



**Consortium for Research on
Educational Access,
Transitions and Equity**

**Seasonality and Access to Education:
the case of primary education in sub-Saharan Africa**

Sierd Hadley

**CREATE PATHWAYS TO ACCESS
Research Monograph No. 31**

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List of Acronyms

ACF	Action Against Hunger (<i>Action Contre la Faim</i>)
AIDS	Acquired Immune Deficiency Syndrome
BRAC	Bangladesh Rural Advancement Committee
CREATE	Consortium for Research on Educational Access, Transitions and Equity
FEWS NET	Famine Early Warning System Network
DFID	Department for International Development
FPE	Free Primary Education
HEA	Household Economy Approach
HIV	Human Immunodeficiency Virus
IDA	Iron deficiency anaemia
MST	Landless Rural Workers' Movement (<i>Movimento dos Trabalhadores Rurais Sem Terra</i>)
PRA	Participatory Rural Appraisal
PTA	Parent Teacher Association
UNESCO	United Nations Educational, Scientific and Cultural Organisation

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Preface

I am delighted that Sierd Hadley is sharing his insights on seasonality with us within the CREATE consortium of research on educational access. At the beginning of our research endeavour we did not include seasonality as a key dimension of educational access and the 'zones of exclusion'. As Sierd points out, discussion of agricultural seasonality occurs rarely alongside discussion of education policy in Sub-Saharan Africa. Yet it is clear that income poverty and labour demand vary with the agricultural seasons and have implications for, *inter alia*, household income, child labour and gender inequalities, migration, malnutrition, anaemia and malaria. These in turn have implications for initial enrolment, school attendance, dropout, repetition and cognitive development and learning. Sierd synthesises the empirical literature on these causal links and explores what is known about seasonally-sensitive education policies such as adjusted fee schedules and school timetables. He argues that policies can be changed to improve school enrolment and lessen the burden of education on poor, rural households and outlines a number of themes for future research.

Professor Angela W Little
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Summary

Discussions of seasonality and public policy together are rare, particularly outside the contexts of food security and agricultural policy. This paper seeks to add a seasonal dimension to education policy-making procedures by drawing together discussions on seasonality, child labour and education in the context of primary education in sub-Saharan Africa. Seasonality describes how variables like income poverty and demand for labour can fluctuate within and between years, yet discussions of (indirect and direct) private costs of education and child labour frequently ignore the significance of highlighting seasonal patterns. Similarly, seasonality discourse is largely silent on education.

Income fluctuations affect ability to afford school costs, especially during the hungry season when income is at its lowest and food prices at their highest. Child labour demands, and other indirect private costs of education, also fluctuate and can impact on school enrolment, attendance and dropouts. To generalise, literature suggests that child labour demands have the greatest impact on the schooling of older girls from poorer families living in rural areas with younger siblings, while seasonality literature shows that gender inequalities may be exacerbated in the lean season. Poorly planned mass education policies can unintentionally damage rural livelihoods by forcing children and households to decide between education and work. Research and anecdotal evidence has revealed how the demand for education facilitated the switch to less drought-resistant crops in East Africa. Though rarely noted in the context of sub-Saharan Africa, seasonal migration can restrict access to education. Depending on the nature and timing of the migration cycle, as well as the destination industry, children may be required to travel away from schools or take on additional work. Seasonal migrants are excluded further when they are omitted from national statistics. Numerous highly seasonal diseases and conditions, such as malnutrition, anaemia and malaria, can impair cognitive development and constrain educational access.

There have been a number of reforms worldwide that may provide models for seasonally-sensitive education policies. State-led reforms of the school schedule or fee due-dates in Brazil, Colombia and The Gambia have proved successful in boosting enrolments and lowering drop-out rates. Non-formal education providers have also taken strides to adjust school calendars to the seasonal needs of children pupils. Schools run by the Bangladesh Rural Advancement Committee (BRAC), for example, operate a seasonally-adjusted school calendar designed through consultation with parents and the wider community. These examples must be supplemented with further research into the inter-linked seasonal constraints to school attendance as well as a broader understanding of the possible spaces for seasonal interventions and reforms. It is argued that by connecting fluctuations in household income and demand for labour with private costs of education, child labour demands and seasonal migration cycles, it is possible for governments to implement reforms to improve school enrolment and lessen the burden of education on poor, rural households.

Seasonality and Access to Education: the case of primary education in sub-Saharan Africa

1. Introduction: Making Public Policy Seasonally Sensitive

Seasonality is not a discipline, even within Development Studies, it is a platform for bringing together disciplines and discourses. Under the heading 'seasonality' research on health, migration, nutrition, climate, agriculture, economics, food security, human physiology, stress and many other subjects can be compared, contrasted and combined. Seasonality broadly refers to anything exhibiting regular annual trends, like weather. Climate is seasonal because its patterns are regular, though not necessarily predictable. Hot, cold, wet or dry, seasons have major implications for agriculture and those who depend on it. Western society has become largely season-proofed, leaving seasonality an overlooked subject in Development Studies, disregarded as a by-product of poverty.

Of all the dimensions of rural deprivation the most neglected is seasonality. Vulnerability, sickness, powerlessness, exploitation, material poverty, under- and malnutrition, wages, prices, incomes...these are recognised, researched and written about. But among them again and again seasonality is overlooked and left out...Yet seasonality manifests in all these dimensions and in how they interlock (Chambers, cited in Devereux et al, 2008: xvi).

This paper seeks to bring the discussions surrounding seasonality into the field of educational development, assessing how seasonality can affect access to education, and how educational access can have a bearing on seasonal poverty, focusing, where possible, on primary education in sub-Saharan Africa. Sub-Saharan Africa is arguably the poorest region of the world. Economic growth in the region is notoriously poor. Per capita growth in the region averaged -0.7 percent between 1990 and 1999 and 2 percent from 2000 to 2006 (World Bank, 2008a). Though reaching 5.4 percent real GDP growth in 2006 (3.4 percent when measured per capita) this was still markedly short of the rapid 9.2 percent growth experienced in 'developing Asia' that year (IMF, 2007). Universal basic education of more than four years is believed to be a necessary condition for sustained economic growth (Griffiths, 2000). Primary education is particularly important as it exhibits the greatest private social returns to investment – correlated with improved health, lower fertility rates and lower child mortality rates (Mutangudra and Lamb, 2003; Kadzamira and Rose, 2003). Statistics from 2004 showed school enrolment in sub-Saharan Africa was the lowest in the world by over 5 percent – with a net primary enrolment rate of 67.2 percent (Huebler, 2006), though these figures vary greatly between countries.

There are a number of factors which constrain access to primary education in sub-Saharan Africa, including private costs of education, demand for child labour, poor teaching quality, distance to schools, early marriage or pregnancy and parental attitudes. Lewin (2007) sets out seven zones of exclusion, referred to in the rest of this paper as the CREATE¹ zones of

¹ See: www.create-rpc.org for more information on CREATE.

exclusion, identifying and categorising groups of children who are being denied primary and secondary schooling:

- Zone 0: children who are excluded from pre-schooling
- Zone 1: children who have never been to school, and are unlikely to attend school;
- Zone 2: children who enter primary school, but who drop out before completing the primary cycle;
- Zone 3: children who enter primary school and are enrolled but are ‘at risk’ of dropping out before completion as a result of irregular attendance, low achievement, and silent exclusion from worthwhile learning;
- Zone 4: children who fail to make the transition to secondary school grades;
- Zone 5: children who enter secondary school but who drop out before completing the cycle;
- Zone 6: children who enter secondary school and are enrolled but are ‘at risk’ of dropping out before completion as a result of irregular attendance, low achievement and silent exclusion from worthwhile learning.

Exclusion from education has numerous seasonal dimensions, but these are often overlooked in recent literature on education, health and child labour, and even in discussions of seasonality. For example, evidence from early 20th Century Europe shows that school attendance in rural areas often fluctuated with seasonal demands for children’s labour (Llop, 2005). This is also true of school participation in sub-Saharan Africa today as the indirect private costs of education vary throughout the year (Ceesay 2008, pers. comm., 26 August; Fentiman et al., 1999). Lewin (2007) notes that children who drop out of primary education are unlikely to return, while those who are forced to repeat years are at greater risk of dropping out and are less likely to enter secondary school. Some of the numerous direct private costs of education (like school fee), which constrain the ability of poor households to send their children to school, vary, not in absolute terms, but relatively with seasonal fluctuations in household income, expenditure and purchasing power. These seasonal barriers are likely to affect Zone 1, Zone 2 and particularly Zone 3 of CREATE’s model of educational access – restricting enrolment; forcing drop-out; or drawing children into a cycle of irregular attendance, low achievement and silent exclusion from worthwhile learning. There may also be further implications for Zones 4, 5 and 6, as children progress into secondary education, though this is not discussed in this paper. Conclusions remain largely speculative due to a lack of targeted research. Gaining a better understanding of the seasonal dimensions behind educational access is vital for designing effective public policy and provides a real opportunity to improve access to education in the global South.

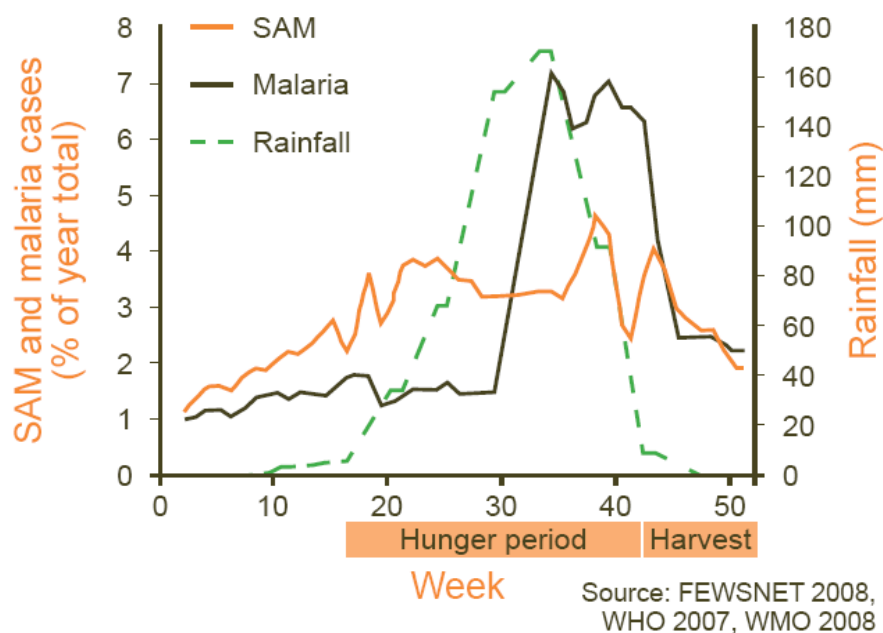
By bringing together research on seasonality with literature from five discourses – education, food security, child labour, migration and health – policy-makers can gain a more complete picture of barriers to universalising education in sub-Saharan Africa. By seasonally adjusting even minor elements of national education policy, like fee due-dates and school term timetables, it is possible to improve school participation and lessen the financial burden of education on poor, rural households. To do this, the paper will construct a picture of seasonality in sub-Saharan Africa, then discuss the relevance of seasonal variations in

income and expenditure, demand for child labour, distress migration and health to educational access and the CREATE zones of exclusion before presenting cases of seasonally-sensitive education reforms and concluding with implications for policy and research. Due to the limited overlap of these discourses, some sections will contain limited empirical reference to seasonality. Triangulation between sources is also difficult. However, this highlights the most significant finding of all: a lack of institutionalised understanding and in-depth research.

2. Re-Introducing ‘Seasonality’

‘Seasonality’ refers to the systematic, annual fluctuations in wellbeing experienced by poor households, which can impoverish or even kill. The numerous dimensions of seasonality are well documented (Devereux et al, 2008; Ulijaszek and Strickland, 1993; Chambers et al, 1981; Gill, 1991; Sahn, 1989). Central to seasonality is the dependence of poor (predominantly rural) economies on small-scale agriculture, which is dictated by changes in climate, both within and between years. Smallholders must often survive on the produce and proceeds of only one or two harvests per year, topping up income throughout the year by diversifying revenue and food sources – such as hiring out their labour and relying on wild fruits. Vulnerable families generally experience a brief improvement in welfare following harvests when food is cheap and readily available, deteriorating throughout the year with poverty levels peaking during the planting and rainy season in a period known as the ‘hungry season’². Fluctuations in household income and food availability are compounded as stored foods perish, food prices rise, heavy-labour demands intensify and incidence of disease and under-nutrition increase in the hungry season. It is at this time that people are most poor and most vulnerable to becoming poorer. Figure 1 and Figure 2 show this pattern more clearly in the context of Niger and Ghana, respectively.

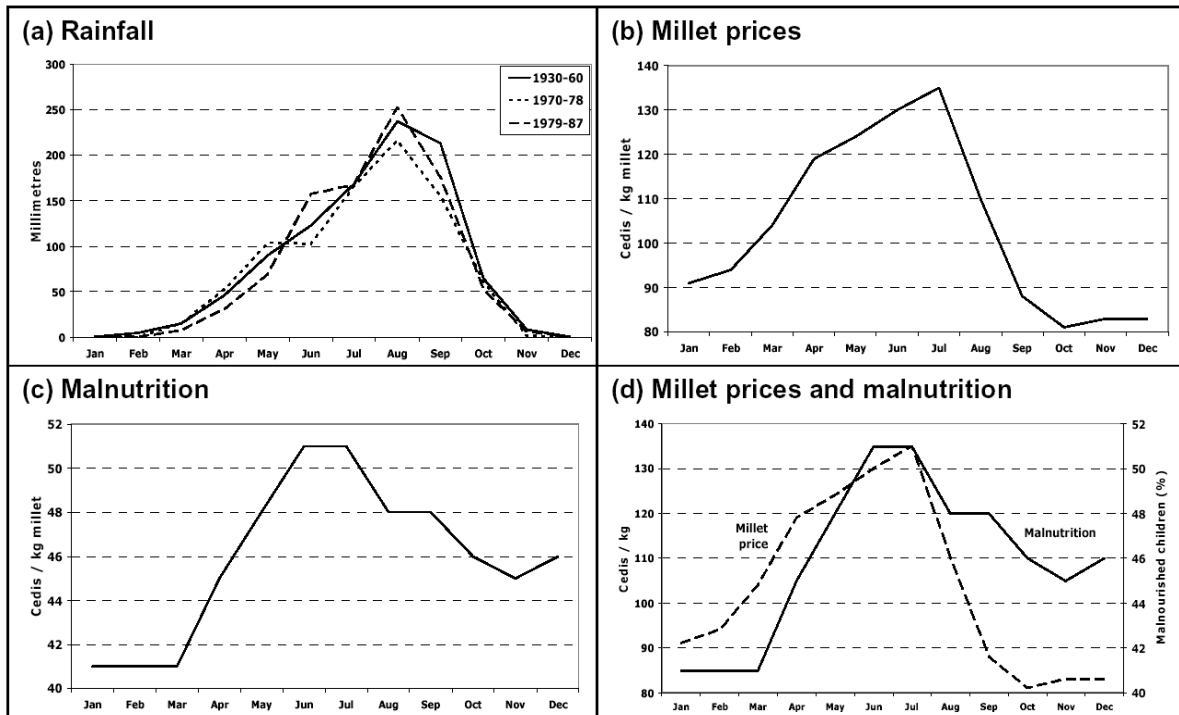
Figure 1: Seasonality of severe acute malnutrition, malaria and rainfall in Niger



Source: Hauenstein Swan et al., 2009:26

² Also referred to as the ‘hunger season’, ‘hunger gap’ or ‘lean season’ - in many countries people have a word specifically associated with the hungry season, for example, in Bangladesh it is referred to as *monga*.

Figure 2: Seasonal price fluctuations in northern Ghana in the 1988 famine



Source: Devereux, 2007:4

2.1 Scope and Variation of Seasonal Poverty

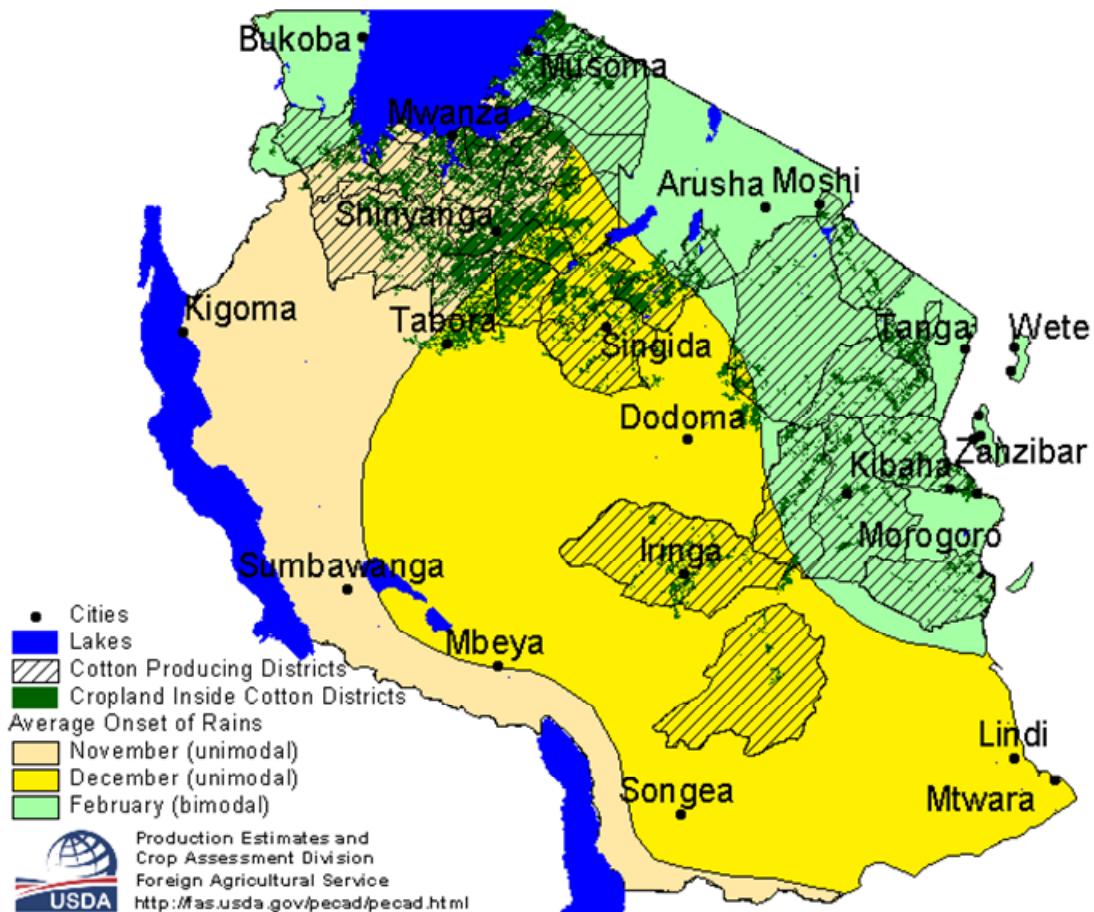
There are very few quantitative estimates of the scale of seasonal poverty. Devereux et al (2008) suggest that seasonality is the number one cause of severe acute malnutrition, but do not give a precise statistic. Research by Dostie et al (2002) estimates that approximately 900,000 people fall below the poverty-line each year during the hungry season in Madagascar. However, this number fails to capture the absolute impact of seasonality, particularly on the estimated nine million Malagasy who live below the poverty line all year round. It is often these people who are most vulnerable to seasonal variation in income, food prices and disease prevalence.

