A Behavioral Approach to Agricultural Finance

Calum G. Turvey

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The management of business and financial risk is ultimately a judgment call based not so much on the objective probabilities that are so often relied upon in academic models of optimization and equilibrium, but rather the experience-laden perceptions of risk that farmers get from life experience. Whatever hope or fears emerge from these risk perceptions, whether a farmer makes one choice over another is probably more of a visceral response to an uncertain and ambiguous informational environment and a sense of unease within a seemingly unpredictable and disorderly environment (cf Tullock 2003).

In fact there is a sense of unease amongst many financial economists about how well equilibrium and optimization plays out in practice, especially at the farm level. The current state of agricultural finance and economics is one of dispassionate objectivity where farmers, business and consumers are simple actors guided by a script written in various forms from the expected utility hypothesis. Departures from the script are brazenly treated as hideous departures from rationality and are either rejected outright, masticated into conformity by the strenuous application of ever more sophisticated statistics and econometrics, or simply blamed on the data.

Of course one cannot lose sight of the basic laws of economics dictated by the ephemeral flow of scarcity and abundance, but on the other hand under conditions of risk one cannot ignore that economic agents can have differing opinions. This is a failing of economics: How naïve we are to assign restrictions of homogeneity to individual decision makers as if markets were guided by a coherent group think! While group think (i.e. homogenous beliefs) as an axiom is convenient for theories of production and theories of the firm, it is aberrant in financial markets for group think leads to bubbles, contagion and ultimately disaster(Barberis and Thalor 2002). Irrational exuberance comes to mind (Shiller 2003) and behavioral finance is now one of the most vibrant areas of study.

As a discipline, agricultural finance has maintained a mathematical and quantitative approach with references to behavioral finance, risk perceptions or the relationship between risk and trust being very limited. Yet with some much of a disciplinary focus on risk and risk management, there is a need to start considering the relationship between producer response to risk and their perceptions of risk. Pidgeon et al (2003) for example consider the social amplification of risk in terms of how risk and risk events interact with psychology, sociology, institutional processes in ways that amplify and attenuate risk perceptions and shape risk behaviour, influence institutional processes and affect risk consequences. The societal perception of risk is often highly correlated with the technical or objective measures of risk, but it is frequently observed that small risks are overestimated while large risks are underestimated (Sjoberg 2000; Lichtenstein et al 1978). How significant these effects are depend upon how producers perceive risk. Slovic (1987) and Kraus and Slovic (1988) provide descriptive models of human risk perception that may be used to predict how agricultural producers will respond to

* Professor, Cornell University.

a stimulus, and how authorities (government and extension) can communicate the risks. Kraus and Slovic (1988) posit that risk perceptions are determined by seven characteristics; 1) voluntariness of activity, 2) dread of outcome, 3) control over consequences, 4) knowledge of associated risks, 5) catastrophic potential, 6) novelty or familiarity with risk, and 7) equity and distribution of consequences (see also Holtgrave and Weaver, 1993) .The realness of subjective probabilities thus comes into question, and this led to a number of heuristics about behavior and risk (Tversky and Kahneman 1973, 1974, Sjoberg 1979, 2000;Combs and Slovic 1979). Fischoff et al (1982) have shown that there are many dimensions to subjective risk assessments, and these include findings of a positive relation between beliefs and values, the target of the risk (self, family, general population), hazard dimension (vis new versus old risk, dread and exposure (Fischhoff et al 1978)) and more recently another factor called unnatural or moral risk (Sjoberg 2000) which may be useful in explaining how farmers balance debt or make decisions about planting gm crops, use of chemicals or tillage methods all of which include a moral imperative. However, the response at the producer level might also be muted or exaggerated by affect. Affect (Slovic et al, 2004) refers to a specific quality of 'goodness ' or 'badness' experienced as a feeling state (risk as feeling) and demarcating a positive or negative quality of a stimulus. Lowenstein et al (2001) add that emotional and cognitive appraisals of risk can have both affective and cognitive dimensions (Slovic et al 2002, 2004). The affective dimension assigns an attribute-good or bad-to the stimulus, which in turn may exacerbate or countervail the main logical reasoning of cognition (Loewenstein et al 2001, Slovic et al 2002, 2004). The emotional response might therefore exaggerate the risk and response that might otherwise occur with cognitive logic. In addition, affect may be influenced by ideology (Sjoberg 2000) which in turn is reflective of a set of beliefs and values.

In another, but related dimension, trust is a significant social variable that harmonizes social interaction, reduces social uncertainty and complexity and is an important element of social capital and stable economies. Furthermore trust and trustworthiness is regarded as a key dimension of risk assessment and communication and can affect perceptions through stigmatization and social amplification when risk regulation fails (Poortinga and Pigeon). Renn and Levine suggest that the core elements of trust revolve around Perceived Competence (degree of technical expertise), Objectivity (absence of bias), Fairness (many points of view), Consistency (Predictability based on past experience), and Faith (a degree of goodwill) (see also Kasperson et al (1992) ;Hovland et al (1953), Metlay (1999) ; Jungermann et al (1996) and Frewer et al (1996)).

The purpose of this (proposed) paper is to provide an overview of three interrelated sets of literature a) risk perceptions, b) risk communication and c) risk and trust with the intent of exploring how these concepts, rooted in psychology and sociology, can be applied to problems in agricultural finance including credit assessment, risk management and portfolio choice decisions. To a large extent these concepts, especially those based on Slovic's work deal with large social risks such as nuclear energy, tobacco consumption and so on, but from a conceptual base these psychological paradigms might go far in explaining farm decision making as well. To this end, this paper will provide an overview of the behavioral finance, risk perception and trust literature with the aim of discussing how these concepts can be used as either a challenge or complement to the conventional wisdoms applied to research in agricultural finance.