



# Seasonality Revisited

Perspectives on Seasonal Poverty



# Seasonality Revisited

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## Seasonality and Access to Education: A Review of Research



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# Seasonality and Access to Education: A Review of Research

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## Abstract

Improved education is associated with higher socio-economic status, lower fertility rates, improved health, reduced mortality rates and greater gender equality and mobility. Investment in primary education is especially crucial, as it offers the greatest private social returns to investment of all education spending. It is largely for this reason that Millennium Development Goal 2, to ensure that, by 2015, all children will be able to complete a full course of primary education, focuses not just on education, but primary education. This paper draws together literature on seasonality and education, largely in the context of sub-Saharan Africa, to demonstrate how seasonality is relevant to the design of education policy, and suggests the possible implementation of seasonally-sensitive reforms and interventions. While the scarcity of research constrains analysis, it is argued that this approach has the potential not only to boost enrolment and lower drop-outs, but also to protect livelihoods and potentially reduce insecurity and vulnerability. Five general conclusions are drawn. First, the private costs of education vary relatively with seasonal fluctuations in income and expenditure. School schedules should ensure larger school expenses, like fees or school uniforms, are not due during the hunger season. Second, school schedules can be made more flexible or adapted to seasonal demands for child labour to allow more children to attend school, reduce absenteeism and school drop outs. Third, seasonal distress migration presents a substantial challenge to educational attendance and policy, because migrant labourers are frequently excluded from education services and official statistics. Fourth, seasonal health interventions targeting malnutrition, malaria or worms could improve the cognitive development of children and school attendance. Fifth, more research is needed on the seasonal dimensions of educational access, including child labour, household income and expenditure, the private costs of education and school participation.

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<sup>1</sup> This paper is based on a forthcoming monograph, prepared by Sierd Hadley for CREATE; the Consortium for Research on Educational Access, Transitions and Equity. The full paper will be available on the CREATE website (<http://www.create-rpc.org>) in July 2009. CREATE is a Research Programme Consortium undertaking research designed to improve access to basic education in developing countries.

## 1. Introduction

Universal primary education is regarded as a precondition for economic growth and has numerous positive social externalities. Despite continued investment in education in sub-Saharan Africa, the net primary enrolment rate for the sub-continent remains the lowest in the world at around 67.2 percent (Huebler 2006). Drop-out rates and gender disparities are also greater than any other developing region (Fentiman et al. 1999). School attendance and enrolment is likely to be constrained, if not reduced, in the coming years as the International Financial Crisis continues to permeate the economies of African nations (IDS 2009). A seasonal approach to school schedules could provide cheap, effective tools for improving participation rates in education. Four dimensions of seasonal poverty are particularly relevant to education: seasonal fluctuations in expenditure and income; seasonal demands for child labour; seasonal distress migration; and seasonality of health and malnutrition. Each is addressed in turn.

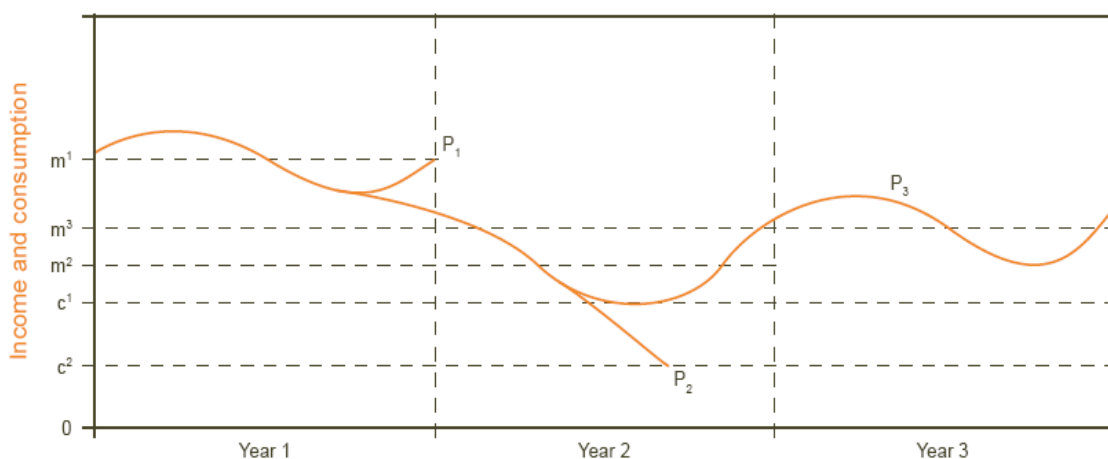
## 2. Context: Combining Literature on Seasonality and Education