Seasonality is not uniform, but varies significantly between and often within countries. The effects of seasonality are especially acute in regions governed by a short, unimodal (occurring only once a year) rainy season, where the population is poor and reliant on subsistence rain-fed agriculture (Devereux et al, 2008)³. Walsh (1981) provides a proxy indicator of seasonality through a climate classification index based on relative and absolute rainfall, which was subsequently mapped. Importantly for appropriate interventions and policy design, the Walsh Map shows seasonality can vary within a country. Tanzania and

³ Interestingly, Orkin (2009) finds that households with irrigated land in Bale, Ethiopia produce the same yearly harvest of maize and teff they would without irrigation, with consequences for labour demands. However, to produce enough food to feed a family, the household needs access to only 1/3 the amount of land if it is irrigated, compared to if it were rain-fed.

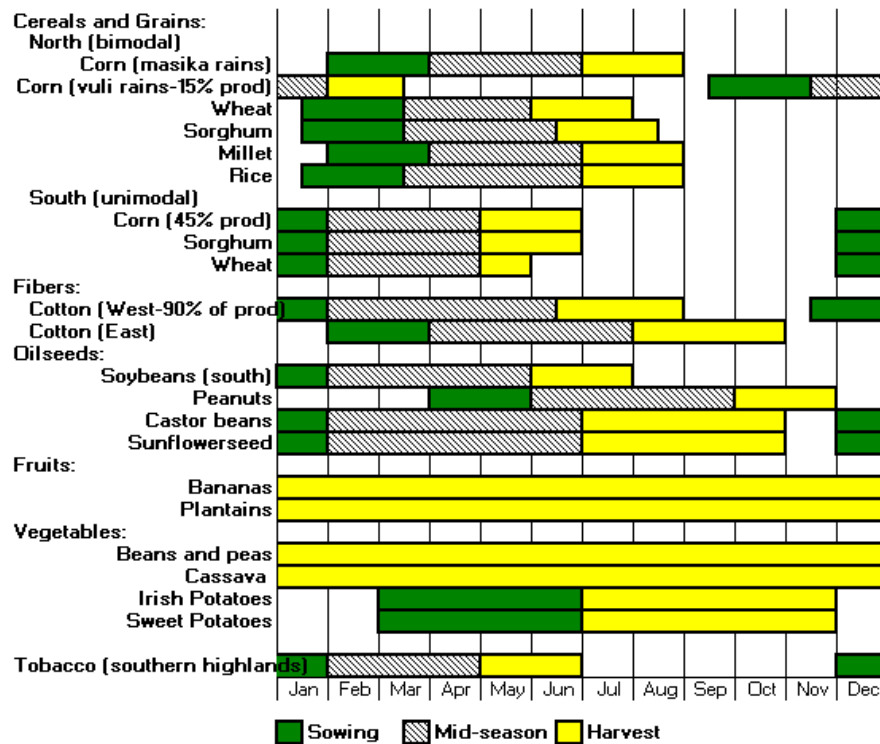
Kenya, for example, feature multiple climatic zones, which are likely to influence the characteristics of seasonal poverty in those regions. Figure 3 shows the three main climatic regions in Tanzania, though the principal distinction is between regions with unimodal and bimodal rainfall. If the population depends on rain-fed agriculture, unimodal regions usually only permit a single staple crop harvest each year, while bimodal regions may produce a second, smaller harvest, smoothing household income and consumption. Figure 4, a cropping calendar for Tanzania, shows how growing seasons vary between bimodal and unimodal regions within the country because of rainfall patterns. Sowing and mid-season in areas characterised by unimodal rainfall are likely to correspond with peaks in hunger and poverty.

Figure 3: The unimodal and bimodal regions in Tanzania



Source: Foreign Agricultural Service, 2003a

Figure 4: The cropping calendar of Tanzania



Source: Foreign Agricultural Service, 2003b

Seasonality is generally discussed in a rural context, but also affects poor urban households, to a lesser degree. Madagascar's main hungry season peaks in January and February. During this period a further 8 percent of rural inhabitants drop below the poverty line, while 3 percent of urban residents are similarly affected (Dostie et al, 2002). Rural households also consume, on average, 10 percent fewer calories than in the harvest season, compared with 5 percent in urban areas (Dostie et al, 2002). Devereux et al (2008) and Barrett (1996) explain that a major factor behind price fluctuation is the unavailability of locally produced foods at certain times of the year, partly caused by national biases in food storage. The bulk of food in Madagascar is stored in urban areas, with grain flowing into urban areas in the post-harvest season, when prices are low, and back into the rural areas during the hungry season when local food stocks are depleted, prices peak and transport costs are high (Barrett, 1996). Consequently, the price of rice (the staple food in Madagascar) fluctuates by about 17 percent in Antananvario compared to 45 percent in rural areas. A thriving private import sector also plays a fundamental part in this discrepancy, explaining (in part) the relatively low price volatility compared to countries like Zambia and Malawi. (Minten and Dorosh, 2006). In many developing countries, price volatility is aggravated by grain traders and other middlemen, who benefit from high prices by manipulating the market and existing institutions (Dostie et al, 2002). Commonly, inequalities are amplified during the hungry season with the negative effects of seasonality increasingly falling on the poorest – often disproportionately on women.

2.2 A Model of Seasonality

Seasonality describes the interlocked nature of various dimensions of wellbeing which fluctuate inter-seasonally and inter-annually; the nature and degree of these variations is related to the level of poverty and the dependence (either directly or indirectly) of households on the agricultural calendar. Seasonal poverty⁴ is succinctly conceptualised through a simple mean-variance model, as proposed by Gill (1991), combining four basic principles:

- *Mean household food consumption (m)*: the constant average amount of food consumed on average throughout a given year.
- *Critical household food consumption threshold (c)*: the level of food consumption, below which a family will become unstable or collapse – either physically (through malnutrition or death), economically (due to debt or inability to work), or cohesively (as families split up to search for better conditions). Conceptually, this could also represent a poverty line.
- *Inter-seasonal variance*: the variation in household food consumption throughout the year, sometimes referred to as intra-annual variance.
- *Inter-annual variance*: the variation in household food consumption between years.

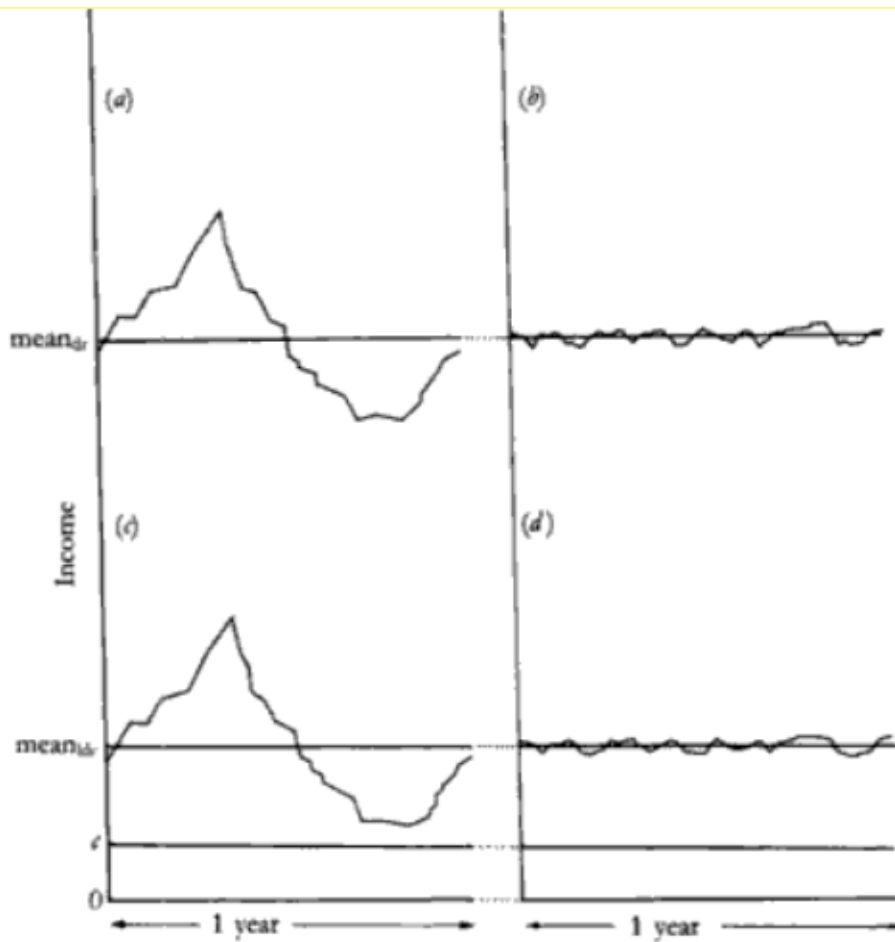
Figure 5 (see Gill, 1991: 9) is composed of two charts (left and right) combining the first three of the four principles: mean household consumption, the critical threshold of consumption and inter-seasonal variance of household consumption. Keeping the critical threshold constant, four combinations present themselves:

- (a) high mean consumption and high variance;
- (b) high mean consumption and low variance;
- (c) low mean consumption and high variance;
- (d) low mean consumption and low variance.

Models (a) and (b) show that households which have a high mean level of consumption, even if inter-seasonal variance is high, are not in danger of crossing the critical threshold. Also apparent is that households facing low mean consumption levels and minimal variance, as shown in model (d), are not in danger of crossing the critical threshold of consumption, unless there is an income shock. However, model (c) shows that the combination of low mean consumption levels and high variance can push households dangerously close to the critical threshold. Onchere and Slooff (1981) capture this image powerfully when examining seasonal variation in household food stocks among landowner and landless households in Bangladesh. While landowner food stocks drop, on average, to a minimum stock of 50kg rice in October, the food stocks of landless families were completely depleted at this time (Onchere and Slooff, 1981). The full graph is presented in Annex 3. The mean-variance model can also be applied to individuals, instead of households, where the critical food consumption may represent severe malnutrition, inability to work or death (Gill 1991).

⁴ I speak here only of material poverty, but there are many other conceptions of poverty.

Figure 5: Mean household consumption, critical consumption threshold and inter-seasonal variance



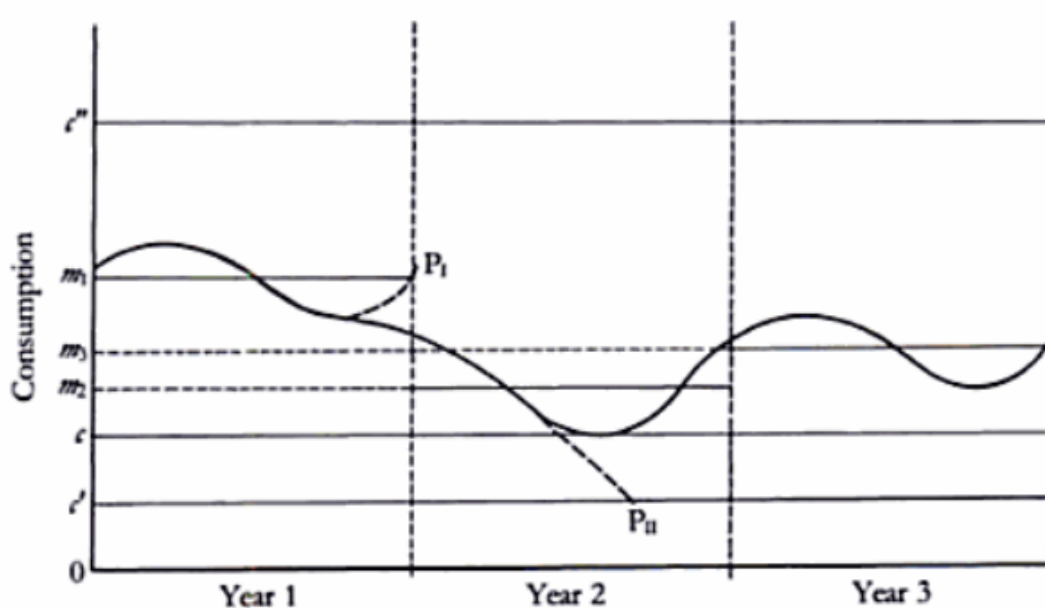
Source: Gill, 1991:9

Figure 6 adds inter-annual variability. Gill (1991:14 writes:

[the] full significance of a critical minimum level of consumption lies in the interaction between [inter-seasonal] and [inter-annual] variation in income and consumption around a low mean, since households are most likely to fall below the critical level is most likely to be crossed in the hungry season of a bad year.

In a bad year, harvests may be compromised by poor rains (too much, too little, too late or too infrequent), pestilence, or any number of other complications affecting the availability and cost of food in the region. The growing literature surrounding development and climate change suggests rainfall is becoming more sporadic in many regions, with adverse impacts on crop yields and food security. More micro effects, such as illness restricting an individual family's ability to attend their crops or raise alternative income may have similar impact on poverty at the household level.

Figure 6: Gill's mean-variance model



Source: Gill, 1991:15

The shock reduces mean annual household consumption from m_1 , in year 1, to m_2 , in year 2, while actual consumption continues to oscillate around the lower mean, pushing the family closer to the critical threshold (c) the in next hungry season. If emergency measures (such as selling off assets or borrowing on future income) are not taken by the family, given that credit and savings were probably used up, the household may fall below the critical threshold and become unstable as a unit, as represented by path P_{II} (Gill, 1991).⁵ Following decapitalisation, a household is unlikely to return to its initial mean consumption level, even following a good harvest, as emergency measures will have reduced collateral for borrowing and limit sources of income and consumption (Gill, 1991). This is shown in year 3, when mean income rises from m_2 to m_3 , but not as high as m_1 . A semi-structured interview conducted in Malawi by Devereux et al (2008) illustrates the relevance of this conceptualisation of seasonality.

[In] some ways the hunger of 2005/06 never ended. Devison tells us that the search for food and medicine that year drained the family's finances. Surviving the hunger season – much less trying to rebuild their assets – became more and more difficult in subsequent years. Now they own little else by one acre of maize, far less than what is

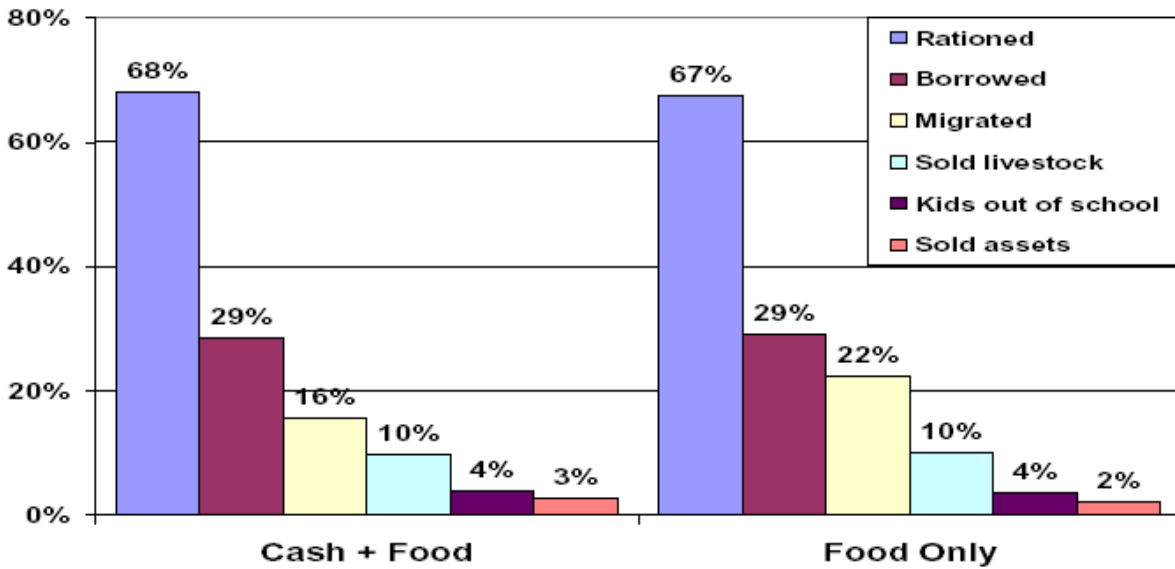
⁵ In circumstances of high food insecurity, poor households frequently employ what have been popularly known as 'coping strategies'. Each year in the hungry season, poorer families begin by cutting non-essential expenditure and then by buying less expensive foods (often purchasing less nutritious foods) in order to maintain staple food consumption. As food insecurity deepens, households adopt more damaging coping strategies, like selling assets, withdrawing children from school or taking expensive loans. In extreme circumstances family members may resort to begging, prostitution or long-distance migration. Devereux et al. (2008) explain that coping strategies employed by households are largely consistent between countries and from year to year, but vary significantly by wealth group.

needed to feed the whole family. They try to find whatever additional work they can on other farmers' lands, but jobs are scarce in the hunger season; many other families are looking for work as well. (Devereux et al, 2008:5-6).

Modelling based on household economy approach (HEA) data suggests that a 30 percent harvest loss on the Iramba Plateau in Tanzania would result in a 10 percent loss in income and a doubling of expenditure on agricultural inputs, likely to force a family to migrate to find labour jobs with additional consequences for health and school expenditure (Chastre and Kindness, 2006).

Figure 7 shows some of the different coping strategies adopted by drought-affected households in Swaziland. Households were most likely to ration food and expenditure, borrow money or migrate; however 4 percent withdrew their children from school. Hunt's (2008) summary of relevant research explains that families commonly seek to exhaust other coping strategies before withdrawing their children from school. Evidence also suggests that it was generally children from poorer households who dropped out, and that children who did not drop out often faced increased workloads in response to increased financial pressure on the household (Hunt, 2008). Education is often prioritised highly. Anecdotal evidence collected as part of a Department for International Development (DFID) research project by Hadley (2008, pers. comm., 20 August) revealed that Zambians are more likely to use income to pay school fees for their children than on medical expenditures. Therefore, this relatively small proportion should not be taken as an indication of the relevance of seasonality to educational access, but serve as a reminder of the value put on education by households, even in times of severe insecurity.

Figure 7: Coping strategies of drought-affected households, Swaziland 2007/08



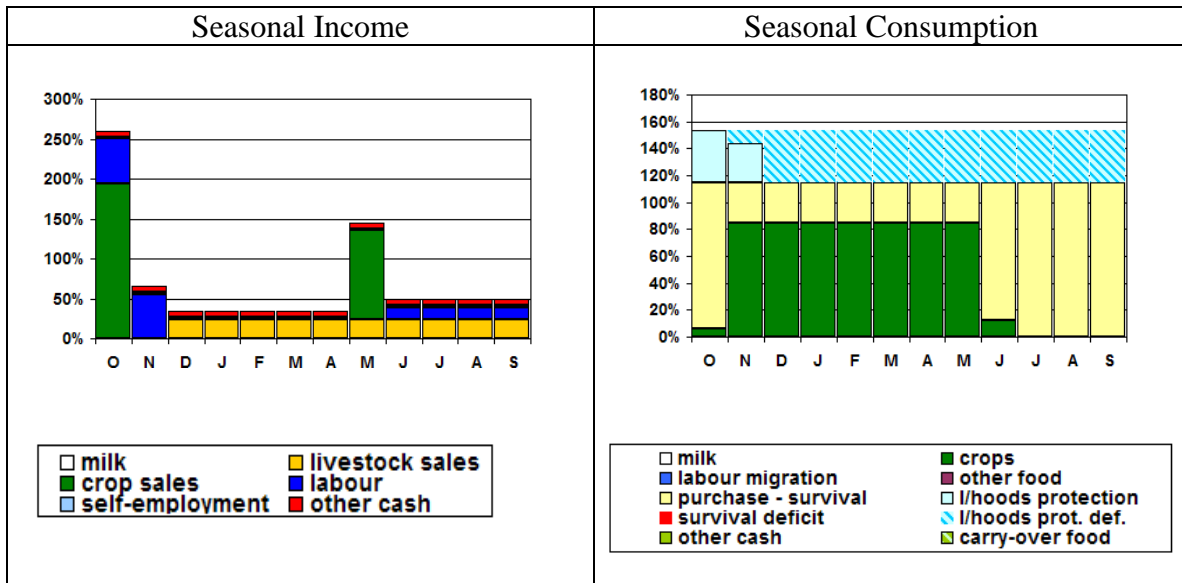
Source: Devereux and Jere, 2008:31

Adopting a seasonal perspective when researching and analysing dimensions of poverty provide, not only an opportunity to design appropriate interventions, but a chance to examine how these dimensions are inter-linked. Poverty limits school participation while poorly designed education policy can exacerbate household vulnerability in the short and medium run. The following sections will discuss some of the ways seasonality is relevant to discussions of educational access, starting with income and expenditure.

