Public investment and the goal of providing universal access to primary education by 2015 in Kenya

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ABSTRACT

The authors use population census data to project school enrolment for Kenya. They also employ current education sector budget and national revenue base statistics to model the sector budget and to forecast the revenue base growth required to sustain universal primary education (UPE). The 2003 fiscal year unit cost of education is used as the base value for computing the budget needed to fund UPE through 2015, the year by which the international community aims to achieve UPE. The authors apply econometric analysis in exploring the policy implications for the education sector budget and capacity for revenue generation that would support the budgetary growth needed.

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1. Introduction

Since gaining independence in 1963, Kenya has spent considerable energy designing and implementing public education programmes. The guiding view thereby has been that economic development is highly dependent on the supply of skilled labour and that intensification of growth in the education sector is crucial to improve the well-being of Kenya’s population (Republic of Kenya, 1965, p. 22). When African ministers of education met in Addis Ababa in 1961, they stressed that “the key to growth is the rate at which educational investment of a country progresses or regresses” (Bartels, 1983, p. 4). Kenya’s programmes thus initially targeted those of its populace who had been denied access to education during the colonial period, while also focusing on training leaders and workers to replace the departing colonial personnel.

Economic performance during the first two decades following independence ranked among the best in sub-Saharan Africa, and brought widespread improvement in households’ living standards. This improvement spurred a high rate of population growth, and the large number of children associated with the rapid growth created a powerful demand for expanded educational opportunities. The total primary school enrolment at independence in 1963 was 840,000; a total of 6,259,304 students were enrolled by 2000; and the introduction of the Free Primary Education Policy in 2003 brought in an additional 1.2 million, raising the total student enrolment to 7,404,280 (Somerset, 2007, p. 1; UNESCO, 2007). It should be noted, however, that fluctuations in the percentage of eligible population enrolled have tended to mirror education funding policies in effect at a given time, with enrolment spiking after government announcements that education costs to the consumer would either be eliminated or reduced, as was the case in 1974 and 2003. Fig. 1 shows the trend in primary school gross enrolment ratio from 1960 to 2005.

Contrary to the commitment made at high-level international fora by the government, there has been a general failure to adequately expand education opportunities so as to develop a human resource capacity that would enhance economic development and guarantee a supply of highly skilled labour. While pursuing policies that improve access to education is key to increasing social mobility, political expediency has guided many of the reforms; the government has ultimately failed to guarantee universal access to education that matches both demand and the development needs of the economy. Expansion of education at all levels is driven by a young population structure in a rapidly growing nation and an increasingly informed populace that seeks to demand its rights from the government. The limited labour market opportunities, having been worsened by the 1975 global oil crisis, resulted in school leavers facing higher levels of unemployment having been worsened by the 1975 global oil crisis, resulted in school leavers facing higher levels of unemployment.
problem has expanded to plague even those with a higher education certification.

While the government initially was able to meet the rising demand for education, over the years tight budgetary constraints have made the education system increasingly fragile. Moreover, as noted, the imbalance between the demand and supply of skilled labour is due to the failure of the national economy to expand at a rate that is sufficient to generate employment opportunities and high-income employment. Kenya's switch from the British-style 7-6-3 education system to the North American-style 8-4-4 system was a failed attempt to redress the unemployment problem by integrating a skill development component in the curriculum.

The government supported an expansionary public primary education programme from the very beginning, albeit with reservations whenever it experiences fiscal constraints. At first, parents were charged a nominal fee for primary education, and in 1974 the government abolished fees for the first four years to make primary education partially free (Amutabi, 2003, p. 131). From 1980 until 2000, the Kenyan economy experienced a recession that greatly constrained the government's ability to finance primary education. To fight the recession, the government implemented short-term economic management measures as mandated by the World Bank's structural adjustment policies (SAPs), which sought to downsize government spending. The policy of cost-sharing between parents and government led to a restriction of access due to increasing parental contribution and caused a decline in enrolment from the late 1980s through 2000. The previous gains in enrolment (91%) by 1980 had declined to 65% of the cohort eligible for primary school by 1997 (World Bank, 2000/2001, p. 284). In 2003, the government implemented its Free Primary Education Policy, which has reversed the declining trend and resulted in a sharp increase in primary school enrolment even as statistical evidence shows some children remain excluded from schooling (Republic of Kenya, 2008).

Kenya has subscribed to the many UNESCO-sponsored declarations of the need to achieve the goal of Education for All (EFA), including Jomtien Declaration in 1990 (UNESCO, 1992, pp. 17–18) and the Dakar Framework for Action in 2000, where the latter (UNESCO, 2002, p. 7) called for “ensuring that by 2015 all children, particularly children in difficult circumstances and those belonging to ethnic minorities, have access to and complete free and compulsory primary education of good quality.” At the 1962 conference of African ministers of education, African governments resolved to work towards the provision of universal primary education (UPE) by 1980 (Obasi, 1997, p. 166). The position has been reiterated at all subsequent EFA conferences, which have been held every decade since. The implementation of Kenya's Free Primary Education Policy in 2003 came in response to the adoption of the Dakar Framework for Action. One of the seminal outcomes of the last EFA conference was a declaration that “no countries seriously committed to education for all will be thwarted in their achievement of this goal [the provision of UPE] by a lack of resources” (UNESCO, 2000, p. 3). The challenge remains one of funding the provision of UPE in keeping with the national budget.

The present study investigates the programming of primary education in Kenya by seeking to answer two related questions: What motivates the public provision of education, and how can funding for the optimum target enrolment be determined? The study examines the economic basis of human capital spending on public education, the influence of projected population dynamics on the formulation of long-term school enrolment goals, and whether a developing country's domestic economy is able to finance universal access to primary education. Researchers in the study sought to model budgetary need against projected enrolment up through the year that Kenya is expected to realize universal access to primary education.

