Chapter 1

Introduction

This dissertation contains four main chapters. After Chapter 1, the introduction, Chapter 2 starts with a review of the economic literature on school participation in developing countries. In this chapter I first discuss the available evidence on interventions that aim to increase school participation, with a specific focus on the optimal design of these interventions. I then discuss the results that may be expected when these interventions are implemented on a large scale and the difficulties that may arise when scaling up these interventions. This literature review forms a stepping stone to two topics that I discuss in the remainder of the dissertation.

The first topic is a randomized cash transfer intervention in Malawi. The intervention provided financial support to school-aged women to improve their school participation. Chapter 3 shows that, besides improving school participation, such interventions may result in a host of side effects. The cash transfer intervention in Malawi, for instance, helped break multiple social patterns that hamper the development of young women.

Chapter 4 shows that the intervention resulted in substantial improvements in mental well-being among beneficiaries. However, Chapter 4 also finds that the intervention resulted in detrimental spillover effects on the mental well-being of non-participants and that the introduction of conditions under which transfers are made can be a source of psychological distress. These findings have implications for the optimal design of future cash transfer interventions.

The second topic, discussed in Chapter 5, is the role of the school environment in schooling decisions and school participation. Using a regression discontinuity approach,
I show that in Malawi the school environment has a strong causal effect on both of these outcomes. In addition, I show that programs that track pupils by ability, which have recently received much attention in the literature, can result in general equilibrium effects that affect students before they enter the tracking programs. These general equilibrium effects are an integral outcome of the tracking programs, but have not been taken into account in previous studies.

School Participation  Despite the progress made under the millennium development initiative, many developing countries still suffer from low school participation rates. In Sub-Saharan Africa alone approximately 31 million primary school-aged children are currently not attending school (United Nations, 2010). Many of the children who do attend school, moreover, drop out prematurely. Economists are interested in this problem, because education is a crucial element in the process of human capital formation and plays an important role in economic growth and public health. Over the past decade, economists have therefore devoted much effort to gaining a better understanding of the determinants of school participation in developing countries and the interventions that can best be used to improve school participation.

As a result of these efforts, we now know that reducing the cost of attending school is one of the most effective ways to increase school participation. Research has shown, for instance, that the introduction of free primary education resulted in a surge in school participation in various Sub-Saharan countries. And cash transfer interventions that provide financial assistance conditional on the school attendance of the beneficiary have been shown to be highly effective in different contextual settings. However, from a policy making perspective, reducing the cost of attending school is a comparatively expensive way to improve school participation. Interventions that directly tackle common causes of low school participation, such as malnutrition and illness, and interventions that inform pupils about the private payoffs they can reap from attending school, tend to be more cost-effective. The evidence on the role of the school environment (i.e. teachers, physical resources, and socioeconomic characteristics of peers) in school participation, on the other hand, is limited.

In Chapter 2 of this dissertation I start with a review of the latest evidence on the ways in which school participation in developing countries can best be promoted. In the review I pay particular attention to what we know about the optimal design of the interventions that aim to increase school participation. I also discuss that the evidence
on the effectiveness of the different interventions typically comes from relatively small randomized trials. Large scale implementation of these interventions can be less effective, for instance due to corruption, or can result in unexpected general equilibrium effects. However, the available evidence suggests that when these interventions can effectively be scaled up, their impact on longer run outcomes such as economic development, health, and female empowerment can be substantial.

The review in Chapter 2 serves as a stepping stone to the two topics on which the remainder of this dissertation focuses: (i) the side effects of cash transfer programs and (ii) the role of the school environment in pupils’ schooling decisions. I discuss both of these topics on the basis of data from Malawi. In the remainder of this Chapter I proceed to provide a more detailed introduction to both of these topics.

**Cash Transfers**  Chapters 3 and 4 of this dissertation focus on a randomly implemented cash transfer intervention that aimed to improve the school participation of a group of young women in Malawi. Cash transfer interventions, providing financial assistance conditional on adherence to a behavioral requirement (typically investments in the human capital of children in the form of school attendance or medical checkups), are by now a mainstream tool in development policy. Mexico’s pioneering cash transfer scheme, initially called PROGRESA (Programa de Educación, Salud y Alimentación) and now better known as Oportunidades, played an important role in the proliferation of these projects. PROGRESA provided poor mothers from rural areas in Mexico with cash grants, conditional on the satisfactory school attendance of their children. The intervention was randomly phased in, which allowed researchers to identify the causal effect of PROGRESA on a range of schooling and health outcomes.

Evaluation studies have shown that cash transfers are an effective tool to achieve changes in the behavior on which they are conditioned. PROGRESA and other cash transfer interventions, for instance, effectively raised school participation and the uptake of preventive health care in various contextual settings. There is evidence, moreover, that cash transfers can have beneficial effects on a broad range of other outcomes including skill accumulation, labor market outcomes, and health status. Most of this evidence, however, comes from Latin-America. Evidence on the effectiveness of cash transfer interventions in other geographical areas, in particular Sub-Saharan Africa, is less abundant. The cash transfer intervention in Malawi was partly designed to fill this gap.

