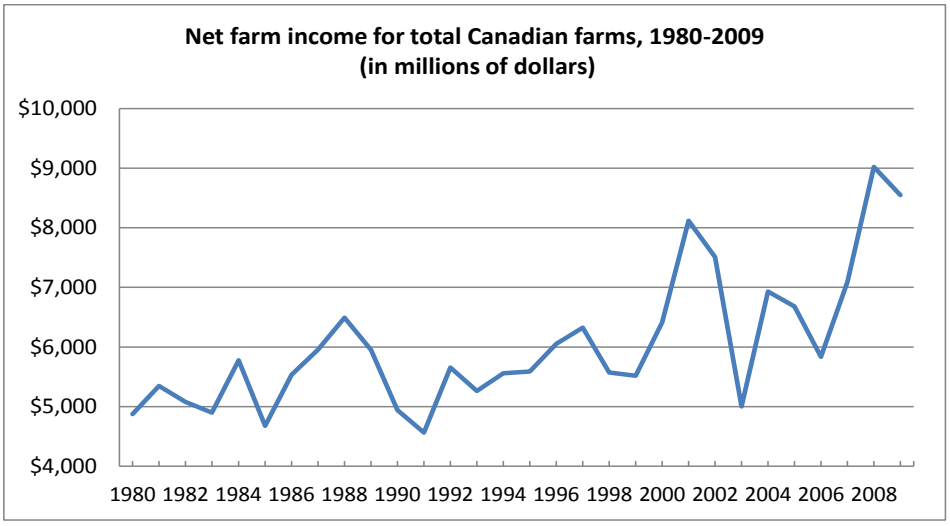
Source: Calculations based on data from Statistics Canada, Farm Financial Survey 2001 to 2005, 2007, and 2009
Note: * denotes statistical significance at the 5% level.

Unprecedented income volatility affects investment on the farms that rely on debt financing to grow their business

Income volatility has always been a challenge for Canadian farms, but more so over the past decade (Figure 15). While farms in different sales classes experienced different degrees of income volatility (Figure 16), this increase in business risk likely affected the propensity to invest and the size of investment of those farms that relied on debt-financing. Specifically, the risk balancing hypothesis (Gabriel and Baker, 1980) states that exogenous shocks affecting a farm's business risk level might induce the farm to make offsetting adjustments in its financial leverage position. The hypothesis thus suggests that some Canadian farms likely abstained from incurring additional financial obligations to finance investment in response to the increased business risk conditions.

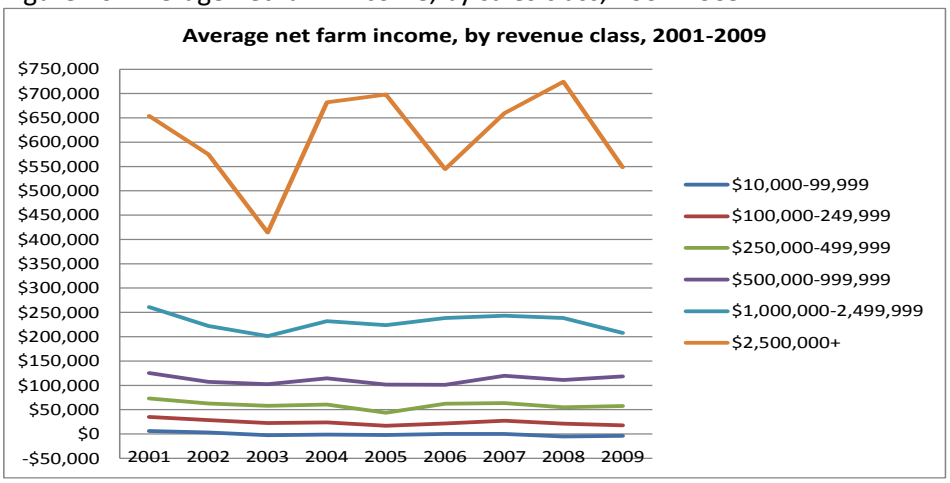
[10] According to the 2011 Census of Agriculture, the average gross farm receipts (i.e., farm sales plus government payments) for farms with all operators under/over 35 years of age was $204,558 and $240,027, respectively, while the average for farms with operators under 35 alongside older operators was $450,485 (Statistics Canada, 2012a). 2011 Census data also show that 54% of operators on farms with one operator (i.e., 59% of all farms) were more than 55 years of age, 40% were between 35 and 54 years old, and 6% were less than 35 years of age (Statistics Canada, 2012b). These numbers compare to 40%, 51%, and 9%, respectively, in 2001 (Statistics Canada, 2007).

Figure 15. Net farm income for total Canadian farms, **1980-2009**



Source: Statistics Canada, CANSIM Table 002-0009 - Net farm income

Figure 16. Average net farm income, by sales class, **2001-2009**



Source: Statistics Canada, Farm Financial Survey 2001-2009

Eroding profitability hampers investment on small farms

As expected, there is a positive correlation between investments in current period and net operating income in previous period, with this relationship stronger and statistically significant for farms with sales of $100,000-249,999 (Table 6). Past returns influence expectations about future returns and profitability of investment. They also determine the amount of investment that can be financed with own resources and influence access to credit. Over the past decade, operating income and return on assets (which shows the profitability of a dollar invested in the farm) deteriorated considerably for small farms, including farms with sales of $100,000-249,999 (Appendix 8). Thus, it can be argued that eroding profitability affected investment on the farms in the $100,000-249,999 category the most.

Table 6. Relationship between farm investment and net operating income, by sales class, **2001-2009**

	$10,000 - 99,999	$100,000 - 249,999	$250,000 - 499,999	$500,000 - 999,999	$1,000,000 - 2,499,999	$2,500,000+
Correlation coefficient	0.52	0.81*	0.50	0.11	0.48	0.17

Source: Calculations based on data from Statistics Canada, Farm Financial Survey 2001 to 2005, 2007, and 2009
Note: * denotes statistical significance at the 5% level.

Off-farm income negatively correlated with investment on small and medium farms

Off-farm income is positively correlated with investment for large farms (except for farms selling over $2.5 million), with this relationship stronger and statistically significant for farms selling between $1 million and $2.5 million (Table 7) – farmers in these classes that earned more from off-farm work tended to invest more in their farms. In contrast, investment is negatively correlated with off-farm income for small and medium-sized farms, with this relationship stronger and statistically significant for medium-sized farms. These farms, for which off-farm income made up a large proportion of total income, were less profitable and less likely to reinvest off-farm income in their business – as Appendix 8 shows, operating returns on assets had been low or negative for these farms. The relationship could also reflect differing priorities. Farmers earning most of their money off-farm may devote less time and fewer resources to farming activities relative to their off-farm employment.

Table 7. Relationship between farm investment and off-farm income, by sales class, **2001-2009**

	$10,000 - 99,999	$100,000 - 249,999	$250,000 - 499,999	$500,000 - 999,999	$1,000,000 - 2,499,999	$2,500,000+
Correlation coefficient	-0.44	-0.47	-0.88*	0.63	0.85*	-0.15

Source: Calculations based on data from Statistics Canada, Farm Financial Survey 2001 to 2005, 2007, and 2009
Note: * denotes statistical significance at the 5% level.

Government payments facilitated investment and growth on the million-dollar farms

Investments are positively correlated with lagged government payments for farms with over $1 million in sales, with this relationship strongest for farms selling more than $2.5 million (Table 8). Thus, it may be argued that program payments facilitated investment and growth on the million-dollar farms. In fact, these farms received the largest amounts of government payments and were the only ones for which government payments as a percentage of sales increased over the past decade (Appendix 8).

Table 8. Relationship between farm investment and government payments, by sales class, **2001-2009**

	$10,000 - 99,999	$100,000 - 249,999	$250,000 - 499,999	$500,000 - 999,999	$1,000,000 - 2,499,999	$2,500,000+
Correlation coefficient	-0.02	-0.32	-0.02	-0.53	0.46	0.89*

Source: Calculations based on data from Statistics Canada, Farm Financial Survey 2001 to 2005, 2007, and 2009
Note: * denotes statistical significance at the 5% level.

Debt hampers investment on the small and medium farms

Investments in the current period are negatively correlated with the amount of debt that farms carry on from the previous year for farms in all but the largest sales class, with this relationship stronger and statistically significant for farms with sales of $100,000-500,000 (Table 9). The more debt farms in these classes carried on from previous years, the less they invested in the current year. For the largest farms, the relationship between current investments and lagged debt is positive and statistically significant. This suggests that these farms are risk-takers, but also have a larger asset base and a stronger capacity to pay back debt – as Appendix 8 shows, farms with sales exceeding $2.5 million had some of the lowest debt/net income ratios. While the most indebted among Canadian farms (they had the largest debt to assets ratios – see Appendix 8), these farms were aware of the importance of utilizing the capacity of farm investments (they exhibited the largest rates of return on assets – see Appendix 8).

Table 9. Relationship between farm investment and debt level, by sales class, **2001-2009**

	$10,000 - 99,999	$100,000 - 249,999	$250,000 - 499,999	$500,000 - 999,999	$1,000,000 - 2,499,999	$2,500,000+
Correlation coefficient	-0.38	-0.95*	-0.89*	-0.19	-0.15	0.85*

Source: Calculations based on data from Statistics Canada, Farm Financial Survey 2001 to 2005, 2007, and 2009
Note: * denotes statistical significance at the 5% level.

Concluding discussion

Capital investment is critical to the success of Canadian farms in the ever increasingly competitive market place. This paper examined the main changes in patterns of investment on Canadian farms from 2001 to 2009 and suggested potential factors underlying these changes.

A key finding of the analysis in this paper is that the propensity of Canadian farms (especially small and medium-sized farms) to invest had been dropping. Unprecedented volatility of farm income likely caused some farms to refrain from using cash to make capital investments or from taking on more debt to finance investment. This might explain why the increase in grain prices later in the decade did not lead to a dramatic rise in the propensity of grain producers to invest, at least not by 2009 (although it led though to a significant rise in average investments by these farms – the largest growth rate across all farm sectors). The horizon problem added to the increase in business risk to further affect the propensity of small and medium-sized farms to invest.

Another important result is that average investments by small and medium farms had been falling or barely rising, while investments by large farms had been increasing. Moreover, small and medium farms had the highest annual growth rates of investments in environmental protection improvements and house construction – an unproductive asset, while large farms had the highest growth rates of investments in farm machinery and equipment and farm real estate. As a result, the productivity and competitiveness of small farms will continue to erode, which will mean continuing lower returns on

assets and less incentives to invest in the farm. In contrast, large farms will enjoy increased productivity and competitiveness, leading to higher returns on assets and more incentives to invest in the farm, as well as more resources to finance future investments.

As expected, propensity to invest and average investments in the two supply-managed sectors, dairy and poultry, were among the highest (only potato farms compared with them). As the analysis in our paper, *Six Years that Changed Agriculture*, showed, these sectors enjoyed some of the highest margins, along with stable income. Hence, they had more incentives to invest/grow and also more resources to finance investment (i.e., own resources, but also debt – banks like to lend money to these farms). However, dairy farms were more likely to invest and invested more on average. One reason for this is that they were more profitable on average. Also, as Poon and Alfons (2011) showed, the poultry farms experienced greater farm income volatility than dairy farms.

