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**DISTRIBUTIONAL IMPACT OF PUBLIC EXPENDITURE ON BASIC
EDUCATION IN THE FREE STATE: A BENEFIT INCIDENCE ANALYSIS**

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ABSTRACT

Investing in education is one of the suggested ways the poor can escape from poverty, if properly targeted. This study investigates whether public spending on basic education in the Free State Province is pro-poor at primary and secondary levels of schooling. The study makes use of a Benefit Incidence Analysis (BIA) tool to assess the pro-poorness of public expenditure on basic education in the Free State. BIA is a tool that is used to ascertain the extent to which either the increased allocation or the existing allocation is reaching the poor. It brings together elements of the supply of and demand for public services and can provide valuable information on inefficiencies and inequities in government allocation of resources for social services and on the public utilisation of these services. The study found that public spending at the primary and secondary level is both progressive and targeted at the poor; more so for primary education. However, given the reclassification of the school quintile system it is found that the share of spending on the poorest 20% has declined as the reclassifying of quintile 3 schools as no-fee schools meant an increase on spending on such schools. In spite of the reclassification of national norms, the Free State as a province continues to spend more on the poorest (i.e. quintile 1) to redress the inherited inequalities manufactured by the discriminatory apartheid system. In terms of the new classifications, the provincial government spent 94.4% on the 'poor' (no-fee schools) in 2005, up from 82.3% in 2006, whilst the share of the 'rich' (fee-paying schools) decreased from 17.7% to 5.6% during the same period. Given the persistent inequalities in the province, the emphasis on shifting fiscal resources to benefit the poor remain critical. It is, therefore, recommended that Government should continue to expand the budget for primary and secondary schools because the poorest households are likely to benefit more than the richest.

Key words: Benefit Incidence Analysis, poverty, education

1. INTRODUCTION

Poverty, unemployment and growing inequality are South Africa's greatest challenges in undoing the legacy of Apartheid. Consequently, since the end of Apartheid, the government has progressively expanded its fiscal programmes to help address poverty and inequality, while maintaining sound fiscal management. In spite of all the gains that have been made, South Africa still remains one of the most unequal nations in the world. Inequality in the country is demonstrated through lack of access to natural resources; a two-tiered educational system; a dual health system; and other socio-economic dimensions (Triegaardt, 2006). This increasing inequality is an issue of concern to policy-makers and social scientists alike.

The Free State Province is not invulnerable to the problem of poverty, inequality and unemployment, together dubbed as the triple challenges. Evidence from Stats SA's Income and Expenditure Survey 2011 suggest that inequality remains unacceptably high in the Free State as is the case in the rest of the country. The poorest 10% of households lived on income of between R0 - R1200 a month. In contrast, the richest 10% of households lived on income of R30 000 - R200 000+ a month. The gap between people at the 10th percentile and the 90th percentile has actually increased since 1996. Using the *Gini coefficient*¹ to measure inequality indicates an increase in the level of inequality in the province, from 0.58 in 1996 to 0.61 in 2014. High levels of poverty go hand in hand with very deep inequalities. The proportion of the poor in the Free State, measured in terms of the *food poverty line*², has decreased significantly in recent years, but remains uncomfortably high at 22.3% in 2014.

The main cause of this poverty and inequality in the Free State is joblessness. The poorest households rely on social grants, because they cannot earn an income and households that do not qualify for a social grant are the poorest of all. Free State has the highest unemployment rate in the country, estimated at 33.9% in the first quarter of 2016. Since the advent of democracy, the unemployment rate in the Free State has remained stubbornly high at 27.2% on average. The result of this situation is high dependence on the government. Consequently, addressing inequalities in the distribution of income and improving the welfare of the poor is one of the most important goals of government policy.

One of the core challenges to poverty reduction is to ensure that investments effectively reach their intended population. The credibility and effectiveness of development efforts is undermined when resources fail to reach those most in need. To address this, programmes are increasingly being required to show their results, including whether poor communities and households actually benefit (Van Domelen, 2007). As many low-income countries attempt to make their budgets pro-poor by, among other things, increasing the share of social spending, they also strive to ensure that the poor receive an appropriate share of the increased allocation. Because the poor often have limited access to services that could enable them to escape from poverty, the government is expected to target the provision of these services to the poor. Benefit

¹ The Gini coefficient is a summary statistic of income inequality, which varies from 0 to 1. If the Gini Coefficient is equal to zero it means that incomes are distributed in a perfectly equal manner, indicating a low variance between high and low income earners in the population. If the Gini coefficient is equal to one, income is completely inequitable, with one individual in the population earning income, whilst everyone else earns nothing

² The food poverty line is defined by Stats SA as the level of consumption below which individuals are unable to purchase sufficient food to provide them with an adequate diet. Those below this line are either consuming insufficient calories for their nourishment, or must change their consumption patterns from those preferred by low income households

incidence analysis (BIA) is a tool that is used to ascertain the extent to which either the increased allocation or the existing allocation is reaching the poor. It brings together elements of the supply of and demand for public services and can provide valuable information on inefficiencies and inequities in government allocation of resources for social services and on the public utilisation of these services (Davoodi HR, Tiongson, ER and Asawanuchit, SS, 2003). Ultimately, this benefit incidence analysis addresses the extent to which spending is pro-poor and progressive; that is, it primarily benefits the poor and does so at an increasing rate as welfare levels decrease.

This paper, thus, aims to assess the distributional impact of public spending on education by applying a benefit incidence analysis. **The main objective of this study is to assess the pro-poorness of public expenditure on basic education in the Free State.** In doing so the study will assess the progressivity and targeting of public spending on basic education.

The study chose to focus specifically on education for the following four reasons: (1) Education is undoubtedly one of the most important services that the poor need to escape from poverty, and therefore vital for poverty alleviation, (2) education spending is considered to be subject to high level of external benefits, and so a strong case can be made for the continued or increased involvement of government in funding it, (3) in general, government usually allocate a significant proportion of their budgets to education, and lastly (4) data requirement for benefit incidence analysis are relatively easier to meet for education.

The remainder of the paper is organized as follows. *Section 2* discusses literature on the subject matter and briefly outlines the key findings of some of the recent studies on BIA. *Section 3* describes the basic data requirements and the methodology of BIA. *Section 4* is dedicated to empirical findings by documenting the spending trends and the observed incidence of spending on education in the Free State. *Section 5* summarizes the limitations of the study. Finally, *section 6* provides conclusions and policy implications.

2. LITERATURE REVIEW

Education can bring significant benefits to society, not only through higher employment opportunities and income but also via enhanced skills, improved social status and access to networks. Therefore, by fully recognising the power of education, policy makers could better address diverse societal challenges.

