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*Benefits and Costs of the Education
Targets for the Post-2015 Development Agenda*

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Post-2015 Consensus

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Introduction

In 2000, there were 102 million primary-aged children not in school worldwide. By 2011, the number had fallen by 44% to 57 million despite a growing population of children. The greatest gains in primary enrollment were in South and West Asia where the number of children not in school fell by 67%. In contrast, the number out of school in Sub-Saharan Africa only declined by 26%. The number in the rest of the world declined by 37%.¹ As a result, 52% of all primary-aged children who are not attending school are in Sub-Saharan Africa. Moreover, 61% of the children expected to receive no primary schooling during their lifetimes reside in that region. If we are to meet the Millennium Development Goal of Universal Primary Education for all, the countries of Sub-Saharan Africa represent the greatest challenge.

George Psacharopoulos makes a convincing case that the returns to schooling in Sub-Saharan Africa are high. While one can quibble with the magnitude of the estimate, more conservative estimates by Young (2012) at 11.6% per year are at or above the typical estimates obtained for industrialized economies. If such returns were captured by the children currently out of school, then it would be virtually certain that the rewards would exceed the current per pupil cost of primary school delivery.

As summarized by UNESCO (2014), the price tag for reaching these last unserved children is extremely high. In 2010, the estimate was an additional \$16 billion in annual international aid above current spending on primary schooling. The latest estimate is an additional \$26 billion annually. It is unclear how much credibility to place on these costs estimates, as the additional amount required to reach Universal Primary Education (UPE) has steadily increased as the number of children failing to complete the primary cycle has gotten smaller. Nevertheless, even at that high cost, rewards of the magnitude estimated by Psacharopoulos and Young would outweigh the costs.²

Clearly, many countries have made dramatic progress toward UPE despite the UNESCO (2014) conclusion that, “one of the biggest failures of the EFA [Education For All] period has been fulfilling the pledge that no country would be thwarted in achieving its goals due to lack of resources.” Many of the gains have been made by country commitments to lower barriers to schooling by eliminating school fees for uniforms or school supplies, conditional income support programs for poor households, or improving child health or disease resistance.

But suppose the additional \$26 billion were forthcoming. Is there convincing evidence that it is the aid gap that is preventing children from finishing primary school? Or is something

¹ These data are provided by the UNESCO Institute for Statistics and are summarized in UNESCO (2013).

² I suspect that the agencies will always report a cost estimate higher than the expected donor level so as not to accidentally limit the amount by announcing a need level below donor willingness to pay. Equally important is that by having a stated need greater than the available funding, international agencies can claim that the failure to reach UPE is due to the miserly behavior of donor nations rather than the poor design or execution of international educational programming.

else impeding their enrollment or persistence to graduation? Moreover, even if we take the \$26 billion estimates at face value, would spending an additional \$26 billion to reach the last 57 million children not in school be the best use of the \$26 billion? Is it even advisable to pledge that no country would lack resources necessary to meet UPE? Finally, is it likely that the best avenue to address the needs of the remaining 57 million children will be pre-school education?

In this comment, I will first argue that the factors restricting primary school enrollment in Sub-Saharan Africa are unlikely to be solved by additional spending. It is likely that the return from additional investments in secondary schooling for children completing the primary cycle would be more promising than getting the last 57 million through grade school. Finally, it is not likely that pre-school is the least expensive solution to raise schooling in Sub-Saharan Africa, meaning that dominant options may generate additional schooling at lower cost, and hence, higher benefit cost ratios.

The Bigger Hurdle to Universal Primary Education in Sub-Saharan Africa

Given that some countries in Sub-Saharan Africa have attained UPE, are the lagging countries making the appropriate effort to meet the educational needs of their citizens or are they using their resources toward other ends. There are several indexes that measure the ability of a government to meet the needs of its people. The Fund for Peace's Fragile States Index uses a proprietary method to aggregate information related to the threats faced by a country and its ability to respond to those threats. Transparency International rates countries by their degree of corruption. The Heritage Foundation's Economic Freedom Index contains assessments of the degree to which a country protects property rights. These assessments are highly correlated and all have been used to evaluate the extent to which a country's political and economic institutions hinder its ability to grow. As shown in King et al (2012), returns to human capital are quite sensitive to the government's ability to protect the economic freedoms of its citizens.