3. Seasonality of Income, Expenditure and Purchasing Power

Though the factors behind seasonality are numerous, many are related directly to changes in household income, expenditure and purchasing power. Very few studies look at household income because it is more volatile than expenditure and consumption. This is because, even when income is low, a basic level of consumption must be maintained in order to survive. Figure 8 shows how household income in the Raya Valley Livelihood Zone, Ethiopia, peaks dramatically twice annually, while consumption levels are more consistent. What is not captured is the changes in purchasing power as households rely more on the market to sustain consumption – this is better represented in Gill’s (1991) mean-variance model discussed earlier.

Figure 8: The seasonality of income and consumption among very poor households in the Raya Valley Livelihood zone, Ethiopia



Source: Boudreau, 2009:9

Seasonality of consumption is driven, in part, because income is highly seasonal, but also because the cost of food varies significantly throughout the year. Hopkins et al (1994:1219-1220) suggest that ‘seasonal variation in prices or preferences is the key determinant of consumption seasonality.’ Rice prices in Madagascar can, depending on the region, fluctuate by 45 percent, or more, between the lean season and harvest. The temporal variance of rice prices is generally greater in the north than the south. Poor families in sub-Saharan Africa, and across the developing world, spend a substantial proportion of their income on food. Devereux et al (2008), for example, find that households intended to use 59 percent of the total cash resources distributed through a cash-for-work scheme in Niger for purchasing food. Therefore, changes in food prices can have significant impacts on household purchasing power.

The direct private costs of education are not seasonal, in the traditional sense, but depending on their timing, even small costs can be damaging to educational access and household wellbeing. This section examines the limited available literature on seasonality and the private costs of education and begins to draw a picture of how these may interact. The analysis is constrained by the lack of studies collecting longitudinal, seasonal household income and expenditure data and the limited documentation of the timing and relative magnitude of direct private costs of education. Within these limitations the discussion begins by examining evidence of the seasonal dimensions behind direct private costs and educational access, before briefly considering the magnitude of some of these costs and how they vary geographically within sub-Saharan Africa. A general finding is that private costs of education are most damaging to poor, rural people, especially girls.

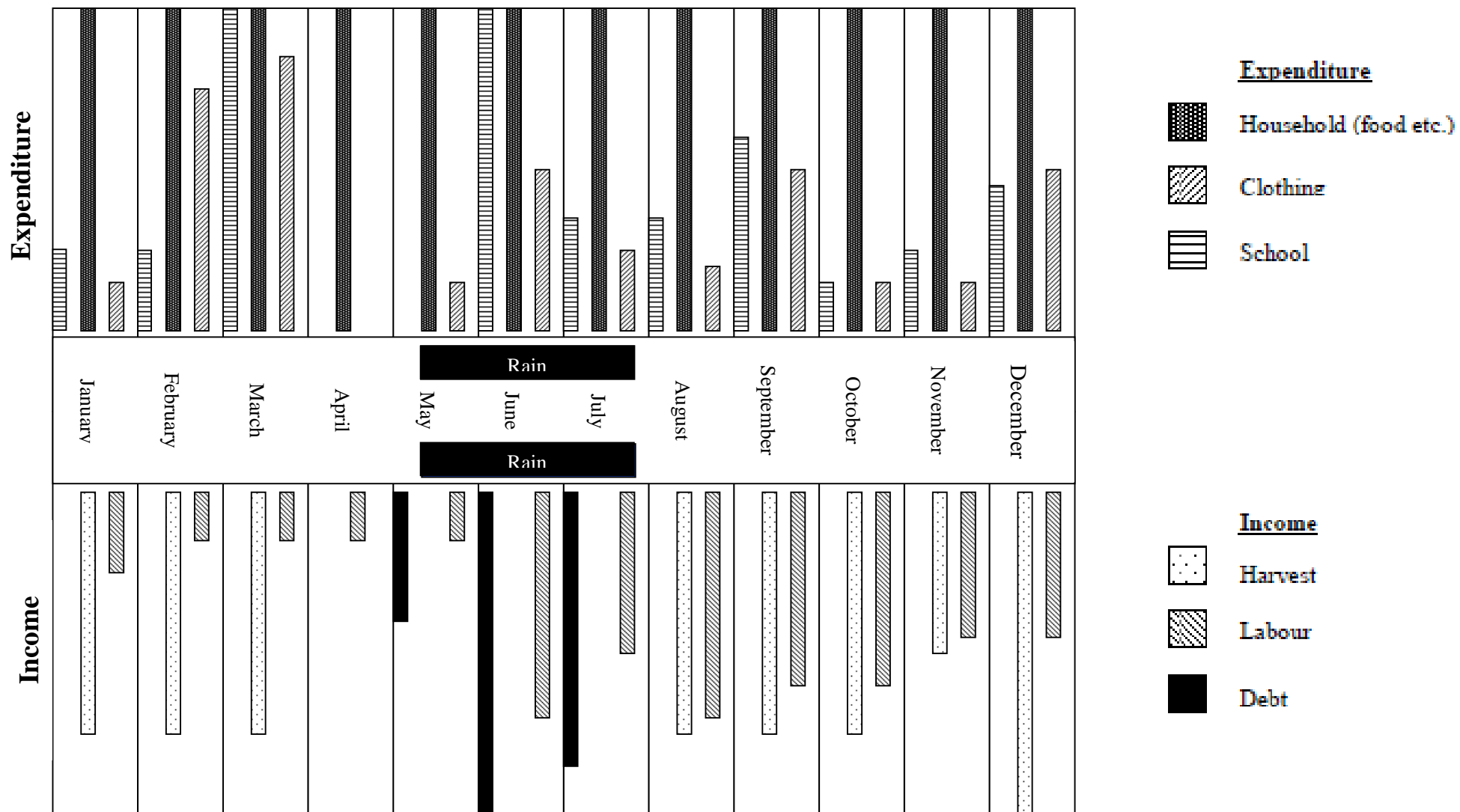
3.1 Purchasing Power and the Relative Private Cost of Education

The various private costs of education faced by households can significantly restrict access to schooling and cause unnecessary stress for poor families who desire that their children receive an education. There is little record of the timing of the various private costs, discussed in greater detail below, even in Asia where more studies have been conducted, but some of the issues are evident.

3.1.1 Timing of direct private costs of education in South-East Asia

A photographic slide provided by Robert Chambers (1995) of a participatory research exercise conducted on Palawan Island, Philippines, matches school expenses faced by households with expenditure and sources of income throughout the year. Figure 9 simplifies the resulting chart to emphasise education expenditure (the original included more variables of expenditure and income). It shows that school costs are greatest in March and June. Significantly, in June, expenditure not only falls in the rainy season when food insecurity, malnutrition and disease are widespread, but is financed primarily by debt and labour as other sources of income are scarce. These costs are an unnecessary burden to Filipino families. Lewin (2002) observed in Papua New Guinea, that people reacted to seasonality of income by seeking income in the lean season only when it was needed, to pay for school fees or health care costs. Potato farmers would be required to pay school fees, which consumed a large proportion of income, in January despite only being able to harvest in September (Lewin, 2002). It is likely that similar circumstances may be prevalent in sub-Saharan Africa.

Figure 9: Seasonal income and expenditure on education in Palawan, Philippines



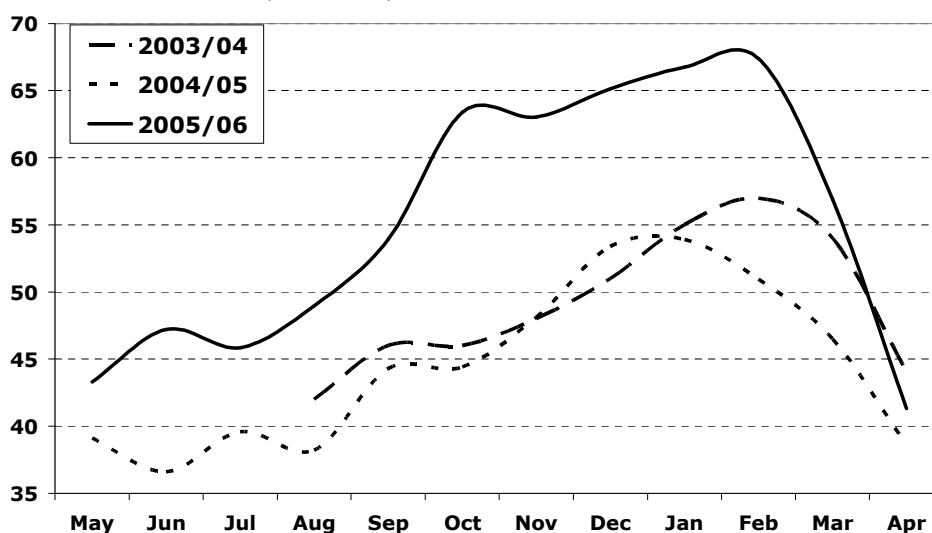
3.1.2 The school calendar and absenteeism in Malawi

A number of studies have noted that school fees and other direct private costs are levied during the hungry season in Southern Africa, with implications for livelihoods and educational access. Nielsen (2001), when discussing educational participation in Zambia, notes:

One school term runs from January to April; therefore, the expenses for fees, books and possibly uniforms are due just before the harvest, which is around May. This constitutes a severe problem for the rural farmers with children of school age (Nielsen 2001:197).

More substantive evidence comes from Malawi. Kadzamira and Rose (2003) and Colclough et al (2003) document how, 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. Figure 10 illustrates how household insecurity in Malawi is lowest in April and May during the harvest, and highest in January to February. For a fuller presentation of the seasonal calendar in Malawi, see Annex 4.

Figure 10: Food stress index⁶, Malawi, 2003/4 to 2005/6



Source: Devereux et al, 2008:45

⁶ The Food Stress Index is compiled from seven indicators: (1) Percentage of families that have a very low immediate supply of staple food. (2) Percentage of households that face serious shortages of staple food in the long-run. (3) Percentage of households earning less than MK1000 per month. (4) Percentage of households struggling to find *ganyu* (seasonal labour) employment. (5) Percentage of households eating three meals per day. (6) Percentage of households not eating any staple foods for a whole day. (7) Percentage of households who did not eat ground nuts or legumes the previous day. (8) Percentage of households reporting a food shortage for that month (Devereux et al 2008).

Though this has not been thoroughly researched, the lack of consideration of the livelihoods of the rural poor in the design of the school calendar appears to have had several negative consequences for educational attendance.

Today, school attendance in Malawi falls during the hungry season due to hunger and a lack of food, particularly in years of greater food insecurity (Namphande, 2007; Kadzamira and Rose, 2003). This is probably exacerbated as household income savings are depleted between December and February (especially after Christmas) and the costs of schooling are likely to be an added burden for households, or simply unaffordable⁸. Namphande (2007) captures some of the coping strategies employed to maintain school attendance when recalling, from a semi-structured interview in Malawi, a mother who ordered a tree chopped down in the garden to be sold as wood so her daughter could afford learning materials and a uniform. This is not only environmentally unsustainable, but also a drain on household assets: it is forced decapitalisation.

A study by the Ministry of Education and UNICEF in 1998 (cited in Kadzamira and Rose, 2003) showed that seasonal absenteeism also corresponded with traditional initiation ceremonies, usually taking place in the post-harvest period from August to October (Colclough et al, 2003). Kadzamira and Rose (2003:513) explain that '[s]ince the long school holidays now fall within the 'hunger' months, parents have little food and money to spare and are, therefore, reluctant to adjust the initiation calendar to fit with the school calendar'.

Namphande (2007) claims that school terms also fail to match up with the demands for seasonal migrant labour, resulting in regular fluctuations in enrolment depending on the time of year and location. Kadzamira and Rose (2003) make a similar observation, stating that the new long summer holiday failed to correspond with demands for child labour. The beginning of the new school year also coincides with peak malaria and diarrhoea seasons, the consequences of which are discussed later.

3.1.3 The relative cost of education in Swaziland

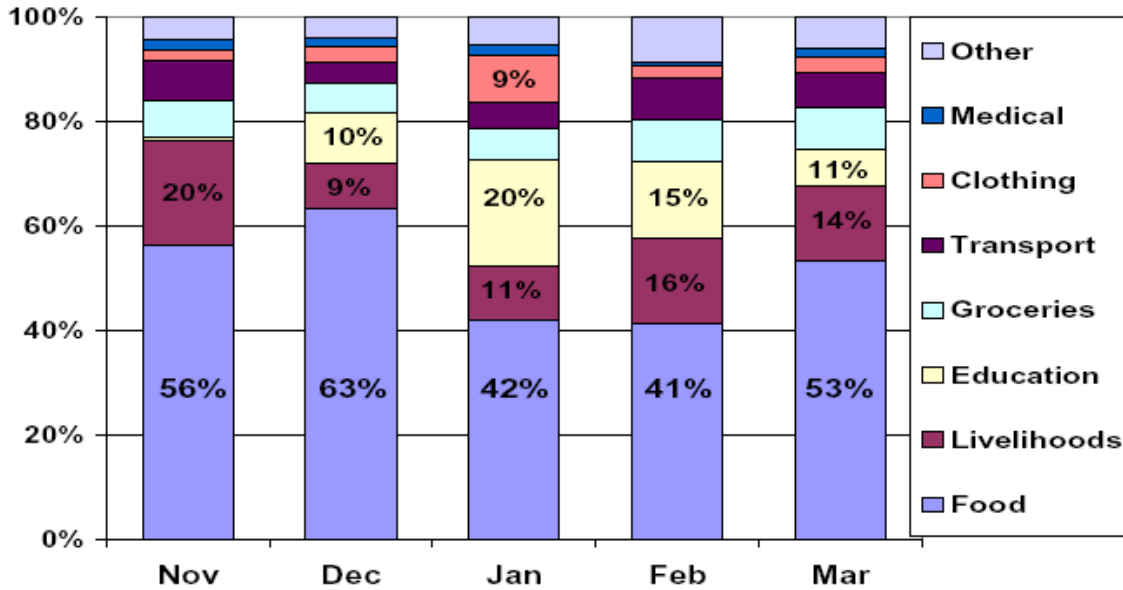
More substantial quantitative documentation of the impact of the timing of school expenses on household expenditure is found in the recent assessment of Save the Children's food and cash transfer programmes⁹ in Swaziland (Devereux and Jere, 2008). The study was designed to compare the positive livelihood effects of pure food handouts and transfers of both food and cash in exchange for work. It compared spending patterns of recipients of both types of 'aid' at different times of the year. They found that education expenditure on school fees, uniforms and meals in Swaziland was greatest in January (see Figure 11 and Figure 12), averaging 20 percent of total spending by participants receiving cash and food, and 31 percent of total spending for those receiving only food in exchange for their labour

⁸ Section 6.2 describes how participatory assessments in The Gambia led to a shift in school fee due dates with positive impacts on girls' school attendance.

⁹ In the field of food security, the 'cash versus food' transfer debate is ongoing – the arguments are beyond the scope of this paper. In short, food handouts fail to protect family assets while cash may be spent on anti-developmental goods and services like alcohol or weddings. However, it is becoming increasingly evident that cash will be spent differently according to the season, a finding which has relevance to education policy design.

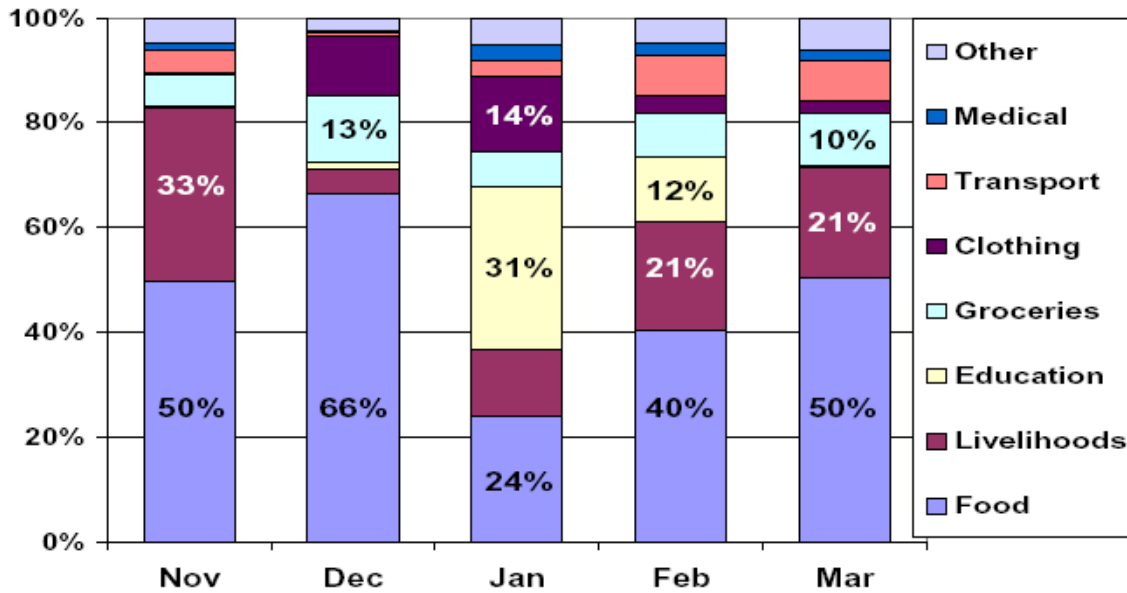
(Devereux and Jere, 2008). Like Malawi, this corresponds with the peak of the hungry season (January and February) demonstrating the impact of school costs at the start of the school year on household expenditure for even very poor families (Devereux and Jere, 2008).

Figure 11: Monthly spending of households receiving cash transfer payments, 2007/08



Source: Devereux and Jere, 2008:29

Figure 12: Monthly spending of households of 'food only' recipients, 2007/08



Source: Devereux and Jere, 2008:29

The authors noted that the additional spending was afforded largely by reducing other expenses:

The increased spending on education was largely financed by a reallocation within household budgets away from other spending categories, especially food, which fell from 63 percent to 42 percent in ‘cash plus food’ households but fell much more steeply in ‘food only’ households, from 66 to 24 percent, recovering to 40 percent in February...Monitoring data also revealed a decline in asset ownership among ‘food only’ recipients between December and January... quite possibly reflecting a ‘forced decapitalisation’ by these households to finance education costs through asset sales (Devereux and Jere, 2008:29).

