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Welfare Spending and Quality of Growth in Developing Countries: Evidence from Hopefuls, Contenders and Best Performers

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Abstract

The transition from the Millennium Development Goals (MDGs) to Sustainable Development Goals (SDGs) has shifted the policy debate from growth to 'quality of growth' (QG). The April 2015 World Bank publication on MDGs extreme poverty targets has revealed that poverty has been decreasing in all regions of the world with the exception of Sub-Saharan Africa (SSA). We explore a new dataset on QG by the IMF and classify 93 developing countries for the period 1990-2011 in terms of Hopefuls, Contenders and Best Performers. Preliminary findings reveal that 31 of the 33 countries in the Hopefuls category are in SSA. We build on stylized facts depicting the contradiction between high-growth and poor social welfare, and assess the determinants of education and health spending on the QG using quantile regressions to articulate least and best QG performers. The following findings are established. First, on average, the effect of health (education) is decreasingly (increasingly) positive from Hopefuls to Best Performers. Second, on within categories: (1) health spending has positive threshold effects with decreasing magnitude among Hopefuls (0.10^{th} to 0.30^{th} quantiles) and Contenders (0.40^{th} to 0.60^{th} quantile), and positive effects with increasing magnitude among Best Performers (0.10^{th} to 0.90^{th} quantile) and (2) education spending has positive inverted U-shaped effects among Hopefuls and Contenders and positive U-shaped effects among Best Performers. Policy implications are discussed.

JEL Classification: O40; O57; I10; I20; I32
Keywords: Quality of growth; Development; Education; Health

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1. Introduction

'*Output may be growing, and yet the mass of the people may be becoming poorer*' (Lewis, 1955). In the transition from Millennium Development Goals (MDGs) to Sustainable Development Goals (SDGs), the policy debate has been substantially shifting from growth to growth quality. The relevance of the underlying policy debate has been fuelled by the April 15th 2015 publication of World Development Indicators by the World Bank which has revealed that, poverty has been decreasing in all regions of the world, with the exception of Sub-Saharan Africa (Asongu & Kodila-Tedika, 2015; Caulderwood, 2015; World Bank, 2015), in spite of: (i) over two decades of growth resurgence that began in the mid-1990s (Fosu, 2015, p. 44) and (ii) the sub-region hosting seven of the ten fastest growing economies in the world (Asongu & Rangan, 2015). According to the narrative, about 45% of countries in the sub-region are off-track from attaining the MDGs poverty target.

In a nutshell, growth quality is important because the poverty elasticity of inequality is higher than the growth elasticity of poverty, implying that the response of poverty to growth is a decreasing function of equality. Put more concretely: "*The study finds that the responsiveness of poverty to income is a decreasing function of inequality*" (Fosu, 2010a, p. 818); "*The responsiveness of poverty to income is a decreasing function of inequality, and the inequality elasticity of poverty is actually larger than the income elasticity of poverty*" (Fosu, 2010b, p. 1432); and "*In general, high initial levels of inequality limit the effectiveness of growth in reducing poverty while growing inequality increases poverty directly for a given level of growth*" (Fosu, 2011, p. 11). The above conjectures are valid for both African countries (Fosu, 2010c, 2010a) and broad sample of developing economies (Fosu, 2010b).

The interesting literature on inclusive growth has recently focused on, among others: correlates of poverty (Anyanwu, 2013a, 2014a), reinventing foreign aid for inclusive and sustainable development (Asongu, 2015), gender inequality (Elu, 2013; Anyanwu, 2013b, 2014b; Baliamoune-Lutz, 2007 & McGillivray, 2009; Baliamoune-Lutz, & McGillivray, 2009; Baliamoune-Lutz, 2007), documentation of recent advances in finance for inclusive and sustainable development (Asongu & De Moor, 2015), debates between relative pro-poor (Dollar & Kraay, 2002) versus absolute pro-poor (Ravallion & Chen, 2003) growth and measurements of inclusive development (Mlachila et al., 2014; Anand et al., 2013). The last strand which also includes determinants of inclusive growth is the closest to the present study.