Income is one way in which education helps individuals improve their social outcomes. Evidence generally supports the income effects of education on social outcomes. However, education's effects on social outcomes generally remain after accounting for income. Hence, education may help individuals to develop skills, improve their social status and gain access to networks that could lead to enhanced social outcomes, independently from the effect of education on income. Emerging research suggests the significant role cognitive, social and emotional skills play in explaining the effects of education on economic and social outcomes (OECD, 2013). Education can, therefore, benefit individuals and societies in a variety of ways. According to UNESCO (2011), education can reduce poverty; if all students in low-income countries left school with basic reading skills, 171 million people could be lifted out of poverty. This is equal to a 12% cut in global poverty. Collier and Sambanis (2005) purport that education can foster peace. If the enrollment rate for secondary schooling is 10 percentage points higher than the average, the risk of war is reduced by about 3 percentage points. Education can also combat HIV and AIDS (Vandemoortele and Delamonica, 2000). Women with post-primary

education are five times more likely than illiterate women to be educated on the topic of HIV and AIDS. The most obvious benefit of education is its potential to increase income. One extra year of schooling increases an individual's earnings by up to 10% (UNESCO, 2011). Education also promotes gender equity, this according to the Guaqueta et al (2010). One additional school year can increase a woman's earnings by 10% to 20%. UNESCO (2013) states that education reduces maternal deaths by estimating that if all mothers completed primary education, maternal deaths would be reduced by two-thirds, saving 189,000 lives. UNESCO (2011) also reported that children of educated mothers are more likely to be vaccinated and less likely to be stunted because of malnourishment, thus making people healthier. A widely supported view is that education boosts economic growth. Each additional year of schooling raises average annual gross domestic product (GDP) growth by 0.37% (UNESCO, 2011). The report by UNESCO (2011) also found that in sub-Saharan Africa, approximately 1.8 million children's lives could be saved if their mothers had at least secondary education, therefore education saves children's lives. According to the Global Partnership for Education (2017), if the enrollment rate for secondary schooling is 10 percentage points higher than the average, the risk of war is reduced by about 3 percentage points, making education peace fostering. Lastly education can reduce fertility rates. One additional year of school reduces the probability of becoming a mother by 7.3 % for women who have completed at least primary education (Ferre, 2009).

It is evident that education has the potential to bring significant benefits to individuals and society, which go well beyond its contribution to individuals' employability or income. Skills are important channels through which the power of education is manifested in a variety of social settings. Policy makers should take into account the wider social benefits of education when allocating resources across public policies.

The remainder of this section of the paper explores literature on the benefit incidence of government spending. Here, emphasis is mainly on the benefit incidence of spending of the social sectors (health and education). A few good examples are selected from each sector to illustrate the outcomes of estimating the incidence of public spending. The nature and design of benefit incidence analysis will be discussed in detail in section 4 dealing with data and methodology.

Governments in developing countries have a tendency to distribute resources through in-kind transfers, which primarily consist of the delivery of social services such as education, health care and social development. Although other categories of government spending are also important for individual welfare, social services are normally regarded as being the most important for enhancing the long-run earning potential of the population, particularly the poor (IMF, 2003). Government spending affects the economic position of individuals and families through two main channels: (1) changes in earnings and (2) changes in gross income. When government alters the level or mix of its expenditures, relative factor income and the relative prices of goods and services produced in the private sector are affected. Government expenditures also affect the well-being of individuals and families through direct cash transfers and the benefits generated by the public provision of goods and services (Shah, 2005). Given the size of social spending in the budgets of many developing countries and the desire to enhance the quality of fiscal adjustment while pursuing macro-economic stability, policy-makers are striving to increase the effectiveness of expenditure policy, particularly social spending, and of the expenditure management system, including the ability to track all pro-poor spending.

There is a large amount of literature on the benefit incidence of government spending. Various studies apply BIA in many countries to assess the pro-poorness of public expenditure on the social sectors such as education and health. Since the early years, BIA has been improved several times and widely used to assess the distributional benefits of public spending. The earliest examples of analysis of the incidence of social spending are studies by Gillespie on Canada (1964) and the United States (1965), respectively (IMF, 2003). Various studies apply BIA in many countries to assess the pro-poorness of public expenditure on sectors such as education (Hammer, Nabi and Cercone, 1995; Selden and Wasylenko, 1995; van de Walle, 1998; Demery, 1997; Castro-Lead et al. 1999; Lanjouw and Ravallion, 1999; Ajwad and Wodon, 2002, 2007; Davoodi, Tiongson and Asawanuchit, 2003; Manasan, Cuenca, and Villanueva, 2007; Guloba, Magidu and Wokadala, 2010; Alabiet al. 2011; Asghar and Zahra, 2012; Cuesta, Kabaso and Suarez-Becerra, 2012), and health (Hammer et al. 1995; Demery, 1997; Castro-Lead et al. 1999; Mahal et al., 2001; Davoodi, Tiongson and Asawanuchit, 2003; Manasan and Cuenca, 2010; Kruse et al. 2012; Alabiet al. 2011; Cuesta, Kabaso and Suarez-Becerra, 2012; Chakraborty et al. 2013; Chakraborty, Singh and Jacob, 2013). Some of the findings of these completed research on BIA are discussed in brief below.

In a study commissioned by the South African National Treasury, Van der Berg (2005) investigated the benefit incidence of social spending in South Africa between 2000 and 2006. He concluded that fiscal redistribution intensified in the period after 2000 and that the expansion of spending on social grants in particular had contributed to a highly redistributive fiscal stance by 2006. Yet, despite this, much inequality remains. The reason for this, he states, is the massive degree of inequality in pre-transfer income.

Chakraborty, Singh and Jacob (2013) made use of the benefit incidence methodology to define the effectiveness of spending at the sub-national government level in India's health sector. The results revealed that the public health system is "seemingly" more equitable in a few states, while regressivity in the pattern of public health-care utilization is observed in others.

Hammer, Nabi and Cercone (1995) having established the benefit incidence of health spending in Malaysia, go on to show that spending is critical of health outcomes and that it makes the targeting of such spending to the poor all the more important.

Manasan and Cuenca (2010) found that the analysis of benefit incidence in the Philippines indicates that government spending on public health is generally progressive, while government spending on hospital services is generally regressive. In this light, there is ground to give greater priority to public health (relative to hospital services) in the allocation of government spending on the health sector.

In the context of India, a major study on the BIA in the health sector was carried out by Mahal et al (2001). A broad finding by Mahal et al. (2001) was that the publicly financed health services in India continue to represent the best method for providing critical services for the poor, and that some subnational governments in India are able to ensure that public financing is not skewed to the rich.

A study by Alabi (2010) shows that spending on social utilities in Nigeria is not pro-poor. The social selectivity is more pronounced in spending on infrastructure than on spending on education and health.