Under unprecedented volatility, the propensity of Canadian farms to invest in stocks, bonds, and other financial assets – a risk diversification strategy – dropped from 6.6% of farms in 2001 to only 3.2% in 2009. Small and medium-sized farms were the most affected, while farms in the largest sales class (over $2.5 million) actually experienced a significant increase in propensity to invest. This may suggest the difference in cash flow between small and medium, and large farms. However, the share of average investments represented by stocks, bonds, and other financial assets was the highest for the smallest and largest farms. For the smallest farms, this may be a reflection of the fact that their primary income source is off-farm. However, for the largest farms, this is another indicator of the amount of extra cash that these farms had available.

Despite more calls for sustainable agricultural production practices, investment in environmental protection improvements on Canadian farms remained virtually unchanged over the past decade. Propensity to invest in a given year increased just slightly from 3.3% of farms in 2001 to 3.8% in 2009, while the share of total investments represented by environmental protection improvements decreased from 0.4% in 2001 to 0.3% in 2009. Propensity to invest increased for small farms, remained unchanged for medium farms, and increased slightly or dropped for large farms.

Policy implications

A number of policy implications emerge from this study. First, the declining propensity to invest among Canadian farms (especially small and medium farms) over the past decade raises more questions about the effectiveness of government risk-reducing and income-augmenting programs and their impact on farm investment. That is, did government payments reduce the volatility of farm income (business risk) and allow farms to use cash or take on more debt (financial risk) than they otherwise would to finance investment, hence facilitating investment and growth on all Canadian farms? Or did they put even more money into the pockets of the large and profitable farms, hence speeding up consolidation in Canadian agriculture?

The latter argument is supported, to some extent, by some of the results in this paper – e.g., government payments (as a percentage of sales) increased for the million-dollar farms, but decreased for farms in all other classes. Moreover, farms with over $2.5 million in sales were the only farms for which propensity to invest in stocks, bonds and other financial assets increased over the 2001-2009 period and also had the largest share of average investments represented by stocks, bonds and other financial assets in 2009. Also, the 9,160 million-dollar farms (i.e., 6.1% of total farm population) invested $166 million in stocks, bonds and other financial assets in 2009 (i.e., 42.5% of total investments in stocks, bonds, and other financial assets) – a reflection of the amount of cash these farms had available.

Apart from improving the effectiveness of program payments, investment tax credits similar to those that exist for check-off payments or for capital investments in manufacturing and processing operations could also be introduced for capital investments in primary agriculture. However, just as with risk-reducing and income-augmenting program payments, it may be that large farms will benefit from such credits more than small farms. The policy objectives for this kind of program must be clear. If it is to increase competitiveness of all Canadian farms, then it will be critically important that the program is designed so that small farms can take advantage of it. This could help break the downward spiral of profitability and investment on small farms.

Third, the results suggest that existing environmental cost-share programs will need to change if they are to foster investments in environmental protection improvements. For instance, the maximum amount an Ontario farm can benefit from participation in such a program is $30,000 (given that the farm matches that amount), while payments under the AgriStability program can go as high as $3 million (at a pretty low cost to the farm). Moreover, unlike AgriStability payments, all cost-share funds are available on a first-come first-served basis up to the available annual funds for each year of the program. Perhaps the changes could start with improving the incentive structure that is built into the environmental cost-share programs.

Finally, the horizon problem suggests that successful succession is critical for future investment on Canadian farms, particularly small and medium farms. Older farmers will naturally invest less in their businesses than younger farmers. Since many will continue to farm for years, should the objective be to encourage them to continue to invest in their businesses while at the same time identifying strategies to help new farmers get into the business of agriculture?

References

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Appendices

Appendix 1. Canadian farm population, by sector and sales class, **2009 vs. 2001**

2009							
	$10,000 - 249,999		$250,000 - 499,999		$500,000+		Total
Farm sector	Number of farms	% of sector	Number of farms	% of sector	Number of farms	% of sector	number of farms
Oilseed & grain	37,545	*63.7%*	10,870	*18.4%*	10,530	*17.9%*	58,945
Potato	275	*26.2%*	215	*20.5%*	560	*53.3%*	1,050
Other vegs (exc. potato) & melon	1,495	*64.6%*	285	*12.3%*	535	*23.1%*	2,315
Fruit & tree nut	2,840	*79.1%*	355	*9.9%*	395	*11.0%*	3,590
Greenhouse, nursery & floriculture	2,370	*59.0%*	605	*15.1%*	1,040	*25.9%*	4,015
Other crops	7,305	*87.7%*	610	*7.3%*	410	*4.9%*	8,325
Beef cattle, including feedlots	35,725	*88.8%*	2,540	*6.3%*	1,970	*4.9%*	40,235
Dairy cattle & milk	3,230	*26.4%*	4,980	*40.7%*	4,015	*32.8%*	12,225
Hog & pig	1,285	*39.3%*	690	*21.1%*	1,295	*39.6%*	3,270
Poultry & egg	955	*27.9%*	610	*17.8%*	1,855	*54.2%*	3,420
Other animal prod	9,580	*88.2%*	670	*6.2%*	615	*5.7%*	10,865

2001							
	$10,000 - 249,999		$250,000 - 499,999		$500,000+		Total
Farm sector	Number of farms	% of sector	Number of farms	% of sector	Number of farms	% of sector	number of farms
Oilseed & grain	47,095	*80.7%*	8,130	*13.9%*	3,160	*5.4%*	58,385
Potato	515	*46.0%*	170	*15.2%*	435	*38.8%*	1,120
Other vegs (exc. potato) & melon	1,495	*69.9%*	280	*13.1%*	365	*17.1%*	2,140
Fruit & tree nut	2,995	*85.7%*	275	*7.9%*	225	*6.4%*	3,495
Greenhouse, nursery & floriculture	1,535	*54.0%*	425	*14.9%*	885	*31.1%*	2,845
Other crops	6,025	*82.8%*	915	*12.6%*	340	*4.7%*	7,280
Beef cattle, including feedlots	40,855	*88.2%*	3,185	*6.9%*	2,290	*4.9%*	46,330
Dairy cattle & milk	8,800	*51.7%*	6,135	*36.1%*	2,080	*12.2%*	17,015
Hog & pig	2,030	*39.8%*	1,420	*27.9%*	1,645	*32.3%*	5,095
Poultry & egg	835	*27.5%*	800	*26.3%*	1,405	*46.2%*	3,040
Other animal prod	7,780	*86.4%*	745	*8.3%*	480	*5.3%*	9,005

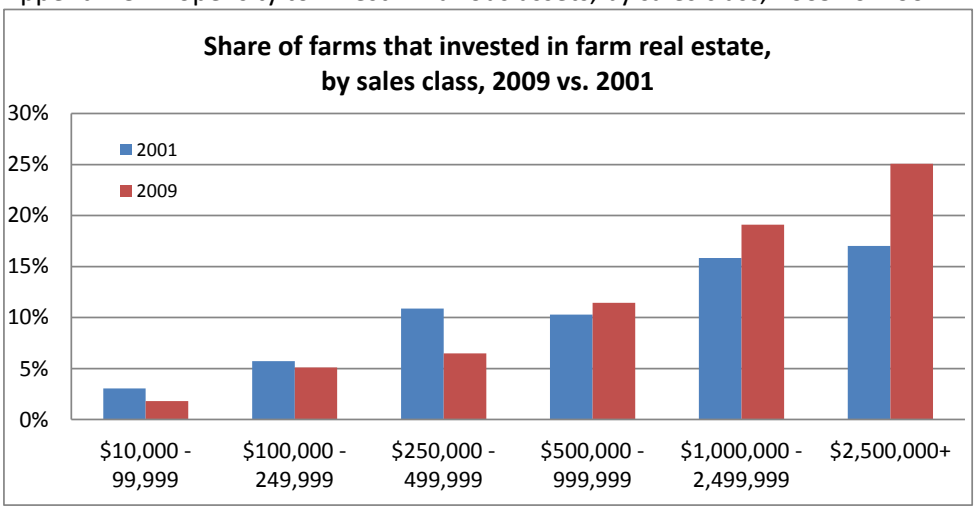
Source: Statistics Canada, Farm Financial Survey 2001 and 2009

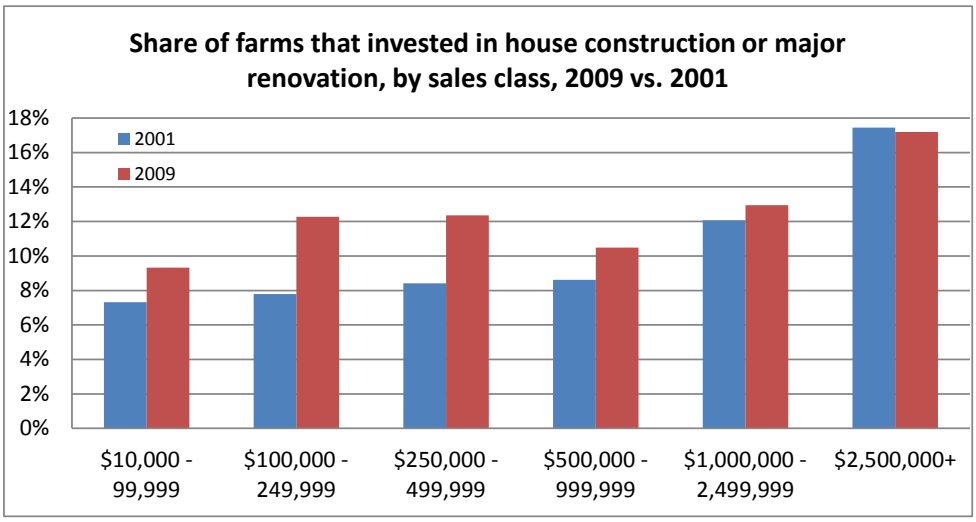
Appendix 2. Propensity to invest, by asset type, **2001-2009**

