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Impact of Decision Makers Divergence in Risk Attitudes and Perceptions on Co-
operative Management in Canada

(Very Draft)

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Motivation: Risk can be defined as imperfect knowledge where the probabilities of the possible outcomes are known (Hardaker, Huirne, and Anderson 1997; Johnson and Boehlje 1981). Risk attitude¹ refers to the decision maker's general or consistent tendency towards risks. Risk attitudes are commonly modeled within an expected utility framework (von Neumann and Morgenstern 1947; Schoemaker 1982; Fishburn 1988) or using psychometrics/ Fishbein's multi-attribute attitude models (MacCrimmon and Wehrug 1986). Risk perception reflects the decision maker's interpretation of the likelihood of risk exposure and is defined as the decision maker's assessment of the risk inherent in a particular situation.

Within the finance literature, decision maker's risk attitude and perception assessment are assumed to be important factor in ensuring successful business management. In this regard, any information concerning risk attitudes and perceptions of managers and the Boards of Directors (BODs) could be useful for co-operative businesses in making decisions regarding training, personnel selection, and placement. Furthermore, assessment of managers' and BODs risk attitudes has important implications for the designing and choice of alternative financial risk management strategies/policies and the performance/success of co-operative businesses. Among other things, the process of risk management² may be affected by the risk attitude and risk perception of decision makers of the business.

¹ An attitude is a mental or neural state of readiness, organized through experience, exerting a directive or dynamic influence on the individual's response to all objects and situations to which it is related (Allport 1935).

² Risk management may be defined as choosing among alternative strategies to reduce risks.

One of the issues in co-operative finance concerns the capital constraints facing the user-owned organization under the financial risks associated with the various sources of capital. In Canada, some co-operative agribusinesses are in financial distress as a result of too much debt leverage (Goddard 2002). According to Robison and Barry (1987), optimal debt for a business depends, among other things, on the decision maker's risk attitude. For example, a risk averse decision maker would tend to hold less debt (MacCrimmon and Weherug 1986), *ceteris paribus*. Thus, in developing risk-based ranges of optimal debt policies, the extent to which managers or boards of directors (BODs) exhibit risk taking or risk avoiding behavior when making decisions with a variety of financial data is of specific interest.

Since the objective of the co-operative business is the maximization of its members' welfare (Bateman, Edwards, and LeVay 1979; Enke 1945), efficient allocation of the co-operative resources will be critical to whether the sector is competitive nationally and internationally. Theoretical evidence suggests that co-operative businesses are less efficient than investor-owned firms (Sexton, Wilson, and Wann 1989), due mainly to director lack of business expertise as compared to directors of investor-owned firms (Helmberger 1966) and the lack of an incentive structure in co-operatives to induce management to run the association efficiently (Caves and Petersen 1986). These problems may be related to risk attitude differentials between managers and the board of directors leading to differing opinions regarding investment, consolidation, and borrowing and ultimately firm financial risk exposure and implemented risk management strategies. No study has attempted to empirically scrutinize the impact of risk attitude differentials on co-operative business performance. Arguably, the variation in debt leveraging risk could be due to the increase in the transaction costs

associated with efforts to resolve conflicts and costs of time taken to arrive at consensus. Thus, risk attitude incompatibility may impede overall efficiency of resource use.

Literature Review: Several empirical studies have investigated risk attitudes for a variety of different classes of decision makers, using a variety of methods, examining a number of different issues (Chavas and Holt 1990; Antle 1987; Saha, Shumway, and Talpaz 1994; Pennings and Smidts 2001; Pennings and Leuthold 2000; Lence 2000; Pennings and Garcia 2001; Roosen and Hennessy 2003; Meuwissen, Huirne, and Hardaker 1999; Brockhaus 1980). For example, Brockhaus (1980) studies the relation between entrepreneurial decisions and risk. Johnson and Powell (1994) and Olen and Cox (2001) examine the relationship between risk attitudes and gender. Pennings and Smidts (2001) assess the relation between risk attitude and market behavior. Thus far, no study has explicitly explored the impact of divergence in risk attitudes of managers and BODs on business management such as selection of financial risk management strategies and capital structure decision. As a result, risk attitude incompatibility may impede the overall efficiency of resource uses. For example, risk-averse managers are expected to borrow less as compared to risk-taking managers. Managers' /directors' degree of risk-aversion has important implication on the level of debt financing risk exposure. Different attitudes will affect negotiations between directors and managers and potentially lead to conflict.

