Do Co-operative Managers and Directors Differ in their Familiarity with Innovative Business Risk Management Strategies?

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This paper provides results of a pilot survey conducted to compare risk attitudes, understanding of innovative risk management tools and strategies used as insurance protection by managers and directors of agribusiness co-operatives in Canada. Managers and directors are also compared with respect to importance ratings of risk factors. Results indicate that both managers and directors of the sample agricultural co-operatives have limited knowledge of new ways of managing risks. The evidence from this pilot survey suggests a need for support for training and specialised skill development for co-operative decision makers.

Introduction

Co-operatives face significant risks from a variety of sources, and these risks have led to reduced performance and viability. For example, structural changes in the market and in the policy arena have caused some co-operatives to be nearly driven out of markets in which they formerly held significant market shares. In Canada, large grain and dairy co-operatives have, in the course of the past several years, lost market share to investor-owned firms (Table 1). Co-operatives must also deal with the potential effects of unexpected and unfavourable events such as severe weather or low prices. Managing financial risk in co-operatives may be the most critical challenge facing their survival and success in the twenty first century.

Risk has also contributed to structural change in the co-operative sector. For example, the few co-operatives (eg, Agrifoods International Co-operative Ltd, Alberta Wheat Pool, Manitoba Pool Elevators, Saskatchewan Wheat Pool, Lilydale Foods Inc) responsible for the largest part of total Canadian agricultural marketing co-operative revenues have been forced into merger, demutualisation or acquisition by investor-owned companies. This may have been due, at least in part, to a lack of risk management protocols being in place. For example, Agrifoods International Ltd. (Dairyworld), Canada's second largest dairy co-operative and Western Canada's largest food manufacturer, took on large levels of debt and was ultimately sold to the Montreal-based food conglomerate Saputo Inc (a private company) in 2001 (Canadian Dairy Information Center, 2002).

One incentive for participation in a co-operative is the ability to mitigate, through membership, some of the member's risks. However, there is often a failure to recognise the risks to which the co-operative itself may be exposed (Zueli, 1999). Co-operatives cannot afford to ignore the potential effects of business risk and the resulting benefits of managing that risk. Risk management within co-operatives, however, must be applied in a way that is consistent with co-operative values and principles. The challenge is to learn from the risk management practices of investor-owned firms but adapt them in a way that affirms and demonstrates the co-operative difference.

One of the issues related to the efficacy of good governance in co-operatives is implementation of effective risk management

Table 1: Estimates of Trends in Market Shares (per cent) of Selected Agricultural Marketing and Supply Co-operatives in Canada (1985-2001)

	1985	1990	1991	1995	1996	1997	1998	1999	2000	2001	2002
Dairy	58	46	59	57	59	62	64	66	59	42	42
Poultry and Eggs	37	40	39	51	57	51	51	53	49	49	52
Grains and oilseeds	74	75	74	55	54	54	51	49	47	45	30
Honey and Maple	23	29	21	24	16	22	20	21	27	28	29
Livestock	30	32	14	18	20	18	20	19	11	14	15
Fruit and vegetables	33	26	13	23	32	21	23	15	6	8	6
Fertiliser and chemicals	--	--	36	--	--	--	39	40	36	38	23
Farm Petroleum	--	--	29	--	--	--	30	31	32	41	43
Feed	--	--	25	--	--	--	14	13	14	15	13
Seeds	--	--	17	--	--	--	22	17	11	8	6

Source: Co-operatives Secretariat, Government of Canada.1985-2003. Co-operatives in Canada

practices. Effective risk management lowers contracting/agency costs (Campbell and Kracaw, 1987; Mayers and Smith, 1987; Bessembinder, 1991), financial distress costs (Mayers and Smith, 1982; Smith and Stulz, 1985), taxes (Smith and Stulz, 1985) and external financing costs associated with capital market imperfections (Froot et al, 1993; Mian, 1996). However, whether or not co-operatives actually undertake appropriate risk management activities may depend on the differences in attitude between managers and directors. For example, managers who are risk averse may tend to make use of risk management tools. Manager behaviour also depends on managerial incentives provided by co-operative directors. If the managerial incentive contract is not a function of the firm's value, the manager has less incentive to adequately manage risks. Further to this argument, if the managers of a co-operative business are less inclined to be actively involved in risk management activities, their knowledge about alternative risk management strategies may be limited.