### 2.1 Seasonality of Income and Expenditure

Income, expenditure and consumption are highly seasonal in many regions of the developing world and are particularly damaging for poor rural households. Figure 1 provides a model of household consumption, demonstrating how consumption<sup>2</sup> (m) varies within and between years. As income and expenditure fluctuate, so do purchasing power and the relative cost of goods and services faced by households. Direct private costs of education, such as official and hidden fees, uniforms and learning materials become *relatively* more expensive in the lean season when income and purchasing power are limited, even if the absolute cost remains the same. Some expenses like building fees and transport costs may be highly seasonal in themselves – though this is rarely documented.

Figure 2 shows the expenditure patterns of participants of a Save the Children cash/food-for-work programme in Swaziland. Devereux and Jere (2008) describe how school expenses are greatest in January and February, the peak of the hunger season. Households finance these costs largely by reallocating expenditure, often away from food (Devereux and Jere 2008).

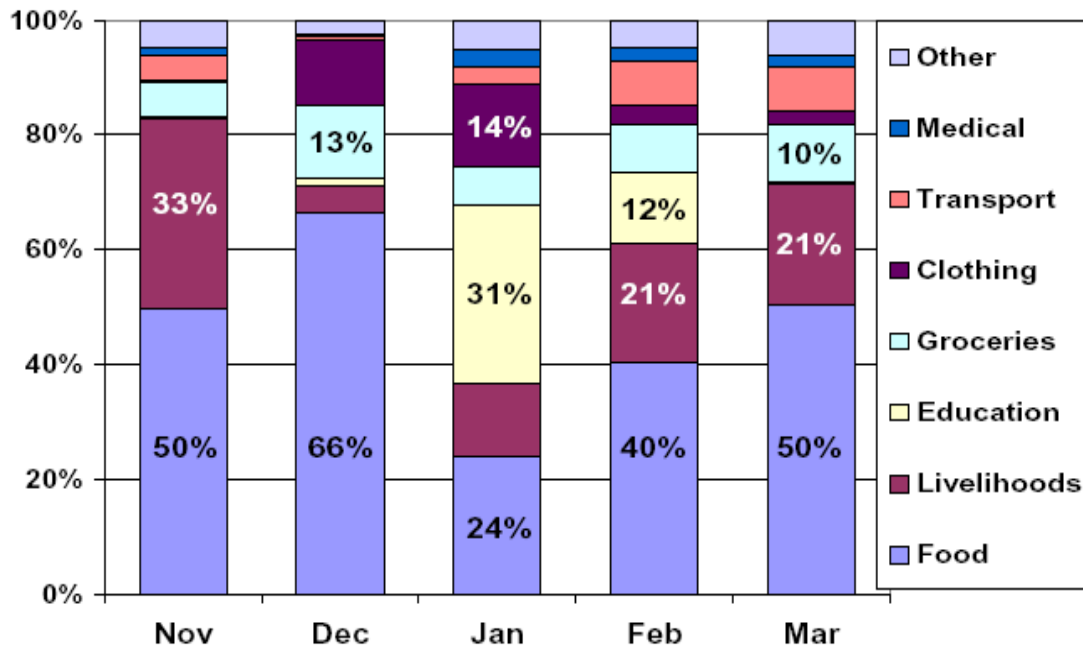
Figure 1: Gill's Mean-Variance Model of Seasonal Consumption



Source: Gill 1991

Estimates from Tanzania, suggest a 30 percent loss of harvest leads to a ten percent loss in income and a doubling of expenditure on farming inputs like seeds. The cost is great enough to force families to migrate (Chastre 2006). Jacoby and Skoufias 1997 and Beegle et al. 2006 find that harvest losses can lead families to withdraw children from school. Seasonality of income and expenditure can directly impact access to education, but poorly planned school calendars can also exacerbate seasonal poverty by placing unnecessary pressure on household budgets when income is scarce and credit expensive.