A benefit incidence analysis of public spending on education in Pakistan found that public spending at the primary and secondary level is progressive, while higher education spending is regressive. These results hold at the national and provincial level. Based on these findings, the study recommended that the government should increase its spending on primary, secondary, and technical education (Asghar and Zahra, 2012).

A paper by Cuesta, Kabaso and Suarez-Becerra (2012) analyzes the distributional effect of public spending in Zambia. The results indicate that overall public education spending in Zambia is neither pro-poor nor progressive, but while this is true for the system as a whole it is not true for all of its parts. The net unitary benefits of primary and secondary education are clearly both pro-poor and progressive. However, their progressivity is ultimately outweighed by the extreme concentration of tertiary education benefits among the wealthiest members of Zambian society.

Using BIA, the World Bank (1999) found that education spending in Cambodia is pro-rich; the richest group received up to 29% of the total spending. By disaggregating the educational system into three levels, it noted that public spending on education was pro-poor at primary level, but pro-rich at lower and upper secondary levels.

According to Demery (2009), benefit incidence data on education in Ivory Coast for 1995 shows that the poorest quintile gained under 14% of total education subsidy, in contrast with 35% going to the richest quintile. There was also a greater gender enrollment bias among the poorest households in Ivory Coast. Men in the poorest quintile gained 16% of the education subsidy accruing to them, but women only received 9% of theirs. The richest women appropriated 37% of the education subsidy received by women. The gender inequality is therefore a critical part of overall inequality in the benefit incidence of education spending in Ivory Coast.

In a study on BIA on education in the Philippines by Manasan, Cuenca, and Villanueva (2007), the results indicated that the distribution of education spending is progressive at the elementary and secondary level, using national averages. On the contrary, it is regressive for the intermediate and college-level. Extending the analysis to the local government units demonstrates that the urban areas usually attract higher subsidies compared to the rural areas.

In Côte d'Ivoire (as well as in Guinea, Madagascar, South Africa, Tanzania, and Uganda), the poorest 20% gain about 20% of the primary education subsidy, about 10% of the secondary education subsidy, and a minimal percent of the tertiary level subsidy (Castro-Leal et al. 1999). In their estimation of benefit incidence in a set of African countries, they obtained that the government subsidies in education and health-care are generally progressive, but are poorly targeted to the poor and favor those who are better off.

A study in Ghana by Adamtey (2009) concluded that spending on social services is still not well targeted. The poor benefit more from basic services; primary education, rural water, health center spending etc. compared to secondary and tertiary services.

Most recently, Lun and Roth (2014) measured inequality in accessing basic healthcare (vaccination, antenatal care and delivery in public hospitals), education (primary, lower secondary and upper secondary) and infrastructure services (electricity, safe water and sanitation) making use of BIA. They noted that access to primary school and healthcare is high and inequality of access low. In contrast, access to secondary school and infrastructure was low while the inequality of access was high. They highlighted that policies targeting both coverage

and distribution should be designed, but the priority should be the former given the extent of the problem.

According to Pearson (2002), a recent review of benefit incidence studies carried out between 1978 and 1995 found that public health expenditures were well targeted in 21 of the 38 studies and were progressive in all 30 of the studies for which data was available. Well targeted refers to the fact that the poorest 20% received more public subsidies than the richest 20%. A system is considered progressive if the poorest 20% receive more than the richest 20% relative to their income or expenditure.

In general government expenditures are more equally distributed when spending is concentrated on services which are used widely by the poor and the general public. Spending on primary health care services which is widely used by the poor and non-poor is likely to be more equally distributed than in-patient hospital care. If spending is on high-cost services, which are not generally used by poorer groups, like in-patient hospital care, then the incidence of spending is likely to be more unequal. Improving the poverty and gender equity impact of public expenditures requires reallocation both between and within sectors, as well as improvements in the efficiency of expenditures. In some cases the priority is reallocating within sectors in favor of basic education, primary health care, etc. in others it is channeling greater resources to sectors such as education and health (Esim, 2000).

The following general trends were observed in the literature on BIA:

1. Countries with better access to information and communication tend to have better pro-poor education and health spending.
2. Countries with a more pro-poor benefit incidence tend to have better education and health outcomes and wider access to healthcare.
3. The incidence of education and health spending tends to be more pro-poor in richer countries than in poorer countries.
4. The incidence of education and health spending were more pro-poor with improvement in governance.
5. Countries with higher (income or consumption) inequality tend to display a more pro-poor incidence of education and health spending.
6. Countries with a large urban population tend to have a more pro-poor incidence of education and health spending.

The vast literature consulted demonstrate the usefulness and applicability of BIA across various countries and regions, mainly on social sectors such as Education and Health. BIA has, therefore, become an important measuring tool as governments try to reduce poverty and inequality by targeting the most vulnerable in their spending. However, this does not begin to say it is a perfect tool with no limitation as will be demonstrated in the coming sections, but is simply one of the tools that can be used to assess the pro-poorness of government spending.

3. DATA AND METHODOLOGY

This section of the paper reviews the methodology of benefit incidence. It clarifies some relevant concepts such as the targeting and progressivity of social spending, establishes the relationship between these concepts and BIA, and describes some common pitfalls in the use of BIA and limitations of BIA.

3.1. Overview of Benefit Incidence Analysis (BIA)

Benefit incidence analysis (BIA) can be defined as a tool that is used to assess how tax policy or government subsidy affects the distribution of welfare in the population. In other words, it evaluates the distribution of government subsidies among different groups in the population, in particular, among different income groups (Cuenca, 2008).

The “benefit incidence” approach also known as the classic or the non-behavioral approach, was pioneered by two World Bank studies by Selowsky (1979) for Colombia and Meerman (1979) for Malaysia. The main goal of benefit incidence analysis is to identify who benefits from public spending and by how much. Benefit incidence, therefore, tells us who is benefiting from public services, and describes the welfare impact on different groups of people or individual households of government spending. It does this by combining information about the unit costs of providing those services (obtained usually from government or service-provider data) with information on the use of these services (usually obtained from the households themselves through a sample survey).

Formally, benefit incidence measures by how much the income of a household would have to be raised if the household had to pay for the subsidized public service at full cost. The essence of the approach is to use information on the cost of publicly provided goods and services together with information on their use by different income groups to arrive at estimates of the distribution of benefits. Individual beneficiaries are characteristically grouped by income level but they can also be grouped by geographical area, ethnic group, urban and rural location, gender and so on (Moreno-Dodson and Wooden, 2008).

In general, the following five steps are involved in conducting a benefit incidence analysis (Kundu, n.a):

1. Obtain the average unit cost of providing a public service by dividing government spending on the service (net of any cost-recovery fees and out-of-pocket expenses by the Users) by the total number of users of the service.
2. Define the average benefit from government spending on a service as the average unit cost of providing the service, which is derived from the previous step.