Objective: In this study we (i) construct a latent risk attitude based on observed variables, (ii) investigate whether risk attitude and perception differs between managers and boards of directors of co-operative agribusiness firms and, if so, determine the factors underlying

these differences, and (iii) statistically test the impact of the differences in risk attitude, if any, on co-operative business financial risk exposure (e.g., borrowing decision) and selection of financial risk management strategies.

Multi-attribute Behavioral Model: The Multi-attribute Behavioral Model has been used broadly to elicit unobservable decision maker risk attitudes (Pennings and Garcia 2001). In the Multi-attribute Behavioral Model or Fishbein multi-attribute model risk attitudes are theoretical constructs that are latent or are theoretical variables in that they cannot be directly observed. Instead, they must be inferred from observable responses. The multi-attribute attitude model is used to organize the key concepts of behavior and predict behavior.

For the purpose of this study, psychometric approach adopting the theory of Planned Behavior is used to elicit decision maker risk attitudes. The theory of planned behavior states that human behaviour/intentions are guided by attitude towards the behaviour (debt), subjective norm (perceived social pressure), perceived behavioural control (ability to affect company decisions), in addition to demographic characteristics (Figure 1).

In the psychometric approach, risk attitude is a latent variable whose “value” is inferred by answers to multi-scale questions. A system of equation is developed based on Fishbein’s attitude-behavior model.