1.1. Should education be expanded?

Research on capital spending on education in developing countries has tended to support two divergent views on what the continued expansion of educational opportunities actually contributes: one view is largely concerned with the impact of education on unemployment (Todaro, 1977, p. 38), whereas the other view emphasizes access to education and reduction in income inequalities (Ahwulia, 1976, p. 130). According to the first view, allowing education as a component of social development to increase more rapidly than economic growth will result in the underutilization of skilled labour. This consequence follows because the rate of expansion of employment opportunities is a function of two key variables: the speed at which the national economy is expanding (the rate of economic growth) and the factor proportions utilized in the growth process (education being a key input when it comes to the application of the classical production function).

The rate of economic growth depends, among other things, on government policy and structures. The three main aspects of government action that affect growth are: the legal infrastructure, which influences investors' willingness to undertake many of the investments made in an economy; the budget, since its tax rates affect the efficiency of economic activity and the size of its deficit affects the macroeconomic balance (the level of economic activity, the rate of inflation, the balance of payments); and planning and other policies the government implements to take charge of certain aspects of the economy.

As for the second key variable that influences the demand for education, the factor proportions utilized in the process of economic growth, they depend largely on the choice of development. The choice of technology is subordinate to the choice of development strategy, which may be either inward- or outward-looking. Once a strategy has been chosen, the technology has been largely set. Throughout the 1960s and into the early 1980s, Kenya, like many developing countries, put its faith in a strategy based on import substitution and capital-intensive industrialization. This development strategy failed to utilize as much of its labour force as could have been if the government had adopted an outward-looking strategy. Such a strategy would have enhanced the country's participation in the international economy and improved its standard of living and its rate of economic development.
Thus an examination of how the government affects economic growth helps to explain the rationale of the first view mentioned above, namely that the expansion of education is untenable so long as the supply of skilled labour exceeds the demand for it. Controlling access to education may be valid when the challenge of job creation in the short term is the focus of development policy. However, the primary purpose of economic development is to improve social welfare, in particular to ensure that economic growth occurs in such a way that the distribution of income and wealth does not become more unequal as growth takes place (Ahwulia, 1976, p. 130).

It is worth noting a number of forces at work in the early stages of development that push in the direction of greater inequality. First, the process of urbanization leads to rural–urban migration and wage differential between urban and rural workers. Second, the spread of modern activities in association with improved techniques for production of goods and services creates demand for skilled labour and gives rise to wage differential between skilled and unskilled workers. Third, the inequalities resulting from industrialization are further accentuated by a concentration of the ownership of the newly created industries in a relatively small number of hands. Fourth, in the rural economy agricultural production becomes differentiated when a small number of farmers adopt modern techniques for commercial agriculture while the majority continues to employ traditional methods of subsistence farming.

Once established, inequality tends to perpetuate itself in two ways: through interpersonal transactions and through ownership of income-earning assets. Interpersonal transactions constitute the circular flow of income in a national economy; they increase with the expansion in monetization of economic activities and tend to spread and promote inequality in income distribution. Government policy interventions that would reduce wealth inequalities in the population include income tax and capital tax (Bouchaud and Mezard, 2000, p. 541). However, the distribution of wealth is generally more skewed than income distribution—a few individuals tend to own a disproportionately large share of income-earning assets. The rate of return earned by these assets reinforces income inequalities. Since saving is a rising function of income, the rich save proportionately more than those with less wealth and can thus acquire more assets, which further skews the distribution of wealth and income. The most obvious factor contributing to the self-perpetuation of inequality stems from the interaction of the distribution of wealth and income. The scenario described here applies to the situation in Kenya, where much of the wealth is concentrated in the hands of a few. Fig. 2 depicts household wealth distribution in Kenya.

![Household wealth distribution in Kenya](source: World Bank, 2000, p. 238)

The underlying cause of inequality in Kenya has roots in the colonial experience as well as in the structure of the modern economy adopted following independence. Many communities lost much of their land when they were pushed onto native reserves. The colonial experience thus created greater inequality in land distribution, excluding African populations from effective participation in the modern and productive capital-intensive market place (Kayizzi-Mugerwa, 2001). The introduction of land titling failed to capture both the logic of land use and the issues of access and use-rights in the traditional and customary agricultural and pastoral systems. Amongst the Luo and Luhyia, individual rights and the rights of others were interlinked and tied to membership within kinship structures with the right to a piece of farmland being seasonal and transitory. As a basis, 1992, p. 361) put it his examination of the Luo community land tenure system, a piece of farmland oscillated seasonally between individual and family cultivation rights during a growing season, and more open grazing rights for a broader community on the same land after the harvest. The group farm titling process failed to effect economic empowerment, as only a few of the ranches met the criterion of having land allotment in both the drier season and wet season grazing ranges. In addition, ranches closer to the major urban areas were further subdivided into economically unviable lots owing to the urban encroachment of settlements (Kimani and Pickard, 1998, p. 206).

Far from contributing to the security of land tenure across board, titling has been documented as increasing both social and economic fragility and generating conflict over land rights in communities in Kenya (Place and Migot-Adholla, 1998). Privately held and titled land is also not readily accommodated as financial collateral by financial markets as originally envisioned by those who sought and advocated for the entrenchment of land rights and individual property ownership. Investor and financial institutions shy away from this instrument because of a growing number of titled land challenges and the potential for transactions involving corruptly obtained title deeds. As market opportunities have not expanded significantly over the years, only a small percentage of the Kenyan population – the majority of which is represented amongst the 20% of the urban-based population – derive livelihood from paid labour. Even then, 58% of the population lives on less than one dollar a day (UNDP, 2007). The rural population is largely left income insecure while differential income levels amongst the few urban employed perpetuates gross inequality in wealth distribution.