The cash transfer intervention was conducted among a sample of 3,796 young women
living in 176 enumeration areas in Zomba, a district in the south of Malawi. Towards
the end of 2007 the women in the study sample participated in a baseline survey. Sub-
sequently, study participants living in a random sample of 88 enumeration areas were
invited to participate in a two-year cash transfer intervention. To measure the impact
of this intervention, the women in the project were interviewed again in two follow-up
surveys. The first follow-up survey took place at the end of 2008, while the intervention
was still in progress. The second follow-up survey took place at the start of 2010, shortly
after the intervention had ended.

The experimental design of the intervention consisted of multiple overlapping treat-
ment layers. First, the treatment condition varied randomly across treatment enumeration
areas. In some of the treatment areas the women were offered a cash transfer conditional
on satisfactory school attendance, while in other villages the women were offered an un-
conditional cash transfer. Second, the transfers consisted of two components: an amount
transferred directly to the beneficiary and an amount transferred to her parents. These
amounts varied randomly between beneficiaries and households. Third, only a random
number of the girls living in treatment areas was sampled into the treatment group. These
randomized treatment layers can be exploited to investigate the impact of the treatment
condition, to examine elasticities with respect to the transfer size, to study whether the
identity of the recipient matters, and to identify local spillover effects.

Baird, McIntosh, and Özler (2009) show that the intervention in Malawi went a long
way in improving school participation (the outcome on which the cash transfers were con-
ditioned). The intervention increased self-reported school participation by 44 percentage
points among girls who were not in school during the baseline survey. Among girls who
were in school during the baseline survey the intervention lowered self-reported dropout
rates by 42%. These findings were corroborated with data from a survey in which teachers
were asked about the school participation of the women participating in the study. Baird,
McIntosh, and Özler (forthcoming) show that, among girls who were in school during the
baseline survey, the conditional transfers had a markedly stronger impact on dropout rates
than the unconditional transfers. There is also evidence that the improvements in school
participation were accompanied by modest improvements in learning. Baird, McIntosh,
and Özler (2009) show that, one year after the start of the intervention, girls who were not
in school during baseline were 7 percentage points more likely to indicate that they could
read a one-page letter written in English. And Baird, McIntosh, and Özler (forthcom-
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ing) observe roughly 0.1 standard deviation improvements on reading, mathematics, and cognitive ability tests among girls who were in school at baseline. These improvements are again stronger in the group receiving conditional transfers than in the group receiving unconditional transfers.

Chapters 3 and 4 of this dissertation show that the intervention had a substantial impact on the lives of its beneficiaries above and beyond these improvements in school participation. Chapter 3 provides an overview of the wide-ranging effects of conditional cash transfers on the lives and well-being of beneficiaries and refers to these wide ranging effects as empowerment. The chapter starts by showing that the conditional transfers resulted in increased resources available to the beneficiaries: to a large extent, the girls participating in the intervention can themselves decide how they spend the money transferred directly to them. The conditional transfers also helped break conventional social patterns that hamper the development of young women. Beneficiaries of the intervention, for instance, were less likely to get married at an early age (which tends to result in inferior bargaining positions vis-à-vis their husbands) and less likely to get pregnant at an early age (which can result in severe health risks to both mother and child). These changes in social patterns appear to be partly the result of changed fertility and marital preferences. Beneficiaries, for instance, indicate that they want to postpone pregnancies. In addition, they are less likely to indicate that financial wealth is one of the primary traits they look for in a marital partner. The chapter also shows that the conditional transfers improved the position of beneficiaries within their mostly parental households, as the members of their households now care more about their health and schooling. The improved position within the household is accompanied by tangible improvements in time use. One year after the start of the intervention, beneficiaries indicate that they spend more time on education versus activities that generate short term benefits for the household, such as chores and agricultural labor.

Chapter 4 dives deeper into the impact of the intervention on the well-being of its beneficiaries by looking at their mental health. This chapter essentially argues that mental health and specifically mental health problems can be a useful indicator of well-being for adolescent girls, because among this demographic group mental health problems constitute the leading component of the global disease burden and can have severe long-run health and socioeconomic consequences. The presented results indicate that the intervention had a substantial impact on the mental health of girls who were in school at baseline.
Among this group, unconditional cash transfers resulted in a strong reduction in mental health problems. Conditional cash transfers also led to a reduction in mental health problems, but this reduction was not nearly as pronounced as the reduction associated with unconditional cash transfers. The amounts transferred to parents conditional on school attendance appear to be responsible for this muted impact. The likelihood that a girl who was in school at baseline suffers from mental health problems increases by approximately 3 percentage points with each additional conditional dollar offered to her parents. The latter result indicates that conditions in cash transfer programs can result in psychological distress. Such conditions should therefore be justified, for instance by providing evidence of a market failure, as they can otherwise be welfare reducing.

