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Does Market Experience Attenuate Risk Aversion? Evidence from Landed Farm Households in Ethiopia

MEQUANINT B. MELESSE [a,b] and FRANCESCO CECCHI [b,c,*]

[a] *Bahir Dar University, Ethiopia*
[b] *Wageningen University, Netherlands*
[c] *University of Groningen, Netherlands*

Summary. — Risk preferences are important drivers of many relevant economic decisions of farm households. High risk aversion is a well-known trigger of "poverty traps" for farm households in developing countries. This paper analyzes the effect of market experience on risk aversion for a relatively large sample of landed farm households characterized by historically low mobility in Ethiopia. We measure risk aversion using lab-in-field experimental data, and relate it to actual market experience of household heads. We use an instrumental variable approach to address the issue of endogeneity due to possible self-selection into trade. We find that market experience attenuates risk aversion—farm households with greater market experience are more risk tolerant. Results are robust to using several alternative specifications, controlling for internal mobility, out-migration and other potential unobservables, and for violations to rational choice. Overall, this study provides strong empirical evidence that risk preferences endogenously change as a result of market experience, and can help design policies aiming to increase the productivity and efficiency of farm households.

Key words — endogenous risk preferences, risk aversion, market experience, experimental economics, Ethiopia

1. INTRODUCTION

Risk preferences play an important role in virtually all economic decision of farm households, like the adoption of improved agricultural technologies, the choice of inputs and production of different crops, and long-term investments. Poor farm households in developing countries are often characterized by a high degree of risk aversion (Binswanger, 1980; Dercon, 1996; Franken, Pennings, & Garcia, 2014; Harrison, Humphrey, & Verschoor, 2010; Humphrey & Verschoor, 2004; Wik, Kebede, Bergland, & Holden, 2004). Their allocation decisions typically reflect not only highest expected value opportunities, but also algorithms that minimize risk exposure—as they typically overweight potential losses over potential gains. [1] Accordingly, high expected value opportunities often go unrealized. Ample empirical evidence shows that risk-averse famers are reluctant to adopt innovations, such as improved agricultural technologies (Alem, Bezabih, Kassie, & Zikhali, 2010; Fafchamps, 2010; Lamb, 2003). Farmers may thus be locked into poverty traps induced by persistent risk aversion (Delpierre, Verheyden, & Weynants, 2016; Dercon & Christiaensen, 2011).

To date, much of the empirical research on risk taking among farm households in developing countries has focused predominantly on the characterization of risk preferences and their coping strategies (for a review and more discussion see Bhattamishra & Barrett, 2010; Dercon, 2008; World Bank, 2014). Traditionally, interventions aiming at changing the high risk aversion nature of farm households have focused mainly on affecting their decision incentives and constraints. Facilitating farm households' access to insurance markets has typically been the common approach of such interventions. The basic idea is that insurance markets can help farm households to "sell" and transfer risk, correspondingly relaxing their constraints. Evidently, a small but emerging experimental literature has reported results that indicate access to insurance markets induces farm households to take more risk, allocating more resources to high-return but high-risk agricultural investment and production choices (e.g., Karlan, Osei, Osei-Akoto, & Udry, 2014; Leiva & Skees, 2008).

These findings reflect changes in behavior, but do not address the issue of risk preferences *per se*. Economic literature has long suggested that individual preferences may endogenously change as a result of individual experience (e.g., Stigler and Becker, 1977; Becker & Mulligan, 1997; Netzer, 2009), and that markets can directly affect preferences (e.g., Bowles, 1998; Falk & Szech, 2013; Henrich, Ensminger, McElreath, Barr, *et al.*, 2010). In this paper we investigate whether market experience induces changes in risk preferences of landed farm households in Ethiopia. In particular, we hypothesize that risk aversion may be attenuated by market experience, potentially via reducing the relative weighing of potential losses over gains. This paper contributes to a diverse literature, both empirical and theoretical, trying to grope around the dynamics of preferences.

Several arguments can be found in literature as to why market experience may change risk preferences. First, exposure to trading in markets may constitute a natural "shock" that provides new experience to induce fundamental changes in risk preferences (Becker & Mulligan, 1997; Bowles, 1998; Netzer, 2009). Second, market experience has been found to reduce other behavioral "anomalies", such as the endowment effect (List, 2003) and revealed-preference violations (Cecchi & Bulte, 2013; List & Millimet, 2008). Third, a property often bestowed on markets is that they may be able to dispel individual biases (e.g., Gode & Sunder, 1993; Jamal & Sunder, 1996; Smith, 1982). Through time, this may in turn induce reduc-

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tions in such biases, driving biased traders to equilibrium. In fact, while Haigh and List (2005) find that professional traders still exhibit behavior consistent with myopic loss aversion (MLA), Feng and Seasholes (2005) show that sophistication and trading experience eliminate investors' reluctance to realize losses, though not their propensity to realize gains. Mayhew and Vitalis (2014) adapt a lab experiment by Gneezy, Kapteyn, and Potters (2003) and find that the MLA effect is all but eliminated by market experience, although their results do not transfer to other settings. List (2004) uses an artefactual field experiment to show that loss aversion adequately organizes behavior among inexperienced consumers, but consumers with intense market experience behave largely in accordance with neoclassical predictions, failing to exhibit a significant overweighting of losses.