As education costs decreased from January and February to March, household spending on food almost doubled (Devereux and Jere, 2008). Reducing non-education expenditures is not necessarily damaging, but if already food-insecure households cut back on food expenditure there is the real risk of increasing micronutrient deficiencies and other forms of malnutrition. In the long run, these may become serious barriers to educational participation. Orkin (2009:10) explains that children who can afford to enrol in school in Ethiopia may drop out later in the year because of seasonal fluctuations in income. She describes how the produce of the previous harvest is usually depleted in the second semester, meaning children come to school hungry, leaving them ‘weak and hopeless’ – then they quit.

3.1.4 Inter-annual seasonality

The picture presented so far appears to be common across sub-Saharan Africa. UNESCO (2006) found, in Kenya, that families regularly skipped meals to ensure children could attend school. In Cameroon, poor families commonly sell African plum fruits in the hungry season to pay school fees and purchase uniforms because few other income sources are available (New Agriculturalist, 2001). While this paper largely concentrates on seasonality within years, this does not capture the full effect of seasonality. To do so one must, like the Gill Model (1991), also examine inter-annual seasonality – often discussed in relation to climate shocks. For example, Hauenstein Swan and Vaitla (2007) find that in pastoralist groups in Niger faced inflation rates of 45 percent for cereals and minus 40 percent for cattle between 2004 and the famine period of 2005.

As a result, a household had to sell five cows to get the same amount of cereal that one cow would have purchased in the previous year; this is equivalent to an incredible 80 percent drop in income (Hauenstein Swan and Vaitla, 2007:39-40).

Hunt (2008) provides a brief review of relevant literature on income shocks. Evidence from India suggests that poor families withdraw their children from school when faced with unexpected losses in crop income (Jacoby and Skoufias, 1997). Beegle et al (2005) draw similar conclusions. This appears to be related, at least in part, to the need for child labour to supplement family income, an aspect that will be discussed later, rather than the direct private cost of schooling.

3.2 Types of Direct Private Costs

While most evidence is either anecdotal or centred round livelihood development and food security, rather than enrolment and access to education, the relevance of seasonal fluctuations in income and expenditure to educational participation continues to be evidenced. When reviewing the health system in Singida Rural District, Tanzania, Chastre and Kindness (2006) found that the costs of sending two children to school was equivalent to ten percent of annual income, or roughly Tsh 15,000. They write:

‘Very poor’ households reported that it is sometimes difficult to pay Tsh 5,000 in one instalment. This is particularly true for those who wait until they are sick to sign up to the [Community Health Fund] and even more so if this coincides with the lean period (Chastre and Kindness 2006:2-3).

Though discussing lump sum health insurance payments, this is significantly less than annual expenditure on education and provides further food for thought. Given the priority of education for the rural poor (as discussed briefly in Section 2.2), education policy may have significant, positive results for school attendance and attainment, but also negative repercussions on other dimensions of poverty, especially in the short run (illustrated in Section 4.4).

The impact of education payments on access to education and seasonal poverty is likely to be related to the timing, frequency and magnitude of these payments. To provoke further discussion, the next sections briefly differentiate some of the direct private costs of schooling faced by households (with reference to seasonality, where possible) and describe how these costs vary between and within countries. Two major omissions from this section is in-kind payment of educational costs, such as school-supplied meals (common in West Africa), and exam fees. Future research will need to consider both in the context of seasonality.

3.2.1 Official School Fees

School fees are often regarded as one of the principle barriers to educational access, but statistics describing school fees as a percentage of household income are limited. Llop (2005) suggests even the smallest costs levied consistently throughout the year decreased school attendance in early 1900’s Spain. The debate surrounding free primary education (FPE) provides some insights into the barriers presented by school fees in sub-Saharan Africa. Somerset (2007) found that the removal of fees in Kenya in 1974 increased Grade 1 enrolment by over 150 percent, despite school fees previously being only Shs 60 (US\$ 8). Enrolment in Malawi exploded by about 50 percent between 1993/94 and 1994/95 after the government removed school user fees (Kadzamira and Rose, 2003), and a similar experience was recorded after Uganda introduced FPE for four children per family in 1997 (Kadzamira and Rose, 2003; Mehrotra and Delamonica, 1998)¹⁰. However, Mehrotra and Delamonica (1998:41) assert that ‘[enrolment] is a function not just of access – physical and economic –

¹⁰ In Malawi, many of the newly enrolled were students who had previously dropped out, particularly older boys (Kadzamira and Rose, 2003).

but also of perceived quality and relevance', and it is difficult to ascertain how much of the increase in enrolment was for economic reasons (Kattan and Burnett, 2004).

There is very little documentation of the timing of school fees. Annex 4 provides a seasonal calendar for a well-off household in rural Malawi, produced in 2008 by Action Against Hunger (ACF). It shows that despite FPE households are required to pay school fees at the start of the first and second term. As discussed in Section 3.1, the first set of fees falls in the peak hunger season (January-February), when purchasing power is low, while the second in the middle of the harvest season when greater food availability and lower food prices improves household purchasing power.

3.2.2 Hidden Fees and Other School Levies

Tuition fees are not the only direct private costs of education. UNESCO (2006) reported that the removal of enrolment fees in Uganda resulted in the emergence of new fees to pay – supporting celebrations, construction, telephone connections and teachers' funerals. This was partly due to the government's inability to afford recurrent costs: it financed only around 60 percent of most teachers' salaries in the late 1990s (Mehrotra and Delamonica, 1998). Even after the introduction of FPE, education remained the second largest expenditure faced by Ugandan households, after food, at about 20 percent of per capita income (Mehrotra and Delamonica, 1998)¹¹.

In Malawi, despite a policy of FPE, schools continue to request labour for construction as well as payments for sports, water bills and building materials (Kadzamira and Chibwana, 2000). In Burkina Faso, students are expected to contribute firewood to the school canteen (Mehrotra and Delamonica, 1998). In Zambia, families whose children attend boarding schools may be charged two sets of school fees per term: Kwacha 120,000 (US\$24) in school fees and a parent-teacher association (PTA) fee of Kwacha 20,000 (US\$4) (Participatory Assessment Group, 2003). PTA fees are a common feature in sub-Saharan Africa. Urwick (2002) notes that PTA fees were levied arbitrarily in Nigeria, as were fees for report sheets. There is no data to compare these costs with income fluctuations, but interviews with school administrators reveal that attempts to collect even Naira 50 (US\$0.4) often fail due to family income constraints (Urwick, 2002).

It was not reported at what time of the year these costs were levied, and impacts related to seasonality can only be speculated upon. Also undocumented is whether some of these costs are seasonal, such as construction, or whether they exhibit fluctuating seasonal prices, like supplying fuel to the canteen.

3.2.3 School Uniforms and Clothing

Non-fee costs of education are often more expensive than fees (Kadzamira and Rose, 2003). Of all non-fee costs, the most significant in sub-Saharan countries is arguably school uniforms. Mehrotra and Delamonica (1998:50) noted that when uniforms became

¹¹ This could be the result of more children from each household enrolling in school, but 50 percent of parents reported they still could not afford schooling expenses (Mehrotra and Delamonica, 1998).

compulsory in Burkina Faso between 1984 and 1987 they accounted ‘for 15 percent of total household costs’. In Zambia, uniforms could cost between US\$4 and US\$18 (Nielsen, 2001). Journalistic investigation by Leistikow (2003) suggests children in Kenya sometimes choose their school depending on the price of the uniform:

The teacher says that many students trek the longer distance to Mbagathi because its uniform is cheaper than other schools, and can easily be obtained second-hand. New, it costs about \$7.50 for a tunic and blouse, a little more than Ndunge's monthly rent (Leistikow, 2003).

The stigma against those who do not wear uniforms often discourages poorer children from attending school, and even in Malawian and Kenyan schools where uniforms are not compulsory, children frequently drop out for lack of ‘adequate’ clothing (Namphande, 2007; Leistikow, 2003). In reality, many schools continue to require uniforms in countries where school uniforms are not compulsory, as in Kenya and Malawi, with negative consequences for school attendance (Leistikow, 2003; Kadzamira and Rose, 2003)¹². A Kenyan school teacher claims that ‘[if] you told the girl to come without a uniform, she will not last a month in school’, due to the stigma attached to inadequate school clothing (Leistikow, 2003). Kadzamira and Rose (2003) note how the need for good clothing to attend school increases as the child ages; total expenditure on education also increased by 50 percent between Standards 1-4 and Standards 5-8. There are some indications that Kenyan girls suffer more from stigma, and must spend more on school uniforms, than boys (Leistikow, 2003).

School expenses such as uniforms and clothing are more difficult to assess using a seasonal framework because the time of purchase is not directly set by a schedule like fees are. It could be assumed that parents purchase school clothing before the school year begins, however documentation is sparse (Figures 11 and 12 may be an indicator). There may also be other links between the need for adequate school clothing, school attendance and seasonality. A field note by Chambers reveals the story of a seven-year-old girl who had missed three of the previous ten days of school in because she only had one uniform that got wet in the rain leaving her with no uniform for the following day¹³. Only indirectly related to seasonality and the cost of uniforms, this example is important for highlighting that there are other seasonal complications surrounding access to education.

3.2.4 Learning Materials

Learning materials present a further cost to the household, even in countries like Malawi where these are officially provided by the state (Namphande, 2007). In neighbouring Zambia, Silanda and Tuijnman (1989) reported a total annual average cost of education to parents of Kwacha 166 (US\$0.20), with learning materials composing Kwacha 20 of that sum. These figures are either not peer reviewed or dated, but consumption data enables a direct comparison with other family expenses. During seasonal food crises (like those experienced in Malawi over the past decade) the survival needs of households mean that expenditure on

¹² Namphande (2007) explains that, in Malawi, children wearing uniforms are regarded as better behaved, in and out of school, adding to the social pressure to wear a uniform.

¹³ The distance from school was the same as for another girl who frequently returned home for lunch.

school supplies can quickly lose priority (Namphande, 2007). As with uniforms, the time of purchase is of greatest relevance when assessing the impact of seasonal purchasing power on relative affordability. Further research is needed to identify when families are most likely to purchase these items – specifically if it is when families have access to cash or when they are demanded by educators (such as the beginning of the school term).

3.3 Variability of Direct Private Costs

In Uganda school uniforms represent the most significant education related costs faced by households, while, on the other side of the World, Cambodians are burdened primarily by transport and pocket money (Urwick, 2002). The direct private costs of education are not uniform across the vast region of sub-Saharan Africa either, and identifying variations is important when analysing the impact of seasonality on access to education. There are significant differences between regions. West Africa exhibits the highest per-pupil private costs relative to per-capita income, in sub-Saharan Africa. In Burkina Faso, for example, private costs per pupil are equivalent to about a fifth of annual per capita income (Mehrotra and Delamonica, 1998). Central to public policy, there are also variations on the national and intra-national levels.

3.3.1 National level

The costs of schooling faced by citizens vary between countries within regions. An important distinction can be made between countries which charge enrolment fees, and those which do not. Malawi (1994), Uganda (1997), Lesotho (2000), Kenya (2001) and Tanzania (2001) all abolished tuition fees. However, so called ‘free primary education’ is not actually free. Uganda removed fees but left households responsible for other costs such as books and uniforms (Mehrotra and Delamonica, 1998). The Government of Malawi extended FPE to include state-provision of books, but has been unable fulfil this promise (Kadzamira and Rose, 2003). Other costs that vary between countries include transport, uniforms (or ‘clothes for school’), PTA fees, boarding fees, construction materials, food, private tuition and learning materials (like books and pens).

3.3.2 Intra-National Level

The variation in costs within countries is not well documented. Differences in school expenses between districts or regions of a country can have any number of causes. Urwick (2002:132) claims that in Nigeria there are substantial variations ‘in the private costs of primary education, between the North and the South and between urban and rural areas.’ Uniforms, unofficial fees and textbooks presented the greatest costs in general, but some urban residents also cited transport and extra tuition as important (Urwick, 2002). The Participatory Assessment Group (2003) in Zambia noted that the residents of Luano valley suffered particularly from the vast distances to school compared to the rest of the country.

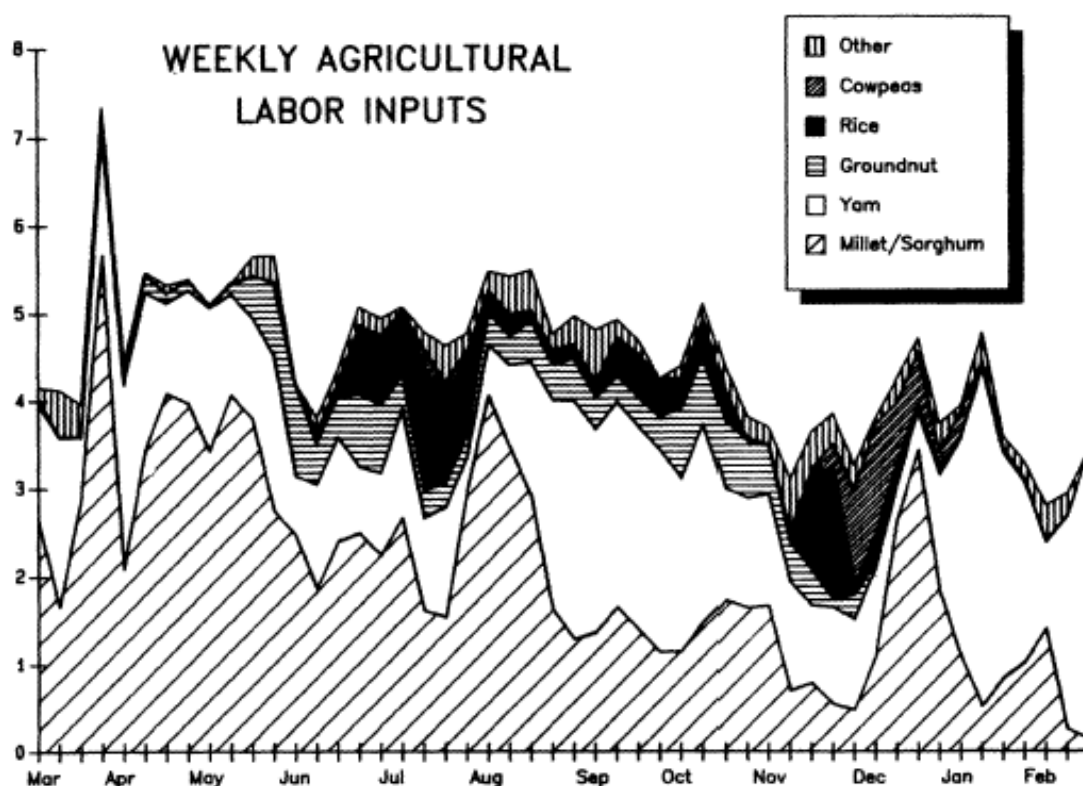
While costs alone do not determine whether or not children will attend school (UNESCO, 2006), the expense of education should not be underestimated. In Ghana, for example, over 50 percent of citizens who never attended school cited financial reasons (Kattan and Burnett,

2004). Urwick (2002) finds that many poor households in Nigeria depend on grain distributions through the community to finance education. Applied research is in short supply, but it may be expected that the importance of seasonality in income and expenditure to the realised price of direct private costs of education is likely to have the greatest relevance to Zone 3 of CREATE's zones of exclusion, children who are at risk of dropping out. This dimension of seasonality will also have some impact on children in Zones 1 and 2 (children who never attend school and those who drop out before completing the primary cycle). Children are somewhat insulated from income fluctuations by the value instilled on education by parents. However, in times of severe food insecurity, households will become more desperate and the timing of education costs will become more important. Children in these circumstances face a real threat of being withdrawn from school and not returning, while families that continue to send their children to school may need to employ damaging coping strategies (including reducing the quantity and quality of their diet) to allow their children to attend. This will only be exacerbated if the direct private costs of education are levied when households are at their most vulnerable.

4. Seasonality of Child Labour Demand

Economies dominated by small-scale agriculture are typically still characterised by fluctuating demands for labour. In general, labour demands peak during the rainy season, or just before, when fields are prepared and crops are planted. This usually coincides with the hungry season. In Nigeria's central savannah, the Kofyar operate different labour arrangements according to seasonal rainfall, with large groups of male labourers paid to work when tasks become congested (Stone et al, 1990). Figure 13 shows how labour demands peak during the millet planting season in late March, and decrease in the long dry season, which peaks in late February (Stone et al, 1990). The Kofyar are not constrained by a short wet season, which further intensifies the demand for labour during the rains in other regions. Hopkins et al (1994) find that that, in Niger, adult labour peaks in the hungry season when the majority of agricultural activities take place. A seasonal calendar produced by the Massa and Mussey of Chad and Cameroon shows energy expenditure is low in the dry season (in January-February), increasing as the rains approach, before peaking in the first two months of the rainy season (June and July) (Gariné, 1993).

Figure 13: Mean daily labouring hours of the Kofyar in Nigeria's savannah, by crop



Source: Stone et al, 1990:11

While seasonality of child labour is rarely highlighted, it may be possible to estimate periods of high demand by looking at adult labour patterns. Kadzamira and Rose (2003) report that

demand for child labour in Malawi follows a similar trend as adult labour, peaking during the *ganyu*¹⁴ season. At the time of year when labour demands are greatest, girls are required to “substitute for the domestic work of adults to allow them to undertake income-generating activities” (Kadzamira and Rose 2003:507). These examples suggest that the demand for children’s work and type of work a child is expected to perform may vary seasonally. Fentiman et al (1999) confirm this claim, finding from focus group discussions in Senegal that seasonal absenteeism was common during the planting and harvesting seasons when children are needed to look after livestock and mind younger siblings. During certain periods of the year young children are required for bird scaring (see Section 4.4).

Child labour in Africa is well researched, but our understanding of the impact on education is still limited:

Domestic and farm work, which could be serious impediments to school attendance have often been neglected in studies on schooling. [Knowledge of the] problem of child labour and its implications for children’s school attendance in rural economies, is also limited. Very little is known about the magnitude, nature, and distribution of child labour within the context of subsistence rural economies. (Admassie, 2003:169).

Over 40 percent of all children in Africa under 14 years of age engage in the labour market (Admassie, 2002). Fentiman et al (1999) found that child labour was a prime factor behind dropout and non-enrolment in rural Ghana. Studies from Europe and the United States of America (USA), past and present, give an indication of the incompatibility of school participation and child work. In the USA, for example seasonal child farm workers have a lower school enrolment rate than any other group, coupled with a dropout rate of 45 percent (Georgetown Journal on Fighting Poverty, 1998). Fuller et al (1995:660) explain that ‘work demands placed on children by parents significantly cut into time available for schooling.’ While analysts often focus on opportunity cost (an indirect private cost of education), the type of work a child is engaged in is equally significant in explaining why many children are regularly unable to attend school. The evidence also suggests that child work does not always restrict schooling, and may facilitate access to education by providing a means to pay school costs (Hunt, 2008).

In the absence of research detailing the seasonal dimensions of child work in sub-Saharan Africa, this section traces the impact of seasonal work on school attendance in early 20th Century Spain before assessing the impact of child work on school attendance varies by region, age, income, gender and (crucially) work-type. Evidence suggests that the burdens of child labour fall hardest on older, poor, rural children, especially girls with younger siblings.

4.1 Seasonal Absenteeism in Early 20th Century Spain

Some of the clearest evidence of the impact of seasonal child labour on educational access comes not from the current crop of developing countries in sub-Saharan Africa, but from turn-of-the-century Europe. Llop (2005) conducted a comprehensive historical investigation into child labour in Spain, which illustrates some of the issues discussed later in the context

¹⁴ *Ganyu* refers to casual labour undertaken during the hungry season, usually by poorer households.