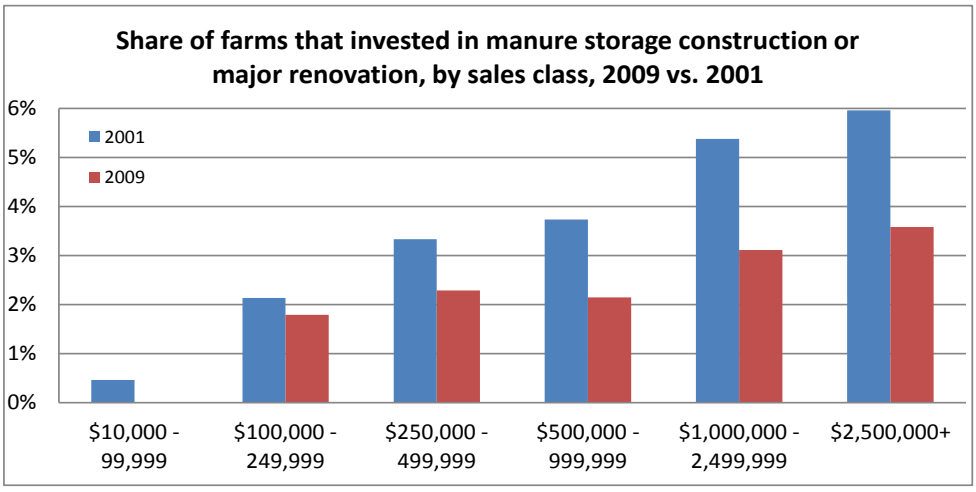
Type of asset	2001	2002	2003	2004	2005	2007	2009
Farm machinery & equipment	47.4%	46.8%	42.6%	44.5%	39.3%	41.6%	39.8%
Other building constr/major renov (e.g., barns, machine sheds, storage sheds)	16.8%	15.8%	14.4%	14.7%	12.1%	13.6%	15.4%
Breeding & replacement livestock	17.2%	15.1%	14.6%	13.0%	12.9%	14.5%	12.3%
Other land improvements (e.g., irrigation, orchard planting, draining)	15.5%	14.6%	13.0%	12.0%	10.7%	11.4%	12.3%
House constr/major renov	7.8%	8.0%	7.0%	6.6%	6.2%	6.4%	10.8%
Farm real estate	5.7%	5.5%	6.1%	4.6%	4.9%	5.1%	5.2%
Environmental protection improvements (shelterbelts, windbreaks, buffer strips or fences for waterways protection)	3.3%	3.4%	3.4%	3.2%	3.3%	4.8%	3.8%
Other farm assets (e.g., stocks, bonds, GICs, mutual funds)	6.6%	4.7%	3.1%	3.1%	2.7%	3.6%	3.2%
Quota	3.0%	3.1%	2.8%	2.4%	2.4%	2.0%	1.7%
Pesticide, chemical or fuel storage constr/major renov	1.1%	1.1%	1.2%	0.9%	1.3%	1.9%	1.8%
Manure storage constr/major renov	1.6%	2.1%	1.3%	1.1%	1.4%	1.4%	1.4%

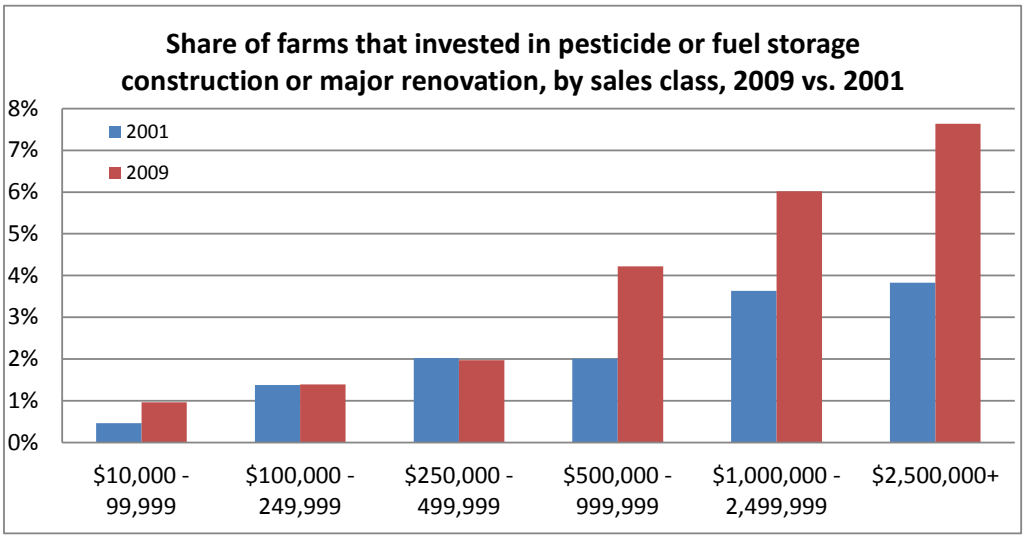
Source: Statistics Canada, Farm Financial Survey 2001 to 2005, 2007, and 2009

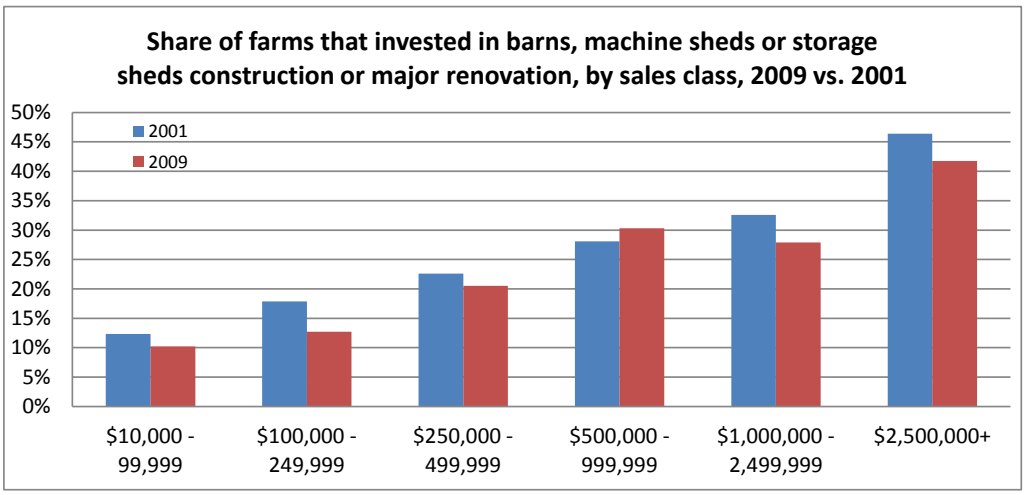
Appendix 3. Propensity to invest in various assets, by sales class, **2009 vs. 2001**

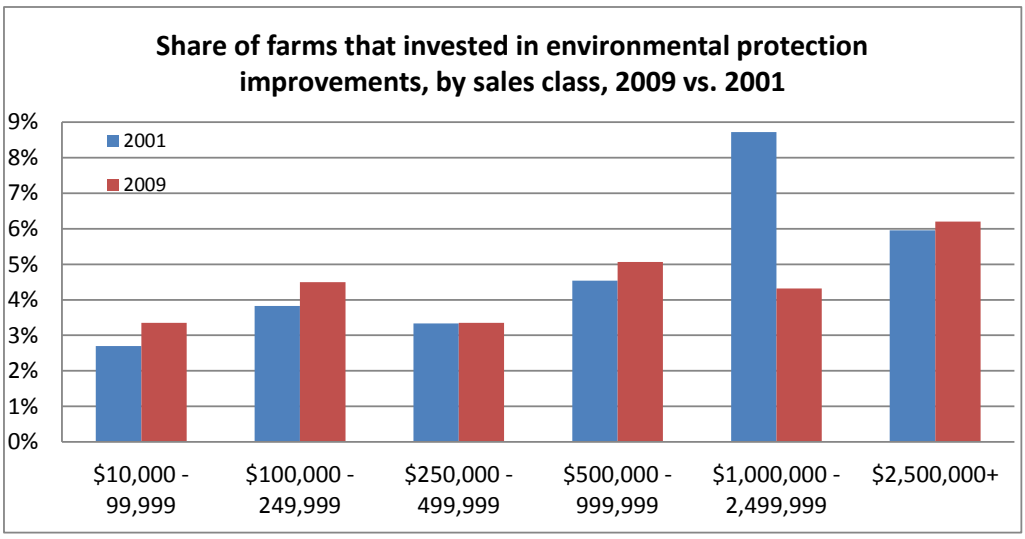


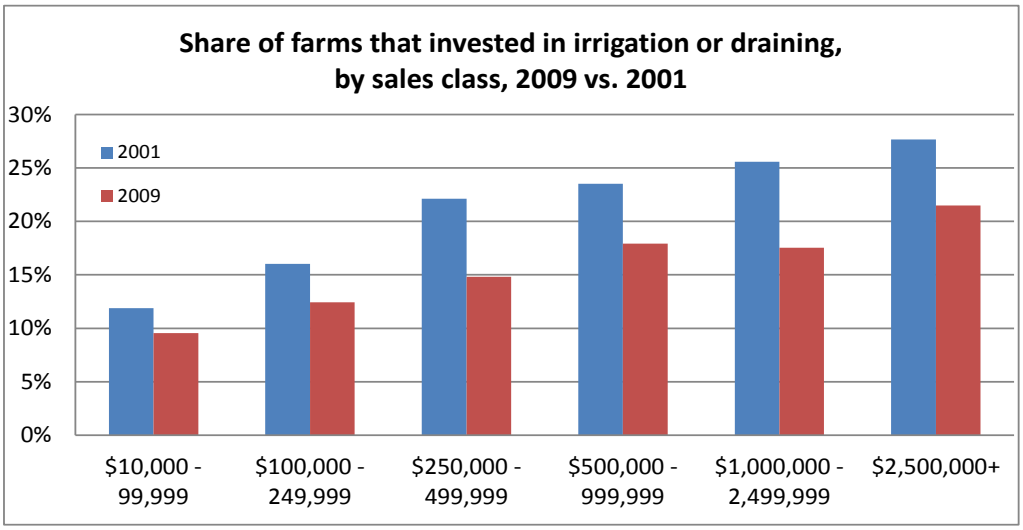


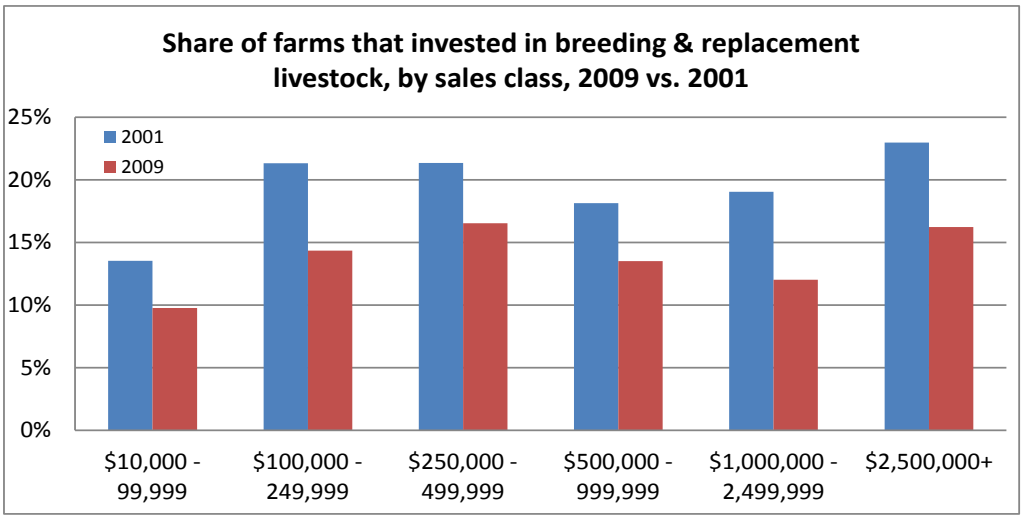


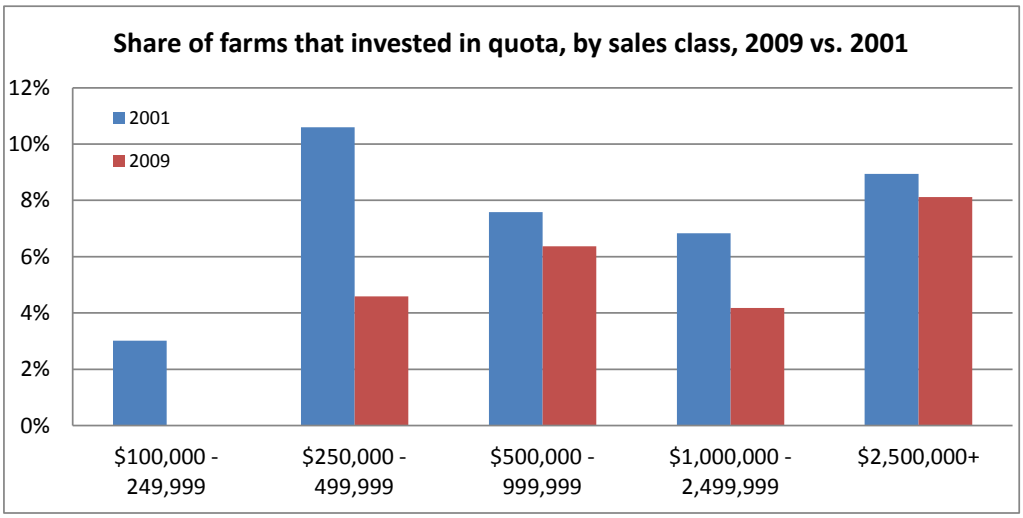

Share of farms that invested in pesticide or fuel storage construction or major renovation, by sales class, 2009 vs. 2001
8%
7%
6%
5%
4%
3%
2%
1%
0%
2001
2009
$10,000 - 99,999
$100,000 - 249,999
$250,000 - 499,999
$500,000 - 999,999
$1,000,000 - 2,499,999
$2,500,000+