Within investor owned firms, there is an expectation that management is able to identify and manage risk exposure. The task of managing these risks has been facilitated by the increasing availability of derivative instruments (eg, forward contracts, futures and options, swaps). While investor-owned firms have been using derivatives for many years, little is known about the awareness, understanding and usage of these and other risk management tools within user-owned firms. A better understanding of risk and risk management instruments is important to help co-operatives make better decisions under volatile market situations. Adoption of effective risk management strategies by co-operatives could also enhance their risk mitigating role by alleviating their own risks and thereby providing implicit risk management for members (Zeuli, 1999).

The objective of this paper is to examine risk attitudes and risk management within Canadian agricultural co-operatives. Results from a pilot survey of managers and directors for Canadian agricultural co-operatives are presented and discussed. The survey examines these two groups in terms of their risk attitudes, understanding of alternative innovative risk management instruments and strategies as insurance protections. This study provides some insights into the existing knowledge of risk management. It also allows for a comparison between these two groups in terms of their attitudes and awareness with respect to risk and risk management. This is the first study to attempt to explore knowledge and the use of risk management instruments for user-owned firms in Canada.

The remainder of this paper is organised as follows. The next section provides a review of literature from related studies. Data and survey methods are then described. Empirical results are presented and discussed, and concluding remarks are then provided.

Literature Review

Within the economics and finance literature, an assessment of a decision maker's (DM's) risk attitude is considered to be an important factor in determining optimal decisions (eg, Weber and Hsee 1998; Barton and Gordon 1988). These decisions include choices with respect to risk management. Previous studies have investigated risk attitudes for a variety of different classes of decision makers, using different methods, and examining a number of different issues (eg, Chavas and Holt, 1990; Antle, 1987; Saha et al, 1994; Pennings and Smidts, 2001; Pennings and Leuthold, 2000; Lence, 2000; Pennings and Garcia, 2001; Roosen and Hennessy, 2003; Meuwissen et al, 1999; Brockhaus, 1980). For example, Brockhaus (1980) studied the relationship between entrepreneurial decisions and risk. Johnson and Powell (1994) and Olen and Cox (2001) examined the relationship between risk attitudes and gender. Pennings and Smidts (2001) assessed the relationship between risk attitude and market behaviour. MacCrimmon and Wehrung (1986) explored the relationship between risk attitudes of business executives and age, income, education as well as other personal and business characteristics. The majority of these studies focused on decision making in investor-owned firms.

Other studies have looked at the impact of risk attitudes on management decisions and firm performance (eg, Lee, 1994; Walls and Dyer, 1996; Walls, 2005; Ruchala, 1999). For example, Lee (1994) applied prospect theory to measure risk attitudes based on longitudinal data from the US brewing firms, and showed that a firm's previous poor performance leads to its risk-taking. Walls and Dyer (1996) explored the differences in observed risk propensity among petroleum firms and their impact on performance using a decision theoretic model,

and found that decisions about corporate risk policy have a significant impact on the petroleum firm's economic performance. Typically, these studies conclude that there is a relationship between decision makers' risk attitudes and production/marketing decisions and the resulting firm performance. Again, however, the majority of these studies dealt with investor-owned firms.

The potential conflicts between managerial self-interest and self-interests of the firm's owners (Jensen 1986; Jensen and Meckling 1976) and the impact of these differences on the choice of capital structure (Matthews et al 1994), firm performance and competitiveness have been acknowledged by many researchers. Agency theory predicts that conflicts between owners and managers can arise because of differences in their attitudes towards risks (Eisenhardt, 1989). Because of different risk preferences, managers and directors may prefer different actions. Thus, risk attitude incompatibility may impede the overall efficiency of resource use. Despite the considerable literature in this area (eg, Jensen and Meckling 1976; Lewis and Sappington 1995), the impact of differences in risk attitudes between managers and directors on the decision making process has remained a relatively unexplained aspect of agency problems, especially in member-owned firms.