That leads us to one reason why the countries of Sub-Saharan Africa have failed to keep pace with those in South and West Asia in reducing the number of children out of school. The Sub-Saharan countries are well represented among the Fund for Peace Fragile States. Of the 10 worst countries, 6 are in Sub-Saharan Africa. Of the 20 worst, 14 are in Sub-Saharan Africa. Returns to time and financial investments in schooling will be limited by the inability of these governments to insure that their citizens will be free to move to sectors or regions where they will gain the highest reward for their skills or even that the citizens will not face expropriation of their reward if given. We would expect that in such political and economic climates, incentives to invest in schooling will be reduced.

Ncube, Brixiova and Bicaba (2014) present evidence consistent with the presumption that weak governmental institutions and support for property rights limit the benefits from human capital investments. While many so-called frontier market countries in Sub-

Saharan Africa are poor,³ they are expected to be primarily responsible for the decline in regional poverty in the future. Meanwhile, poverty rates in fragile states will fall from 63% to 43% by 2030, double the rate in the other countries. Returns to human capital are suppressed in these fragile states, lowering incentive for parents to send their children to school.

A simple example consistent with that presumption is shown in Table 1. While not monotonic, we find that the countries scoring worst on the Fragile States index average 42% of their primary age children out of school while those ranking above 40 have only 15% out of school. The simple correlation between the two measures is -0.55. The case would be even stronger except that the worst states also do not have reliable statistical information on their schooling outcomes, and so we have no reliable current measures of enrollment for the Democratic Republic of the Congo, Somalia or Zimbabwe. Out-of-school children in these countries are unlikely to attend school even if international aid were to be increased. Moreover, international donors are unlikely to offer aid to countries that are unlikely to use the resources as intended.

A second roadblock to UPE in Sub-Saharan Africa is the atypically large proportion of children who have lost one or both parents. The ravages of AIDS have been particularly felt by countries in the region, but AIDS only represents a minority of the incidence of parental mortality. Disease borne by pests or spread by poor sanitation; immune systems compromised by malnutrition; injuries sustained from sectarian violence, civil war or inadequate police protection; and inadequate access to health care have also taken their toll.

Table 2 reports the incidence of orphan status for selected countries in Sub-Saharan Africa with the largest numbers of affected children. The nations of the Sub-Saharan region have 36% of the children worldwide who have lost at least one parent and 47% of the children who have lost both parents. AIDS is responsible for only 28% of the orphan problem with other causes responsible for the majority of the parental deaths. One of every eight children in Sub-Saharan Africa has lost at least one parent and one of every twelve has lost both parents. While more research is ongoing and strategies to collect more reliable data on orphans are being implemented, it seems clear that the loss of a parent adversely affects schooling.

The research on the effects of parental loss on child schooling suggests that the effects are substantial in some countries and insignificant in others (Ainsworth et al, 2006), with the adverse effects mitigated when there are strong extended family linkages that insure the care for orphaned relatives. The effect also depends on the nature of the parental loss, as sudden unexpected deaths may have greater adverse consequences than deaths after protracted illness where care for the children and transfer of assets can be planned. It is for that reason that the AIDS epidemic does not appear to have had an unusually large effect on child schooling compared to other parental deaths as the long. For example, in

³ Frontier status is typically defined by recent growth and prospects for future growth, an established financial market, and strong and stable political institutions conditions.