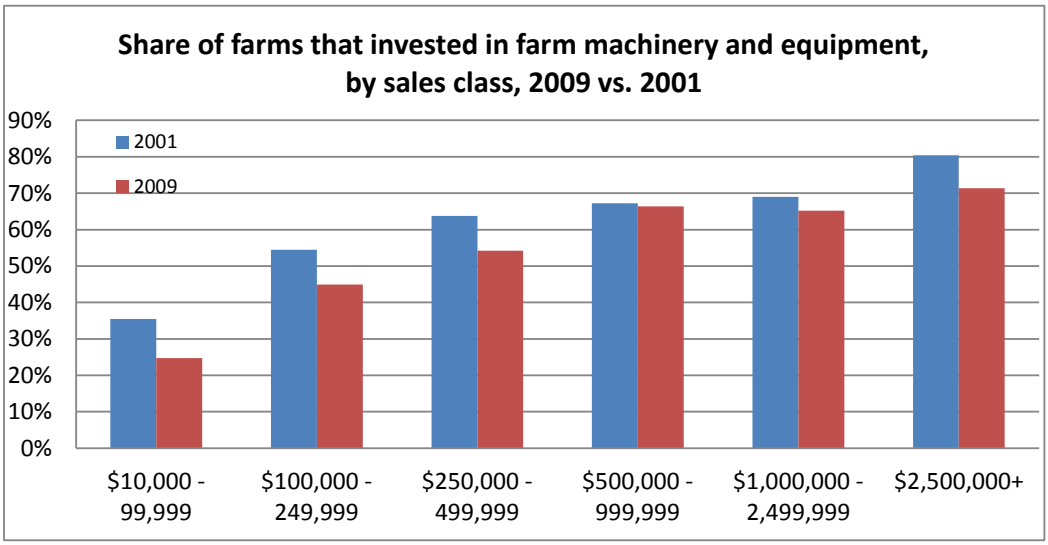

Share of farms that invested in barns, machine sheds or storage sheds construction or major renovation, by sales class, 2009 vs. 2001
50%
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
2001
2009
$10,000 - 99,999
$100,000 - 249,999
$250,000 - 499,999
$500,000 - 999,999
$1,000,000 - 2,499,999
$2,500,000+

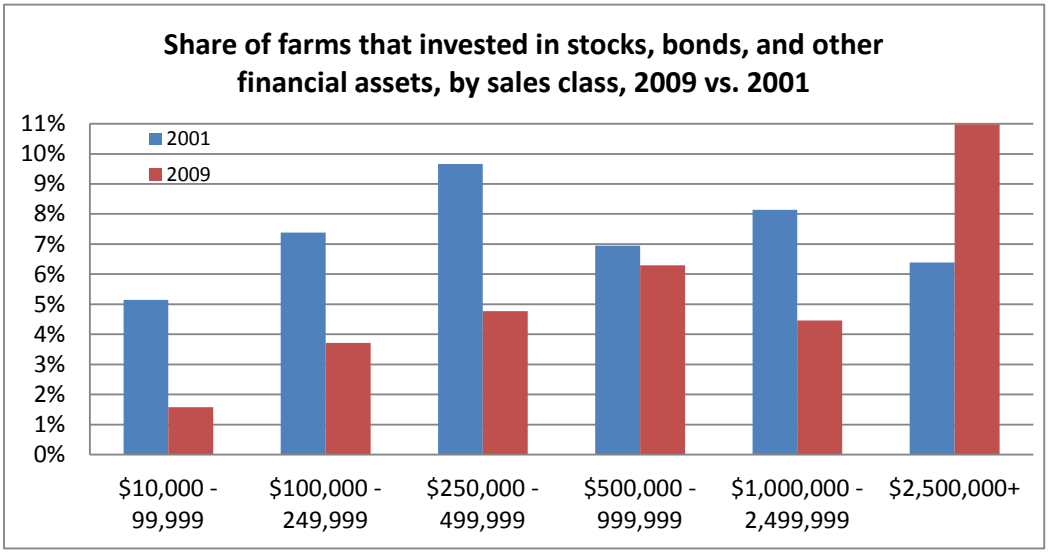

Share of farms that invested in environmental protection improvements, by sales class, 2009 vs. 2001
9%
8%
7%
6%
5%
4%
3%
2%
1%
0%
2001
2009
$10,000 - 99,999
$100,000 - 249,999
$250,000 - 499,999
$500,000 - 999,999
$1,000,000 - 2,499,999
$2,500,000+


Share of farms that invested in irrigation or draining, by sales class, 2009 vs. 2001
30%
25%
20%
15%
10%
5%
0%
2001
2009
$10,000 - 99,999
$100,000 - 249,999
$250,000 - 499,999
$500,000 - 999,999
$1,000,000 - 2,499,999
$2,500,000+


Share of farms that invested in breeding & replacement livestock, by sales class, 2009 vs. 2001
25%
20%
15%
10%
5%
0%
2001
2009
$10,000 - 99,999
$100,000 - 249,999
$250,000 - 499,999
$500,000 - 999,999
$1,000,000 - 2,499,999
$2,500,000+

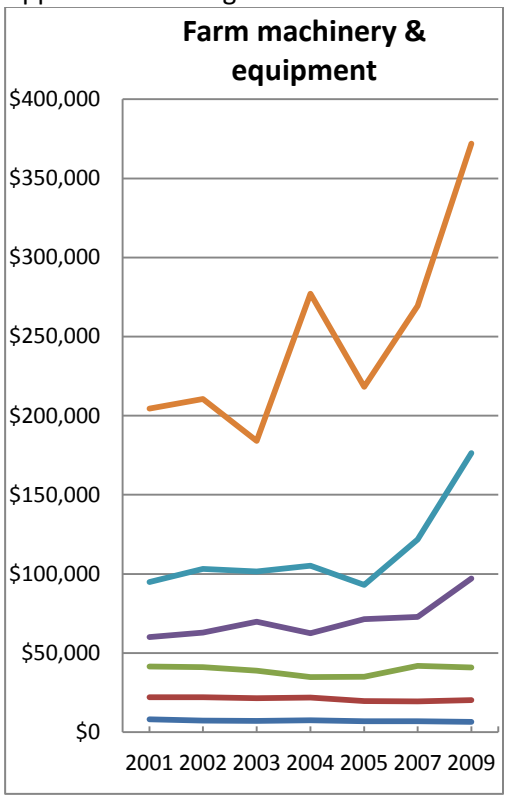

Share of farms that invested in quota, by sales class, 2009 vs. 2001
12%
10%
8%
6%
4%
2%
0%
2001
2009
$100,000 - 249,999
$250,000 - 499,999
$500,000 - 999,999
$1,000,000 - 2,499,999
$2,500,000+

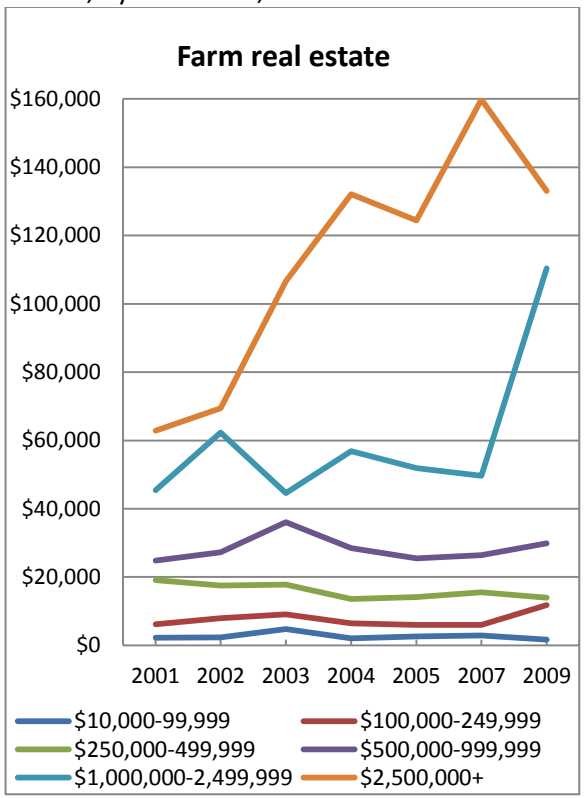


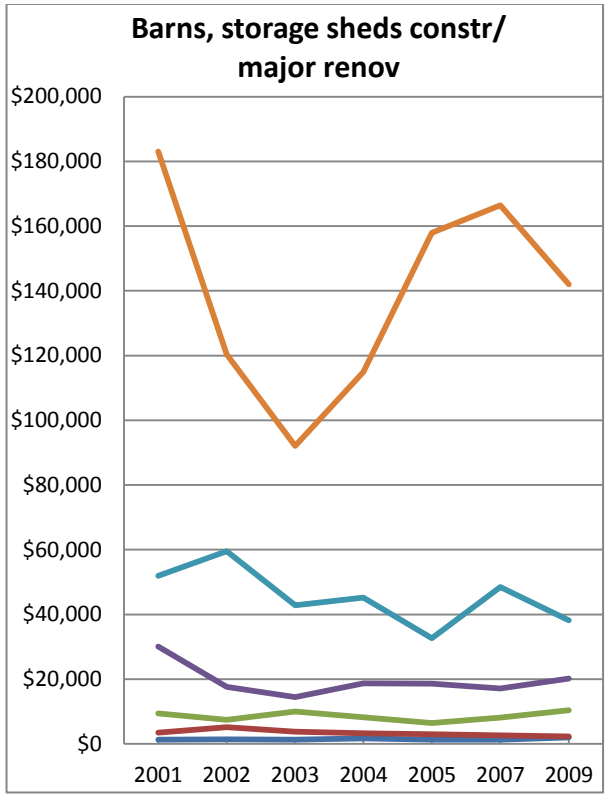


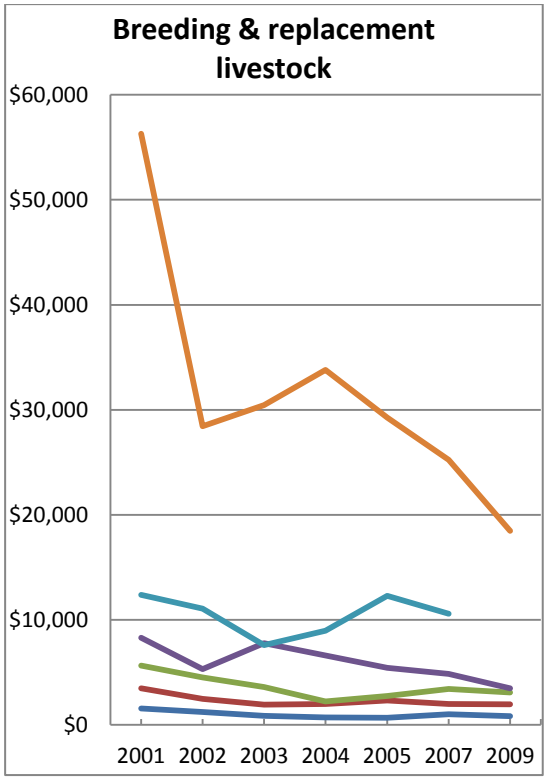
Source: Statistics Canada, Farm Financial Survey 2001 and 2009