This assumption “attributes” or “imputes” benefits from government in-kind transfers to individuals’ welfare as measured by their income or consumption. This is a strong assumption; the alternative is the more complicated task of estimating a demand curve for a public service and deriving benefits from users’ willingness to pay as summarized in the demand curve.

3. Rank the population of users from poorest to richest using a welfare measure and aggregate them into groups with equal numbers of users.
4. Fourth, derive the distribution of benefits by multiplying the average benefit derived from the previous step by the number of users of the service in each income or consumption group.

The first four steps can now be illustrated by some simple algebra as applied to the case of education spending. Total benefits from government spending on “all” education (i.e., the combined primary, secondary and tertiary spending) accrued to group j is estimated as

$$X_j = \sum_{i=1}^3 E_{ij} \frac{S_i}{E_i} = \sum_{i=1}^3 \frac{E_{ij}}{E_i} S_i \quad \text{where } j=1,2,3,4,5.$$

Where X_j is the benefit incidence in local currency accrued to income or consumption group j from (net) government spending on level i (primary, secondary, or tertiary education) denoted as S_i , also measured in local currency; E_{ij} represents number of students enrolled in level i from group j where each group is a quintile; and S_i/E_i is the unit cost of providing education at level i . Groups are typically ordered from lowest to highest with respect to the Classifying variable. If desired, the groups in the middle of the distribution can be aggregated to define a “middle class”.

By dividing both sides of expression (1) by total (net) government education spending, S , one obtains the share of benefits accrued to quintile j from total government spending on education:

$$x_j = \sum_{i=1}^3 \left(\frac{E_{ij}}{E_i} \right) \times \left(\frac{S_i}{S} \right) = \sum_{i=1}^3 e_{ij} s_i, \quad \text{where } j=1,2,3,4,5$$

Where,

$x_j = X_j/S$; e_{ij} is the quintile j share of total students enrolled at primary, secondary and tertiary level; s_i is the share of government spending for a given level i in total education spending and $S = \sum_{i=1}^3 s_i$

5. Compare the resulting distribution of benefits with a number of benchmark distributions.

3.2. Targeting and progressivity

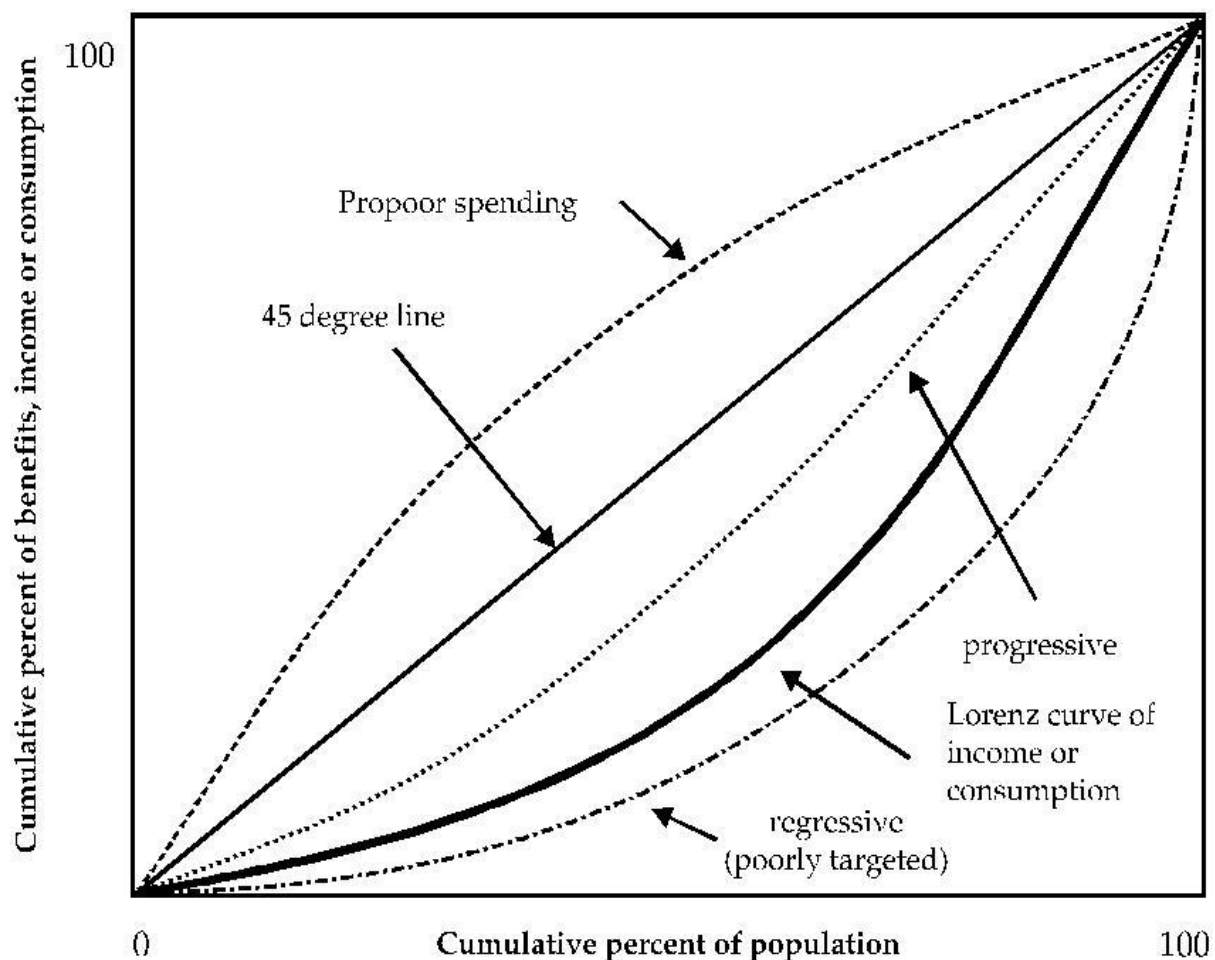
BIA is better understood in relation to the concepts of targeting and progressivity of social spending. There is mounting recognition of targeting, an instrument to concentrate the benefits of public spending to the poorest segments of the population, thereby reducing or keeping constant the amount spent on merit goods. Targeting is, therefore, described as a tool used to select eligible beneficiaries of any government intervention. In principle, it should concentrate the benefits of social assistance programs to the poorest segments of the population. All targeting mechanisms share a common objective: to correctly identify which households or individuals are poor and which are not. Targeting is a means of increasing the efficiency of the programme by increasing the benefits that the poor can get with a fixed programme budget (Coady, Grosh and Hoddinott 2004). Conversely, it is a means that will allow the government to reduce the budget requirement of the program while still delivering the same level of benefits to the poor.