Some indicators for measuring inclusive growth have been proposed in recent literature. The most notable to the best of our knowledge are from Anand et al. (2013) and

Mlachila et al. (2014). The former's which accounts for inequality is substantially drawn from a current of the literature documenting the imperative for inclusive growth to mitigate poverty in a sustainable manner (Kraay, 2004; Berg et al., 2011ab). Conversely to *relative pro-poor growth* (Dollar & Kraay, 2002), the authors adopt the concept of *absolute pro-poor growth* in line with Ravallion and Chen (2003). The former sustains that growth is inclusive on the condition that it reduces inequality with more equalizing income distribution that benefits the poor while the latter considers inclusive growth as growth that benefits the poor in absolute terms. According to Anand et al. (2013), the alternative or relative concept could affect both rich and poor households with unfavourable or sub-optimal externalities. Their definition of inclusiveness and understanding of inclusive growth entail features like: market protection, employment transitions, equity and equal opportunities. In this light, their measurement of inclusive growth encompasses growth that is increasing with economic expansion factoring-in, inter alia: productivity, increasing investment and equal employment opportunities.

The latter or Mlachila et al. (2014) has drawn on the former (Anand et al., 2013) as well as a combination of previous definitions, concepts and measurements of pro-poor growth, to provide a new measurement called the Quality of Growth Index (QGI). The new index which builds on Ianchovichina and Gable (2012) and the Commission on Growth and Development (2008) is based on a current stream in the literature providing evidence on 'immiserizing growth' that is associated with growing unemployment, poverty and inequality in regions like sub-Saharan Africa (SSA) (Ola-David & Oyelaran-Oyeyinka, 2014; Dollar et al., 2013; Dollar & Kraay, 2002; Martinez & Mlachila, 2013). The GQI conceives 'inclusive growth' to be 'pro-poor growth' that is durable, high and socially-friendly. Hence, some important dimensions critical for 'growth quality' include: increasing productivity, strength, sustainability, stability, poverty mitigation and better living standards. The present study focuses on extending Mlachila et al. (2014) that has integrated social dimensions to the intrinsic measurement of growth.

But before we discuss how the underlying study is relevant to the present line of inquiry, it is first of all imperative to: (i) provide a linkage between stylized facts on SSA from the World Bank publication provided in the first paragraph and the QGI and (ii) engage why social welfare in terms of health and education are deteriorating the QGI in SSA. Given that growth in the sub-region has fundamentally been driven by resource-rich countries (Asongu, 2015b, pp. 16-17), we use some case studies to substantiate the narrative. Accordingly, we consider the examples of Equatorial Guinea, the Republic of Congo and

Gabon used by Ndikumana and Boyce (2012) and compare with corresponding 'quality of growth' performance from Mlachila et al. (2014).

On the first point, the GQI by the International Monetary Fund (IMF) shows a significant deterioration in the rankings of the underlying countries during the sampled period (1990-2011) (Mlachila et al., 2014, p.27). In essence, based on a comparative examination of 93 developing countries during four non-overlapping periods (1990-1994, 1995-1999, 2000-2004 and 2005-2011) the countries under consideration have seen their quality of growth consistently deteriorate, notably: (i) 58th, 61st, 67th and 69th for Gabon; (ii) 59th, 70th, 74th and 84th for the Congo Republic and (iii) 76th, 73rd, 76th and 88th for Equatorial Guinea.

With regard to the second point, consistent with Ndikumana and Boyce (2012), whereas Equatorial Guinea, Gabon and the Republic of Congo are in the club of Africa's wealthiest countries with respective overall rankings of 15th, 2nd and 5th and corresponding per capita incomes of $1,253, $8,649 and $4,176, they are also among the poorest in terms of educational and health amenities. Moreover, while these nations have been blessed with an abundance of oil reserves, with respective ranks of 10th, 7th and 8th, their citizens are living in lamentable poverty standards. According to the narrative, they lack basic social facilities like drinkable water, elementary schools, good sanitation and health care. For instance, when it comes to the vaccination of the population against measles or immunisation against the disease, Equatorial Guinea and Gabon rank third- and second-to-the last with 51% and 55% respectively. In addition, the odds of a child celebrating his/her fifth birthday in Equatorial Guinea are higher compared to the average of SSA.