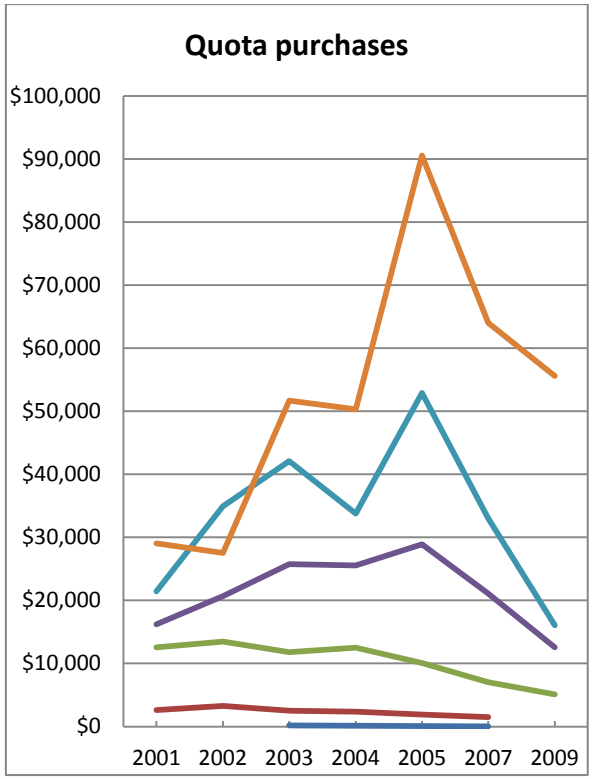
Appendix 4. Average investments in various assets, by sales class, **2001-2009**

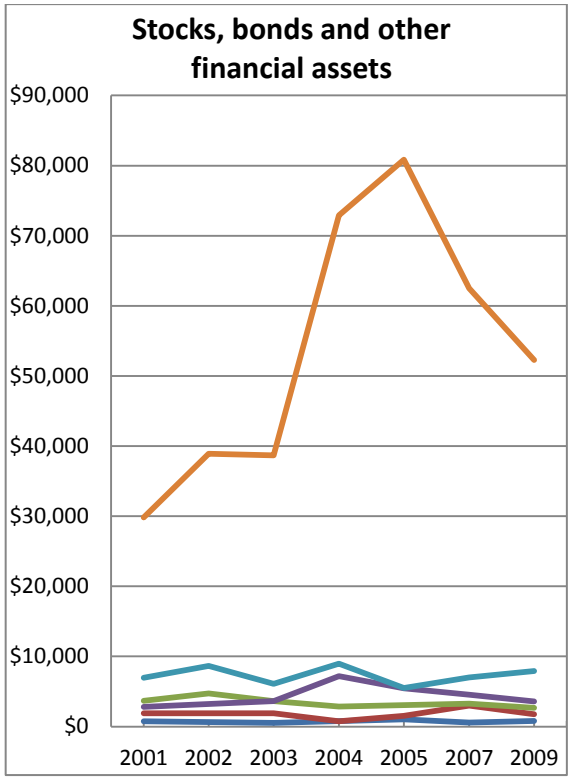


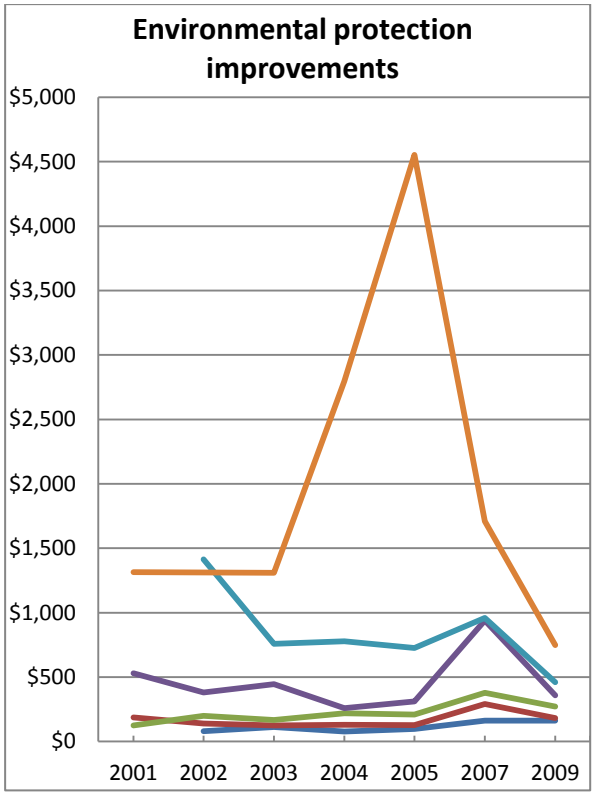


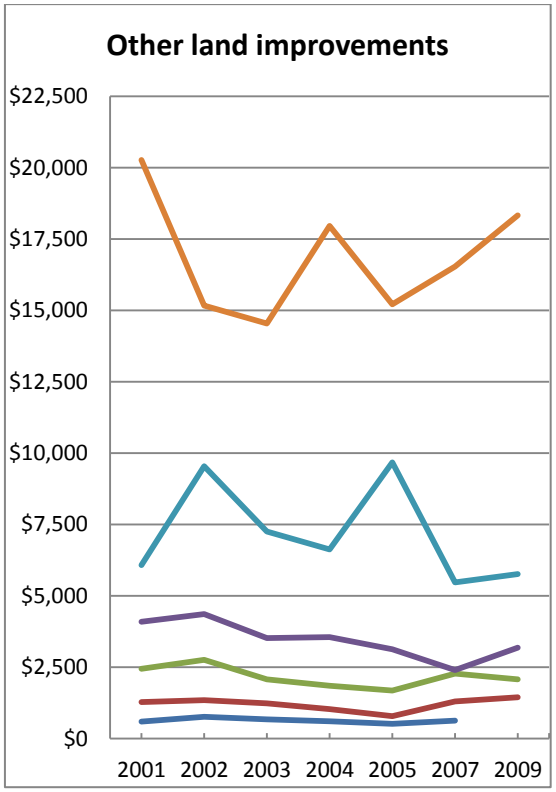


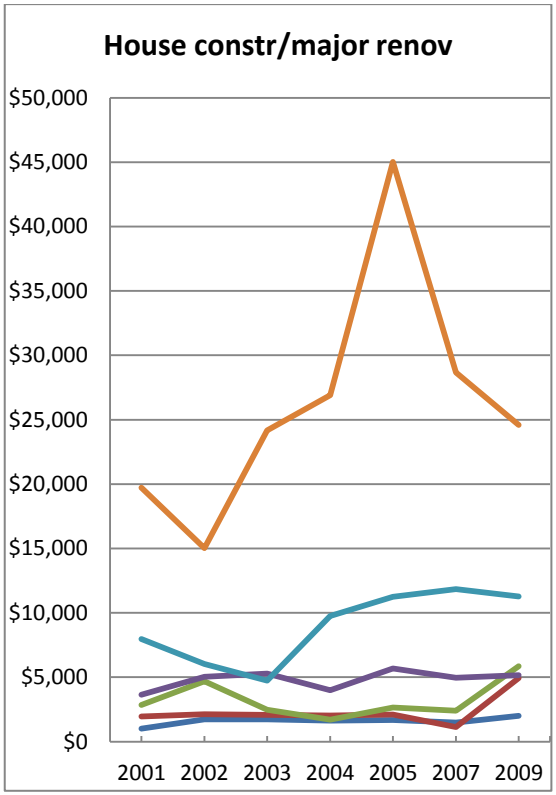

Breeding & replacement livestock
$60,000
$50,000
$40,000
$30,000
$20,000
$10,000
$0
2001 2002 2003 2004 2005 2007 2009

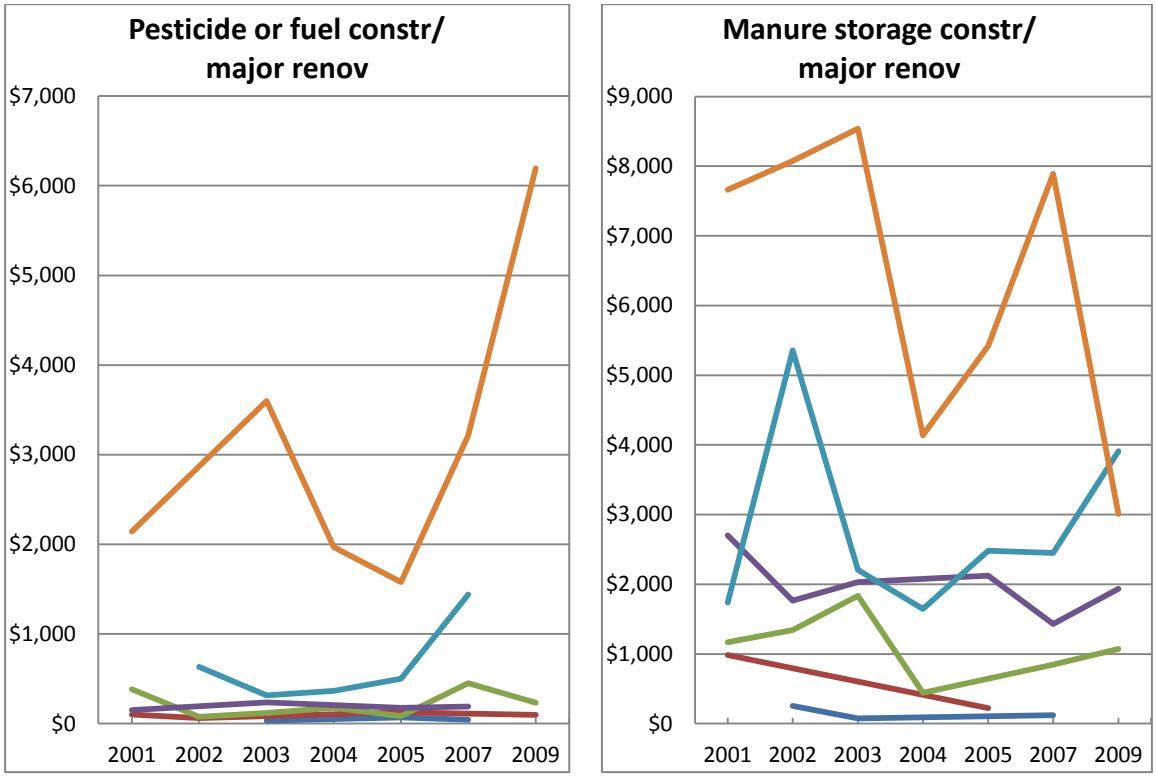

Quota purchases
$100,000
$90,000
$80,000
$70,000
$60,000
$50,000
$40,000
$30,000
$20,000
$10,000
$0
2001 2002 2003 2004 2005 2007 2009