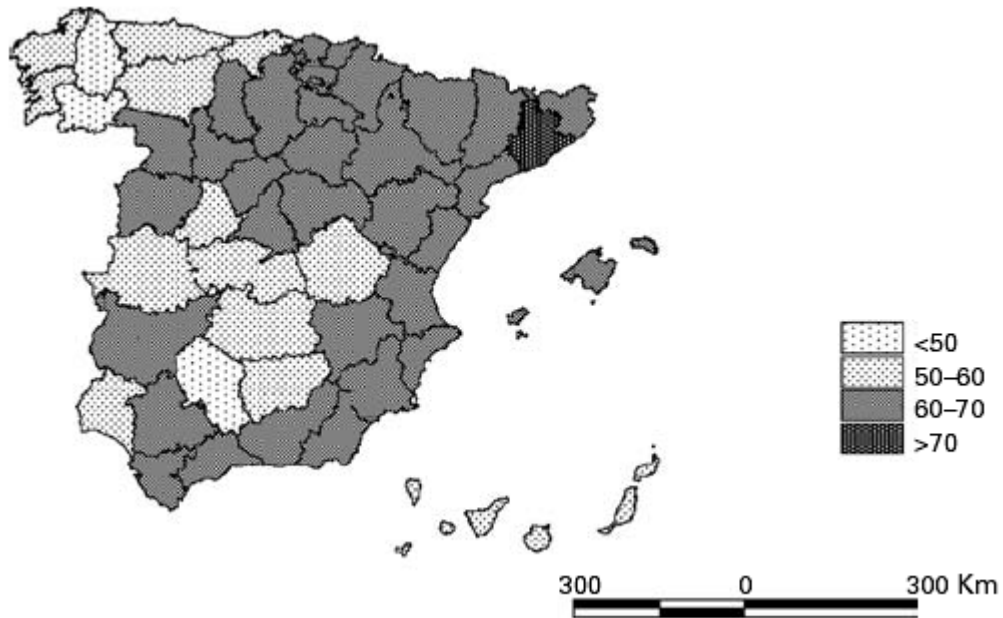
of Africa. Child farm labour was a common feature in Spain throughout the 1800s and early 1900s (Llop 2005; Rahikainen 2004). School dropouts increased sharply around the age of ten when children became more valuable labour assets. Evidence from Germany suggests children became a major labour asset at 12 years-old and were considered a 'proper' labourer by fourteen (Rahikainen, 2004). 'It was not the youngest, the most fragile, who attended less...[absenteeism] accelerated as one grew older and gained in physical abilities' (Llop 2005:400).

The child is a necessity, and is taken advantage of. At the age of nine or ten children already have their part of the herd to mind, they have to watch over the house, and help their parents in almost all the agricultural tasks. They go to school when there is nothing else to do, and as this very rarely occurs, they very rarely attend school. (Alpera, 1911, cited in Llop, 2005:393)

At this time, Spanish school attendance levels for children over 10 years of age were low – around 18 percent for children around 12 years-old in 1920 (Llop, 2005). Provinces characterised by family-run and smallholder farms, or by estate-agriculture, such as north and central Spain recorded substantially lower attendance than urban centres (Llop, 2005). This suggests that the labour of children from landless and smallholder rural households was essential to family survival. Household demand for child labour (or income there from) was a major factor in seasonal truancy rates in rural Spain¹⁵. Figure 14 illustrates the regional distribution of school attendance rates in 1922/23, while Figure 15 shows the high attendance rate in winter compared to the summer in rural regions (Lugo). It is likely that seasonal demands for child labour are currently producing similar patterns of school participation in parts of sub-Saharan Africa.

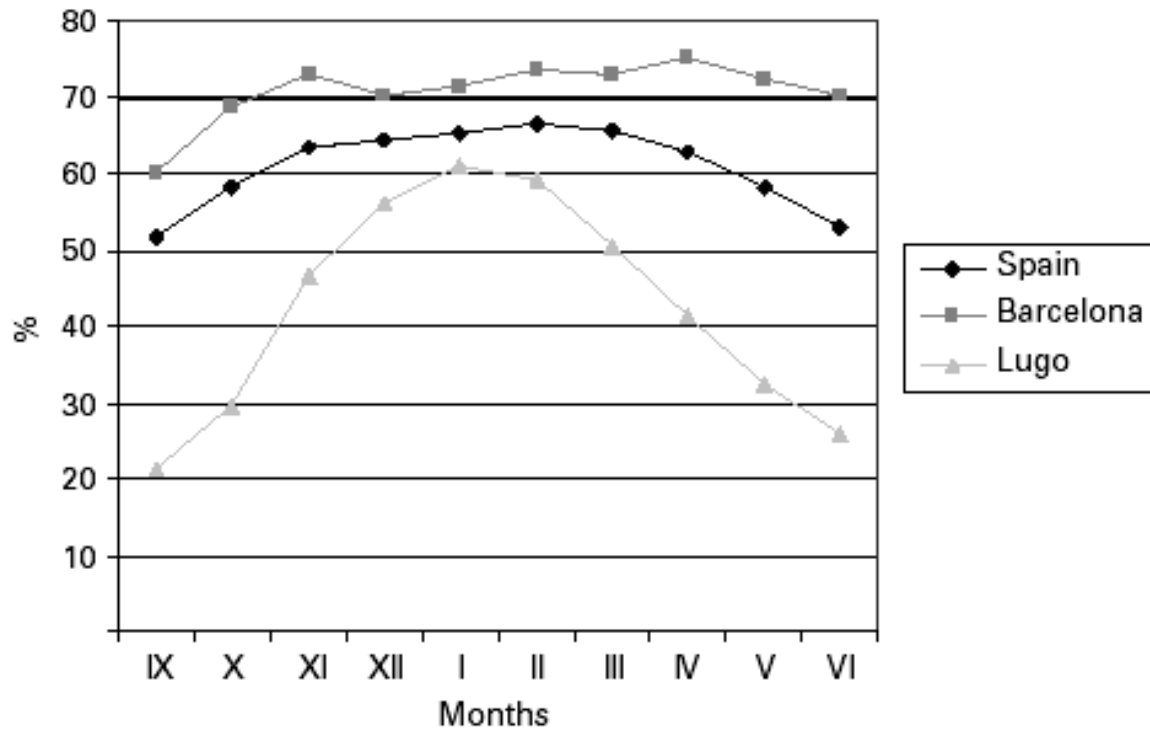
¹⁵ Additional factors cited by children, in early 20th Century Spain, for not attending schools included availability of schools, parents' attitudes, distance from school, poor road networks, collection of payments by school teachers over long periods of time and the disjuncture between formal education and rural life and work (Llop, 2005).

Figure 14: Mean provincial school attendance rates in Spain (1922-23)



Source: Llop, 2005:398

Figure 15: Monthly school attendance rates in state schools in Spain (1922-23)



Source: Llop, 2005:399

4.2 Variations in Indirect Private Costs in sub-Saharan Africa

Recent studies have attempted to investigate the impact of indirect private costs of education, particularly the foregone income of child labour, by estimating the opportunity cost of education. The concept of ‘opportunity cost’ comes from neoclassical economics and is equivalent to the income or benefits a person could gain by engaging in a different activity¹⁶. In this context: is it more productive for the household to send their child to school or to work? Historically, the high demand for child labour in peasant societies has been associated with a high opportunity cost of schooling (Fuller et al, 1995). The discussions are limited by the difficulty in determining whether child work causes absenteeism or whether absenteeism encourages child work. It is also difficult to correlate dropouts with work, given the numerous variables that affect access to education. In addition, there has been little work investigating how indirect private costs of education vary in relation to seasonal dimensions of poverty. Still, evaluating the opportunity cost of schooling and child labour raises important questions regarding access to education. To provoke thought around where seasonal research and interventions may be targeted in the future, this section looks at some of the ways opportunity costs vary between regions and individuals.

4.2.1 Geographic Variations

Fuller et al (1995) explain how child labour, and its impact on schooling, varies across Africa. In Botswana, society is less dependent on subsistence agriculture and children have fewer labour commitments, minimising the conflict between labour and school attendance (Fuller et al, 1995). Conversely, estimates suggest Ethiopia exhibits one of the highest child labour rates in the world, and 75 percent of those child labourers work for over 9 hours a day (Admassie, 2003).

The time spent working also varies intra-nationally. In Botswana, girls were noted to have greater domestic responsibility in the south than the north (Fuller et al, 1995). The dropout rate in rural Ethiopia is more than 50 percent higher than in urban areas (Woldehanne et al, 2005). Urwick (2002) compared hours worked by children in urban and rural Nigeria (on school days and non-school days). He found that the mean hours worked was greater in rural areas regardless of whether children attended private or public schools (Urwick, 2002). Kadzamira and Rose (2003) found that children in Malawi, who are not attending school, work, on average, 4.5 hours per day more than a child who attends school, and girls an hour more than boys (Kadzamira and Rose, 2003).

¹⁶ Accurately calculating the opportunity cost of schooling in Africa is complicated. A few studies, globally, have selected areas where families face expected increases in income (such as the receipt of a state pension) in order to estimate opportunity cost of education (Carvalho Filho, 2008; Edmonds 2006). Where this information is not available, dropout and school attendance rates can provide an estimate of the age at which children’s work becomes more valuable to the family, and pinpoint seasonality. The difference between the number of hours worked by a child engaged in education compared to a child who works ‘full-time’ approximates how much longer a child would work if they were not in school. Otherwise, longer hours worked can imply greater opportunity costs

4.2.2 Gender

There is often a clear gender division of labour. Girls in rural areas are usually involved in domestic duties like cooking, while boys generally engage in farm work or mind livestock (Admassie, 2003; Edmonds, 2006). Girls are generally involved in more work activities than boys, and work for longer hours. In Ethiopia, roughly 10 percent more girls were engaged in child labour activities than boys (Admassie, 2003). Girls in Ethiopia are also 2 percent more likely to drop out of school than boys (Woldehanne et al, 2005). In rural South Africa, girls aged 13-17 worked 2.5 hours more per day than boys who worked for just over an hour per day (Edmonds, 2006)¹⁷.

4.2.3 Age

In India, children of migrant families begin working as early as age 6 and are usually regarded as proper labourers by age 11 or 12. This appears to be true in sub-Saharan Africa too. As children grow older, labour demands increase and tasks become more difficult (Urwick, 2002).

[In] rural Ethiopia, children begin participating in work activities as shepherds looking after the animals, collecting firewood and fodder, fetching water, and then taking on more strenuous tasks such as farming and cooking when they grow up (Admassie, 2003:172).

In southern Botswana, dropout rates for girls peak around grades 8 and 9, possibly due to the pressure of labour demands and increasing wages (Fuller et al, 1995). However, Dunne and Leach (2005) maintain the main reason for girls dropping out of school in Botswana is teenage pregnancy. Child education in Ethiopia is influenced by child labour demands far earlier, with dropout rates peaking at about 8 years old (Woldehanne et al, 2005). Children in poorer families participate in domestic chores at a younger age. About 40 percent of rural Ethiopian children begin working around the age of 5 and almost all are engaged in work by the age of 10 (Admassie, 2003; Woldehanna et al, 2005).

4.2.4 Income

Though some recent research suggests otherwise, most studies find that the opportunity cost of education rises as income falls (Urwick, 2002), and as income rises incidence of child labour diminishes (Admassie, 2002). De Carvalho Filho (2008) found, in urban Brazil, that a \$100 dollar increase in family income increases school enrolment of girls by 6.2 percent, with a similar figure for boys' enrolment. Though the relationship was not perfect, this was despite the cost of sending an additional child to school equalling around \$500. In sharp contrast to this, Woldehanne et al (2005) show that increases in total household expenditure are correlated with higher participation in child labour in rural areas, until a certain threshold of wealth, regardless of whether or not children were attending school. This is likely due to a

¹⁷ It should be noted that this may not come at the expense of school enrolment, as South African girls have higher school enrolment rates than South African boys, especially in secondary school.

‘wealth paradox effect’ resulting from lack of access to credit and labour; because families cannot employ labourers they use their children instead, and more land needs more children to work it (Woldehanne et al, 2005).

4.3 Work Type and School Participation

Woldehanne et al (2005) suggest that the majority of children who dropout in Ethiopia do so because of work-related reasons, though there are many other factors. For example, Admassie (2003:171) explains that ‘[child] labour is more prevalent in the rural areas [of Ethiopia] also because the capacity to enforce minimum age requirements for schooling and work is lacking.’ What is particularly important to the design of government interventions to tackle child labour and increase school participation rates is how different types of work influence participation in education. Some forms of child labour appear to be relatively compatible with school attendance, while others are not. Combining this more traditional analysis of child work with a seasonal perspective in future research may provide powerful insights into educational access. This section provides a brief discussion of the types of work that children engage in and their compatibility with school attendance in order to understand the groups of children who are most likely to have their access to schooling compromised by work. However, the results are from specific studies, usually conducted in only one region or country and it might not be possible to generalise from them.

4.3.1 Compatible Work Types

Research from Ethiopia suggests that certain activities, like herding, farm work, fetching water and collecting firewood, are more compatible with school attendance than others (Admassie, 2003). ‘Children who attend school are able to fetch water or firewood either on their way to and from school or before and after school hours’ (Admassie, 2003:179-180). This will depend partly on the location and environment of the household, for Hemson (2007) notes that collecting water did affect school attendance and performance in South Africa. In Côte d’Ivoire, boys’ enrolment increases with the proximity of fuel sources (Woldehanne et al, 2005). Other research indicates that household chores and family-based economic activity pose less of a threat to school participation than wage employment and other ‘external’ work (Guarcello et al, 2006). Another factor is how well the school schedule is adapted to allow children to engage in work activities (Admassie, 2003) – this is discussed in more detail in Section 6.

4.3.2 Incompatible Work Types

Other activities are largely incompatible with schooling. Child minding is particularly restrictive (Admassie, 2003). In Ethiopia, few children engaged in child minding also attend school (Admassie, 2003). In Botswana, Fuller et al (1995) find that girls with siblings averaging 11 years-old, are 3.5 times more likely to still be in school, compared to girls whose siblings average 5 years. This is because girls with fewer older siblings incur greater responsibility for minding their brothers and sisters (Fuller et al, 1995). Similar evidence comes from Côte d’Ivoire, where child schooling was found to increase with the number of female siblings aged between 7 and 14 (Woldehanne et al, 2005). HIV/AIDS prevalence in

Southern Africa may further restrict girls' schooling by increasing the demand for domestic help or child minding. Following the death or incapacitation of a parent or guardian older girls may be required to mind children, care for the sick or adopt domestic chores (Kadzamira and Rose, 2003). Child minding may be seasonal in some areas, as found by Fentiman et al (1999) in Senegal, but more research is needed to determine whether this is a widespread phenomenon.

4.4 The opportunity cost of education, how demand for education can affect livelihoods

The literature analysing child labour and schooling predominantly focuses on how child labour interferes with educational development. My argument so far in this section has claimed that the demand for child labour may affect attendance or enrolment. However, there may also be instances where demand for schooling affects the livelihoods or behaviour of the rural poor. A discussion between Chambers and Thompson reveals how schooling interfered with agricultural practice in what was formerly Machakos District, Kenya.

The maize crop is once again failing for lack of rain. Sorghum and millet would do better in these conditions but none was to be seen anywhere. There is a food preference for maize but that is not the whole story. Thompson says that another reason they don't grow sorghum or millet is that they are vulnerable to birds, and children who used to do the bird scaring are now in school (personal communication Chambers 2008).

Huss-Ashmore (1993) and Moris (1989) describe how policy universalising education, combined with high demand for education from rural people 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 (Moris 1989). 'Bird scaring' has been a traditional approach to reduce crop damage from birds (usually quelea) across Africa; Ruelle and Bruggers (1982) noted bird scaring as common practice in all North, West and East Africa as well as the Sahel. Bird scaring is particularly effective for subsistence farmers, and especially important for sorghum, rice and millet (Ruelle and Bruggers 1982). The bird scaring season usually requires 30 full days of duty, varying between country, pest-bird, season, approach and crop (Ruelle and Bruggers 1982). For example, in the Senegal River Valley, villagers frighten birds from their roosts at night during the dry season (unlike in Chad) between January and March (Ruelle and Bruggers 1982). It is vital that future research around seasonality and educational development elicits both negative and positive aspects of education policy and interventions.

Child labour is one of the main obstacles to achieving universal primary education because it is an important livelihood support to many poor households and because it vies directly with time needed for schooling. Child labour appears to be driven by seasonal demands in the same way as adults. This section shows that some children are more at risk of being excluded from schooling by seasonal labour than others, and that the types of work children engage in is also a determinant of educational access. It is important to understand the intra-annual seasonality of child labour. Inter-annual seasonality – shocks such as a family member falling ill or a failed harvest – also increases the incidence of child work and decrease school

attendance (Guarcello et al, 2008). Speculatively it may be suggested that seasonal child labour may have greatest impact on Zone 3 of the CREATE zones of exclusion, by forcing irregular attendance and leaving a child tired and unable to concentrate. Child labour demands may also impact Zones 1, 2 and 4 – children who never attend school, those who drop out before completing primary education and those who fail to make the transition to secondary school – depending on the age a child begins work, the longevity of that work and whether work leads to full-time employment within or outside the family before secondary school. The next section looks at other aspects of seasonality that may impact educational access, including migration, health and man-made seasons.

5. Other Dimensions of Seasonality

Seasonality of income and child labour are interconnected and represent a number of ways seasonal poverty can impact access to education, restricting the ability to pay fees or attend school at certain times of the year when income is scarce, food prices are high and labour demands are at their peak (often all simultaneously). Low-income households are likely to be more susceptible to needing child labour during the peak agricultural seasons. But there are other ways seasonality can impede access to education, here I will discuss three: migration, health and ‘faux’ seasons. During times of intense food insecurity, often faced on an annual basis in countries like Niger and Ethiopia, household members or even whole families are forced to migrate to find work. Another concern in the hunger season is health, and its impact on educational access and performance. Micronutrient deficiencies and other forms of under-nutrition, diseases like malaria and cholera and parasites, particularly worms, all exhibit clear seasonal trends. Finally, there are also man-made seasons, often associated with religion or steeped in tradition when families are required by society to spend more money, impacting the likelihood of paying for school expenses.

5.1 Migration

For most of the world’s poor households, ‘subsistence’ farming, casual seasonal labour and sales of livestock and assets remain a principle sources of income and food. Across livelihood zones in Malawi, for example, *ganyu* remains the most important income generating activity for poor households, providing between 10 and 50 percent of total household income as well as supplying food in the form of in-kind payments (Malawi National Vulnerability Assessment Committee, 2005). Landless groups are likely to rely even more on labour to buy food, as will pastoralists who must either labour or sell valuable livestock to purchase food (Save the Children, 2007). Each year, in the lean period, when food prices are high, food stocks low and household purchasing power is restricted, poorer households often resort to seasonal distress migration– sometimes regionally, but also domestically, in neighbouring countries or to more developed countries.

Seasonal migration occurs for several different purposes, including search for work opportunities or food. This may involve migration from one rural area to another where cropping patterns and the agricultural calendar differ, or from the home region to plantations, mines or cities. Other reasons for migration may include engaging in trade and marketing activities, cultivation of secondary holdings and pasturing cattle (Alderman and Sahn, 1989).

Few studies have been conducted on the impact of seasonal migration on education in sub-Saharan Africa, though numerous reports assess the benefits of non-formal education institutions targeting nomadic groups. Migration can be both beneficial and harmful to educational access of primary school children. Deshingkar and Start (2003) explain that in some areas of Andhra Pradesh and Madhya Pradesh, India, migrant labourers choose to seek employment in the off season because it boosts family income substantially, while in others, marginal farmers in particular are forced to migrate to maintain food security. However, even

in cases of accumulative migration¹⁸ children may be required to migrate along with other family members (Deshingkar and Start, 2003), potentially compromising their schooling.