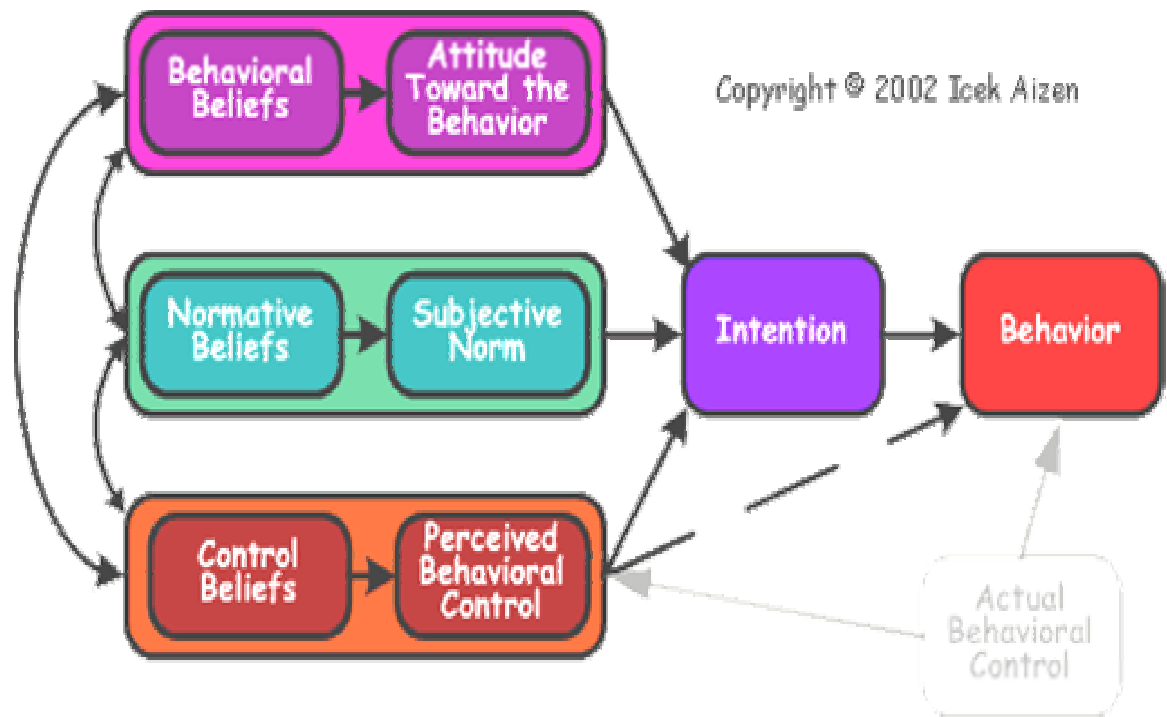


Figure 1: Theory of Planned Behaviour (Source: Aizen 2002)

Preliminary results:

Information on the risk attitudes and risk perceptions of the co-operative managers and directors is collected through a survey based on theory of planned behavior model. The analysis in this study is based on the first 24 observations. In the survey questions such as *“When making investment decisions, I am willing to accept more risk to achieve higher returns and reach member goals: Strongly Disagree ... Strongly Agree”* are asked to elicit general risk attitude managers and directors. Other specific questions were asked to elicit risk attitude. The actual behavior of the decision makers is also elicited using a set of question related to their intention. This is based on the assumption that behavior is the direct reflection of decision maker’s intention. Among other the intention questions include: *“In your opinion, could excessive debt financing lead to*

serious financial risk in your company?” “During the next two years I will approve additional borrowing to finance new investments in the company.” “During the next two years additional investments should be financed solely through equity.” “I intend to approve additional borrowing to finance new investments in the company over the next two years.” Responses from the sample managers/directors are summarized in figures [2]-[5].

Figure 2: In your opinion, could excessive debt financing lead to serious financial risk in your company?