Stocks, bonds and other financial assets
$90,000
$80,000
$70,000
$60,000
$50,000
$40,000
$30,000
$20,000
$10,000
$0
2001 2002 2003 2004 2005 2007 2009


Environmental protection improvements
$5,000
$4,500
$4,000
$3,500
$3,000
$2,500
$2,000
$1,500
$1,000
$500
$0
2001 2002 2003 2004 2005 2007 2009

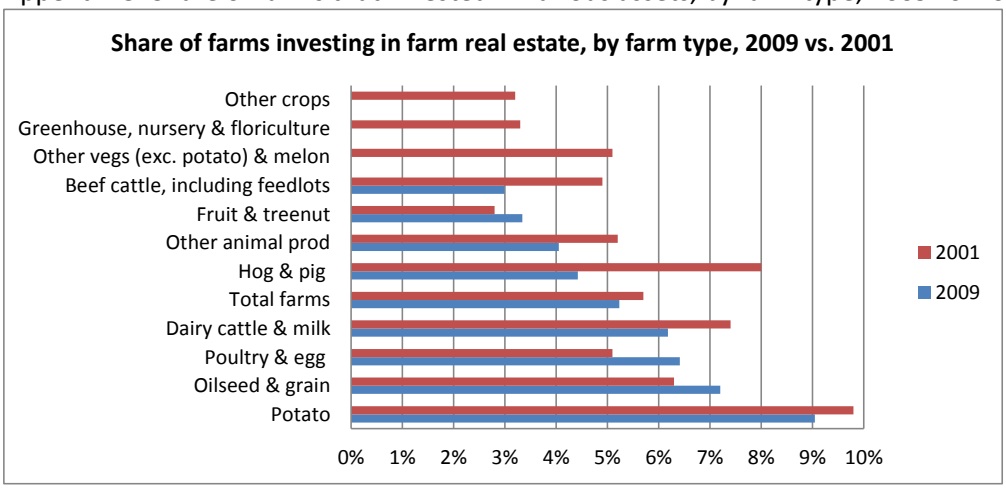

Other land improvements
$22,500
$20,000
$17,500
$15,000
$12,500
$10,000
$7,500
$5,000
$2,500
$0
2001 2002 2003 2004 2005 2007 2009

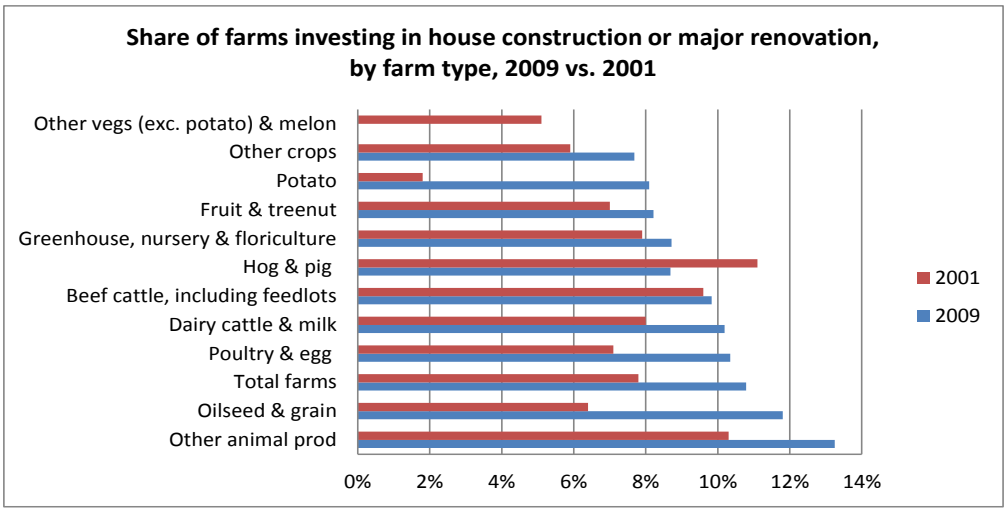

House constr/major renov
$50,000
$45,000
$40,000
$35,000
$30,000
$25,000
$20,000
$15,000
$10,000
$5,000
$0
2001 2002 2003 2004 2005 2007 2009

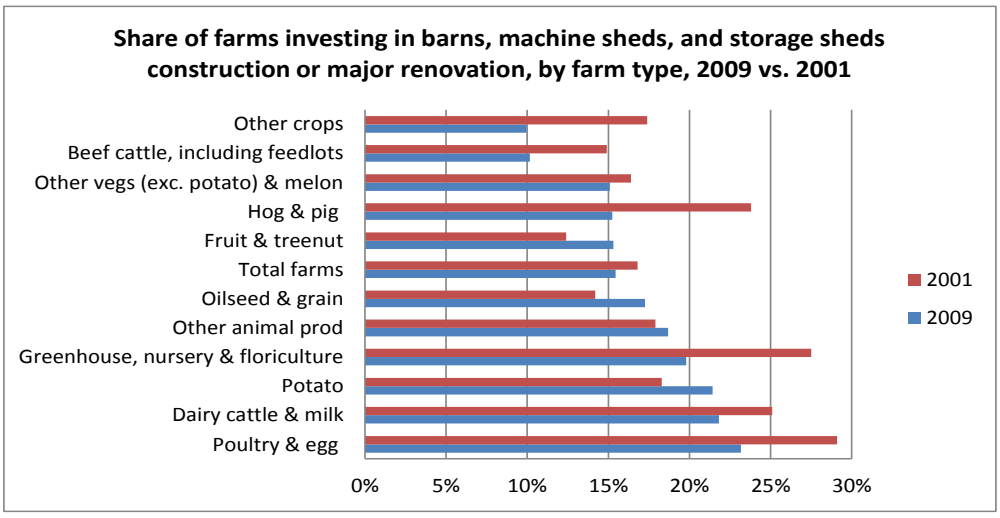


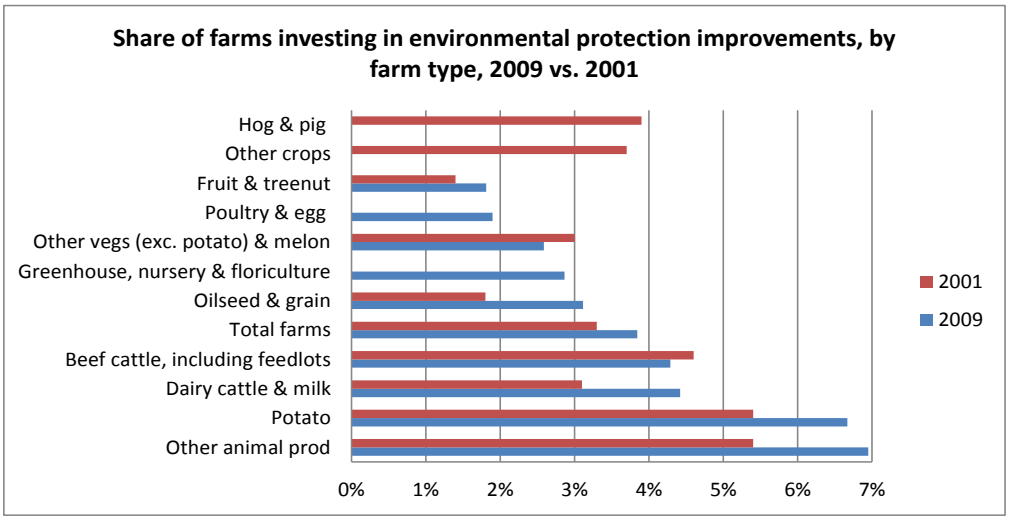
Source: Statistics Canada, Farm Financial Survey 2001 to 2005, 2007, and 2009

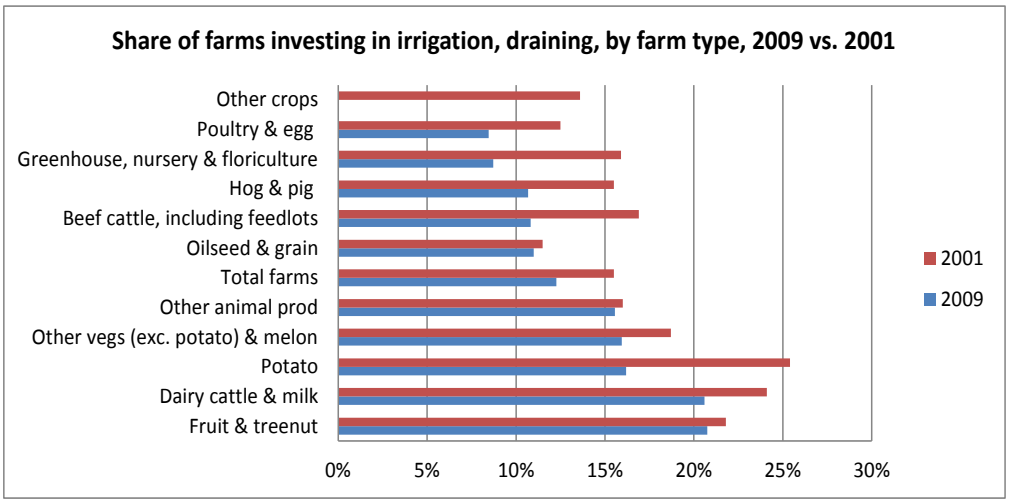
Appendix 5. Share of farms that invested in various assets, by farm type, **2009 vs. 2001**