In light of the above on characteristics of high-growth countries, the QGI determinants documented by Mlachila et al. (2014) could be improved to incorporate at least two dimensions: (i) the *Hopeful* status in terms of quality of growth performance and (ii) poor social conditions. First, while the underlying study has documented 7 fundamental features (p. 30), we focus on the time-consistent growth quality performance characteristics that are highlighted but not exploited (p.16)[2]. These are: *Hopefuls*, *Contenders* and *Best Performers* in growth quality. We extrapolate countries corresponding to Hopefuls and discover that, almost all members of this category are in SSA. As shown in Appendix 4, with the exception of Yemen and Pakistan, 31 of the 33 countries from this category are from SSA, which is broadly consistent with the 2015 World Bank publication. Second, given the crucial role of

[2] The features are provided in Figure 4 (p. 16) and Figures 2-3 (pp. 13-14). We shall employ 'underlying study' and Mlachila et al. (2014) interchangeably throughout the study.

the socially-friendly feature in the composition of the QGI, we decompose the *social spending* variable into its health and educational components in order to: (i) emphasis the welfare dimension articulated in the stylized facts and (ii) avail more room for policy implications.

On the methodological front, instead of examining the determinants in the mean of the dependent variable as in the underling study, we assess the determinants throughout the conditional distributions of the QGI. The intuition for this extension is that determinants could vary across high-QGI and low-QGI countries, such that blanket policies are inefficient unless they are contingent on initial levels of QGI and tailored differently across low-QGI and high-QGI countries. Quantile Regressions (QR) is used for this purpose. This empirical strategy also enables us to go beyond the superficial sign-reporting of estimated coefficients (p. 30). Hence, in the interpretation of results, we engage the magnitude of coefficients across identified categories and specifications.

We are not unaware of the unpublished feature of the underlying paper. Hence, we are conscious of the risks involved in extending an unpublished study. This is essentially because of some mainstream conception in academic circles sustaining that it is not very likely to publish the extension of an unpublished manuscript in reputable scientific media. In what follows, we present justifications for extending the current paper in three strands.

Our first line of defence draws from a recent current of empirical studies which has steered clear of the mainstream consensus and presented a case for broadening the scope of Applied econometrics. According to the narrative, it should not be restricted to simply accepting or refuting existing theories (Constantini & Lupi, 2005, p. 2; Asongu, 2014a, p. 336; Narayan et al., 2011, p. 2772). In this light, we postulate that extending papers that are yet to be published is also a useful scientific activity.

Second, we further postulate that some working papers may be endowed with better scope for empirics because some published studies could be riddled with errors. Hence, any line of inquiry positioned on a practical assessment of the corresponding published paper may be vague (Granger, 1999). In this light, the goals of empirical econometrics may focus on practical concerns (Franses, 2002) because results of published papers may be void of appeal/interest relative to some working papers (Summers, 1991, p. 129). According to Constantini and Lupi (2005), some published studies could be accompanied with concealed data.

The third line of defence articulates three factors of practical relevance: MDGs, reputation of Working Paper Series and specifics of the published data. (1) The deadline of

the MDGs is this year (2015). Hence, researchers may not have the luxury of being patient until Mlachila et al. (2014) is published per say before making-use of corresponding data to provide policy recommendations for the post-2015 SDGs agenda. (2) The publication medium publishes peer-reviewed working papers. In other words, IMF working papers may also informally be acknowledged as published. (3) The IMF also publishes material that does not require further publication in mainstream scientific media. Such material is destined for immediate use by the scientific community[3].

Cognizant of the above, we are confident in extending the underlying paper because it is an opportunity of exploiting a fresh dataset that has been made available to the scientific community. With this year being the deadline for the MDGs, what matters to us are more practical and pressing issues of inclusive development, as opposed to compliance with some informal orthodoxy in scientific circles.

The rest of the study is organised as follows. Section 2 discusses the data and methodology. The empirical results are presented in Section 3, while Section 4 concludes with implications and future research directions.

2. Data and Methodology

2.1 Data

We examine a panel of 93 developing countries with data for the period 1990-2011 from Mlachila et al. (2014). The dataset which is in the public domain consists of four non-overlapping intervals: 1990-1994; 1995-1999; 2000-2004 and 2005-2011. Computation of the QGI is based on data from a plethora of sources, namely: Sala-i-Martin (2006), Barro and Lee (2010), United Nations(UN) COMTRADE database, the IMF's World Economic Outlook and World Development Indicators of the World Bank.