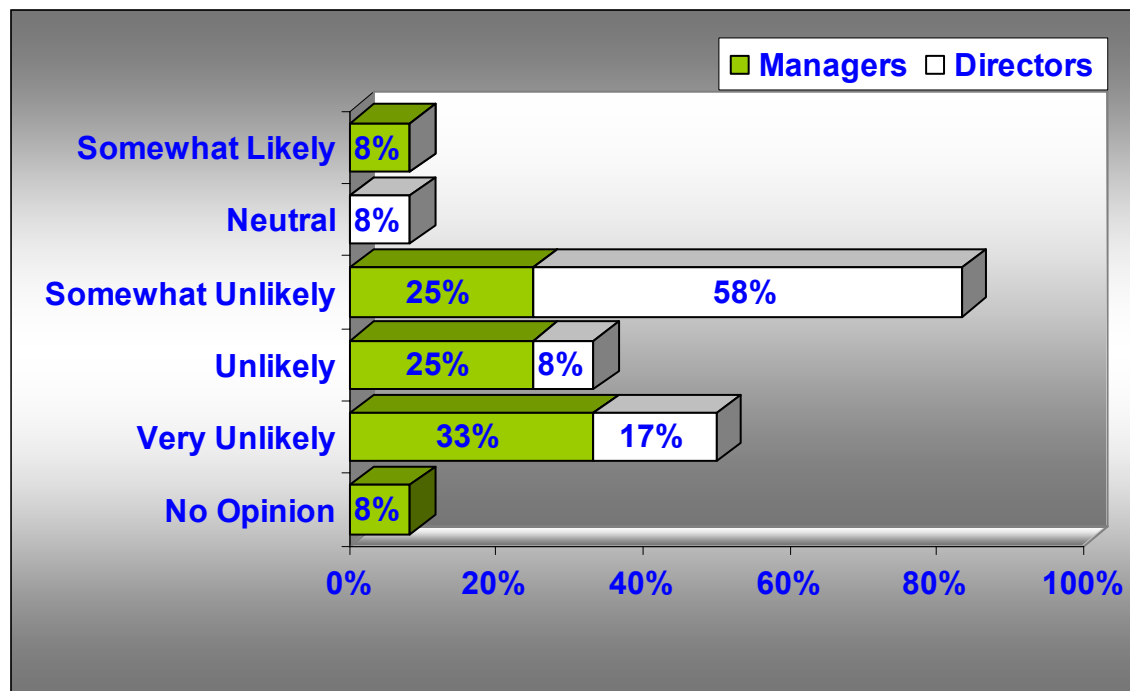


Figure 3: When making investment decisions, I am willing to accept more risk to achieve higher returns and reach member goals.

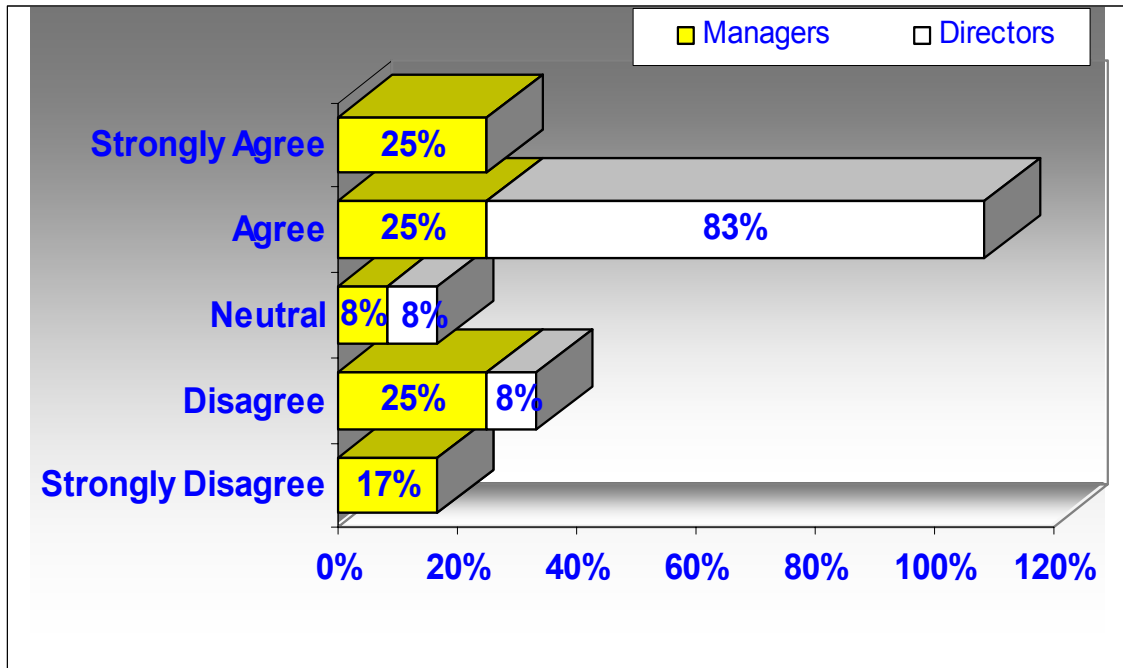


Figure 4: During the next two years I will approve additional borrowing to finance new investments in the company