From a review of the literature, it is clear that there are information gaps with respect to risk attitudes and risk management in co-operative firms. Relatively little is known about the risk attitudes of directors and managers within these organisations, or their degree of knowledge about risk management instruments. As suggested by agency theory, the consistency (or lack thereof) of risk attitudes for directors and managers of co-operatives may have important implications for the level risk exposure. Different attitudes can affect negotiations between directors and managers and potentially lead to conflict.

Data and Methods

Survey methods are used to address the objectives of this study; specifically, a survey is conducted on Canadian agricultural co-operatives. The main purpose of the survey is to elicit information about financial risk attitudes of managers and members of the boards of directors for these co-operatives. The survey questionnaire used for the study consists of questions designed to elicit information about overall financial risk attitudes as well as eliciting risk attitudes based on alternative theories of decision makers' behaviour; the theory of planned behaviour and expected utility theory. Additional questions asked respondents about their perceptions regarding the relative importance of different sources of risk and their knowledge of risk management tools. Finally questions were included concerning general business information and demographics. The analysis in this paper focuses on results for overall financial risk attitudes, and risk management knowledge and importance ratings.[1]

The questionnaire consists of a combination of closed and multiple-choice questions. Elicitation of general financial risk attitudes is based on psychometric measures. This part of the survey contains twelve statements used to elicit respondents' attitudes towards the risk associated with using debt financing. For each statement, respondents were asked to respond to the following question:

> *Assess yourself on the basis of the degree to which the statement applies to you (most of the time) in your role as a manager or director in your company. Indicate the extent of your agreement with each statement by selecting a number between -3 (= very strongly disagree) and +3 (= very strongly agree).*

Respondents' risk management knowledge was elicited through a set of questions (with twelve items) related to their familiarity with alternative risk management strategies. Respondents were asked the following question

> *How familiar are you with the following risk management strategies or practices. (Please use the following scale and circle the number that best indicates your feeling.)*

as it relates to twelve types of risk management strategies. In each case there were seven possible responses:

Not at all
Very unfamiliar
Unfamiliar
Neutral
Familiar
Very familiar
Extremely familiar

Respondents were then asked their perceptions about the importance of alternative risk factors and the effectiveness with which their firm managed these risk factors. Respondents were asked the following question:

Table 2. Sample Respondents' Characteristics

Characteristics	Number	Percentage
Director	16	53
Manager	14	47
Male	28	93
Female	2	7
Age > 54	9	30
Education > High school	20	67
Income > CAN$100,000	15	50
Supply Co-operatives	28	93
Marketing Co-operatives	2	7

How would you rate the importance of the following risk factors in your company during 2003?

as it relates to seventeen different potential sources of risk. In each case, they were given seven alternative numerical responses ranging from 7 (highly important) to 1 (not important at all). Respondents were then asked:

How effectively were these risks managed in 2003?

again with seven possible numerical responses in each case (ie, from '7' meaning highly effective, to '1' meaning not effective at all).

To identify potential respondents, all agricultural marketing and supply co-operatives in the provinces of Alberta, Manitoba, Saskatchewan, Ontario, British Columbia and Quebec were first contacted, either by mail, telephone or fax. The initial contact was made to explain the nature of the research project and its importance for the co-operative sector. The co-operatives were also asked about their willingness to participate in the survey.

Of the 426 co-operatives initially contacted, only 17 expressed a willingness to participate, a response rate of 4 per cent. Next, questionnaires were sent to these 17 co-operatives for distribution to managers and directors. A total of 139 survey questionnaires were sent by direct mail to the 17 co-operatives.[2] Reminder mailouts and phone calls were sent/made to the participating co-operatives.

Using this 'indirect'[3] mail method a total of 30 completed questionnaires were received from co-operative managers and directors, for a direct mail response rate of 20 per cent. Given the two stage nature of this survey, this response rate is unsatisfactory and therefore care should be taken in interpreting the numerical results. However, as noted in the introduction this survey is considered to be a 'pilot' to assess the use of these survey techniques in investigating risk perceptions, attitudes and knowledge for co-operative directors and managers. Consequently, the results are potentially useful for helping to identify future research directions.