Tanzania, children did not drop out of school following an adult death, but they did reduce attendance and hours in school during the months preceding the death, presumably to help care for their parents or to work when their parents were no longer able (Ainsworth et al, 2005). Across the African countries, the biggest adverse effects on schooling were experienced by orphans placed with more distant relatives or unrelated families (Case et al, 2004) and for rural orphans compared to their urban counterparts (Kobiané et al, 2005). Over time, researchers have been able to examine the orphan problem longitudinally. It seems clear that in most countries, the problem is getting worse and not better (Beegle, Filmer, Stokes and Tiererova, 2010), raising concerns that extended families may no longer be able to provide the needed financial and emotional support orphans require. We also know that children who lost parents early in life are shorter, complete fewer years of schooling and earn less when they reach adulthood (Beegle, De Weerd and Dercon, 2010). The schooling problems faced by orphans are more severe in poorer households, but are even seen in wealthy countries such as Taiwan (Gimenez et al, 2013).

While being orphaned appears to have negative consequences for children, they may be further disadvantaged by having to compete for attention and resources with children in the new household. However, data from developed countries suggests that performance in schools is largely driven by inherited traits and only modestly by nurturing by parents or guardians (Plug and Vijverberg, 2003; Black et al, 2005a, b). Similarly, child IQ is more directly tied to parents' IQ than parents' years of schooling (Anger and Heineck, 2010). In fact, it seems that exposure to more able step-siblings in fostering relationships actually benefits both the fostered children and their host step-siblings (Akresh, 2009; Serra, 2009; Angelucci, 2010). It is possible that as the death rate for parents continues to rise, the neutral impacts of fostering on child will be superceded by more adverse consequences (grant and Yeatman, 2012).

There is one further concern with these estimates. While fostered and host children may perform similarly in school, both may be disadvantaged by high parental death rates. This could be indirectly a consequence of high mortality rates among teachers accompanying the high parental death rates, or it may be that all children in extended families suffer from the death of their relatives. Finally, countries experiencing high adult death rates will be resource constrained by the costs of lost productivity and health care services.

I summarize the implications of state fragility and orphan incidence on school enrollments with a regression

$$E_i = 0.94 - 0.288F_i - 0.811O_i + \varepsilon_i; R^2 = 0.42$$

(64.4) (5.54) (4.20)

To aggregate the various indicators of the quality of the state's economic and political institutions, F_i is the fitted value from a regression of the fragile state index on indicators of the country's polity and economic freedom status. Orphan status is measured by the fraction of children aged 0-17 with at least one deceased parent. Both measures are strongly negatively correlated with the net primary enrollment rate in the country. If the country wishes to attain Universal Primary Education, it will have to overcome these

substantial head winds. It is unlikely it will be able to do this without reforming its political institutions and addressing the causes of high adult mortality.

The Prospects For Pre-School As A Strategy To Raise Schooling Investments In Sub-Saharan Africa

There is widespread acceptance that policies aimed at enhancing human capital investments should target the very young. Much of an individual's cognitive potential is fixed by age 3, and so anything that can raise a child's potential in the first three years of life will raise the entire trajectory of human capital attainment over the lifetime. Both theoretical and empirical evidence supports this strategy (Cunha et al, 2010). Moreover, early interventions may address both cognitive and noncognitive skills. Even if cognitive skills of orphans are only modestly affected by the loss of one or both parents, they may lose valuable noncognitive skills. Indeed, it appears that it is noncognitive skills that are particularly responsive to parental nurturing (Heckman and Kautz, 2013).

If we are to target early life interventions, which one would have the largest return per dollar expended? The strongest evidence in support of the preschool strategy comes from analysis of controlled social experiments in which disadvantaged children are randomly assigned to a preschool program and others randomly assigned to a control group. The most famous of these is the Perry preschool program. Children randomly assigned to a two year preschool program initially had higher cognitive scores upon entering school than the control children, but the treatment advantage soon disappeared. The reversion to the mean cognitive scores appears to be a common result of these programs. However, follow-up studies of the children as adults found that the treated children were significantly more likely to finish high school, go to college, have steady employment and avoid criminal activity. Heckman, Pinto and Savelyev (2013) attribute these gains to noncognitive skills acquired during the Perry program. Evaluation of similar programs suggest that when successful, the largest benefits are for disadvantaged children in single parent families.