Consistent with the motivation of this study, the dependent variable is the QGI whereas welfare and/or social spending indicators are education spending and health spending. It should be noted that contrary to the underlying study, we have decomposed social spending into its health and educational components for the purpose of this study. The control variables include: *government stability*, *inflation*, *private domestic credit*, *foreign direct investment* (FDI), *remittances*, *foreign aid*, *rule of law* and *quality of bureaucracy*. A complete definition of the variables is provided in Appendix 1.

[3] Information on the published data is found on the following link: http://www.imf.org/external/pubs/cat/longres.aspx?sk=41922.0

The control variables employed are broadly in line with Anand et al. (2013, p. 16) in the inclusive growth literature. With the exception of inflation, which we expect to reduce quality of growth when it is high, owing to diminishing purchasing power, other control variables are expected, for the most part to display positive signs. In essence, whereas high inflation mitigates growth quality, inflation that is low and stable is positive for income-equalization (Asongu, 2013a) and stimulation of investment to boost economic growth (Asongu, 2013a). This is fundamentally because, high inflation creates uncertainty due to growing ambiguity and investors have been documented to prefer less ambiguous economic strategies (Le Roux & Kelsey, 2015ab). On the positive indicators, they have been substantially documented in the bulk of inclusive growth literature (Dollar & Kraay, 2003; Barro & Lee, 2000; Calderon & Servén, 2004; Levine, 2005; Hausmann et al., 2007; IMF, 2007; Mishra, et al., 2011; Anand et al., 2012; Seneviratne & Sun, 2013).

We devote some space to engaging the highlighted literature in substantive detail. Consistent with the IMF (2007) and Anand et al. (2013), human capital, structural change and macroeconomic stability are relevant pro-growth determinants in developing countries. While structural change entails globalisation (FDI and trade), human capital and macroeconomic stability embody, inter alia: educational levels, technological change and fixed investment. Other structural and macroeconomic features essential for the growth process are inflation and output volatility (Dollar & Kraay, 2003; Barro & Lee, 2010), finance (Levine, 2005); infrastructural development (Calderon & Servén, 2004; Seneviratne & Sun, 2013); development of value chains (Hausmann et al., 2007; Anand, et al., 2012) and production modernization (Mishra et al., 2011). The summary statistics is presented in Appendix 2 whereas the correlation matrix in Appendix 3. From the summary statistics we observe that: (i) the means are comparable and (ii) the variables exhibit a substantial degree of variation, hence we can be confident that reasonable estimated nexuses would emerge. The purpose of the correlation matrix is to mitigate potential issues of multicollinearity and overparameterization.

2.2 Methodology

Consistent with the motivation of the study, we adopt Quantile regression (QR). The QR technique consists of assessing the determinants of growth quality throughout the conditional distributions of the dependent variable. That is, from low-QGI to high-QGI countries. It yields parameters estimated at various thresholds in the conditional distributions

of the QGI (Koenket & Hallock, 2001). This is in line with the underlying literature on conditional determinants (Billger & Goel, 2009; Asongu, 2013b), which is focused on investigating if initial levels of the dependent variable matter in the effects of underlying determinants.

Mlachila et al. (2014) have reported estimated parameters at the conditional mean of quality of growth. Whereas, mean impacts are important, we improve the underlying study by employing the QR estimation strategy to account for initial quality of growth levels. In essence, while Ordinary Least Squares (OLS) for instance, may assume that the QGI and error terms are normally distributed, the QR is not based on this assumption. In essence, with QR, parameter estimates are derived at multiple points of the conditional distributions of quality of growth (Koenker & Bassett, 1978). The QR estimation strategy is increasingly being employed in development literature, inter alia in: health (Asongu, 2014b), corruption (Billger & Goel, 2009; Okada & Samreth, 2012) and quality of growth (Asongu & Rangan, 2015) studies. Therefore, the techinque enables us to examine the effects of social spending (health and education) on quality of growth with particular emphasis on best- and worst-performing developing countries in terms of growth quality.