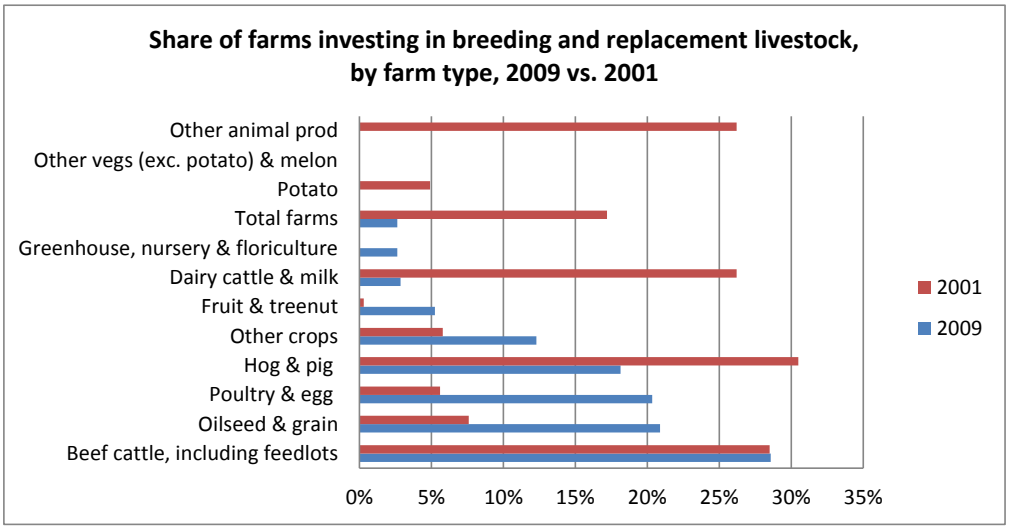


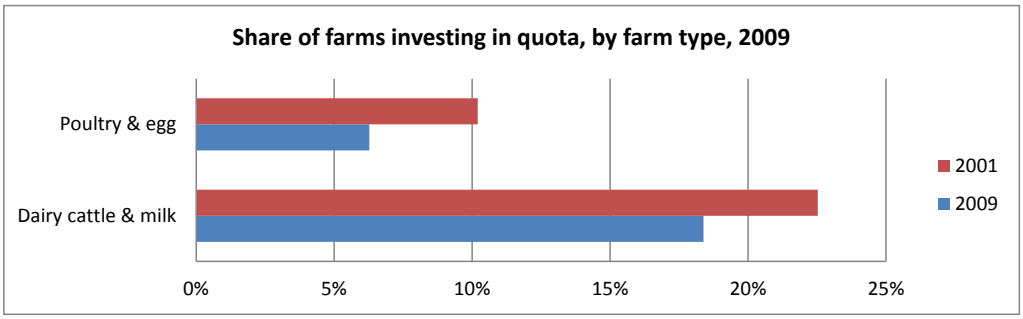


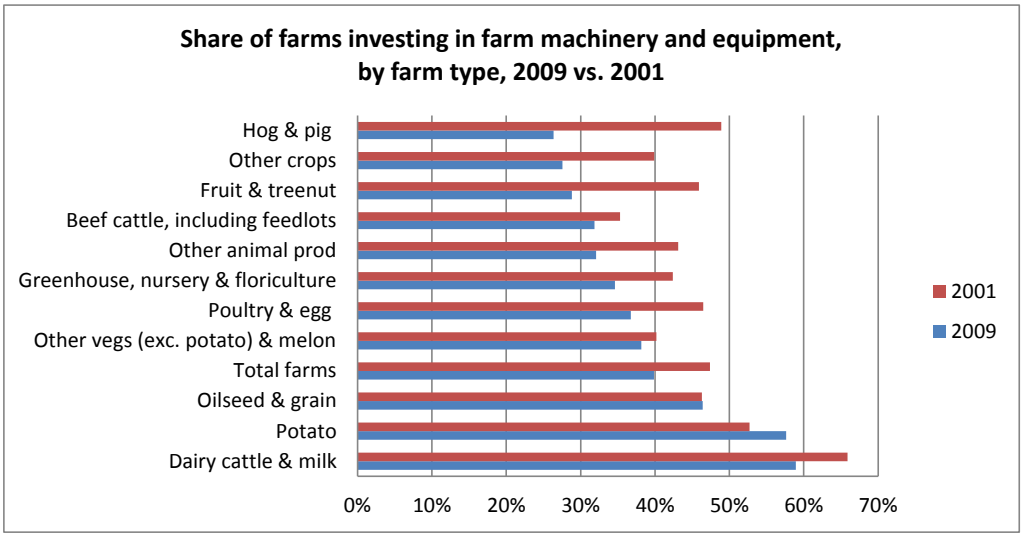


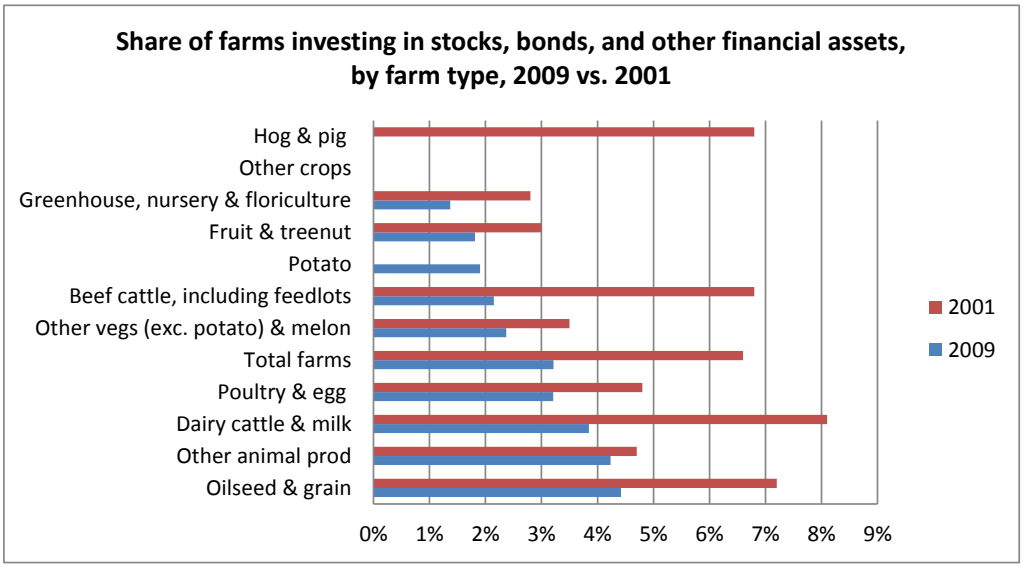

Share of farms investing in environmental protection improvements, by farm type, 2009 vs. 2001
Hog & pig
Other crops
Fruit & treenut
Poultry & egg
Other vegs (exc. potato) & melon
Greenhouse, nursery & floriculture
Oilseed & grain
Total farms
Beef cattle, including feedlots
Dairy cattle & milk
Potato
Other animal prod
0%
1%
2%
3%
4%
5%
6%
7%
2001
2009


Share of farms investing in irrigation, draining, by farm type, 2009 vs. 2001
Other crops
Poultry & egg
Greenhouse, nursery & floriculture
Hog & pig
Beef cattle, including feedlots
Oilseed & grain
Total farms
Other animal prod
Other vegs (exc. potato) & melon
Potato
Dairy cattle & milk
Fruit & treenut
0%
5%
10%
15%
20%
25%
30%
2001
2009


Share of farms investing in breeding and replacement livestock, by farm type, 2009 vs. 2001
Other animal prod
Other vegs (exc. potato) & melon
Potato
Total farms
Greenhouse, nursery & floriculture
Dairy cattle & milk
Fruit & treenut
Other crops
Hog & pig
Poultry & egg
Oilseed & grain
Beef cattle, including feedlots
0%
5%
10%
15%
20%
25%
30%
35%
2001
2009







Source: Statistics Canada, Farm Financial Survey 2001 and 2009

Appendix 6: Share of farm sector in total investments, by asset type, **2009 vs. 2001**

	2009											
Type of Assets	Oilseed & grain	Potato	Other vegs (exc. potato) & melon	Fruit & tree nut	Greenhouse, nursery & floriculture	Other crops	Beef cattle, including feedlots	Dairy cattle & milk	Hog & pig	Poultry & egg	Other animal prod	Total farms
Farm real estate	53.8%	2.5%	n.a	n.a	1.3%	n.a	10.5%	14.2%	1.7%	3.7%	2.0%	**100%**
House constr/major renov	43.8%	0.9%	n.a	1.9%	2.1%	1.8%	21.9%	10.2%	n.a	2.8%	5.1%	**100%**
Manure storage constr/major renov	17.3%	n.a	n.a	n.a	n.a	n.a	n.a	50.5%	n.a	7.7%	n.a	**100%**
Pesticide, chemical or fuel storage constr/major renov	n.a	n.a	0.2%	0.9%	1.0%	n.a	3.0%	n.a	n.a	n.a	n.a	**100%**
Other building constr/major renov	35.5%	3.5%	1.2%	3.0%	5.2%	2.7%	7.3%	28.3%	2.3%	6.4%	4.5%	**100%**
Environmental protection improvements	39.1%	2.4%	n.a	1.1%	2.3%	n.a	25.1%	8.0%	1.1%	1.1%	11.0%	**100%**
Other land improvements	40.4%	n.a	2.6%	8.9%	3.0%	3.9%	11.7%	12.4%	1.9%	n.a	4.3%	**100%**
Breeding & replacement livestock	16.3%	n.a	n.a	n.a	n.a	n.a	40.0%	24.0%	6.0%	n.a	9.7%	**100%**
Quota	14.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	64.3%	n.a	19.0%	n.a	**100%**
Farm machinery & equipment	66.5%	2.2%	1.2%	0.8%	1.7%	2.8%	10.0%	8.6%	1.3%	1.6%	2.4%	**100%**
Stocks, bonds and other financial assets	61.8%	n.a	n.a	n.a	2.8%	n.a	15.0%	n.a	0.5%	4.1%	n.a	**100%**
Total Investments	**53.9%**	**2.2%**	**n.a**	**1.6%**	**2.0%**	**2.2%**	**11.1%**	**15.6%**	**1.8%**	**3.7%**	**2.9%**	100%