Since the market has no internal mechanism to promote a greater degree of economic equality through income redistribution, the government turns to fiscal policy to influence wealth distribution. Taxation is used to reduce differences in wealth, and the revenues generated are used directly to finance transfer payments, and indirectly to distribute goods and services, including education. For a developing country, utilization of the tax revenues to finance the implementation of long-term economic policy aimed primarily at improving the performance of the national economy and expanding the production possibility frontier – that is, growth – offers the only fundamental chance of eradicating poverty and the underutilization of human resources.

Skilled labour is a core complementary resource in the productivity of capital investment; it determines the speed at which the production possibility frontier expands outwards. Consequently, public access to education can minimise potential skewing of the privileges towards the wealthy by extending opportunity for wealth creation to all, raising general skill levels in the population, enhancing productivity and earnings, and contributing to the growth of the economy. Such a policy would achieve this goal by ensuring that future increases in assets and...

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output are more equitably distributed – especially to those living in poverty – and that they generate as much new productive employment as possible. Kenya has adopted a global poverty reduction strategy that regards education as central to the war on poverty. Based on the foregoing considerations, we maintain that the primary motivation for the government to continue to invest substantially in education is that expanded educational opportunities influence income distribution and thus promote development.

1.2. The supply of public education

Education has technical and economic properties that make it possible to use the price mechanism to capture the full cost of schooling. This formulation implies that the market mechanism is the best institution to achieve efficiency in the allocation of resources in the education market that would allow participants to choose freely the amount of education that is to be produced and consumed. In the real world, there are several notable justifications for education to be provided by means of public policy. Of particular importance to a developing country is the issue of economic equality. The distribution of income in most developing countries is highly unequal, more so than in industrial countries, where access to education is widely diffused and has narrowed occupational income differentials. Where there is unequal income distribution, if education were provided under market conditions, only those who could afford to pay would be able to enrol. The market optimal enrolment would be below the level that parents would choose if they could afford the direct and indirect costs associated with investing in education. Not only would there be underinvestment from a social standpoint, but income inequalities would also be preserved from one generation to the next, inasmuch as education is a determinant of lifetime income. Indeed, the introduction of cost-sharing policies under the World Bank’s structural adjustment programmes in the 1980s resulted in declining enrolment for much of sub-Saharan Africa (Obasi, 2000, p. 200).

The influence of income distribution on access to education can be examined graphically. Fig. 3 shows the maximum amount of public education that the government can provide by using fiscal policy as an instrument to mobilize resources for capital spending on education. In the left-hand panel, the production possibility frontier (PP’) represents country wealth at a given stage of economic development; and community preferences and the allocation of resources to private or public education are represented by indifference curves. Since it is possible to draw an indifference curve like XX’ only based on a given income distribution, each alternative distribution will have a separate indifference curve. The curve XX’ is drawn on the assumption of greater inequality due to a tax policy that does not significantly mitigate inequalities in income and wealth. At point A, education is provided mainly under market conditions with access restricted to children whose parents can afford to pay the market-determined cost of schooling. The curve YY’ is drawn on the assumption of a more equal distribution and a tax policy that is able to generate sufficient revenue to enable the government to finance expansion in public education. At point B, the total amount of education provided in the economy is more socially desirable than at point A.

The right-hand panel in Fig. 3 depicts the public education supply curve. The Gini coefficient, as a numerical measure of the extent of inequality or income concentration, is given as the shift parameter of the supply curve. In order of magnitude, the coefficient is: \( g^1 > g^2 > g^3 = 0 \). Fig. 3 shows the supply, \( E \), resulting from maximum government resource mobilization, which the supply at the Gini coefficient \( g = 0 \) approaches asymptotically as the cost of schooling increases. Other supply curves have their own maximum supply, based on their own Gini coefficient, which they approach asymptotically.

In Fig. 4, we diagrammatically examine the provision of access to education as an important public policy for actively promoting economic development. The model shows the disposition of national wealth into: (a) consumption, (b) investment in physical capital, and (c) spending on education. Consumption contributes directly to the improvement in standard of living, which impacts on demographic transition and drives the demand for education. Investments in physical and human capital expand country capacity for productivity and increase national wealth. As national wealth increases and the standard of living improves, changing socio-economic conditions cause the population first to rise sharply (with a decrease in mortality rates) and thereafter to decline as a result of falling fertility rates. In the late transition phase, when the young population structure is dominant, the age cohort below 15 making up 45% (or more in some instances) of the population creates a powerful demand for the public provision of...
primary education. The fiscal challenge posed by population momentum requires the national economy to grow at a rate that can ensure resource availability to fund education and other social programmes.

1.3. School population based demand and funding needs for UPE

The advent of multiparty democracy in Kenya and the government’s response to the public’s demand for accountability caused the government to articulate its development agenda in terms of public needs. During the 2002 elections, voters were inundated with political parties’ promises to universalize access to primary education. The newly elected government had campaigned on a platform that included the provision of free primary education. Global development agencies’ focus on the provision of universal access to basic education, as one of the key Millennium Development Goals (MDGs), and the resumption of aid flows have made it possible for the government to begin to implement its Free Primary Education Policy in 2003 (Kattan and Burnett, 2004, p. 21).