A concentration curve or benefit concentration curve is one way of graphically representing the distribution of benefits to evaluate the targeting of government subsidies. The benefits from government spending on a service are said to be pro-poor if the concentration curve for these

benefits is above the 45-degree line (see figure 1). The Lorenz curve is a graphical interpretation of the cumulative distribution of income on the y-axis against the cumulative distribution of population on the x-axis (Asghar and Zahra, 2012).

On the other hand, the distribution of benefits is said to be progressive if the lower income groups receive a larger share of the benefits from government spending than the richer income groups. Whether public spending is progressive or regressive is evaluated by comparing the benefit concentration curve with the 45-degree diagonal and the Lorenz curve of income/consumption. Benefits are said to be progressive if the concentration curve for these benefits is above the Lorenz curve for income or consumption, but below the 45-degree line (see figure 1 below). For instance, if the concentration curve lies above the diagonal, then the poorest 10% of the population receives a share of benefits greater than their income/consumption share, and the distribution of benefits is said to be progressive in absolute terms (Asghar and Zahra, 2012).

Figure 1: Lorenz and concentration curves

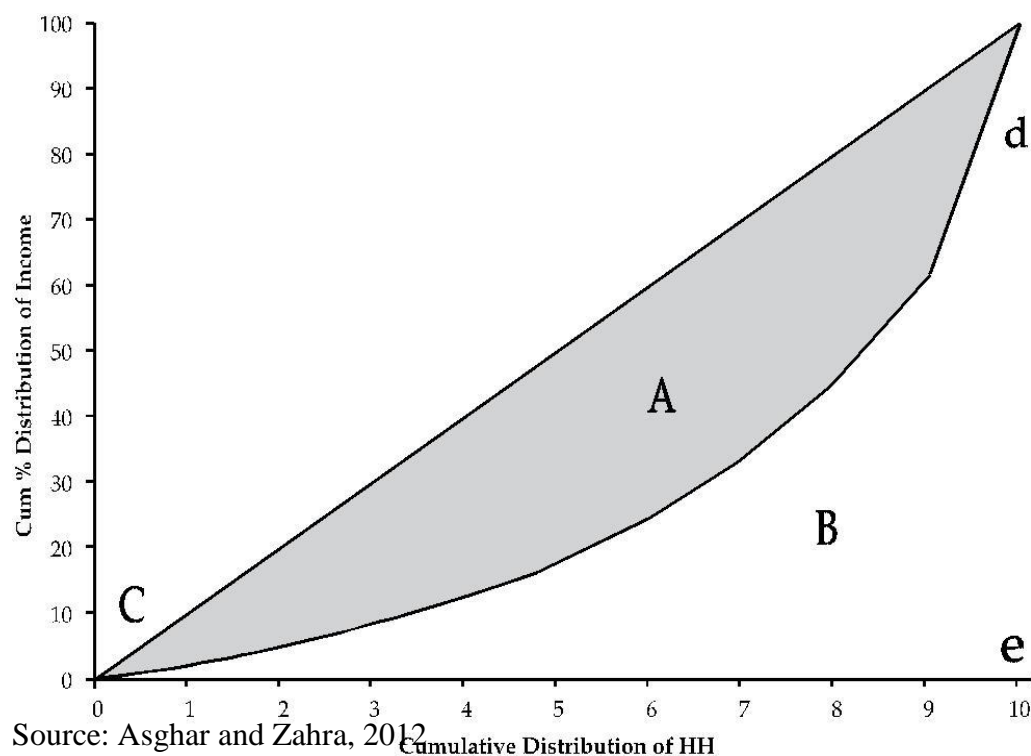


Source: Asghar and Zahra, 2012

The concentration coefficient is a summary measure of benefit incidence, and is based on the concentration curve. It is the ratio of the bounded by the diagonal and the concentration curve to the total area below the diagonal (see figure 2). If the distribution of benefits is progressive in absolute terms, the concentration index is negative. Conversely, if the distribution of benefits is regressive in absolute terms, then the concentration index is positive (Asghar and Zahra, 2012).

If the concentration curve lies above the diagonal, then the poorest 10% of the population receives more than 10% of the benefits, and the distribution of benefits is said to be pro-poor.

Figure 2: Gini measure of inequality



3.3. Limitations of BIA

Despite several refinements to the original methodology and its appealing simplicity over the decades, BIA has a number of limitations (van de Walle 1998; Mckay 2002; IMF 2003; World Bank, 2008), for instance:

1. The nature of benefit incidence, requiring information on unit costs in the provision of public services to individuals and the rate of use of those services by different individuals, makes it un-applicable to many, economically important, public expenditures which have no private beneficiaries.
2. It is a static method that examines the distributional benefit at a specific time.
3. It typically does not take into account other government costs such as administrative costs
4. It is based on monetary measures of welfare, which capture only one dimension; in some cases, e.g. the evaluation of food subsidy projects, non-monetary measures such as nutritional outcomes will be of greater interest than monetary indicators.
5. It simply assumes that the cost of the service is its benefit, and it does not take the quality of the service into account.
6. It does not explain why some households do not use the service.

Notwithstanding these limitations, empirical evidence from BIA can at least inform policy-makers about the current incidence of public spending, that is, the extent to which different segments of the population benefit, or the changes in incidence due to the expansion or

contraction of public spending over time. This kind of information would definitely help the formulation of policy that is more pro-poor.

3.4. Data description

Three kinds of information are needed for the calculation of the incidence of government spending on the service it provides, such as education or health care. These are:

1. Government spending on a service;
2. Public utilization of the service; and
3. The socio-economic characteristics of the population using the service.

Government spending data on Education is obtained from the National Treasury and the Free State Department of Education. Spending on education is based on government's school quintile system as outline in the National Norms and Standards for School Funding. The school allocation is an amount of money that Government gives to each public ordinary school every year. The school allocation must be used by schools for things other than new buildings and other than the payment of salaries. The school allocation must be used to buy things such as textbooks, stationery and desks and to pay for things such as photocopying, electricity and telephone calls (these are just examples).

Government works out the amount of the school allocation on the basis of how many learners there are in a school, but also on the basis of how poor school communities are. Government believes that poorer school communities should receive higher school allocations, so that there is less pressure in poor schools to charge school fees, and because poorer parents are less able to purchase things like books that assist children to learn (Department of Education, 2004).