We make use of the low-mobility of Ethiopian farm households who possess land rights designed to minimize migration and absentee landlordism—being conditional on active farming and residence within the same community[2]—to instrument market exposure with distance of their community of residence to the nearest daily markets. We employ context-free experimental measures of risk preferences, using a behavioral game designed to elicit risk aversion due to the overweighing of potential losses over potential gains (see Gneezy & Potters, 1997), which provides us an objective and incentive compatible measure of risk aversion with real payoffs at stake. Our results reveal that market experience robustly reduces risk aversion, as the share of capital invested in a lottery, with a 50% probability of losing half the invested amount and 50% probability of doubling the invested amount, increases. Next to self-selection into trade, we thoroughly address the issues of internal mobility and selective out-migration, which could make establishing causality difficult in studies of this type. Our finding has important implications for policy interventions aiming to spur rural development in poor countries. If market experience mitigates risk aversion, the penetration of markets in remote areas can be an additional important channel to reduce the productivity lag of rural households, directly helping them exit the poverty trap.

The remainder of the paper proceeds in the following order. Section 2 rationalizes the nexus between market exposure and risk preferences. Section 3 describes the setting and Section 4 summarizes our data and identification strategy. We discuss and interpret our results in Section 5. Section 6 subjects our result to a series of sensitivity checks to probe their robustness, while Section 7 briefly presents concluding remarks.

2. ENDOGENOUS RISK PREFERENCES AND MARKET EXPERIENCE

Recent evidence suggests that people's risk preferences can change over time. For example, Cameron and Shah (2015) report an increase in risk aversion after exposure to natural disasters in Indonesia. On the other hand, Voors *et al.* (2012) and Hanaoka, Shigeoka, and Watanabe (2014) document a decrease in risk aversion (i.e., increased risk tolerance) after exposure to civil conflicts in Burundi and natural disasters in Japan, respectively. Eckel, El-Gamal, and Wilson (2009) also report a decrease in risk aversion after exposure to Hurricane Katrina. Taken together, this literature points to the fact that risk preferences may not be as hard wired as previously thought, and that life experiences may change one's willingness to take risks.

Market exposure may also affect risk preferences. Different authors have documented empirical evidence suggesting that markets play an important role in shaping and influencing preferences in several ways. For example, Henrich *et al.* (2010) find that exposure to markets may promote fairness, cooperation, and the propensity to trust others. List (2003, 2011) shows that market experience plays a significant role in eliminating behavioral anomalies, like the "endowment effect"—the fact that individuals demand much more to give up a good than they would pay to acquire it. The endowment effect, in turn, has often been explained by the existence of loss aversion (e.g., Kahneman, Knetsch, & Thaler, 1990; Thaler, 1980). Coherently, List (2004) finds that inexperienced agents tend to make loss-averse choices that are better explained through prospect theory (Kahneman & Tversky, 1979), while agents with intense market experience behave largely in accordance with neoclassical predictions. This is different from saying that market experience changes peoples' risk preferences, though it partially implies it. In fact, if market experience eliminates the kink in indifference curves around the current endowment (Kahneman & Tversky, 1979), given an investment with constant and positive expected value and constant chances of gains and losses, people should be willing to invest more as they "learn" not to overvalue losses. In other words, the revealed preference for risk increases as people become less loss-averse and start behaving closer to the expected utility hypothesis.

The negative correlation between market exposure and risk aversion has been documented in a variety of settings. For example, Fellner and Maciejovsky (2007) find that high risk aversion and low levels of market activity are systematically related, while Franken *et al.* (2014) show that risk aversion is associated with the choice of more conservative marketing alternatives among American agricultural producers. While suggestive, these studies do not provide conclusive evidence about the causality underpinning such relationships. Arguably, market exposure may be endogenous to risk preferences—more risk-averse agents may self-select out of market exchanges, and vice versa. To the best of our knowledge our study is the first to go beyond documenting simple correlations, and attempt to address the causal relationship between market experience and risk aversion outside the laboratory setting.

3. SETTING

We conduct an experiment involving 532 randomly sampled landed farm households from 179 villages in 18 Kebeles (municipalities) of West Gojjam, in the Amhara Region of Ethiopia. Our subjects were the main income earners in the family (household heads). These individuals often assume the primary responsibility for making important economic decisions, and are more likely to confront major risky choices of their respective households on a continual basis—their livelihood depends on how well they deal with risks. All the households in this study possess a usufruct title on the land they farm. In Ethiopia, land use rights are legally bound to permanent physical residence in the community (Deininger & Jin, 2006), which reduces the mobility of landed household systematically.

Prior to the land reform proclamation of 1975, the major form of land ownership in the sampled communities was the *rist*, a system that bestowed the right of use to land to all descendants of an individual "founding father". Land usage rights were distributed to individual households, but land was inalienable and inviolable. No individual household could sell their share of land outside the family, but if a household

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