**Figure 2:** Monthly spending of households of ‘food only’ recipients, 2007/08



Source: Devereux and Jere 2008

## 2.2 Seasonality of Child Labour Demands

Seasonality also has a bearing on indirect private costs of education, particularly on the opportunity costs of attending school. Poor families often rely on the labour of their children to top-up household income, assist in agricultural activities or look after younger children while parents work. Where labour markets are poorly developed, richer families have also been found to rely on child work because hiring labour is unpractical, too expensive or simply not feasible – sometimes referred to as the ‘wealth paradox’ (Woldehanne et al. 2005). Overall, more than 40 percent of under-fourteens in Africa are engaged in the labour market (Admassie 2002).

Seasonal child labour is closely linked with adult labour patterns (Kazamira and Rose 2003). As noted by Hopkins et al. (1994) in Niger, adult labour is often most important in the hungry season when most agricultural activities take place. Fentiman et al. (1999) and Kazamira and Rose (2003) explain that seasonal absenteeism is common during the planting and harvesting seasons when children are required to look after livestock and mind younger siblings to allow adults to undertake income generating activities. At other times, young children are needed for bird scaring (see box 2).

The opportunity cost of education varies in a number of ways. (1) Geographically. In Botswana, for example, society depends less on small-scale agriculture meaning children have fewer labour commitments, and households do not have to choose between labouring and school attendance (Fuller et al. 1995). Conversely, Ethiopia exhibits one of the highest child labour rates in the world. Three quarters of Ethiopian child labourers work for over nine hours a day (Admassie 2003). Rural children also appear to be more likely to be excluded from education by work requirements. (2) By

Income. Though not unanimous, most studies suggest an inverse relationship between the opportunity cost of education and income (Urwick 2002) and between income and incidence of child labour (Admassie 2002). (3) By age. As children grow older, labour demands increase, wages become more substantial and tasks become more difficult, lowering school participation (Urwick 2002 and Fuller et al. 1995). (4) By gender. Girls are generally more likely to work, and work for longer hours. In rural South Africa, girls aged 13-17 work, on average, approximately 2 ½ times more hours per day than boys (Edmonds 2006).

The type of work a child engages in can also have a substantial bearing on school participation. Admassie (2003) finds that certain activities, like herding, farm work, fetching water and collecting firewood, are less of a barrier to school attendance in Ethiopia than other activities (Admassie 2003). Guarcello et al. (2006) suggest that household chores and family-based work are less damaging to educational access than work outside the household, though most studies find that child minding is substantial barrier to school participation. In Ethiopia and Botswana, for example, children who mind younger siblings are less likely to attend school (Admassie 2003 and Fuller et al. 1995). HIV/AIDS prevalence in Southern Africa may further restrict girls' schooling in the region by increasing the demand for domestic help and child minding (Kadzamira and Rose 2003).

There are other seasonal dimensions of child labour which are not discussed in this paper. Climatic shocks, for example, such as floods and droughts can increase the number of children engaging in work, restricting school participation. More research is needed to gain a greater understanding of the relationship between seasonality, child labour and education, including the seasonal dimensions of different types of work occupying children's time.