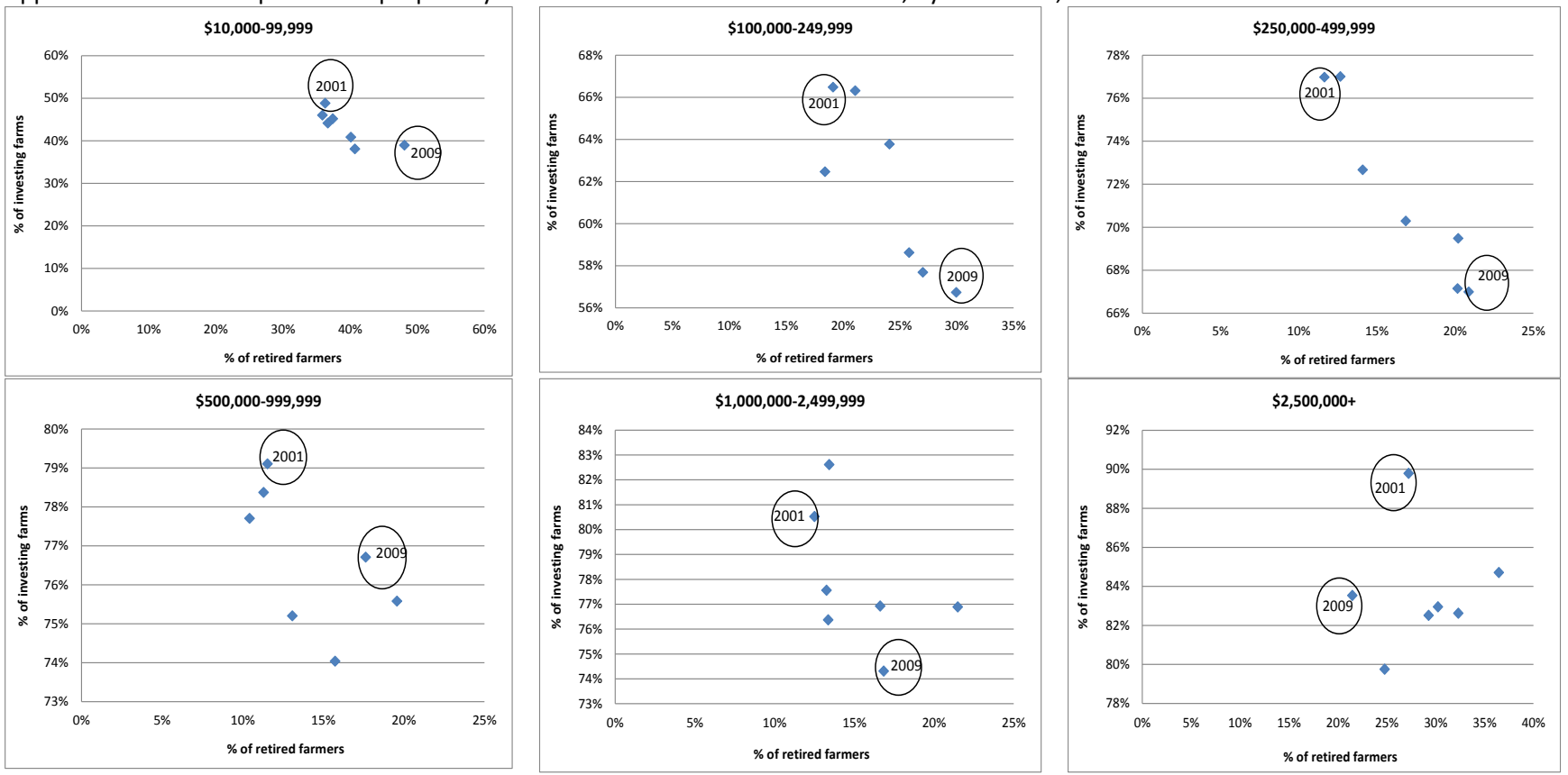
	2001											
Type of Assets	Oilseed & grain	Potato	Other vegs (exc. potato) & melon	Fruit & tree nut	Greenhouse, nursery & floriculture	Other crops	Beef cattle, including feedlots	Dairy cattle & milk	Hog & pig	Poultry & egg	Other animal prod	Total farms
Farm real estate	39.7%	1.9%	n.a.	n.a.	1.2%	2.5%	21.3%	14.3%	7.7%	3.1%	4.9%	**100%**
House constr/major renov	18.1%	0.3%	0.5%	2.1%	n.a.	n.a.	35.5%	9.6%	12.8%	2.8%	9.7%	**100%**
Manure storage constr/major renov	5.0%	n.a.	n.a.	n.a.	n.a.	n.a.	9.2%	48.6%	24.0%	4.0%	4.3%	**100%**
Pesticide, chemical or fuel storage constr/major renov	31.3%	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	2.5%	n.a.	n.a.	n.a.	**100%**

Other building constr/major renov	12.8%	1.4%	1.6%	1.1%	12.2%	3.7%	10.9%	25.1%	17.8%	9.5%	3.6%	**100%**
Environmental protection improvements	10.9%	2.0%	1.4%	n.a.	3.4%	4.3%	34.7%	6.2%	n.a.	1.4%	n.a.	**100%**
Other land improvements	24.4%	2.5%	2.4%	4.4%	5.1%	3.8%	25.8%	19.4%	4.6%	1.8%	5.4%	**100%**
Breeding & replacement livestock	11.8%	0.1%	n.a.	n.a.	n.a.	0.8%	49.5%	13.1%	11.8%	n.a.	12.1%	**100%**
Quota	0.9%	n.a.	n.a.	0.0%	0.0%	5.1%	n.a.	77.4%	n.a.	12.5%	1.7%	**100%**
Farm machinery & equipment	44.0%	1.7%	1.6%	0.9%	2.2%	3.9%	20.9%	14.5%	4.5%	1.9%	3.7%	**100%**
Stocks, bonds and other financial assets	38.4%	0.3%	n.a.	n.a.	2.4%	n.a.	28.9%	10.7%	6.6%	2.4%	3.3%	**100%**
Total Investments	**31.0%**	**1.4%**	**1.5%**	**1.1%**	**3.2%**	**3.5%**	**20.9%**	**20.9%**	**7.7%**	**4.0%**	**4.7%**	100%

Source: Statistics Canada, Farm Financial Survey 2001 and 2009

Note: n.a.= data were not reported by Statistics Canada – either were suppressed to meet the confidentiality requirements of the *Statistics Act* or had a large coefficient of variation.

Appendix 7. Relationship between propensity to invest and share of retired farmers, by sales class, **2001-2009**



Source: Statistics Canada, Farm Financial Survey 2001 to 2005, 2007, and 2009

Appendix 8. Investment financing and profitability, degree of leverage, and capacity to service debt – average farm, by sales class, **2001-2009 (selected years)**

	2009					
	$10,000 – 99,999	$100,000 – 249,999	$250,000 – 499,999	$500,000 – 999,999	$1,000,000 – 2,499,999	$2,500,000+
Average capital investments	$15,076	$45,608	$85,511	$178,799	$382,020	$826,108
Average farm sales	$39,435	$152,650	$331,303	$662,238	$1,388,816	$5,477,783
Average net operating income	-$7,295	$7,375	$37,521	$86,750	$138,472	$350,765
Average government payments	$3,328	$10,582	$19,858	$31,603	$69,518	$197,821
Average off-farm income	$44,210	$28,782	$21,857	$23,290	$26,525	$25,517
Government payments/Sales	8.4%	6.9%	6.0%	4.8%	5.0%	3.6%
Investments/Net farm income	-3.8	2.5	1.5	1.5	1.8	1.5
Debt/Assets	8.3%	14.0%	20.5%	22.3%	27.6%	28.8%
Operating returns on assets	-1.0%	0.6%	1.9%	2.6%	2.5%	2.7%
Debt/Net farm income	-16.0	10.2	7.1	6.2	7.3	6.9
Debt/Net total income	1.6	3.9	5.1	5.2	6.5	6.6

	2007					
	$10,000 – 99,999	$100,000 – 249,999	$250,000 – 499,999	$500,000 – 999,999	$1,000,000 – 2,499,999	$2,500,000+
Average capital investments	$15,178	$40,408	$85,589	$156,672	$292,651	$805,425
Average farm sales	$36,855	$145,638	$323,005	$635,273	$1,379,859	$5,136,485
Average net operating income	-$4,421	$12,118	$37,617	$81,207	$166,397	$464,184
Average government payments	$4,251	$14,963	$25,755	$38,286	$76,973	$195,440
Average off-farm income	$36,271	$25,814	$19,174	$17,968	$19,985	$22,777
Government payments/Sales	11.5%	10.3%	8.0%	6.0%	5.6%	3.8%
Investments/Net farm income	-89.3	1.5	1.4	1.3	1.2	1.2
Debt/Assets	8.7%	13.8%	19.2%	24.1%	26.5%	28.0%
Operating returns on assets	-0.7%	1.0%	1.9%	2.6%	3.1%	3.7%
Debt/Net farm income	-339.1	6.1	5.9	6.3	5.8	5.3
Debt/Net total income	1.6	3.1	4.6	5.5	5.3	5.2

	2005					
	$10,000 – 99,999	$100,000 – 249,999	$250,000 – 499,999	$500,000 – 999,999	$1,000,000 – 2,499,999	$2,500,000+
Average capital investments	$14,962	$37,777	$77,941	$166,787	$272,720	$773,124
Average farm sales	$36,921	$141,740	$310,619	$628,151	$1,340,577	$5,270,430
Average net operating income	-$5,370	$5,009	$20,107	$61,951	$162,100	$530,715
Average government payments	$3,291	$11,854	$23,468	$39,506	$61,674	$167,198
Average off-farm income	$41,584	$26,879	$19,524	$24,004	$18,760	-
Government payments/Sales	8.9%	8.4%	7.6%	6.3%	4.6%	3.2%
Investments/Net farm income	-7.2	2.2	1.8	1.6	1.2	1.1
Debt/Assets	8.7%	13.8%	19.2%	24.1%	26.5%	28.0%
Operating returns on assets	-0.9%	0.4%	1.1%	2.0%	3.1%	4.5%
Debt/Net farm income	-26.4	10.9	9.0	7.7	6.3	4.9
Debt/Net total income	1.4	4.2	6.2	6.2	5.8	-

	2003					
	$10,000 – 99,999	$100,000 – 249,999	$250,000 – 499,999	$500,000 – 999,999	$1,000,000 – 2,499,999	$2,500,000+
Average capital investments	$17,380	$44,870	$92,440	$169,173	$259,887	$555,738
Average farm sales	$34,946	$141,014	$311,152	$619,750	$1,383,996	$5,292,554
Average net operating income	-$7,967	$2,068	$27,620	$53,319	$135,545	$208,489

Average government payments	$5,601	$20,265	$30,453	$48,888	$65,756	$205,918
Average off-farm income	$37,076	$21,383	$15,615	$14,681	$17,417	$23,741
Government payments/Sales	16.0%	14.4%	9.8%	7.9%	4.8%	3.9%
Investments/Net farm income	-7.3	2.0	1.6	1.7	1.3	1.3
Debt/Assets	12.8%	18.5%	21.7%	25.0%	28.6%	29.6%
Operating returns on assets	-1.6%	0.2%	1.5%	1.9%	3.0%	2.2%
Debt/Net farm income	-26.9	8.6	6.7	7.0	6.5	6.8
Debt/Net total income	1.8	4.4	5.3	6.1	5.9	6.4

	2001					
	$10,000 – 99,999	$100,000 – 249,999	$250,000 – 499,999	$500,000 – 999,999	$1,000,000 – 2,499,999	$2,500,000+
Average capital investments	$15,993	$44,118	$98,800	$153,366	$250,969	$616,756
Average farm sales	$39,705	$147,395	$310,369	$618,254	$1,383,387	$5,340,161
Average net operating income	$1,573	$20,259	$45,195	$80,748	$201,731	$563,972
Average government payments	$4,690	$14,961	$28,016	$44,714	$59,031	$89,939
Average off-farm income	$32,116	$18,049	$14,519	$11,263	$14,204	$17,779
Government payments/Sales	11.8%	10.2%	9.0%	7.2%	4.3%	1.7%
Investments/Net farm income	2.6	1.3	1.3	1.2	1.0	0.9
Debt/Assets	10.0%	16.4%	19.9%	25.7%	27.3%	28.0%
Operating returns on assets	0.3%	2.1%	2.6%	3.2%	5.0%	6.0%
Debt/Net farm income	7.4	4.6	4.7	5.2	4.3	4.0
Debt/Net total income	1.2	3.0	3.9	4.8	4.0	3.9

Source: Statistics Canada, Farm Financial Survey 2001, 2003, 2005, 2007, and 2009
Notes: net farm income = net operating income + government payments; net total income = net farm income + off-farm income.