But are the benefits from the Perry Program due to the pre-school component alone or to other features of the program? The Perry program was a menu of complementary activities and not just the preschool itself. The class was carefully designed with a set time and place for various activities that included active learning, play, eating and resting. The program also involved weekly meeting with each parent and monthly group meetings designed to build family support for each child's education. The popular press focuses on the pre-school, but the benefits could easily come from all or some of the rest of the Perry program features and may not be due to the preschool at all, but due to the intervention with the household. If it is households that are critical to development of noncognitive skills, a preschool program that does not train parents in methods to foster such noncognitive skills may not succeed.

However, evaluations of other programs such as the Head Start program in the U.S. failed to find strong evidence of success. Evaluations of state subsidized preschool programs have

also resulted in mixed evidence regarding student outcomes.⁴ A program in Canada that extended time in kindergarten failed to produce significant positive results and actually lowered the probability that a child passed the third grade (DeCicca and Smith, 2013).

In developing countries, there are numerous preschool programs that appear to have generated positive long-term results.⁵ Again, there are multiple features, any of which might be responsible for the long-term benefits. When these programs are installed in areas with high incidence of malnutrition, it may be the provision of nutritional supplements that generated the results. Or it may be the provision of health clinic services. Or it may be the creation of a cadre of parents trained in methods that foster cognitive skills or nurture educational ambition. In short, the evidence that it is preschool itself that is responsible for the benefits is thin. Devoting substantial resources to preschool programs without first deconstructing past successes into the value added from each subcomponent is premature. And any effort to expand preschool must also establish why these programs have not been universally successful.

There are at least three alternatives to the use of pre-school as a means of raising schooling outcomes that may be either cheaper, more effective, or both. All may be responsible for the apparent success of the Perry Pre-school program.

Nutrition Supplements And Schooling

All of the pre-school programs in the United States involved some provision of meals or snacks. Malnutrition is relatively less important in the United States, but is a fact of life in many Sub-Saharan countries. Inadequate protein, calories, or micro-nutrients UNICEF compilations indicate that 28% of children in developing countries are moderately or severely undernourished. In areas where malnutrition is common, nutritional supplements and/or treatments for intestinal diseases or parasites offer an inexpensive way to raise school attendance and physical and mental capacity.

The link between health and schooling is quite well established, particularly for health improvements that occur early in life or even in utero (Eide and Showalter, 2011; Oster, Shoulson and Dorsey, 2013; Bhardwaj, Løken and Neilson, 2013). Long-term returns that extend into adulthood have been reported from a 1969 nutrition intervention in Guatemala (Hoddinott et al, 2008). A deworming intervention in Kenya given to school-aged children costing \$3.50 apiece led to 13% more hours worked and 20-29% higher earnings when the children reached adulthood (Karlan and Appel, 2011). It appears that nutritional interventions work in many settings, albeit not in all, and they work best when applied

⁴ See Blau and Currie (2006).

⁵ Engle *et al* (2007) report positive impacts from 8 child care centers and 6 parent-child interventions in developing countries, but the programs were most effective when with family support, health, and nutrition support. Promising interventions in pre-schools in Bolivia (Behrman *et al*, 2004) and India (Bobonis *et al*, 2006) credited the benefits to nutritional supplements offered as part of the pre-school. Many conditional transfer programs required that children attend pre-school, but the programs include cash, health and nutrition interventions as well (Fiszbein *et al*, 2009). It is impossible to separate the independent effect of the pre-school component in these studies

systematically over longer periods of time. Three-quarters of the nutrition interventions managed by the World Bank resulted in improvements in anthropometric measures, although impacts on schooling were not addressed (World Bank, 2010).

For our purposes, such interventions are relatively inexpensive, and they can be given to individual children as well as households, they can bypass corrupt governments when distributed through nongovernmental organizations, and they can help households that have taken in fostered children. Moreover, we have high confidence that nutrition will enhance health and healthier children learn more in school.