South Africa's schools are divided into five categories or "quintiles", according to their poverty ranking. The poorest schools are included in quintile 1 and the least poor in quintile 5. There are two steps in the classification of schools. First, a national poverty table, prepared by the Treasury, determines the poverty ranking of areas based on data from the national census including income levels, dependency ratios and literacy rates in the area. Provinces then rank schools from quintile 1 to 5, according to the catchment area of the school. Each national quintile contains 20% of all learners, with quintile 1 representing the poorest 20% and quintile 5 the wealthiest 20%. However, provincial inequalities mean that these quintiles are unevenly distributed across provinces. According to the 2003 Plan of Action, the rationale for national ranking (according to the previous provincial ranking) is to ensure that "equally poor learners across the country will be subject to the same pro-poor targeting"(Hall and Giese, 2009). The quintile ranking determines the amount of money that a school receives. The poorest schools receive the greatest per-learner allocation, based on the assumption that schools in wealthier communities are better able to raise funds and require less support from government. The policy requires that 60% of the available resources must be distributed to the poorest 40% of learners (i.e. quintiles 1 and 2).

The second and third kinds of information identified above, *public utilization of the service* and *the socio-economic characteristics of the population using the service*, were obtained from the provincial Department of Education. We therefore, used the school quintiles as proxy for the socio-economic status of the learners. Without knowledge of these two indicators, BIA cannot usefully distinguish the poor from the non-poor. Since BIA concentrates on different rates of

usage of public services, it has an advantage of allowing focus on the important issue of how effectively public expenditure programmes target the poor and most vulnerable.

4. EMPIRICAL RESULTS: EXPLORATORY ANALYSIS OF THE INCIDENCE OF EDUCATION SPENDING.

Education is without a doubt one of the most essential means of economic development, and there is consensus among policy-makers that it is better to be educated than not. Thus, education is one of the most important factors of human capital development, and plays a key role in helping individuals acquire useful skills, which in turn, help improve a country's socio-economic wellbeing. The debate on education is not, therefore, whether it is good or bad, rather it centers on whether the state should intervene in its provision. Public provision of education at the school level is generally considered one of the most important investments for creating social opportunities to help the wider population actively participate in various economic activities.

In South Africa, schooling is compulsory for all children aged seven to fifteen. The vast majority (96.7%) of school-goers in the Free State Province attend public schools. The fiscus provides all public schools with a grant to finance their operational costs and teacher salaries. Schools in poorer neighborhoods are designated 'no fee' schools which receive a slightly higher state subsidy to compensate for the absence of school fees. In terms of section 39(7) of the South African Schools Act, all learners in quintiles 1 to 3 are classified as "no fee" schools for 2015. In 2015, 87.8% of learners in the Free State attended no-fee schools, up by 2.9 percentage points from 84.9% in 2006 (Free State Department of Education, 2016).

4.1. Expenditure trends on education in the Free State Province

To maintain healthy economic growth while bridging South Africa's economic divide, public expenditure focuses on developing people through the social services of education, health and social development. However, provinces' responsibilities also include a range of non-social services including provincial roads and transport, public works, human settlements and local government, agriculture, economic development and sport. These functions account for about 25% of total provincial expenditure and play an important role in economic growth and job creation (National Treasury, 2015). For the purpose of this paper, the focus will be exclusively on public expenditure trends on education.

Table 2 below depicts total provincial spending and spending on education by each province. In the 2006/07 financial year KwaZulu-Natal had the highest provincial expenditure at R36.88 billion, followed by Gauteng (R34.70 billion) and Eastern Cape (R26.88 billion), whilst the provinces with the lowest expenditure were Northern Cape (R4.56 billion), Free State (R4.29 billion) and Mpumalanga (R2.70 billion). Similar expenditure trends are observed in 2015/16 with the only exception being the replacement of Mpumalanga in the bottom three with North West.

Education has historically been given top priority in provincial budgets, although there has been a slight decline in the share of education spending in recent years. The provincial average education expenditure as percentage of total expenditure declined from 42.6% in 2006/07 to 40.1% in 2015/16; representing a decline of 2.5 percentage points, due to increased pressure on budgets overall, requiring governments to prioritise between education and other key public sectors, such as health, unemployment and social policy. In 2006/07, the highest education

spending as a percentage of total provincial spending was in Mpumalanga (49.4%) followed by Eastern Cape (47.9%) and Limpopo (47.6%). Free State's expenditure on education as a share of total provincial expenditure was 43.5% in 2006/07; ranking fourth lowest compared to other provinces.

The latest expenditure trends (i.e. 2015/16) indicates a decline in the share of education in all but one province in the country. Gauteng is the only province that increased its relative percentage share of spending on education. Free State's education share decreased by 3.1 percentage points; from 43.5% in 2006/07 to 40.4% in 2015/16.

Globally, the aftermath of the 2008 financial crisis has meant a significant number of countries have cut public spending on education. Despite GDP rising in most OECD countries between 2009 and 2010, public expenditure on educational institutions fell in one-third of them. Teachers' salaries were either frozen or cut between 2009 and 2011 in twelve out of the twenty-five OECD countries with data available. This may discourage the highest-performing students from joining the teaching profession. Demand for education and training is increasing even as austerity continues to put pressure on the resources allocated to education. Educational institutions will have to do more with less in the coming years (OECD, 2013).

Table 2: Expenditure by province and education sector

	2006/07 (audited)			2015/16 (revised estimates)		
	Total Expenditure	Education expenditure	Education expenditure as % of total expenditure	Total Expenditure	Education expenditure	Education expenditure as % of total expenditure
Eastern Cape	R 26 886 407.00	R 12 872 743.00	47.9%	R 65 874 281.00	R 29 259 707.00	44.4%
Free State	R 12 298 392.00	R 5 345 739.00	43.5%	R 30 759 567.00	R 12 433 874.00	40.4%
Gauteng	R 34 703 742.00	R 11 622 696.00	33.5%	R 97 836 570.00	R 36 457 543.00	37.3%
KwaZulu-Natal	R 36 881 397.00	R 16 218 726.00	44.0%	R 104 990 947.00	R 43 162 870.00	41.1%
Limpopo	R 23 873 606.00	R 11 365 966.00	47.6%	R 54 040 568.00	R 25 284 705.00	46.8%
Mpumalanga	R 12 704 912.00	R 6 272 885.00	49.4%	R 39 727 370.00	R 17 173 325.00	43.2%
Northern Cape	R 4 566 661.00	R 1 642 659.00	36.0%	R 14 666 330.00	R 5 126 865.00	35.0%
North West	R 15 023 672.00	R 6 685 648.00	44.5%	R 35 354 676.00	R 13 691 860.00	38.7%
Western Cape	R 18 848 794.00	R 6 920 362.00	36.7%	R 52 084 311.00	R 17 849 369.00	34.3%

Source: National Treasury, Provincial Budgets, 2008/09 and 2016/17

4.2. School allocations

The school allocation is an amount of money that Government gives to each public ordinary school every year. The school allocation must be used by schools for things other than new buildings and other than the payment of salaries. The school allocation must be used to buy things such as textbooks, stationery and desks and to pay for things such as photocopying, electricity and telephone calls (these are just examples). Schools will not be able to afford to buy all these things each year. However, the plan of Government is to make sure that at least the very poorest schools receive enough money in the school allocation to make quality schooling possible without school fees. In general, the school allocations are intended to cover non-personnel recurrent items and small capital items required by the school, as well as minor repairs and maintenance of the physical infrastructure of the school. Moreover, the school

allocations are primarily and exclusively intended for the promotion of quality education in public ordinary schools (NNSSF, 2004).