Though seasonal migrant labour could be classified as a form of child labour in many countries, I consider seasonal migration separately from seasonality of child labour because household mobility poses a separate problem to educational access. One that is less rooted in the opportunity cost of education and more in social and political exclusion as well as school availability, governance and flexibility. Also, unlike many private direct and indirect costs of education, it has been argued that migration affects not the poorest, but those who are able to afford to migrate (Skeldon, 2002), though this is contextual and debatable.

5.1.1 Seasonal Distress Migration in India

In the context of India, Smita (2008) provides the most comprehensive research into the relationship between seasonal distress migration and educational access that I am aware of. I summarize the findings here. Distress seasonal migration is common in South Asia, and is a growing phenomenon in India (Smita, 2008). There, richer money lenders recruit labourers by providing small advanced loans to poor families to meet immediate cash needs in the post monsoon season, when needs are greatest, in exchange for their future labour. Though formal statistics are unavailable, Smita estimates the number of seasonal migrants at between 10 and 30 million people, each year.

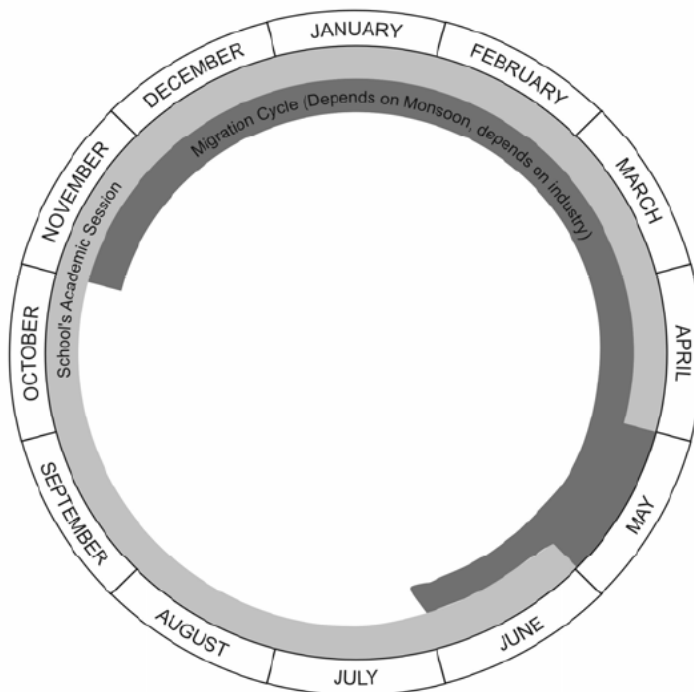
With the collapse of rural livelihoods in many parts of the country, hundreds of thousands of families are being forced out of their homes and villages in search of work for several months every year. These migrations force adults to take their children along, making them drop out of school and closing the only opportunity available to them for an alternate future. Evidence indicates that such migrations are large and growing, and the number of children below 14 years involved may be close to 9 million (Smita, 2008:1).

The length, duration and timing of seasonal migration in India depends largely on the type of seasonal work sought by migrants. To generalize, agricultural labourers migrate for short durations, often more than once per year, while the industrial and agro-industrial migration operates a single cycle beginning after the Monsoon and lasting for 6 to 8 months until April or June. Figure 16 shows how this pattern overlaps with the school calendar. Migration patterns are constantly changing. Heavily indebted households migrate for increasingly long periods to repay interest and credit accumulated in previous work sites. Some migrant groups consist entirely of unaccompanied children, usually hired for cotton pollination between July and October. Smita (2008) identifies a number of ways seasonal distress migration restricts school access, particularly in the primary school age group. Most relevant to this discussion is that when families move, so do children, drawing children out of school in the dry months. These families generally return after the following school year has begun, meaning children who must catch up are more likely to drop out or simply be excluded. Even when only adult

¹⁸ “Accumulative seasonal migration is undertaken to improve the economic position of the household” (Deshingkar and Start 2003:2)

males migrate, school participation can become restricted or irregular, as children are required to help with household chores and income generating activities.

Figure 16: Overlap of seasonal migration cycle and school calendar in India

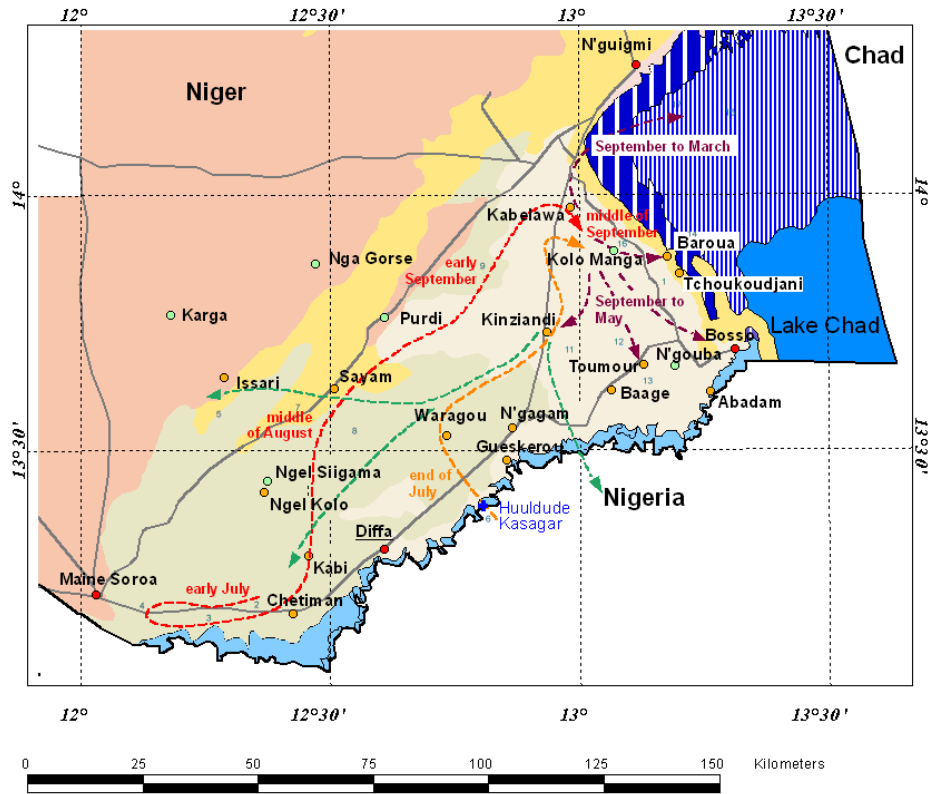


Source: Smita,2008:3

5.1.1 Seasonal Distress Migration in Sub-Saharan Africa

Seasonal analysis of migration in the context of education is largely confined to South Asia, though seasonal distress migration remains a common phenomenon in sub-Saharan Africa most famously in West Africa. FEWS NET (2005) finds that earnings from seasonal labour, including both migrant and proximate labour, are the predominant source of income for poor households in Niger, across all livelihoods zones. Agro-pastoralists and farmers dependent on rain-fed crops are the most reliant on income from migrant labour (FEWS NET, 2005). Figure 17 shows the migration routes taken in southern Niger. More widely, Konseiga (2005) finds that off-farm and migrant labour account for 42 percent of household income in rural Sahel. Adult men in Liberia migrate seasonally in search of work at rubber plantations while farmers in northern Ghana migrate south in the lean season to where cash crops are being harvested (Alderman and Sahn, 1989). In Zambia, Petersen (cited in University of East Anglia, 2007) finds that migration to the Kafue Flats in order to harvest fish has decreased access to education as fishing villages are located far from schools. She also reports seasonal difficulties in paying school fees among this group.

Figure 17: Map of seasonal migration paths in southern Niger

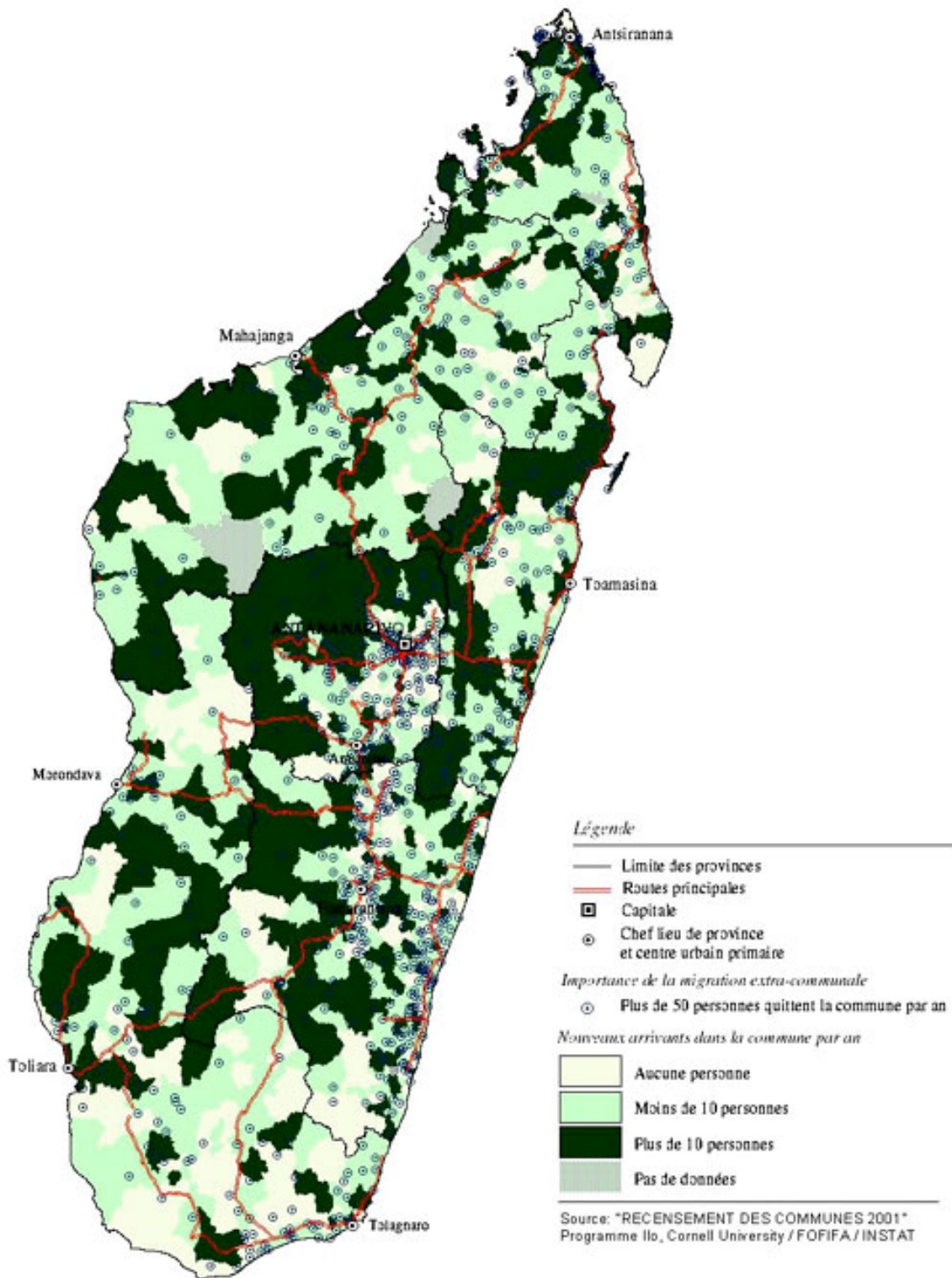


Source: Vennemann, 1999

Short and long-distance seasonal migration has traditionally been a male dominated practice, but is becoming increasingly feminised (Adepoju, 2005). In Senegal, girls migrate when they are as young as 10 years-old, often leaving the district to help a family member (Fentiman et al, 1999). Girls in Ghana frequently migrate to become housemaids in urban areas, often for family and kin (Fentiman et al, 1999). What begins as seasonal migration may eventually become permanent migration and homelessness, characterised by entire families moving from work site to work site, never returning home (Alderman and Sahn, 1989).

Few statistics are available of the scope of this coping strategy, but seasonal rural-urban migration in Senegal has been estimated as involving as much as 40 percent of the active population (Alderman and Sahn, 1989). Figure 18 shows the scale of seasonal migration in different areas of Madagascar – dark-shaded regions show areas where more than 10 people migrated, while in white areas no one migrated; dots mark areas where more than 50 people migrated in a single year.

Figure 18: The importance of seasonal migration in Madagascar



Source: Cornell University/FOFIFA/INSTAT, 2001

5.2 Seasonality of Health

Health status plays a vital role in access to education. Fentiman et al. (1999) suggests that lack of concentration, underachievement, hunger and malaria were the principle causes of absenteeism and school drop-outs in rural Uganda. The linkages between ill health and education have been well researched; Pridmore (2007) provides an up-to-date review of literature on the impact of ill health and malnutrition on access to education. However, what is often missed is that health and wellbeing are often seasonal. Table 1 shows how different diseases, parasites and disorders peak in the wet or dry season in West Africa.

Table 1: Seasonality of infection in West Africa

Dry Season	Wet Season
Measles	Malaria
Meningitis	Typhoid
Pneumonia	Diarrhoea
Tetanus	Guinea-Worm
Scabies	PEM/infection syndromes
Acute respiratory diseases	Anaemia
	Vitamin A deficiency

Source: Tomkins 1993:129

5.2.1 Hunger and malnutrition

In Madagascar, child mortality triples between the harvest and hungry season – most deaths are attributed to diarrhoea and malnutrition (Dostie et al, 2002). Seasonal undernutrition, from lack of caloric consumption during the hungry season, can compromise the body’s immune system, leaving it vulnerable to diseases, which are more prevalent in the rainy season (Devereux, 2007). Severe acute malnutrition (wasting), which affects 19 million children worldwide (Black, 2008), restricts the physical and cognitive development of children. Many millions more suffer from moderate acute malnutrition and chronic malnutrition (stunting). Though less conclusive, numerous studies show that stunting restricts IQ (Grantham-McGregor et al, 1997; Walker et al. 2000) and lowers children’s attainment in school (Chang et al, 2002; Pollitt, 1995). Powell et al (1998), as with a number of other less rigorous studies, find that hunger during school can limit the benefits of education and that school feeding programmes improve attendance and performance of students.

5.2.2 Maternal health and low birthweight

In 1986, 30 percent of men and 50 percent of women in Ghana were underweight, increasing to 49 and 63 percent, respectively, in the hungry season (Awumbila, 1997). Low birth-weight is closely linked to maternal health and nutrition, and is highly seasonal in many parts of the developing world (Gill, 1991). Rowland et al (1981) found that birth-weight in Keneba, The Gambia, fluctuates between the wet and dry season, in much the same way as energy balance among women, and is as much as 200-300g lower, on average, in the rainy season. Pridmore

(2007) notes that evidence from India indicates that low birth-weight is associated with a small, but long-term, decrease in the mental performance of boys aged between 10 and 12.

The ability to lactate is also linked to seasonal energy intake and labour requirements of women. Steenbergen et al (1980) revealed that women in Machakos, Kenya, with children under 5 months old produced about half the amount of breast milk in the lean season as they did in the harvest season, while evidence from Bangladesh noted that women not only produce less milk at this time, but have less time to breastfeed their children when harvest labour demands are greatest (Chowdhury et al, 1981). Available literature suggests that there is a link between breastfeeding and cognitive development, though this has not been conclusively proven (Jukes, 2005).

5.2.3 Diarrhoea and worms

Diarrhoea and intestinal worm infestations usually peak in the rainy season; when absorption is affected. Intestinal worms are the single largest contributor to the total disease burden of 5 to 14 year-olds worldwide – about 40 percent of all school age children are affected – with negative impacts on growth, nutritional status, cognition and school performance (Awasthi et al, 2000 and Alderman et al, 2006). A recent study (Bobonis et al, 2004) shows that intestinal worms can also affect growth of children under 5, with possible implications for brain development. The same research also found that a 5 month course of treatment for intestinal worms not only increased the weight of children, but improved school attendance by 20 percent.

5.2.4 Vitamin A and iron deficiencies

One symptom of worm infestation is vitamin A deficiency, which also peaks at this time (Sommer, 1982). Vitamin A deficiency increases the risk of acute respiratory infections, iron deficiency and other diseases as well as increasing the likelihood of dying from these diseases (Tomkins, 1993). Deficiency can also cause blindness, especially in pre-school children. Vitamin A deficiency is a widespread problem, affecting a greater proportion of school age children than pre-school children and affecting more boys than girls.

Iron-deficiency anaemia (IDA) is also most common in the wet season and is caused by poor diet and exacerbated by vitamin A deficiency and loss of blood from worm infestations (Tomkins, 1993; Bantje, 1982). Hall et al (2001) estimates that as much as 40 percent of children in Africa and Asia suffer from IDA, which in its severe form has been found to reduce the mental and motor performance of young children (Pridmore, 2007; Horton and Ross, 2003) and impacts cognitive development and academic performance in the long-run (Grantham-McGregor, 2003). Less is known about the impact of mild and moderate IDA (Grantham-McGregor, 2003). Hall et al (2001) find that children who enrolled late in school were more likely to be anaemic than those who did not. Boys are more likely to be anaemic than girls (Hall et al, 2001).

5.2.5 Insect and water-borne diseases

Many water-borne diseases, such as onchocerciasis, peak in the rainy season, as do insect-borne maladies like malaria and kala-azar (Tomkins, 1993). In Ethiopia, peak incidence of malaria occurs in June and between September and October, overlapping with the July to September hungry season (Devereux, 2007). Cerebral malaria is most likely to affect children in rural areas and, if severe, may cause serious cognitive impairment as well as rendering children less able to initiate, plan and carry out tasks (Boivin, 2002; Holding et al, 1999). While not discussed by Pridmore (2007), other seasonal parasites such as filaria, Guinea-worm, kala-azar, onchocerciasis and schistosomiasis may also have implications for school attendance where prevalence is high.

As implied by Table 1, peaks in malnutrition and ill health often occur at the same time creating periods of high risk for children. This is especially true when one considers the broader picture of seasonality, with labour intensity, material poverty, lack of adequate shelter and powerlessness peaking at a similar time. There will also be implications for mental health and stress that have not been discussed in this paper. The cyclical nature of seasonality can reinforce patterns of ill health creating chronic conditions, Gill (1991) writes of low-birthweight,

The net effect on timing of births varies greatly between societies, but in some cases it actually produces a peak in births at the time least favourable to the child's survival. Palmer [in Chambers et al, 1981] gives an example from an area in Bangladesh where the incidence of children coming off the breast peaks in December. This is just after the main rice harvest when women's workloads are heaviest due to crop processing and they have correspondingly little time for child care. This in turn means they resume ovulation in January-February, so that conceptions peak in March and births peak the following December. 'Hence the cycle in which child care and agricultural work compete for the mothers' time and energy is perpetuated' (1981:197). For babies born at a time when maternal nutritional status is poor, the resulting problem of low birth-weights is likely to be complicated by poor nutrition, for it can be assumed that poor maternal nutrition will be reflected in reduced milk output (Gill, 1991:60).

Seasonal health crises are compounded by the lack of income for health expenditure in the hungry season – even 'free' health care has hidden costs, such as transport and drugs which may be restrictive (Namphande, 2007; Chastre and Kindness, 2006). It is the complex interplay between the seasons and the various dimensions of poverty that constrain educational access that must be acknowledged when planning effective interventions.