Teaching Parents How To Parent

The Perry Pre-School Program included weekly two-hour sessions where parents were trained to support their child's schooling. Similar features have been used to support child schooling in the Harlem Children's Zone Baby College program. Providing Pre-School is more expensive than training parents how to stimulate their children's development. What if it is the parental training that was responsible for the Perry Pre-School success and not the pre-school itself?

There is a strong theoretical base for the use of trained parents as substitutes for or complements to formal schooling (Engle et al, 2007; Walker et al, 2011). Home visits may be effective in reinforcing to parents that schooling generates high returns (Cunha, Elo and Culhane, 2013) which in turn raise child time in school (Nguyen, 2008; Jensen, 2010). Parents can be taught to converse with their children which helps with brain development (Suskind et al, 2013). In Jamaica parents of malnourished children were taught parenting skills and encouraged to play with their children to help develop socio-emotional skills. As adults, their children earned 25% more than a comparison group of non-stunted children (Gertler et al, 2014). A similar program in Colombia generated positive effects on cognitive and socio-economic development (Attanasio et al, 2012). While not all interventions are as effective at least in short-term effects (Janssens and Rosemberg, 2014), it seems that such programs would be particularly useful for countries with many foster parents who may find themselves with unexpected child-nurturing responsibilities.

Income Transfers

The most widely studied development intervention over the past 20 years has been to tie desired household behaviors to the receipt of cash or in-kind transfers from the government. Fiszbein, Schady et al (2009) listed 28 countries that had initiated at least a pilot program since 1997 including virtually all Latin American countries, 4 in Africa, 6 in Asia and 2 in the Middle East. The programs are targeted to households in the lowest socioeconomic strata. The transfer programs typically require that child attendance in school meets a threshold level of 80% per month or more. They may also require that the children receive periodic health assessments at a local clinic and receive timely vaccinations, that the mothers receive training in nutrition and health, and that the mothers participate in perinatal care and receive training in early childhood development. As a result, the conditional transfers become an umbrella program aimed at incentivizing a broad array of desired behaviors believed to improve private and social outcomes.

Few interventions have been subjected to so many rigorous evaluations that allow us to evaluate outcomes relative to a baseline collected before the conditional transfers were implemented and that include randomized participants and controls. As such, the evidence of the outcomes of these programs should be particularly reliable for assessing whether further expansion of such programs is warranted. The evidence consistently supports the view that conditional transfers increase time in school as well as increasing expenditures on food. The largest impacts are found among the poorest households that are the most likely to face liquidity constraints that would inefficiently limit the time their children spend in school. Larger effects are found in rural areas where children face the highest opportunity cost of time in school. Consistently where evaluated, we find that the increased child time in school is accompanied by a reduced incidence of child labor.

Fragile states may not be able to administer a conditional transfer program, but the need to address presumed liquidity constraints on households should be considered. The high incidence of orphans suggests that many households will be facing unexpected shocks in family size that we would expect will limit human capital investment opportunities for fostered children and could adversely affect biological children as well. Evidence from conditional transfers and from international sponsorships (Wydick, Glewwe and Rutledge, 2013) suggest that relieving the income pressure can have significant effects on child schooling and lifetime earnings.

Summary

Countries in Sub-Saharan Africa face additional headwinds against their efforts to develop and grow their economies. Focusing on just two, weak governmental institutions and high adult mortality rates, is undoubtedly too simplistic. Nevertheless, it does highlight the fact that intervention strategies need to be tailored to the unique challenges faced by countries in the region. Returns to schooling may be high, but only if the economy provides opportunities for individuals to apply their skills toward their highest reward and only if the government protects their claim on those rewards. I support George Psacharopoulos's view that interventions that address impediments to schooling at the earliest age are likely to be the least expensive and the most effective. However, providing formal pre-school may be a more expensive strategy than interventions that focus on addressing child health, parenting skills or providing a social safety net that helps replace lost earnings from parental mortality.

