## **Abstract**

The question posed in this dissertation is whether the quality of education can be improved in a developing country by means of incentives for students to learn. This complex topic has been subject to a plethora of research studies in economics, psychology, and sociology using data from developed countries, but comparatively few studies have been conducted in the developing world. I discuss evidence from an extensive randomized control trial (RCT) employing a variety of incentive mechanisms, which I designed and implemented in primary and secondary schools in Southern Uganda. This study involved more than 5,000 students aged 11 through 25 who were repeatedly interviewed and tested between 2011 and 2013. I collected data and analyzed the effects of different incentive schemes on students' performance on Math and English tests, and also on their well-being, measured by perceived happiness and stress. The latter is a unique contribution to this field of study.

The Preface provides contextual information on the Ugandan education system and the experimental design, critical to understanding the choices made at every level of this study. In Chapter 1, "The Dark Side of Incentives in Schools," I discuss the effects of feedback, as well as monetary and non-monetary incentives on students' performance and well-being. This study contributes by explicitly accounting for the tradeoffs between performance and well-being introduced by incentives. I implement two types of social comparative feedback regimes, within- and across-class group comparisons, and two types of incentive regimes, financial and reputation rewards. The results show that rewards can improve performance but at a cost of higher stress and lower happiness, whereas comparative feedback alone

(without rewards) increases performance only mildly but without a negative impact on student's stress and happiness levels. Moreover, the results show that more highly stressed students exert less effort, perform less well and are more often absent than those who are minimally stressed. Finally, the results also help to identify gender-specific responses to incentives: boys react strongly to rewards, but girls do so only if they are also given feedback.

In Chapter 2, "Information Provision and Overconfidence," I investigate whether and how students calibrate self-assessment of their performance in response to feedback and contribute evidence to the debate regarding the existence of the unskilled-but-unaware phenomenon.

While previous studies have found performance to be related to subjects' confidence (Camerer and Lovallo, 1999), some subjects consistently overestimate their abilities (e.g., Ehrlinger et al., 2008). Although informing subjects about their performance has been shown to decrease their inflated beliefs (e.g., Ryvkin et al., 2012), they remain overconfident (e.g., Lipko et al., 2009). A possible explanation is that they lack information about others.

As described in Chapter 2, students in the current RCT, who were from primary and secondary schools in Southern Uganda (as opposed to a typical sample involving (under)graduate students from developed countries), were evaluated and incentivized in groups repeatedly during an academic year. Students received complex feedback about their own performance and the performance of other group members.

The results show that the overconfidence of students in the control group (who received no feedback) increased with repeated testing, whereas feedback received by the treatment groups lowered students' inaccurate estimates of their performance. Students reacted immediately after they received the first feedback, by improving their estimation about their own performance. Nevertheless, overconfidence remained. Although students improved continuously in every round, the most significant improvements were achieved after the first two feedback rounds. Girls updated significantly more compared to boys.

Consistent with the "unskilled-and-unaware phenomenon", the bottom-quartile performers grossly overestimated their performance, although, interestingly, so did top-quartile performers, though to a significantly lesser degree. It is worth noting that the current experimental design makes it possible to document that the "unskilled-and-unaware phenomenon" is a behavioral regularity rather than a statistical artefact.