The θ^{th} quantile estimator of growth quality is obtained by solving for the following optimization problem, which is presented without subscripts in Eq. (1) for the purpose of simplicity and readability.

$$\min_{\beta \in R^k}\left[\sum_{i\in\{i:y_i\geq x_{i'}\beta\}}\theta\left|y_i-x_{i'}\beta\right|+\sum_{i\in\{i:y_i\geq x_{i'}\beta\}}(1-\theta)\left|y_i-x_{i'}\beta\right|\right] \quad (1)$$

Where $\theta\in(0,1)$. Contrary to OLS which is fundamentally based on minimizing the sum of squared residuals, with QR, the weighted sum of absolute deviations are minimised. For example the 10^{th} or 25^{th} quantiles (with θ=0.10 or 0.25 respectively) by approximately weighing the residuals. The conditional quantile of growth quality or y_i given x_i is:

$$Q_y(\theta / x_i) = x_{i'}\beta_\theta \quad (2)$$

Where unique slope parameters are modelled for each θ^{th} specific quantile. This formulation is analogous to $E(y/x)=x_{i'}\beta$ in the OLS slope where parameters are assessed only at the mean of the conditional distribution of 'quality of growth'. For Eq. (2) the dependent variable y_i is the quality of growth indicator while x_i contains: a constant term, *health spending*,

educational spending, government stability, inflation, credit, FDI, remittances, foreign aid, rule of law and *quality of bureaucracy*.

3. Empirical results

The empirical results are presented in Table 1. Conditional distributions are divided into three main categories to articulate Hopefuls (0.10, 0.20 & 0.30), Contenders (0.40, 0.50 & 0.60), and Best performers (0.70, 0.80 & 0.90), in terms of growth quality. Two main specifications are provided: the first with a limited conditioning information set (or control variables) and the second with more control variables to assess robustness of baseline estimations.

The following findings can be established from the first specification. First, health spending has positive threshold effect with decreasing magnitude across the whole distribution from the 0.10^{th} to the 0.80^{th} quantile. Second, as for the impact of educational spending, there is a positive threshold effect with increasing magnitude in each quality of growth category. In other words, there is a positive increasing magnitude from: (i) 0.10^{th} to the 0.30^{th} quantile (Hopefuls); 0.40^{th} to the 0.60^{th} quantile (Contenders) and 0.70^{th} to the 0.90^{th} quantile (Best Performers). Overall, when averages of the categories are compared, the effect of education has a positive threshold effect with increasing magnitude from Hopefuls to Contenders. Third, on the control variables, while inflation has the expected sign, government quality has the expected effect only in the 0.10^{th} quantile. However, the magnitude of the latter control variable is substantially low.

In the second specification, the following can be established. First, health spending has a positive threshold effect with decreasing magnitude across the whole distribution from the 0.10^{th} to the 0.60^{th} quantile. Conversely, there is a threshold positive effect with increasing magnitude among Best Performers (0.10^{th} to the 0.90^{th} quantile). Second, on education spending: while there is a positive effect with inverted U-shaped tendency among Hopefuls and Contenders, the corresponding positive effect is U-shaped among Best Performers. Overall, when averages of categories are compared, education has a positive threshold effect with increasing magnitude from Hopefuls to Contenders. Third, most of the significant control variables have the expected signs. While government quality, private credit and quality of bureaucracy have positive effects, the effect of remittances is negative.

Table 1: Conditional effects of health and education spending

Specification 1

	Hopefuls			Contenders			Best Performers		
	Q.10	**Q.20**	**Q.30**	**Q.40**	**Q.50**	**Q.60**	**Q.70**	**Q.80**	**Q.90**
Constant	**0.164*** **	**0.191*** **	**0.204*** **	**0.217*** **	**0.226*** **	**0.235*** **	**0.247*** **	**0.278*** **	**0.288*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Health Spending	**0.370*** **	**0.362*** **	**0.340*** **	**0.334*** **	**0.331*** **	**0.320*** **	**0.314*** **	**0.290*** **	**0.295*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Educational Spending	**0.258*** **	**0.259*** **	**0.274*** **	**0.272*** **	**0.274*** **	**0.280*** **	**0.278*** **	**0.282*** **	**0.293*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Government Stability	**0.000006****	0.000	-0.000	**-0.000006 *** **	**-0.000008 *** **	**-0.00001 *** **	**-0.00001 *** **	**-0.00002 *** **	**-0.00002 *** **
	(0.037)	(0.961)	(0.314)	**(0.004)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Inflation (ln)	-0.002	**-0.005****	**-0.004****	-0.004	**-0.005*** **	**-0.003****	**-0.003****	**-0.006****	**-0.008****
	(0.409)	**(0.028)**	**(0.017)**	(0.018)	**(0.005)**	**(0.018)**	**(0.010)**	**(0.024)**	**(0.014)**
Pseudo R^2	0.779	0.790	0.794	0.786	0.772	0.756	0.736	0.704	0.667
Observations	283	283	283	283	283	283	283	283	283