### **2.3 Seasonal Distress Migration**

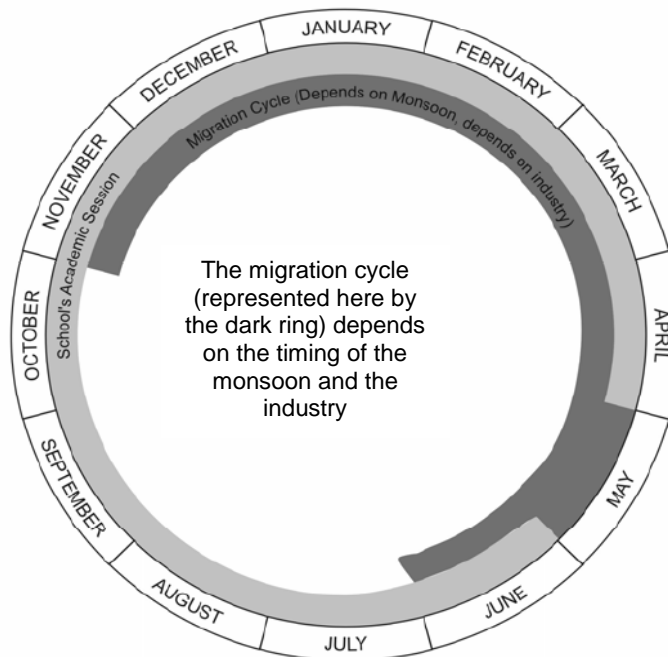
Seasonal migration is a common coping strategy in sub-Saharan Africa and has been widely reported in West Africa and the Sahel in particular. Migration patterns vary by industry and type. Sometimes only adult men migrate, other times the whole family or only the children will move to find work. Girls in Ghana, for example, frequently migrate to become housemaids in urban areas, often for family and kin (Fentiman et al. 1999). Destinations may be local, but are often in neighbouring countries or distant urban and agricultural centres. Few statistics are available of the scope of this coping strategy, though Alderman and Sahn (in Sahn 1989) estimate that seasonal rural-urban migration in Senegal involves as much as 40 percent of the active population (Alderman and Sahn in Sahn 1989). There is a danger that seasonal migration could become permanent migration and homelessness, with whole families travelling between work sites, never returning home (Alderman and Sahn in Sahn 1989).

No comprehensive study exists which examines the impact of seasonal migration on primary education in sub-Saharan Africa. However, Smita (2008) investigates the relationship between seasonal distress migration and educational access in India where agricultural labourers migrate for short periods, often several times per year, while migrants to industrial and agro-industrial employment follow a single cycle beginning after the Monsoon, and lasting for six to eight months until April or June (Smita 2008). Smita (2008) identifies a number of ways seasonal distress migration prevents access to education, particularly in the primary age group. Here, listed, are some.

- As adults move, so do children, taking children away from school and only returning after the next school year has already started (see figure 4, overleaf), meaning children who must catch up are more likely to drop out or simply be excluded.
- Schools are often unavailable near worksites. Even where schools are present, migrant children are often intentionally prevented from enrolling and discouraged from attending by the resident society and other school children.

- Older girls must look after their siblings while the parents work and so are unable to attend classes.
- Some labour forms require migrant workers to have children work with them, preventing parents from leaving children in hostels or boarding schools. When child migration is unaccompanied, child labour becomes an even more serious barrier to school participation as children on worksites often work in excess of 14 hours per day. Many of these tasks are highly gendered, with a preference for girls.
- Children of seasonal migrants are rarely captured in government statistics, excluding them from public services and government interventions.
- Migrant labourers have little or no democratic voice and are rarely able to vote, limiting space for change and empowerment.
- School participation can be restricted or irregular, even if adult males migrate without their families, because children are required to help with domestic chores and household income generating activities.

**Figure 4:** Overlap of the seasonal migration cycle and the school calendar in India.



Source: Smita 2008

Further research is needed to determine how seasonal migration impacts access to primary education.

## 2.4 Seasonality of Health and Nutrition Status

Health and nutritional status are often highly seasonal. In Madagascar, child mortality triples between the harvest and hungry season largely because of diarrhoea and malnutrition (Dostie et al. 2002). Figure 5 builds on work by Tomkins (in Ulijaszek and Strickland 1993), tabulating seasonality of infection, diseases and disorders in West Africa.