The Kenyan school system has traditionally been tuition-free. Fees that schools have charged parents directly (under the sanction of the Ministry of Education) have been for infrastructure development and school-level management expenditures. With the implementation of the Free Primary Education Policy in 2003 (Mukudi, 2004), capitation grants to the schools replaced these fees. However, the costs do not factor in the price of uniforms, examination fees, textbooks and other non-academic costs. As such, the gap in the private cost of primary education remains high. The Elimu Yetu Coalition group has estimated this cost to be more than 5000 Kenya Shillings for every child (EYC, 2004).

2. Data and methods

To determine the funding needs over the period during which the government has committed to realize UPE, target population projections were obtained from the population census projections; education sector budgets were used to project sector budgetary allocation; and the government’s revenue base was used to project the government’s capacity to fund universal access to primary education. While the statistics on the population eligible for primary education were derived from the population census data, current enrolment statistics were used to determine the funding level that would be required to support universal enrolment. Current assumptions and observations based on earlier field research on fees previously charged to parents were the basis for projecting capitation grants. For education to be universally accessible and compulsory attendance to be enforced, any additional costs have to be eliminated. Our computation of projected funding levels took into account the elimination of all costs associated with schooling.

In this section we seek to model the eligible pupil population for which universal access to primary education is to be provided. Data and statistics for the projected population eligible for universal primary education were derived from the US Census Department’s international projections for the years 2000 through 2015 (US Government, 2008). Only population groups 5–14 years of age were included in any school year projected enrolment computation. An aggregate of the two age bracket population values for each subsequent year constitutes the eligible student population. The US international census estimates for Kenya project a 3% average annual growth rate in the eligible primary school age population. This grouping allows the Kenyan government to plan for both early childhood education (pre-primary) and all eligible primary school populations. Pre-primary has long been an appendage of the primary education tier in Kenya. Most primary schools will have a pre-primary class affiliated with them, and from which they draw most of their first grade admits. Actual student enrolment statistics were obtained from the UNESCO Institute for Statistics database (UNESCO, 2007). Actual enrolment comprised statistics for both public and private institutions at the
primary and primary school levels. The baseline public school enrolment data used for computing the unit cost of public funding was obtained from the Elimu Yetu Coalition document (EYC, 2004, p. 9).

Data and statistics for the national revenue base were derived from the Central Bank of Kenya’s Economic Reviews from 1998 through 2007 (Republic of Kenya, 2000–2007). Analysis was undertaken to compute the projected revenue base and the capacity for support to the education sector and for funding UPE using the government’s own revenue base. An average tax growth rate of 8.26% derived from the 2000 through 2007 available data was used as the basis for computing the revenue projections. The Gross Domestic Product (GDP current) values for the years 2000 through 2007 and the corresponding total revenue and grants (government revenue) were the base for projecting the national economic and fiscal capacity to fund free primary education. GDP projections were derived from the revenue values in estimating the potential for the public finance sector to support universal access to primary education. It was also assumed that in order for the education budget to be funded at the same level, the allocation would have to be increased in tandem with the average revenue growth rate computed for the primary education tier.

The general education sector budgetary statistics come from Kenyan government documents, among them the Education Sector Report 2005 (Republic of Kenya, 2005), Education Sector Report 2008 (Republic of Kenya, 2008), and the Budget Outlook Paper data for the years 2005/2006–2008/2009 (Republic of Kenya, 2006). Budget items include itemized government recurrent and development expenditures on the education sector and the primary education tier as well as a percentage of the general and administration cost. The allocation of the general and administration cost was computed using the proportionate allocation of the recurrent and development funding that went to primary and pre-primary tiers. We sourced the data on the user fee and the private cost of education preceding the elimination of user fees from the field research data documented by the Elimu Yetu Coalition. In its study (EYC, 2004, p. 43), direct costs included “fees, extra tuition, textbooks, exercise books, KCPE examination fees, and other costs like mock/district internal assessment, library and science facilities costs.” The indirect costs included monies spent on construction and development levies, uniforms, transportation, meals, and sports. This study used the aggregated values under the two subheadings (direct and indirect costs) to compute the private cost of primary education, and therefore, the budget for public finance of the same. An average cost of 6154 Kenya Shillings per child was computed from field research evidence just before the implementation of Free Primary Education Policy started in January of 2003 (Republic of Kenya, 2008: EYC, 2004, pp. 34–41). Of this amount, the government of Kenya gave a capitation grant of 1020 Kenya Shillings per child for the free primary education program. The funding gap of 5134 Kenya Shillings per child was assumed to be the additional support needed to guarantee free access to primary education—a cost continued to be borne by parents (EYC, 2004). Our analysis focused on what the government has opted to allocate rather than what the total cost of primary education should be if parents did not bear any cost in the education of their children.

The computed per-student budgetary allocation was based on the 2003/2004 fiscal year combined pre-primary and primary education recurrent and development expenditure allocation of 12,353,080,000.00 Kenya Shillings, and a percent allocation of the general and administration cost of 30,210,591,273.08 Kenya Shillings (derived from a 53.05% allocation ratio of the total recurrent and development costs) (EYC, 2004, pp. 31, 36). The total budget for computing the base for the unit cost of primary education was 42,563,671,273.08 Kenya Shillings. We examined the budget for the primary education tier in order to establish the current unit cost and the ratio of education sector budget to government revenue, as well as to estimate the budgetary needs to sustain universal access to primary education. Unit cost and total primary education budget projections were derived from the census enrolment projections and the funding growth rate represented by the revenue growth rate. The reference population in assessing both the current unit cost and the projected primary education budget was that of currently enrolled students and projected eligible student statistics. The public school enrolment of 7,208,100 for the 2003 school year (EYC, 2004) was taken as the base value for computing the unit cost of public finance for primary education.