Specification 2

	Hopefuls			Contenders			Best Performers		
	Q.10	**Q.20**	**Q.30**	**Q.40**	**Q.50**	**Q.60**	**Q.70**	**Q.80**	**Q.90**
Constant	**0.109****	**0.121*** **	0.117	**0.148*** **	**0.157*** **	**0.185*** **	**0.210*** **	**0.218*** **	**0.199*** **
	(0.011)	**(0.001)**	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Health Spending	**0.375*** **	**0.347*** **	**0.334*** **	**0.318*** **	**0.302*** **	**0.288*** **	**0.298*** **	**0.301*** **	**0.319*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Educational Spending	**0.245*** **	**0.254*** **	**0.244*** **	**0.252*** **	**0.267*** **	**0.266*** **	**0.278*** **	**0.274*** **	**0.285*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Government Stability	0.002	0.002	**0.004****	**0.004*** **	**0.004*** **	**0.004****	0.003	0.004	0.003
	(0.421)	(0.314)	**(0.034)**	**(0.003)**	**(0.003)**	**(0.026)**	(0.328)	(0.232)	(0.374)
Inflation (ln)	0.002	0.0005	0.005	0.004	0.003	0.003	0.003	0.002	0.006
	(0.738)	(0.908)	(0.135)	(0.105)	(0.204)	(0.230)	(0.495)	(0.627)	(0.216)
Credit (ln)	**0.009***	**0.015****	**0.018*** **	**0.013*** **	**0.013*** **	0.006	0.0006	-0.001	0.002
	(0.065)	**(0.011)**	**(0.006)**	**(0.003)**	**(0.004)**	(0.204)	(0.941)	(0.878)	(0.837)
Foreign Direct Investment	-0.001	-0.0001	0.00001	0.00006	-0.0003	-0.0006	0.0002	0.0001	-0.0009
	(0.501)	(0.943)	(0.991)	(0.947)	(0.752)	(0.575)	(0.888)	(0.928)	(0.716)
Remittances	-0.0009	-0.0008	-0.001	**-0.001***	**-0.001***	-0.0006	-0.001	**-0.002****	**-0.003****
	(0.532)	(0.448)	(0.233)	**(0.097)**	**(0.060)**	(0.389)	(0.163)	**(0.021)**	**(0.016)**
Foreign Aid	0.0006	0.0002	0.0002	-0.0002	-0.0002	-0.0004	-0.0008	-0.0002	-0.0001
	(0.471)	(0.821)	(0.767)	(0.727)	(0.662)	(0.548)	(0.553)	(0.874)	(0.898)
Rule of Law	0.004	0.001	-0.002	-0.002	-0.001	0.0006	0.0001	0.002	0.004
	(0.234)	(0.707)	(0.514)	(0.428)	(0.576)	(0.817)	(0.978)	(0.555)	(0.485)
Bureaucracy	0.002	0.0003	0.001	0.003	0.004	**0.007***	0.006	0.006	0.002
	(0.746)	(0.957)	(0.745)	(0.329)	(0.306)	**(0.084)**	(0.404)	(0.449)	(0.732)
Pseudo R^2	0.846	0.833	0.831	0.830	0.824	0.812	0.796	0.777	0.755
Observations	147	147	147	147	147	147	147	147	147

***; **;*: significance levels of 1%, 5% and 10% respectively. Lower quantiles (e.g., Q 0.1) signify nations where Growth is least. Ln: logarithm.

4. Concluding implications and future research directions

We have observed from the above that but for some slight exceptions in the findings of Specification 2, the results of Specification 1 are broadly consistent with those of Specification 2. The exceptions include: (i) the Best Performers category for health spending and (ii) shapes of all categories in the positive effects of education spending. In a situation of conflict of interest, while it would be logical to give preference to the findings of Specification 2 because it entails more control variables, on average terms, the findings of both specifications are consistent, notably: the effect of health is decreasingly positive from Hopeful, Contenders to Best Performers while the impact of education is increasingly positive in the same chronology of categories.