Table 2 depicts sample respondents' characteristics. Of the 30 respondents, 14 were managers and 16 were directors. The respondents included 2 females and 28 males. Approximately 67 per cent of the respondents had more than high school education, 30 per cent of the respondents were above the age of 54 years, and 50 per cent of the respondents had before tax household income greater than CAN$100,000 for the year 2003. More than 80 per cent of the respondents were from agribusiness supply co-operatives while the rest of the respondents were from feed mill, fruit and flower co-operatives (Table 3).

For each category of question in the survey (ie, general risk attitudes, awareness of risk management tools, perception of risk factors), general patterns in the results are identified and discussed. Where appropriate, significant differences in terms of the responses for managers versus directors are noted and discussed. Mann-Whitney tests[4] are used to identify statistically significant differences between these two groups.

Results and Discussion

The overall results on financial risk attitudes are provided in Table 4. Responses to the psychometric question:

Assess yourself on the basis of the degree to which the statement applies to you (most of the time) in your role as a manager or director in your company. Indicate the extent of your agreement with each statement by selecting a

Table 3: Distribution of Sample Respondents by Activity

Activity	Number of Responses	Percentage
Agricultural Supply	11	37
Feed Mill	3	10
Farm Petroleum	14	47
Fruit Growers	1	3
Flower Growers	1	3

Table 4. Differences in Risk Attitudes between Co-operative Managers and Directors (N=30)

	Managers	Directors	Mann-Whitney U Test	
Items representing Co-operative Leaders' Risk Attitudes	**(Mean Score)**	**(Mean Score)**	**Z-score**	**P-value**
When making investment decisions, I am willing to accept more risk to achieve higher returns and reach shareholder/member goals.	0.29	0.69	-0.54	0.59
I generally like to suggest trying out new ideas.	1.93	1.19	-2.19**	0.03
After I make a significant business and financial decision, I normally feel optimistic that the decision I made will provide substantial benefits to shareholders/members.	2.00	1.88	-0.55	0.58
When it comes to business decision-making, I like borrowing to fund strategies although debt increases investment risks.	-0.93	0.00	-2.44***	0.01
I really don't let financial risk govern decisions when borrowing money to overcome capital constraints.	-1.07	-0.69	-0.55	0.59
Debt financing is a strategy to increase the return on equity despite the fact that it increases investment risks.	0.64	1.13	-1.38	0.17
In business, my main concern is the security of shareholders/members. Keeping the company's money safe is more important than earning higher returns with risk.	0.79	0.00	-1.95**	0.05
Safety is my main concern when borrowing money from banks and other sources, even when the expected benefit to the shareholders/members is very high.	0.57	0.38	-0.43	0.67
There is a serious financial risk exposure problem due to excessive debt financing in my company.	-1.93	-1.88	-0.70	0.48
I find making decisions about taking on additional debt difficult when there is limited information.	1.64	2.13	-1.61*	0.11
Debt financing risk has made many companies paranoid about excessive debt financing.	0.43	0.34	-0.11	0.91
After Dairyworld, one of the largest farmer-owned western Canadian co-operatives, was sold to a private company I worried more about the survival of my company.	-1.21	-0.94	-0.43	0.67

Note: -3 = strongly disagree, +3 strongly agree; *** and ** represents 99 and 95 per cent confidence level, respectively.

number between -3 (= very strongly disagree) and +3(= very strongly agree) is used to examine manager-director risk attitude differentials.

The mean values of each items and a summary of Mann-Whitney test results for risk attitude differences between managers and directors are presented. Note that a positive mean score for the first six statements would correspond to 'preferring risk' while a positive mean score for the next six statements would correspond to 'risk aversion' (Table 4).