3. Results and discussion

3.1. Projecting funding for Universal Primary Education

Since the introduction of popular democracy under new NARC leadership in 2002, the Gross Domestic Product (GDP) of Kenya has been growing. The average GDP growth rate between 2000 and 2007 was 10.84%. The available revenue data stream, however, shows that growth in the revenue base for the same years has often fluctuated—even as it reflects the realization of an average growth rate of 8.26%. It is apparent that the country’s stability is important for economic growth and potential revenue accumulation. At the height of the popular multiparty democracy movement in 2001, revenue collection significantly declined. The highly contested 2005 constitutional referendum also negatively impacted revenue collection. The GDP growth rate shows a decline in 2001, 2002, and 2007—year that was marred by the contentious election of Mwai Kibaki to a second term presidency. As government expenditure is largely a product of revenue allocation, the nature of revenue sourcing has implications for expenditure reform and the capacity for governments to publicly fund social sectors. It is difficult to envision a Kenyan government that could independently support additional budgetary demand from the primary education tier based on the revenue stream and the spending levels currently in place. Fig. 5 shows the pattern of growth for both GDP and total revenue and expenditure for the last eight years.

Although the GDP has grown over the years, the total revenue and grants available to the government to fund public programmes
has lagged behind. On the other hand, government expenditures have sometimes exceeded the revenue available. This trend has implications for the government’s capacity to meet its obligations to the populace, particularly when there is a definite need to increase the budget to meet the increased demand for services such as education. At about 30% of income, Kenyan income tax rates are among the highest in the world for income above 38,893 Kenya Shillings (Republic of Kenya, 2006). Moreover, the fiscal business environment is hostile for investors as high tariffs are charged on imports. Mwega and Ndung’u (2001, p. 37) illustrate the negative pattern of high tariff imposition on manufacturing imports that dominated Kenya through the 1990s, with the percent of value charged ranging from the 30s through to the high 40s. Still, these rates represented an improvement over the previous years, as Mwega (1993, 385) notes, stating that “the maximum tariff rate was reduced from 170% to 70% during 1978–1991” fiscal years. In their proposal for tax reform that would help with the process of modernizing the country, Moyo and Ronge (2006, p. 1) acknowledge the limitations of pursuing a policy that would involve a tax increase as a way of raising revenue for public sector finance given the existing high tax burden. Thus the only option is an outcome involving the expansion of Kenya’s GDP and therefore a horizontal expansion of the tax base.

The international goal, as set out in the MDGs, is to have the entire eligible population of primary school age children enrolled in primary education by 2015. Given the current trend in enrolment and funding needs, and despite the government’s having implemented a free-education policy, Kenya is unlikely to meet the goal of universal access by 2015. The implementation of the Free Primary Education Policy in 2003 led to a surge in enrolment, which increased by more than 1.2 million over the previous year. Yet both actual enrolment and population projections show that not all eligible children are enrolled. In 2003, the Ministry of Education recorded a net enrolment of 75% (Republic of Kenya, 2008, p. 26). Notably, enrolment declined following the 2007 post-election violence (UNICEF, 2008). Between 2003 and 2006, the US International Census statistics derived eligible population projection for primary school enrolment in Kenya grew by 1%, 2%, 2% and 3%, in that order. However, actual enrolment has continued to lag behind, evidencing a gap of more than 10% of the eligible population. In addition, in the last year, there is evidence of decline in absolute enrolment over the previous year—primarily due to a combination of growing poverty and the precarious post-2007 election environment. The government reports that inflation is high, thus eroding the populace’s capacity to meet its own basic needs. As example, the inflation rate for the month of February of 2009 stood at 25.1% (Republic of Kenya, 2009, p. 2). Families displaced by post-election violence face camp closures and yet they cannot go back to their homes. It is worth noting here that much of the aforementioned surge in enrolment that occurred with the elimination of user fees was due to returning students and enrolment by the poor (Kattan, 2006, pp. 28, 132). Fig. 6 illustrates the trend in actual enrolment versus the population modelling for eligible population for primary school enrolment up to 2015.

Government expenditures on recurrent and development cost for pre-primary and primary education for 2003–2004 was 12,353,080,000.00 Kenya Shillings, with an increase in development expenditure allocation accounting for much of the growth in the budget over the previous year. This allocation represented an estimated 15.40% of the total education sector budget of 80,234,000,000.74 Kenya Shillings for the 2003 base year. The total allocation to the free primary education program for the same year amounted to 53% of the total education sector budget for the year. To maintain the unit cost value and increase funding to meet universal access goals, an additional 12% of eligible population (1 million children) equivalent in unit cost expenditure would have to be found to bridge the funding gap for the children who still remained out of school when free-education policy was implemented. At a public school enrolment level of 7,208,100 pupils, the resultant per unit cost of primary education is 5904.98 Kenya Shillings. The direct unit cost for public expenditure on recurrent and development budgetary expenditure is 1713.78 Kenya Shillings, an estimate that takes the 2003 calendar year enrolment population as a base. It is likely that the unit cost for the year previous to the implementation of free primary education was higher than the value obtained as enrolment at public schools skyrocketed with the implementation of the free-education policy in 2003.

The enrolment given for the referenced year assumes an enrolment gap of 1,020,508 pupils. An additional 1,748,923,705.92 Kenya Shillings in recurrent and development direct costs would be required to bridge the funding gap for that year in order to provide all eligible children with access to primary education. At the estimated unit cost of primary education, this gap would have raised the primary education budget allocation for the 2003 fiscal year to 48,589,748,470.06 Kenya Shillings. Further, this budgetary increase does not take into account the administration and general expenditure overhead that would be required as a result of increases in the demand for education. Our assumption here is that the unit cost of education would be constant until 2015. However, inflation is a persistent problem in Kenya. Between 2004 and 2006, the inflation rate has been in the double digits. Fig. 7 shows the pattern of inflation over the last nine years, starting in 1998 (Republic of Kenya, 2007, p. 5).