Chapter 4 also shows that the mental well-being of girls who were not in school at baseline was not significantly affected by the intervention. The “stress” of returning to school is a likely explanation for the absence of a significant impact among this treatment group. Finally, the intervention resulted in detrimental spillover effects on the mental health of girls who lived in a treatment village but were not assigned to the treatment group. The latter finding has implications for policy makers who intend to target cash transfer programs at specific subgroups in a population.

The principal investigators of the cash transfer intervention in Malawi are Sarah Baird, Craig McIntosh, and Berk Özler. I was involved in this project from the start of its implementation, first as a field manager on two rounds of a household survey (from September 2007 to March 2008 and from September 2008 to December 2008) and then as a field manager on two rounds of a school survey (from January 2009 to May 2009 and from May 2010 to June 2010). Based on preliminary discussions with Sarah Baird and Berk Özler, I conducted the analysis for chapters 3 and 4 of this dissertation and I produced a first draft of these chapters. These first drafts subsequently went through several rounds of revisions by Sarah Baird, Berk Özler, and me. Ephraim Chirwa was involved in Chapter 3 of this dissertation primarily through his management of the field work conducted in Zomba.

**Selective Education** Chapter 5 of this dissertation is unrelated to the cash transfer intervention described above. Instead, this chapter investigates how the school environment (which comprises the physical and human resources available in a school as well as the ability and socioeconomic background of fellow pupils) affects the schooling decisions of pupils. Despite its importance, we know remarkably little about this relationship. Sev-
eral studies show that randomized temporary interventions that affect a narrow aspect of the school environment (such as available textbooks) do not affect school participation. However, the fact that these studies focus on a single aspect of the school environment implies that they may well miss other crucial aspects of school quality. Older studies that do focus on more comprehensive measures of the school environment tend to find a relationship with school participation. However, those studies are typically retrospective and lack a clean strategy to identify the causal effect of the school environment. Recent reviews of the literature, such as Kremer and Holla (2009), therefore conclude that there is little evidence that the school environment matters for school participation.

Chapter 5 contributes by identifying the causal effect of a highly comprehensive measure of the school environment on pupils’ schooling decisions. To identify this effect, I exploit the procedure used by Malawi’s Ministry of Education to assign pupils to public secondary schools. This procedure assigns the top performers on a national primary school exam to a group of elite public schools of comparatively high quality. Second tier performers are selected into the remaining lower quality public schools. Third tier performers, approximately 60% of the pupils who annually complete primary school, are not assigned to public schools. The assignment procedure results in cutoff scores in the primary school exam for selection into the different types of public schools. I exploit these cutoff points in a regression discontinuity framework to estimate the causal effect of selection into the different school types on pupils’ schooling decisions. The analysis is based on multiple large institutional datasets, which I linked such that they can be used to track the progress of an entire cohort of students through Malawi’s education system.\footnote{For my work on the field experiment I met with officials at Malawi’s Ministry of Education and Malawi’s National Examinations Board on multiple occasions. During these meetings I learned that both of these organizations maintain large databases on education in Malawi. The Ministry of Education and the Examinations Board kindly provided access to these data.}

The first main finding of Chapter 5 is that pupils who pass the national primary school exam, but not with a sufficient score to get selected into a public school, are more likely to retake the primary school exam than pupils who do get selected into public schools. This higher rate of retaking the primary school exam will result in negative spillover effects on other pupils to the extent that it increases class sizes in the final grade of primary school. The second main finding is that pupils who are selected into an elite public school are roughly 30 percentage points more likely to stay in this school than pupils who are selected into lower quality public schools. About one third of this difference can be explained by the fact that pupils who are selected into lower quality schools are more likely to switch
to other schools. The remainder of this difference is most likely due to a higher dropout rate among pupils who are selected into lower quality public schools.

These findings matter for two reasons. First, an influential recent study by Duflo, Dupas, and Kremer (forthcoming) shows that separating pupils by ability (called tracking in the literature) has a beneficial effect on pupil learning. Chapter 5 contributes to this literature by showing that tracking programs can result in general equilibrium effects that affect pupils before they enter the schools in the tracking programs. Such general equilibrium effects are integral outcomes of tracking programs, but cannot be identified when focusing purely on the pupils who have already entered the program. Second, Chapter 5 contributes to the literature that investigates the relationship between the school environment and school participation. The chapter suggests that, contrary to the conclusions of recent literature reviews, school quality can affect school participation. This finding is of importance, since many schools in developing countries are of very poor quality. Upgrading the quality of these schools thus potentially results in a double dividend as it may affect not only learning in school, but also school participation.