The mean comparisons indicate that of the 12 items examined there are four for which the risk attitudes of managers differ from those of co-operative directors. Sample managers are more likely to qualify as 'preferring risk' in trying out new ideas (statement #2) than are co-operative directors. Sample managers are more likely to be categorised as 'risk averse' when it comes to borrowing funds (statement #4) than are directors. When it comes to the safety of the co-operative (statement #7) and acquiring additional debt (statement #10), sample managers tend to be classified as 'risk averse' more often than directors. Although these findings are valuable in providing insights on the differences between agents and their implications, strong conclusive remarks may not be made due to the small sample size. However, understanding decision makers' risk attitudes or tolerance and its impact on the firm's strategic decisions has implications with regards to their ability to compete successfully. While meeting competition has always been a part of the *laissez faire* market system, the type of competition faced by co-operatives today is qualitatively more intense and threatening. It is important to have a clear policy on risk management and to acknowledge that risk management eventually depends on risk attitudes. Thus, understanding of key decision makers' behaviour is important. The next section discusses decision makers' awareness of alternative risk management instruments.

Risk Management Strategies Knowledge

In this section, responses to the risk management strategy awareness psychometric question:

How familiar are you with the following risk management strategies or practices. (Please use the following scale and circle the number that best indicates your feeling: 'Not at all', 'Very unfamiliar', 'Unfamiliar', 'Neutral', 'Familiar', 'Very familiar', and 'Extremely familiar'.)

are analysed. Respondents indicated their level of familiarity with risk management strategies on a scale of -3 (low – not familiar at all) to +3 (high – extremely familiar). Cronbach's Alpha coefficient is used to measure how consistently individuals respond to the items within scale (Cronbach, 1951; Allen and Yen, 2002). For a set of items to be reliable (or internally consistent), the widely accepted Alpha value is 0.7 or higher. For the present study, the calculated value of Alpha is 0.897 suggesting strong consistency of individual response.

A summary of the survey results for managers and directors is presented in Table 5. The surveyed managers and directors appear to be most knowledgeable about insurance, leasing/renting, and investment diversification and least knowledgeable about the use of derivatives as a risk management strategy. The majority of co-operative decision makers seem to be familiar or very familiar with insurance (87 per cent), leasing/renting (93 per cent), deferred or delayed price contract (56 per cent) and investment diversification (80 per cent). Conversely, less than 20 per cent of co-operative decision makers were familiar or very familiar with derivatives (16 per cent), currency swaps (17 per cent), interest rate swaps (20 per cent) and commodity swaps (13 per cent) as risk management tools. These results are confirmed through an examination of the mean values; most of the traditional instruments have positive means while all of the derivative instruments have negative mean scores.

These results contrast somewhat with previous research for investor-owned firms. Previous studies have studied the prevalence of derivative usage in risk management by corporate firms. Bodnar and Gebhardt (1998) compared derivative usages in the US and Germany and found that 75 per cent of German firms and 57 per cent of US firms use derivatives. In the same study, it was found that only 10.6 per cent of US firms indicated a lack of knowledge about derivatives. In Canada, 60.3 per cent of firms use derivatives in general, while 45.2 per cent foreign exchange derivatives, 26.7 per cent interest rate derivatives, 18.2 per cent commodity price derivatives (Bartram et al, 2004).

Comparisons between sample managers and directors indicate that, with the exception of

deferred or delayed price contract, there are no statistically significant differences in terms of familiarity with the various risk management instruments (Table 5). Because directors have limited ownership shares in these companies and in many cases are managers for their own agricultural firms, they may also have little incentive to familiarise themselves with alternative risk management instruments that may be of value for agri-business co-operatives. It may also be the case that agricultural co-operatives traditionally serve the function of sharing risk among owner-members. These factors may at least in part explain the pattern of survey results for directors in terms of knowledge of risk management instruments.

It may be argued that managers of these co-operatives should have an incentive to understand potential risk management instruments for these co-operatives, as part of their job. However, the absence of share ownership by managers in co-operative firms may provide an incentive to expend less effort to learn more about alternative risk management strategies than if they had had a significant ownership stake in the firm (ie, from agency theory). In general, these results tend to suggest that management is less concerned with managing risk. These results raise an important question for further research: why do co-operatives' management and directors ignore the recommendation of the theoretical financial risk management literature? The lack of knowledge about the use of derivatives is not, however, limited to co-operative firms. For instance, in a comparative survey of derivatives usage in risk management by US and German non-financial firms, about 10.6 per cent of US firms indicated lack of knowledge about derivatives (Bodnar and Gebhardt, 1998). With the changing marketing norms and rule of the game, adopting and using risk management as one part of strategic management by co-operative is inevitable in terms of strengthening their competitive position in the marketplace.