The government economists had anticipated that double-digit inflation would continue for some time through 2008 (Republic of Kenya, 2009), though it is likely that had a more accountable government taken charge in 2008 the economy would have grown and inflation would have declined. Instead, the continued political wrangling has not been particularly helpful to the economic...
Given the implementation of the Free Primary Education Policy, the projected funding need for UPE coverage at the current unit cost funding level would be given by the following formula:

$$UC_{yr} \times P_{pop} = Pr_{Bdt}$$

where $UC$ is the unit cost for a given year, $P_{pop}$ is the eligible cohort population; and $Pr_{Bdt}$ is the primary education budget. Hence, $15,686.28$ Kenya Shillings (unit cost) $\times 12,253,417$ (eligible population in 2015) $= 192,210,584,307$ Kenya Shillings (free-education total budget). The projected cost for the recurrent and development expenditure on free-education for the year 2015 would be $55,784,490,721.35$ Kenya Shillings.

### 3.2. Education sector budget, revenue base and GDP growth

We assume that the government’s education budget and its total revenue will rise in tandem with the average annual inflation rate and average annual growth rate, in that order, over the specified period in order to maintain the prevailing funding level. Thus we apply an interest rate equivalent to the average annual inflation rate in order to project both the education sector budget and the total public sector expenditure. The average sector growth rate was applied to project revenue. We assume that there would be no decision to either universalize access to other tiers of the education sector, or increase the budget for other social services and other sectors of the economy. We make these assumptions solely to isolate the budgetary projections that would meet the funding needs in the education sector, even though we realize that the MDGs also call for universal access to health care, water and sanitation, and food security, among other basic needs (UN, 2000, pp. 1–9). All the MDGs have budgetary implications that require governments to allocate resources to realize the goals.

While 2003 serves as the base year for projecting education sector budget needs, 2007 is adopted as the base year for projecting both revenue and public expenditure. In both of these cases, the average revenue growth rate was used to compute the future value (FV) for expected revenue and expenditure, assuming no real-term growth in both of these measures. We chose this base year for our projections solely based on data availability. The projections call for doubling the 2006 revenue base by 2015. Incidentally, public expenditure projections show that the revenue base would be lagging behind expenditure levels—due to the fact that the base year for which the projections are derived had an expenditure level that was higher than the revenue level. In any case, a situation where there is a budget gap is not uncommon for Kenya as the environment. With that in mind, an average annual inflation rate of 8.48% is applied for purpose of projecting education sector funding needs and therefore total government expenditure until 2015. This value is derived from the average annual inflation figures from 1998 through 2006. The funding need that is predicted for each year of free primary education provision takes into account the real-term funding levels. The unit cost of primary schooling of primary education cost (year 2008) to an interest rate equal to the computed average annual inflation rate in order to maintain the prevailing funding level. Thus we apply an interest rate equivalent to the average annual inflation rate by subjecting the future value (FV) of the current total revenue will rise in tandem with the average annual inflation rate in order to maintain the prevailing funding level.


### Table 1

<table>
<thead>
<tr>
<th>Year</th>
<th>Primary budget</th>
<th>Education budget</th>
<th>Revenue and grants</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>–</td>
<td>–</td>
<td>197,200,000,000.00</td>
</tr>
<tr>
<td>2001</td>
<td>–</td>
<td>–</td>
<td>181,000,000,000.00</td>
</tr>
<tr>
<td>2002</td>
<td>–</td>
<td>–</td>
<td>199,800,000,000.00</td>
</tr>
<tr>
<td>2003</td>
<td>42,563,671,273.08</td>
<td>80,234,740,000.00</td>
<td>225,700,000,000.00</td>
</tr>
<tr>
<td>2004</td>
<td>54,538,727,422.56</td>
<td>80,234,740,000.00</td>
<td>264,600,000,000.00</td>
</tr>
<tr>
<td>2005</td>
<td>60,173,509,596.47</td>
<td>94,578,000,000.00</td>
<td>266,600,000,000.00</td>
</tr>
<tr>
<td>2006</td>
<td>66,860,513,296.71</td>
<td>105,387,000,000.00</td>
<td>290,400,000,000.00</td>
</tr>
<tr>
<td>2007</td>
<td>74,865,980,677.28</td>
<td>116,670,000,000.00</td>
<td>336,100,000,000.00</td>
</tr>
<tr>
<td>2008</td>
<td>84,226,102,513.46</td>
<td>126,514,000,000.00</td>
<td>363,847,439,156.38</td>
</tr>
<tr>
<td>2009</td>
<td>94,947,479,423.43</td>
<td>137,242,387,200.00</td>
<td>393,885,626,244.14</td>
</tr>
<tr>
<td>2010</td>
<td>107,165,776,190.89</td>
<td>148,880,541,634.56</td>
<td>426,403,678,754.65</td>
</tr>
<tr>
<td>2011</td>
<td>121,018,604,439.77</td>
<td>159,056,611,565.17</td>
<td>461,606,327,169.70</td>
</tr>
<tr>
<td>2012</td>
<td>136,577,802,987.71</td>
<td>175,201,287,425.90</td>
<td>499,715,203,924.66</td>
</tr>
<tr>
<td>2013</td>
<td>153,896,841,125.07</td>
<td>192,210,584,307.00</td>
<td>553,849,790,721.35</td>
</tr>
<tr>
<td>2014</td>
<td>172,619,591,259.06</td>
<td>206,175,305,239.26</td>
<td>585,631,169,418.57</td>
</tr>
<tr>
<td>2015</td>
<td>192,210,584,304.07</td>
<td>223,658,971,123.55</td>
<td>633,979,176,682.84</td>
</tr>
</tbody>
</table>


statistics for past revenue and expenditure documentation have shown. Table 1 shows the government’s projected budget for the education sector and revenue stream under the assumption (Appendix B offers a US dollar equivalent table for these statistics).