References

- Ainsworth, Martha, Kathleen Beegle, and Godlike Koda. 2005. "The impact of adult mortality and parental deaths on primary schooling in North-Western Tanzania." *The Journal of Development Studies* 41(3): 412-439.
- Ainsworth, Martha, and Deon Filmer. 2006. "Inequalities in children's schooling: AIDS, orphanhood, poverty, and gender." *World Development* 34(6): 1099-1128.
- Akresh, Richard. 2009. "Flexibility of household structure child fostering decisions in Burkina Faso." *Journal of Human Resources* 44(4): 976-997.
- Angelucci, Manuela, Giacomo De Giorgi, Marcos A. Rangel, and Imran Rasul. 2010. "Family networks and school enrolment: Evidence from a randomized social experiment." *Journal of Public Economics* 94(3): 197-221.
- Anger, Silke, and Guido Heineck. 2010. "Do smart parents raise smart children? The intergenerational transmission of cognitive abilities." *Journal of Population Economics* 23(3): 1105-1132.
- Attanasio, Orazio, Emla Fitzsimons, Camila Fernández, Sally Grantham-McGregor, Costas Meghir, and Marta Rubio-Codina. 2012. "Stimulation and Early Childhood Development in Colombia: The Impact of a Scalable Intervention." In *Promises for Preschoolers: Early Childhood Development and Human Capital Accumulation* Conference, University College London.
- Beegle, Kathleen, Deon Filmer, Andrew Stokes, and Lucia Tiererova. 2010. "Orphanhood and the living arrangements of children in sub-Saharan Africa." *World Development* 38(12): 1727-1746.
- Beegle, Kathleen, Joachim De Weerd, and Stefan Dercon. 2010. "Orphanhood and human capital destruction: Is there persistence into adulthood?." *Demography* 47(1): 163-180.
- Behrman, Jere R., Yingmei Cheng, and Petra Todd. 2004. "Evaluating Pre-school Programs when Length of Exposure to the Program Varies: A Nonparametric Approach," *Review of Economics and Statistics* 86(1): 108-32.
- Bharadwaj, Prashant, Katrine Vellesen Løken, and Christopher Neilson. 2013. "Early life health interventions and academic achievement." *The American Economic Review* 103(5): 1862-1891.
- Black, Sandra E., Paul J. Devereux, and Kjell G. Salvanes. 2005a. "The more the merrier? The effect of family size and birth order on children's education." *The Quarterly Journal of Economics* 120(2): 669-700.

Black, Sandra E., Paul J. Devereux, and Kjell G. Salvanes. 2005b. "Why the Apple Doesn't Fall Far: Understanding Intergenerational Transmission of Human Capital." *American Economic Review* 95(1): 437-449.

Blau, David, and Janet Currie. 2006. "Pre-school, day care, and after-school care: Who's minding the kids?." *Handbook of the Economics of Education* Vol. 2: 1163-1278. North Holland.

Bobonis, Gustavo J., Edward Miguel, and Charu Puri Sharma 2006. "Anemia and School Participation". *Journal of Human Resources*. 41 (4), 692-721. India

Case, Anne, Christina Paxson, and Joseph Ableidinger. 2004. "Orphans in Africa: Parental death, poverty, and school enrollment." *Demography* 41(3): 483-508.

Cunha, Flávio, Irma Elo, and Jennifer Culhane. 2013. Eliciting maternal expectations about the technology of cognitive skill formation. No. w19144. National Bureau of Economic Research.

Cunha, Flavio, James J. Heckman, and Susanne M. Schennach. 2010. "Estimating the technology of cognitive and noncognitive skill formation." *Econometrica* 78(3): 883-931.

DeCicca, Philip, and Justin Smith. 2013. "The long-run impacts of early childhood education: Evidence from a failed policy experiment." *Economics of Education Review* 36: 41-59.

Eide, Eric R., and Mark H. Showalter. 2011. "Estimating the relation between health and education: What do we know and what do we need to know?." *Economics of Education Review* 30(5): 778-791.