Government works out the amount of the school allocation on the basis of how many learners there are in a school, but also on the basis of how poor school communities are. Government believes that poorer school communities should receive higher school allocations, so that there is less pressure in poor schools to charge school fees, and because poorer parents are less able to purchase things like books that assist children to learn.

Prior to 2014 the National Norms and Standards for School Funding (NNSSF) required the allocation of funds to schools according to their poverty score. The poverty score of each school assigned it to a quintile mark (quintile 1 to quintile 5) which based on predetermined formula, governed the amount of funding the school received. The poverty score of a school, or quintile mark, was based on the level of poverty of the community in which it was located. This score was calculated using national census data; weighted household data on income dependency ratio (or unemployment rate) and the level of education of the community. Each Provincial Education Department was required to produce a 'resource targeting list' of all schools in its province, sorted on the conditions at the school and the poverty of the community served by the school so as to produce five groups of the schools. These correspond to the school quintiles from the poorest (Q1) to the least poor (Q5).

The changes in the NNSSF policy prescribed that for 2015 schools be ranked into quintiles where quintile 1, 2 and 3 are declared no-fee schools and are provided with substantial funding, and quintile 4 and 5 schools are affluent schools where state funding has been significantly reduced. Formerly, public schools were divided into five categories or quintiles. Poor schools had a low quintile ranking, while better-resourced schools had a higher ranking. Schools with the lowest quintile rankings received more funding and higher-ranked schools received less. With the new system, all schools that fell under quintiles 1 to 3 have become no-fee schools. Currently, 60% of all pupils in public schools in the country are in no-fee schools.

Government's targets for the school allocation for 2006 and 2015 are given in the below table. Each amount is what one learner in the school should receive. As an example the target for quintile 1 (or Q1) was R703 for the year 2006 and R1,116 for 2015. Prior to the reclassification of schools, Quintile 1 was the group of schools in each province catering for the poorest 20% of learners. Quintile 2 schools catered for the next poorest 20% of schools and so on. Quintile 5 schools were those schools that cater for the least poor 20% of learners. Poorer quintiles had higher targets than the less poor quintiles. However, since 2014 quintile 1 to 3 we classified as no-fee schools with the same base allocation and quintiles 4 and 5 were classified as fee-paying schools receiving the least support from government. The NNSSF policy aims to improve the quality of education by not only redistributing resources, but also by redistributing the conditions of learning so as to increase the possibility of attaining cognitive equity amongst all learners in South Africa.

Table 3: National table of targets for the school allocation

	2006	2015
Q1	R 703	R 1 116
Q2	R 645	R 1 116
Q3	R 527	R 1 116
Q4	R 352	R 559
Q5	R 117	R 193

Source: NNSSF, 2004 and 2014

Table 4 below illustrates the actual government spending in education per pupil for the years 2006 and 2015. In 2006, government's allocations to schools amounted to R327.2 million; with 67.3% spent on primary schools and 32.7% on secondary schools. About 48.2% of the allocation to schools went to Q1 schools, quintile 2 received 20.7% and quintile 3 received 13.5%, summing the expenditure on 'no fee' school at 82.3%. Q4 and Q5 schools received 11.4% and 6.2% respectively.

In 2015, government allocations to schools amounted to R617.3 million. A staggering 94.4% of this R617.3 million was spent on 'no fee' schools. A further breakdown shows 35.7% of the spending going to Q1 schools, 26.7% to Q2 and 32.05% to Q3. Again, Q4 and Q5 schools received the least allocations at 2.9% and 2.7% respectively, as per the objectives of the national norms and standards for school funding.

Comparing the two years (i.e. 2006 and 2015) shows an increase of 88.6% on this expenditure; primary schooling expenditure increased by 86.9%, whilst secondary schooling increased by 92.3%. It is also worth noting that the share of Q1 schools has decreased significantly from 48.2% to 35.7% in this period as a result of the decline in the share of Q1 schools from 67.3% to 53.4%. Spending on 'no fee' schools has increased from 82.3% share to 94.4% share as the share of 'no fee' schools increased by 2.9 percentage points; from 84.9% in 2006 to 87.8% in 2015.

Per learner allocation for primary schools has increased across all quintiles but more so for Q3, followed by Q2 and Q1 respectively. Allocation per learner for Q3 has increased substantially to a point where it is equal to allocations for Q2 learners and only marginally lower than Q1 learners, due to the reclassification of Q3 schools as no-fee schools. Clearly, the provincial government has invested significantly in the poorer schools, and the proportion of investment in these school continue to increase in efforts to eliminate the prevalent inequalities in basic education. However, allocations to the poorest school, classified as Q1, has increased at a significantly slower rate of 62% compared to Q2 and Q3 that increased by 116% and 169% respectively. The implication of this is that, although Q1 still received the highest allocation relative to other quintiles, its share has declined from 49% in 2005 to 37% in 2015; a fall of 12 percentage points. This consequently makes spending on primary education less pro-poor when comparing 2006 to 2015, in a sense that the share of the poorest population (Q1) has decreased.

An analyses on spending on secondary education reflect the same trends observed in primary education. Allocations to Q1 per learner increased by R433 (or 62%), whereas allocations to Q2 and Q3 increased by R600 (or 116%) and R701 (or 116%) respectively. It's also interesting to note that per allocations to Q4 increased at a faster rate that allocations to Q1, which is contrary to the pro-poor objectives. It is, therefore, safe to conclude that, as was the case for primary education, the share of spending in Q1 has declined over the review period (from 46%

to 33%), making it less progressive as the poorest are receiving a smaller share of the total spending.