Importance of Risk Factors and Effectiveness of Risk Management

The analysis of the importance of risk factors is based on the question:

> *How would you rate the importance of the following risk factors in your company during 2003?*

Respondents were asked to rate, on a scale of 1 (low - not important at all) to 7 (high - highly important), a number of potential sources of risk (Table 6) in terms of the relevance or importance to their company.

Results suggest that managers' and directors' perceptions as to the importance of risk sources are similar. Mean values for sample managers and directors, as well as pooled

Table 5: Differences in Familiarities with Risk Management Strategies between Managers and Directors (N=30)

	DMs' Familiarity (%)	Managers (Mean Score)	Directors (Mean Score)	Mann-Whitney U Test[e] Z-score
Traditional Instruments				
Insurance	87	1.29 (52)	1.06 (81)	-0.57
Leasing/renting	93.4	1.21 (93)	1.44 (94)	-1.02
Investment diversification	80	0.57 (71)	1.13 (87)	-1.55
Deferred or Delayed Price Contract	56.6	-0.43 (36)	0.69 (75)	-2.41**
Hedge-to-Arrive (HTA) Contract	20	-1.07 (14)	-0.56 (25)	-0.98
Derivative Instruments	16	-1.43 (14)	-0.93 (19)	-0.90
Forward cash contract	36.7	-0.36 (43)	0.25 (50)	-1.19
Futures market	60	-0.07 (57)	0.69 (63)	-1.37
Options	50	-0.21 (50)	0.44 (50)	-1.08
Swaps				
Currency swap, cap, floor or collar	16.7	-1.07 (14)	-1.00 (25)	-0.09
Interest rate swap, cap, floor or collar	20	-1.14 (14)	-0.94 (25)	-0.41
Commodity price swap, cap, floor or collar	13.3	-1.43 (0)	-0.88 (25)	-0.89

[e]: Note that ** represents 95 per cent confidence level. Figures in parentheses are the percentages of managers and directors that are at least familiar (or greater) with each type of risk management instrument

responses, are provided in Table 6. Weather risk was rated as the most important source of income variability (ie, pooled response average of 5.76), followed by credit risk (5.69) and market place competitiveness risk (5.22). Foreign exchange risk was the lowest rated source of risk (2.80). With the exception of credit risk, which was viewed as being more important by managers than by directors, there were no statistically significant differences in terms of the ratings of risk factors between managers and directors.

From the mean values presented in Table 6, there is no obvious pattern with respect to the types of risks viewed as being more versus less important by co-operative managers and directors. Of the top five most important sources of risk, using pooled response averages, two represent 'technical' risk sources (ie, weather and livestock disease), two represent 'market' risk sources (ie, market place competitiveness and commodity price) and one is a source of credit risk. However, other than credit risk, other sources of market/financial risk tend to be ranked lower by sample managers and directors (ie, debt leverage risk is tenth and interest rate risk is fifteenth).

The efficacy of risk management activities was explored using responses to the question:

How effectively were these risks managed in 2003?

where 'these risks' refer to the same categories used in the previous question. Respondents were asked to rate the degree to which risks was managed effectively by their companies on a scale of 1 (low - not effective at all) to 7 (high - highly effective).

Mean values for the ratings of the effectiveness of risk factors are provided in Table 7. Generally, sample managers and directors felt that property damages/losses and debt leverage risks are relatively well managed in their companies; the lowest average score was 3.30, for foreign exchange risk. Of the seventeen risks provided in the question, the highest pooled response average scores were for property damage/losses (5.04), input supply risk (4.92), debt leverage risk (4.92) and credit risk (4.86). These risks were perceived by respondents to be the most effectively managed by their businesses.

