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## Competitive in the lab, successful in the field?☆

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### ABSTRACT

A number of lab experiments in recent years have analyzed people's willingness to compete. But to what extent is competitive behavior in the lab associated with field choices and outcomes? We address this question in a setting of entrepreneurship, where we combine lab evidence on competitiveness with field evidence on investment, employment, profit, and sales. We find strong evidence that competitiveness in the lab is positively associated with competitive choices in the field (investment and employment) and weaker, but suggestive, evidence of a positive link to successful field outcomes (profit and sales). Other non-cognitive skills measured in the lab, including risk- and time preferences and confidence, and cognitive skills are less consistently associated with the field variables. Our findings suggest that the willingness to compete in the lab identifies an important entrepreneurial trait that shapes the entrepreneur's field choices and to some extent also field outcomes.

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## 1. Introduction

There is a growing literature studying competitive behavior in the lab, but little is still known about how competitive behavior in the lab is associated with field choices, and even less is known about how it is associated with field outcomes.<sup>1</sup> [Buser et al. \(2015\)](#) and [Zhang \(2012\)](#) study secondary school students and demonstrate that competitive choices in the lab are associated with entry into competitive study profiles and exams. These studies do not consider field outcomes, even though it is clearly important to understand whether the students make the right educational choices. Choosing to compete

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<sup>1</sup> Key contributions to the experimental literature on competitiveness include [Niederle and Vesterlund \(2007\)](#), [Booth and Nolen \(2012\)](#), [Flory et al. \(2010\)](#), [Gneezy et al. \(2003, 2009\)](#), [Gneezy and Rustichini \(2004\)](#), and [Healy and Pate \(2011\)](#). See also [Fortin \(2008\)](#), who shows that individuals who self-report being more competitive have higher wages and earn more, and [Ors et al. \(2013\)](#) who find that women perform worse than men in a competitive setting, but outperform men in a less competitive setting. See [Levitt and List \(2007a,b\)](#) and [Falk and Fehr \(2003\)](#) for discussions of the external validity of lab experiments.

is not necessarily a winning strategy, and therefore, ultimately, we would also like to know whether competitive behavior in the lab maps into successful outcomes in the field.

The present paper contributes to this literature by studying the association between competitiveness in the lab and entrepreneurial choices and outcomes in the field, using a group of small-scale business owners in Tanzania as subject pool.<sup>2</sup> The entrepreneurs took part in a lab experiment, where we in addition to competitiveness also measured other non-cognitive skills, such as risk- and time preferences and confidence, and cognitive skills. They were subsequently visited at their business over a two-year period to measure field choices and outcomes. Small-scale entrepreneurship is an attractive setting for studying the association between the lab and the field for two reasons. First, it offers a rather uncontroversial measure of success in the field, namely profit (or sales). Second, it provides a context where it is reasonable to assume that business practices observed in the field reflect the choices of the owner; we use investment and employment decisions as indicators of competitive field choices, as these may be used to give a firm a competitive advantage relative to other firms (by increasing capacity and lowering marginal costs).

Our study shows that (i) there is a strong and robust association between competitive behavior in the lab and investment and employment choices in the field, (ii) entrepreneurs who compete in the lab tend to have higher profits than those who do not compete, and (iii) willingness to compete is the entrepreneurial characteristic that is most consistently associated with competitive choices and successful outcomes; other cognitive and non-cognitive skills have less consistent explanatory power.

A number of other studies have shown that risk- and time preferences measured in the lab are strongly associated with field behavior. Sutter et al. (2013) demonstrate this for health, savings, and conduct at school, using a sample of children and adolescents, and Dohmen et al. (2011) and Fisher (2010) show that risk preferences in particular are strongly associated with career choice.<sup>3</sup> Our paper differs from these studies in two important ways. First, by considering a very different sample, namely small-scale entrepreneurs in a development context. Second, by including willingness to compete alongside risk and time preferences, which enables us to shed light on which is the more important entrepreneurial trait for competitive choices and successful outcomes.

The rest of the paper is organized as follows. In the next section, we introduce the data from the lab and from the field. In Section 3, we present the results from our study. In Section 4, we provide concluding remarks.

## 2. Sample and data

Our sample consists of 207 small-scale entrepreneurs in Dar es Salaam, Tanzania, all members of one of the leading microfinance institutions in the country, PRIDE Tanzania. Most of them are involved in small-scale commerce (running a small kiosk, having a stall at the market) or different sorts of service activities (hairdressing, small restaurants), with a few also involved in light manufacturing (tailoring, carpentry, brick making) or agriculture. They are organized in loan groups of five entrepreneurs, who are jointly responsible for each other's loans in the microfinance institution. There are 143 loan groups represented in our sample. The entrepreneurs formed part of a larger randomized control trial on entrepreneurship promotion, involving more than 600 subjects, documented in Berge et al. (2015).<sup>4</sup> Half of the entrepreneurs in our sample had randomly been offered business training as part of the larger research project (the training program was completed in January 2009), and all of them subsequently received a business grant of 100 000 Tanzanian Shillings (TZS) (around 80 USD).

The lab experiment was organized in March 2009. The entrepreneurs in our sample were randomly selected, among all the entrepreneurs involved in the larger randomized control trial, to take part in the lab experiment. The field data are from two survey rounds that we conducted in June–July 2009 and June–September 2011, where we visited all the entrepreneurs at their business premises. We managed to interview 207 out of the 211 entrepreneurs in at least one of the survey rounds, 194 in 2007 and 197 in 2011, and thus we have very low attrition.<sup>5</sup> In addition, we use background data (age and education) from the baseline survey that we conducted in June–July 2008 as part of the larger randomized control trial.

The upper part of Table 1 provides more details about the background of the entrepreneurs. We observe that the majority of the entrepreneurs in our sample are females, in line with the gender distribution in PRIDE. The average entrepreneur is 39 years old, married, and has completed primary schooling (which is seven years in Tanzania), but we observe that there is substantial heterogeneity both in age (ranging from 22 to 63 years) and in education (ranging from 0 to 18 years).

The lower part of Table 1 provides an overview of the field choices and field outcomes that we focus on in the analysis. These variables are self-reported by the entrepreneurs. Investments are measured as total investments in the two survey rounds, excluding purchases of stocks. Typical investments are sewing machines for tailors, cooking equipment,

<sup>2</sup> On the determinants of entrepreneurship more generally, see Becker (1975), Lazear (2004, 2005), Heckman et al. (2006), Hall and Woodward (2010), Vereshchagina and Hopenhayn (2009), Read and Van Leeuwen (1998), Doepke and Zilibotti (2014), and Acs et al. (2005).

<sup>3</sup> A number of other interesting lab experiments study how social preferences and trust relate to different types of field behavior, see for example Ashraf et al., 2006; Benz and Meier, 2008; Dohmen and Falk, 2011; Karlan, 2005; Meier and Sprenger, 2010, and Jakiela et al., 2010.

<sup>4</sup> At the time of the baseline, the entrepreneurs in our study had loans at the intermediate steps of the microfinance institution's loan ladder, and should thus be rather typical of microfinance clients in Dar es Salaam. Indeed, given the prevalence of microfinance, we conjecture that the entrepreneurs in our sample are fairly representative of small-scale entrepreneurs in urban Tanzania.

<sup>5</sup> For the entrepreneurs that we only reached in one of the two survey rounds, we assume that the observation also is representative for the other survey round.

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