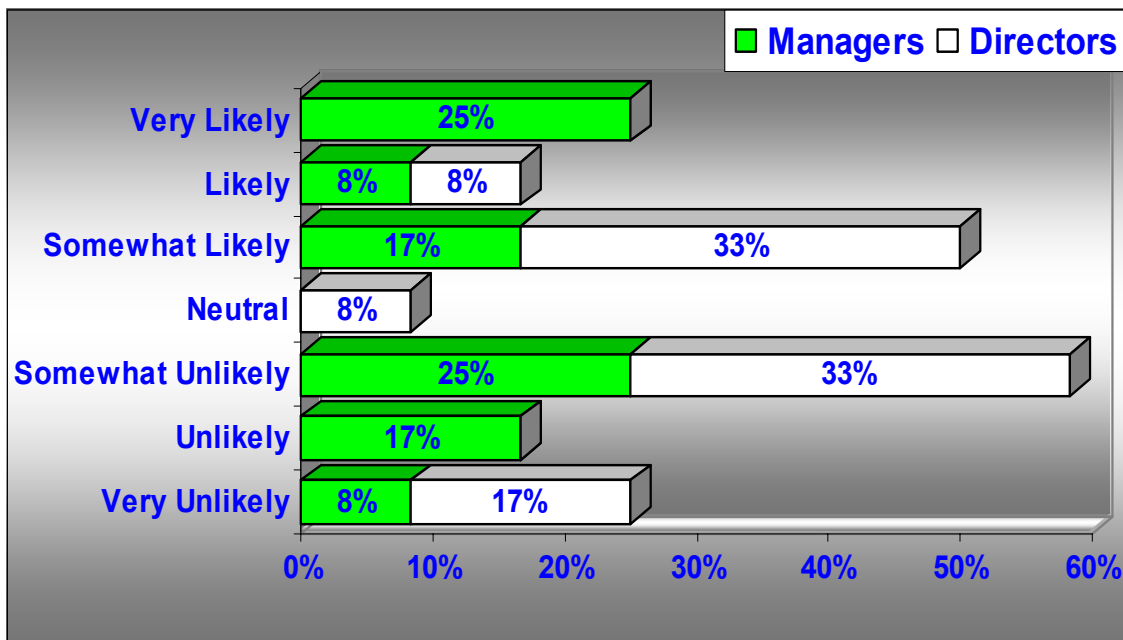
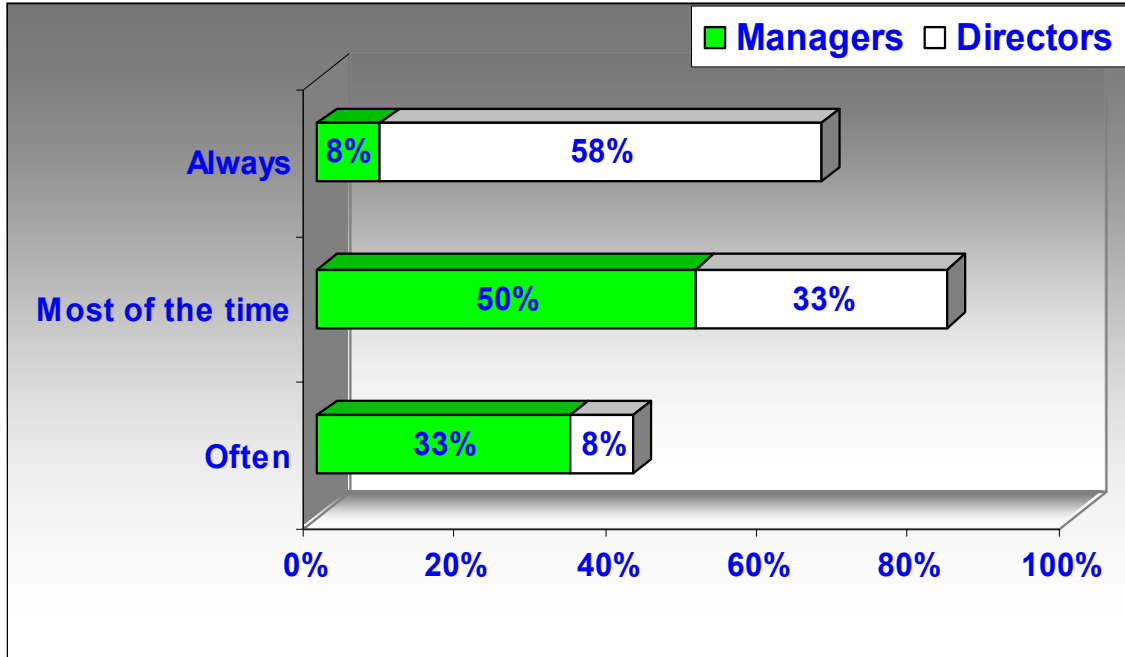


Figure 5: During the next two years additional investments should be financed solely through equity.