As it is, the Kenyan government’s budget is overstretched. Any increase in funding to primary education would have to be realized through a radical increase in the tax base or come from outside sources. The GDP would have to grow substantially if the revenue base is to be expanded at the prevailing tax rate. If the government is to fund UPE, with a view to achieving the goal of UPE, the annual expenditure on primary education must be factored into revenue projections and ultimately into GDP growth expectations. We employ a simple econometric analysis here to predict the GDP growth that would sustain the projected revenue base required to maintain education sector support at the current level. The predicted GDP for each year will be given by:

\[ \hat{Y} = a + bX \]

where \( \hat{Y} \) is the predicted variable (GDP) and \( X \) is the predictor variable (income and grants), while \( a \) and \( b \) are the intercept and \( X \) variable coefficients, respectively. Tax revenue values used in predicting GDP were obtained from projections of revenue stream as previously noted herein. In this case, GDP is the unknown variable and as such the computation of Kenya’s GDP regressed against the tax revenue gives us the following formula for deriving projection values:

\[ \hat{Y} = 34.686 \times 729.235 \times 1782.6 + 5.07027 \times X \]

where \( \hat{Y} \) is the predicted GDP and \( X \) is the tax rate that takes into account funding for UPE.

Table 2 shows the projected GDP growth and total revenue projections for the years 2008 through 2015 that allow for the revenue base that would be required to enable the government to allocate the desired resource to fund universal access to primary education under the current assumptions. The values presented in Table 2 are derived from computations predicting the different variables as examined in the text; namely, revenue, government expenditure and GDP in that order. The basis for the revenue and government expenditure projections was future value (FV) of the average revenue growth rate for the previous years for which data was available.

The challenge for Kenya is how best to establish an economic, social, and political environment that will attract both local and international investors in order to accelerate the current rate of economic growth. A miracle would virtually be required to almost double the GDP in a span of eight years. Of particular relevance for Kenya will be reforms in the legal infrastructure, tax policy, and capacity development of the physical infrastructure. It was noted that the political environment is critical to the performance of the economy. More lately, the donor community has indicated that there is a likelihood of withholding funding for development programming if the government does not resolve the outstanding post-election violence legal conundrum. An escalation of difference around fiscal support would not be helpful for a government that was only able to implement the free-education policy in 2003 with the help of donors. Besides, withdrawal of donor support would also negatively impact investor confidence in the country as a viable destination for economic opportunities.

4. Summary and conclusion

Over the years Kenya has demonstrated its desire to provide UPE to its populace. Although there have been efforts to relieve parents of user fees, budgetary constraints have always caused them to be reintroduced. The result has been spikes and dips in enrolment levels, depending on whether or not user fees were in place. Poverty and the government’s limited capacity have resulted in Kenya’s failure to realize and sustain universal access to primary education. In other words, the very cost of schooling has restricted both supply and access to education.

Since the implementation of the Free Primary Education Policy, enrolment has significantly increased. In fact, the elimination of user fees saw an increase of over 1 million children attending school in 2003 than in the previous year. Nevertheless, not all the children who are eligible to be enrolled are in school. To accommodate all children under the new Free Primary Education Policy, increasing funding and eliminating all indirect costs of schooling at the primary education tier is necessary. Even under the current assumptions, parents will continue to shoulder an almost 50% of the total cost of primary education.

The aim of the present study was to model budgetary needs to realize and sustain UPE by 2015. To meet the increase in budgetary demands for this tier of education, projections were made to determine the revenue base that would support the funding level for universal access. Our guiding assumption – that such an effort would be sustainable only in an environment of economic independence – meant that economic growth projections were necessary as well. This exercise evidences that the Kenyan economy will have to grow an average of about 8% annually if it is to generate adequate revenue to continue funding universal access to primary education at the current funding unit cost level.

Although enrolment has increased, evidence also exists that government allocation of per-capita grants to schools has declined. The government currently allocates a capitation grant of 1020 Kenya Shillings per child under the Free Primary Education program implemented in 2003, representing a decline from the 2774 Kenya Shillings the government had spent on each primary school child in 1997 (EYC, 2004). This differential raises questions about what quality level of free primary education we hope to see delivered under the universal access program. While it may be cost-effective to deliver education services at a lower cost (as reflected in the decline in the per-capita grant allocation at primary level since the implementation of Free Primary Education Policy) spending public funds on an internally inefficient school system would be counterproductive. The topic of technical and economic efficiency as applied to the Kenyan context is very important given the government’s guarantees and the country’s need to build a human capital base for the global knowledge driven economy. In reducing...
the per-capita grant allocation however, the government may have been aiming at what Nafukho and Ngware (2002, p. 45) term as economic efficiency in their examination of technical education delivery in Kenya.

A look at the functioning of the Kenyan primary school tier reveals the challenges to realizing both technical and allocative efficiency in education resource utilization. Overcrowding, a poor infrastructure capacity, and a lack of instructional material mean that even though the government is able to offer more children access to education, their ability to learn is compromised. The shift from public to non-governmental schools amongst the poor in Kibera slums evidences recognition by the poor that the environment created in the public school system was plagued by inefficiency stemming primarily from overcrowding and a lack of teaching and learning resources (Tooley et al., 2008, p. 456). Children from the private and non-governmental schools had been transferred to public schools following the implementation of the free-education policy in early 2003 only for some to return to the very private schools they had fled. In their analysis, Tooley et al. (2008) attribute the increase in enrolment at public schools to a trend brought on by a change in the user-fee policy that resulted in poor children from private schools transferring to public schools and not necessarily due to new enrolment from children previously excluded from schooling.