5.3 Man-Made Seasons

Religion can also be a major influence on stress, health and income in sub-Saharan Africa. While little empirical research is available, this may have a bearing on educational access. The Mussy and Massa of northern Cameroon and Chad, like many peoples in sub-Saharan Africa celebrate 'initiation ceremonies' (Garine, 1993). Initiations into adulthood can be

mentally stressful and physically painful, especially when ceremonies involve rituals such as female genital cutting (Garine, 1993). Hunt (2008) summarises important findings in recent literature on education and rites of passage:

Boys in Guinea undertaking initiation ceremonies had primary schooling disrupted, with ceremonies sometimes taking place in term time, absenteeism lasting up to one month, and sometimes leading to drop out, while for girls it was often considered 'shameful' for them to return to school (Colclough et al, 2000). Secondly, money available for schooling might be used for the initiation event (Kane, 2004). And lastly, this move into adulthood at times means that 'new' adults can think themselves too grown up for schooling (Kane & DeBrun, 1993, Thomas, 2002 cited in Kane, 2004) (Hunt, 2008:36).

Islam is a predominant religion in much of north, west and (to a lesser extent) east Africa. The practice of fasting for 28 or 29 days during Ramadan before celebrating Eid, can have a negative effect on weight in non-temperate regions – with severe consequences for pregnant mothers and their children (Cole, 1993). Ramadan begins with the appearance of the new moon, and so starts approximately 11 days earlier each year. Cole (1993:95) discovered that when Ramadan fell during the rainy season in The Gambia, it had 'a substantial effect on the health of pregnant women', with weight falling an average of 0.9kg in a month. Weight also fluctuated within the Ramadan months, due to varying consumption patterns (Cole, 1993). Christmas in Christian Southern Africa will have a major impact on livelihoods as it encourages spending at the beginning of the hungry season, leaving less for the lean months of February and March.

Other aspects of educational access may have seasonal dimensions. Fentiman et al (1999) notes, for example, that physical access to schools was a constraint to school attendance in Uganda, especially in the rainy season when poor roads became impassable. A similar finding also surfaced in Masaiti, Zambia, where the makeshift bridge linking the area to Luanshya collapses each rainy season leaving pupils stranded (Jesuit Centre for Theological Reflection, 2009). Teacher absenteeism during the peak agricultural seasons in areas where teacher salaries are supplemented by agriculture may be significant. Anecdotal evidence also suggests that attendance of children in the rainy season may become erratic when a child's only school uniform gets wet and fails to dry overnight, or when siblings must share a single pair of shoes to walk to school. The scale of these barriers is often difficult to ascertain as few studies have taken a seasonal approach to research on education, and many relevant findings are mentioned only in passing. It is likely that, in many cases, seasonal migration in sub-Saharan Africa affects the ability of children to attend school, either directly by forcing them to move or indirectly by encouraging child labour within the household when remittances fail. However, seasonal migration may also increase access to education by financing the costs of attending school. The impact of poor health has received greater attention, though the seasonal dimensions have not featured strongly in discourses surrounding education either. The next section examines some of the seasonally-sensitive approaches that have been taken to improve school attendance, historically and in recent decades.

6. Educational Responses to Seasonality

Until now, this paper has discussed the possible dimensions of seasonality that can impede access to education, particularly Zones 1, 2 and 3: by preventing school enrolment, forcing children to drop out before completing primary school or putting children at risk of dropping out because of irregular attendance, poor grades or other forms of silent exclusion. There are also other affects stemming from the seasonality of many health conditions, migration that affect educational access, and complications arising from man-made seasons. The next step is to apply seasonal knowledge to the design of education policy and structures. This section examines some of the initiatives taken by formal and informal providers of education to make school schedules seasonally-sensitive. It begins by examining the history of school schedules in Europe and the United States before summarizing more recent educational reforms in developing countries.

6.1 Educational Reactions to Seasonality in Europe and the USA

Seasonal dimensions of school attendance are not a recent phenomenon. They are very much part of the recent past in Europe. Only a century ago, seasonal fluctuations in school attendance were common in Europe and the USA. Schools were still adapting timetables to permit children to work on farms or bird scaring in cherry season in rural Netherlands only 50 years ago.

6.1.1 The School Schedule in Early 20th Century Europe

Intra-annual fluctuations in school attendance, caused by changing demands for child labour, were common in Europe between the 17th and early 20th Century. In the Scottish Borders, school log books frequently noted patterns of absenteeism caused by demand for children's labour for 'hay-making, potato-lifting, clipping, peat work, lambing, winter foddering, driving sheep [and] keeping house' (Rahikainen, 2004:114). The incompatibility of child labour and schooling, and high costs of education, led to a number of informal and formal changes in school schedules.

Starting with informal adaptations, Sunday schools in England proved popular because they did not interfere with labour hours and were free (Rahikainen, 2004). In France, children from poor families in rural areas were required to work in the fields in summer so school attendance dropped markedly between February/March and October/November (Rahikainen, 2004). The official school calendar did not reflect this pattern, but teachers often shortened the school year and narrowed the curriculum (Rahikainen, 2004). *Escuelas temporales* (temporary schools) operated in northern Spain, teaching only in the winter when demand for children's labour was lowest (Rahikainen, 2004). The schools resulted in high literacy rates (especially among boys) when compared to similar regions without temporary schools (Rahikainen, 2004). In Finland, prior to compulsory education, 'ambulatory schools' were popular in rural areas, offering a short period of schooling in the slack-season (Rahikainen, 2004).

There were also formal, state-led changes. Ukrainian school schedules were modified to accommodate local demands for children's labour on farms (Rahikainen, 2004). Although girls' participation was lower than boys, schools generally experienced good attendance and enrolment rates (Rahikainen, 2004). Similarly, in Denmark and Norway, schools sought to officially adapt the school calendar to children's labour demands to minimise the burden of education on poor rural families. Danish legislation decentralised school term decision-making, and ensured children were only required to attend school three days a week (reduced to two days per week in June and July for some ages) (Rahikainen, 2004). The 30 week Norwegian school year took place in the slack-season, with girls permitted to skip every other day in winter (Rahikainen, 2004).

6.1.2 Calendar reform in the United States of America

Trying to expose the history of the modern school calendar in Europe is difficult given its limited documentation. It is often assumed that the calendar used in most European countries originated from rural demand for child labour in the summer. However, at the turn of the last century, disunity between the school calendar and seasonal child labour demands was the norm rather than the exception. Evidence from the USA provides some insights.

The recent debate surrounding year-round schooling has revealed the current calendar was forged by urban demands, and is radically different from the rural school calendars of the early 1900s. In the 1800s, the rural school year was usually short, varying from 3 months in sparsely populated areas to 7 months elsewhere (Kneese and Ballinger, 2006). In large cities, like New York, schools were open 11 or 12 months per year (Tompkins, 2007). Around 1875, as many children attended school in the summer months, the period between planting and harvesting, as in the winter (Fischel, 2006).

In the mid-19th century, the [rural] school year was divided into two terms. The typical summer term extended over five months, from May to August or September. The winter term varied from state to state, depending on local planting and harvesting times; it generally began after harvest in November and continued until just before spring ploughing, usually around early April. After 1900 the school year was standardized into one nine-month term, beginning in September and ending in May (Gulliford, 1991 cited in Fischel, 2006:237).

There are a number of explanations for the shift to a standard school year for the whole of the USA (Tompkins, 2007; McIntyre and McIntyre, 2007; Kneese and Ballinger, 2006); but the process was not enforced by the government: '[by] all accounts, it just happened' (Fischel, 2006:243). Fischel (2006) argues that the progression towards a uniform school calendar emerged as a result of increasing labour mobility. There was some pressure to shift from single-classroom schools to age-graded structures so students in rural primary schools could move into high schools (Fischer, 2006). This movement was hastened by improving rural road networks. Because labour became increasingly fluid across the USA, demand for a uniform school calendar increased so children of migrant families would not fall behind in their education (Fischel, 2006). The summer was preferred as the holiday period because, firstly, the climate was more suitable for vacation, and secondly, moving home was easier in

the summer, because roads sometimes became impassable in the winter (Fischel, 2006). Regardless of the explanation:

Finally a consensus emerged during and immediately following World War II that school time should consist of 170 to 180 days of teacher/student contact annually, usually from around September 1 to around June 1, or from around Labour Day to Memorial Day (Kneese and Ballinger, 2006:34).

The seasonal patterns of school attendance in early 20th Century Europe and USA appear similar to those present today in Africa, where children continue to be regarded in many areas as assets to the household, and a vital source of labour (Bhalotra and Heady, 2003). It is difficult to assess the origins of the school calendar in African nations, though many are likely to be remnants from the colonial era. Chad, for example, shares the school calendar of France (World Bank, 2008b). Section 3.1 shows Malawi took strides to alter its school calendar, but failed to implement seasonally-sensitive reform. There have been a number of cases across the world where schools have adapted their school calendar to target enrolment levels and seasonal absenteeism, though relatively few in Africa. In Ethiopia, Kenya, Mali, The Gambia, Guinea and Ghana efforts have been made to better adapt school schedules to the local context, though these are generally poorly documented. Here I will discuss some of the more famous reforms in developing countries, starting with non-formal education.

6.2 Recent Non-Governmental Calendar Reforms

6.2.1 Bangladesh Rural Advancement Committee

The Bangladesh Rural Advancement Committee (BRAC) runs a rural education programme which operated about 35,000 schools in 2000, targeting poor rural children, especially girls, who make up 75 percent of participants (Watkins, 2000). BRAC schools are highly participatory in their governance, with communities and parents involved in establishing both costs and timetables (Watkins, 2000). Even before establishing a new school, parents are consulted regarding seasonal labour demands (Watkins, 2000). BRAC schools operate 3 hours per day, 6 days per week, 270 days per year. The average cost per child of a BRAC school is US\$20 per year, less than half of government schools (Watkins, 2000). Graduates of BRAC schools are able to rejoin state schools at level Grade 5 or 6 (Watkins 2000). Though figures are not publicly available, the success of BRAC schools has led the government of Bangladesh to install a similar approach in formal primary schooling (Watkins, 2000).

6.2.2 Mali Community Schools

In Mali, community schools have taken the initiative. Colclough et al (2003:174-175) wrote:

In Mali, community schools have successfully implemented flexible schedules and school calendars whereby the school term begins at the end of harvest in November and continues until the beginning of May. Children are taught for two or three hours a

day, six days a week for six and a half months. The impact of these changes has been positive in increasing girls' enrolments in these schools.

6.3 Recent State-led Reforms

6.3.1 Colombia

The most renowned example of state-led rural school calendar reform is the *Escuela Nueva* programme of Colombia. The programme concentrates on adapting the curriculum to local contexts and establishing flexible school schedules (Watkins, 2000). *Escuela Nueva* schools operate a multi-grade system where children progress from one grade to the next after reaching a set academic standard, assessed on a continuous basis irrespective of school year (Watkins, 2000). Children are able to halt their education temporarily, according to household needs etc, without the threat of being required to repeat a year (which is expensive) or drop out (Watkins, 2000). Parents and children are engaged when establishing school calendars, so seasonally adapting the schedule (Watkins, 2000). Watkins (2000) highlights two significant results of the *Escuela Nueva* programme, (1) high performance rates of students in almost all subjects relative to other rural schools, they also complete primary school earlier; and (2) participating girls and boys demonstrate equal self-esteem.

6.3.2 Brazil

A more simple reform was initiated in Brazilian states governed by the Landless Rural Workers' Movement (MST). Calendar changes sought to reduce absenteeism and illiteracy; following the shift, '[the] school year, which had always started in February or March, no longer clashes with local sowing and harvest times in the rainy season between January and May' (Lucas, 2001). In rural areas, participation in education tripled, while illiteracy and dropout rates halved (Lucas, 2001). It is difficult to determine what proportion of these improvements was a result of calendar reform, and not changes in the curriculum and context/cultural-specific teaching; however, in light of these successes the Brazilian government soon implemented similar reforms in non-MST states (Lucas, 2001).

6.3.3 The Gambia

Participatory Rural Appraisal (PRA) conducted in The Gambia between 1993 and 1995 uncovered a number of significant findings regarding education, including the burden of the private costs of education for rural Gambians (Kane et al, 1998). The involvement of the Ministry of Education played a vital role in ensuring the PRA findings translated into policy (Kane et al, 1998). Two of the many policy changes were a reduction of tuition fees by 50 percent at the junior-secondary level and a relaxation of the school uniform requirements for girls (Kane et al, 1998). Furthermore, 'user charges (school fund, textbook rental etc.) at the primary level are now payable after the harvest in January/February when rural parents can better afford to meet these costs' (Kane et al, 1998:41). Ceesay (pers. comm., 26 August, 2008) claims that, despite the reform in 1995/96, parents still face the financial constraints of uniforms, books, pencils and lunch money; however, schools are no longer permitted to expel students for not paying fees until after the harvest season (if fees remain unpaid). Seasonal

absenteeism persists, usually before and after The Gambia’s major festival (Ceesay, pers. comm., 26 August, 2008). Many children from poorer families also do not attend school at the beginning of the rainy season, when they are required to assist their parents on the farm (Ceesay, pers. comm., 26 August, 2008). The government is making some efforts to counter seasonal absenteeism by proposing that rural schools close earlier than urban equivalents; the school calendar currently runs from September to July (Ceesay, 2008).

6.3.4 Lesser-Known Reforms in Sub-Saharan Africa

Chambers and Maxwell (1981) briefly reference examples from Uganda and Kenya, which have not been discussed in more recent journals and books. On the Mwea Irrigation Settlement in Kenya, school schedules were altered to allow children to help cultivate rice (Chambers and Maxwell, 1981). Similarly, school terms in Teso, Uganda were adapted to demand for children’s labour in the cotton-picking season (Chambers and Maxwell, 1981). Ethiopian schools have the power to decide their school calendar, provided the school remains open for 205-210 days per year (Colclough et al, 2003). This provides some flexibility to adjust according to seasonal patterns of absenteeism. Table 2 shows the key links between the agricultural and school calendars in Bale, Ethiopia.

Table 2: Agricultural and school calendars in Bale

Month	Agricultural activity	School calendar
Jan-Feb	Vegetable harvest (<i>belg</i> crop)	School opens in mid-January
Mar	Main fishing season	
Apr- May	Maize planted; (<i>Belg</i> rains)	School moves to the afternoon
Jun	Teff planted in late June; (<i>Keramt</i> rains begin)	Examinations; School closes
Sept	Maize harvested (<i>Meher</i> crop); (<i>Keramt</i> rains end)	School opens in early September
Oct	Maize and teff harvested; Vegetables planted	School closes for two weeks and then moves to the afternoon
Nov		School moves to the morning
Dec		School closes

Colclough et al (2003) explain that Ghana and Guinea have been persuaded to alter their daily school schedule to fit with seasonal demands for children’s labour and the reforms intend to alter school hours (starting and ending the school day 30 minutes earlier) to allow children to complete household chores.

7. Recommendations for Research and Policy

Seasonality is both a factor of poverty and a driver behind it. Households which lack adequate access to infrastructure, capital and social protection are most vulnerable to the compounding effects of seasonality while seasonality traps millions in poverty by exacerbating existing inequalities and periodically contracting household wealth and human capital. Yet policy often overlooks the centrality of seasonality to poor people. Education may offer a clear route out of poverty, at least in the long-run, but enrolment and attendance of primary school children continue to be constrained by a multitude of factors, many of which have a seasonal dimension or have roots in seasonality. Demands for child labour, either in the home or in the fields, can be highly seasonal, while the ability of households to afford the direct private costs of educating their children will change throughout the year. These barriers to educational access for primary school children are mutually compounding. For example, young children eat less in the rainy season, just before the harvest, because food stocks are low and food prices high, making them susceptible to malnutrition (with associated consequences for attendance and cognitive development). They are also more likely to suffer from fatigue limiting the quality of the learning experience. Undernutrition increases the risk of contracting diseases which are rife during the rains, in turn making children more likely to become undernourished. Reduced purchasing power constrains access to services such as health care while transport links can be lost or become unaffordable, especially in remote rural areas. Not every year will be the same. A productive family member may become ill in the peak labour period forcing children to work harder still. Often harvest income can be lost this way with severe consequences of seasonal debt repayment and household well-being for many years to come.

Seasonality offers a real opportunity to reflect the realities facing poor people around the world in policy and programming, not only because it is central to their lives, but because seasonally-sensitive policies would have to be both cross-sectoral and receptive to micro-level context. Understanding that a policy like mass education can have both positive and negative externalities – as highlighted in Section 4.4 – is vital to designing effective interventions. Equally important is that effective policy is not replicated across the Africa, but adapted to local context. Seasonality is not the same in West Africa as East Africa or in Southern Africa. The complex interplay between environment, economy and culture must be recognised and captured. To conclude my analysis so far, I will briefly identify some areas for further research linking seasonality and education before outlining spaces for seasonally-sensitive interventions in the school calendar. Though this represents only a small part of what was covered in this paper, it serves to demonstrate that seasonally-sensitive policies need not be complicated or expensive. Nor do they require a wholesale change in our approach towards poverty reduction and improved educational access for children of primary school age.

7.1 Implications for Research

There is one finding which is raised implicitly and explicitly throughout this paper: the need for further research on seasonality and access to education. Combining the literature on

seasonality, education, child labour, migration and health has proved challenging as there are gaps in information. There are also major gaps in our understanding of seasonality: household expenditure, child private costs of education and child labour, which are explored below.

7.1.1 Household Expenditure

Rose (pers. comm., 24 June, 2008) and Scoones (pers. comm., 1 July, 2008) maintain that there are difficulties in uncovering income and expenditure seasonality data for sub-Saharan Africa. Some data no doubt exists outside the public domain, such as in World Bank databases. Though only certain 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, 2008c). Living Standard Measurements surveys may show some variation within the month they are conducted (World Bank, 2008c). 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.

7.1.2 Child Labour

There are gaps in the literature on child labour in terms of scope and seasonality. Admassie (2003) claims little is known about the extent and character of child labour in rural sub-Saharan Africa. There is also limited information on the seasonal character of children's labour. Work types and demand probably vary throughout the year, as in Europe a century ago. Devereux et al (2008) and Kadzamira and Rose (2003) describe how older siblings may substitute for their parents' domestic chores during the hungry season to allow the adults to engage in income-generating activities. I have shown that some forms of child work are often incompatible with school participation, particularly full time child minding. 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.

7.1.3 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 in household income and expenditure on school payments are sparse. The seasonal calendar from the Philippines shows how useful this type of study could be. Participatory research in The Gambia and Zambia also revealed the clash between official tuition fees and periods of high stress and low incomes (Holland and Blackburn, 1998). Further research is needed determine whether unofficial or hidden costs also exacerbate periods of seasonal stress, looking at, for example, when costs associated with national exams fall and when families are most likely to buy school uniforms.

7.1.4 Other Areas for Research

There are a number of cases of calendar reform in the world; famously, BRAC and *Escuela Nueva*. Impact assessments of these reforms could examine affects 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 have been successful, but how successful? Are fees still restricting the education of, or causing unnecessary stress to, certain groups at certain times of the year? Further research is also needed in drawing out the more personal elements of seasonality, with respect to education. Though not covered in detail here, research often neglects the seasonal dimensions of feeling hungry, cold, wet or tired. Answering these questions may be relevant to future debates surrounding the supply of FPE, especially given that governments are often unable to finance the costs of free universal primary education with a narrow tax-base. However, it must be understood that relatively under-developed (and sometimes highly centralised) governments may have difficulties in administering the appropriate service delivery mechanisms to implement seasonally-sensitive policies.