Based on figure 1 the following simultaneous system of equation is specified.

$$Intention = \beta_0 + \beta_1 ATB + \beta_2 SN + \beta_3 PBC + \sum_{j=1}^n \beta_j Demo_j + \varepsilon_1 \quad [1]$$

$$ATB = \alpha_0 + \sum_{j=1}^n \alpha_j Demo_j + \varepsilon_2 \quad [2]$$

$$SN = \delta_0 + \sum_{j=1}^n \delta_j Demo_j + \varepsilon_3 \quad [3]$$

$$PBC = \phi_0 + \sum_{j=1}^n \phi_j Demo_j + \varepsilon_4 \quad [4]$$

where ATB is attitude towards behaviour, SN is subjective norm, PBC is perceive bahvioural control, Demo is demographic characteristics (age, manager-director dummy variable, age, income), β , α , δ and ϕ are parameters to be estimated and ε 's are i.i.d. disturbance terms. The above equations are simultaneously estimated and resulted are reported in Tables [1] and [2]. Results indicate that the coefficient on attitude towards debt is positive and statistically significant suggesting that decision maker's attitude towards debt has a positive impact on intentions to increase debt capital. This may further

suggest that capital structure may depend on decision maker's attitude which is consistent with our theoretical review. The coefficient on perceived social pressure is also statistically significant and negative. This may suggest that perceived social pressure to increase or not to increase debt capital had negative impacts on intention to increase debt. The coefficient on Decision makers' perceptions of their ability to increase debt capital had negative impact on intention to increase debt capital.

The coefficient on the dummy variable manager-director is negative and significant suggesting that sample managers might have a lower intention to increase debt capital than directors. The coefficient on respondents' age is negative and statistically significant in all equations. This may suggest that age had a negative impact on, attitude towards debt, subjective norm, perceived behavioral control and intention to increase debt. Education had a positive impact on intention to increase debt capital and negative impact on attitude towards debt capital.

One of the hypotheses in this study is to test if there is difference in attitude towards debt capital between managers and directors of co-operative firms. In equations the coefficient on the dummy variable manager-director is statistically significant and negative. This may indicate that differing attitudes towards increasing debt capital or intention to increase debt capital between managers and directors may increase agency cost problems. Ultimately, this divergence in attitude may result in significant costs (transaction costs of negotiation) associated with resolving conflicts. In sum, decision maker's attitude towards debt may affect corporate financial risk management policy. Further research is warranted to investigate if the manager-board difference in attitude towards debt affect the success of the business.

Table 1: Determinants of Attitude towards Debt, Subjective Norm, and Perceived Behavioural Control

Variables	Attitude		Subjective Norm		Behavioral Control	
	Estimates	t-ratio	Estimates	t-ratio	Estimates	t-ratio
Intercept	16.753	3.119	7.056	1.161	48.397	2.341
Age	-1.655	-1.976	-1.543	-1.447	-8.537	-1.987
Manager (=1)	-6.088	-2.969	-6.077	-2.753	-23.416	-3.239
Education	-1.423	-2.677	0.467	0.740	0.864	0.404
Income	-0.158	-0.603	-0.056	-0.175	1.225	1.032

Table 2: Factor Affecting Decision Makers Intention to increase Debt Capital (During the next two years I will approve additional borrowing to finance new investments in the company) (n=24)

Variables	Estimates	t-ratio
Intercept	0.041	0.014
Attitude towards Debt	2.220	2.421
Subjective Norm	-1.740	-3.874
Perceived Behavioural Control	-0.488	-2.972
Age	-3.265	-1.851
Manager (=1)	-8.057	-1.973
Education	4.355	3.007
Income	0.644	0.634

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