Engle, Patrice L., Maureen M. Black, Jere R. Behrman, Meena Cabral de Mello, Paul J. Gertler, Lydia Kapiriri, Reynaldo Martorell, and Mary Eming Young. 2007. "Strategies to avoid the loss of developmental potential in more than 200 million children in the developing world." *The Lancet* 369 (9557): 229-242.

Fiszbein, Ariel and Norbert Schady with Francisco H.G. Ferreira, Margaret Grosh, Nial Kelleher, Pedro Olinto and Emmanuel Skoufias. 2009. *Conditional Cash Transfers: Reducing Current and Future Poverty*. Washington DC: The World Bank.

Gertler, Paul, James Heckman, Rodrigo Pinto, Arianna Zanolini, Christel Vermeersch, Susan Walker, Susan M. Chang, and Sally Grantham-McGregor. 2014. "Labor market returns to an early childhood stimulation intervention in Jamaica." *Science* 344(6187): 998-1001.

Gimenez, Lea, Shin-Yi Chou, Jin-Tan Liu, and Jin-Long Liu. 2013. "Parental Loss and Children's Well-Being." *Journal of Human Resources* 48(4):1035-1071

Grant, Monica J., and Sara Yeatman. 2012. "The relationship between orphanhood and child fostering in sub-Saharan Africa, 1990s–2000s." *Population studies* 66(3): 279-295.

Heckman, James J., and Tim Kautz. 2013. Fostering and measuring skills: Interventions that improve character and cognition. No. w19656. National Bureau of Economic Research.

Heckman, James, Rodrigo Pinto, and Peter Savelyev. 2013. "Understanding the Mechanisms through Which an Influential Early Childhood Program Boosted Adult Outcomes." *American Economic Review*, 103(6): 2052-86.

Hoddinott, John, John A. Maluccio, Jere R. Behrman, Rafael Flores, and Reynaldo Martorell. 2008. "Effect of a nutrition intervention during early childhood on economic productivity in Guatemalan adults." *The Lancet* 371 (9610): 411-416.

Janssens, Wendy, and Cristina Rosemberg. 2014. "The impact of a Caribbean home-visiting child development program on cognitive skills." *Economics of Education Review* 39 (1): 22-37.

Jensen, Robert (2010), "The (Perceived) Returns to Education and the Demand for Schooling," *Quarterly Journal of Economics*, 125(2): 515-548.

Karlan, Dean, and Jacob Appel. 2011. *More Than Good Intentions: Improving the Ways the World's Poor Borrow, Save, Farm, Learn, and Stay Healthy*. Penguin.

King, Elizabeth M., Claudio E. Montenegro and Peter F. Orazem. 2012. "Economic Freedom, Human Rights, and the Returns to Human Capital: An Evaluation of the Schultz Hypothesis." *Economic Development and Cultural Change*. 61(1): 39-72.

Kobiané, Jean-François, Anne-Emmanuèle Calvès, and Richard Marcoux. 2005. "Parental death and children's schooling in Burkina Faso." *Comparative Education Review* 49(4): 468-489.

Ncube, Mthuli, Zuzana Brixiova, and Zorobabel Bicaba. 2014. "Can Dreams Come True? Eliminating Extreme Poverty in Africa by 2030." African Development Bank.

Nguyen, Trang. 2008. "Information, Role Models and Perceived Returns to Education: Experimental Evidence from Madagascar," MIT Working Paper.

Oster, Emily, Ira Shoulson, and E. Dorsey. 2013. "Limited life expectancy, human capital and health investments." *The American Economic Review* 103(5): 1977-2002.

Plug, Erik, and Wim Vijverberg. 2003. "Schooling, family background, and adoption: Is it nature or is it nurture?." *Journal of Political Economy* 111(3): 611-641.

Serra, Renata. 2009. "Child fostering in Africa: When labor and schooling motives may coexist." *Journal of Development Economics* 88(1): 157-170.

Suskind, Dana, Patricia Kuhl, Kristin R. Leffel, Susan Landry, Flavio Cunha, and Kathryn M. Neckerman. 2013. "Bridging the Early Language Gap: A Plan for Scaling Up." University of Chicago. Mimeo.