**Figure 5:** Seasonality of health status in West Africa

<b>Dry Season</b>	<b>Wet Season</b>
Measles	Low birth-weight
Meningitis	Lessened capacity to lactate
Pneumonia	Malnutrition
Tetanus	Intestinal Worms
Scabies	Malaria
Acute respiratory diseases	Typhoid
	Diarrhoea
	Guinea-Worm
	Iron-deficiency anaemia
	Vitamin A deficiency

Adapted from: Tomkins in Ulijaszek. and Strickland 1993

Pridmore (2007) provides a comprehensive review of recent literature discussing the importance of good health to education. Fentiman et al. (1999) claim that the principle causes of absenteeism and school drop-outs in rural Uganda are inability to concentrate, underachievement, hunger and malaria. Pridmore (2007) finds a number of studies which link the cognitive ability of children with pre-natal health and birthweight, both of which are seasonal. Another literature review by Jukes (2005) suggests that cognitive development is also dependent on adequate breastfeeding. Malaria and diarrhoeal disease rates peak in the wet season and can impede school attendance; malaria may also have consequences for cognitive development of children (Boivin 2002; Holding et al. 1999). Both acute malnutrition and micronutrient deficiencies, particularly deficiency in iron and vitamin A, also can have long-term impacts on cognitive development, as well as causing other complications, with implications for school achievement and completion (Pridmore 2007). Worms, also most prevalent in the wet season, exacerbate vitamin A and iron deficiencies, and remain the single largest contributor to the total disease burden of children between five and fourteen years-old, worldwide (Pridmore 2007).

Seasonality is a platform for examining the inter-linkages between dimensions of poverty, many of which fluctuate throughout the year. Many are mutually compounding and reinforcing. Palmer (in Chambers et al. 1981) explains that women in Bangladesh wean children off the breast in December just after the main rice harvest when labour demands are greatest. Women then resume ovulation in January or February with a peak in conception in March and births around December, when the time needed for child care and labour are in direct competition with one another, perpetuating the cycle. Child labour, health, migration and private costs of education are only a few of the multitude of barriers to schooling faced by children in sub-Saharan Africa, and their relative contribution to the low enrolment and high drop-out rates is not clear. Other barriers to educational access like transport may also have a seasonal dimension as noted by Fentiman et al. (1999) and the Jesuit Centre of Theological Reflection (2009). It is also possible that man-made seasons, such as Christmas and Eid could have a bearing on the ability of children to attend school, financially or due to other priorities. The next section gives a number of examples of seasonally-sensitive education policies, and suggests potential spaces for further reform of school calendars.

### **3. Implementing a Seasonal Approach**

The educational systems and school schedules of the United States and Western Europe changed rapidly at the turn of the last century. The move from a rural to an urban-centred population and the increased mobility of labour led to changes in the school calendar in the United States, which previously followed the local agricultural calendar. School holidays, previously timed in

conjunction with the planting and harvest seasons, were unified to help migrant families, and moved to the summer when it was easier and more comfortable to move home. The failure to understand the development and history of the school calendar in the North and South has restricted progress in boosting education in regions like sub-Saharan Africa. However, a number of ‘good-practice’ examples exist and further spaces are available to evoke seasonally-sensitive, pro-poor change in the education sector.

### **Box 1: Poorly designed calendar reform in Malawi**

In 1997, the Government of Malawi initiated a change in the school calendar. The school year previously began in October and ran until July, but was shifted to a January – November calendar, similar to South Africa. The motivation behind the reform was to enable tertiary institutions and boarding schools to close during periods of more acute water shortages. As a result, the academic year begins in the hungry season, which stretches between December and April. The lack of consideration of the livelihoods of the rural poor appears to have had several negative implications for educational attendance, though these were not well documented. Household income and savings are seriously depleted around January, especially after Christmas, and additional costs of schooling are likely to be an added burden or simply unaffordable. School attendance in Malawi falls during the hungry season due to lack of food, particularly in years of greater food insecurity (Kadzamira and Rose 2003).