The government will need to increase funding in order to improve the quality of education and to enhance the learning experience for all children. Such a measure would be in line with the commitment by all nations that subscribed to the UNESCO education for all declaration in at the 2000 Dakar conference at which it was noted that the goal of “access to and complete, free and compulsory primary education of good quality” would be realized by 2015 (UNESCO, 2000, p. 8). There is evidence that children who had the most access to learning materials had the best achievement scores irrespective of socio-economic background (Hungi and Thuku, 2009). Although the government is committed to providing learning materials under the free primary education program, the reduced per-student allocation in capitation grants for supplies may not augur well for equity considerations.

The funding structure for free primary education indicated under the current model means parents will continue to shoulder some of the costs of education, including school uniforms. Furthermore, net enrolment records reveal that children remain out of school even after the implementation of the Free Primary Education Policy. This conclusion is supported by Ministry of Education evidence that showed net enrolment to be 75% for the year the policy came into effect. Elimination of the remaining user fees that continue to limit access by poor households will be key to guaranteeing universal access to primary education. It is likely that the most vulnerable children remain locked out of primary schooling even with the implementation of free-education policy.

Appendix A. Projected education costs in US Dollars*

<table>
<thead>
<tr>
<th>Year</th>
<th>Recurrent and development</th>
<th>Education budget</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unit cost</td>
<td>Total cost</td>
</tr>
<tr>
<td>2004</td>
<td>23.86</td>
<td>203,132,759.39</td>
</tr>
<tr>
<td>2005</td>
<td>25.88</td>
<td>224,119,843.36</td>
</tr>
<tr>
<td>2006</td>
<td>26.08</td>
<td>249,025,899.46</td>
</tr>
<tr>
<td>2007</td>
<td>30.46</td>
<td>278,842,832.58</td>
</tr>
<tr>
<td>2008</td>
<td>33.04</td>
<td>313,705,167.47</td>
</tr>
<tr>
<td>2009</td>
<td>35.85</td>
<td>353,637,578.37</td>
</tr>
<tr>
<td>2010</td>
<td>38.89</td>
<td>399,145,357.05</td>
</tr>
<tr>
<td>2011</td>
<td>42.19</td>
<td>450,741,046.22</td>
</tr>
<tr>
<td>2012</td>
<td>45.76</td>
<td>508,692,213.85</td>
</tr>
<tr>
<td>2013</td>
<td>49.65</td>
<td>573,198,009.51</td>
</tr>
<tr>
<td>2014</td>
<td>53.86</td>
<td>642,932,014.65</td>
</tr>
<tr>
<td>2015</td>
<td>58.42</td>
<td>715,899,842.68</td>
</tr>
</tbody>
</table>

*Exchange rate: USD = Kenya Shillings 77.92. June 05, 2009 exchange rate was used (exchange rate source: Republic of Kenya, 2009).

Appendix B. Projected education expenditure and revenue in US Dollars*

<table>
<thead>
<tr>
<th>Year</th>
<th>Primary budget</th>
<th>Education budget</th>
<th>Revenue and grants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unit cost</td>
<td>Total cost</td>
<td>Unit cost</td>
</tr>
<tr>
<td>2000</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>2001</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>2002</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>2003</td>
<td>546,232,925.57</td>
<td>1,029,677,550.17</td>
<td>3,896,478,795.52</td>
</tr>
<tr>
<td>2004</td>
<td>699,912,572.06</td>
<td>1,213,749,098.46</td>
<td>4,321,361,305.36</td>
</tr>
<tr>
<td>2005</td>
<td>772,225,466.77</td>
<td>1,352,464,381.14</td>
<td>4,726,794,131.64</td>
</tr>
<tr>
<td>2006</td>
<td>838,041,909.71</td>
<td>1,497,262,654.29</td>
<td>5,313,767,575.87</td>
</tr>
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<td>2007</td>
<td>960,778,580.14</td>
<td>1,623,933,789.70</td>
<td>5,669,368,153.83</td>
</tr>
<tr>
<td>2008</td>
<td>1,080,899,955.51</td>
<td>1,761,274,543.07</td>
<td>6,054,857,617.52</td>
</tr>
<tr>
<td>2009</td>
<td>1,218,490,743.63</td>
<td>1,910,630,624.32</td>
<td>6,472,171,970.95</td>
</tr>
<tr>
<td>2010</td>
<td>1,375,291,973.16</td>
<td>2,072,652,101.26</td>
<td>6,923,938,584.51</td>
</tr>
<tr>
<td>2011</td>
<td>1,553,069,657.17</td>
<td>2,248,412,999.45</td>
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<td>2012</td>
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<td>2,439,078,421.81</td>
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<td>2013</td>
<td>1,975,006,366.93</td>
<td>2,645,912,271.97</td>
<td>8,136,053,354.28</td>
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<tr>
<td>2014</td>
<td>2,215,281,283.88</td>
<td>2,870,285,632.64</td>
<td>9,551,588,233.12</td>
</tr>
<tr>
<td>2015</td>
<td>2,466,698,634.54</td>
<td>3,103,099,718.33</td>
<td>10,415,590,522.87</td>
</tr>
</tbody>
</table>

*Exchange rate: USD = Kenya Shillings 77.92. June 05, 2009 exchange rate was used (exchange rate source: Republic of Kenya, 2009).
References