UNESCO. 2014. "Teaching and Learning": Achieving Quality Education for All." EFA Global Monitoring Report 2013/4. UNESCO.

UNESCO Institute for Statistics. 2013. "Schooling for Millions of Children Jeopardized by reductions in Aid." UIS Fact Sheet No. 25.

Walker, Susan P., Theodore D. Wachs, Sally Grantham-McGregor, Maureen M. Black, Charles A. Nelson, Sandra L. Huffman, Helen Baker-Henningham, Susan M Chang, Jena D Hamadani, Prof Betsy Lozoff, Julie M Meeks Gardner, Christine A Powell, Atif Rahman, Prof Linda Richter. 2011. "Inequality in early childhood: risk and protective factors for early child development." *The Lancet* 378 (9799): 1325-1338.

World Bank. 2010. What can we learn from nutrition impact evaluations?: lessons from a review of interventions to reduce child malnutrition in developing countries. The International Bank for Reconstruction and Development.

Wydick, Bruce, Paul Glewwe, and Laine Rutledge. 2013. "Does international child sponsorship work? A six-country study of impacts on adult life outcomes." *Journal of Political Economy* 121(2): 393-436.

Young, Alwyn. 2012. "The African Growth Miracle." *Journal of Political Economy* 120 (4): 696-739.

Annex 1 - Table 1: Fragile States and Net Primary Enrollment Rates

Fragile States Group	% not in school
0 - 10	43.20%
11 - 20	26.50%
21 - 30	35.80%
31 - 40	31.50%
> 40	14.60%

Source: Authors compilations based on UNESCO Institute for Statistics data on the rate of out-of-school children of primary school age by country in 2011 or 2012, and on the 2013 Fragile States Index provided by the Fund for Peace.

Annex - Table 2: Number of children aged 0-17 who have lost one or both parents, Sub-Saharan Africa, 2011

Country	Children who lost at least		(in % of parent deaths due to AIDS)	% of children who lost at least one parent, all causes
	1 parent (in millions)	both parents (in millions)		
Nigeria	10.8	1.7	20.4%	13.1%
Ethiopia	4.6	0.67	20.7%	11.0%
South Africa	3.5	0.74	60.0%	19.1%
Tanzania	3.0	0.48	43.3%	12.3%
Uganda	2.6	0.43	42.3%	13.2%
Kenya	2.6	0.43	42.3%	12.4%
Mozambique	2.0	0.37	40.0%	16.0%
Angola	1.3	0.17	10.8%	12.0%
Cameroon	1.3	0.19	26.2%	13.5%
Zimbabwe	1.3	0.33	76.9%	21.9%
Côte d'Ivoire	1.2	0.19	34.2%	12.2%
Zambia	1.2	0.26	56.7%	16.5%
Malawi	1.0	0.17	61.0%	12.1%
Sub-Saharan Africa	53.6	8.5	28.4%	12.2%
Share of World	35.5%	47%		

Source: Authors estimates based on UNESCO data on orphans available at http://www.childinfo.org/hiv_aids_orphanestimates.php and the population of children available from the World Bank's World Development Indicators.

This paper was written by Peter F. Orazem, Professor of Economics at Iowa State University. The Post-2015 Consensus project brings together more than 50 top economists, NGOs, international agencies and businesses to identify the goals with the greatest benefit-to-cost ratio for the next set of UN development goals.

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C O P E N H A G E N C O N S E N S U S C E N T E R

Copenhagen Consensus Center is a think tank that investigates and publishes the best policies and investment opportunities based on how much social good (measured in dollars, but also incorporating e.g. welfare, health and environmental protection) for every dollar spent. The Copenhagen Consensus was conceived to address a fundamental, but overlooked topic in international development: In a world with limited budgets and attention spans, we need to find effective ways to do the most good for the most people. The Copenhagen Consensus works with 100+ of the world's top economists including 7 Nobel Laureates to prioritize solutions to the world's biggest problems, on the basis of data and cost-benefit analysis.