It should be noted that almost all countries in the Hopeful category are from SSA (with the exceptions of Yemen and Pakistan). It follows that it would benefit countries in the sub-region to invest more in health relative to education now, but decreases (increase) health spending (education spending) relative to education spending (health spending) as the economies in the sub-region make the transition from Hopeful to Contenders and finally to Best Performers in terms of 'quality of growth'. In other words, the health elasticity of 'growth quality' is a decreasing function of 'quality of growth' whereas education elasticity of 'growth quality' is an increasing function of 'quality of growth'.

Overall, we have shown that blanket welfare policies on social spending aimed at boosting 'quality of quality' may not be effective unless they are contingent on performance in growth quality and hence, tailored differently across, Hopefuls, Contenders and Best Performers. This implies policies meant to improve growth quality across in SSA should be different from those of more advanced developing countries in growth quality. Moreover, the findings also have implications for medium- and long-term planning when it comes to social spending needed to increase the much needed 'quality of growth'. This planning dimension in relevant for the post-2015 Sustainable Development agenda.

Accordingly, this study has been motivated by the transition from the Millennium Development Goals (MDGs) to Sustainable Development Goals (SDGs) that has substantially shifted the policy debate from growth to 'quality of growth' (QG). The April 2015 World Bank publication on MDGs extreme poverty targets has revealed that poverty has been decreasing in all regions of the world with the exception of Sub-Saharan Africa (SSA). We have explored a new dataset on QG by the IMF and classified 93 developing countries for the

period 1990-2011 in terms of Hopefuls, Contenders and Best Performers. Preliminary findings reveal that 31 of the 33 countries in the Hopefuls category are in SSA.

We have built on stylized facts depicting the contradiction between high-growth and poor welfare spending and assessed determinants of education and health spending on the QG using quantile regressions to articulate least and best performers. The following findings have been established. First, on average, the effect of health (education) is decreasingly (increasingly) positive from Hopeful to Best Performers. Second, on within categories: (1) health spending has positive threshold effects with decreasing magnitude among Hopefuls (0.10^{th} to 0.30^{th} quantiles) and Contenders (0.40^{th} to 0.60^{th} quantile), and positive effects with increasing magnitude among Best Performers (0.10^{th} to 0.90^{th} quantile) and (2) education spending has positive inverted U-shaped effects among Hopefuls and Contenders and positive U-shaped effects among Best Performers..

Policy implications have been discussed. The study which partially elucidates SSA's extreme poverty tragedy is timely and relevant for the post-2015 inclusive and sustainable development agenda. There is evidently room for further research on: (i) comparative country-specific case studies and (ii) other welfare variables, for more focused policy implications

Appendices

Appendix 1: Definition of variables

Variable(s)	Definition(s)	Source(s)
Quality of Growth Index (QGI)	"*Composite index ranging between 0 and 1, resulting from the aggregation of components capturing growth fundamentals and from components capturing the socially-friendly nature of growth. The higher the index, the greater is the quality of growth*" (p. 25).	Mlachila et al. (2014)
Educational Spending	"*Public resources allocated to education spending, as percent of GDP*" (p. 25)	Mlachila et al. (2014)
Health Spending	"*Public resources allocated to heath spending, as percent of GDP*" (p. 25)	Mlachila et al. (2014)
Government Stability	"*Index ranging from 0 to 12 and measuring the ability of government to stay in office and to carry out its declared program(s).The higher the index, the more stable the government is*" (p. 25).	Mlachila et al. (2014)
Inflation	Inflation rate based on the Consumer Price Index (CPI)	Mlachila et al. (2014)
Credit to private sector	"*Domestic credit to private sector, namely credit offered by the banks to the private sector, as percent of GDP*" (p. 25).	Mlachila et al. (2014)
Foreign Direct Investment	"*Net Inflows of Foreign Direct Investments, as percent of GDP*" (p. 25)	Mlachila et al. (2014)
Remittances	"*Workers' remittances and compensation of employees (Percent of GDP), calculated as the sum of workers' remittances, compensation of employees and migrants' transfers*" (p. 25).	Mlachila et al. (2014)
Foreign Aid	"*Official development Aid actually disbursed, as percent of GDP*" (p. 25)	Mlachila et al. (2014)
Rule of Law	"*Index assessing the strength and the impartiality of the legal system, as well as the popular observance of the law. The index ranges from 0 to 6, with a higher value of the index reflecting a higher institutional Quality*" (p. 25).	Mlachila et al. (2014)
Quality of Bureaucracy	"*Index of the institutional strength and quality of the bureaucracy, ranging from 0 to 4. The higher the index, the stronger the quality of the bureaucracy*" (p. 25)	Mlachila et al. (2014)