### **3.1 Examples of Seasonally-Sensitive Education Policy**

In recent years there have been a number of seasonally-sensitive educational reforms led both by governments and by non-governmental organisations (NGOs). Here are a few.

Colombia’s *Escuela Nueva* has become the most renowned of the state-led reforms, adapting the curriculum to local contexts and developing a multi-grade system with a flexible calendar designed through a participatory process that allows children to halt their education temporarily without being required to repeat a year (Watkins 2000). Children of the *Escuela Nueva* perform better than other rural schools and exhibit greater confidence (Watkins 2000). Brazil initiated a simpler shift in the school calendar, including moving the start date, so it did not clash with child labour demands in the sowing and harvest seasons (Lucas 2001). In rural areas education participation rates increased by 300 percent, while literacy and drop-outs halved, though it is difficult to attribute the full gain to the calendar shift (Lucas 2001). The Gambia moved school fee due-dates to the post harvest period, following participatory rural appraisal conducted between 1993 and 1995, though seasonal absenteeism from child labour remains a problem (Kane et al. 1998; personal communication Ceasay 2008). Ethiopia has decentralised decisions over the school calendar, providing some flexibility to adjust to seasonal absenteeism (Colclough et al. 2003).

The Bangladesh Rural Advancement Committee (BRAC) operates a rural education programme consisting of over 35,000 non-formal primary schools in Bangladesh. These schools target poor rural children, mostly girls using a highly participatory school schedule designed through consultation with parents and local communities. Graduates of BRAC schools are able to rejoin state schools at level Grade five or six (Watkins 2000). Some of Mali’s community schools have implemented flexible schedules and school calendars. The calendar starts at the end of the harvest season and runs six days week per week for between two and three hours each day. As a result, more girls are attending these schools (Colclough et al. 2003). Chambers and Maxwell (in Chambers et al. 1981) briefly reference other examples from Uganda and Kenya, which have not been discussed in more recent journals and books.



### 3.2 Space for Seasonal Interventions

Employing participatory and flexible timetabling, as in the *Escuela Nueva* and BRAC programmes, in African schools would give children the greatest control in deciding whether to attend school, without the danger and cost of repeating years or increasing household vulnerability. However, such a system may not always be appropriate (Kadzamira and Rose 2003). There are a number of areas in education policy open to reform which could potentially improve enrolment, lessen the burden of education on households, or both.

School holiday periods offer a clear possibility for seasonally-sensitive reforms. Changes in the school schedule should consider the different types of seasonal labour, seasonal changes in household vulnerability and traditional/religious festivals. For example, there may be different policy implications resulting from analysis of child labour in the bird scaring season when children will be in the fields at certain times of the day or night compared to domestic and child-minding duties.

The school start-date will be influenced by the school holiday periods, but is also a space for seasonal reform. School should not start in a period of high demand for children's labour, nor when the significant costs associated with beginning school (such as books, pens and uniforms) represent a particularly large percentage of income or expenditure for that time of year.

School days and hours are another space. The traditional US/European schedule of 5 days per week, eight hours per day is often not appropriate in the circumstances discussed in this paper – in fact, many schools in Africa run much shorter days. School hours could be designed to allow children to complete domestic chores as well as attend school. The customary Saturday-Sunday weekend could also be reconsidered (Eagle 2006).

#### **Box 2: How demand for education can impact livelihoods**

The literature analysing child labour and schooling predominantly focuses on how child labour interferes with educational development. However, there may also be instances where demand for schooling affects the livelihoods or behaviour of the rural poor. Huss-Ashmore (in Ulijaszek and Strickland 1993) and Moris (in Sahn 1989) describe how policy universalising education, combined with high demand for education from rural peoples in Sukumaland, Tanzania, resulted in an accelerated move to growing hybrid maize instead of sorghum and millet because children were unavailable for bird scaring. Farmers explained that maize is less prone to bird damage, and with their children in school it became risky to grow sorghum and millet which require bird scarers – traditionally children – at key stages of the growing season (Moris in Sahn 1989). Yet maize is less drought resistant, making households more vulnerable to inter-annual fluctuations in rainfall.