Of particular interest to policy-makers should be the finding that centralised policies like mass education may be damaging to rural livelihoods, in the short-run at least – for example, by drawing children away from bird scaring and into education. Devereux (2007) explains that Structural Adjustment Programmes were damaging to rural households, when they abolished government bodies which stabilised food prices in a number of African nations. Too often changes are made without due consideration for the impact on the most vulnerable people, who are without a strong political voice.

7.2 Implications for Policy

Education reforms must be particularly sensitive as they should take into account both demand and supply factors. Education is often valued as a way out of poverty and households are willing to make sacrifices for their children to attend school. Employing participatory flexible timetabling, as in the *Escuela Nueva* and BRAC programmes, in Africa could give households control and flexibility about educational access, without adding costs of repeating years or interfering with demand for children's labour. However, such a system may not be suited to the over-populated classrooms of many sub-Saharan African countries (Kadzamira and Rose, 2003). There are a number of areas in education policy open to reform which may improve enrolment, lessen the burden of education on households or both; to provide some examples this section will focus on the design of the school calendar. Importantly, this represents only one space for seasonal intervention. Also, many counter-seasonal interventions may be explicitly non-seasonal.

7.2.1 School Holiday Periods

Proper assessments of school holidays and their origins are needed for countries in sub-Saharan Africa. School holidays could be adjusted according to seasonal absenteeism and its causes. Child farm labour will undoubtedly be a major factor in rural areas. There should be

considerations for different types of seasonal labour. For example, there may be different policy implications resulting from 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. Traditional festivals and religious seasons or celebrations will also play a role. Participatory school calendar design could help balance the multiple demands on children's time and highlight regional differences within countries.

7.2.2 School Start-Dates

The school start-date will most likely be influenced by the school holiday periods. The case of Malawi (presented in section 3.1) shows how a shift in the start-date can be poorly informed. The main reason for shifting the school start-date is to ensure the maximum number of families possible is able to send their children to school. The school start-date should not fall during a time when children's labour is required, when families are migrating, or when the large costs associated with starting school (books, pens, uniforms, etc.) would represent too great a percentage of income or expenditure.

7.2.3 School Days and Hours

Many schools in Africa run short school days. School hours could be designed, as in BRAC schools, to allow children to complete domestic chores as well as attend school. Eagle (2006) cites how children of some communities are willing to go to school on Saturday and Sunday but must take the market day off. Clearly, the traditional Western weekend is also inappropriate in some contexts.

7.2.4 School Enrolment Age

Participatory research in The Gambia resulted in the government lowering the primary school enrolment age for girls (Holland and Blackburn, 1998). Two arguments exist for allowing children to participate in school earlier. Firstly, the lower opportunity cost of their education, as younger children's labour is not as productive as older ones (Admassie, 2003). Secondly, if younger children attend school it alleviates guardians and older siblings of the burden of child-minding (Admassie, 2003). An alternative is to improve pre-school facilities, perhaps on a seasonal basis, to allow children to remain in school rather than look after siblings (discussed in CREATE, 2008:59). Care must be taken when establishing the enrolment age. In Ethiopia, many children under 10 are not sent to school because they are regarded as too young (Woldehanna et al, 2005).

7.2.5 School Fee Due-Dates

There is a lot of support for seasonally adjusting school fee due-dates, usually postponing them till after the harvest, as in The Gambia. However, support has waned in recent years, replaced by arguments for free universal primary education (Rose, pers. comm., 24 June, 2008). Moris (1989) maintains that fees, where officially levied, should be spread out throughout the year, rather than in a lump-sum payment after the rains – though the timing of these fees is still important as there are only certain times of the year when households have

cash income available to spend. Households are unlikely to be able to afford costs of education in the hungry season.

7.2.6 Supply of learning materials and uniforms

Learning materials and uniforms represent substantial costs to poor rural households. In some cases, it is difficult to determine what kinds of policy intervention can alleviate this problem. Banning school uniforms or supplying school materials free of charge are options – however, the latter may be constrained by the availability of public funds to support such an initiative. I have suggested that the school start-date may influence when families purchase uniforms and books, but stationary, such as pencils, is usually purchased on demand (Rose, pers. comm., 24 June, 2008). More research and thought is required on this subject, but a tentative proposal would be to ensure schools rented books or sold stationary in larger quantities in the post-harvest season (taking advantage of bulk-buying). Again this would depend on when schools started term.

8. Conclusion

The lack of research and understanding of the seasonal dimensions of educational access remains the greatest barrier to developing seasonally-sensitive policies to improve schooling in sub-Saharan Africa. Seasonality dominates the lives of poor households throughout the tropics – but also in more temperate regions of the World – particularly impacting poor rural households living in regions characterized by bimodal rainfall, remote from requisite services and infrastructure. Dependence on the agricultural cycle, and the single harvest, purchasing power fluctuates throughout the year with changes in income and food prices. Research assessing the direct costs of education, such as school fees and the price of uniforms, fail to capture this change in purchasing power, and so the real value of these costs to households. Evidence suggests that education is valued highly among poor families, and that relatively few children drop out of school due to income shocks, such as drought. However, this fails to recognize the burden of education on the family, which may consume a significant part of household expenditure and prevent children from enrolling in the first place (as evidenced by the introduction of FPE). This paper highlights anecdotal evidence that families may adopt other coping mechanisms first to keep their children in school, and prioritize education expenditure over other spending (such as on health). Poorly planned policies, such as starting the school year in the hungry season or after a major festival (like Christmas), may restrict access to education more than at other times in the year.

Economies in sub-Saharan Africa continue to be characterised by high levels of subsistence agriculture. History shows us that children have been an active part of the labour market in peasant societies, and that seasonal changes in the demand for child labour (and therefore the opportunity cost of education) influenced school attendance in Europe and the USA only 100 years ago. These findings are similar to the present situation in many parts of sub-Saharan Africa where children and their families must still balance schooling with work. The limited evidence available suggests that child labour demands in Africa follow changes in adult labour demands. This is partly driven by the need for more workers generally, but also because children must assume the domestic duties of their parents whose work is concentrated elsewhere. More can be done to make school calendars fit better with demands for child work – including adjusting school holidays, hours and start times to allow children to combine school and work. This is especially important given that child labour may be a path for increasing educational access by providing a means to cover school expenses. However, some forms of work may be more detrimental than others. For example, child minding and work done outside the family economy appear to be less compatible with schooling than fetching firewood and herding animals. Older children from families living on low incomes in rural areas are most likely to be drawn out of school and into work. Girls with younger siblings are also disproportionately affected. It is these subtleties that need to be accounted for in future research investigating seasonality and access to education.

Other dimensions of seasonal poverty also have an impact on access to education. Seasonal distress migration remains a common coping mechanism for vulnerable households, but also serves as a means for covering school costs. Though evidence of seasonal migration exists for sub-Saharan Africa, it is not clear whether it has the same effects on educational access as in parts of South Asia. School schedules may need to adjust their start dates or holiday

periods to become more compatible with migration patterns and to ensure that children from migrating families can attend school without having to join late or leave mid-way through a term (only to repeat the year later on). The adverse impacts of ill-health on access to education are relatively well documented. What research fails to address is that many conditions that are discussed in the context of educational access, such as malaria and malnutrition are highly seasonal. Some interventions could follow a seasonal approach that maximizes the use of scarce drugs and medical resources – such as treating children (and teachers) for malaria during peak seasons or establishing school feeding programmes in the hungry season. Man-made seasons further complicate the picture of seasonality, but Christmas and initiation festivals can impact on income and school attendance. More must be done by policy makers and researchers to understand, appreciate and combine these elements of poverty, seasonality and access to education.

Seasonality provides a framework to not only tackle some of the basic issues surrounding access to education directly, but also a methodology that encourages the interaction between education policy and other sectors – including food security, economics and health. This is even more evident when one appreciates the interconnected nature of the different dimensions of seasonal poverty. 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 alleviate 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, with adequate research and consideration for seasonality, it is possible to take small strides to improving school participation and lessening the burden of education on poor, rural households in sub-Saharan Africa.

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Appendices

Appendix 1: Personal Communications

Ceesay, O. M. J. 2008. 26 August 2008. Employee of the Department of State for Basic and Secondary Education, The Gambia.

Chambers, R. 2008. 24 June 2008. Research Associate at the Institute of Development Studies.

Hadley, M. B. 2008. 20 August 2008. Former advisor to District Board of Health, Copperbelt, Zambia.

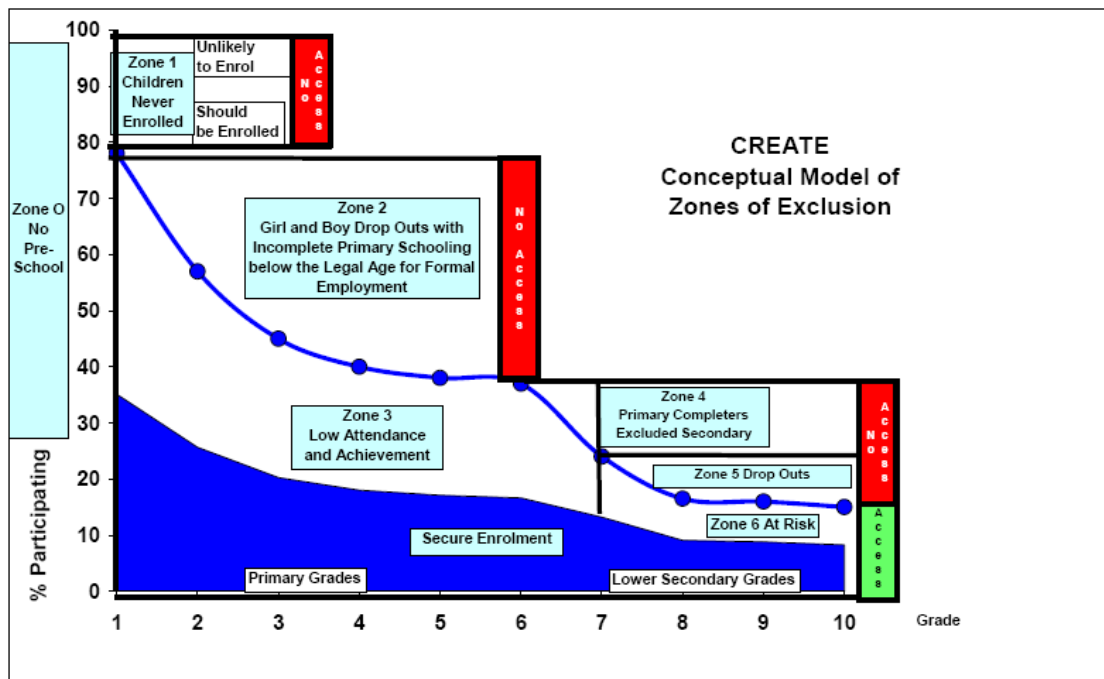
Rose, P. 2008. 24 June 2008. Deputy Director, Centre for International Education.

Scoones, I. 2008. 1 July 2008. Research Associate at the Institute of Development Studies.

Stusek, M. 2008. 2 July 2008. Executive director of the Kenya School Project.

Appendix 2: CREATE Research Framework

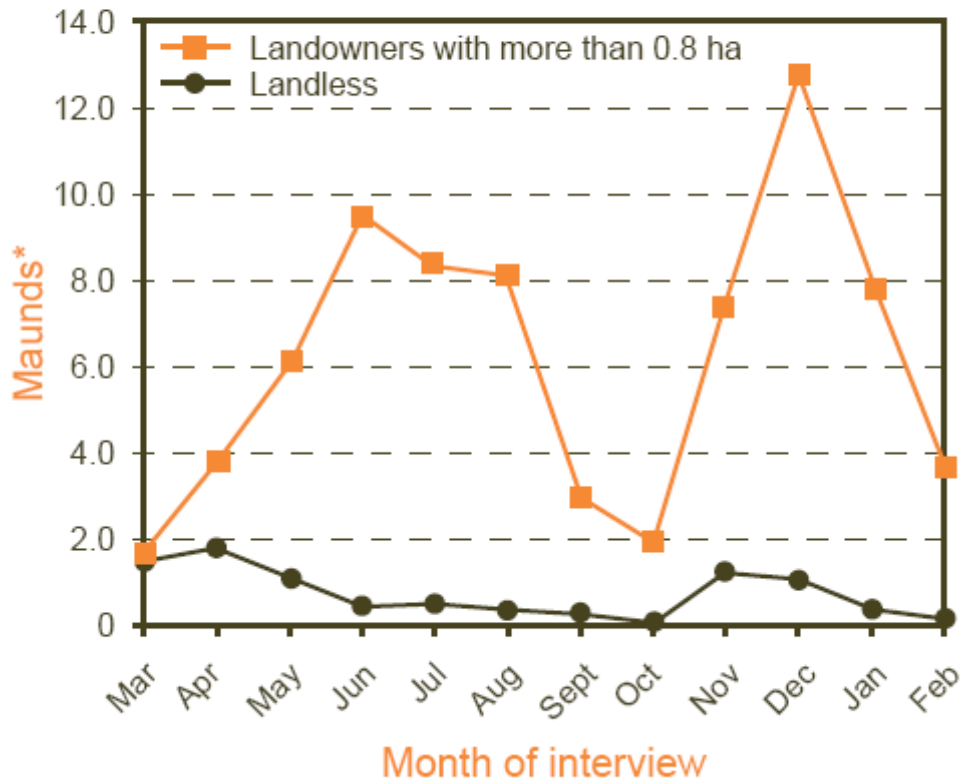
This model maps the CREATE zones of exclusion, as listed below, locating key stress points where educational participation is constrained. It demonstrates how enrolment rates usually start around 80 percent and decline sharply in primary school and again in early secondary. The space between enrolment and secure enrolment signifies children at risk of dropping out. It is this space that is most relevant to this paper.



CREATE zones of exclusion

- Zone 0: children who are excluded from pre-schooling
- Zone 1: children who have never been to school, and are unlikely to attend school;
- Zone 2: children who enter primary schooling, but who drop out before completing the primary cycle
- Zone 3: children who enter primary schooling and are enrolled but are “at risk” of dropping out before completion as a result of irregular attendance, low achievement, and silent exclusion from worthwhile learning
- Zone 4: children who fail to make the transition to secondary school grades
- Zone 5: children who enter secondary schooling but who drop out before completing the cycle
- Zone 6: children who enter secondary schooling and are enrolled but are “at risk” of dropping out before completion as a result of irregular attendance, low achievement and silent exclusion from worthwhile learning

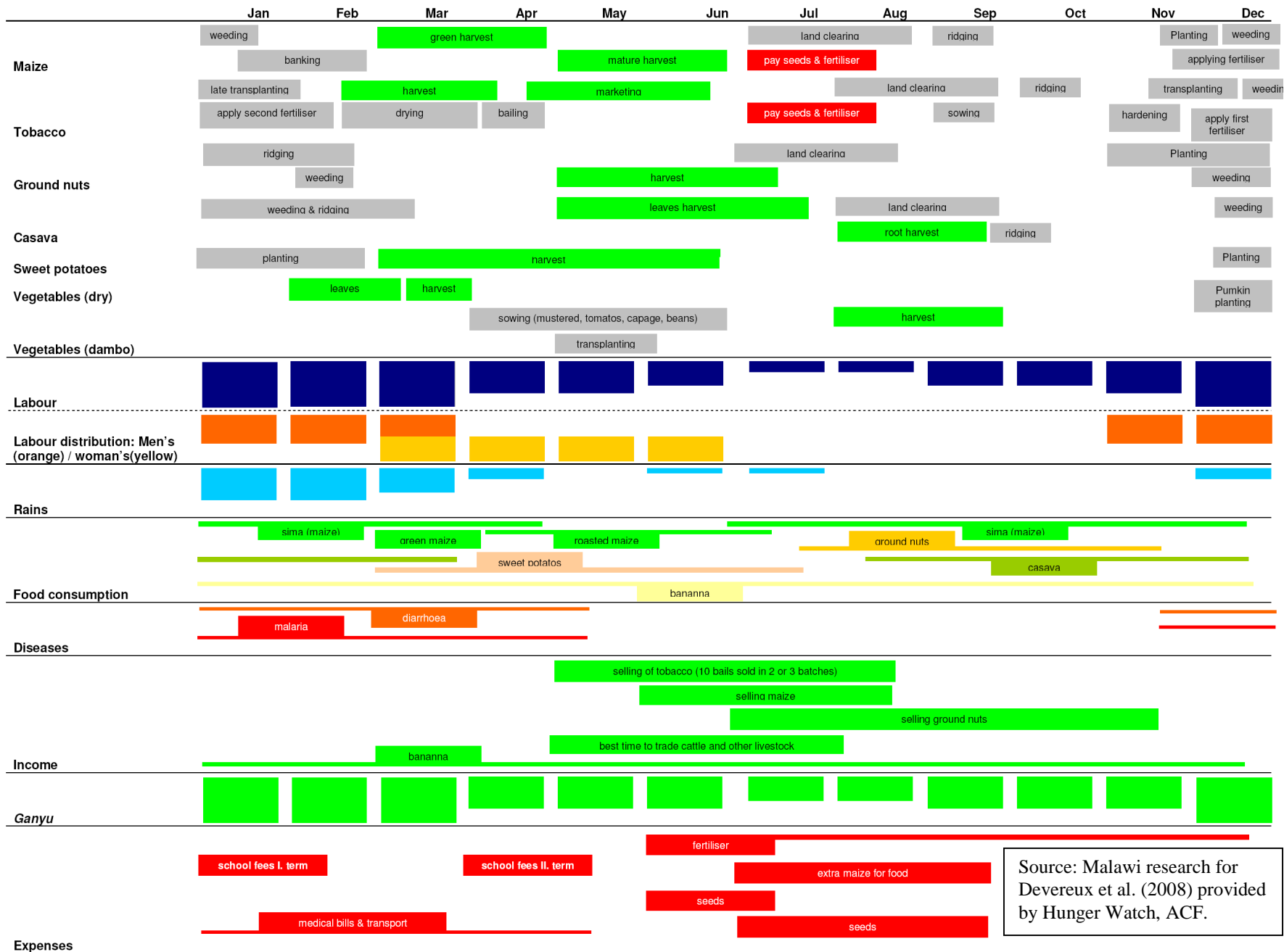
Appendix 3: Household food stocks on the day of interview by month of interview of eight landowner households and seventeen landless households in Matlab thana, Bangladesh



*1 Maund:37.32kg

Source: Onchere and Slooff 1981

Appendix 4: Seasonal calendar for a well-off household in Malawi



Source: Malawi research for Devereux et al. (2008) provided by Hunger Watch, ACF.



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Report summary:

This paper draws together research on seasonality, child labour and education in the context of primary education in sub-Saharan Africa. It describes how income poverty and demand for labour can fluctuate within and between years, affecting participation and progression through school systems. It highlights how analysis of the private and public costs of education frequently ignore the significance of seasonal patterns related to the agricultural cycle and migration. It argues that education policy and practice should be more clearly articulated with fluctuations in household income, demand for labour (especially school age children), and seasonal migration cycles. Educational reforms to improve school enrolment and lessen the burden of education on poor will not succeed unless seasonality is recognised.

Author notes:

Sierd Hadley is an economist specializing in governance and development and currently works at Her Majesty's Treasury in the United Kingdom. Having lived in Africa and Asia for over 15 years and worked with local NGOs in Zambia, his work on 'seasonality and education' began at the Institute of Development Studies. Sierd's recent work with Action Against Hunger and the Institute of Development Studies has centred around building the profile of seasonality in development discourse and practice. His other interests include: the resource management, public finance, environmental conservation, empowerment, and participatory research.

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