Appendix 2: Summary Statistics

	Mean	S. D	Minimum	Maximum	Obs
Quality of Growth Index (QGI)	0.604	0.140	0.258	0.849	372
Educational Spending	0.612	0.263	0.000	1.000	372
Health Spending	0.676	0.208	0.089	0.995	372
Government Stability	18.518	165.55	2.666	2873.8	303
Inflation (log)	2.331	1.358	-0.637	8.767	339
Domestic Credit (log)	3.355	0.798	0.529	5.131	345
Foreign Direct Investment	3.225	4.867	-4.172	62.264	366
Remittances	4.117	7.391	0.001	63.295	322
Foreign Aid	4.921	5.771	-9.546	36.317	226
Rule of Law	3.290	1.060	0.666	5.933	301
Quality of Bureaucracy	1.693	0.772	0.000	4.000	301

S.D: Standard Deviation. Obs: Observations.

Appendix 3: Correlation Matrix

Educ	Health	GovStab	Infl(log)	Credit(log)	FDI	Remit	Aid	Law	Bureau	QGI	
1.000	0.594	0.024	-0.007	0.152	0.048	0.419	-0.014	0.219	0.214	0.098	Educ
	1.000	0.036	0.032	0.231	0.133	0.265	-0.070	0.214	0.228	0.340	Health
		1.000	-0.002	-0.007	-0.050	-0.046	0.160	0.355	0.025	-0.119	GovStab
			1.000	-0.103	-0.111	-0.058	0.088	-0.100	-0.071	-0.003	Infl(log)
				1.000	-0.047	-0.018	-0.230	0.235	0.464	0.551	Credit(log)
					1.000	0.134	-0.062	0.130	-0.069	0.038	FDI
						1.000	-0.027	-0.040	-0.058	-0.033	Remit
							1.000	-0.059	-0.304	-0.572	Aid
								1.000	0.256	0.352	Law
									1.000	0.493	Bureau
											QGI

Educ: Educational Spending. Health: Health Spending. GovStab: Government Stability. Infl: Inflation. Credit: Domestic Credit. FDI: Foreign Direct Investment. Remit: Remittances. Aid: Foreign Aid. Law: Rule of Law. Bureau: Bureaucracy. QGI: Quality of Growth Index.

Appendix 4: Categorization of countries

Categories	Panels	Countries	Number
Performance	Hopefuls	"Burundi, Benin, Burkina Faso, Bangladesh, Central African Republic, Côte d'Ivoire, Cameroon, Congo Republic, Djibouti, Ethiopia, Gabon, Guinea, The Gambia, Equatorial Guinea, Lesotho, Madagascar, Mali, Mozambique, Mauritania, Malawi, Niger, Nigeria, Pakistan, Rwanda, Sudan, Senegal, Sierra Leone, Swaziland, Chad, Togo, Uganda, Yemen, Congo Democratic Republic".	33
	Contenders	"Azerbaijan, Bolivia, Georgia, Ghana, Guatemala, Iran, Lao PDR, Morocco, Mongolia, Namibia, Nicaragua, Nepal, Tajikistan, Tanzania, Uzbekistan, Zambia".	16
	Best Performers	"Albania, Argentina, Armenia, Bulgaria, Belarus, Brazil, Botswana, Chile, China, Colombia, Costa Rica, Cuba, Algeria, Ecuador, Egypt, Honduras, Indonesia, India, Jordan, Kazakhstan, Kenya, Kyrgyz Republic, Sri Lanka, Lithuania, Latvia, Moldova, Mexico, Malaysia, Panama, Peru, Philippines, Poland, Paraguay, Romania, Russia, El Salvador, Syria, Thailand, Tunisia, Turkey, Uruguay, Venezuela, Vietnam, South Africa".	44

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