As with the perceptions of the risks themselves, there was no general trend in terms of certain categories of risks (ie, technical, market or financial) being managed in a better or worse manner. There were also no significant differences between managers and directors in terms of ranking effectiveness of risk management (Table 7) with the exception of effectiveness of weather risk management. Relative to managers, sample directors thought that weather risks were managed more effectively.

Table 6: Importance Rating of Risk Factors (1= not important at all, 7 = highly important)

Risk Factors	N	Overall[a]	Managers	Directors	Mann-Whitney U Test[e]	
		(Mean)	(Mean)	(Mean)	Z-Score	P-value
Technical/Operational Risks						
Weather risk	29	5.76 (1)	5.77	5.75	-0.37	0.71
Inventory spoilage risk	30	3.67 (16)	3.79	3.56	-0.13	0.90
Livestock disease risk	27	4.82 (5)	4.55	5.00	-0.25	0.80
Loss of key personnel risk	30	4.67 (6)	4.93	4.44	-1.01	0.31
Data accuracy risk	28	4.46 (8)	4.67	4.31	-0.66	0.51
Technology risk	28	4.00 (13)	4.58	3.56	-1.78	0.07
Regulatory risk	26	3.96 (14)	4.33	3.64	-1.27	0.20
Property damage/losses risk	28	4.21 (11)	4.08	4.31	-0.45	0.65
Input supply risk	26	4.15 (12)	4.08	4.21	-0.11	0.92
Business Risks	27	4.56 (7)	4.55	4.56	-0.23	0.81
Market place competitiveness risk	27	5.22 (3)	5.17	5.27	-0.57	0.57
Net return variability risk	26	4.35 (9)	3.83	4.79	-1.23	0.22
Credit risk	29	5.69 (2)	6.23	5.25	-2.02**	0.04
Market/Financial Risks						
Commodity price risk	29	5.03 (4)	5.00	5.06	-0.30	0.77
Foreign exchange risk	25	2.80 (17)	2.82	2.79	-0.48	0.63
Debt Leverage risk	27	4.30 (10)	3.83	4.67	-1.35	0.18
Interest rate risk	28	3.89 (15)	3.50	4.19	-1.30	0.19

Note that, [a]: the numbers in parentheses represent rating of risk factors. [e]: ** represents 95 per cent confidence level.

Concluding Remarks

This study presents results from a 'pilot project', investigating risk perceptions, attitudes and knowledge for directors and managers of co-operative agribusiness firms. This is done using a novel survey approach. While the sample resulting from the survey is extremely limited in size, there appear to be statistically significant differences between managers and directors in terms of attitudes towards risks associated with long-term borrowing. In terms of familiarity with different risk management tools, directors and managers do not differ significantly. However, within the overall sample, there are differences in the familiarity when different risk management alternatives are compared. Finally, there appears to be commonality between managers and directors in terms of their perceptions of risks facing their businesses, and the degree to which these risks are managed effectively.

The exhibited differences in risk attitudes may have implications for these businesses in terms of contributing to agency problems. The differences may result in increased costs of resolving conflicts (agency costs), or they may delay the process of decision-making. Ultimately, they may negatively influence the actual business performance and members' welfare and hamper the success of the co-operative business.

'Findings' from this study have several managerial implications. Previous studies have suggested that differences in risk attitudes for decision makers within a business may affect corporate financial risk management (eg, Hailu et al, 2004). In addition, if managers' holdings are substantial, their motivations become aligned with those of shareholders and potential for agency problems is reduced (eg, Demsetz and Lehn, 1985; Jensen and Meckling, 1976). In the case of co-operative businesses, where managers have no equity holdings in the business, the motivations of the managers and directors/ members may not be very well aligned. Thus, differences in risk attitudes may be expected. Second, acknowledging and aligning the differing decision makers' attitudes through technical support may facilitate the optimisation of the overall co-operative goals.

The evidence from the survey may suggest a need for technical support for co-operative decision makers in the area of financial risk management. There appears to be a lack of familiarity with tools that address this general area of risk management. However, this does not seem to negatively affect, in general, the perceptions of co-operative managers with respect to their ability to manage these types of risks.