The opportunity cost of education rises with age. School enrolment age could be adjusted to improve enrolment and attendance. Participatory research in The Gambia resulted in the government lowering the primary school enrolment age for girls (Holland and Blackburn 1998). However, in Ethiopia, many children under 10 are not sent to school because they are regarded as too young (Woldehanna et al. 2005). Care must be taken when establishing the enrolment age.

Considerable support exists for seasonally adjusting school fee due-dates, usually postponing them till after the harvest, as in The Gambia. The participation of local communities, parents and even children in this process is vital. The supply of learning materials and uniforms may also offer an opportunity for seasonally-sensitive reform, though it is difficult to determine what form such an intervention would look like. More research and thought is required on this subject.

## **4. Areas for Further Research**

Combining the literature on seasonality, education and child labour has proved challenging because of a lack of information. There are several major gaps in our understanding of seasonality: household expenditure, child private costs of education and child labour.

### **4.1 Household Expenditure**

Appropriate income and expenditure data for sub-Saharan Africa is rare, though some data no doubt exists outside the public domain, such as in World Bank databases. Though only some World Bank surveys accurately capture seasonal variations. Household Budget Surveys compile information through multiple visits to each household throughout a year and so may provide a picture of seasonal expenses and income (World Bank 2008). Living Standard Measurements surveys may show some variation within the month they are conducted (World Bank 2008). Ideally, household data would be recorded frequently and evenly across the year, and again across several years to give a clearer longitudinal picture of seasonality.

### **4.2 Child Labour**

There are two major gaps in the literature of child labour: scope and seasonality. Admassie (2003) claims little is known about the extent and character of child labour in rural sub-Saharan Africa. It is important for research to reveal restrictive work-types and their seasonal character. The opportunity costs of education vary with demand for child labour and despite a growing literature there is a neglect of how opportunity costs vary seasonally.

### **4.3 Private Costs of Education**

Mehrotra and Delemonica (1998) note the lack of availability of data on private costs of primary education. Since 1998 there have been more studies on the private costs of education, especially in literature arguing for universal primary education. However, none clearly assess the timing of the various costs of education, nor how they are distributed throughout the year. Studies connecting fluctuations household income and expenditure on school payments are rare. Participatory research in The Gambia and Zambia shows how useful this type of study could be (Holland and Blackburn 1998). Further research is needed to determine whether unofficial or hidden costs also exacerbate periods of seasonal stress. For example, do costs associated with national exams fall at the optimal times? Or, when are families most likely to buy school uniforms?

### **4.4 Other Areas for Research**

There are a number of cases of calendar reform in the world, such as those initiated by BRAC and Colombia. Impact assessments of these reforms could examine effect on health, stress, expenditure, food security and other areas featuring pronounced seasonality. Other areas of interest would be seasonal enrolment, seasonal absenteeism and seasonal drop-outs. The Gambia's experiment postponing school fee due-dates till after the harvest appears to be successful, but how successful? Are fees still restricting the education of, or causing unnecessary stress to, certain groups? What is the effect of direct private costs on livelihoods and HIV/AIDS prevalence? Other questions will undoubtedly arise.

## **5. Conclusion**

Altering school schedules and fee-due dates will not produce a child labour free world or instantly boost enrolment to 100 percent; it will not end poverty. Private costs of education and the need for children to contribute to household income are only a small part of a larger picture. There are many factors constraining education outside the scope of seasonality, and there are dimensions of seasonality which will not be helped by matching school calendars to agricultural calendars. However, this paper has revealed opportunities that, if acted upon, can be taken to immediately improve access to education for children, particularly those in poor rural areas. A concerted effort must be made to incorporate seasonality into thinking behind education policy and research, but also for development practitioners to recognise the inter-linkages between dimensions of poverty. With adequate research and consideration for seasonality, it is possible to take strides to improve school participation and lessen the burden of education on poor, rural households in sub-Saharan Africa at minimal cost.

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