Table 7: Ratings of Effectiveness Risk Management (1= not effective at all, 7 = highly effective)

Risk Factors	N	Overall	Managers	Directors	Mann-Whitney U	
		(Mean)	(Mean)	(Mean)	Z-score	P-value
Technical/Operational Risks						
Weather risk	27	4.07	3.62	4.50	-2.10**	0.04
Inventory spoilage risk	29	4.62	4.93	4.33	-1.15	0.25
Livestock disease risk	27	3.63	3.67	3.60	-0.15	0.88
Loss of key personnel risk	28	4.29	4.23	4.33	-0.14	0.89
Data accuracy risk	28	4.68	4.69	4.67	-0.07	0.94
Technology risk	26	4.50	4.75	4.29	-0.85	0.39
Regulatory risk	25	4.08	3.67	4.46	-0.98	0.33
Property damage/losses risk	27	5.04	4.92	5.13	-0.28	0.78
Input supply risk	25	4.92	4.83	5.00	-0.03	0.98
Business Risks	26	4.38	4.27	4.47	-0.30	0.77
Market place competitiveness risk	27	4.56	4.33	4.73	-0.72	0.47
Net return variability risk	25	4.44	4.17	4.69	-0.72	0.47
Credit risk	28	4.86	4.85	4.87	-0.26	0.79
Market/Financial Risks						
Commodity price risk	28	4.29	4.15	4.40	-0.02	0.98
Foreign exchange risk	23	3.30	3.20	3.38	-0.24	0.81
Debt Leverage risk	26	4.92	4.67	5.14	-0.82	0.41
Interest rate risk	27	4.37	4.58	4.20	-0.71	0.48

Note that ** represents 95 per cent confidence level.

Finally, given the limitation of this study, further research may allow an assessment of the robustness of these results. Although the results from this study are not conclusive due to the small sample size, they provide some directions and suggestions for future research. The 20 per cent 'indirect' mail response rate is disappointing although not unusual. The 4 per cent response rate at the co-operative level, however, is unsatisfactory. The lower response rate for direct mail method is in line with response rates achieved in other related studies that used this method. For example, MacCrimmon and Wehrung (1986) achieved a direct mail response rate of 7 per cent (509/3530) in the study of differences in risk attitudes between Canadian and American top executives. However, they were able to achieve a higher response rate of (ie, approximately 48 per cent, 215/450) when they used a personal contact survey method.

There does not appear to be a single obvious explanation for the low mail survey response rate. One could argue that factors such as respondents' time constraints, increasing numbers of survey requests, and concerns about confidentiality, may lead to lower response rates. Future extensions to this study may consider using the personal contact approach in order to increase the response rate. Other options for enhancing response rate include providing incentives (eg, offering to educate co-operative leaders about the value of the research), attempting multiple contacts (eg, many call-back, refusal conversion), using a pre-notification letter, training interviewers in face-to-face survey, sponsorship by and collaboration with government organisations (eg, Canadian Co-operative Association, Canadian Co-operative Secretariat), conducting multiple mode survey (eg, combining mail surveys with web survey), and developing a shorter survey instrument.

Although the study demonstrated the lack of knowledge about innovative risk management in co-operative business, care must be taken when extrapolating the results to the general population. Further research that is geared towards answering the following question is warranted. Do the results in this study extend to a larger and diversified sample of managers and directors? By using an adequate sample size from diverse co-operative types and structure, more confidence may be placed on the representativeness of the results. Anecdotal evidence suggests that investor owned firms are better managed due to qualifications of board members and managers. Exploring differences in management between agribusiness co-operatives and investor owned firms in the Canadian context would provide important lessons to successfully managing co-operatives.

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Footnotes

1 Detailed results for the entire survey are available from the authors.
2 The contact person for each responding co-operative was asked to indicate the number of surveys that should be forwarded to their organisation. The total number requested from the 17 co-operatives was 139 surveys.
3 Direct mails were sent to the co-operatives. The contact persons in each co-operative distributed the questionnaires to the participants.
4 Non-parametric procedures are recommended when sample size is small or the distribution of the population from which the data is obtained is uncertain (Hollander and Wolfe, 1973).