Table 4: Direct Public Investment in Education per Pupil

School level	Quintiles	2006			2015			Growth	
		Number of learners	Schools Allocation	Allocation per learner	Number of learners	Schools Allocation	Allocation per learner	Rands	%
Primary	Q1	154382	R 108 530 546	R 703	134283	R 152 590 054	R 1 136	R 433	62%
	Q2	91831	R 47 384 796	R 516	99873	R 111 482 054	R 1 116	R 600	116%
	Q3	69629	R 28 896 035	R 415	116122	R 129 592 152	R 1 116	R 701	169%
	Q4	75526	R 24 923 580	R 330	18818	R 10 574 118	R 562	R 232	70%
	Q5	44014	R 10 563 360	R 240	30191	R 7 445 757	R 247	R 7	3%
Primary Total		435382	R 220 298 317	R 506	399287	R 411 684 135	R 1 031	R 525	104%
Secondary	Q1	69962	R 49 183 286	R 703	60842	R 67 899 672	R 1 116	R 413	59%
	Q2	39401	R 20 330 916	R 516	47852	R 53 402 832	R 1 116	R 600	116%
	Q3	36472	R 15 135 880	R 415	60710	R 67 752 360	R 1 116	R 701	169%
	Q4	37896	R 12 505 680	R 330	13050	R 7 294 950	R 559	R 229	69%
	Q5	40757	R 9 781 680	R 240	33876	R 9 286 250	R 274	R 34	14%
Secondary Total		224488	R 106 937 442	R 476	216330	R 205 636 064	R 951	R 474	100%
Grand Total		659870	R 327 235 759	R 496	615617	R 617 320 199	R 1 003	R 507	102%

Source: Free State Department of Education, 2016

4.3. Incidence of spending on education

How progressive is social spending in the Free State? As we saw in the previous section, Free State has high and increasing spending on social programmes. But spending more does not mean that the poor always benefit from such programmes. Poorly targeted or designed social programs often result in the benefits leaking to higher-income groups. For the purpose of this study, we address the question of who benefits from Education spending in the Free State to assess the incidence of spending.

Table 5 below outlines the changes in the number of schools and learners by quintile level in the Free State over the period under review (i.e. 2006 – 2015). According to the data provided by the Free State Department of Education (2016), the total number of schools in the province decreased by 31.3% or 575 schools between 2006 and 2015, whilst the number of learners declined by 6.7% or 44 253 pupils. The decline in the number of schools in the province is solely due to the decrease in the number of primary schools, from 15 555 in 2006 to 963 in 2015 as the number of learners declined by 8.3% or 36 095 learners.

In 2015, about 87.8% of Free State’s schools were “no fee” school (quintile 1 to 3), accommodating about 84.4% of the students.

Table 5: Total enrolments in basic education by quintile level

Quintiles	2006		2015		% Change		
	Number of schools	Number of learners	Number of schools	Number of learners	Number of schools	Number of learners	
Primary School	Q1	1142	154382	580	134283	-49.2%	-13.0%
	Q2	123	91831	135	99873	9.8%	8.8%
	Q3	109	69629	165	116122	51.4%	66.8%
	Q4	104	75526	37	18818	-64.4%	-75.1%
	Q5	77	44014	46	30191	-40.3%	-31.4%
Primary Total		1555	435382	963	399287	-38.1%	-8.3%
Secondary School	Q1	95	69962	95	60842	0.0%	-13.0%
	Q2	51	39401	64	47852	25.5%	21.4%
	Q3	41	36472	71	60710	73.2%	66.5%
	Q4	44	37896	22	13050	-50.0%	-65.6%
	Q5	53	40757	49	33876	-7.5%	-16.9%
Secondary Total		284	224488	301	216330	6.0%	-3.6%
Grand Total		1839	659870	1264	615617	-31.3%	-6.7%

Source: Free State Department of Education, 2016

The unit subsidy in the education sector is arrived by dividing the total government expenditure by enrollment figures. According to table 6 below, primary schooling has a higher unit subsidy than secondary schooling for both 2006 and 2015. This means that government spends more money on primary schooling than on secondary schooling measures per unity subsidy.

Table 6: Per unit subsidy in the Education Sector

Education level	2006			2015		
	Enrolments	Actual government expenditure	Unit subsidy	Enrolments	Actual government expenditure	Unit subsidy
Primary Total	435382	220298317	505.988573	399287	411684135	1031.04818
Secondary Total	224488	106937442	476.361507	216330	205636064	950.56656
Grand Total	659870	327235759	495.909435	615617	617320199	1002.76665

Source: Free State Department of Education, 2016

Table 7 below provides the results from the benefit incidence analysis, with each of the quintiles representing 20% of the population. As shown in the table, the bulk of the government subsidy in 2015 went to primary education with a share of 66.7%, while secondary education receive only 33.3%. As expected the distribution of public spending for education as a whole is progressive, since the bottom quintile (poorest) received 35.7% of total spending while the top quintile (richest) obtained 2.7% of total spending. The same observations are evident for 2006, where the bottom quintile received 48.2% and the top quintile received 6.2% of total spending. Over the review period, spending has become even more progressive with the bottom three quintiles' (regarded as no fee schools) share increasing from 82.4% in 2006 to 94.4% in 2015; representing a 12.0 percentage points increase.

At primary level, public spending is aggressively progressive, essentially because students in the top quintile are more likely to attend private schools (and also households in that quintile tend to have fewer children in age of attending school). The share of the bottom quintile for

primary school has decreased to 37.1% in 2015, from a staggering 49.3% in 2006. However, what is encouraging is that share of ‘no school fees’ in total has increased by 11.8 percentage points; from 83.9% in 2006 to 95.7% in 2015. This, therefore, means that although the share of education spending on the poorest quintile (Q1) has decreased, the share of quintiles 1 to 3 as a collective has increased; with the biggest beneficiary being quintile 3 schools, whose share has increased from 13.1% in 2006 to 31.5% in 2015. Total primary subsidy accruing to the richest quintile has decreased from 4.8% in 2006 to 1.8% in 2015. These observations generally makes primary education expenditure progressive in nature.

At secondary school level, the share of the bottom quintile has decreased significantly from 46.0% in 2008 to 33.0% in 2015; a decline of 13.0 percentage points. The beneficiaries in terms of spending share over the review period are quintile 2 and 3 with increases of 7.0 and 18.7 percentage points respectively. The share of no fee schools has increased from 79.2% in 2006 to 91.9% in 2015, for secondary level schooling. As is the case with primary education, the share of the richest quintile has decreased; from 9.1% in 2006 to 4.5% in 2015

Overall, public spending on primary and secondary level schooling has become more progressive in a sense that the share of spending that goes to no fee school has increased significantly from 82.4% in 2006 to 94.4% in 2015. However, within the bottom three quintiles, spending has become less progressive with the resurgent share of quintile 3 and simultaneous drop in the share of quintile 1, while quintile 2 has shown the least change. In fact, comparing quintile 2 to quintile 3, it becomes clear that public spending has become regressive in this instance; there is now also little separating quintile 1 and quintile 3. In conclusion, it is apparent that the poorest quintile benefits most from public primary education than secondary education. Conversely, the richest quintile benefits more from public secondary education than primary education.

Table 7: Benefit incidence analysis of public basic education spending

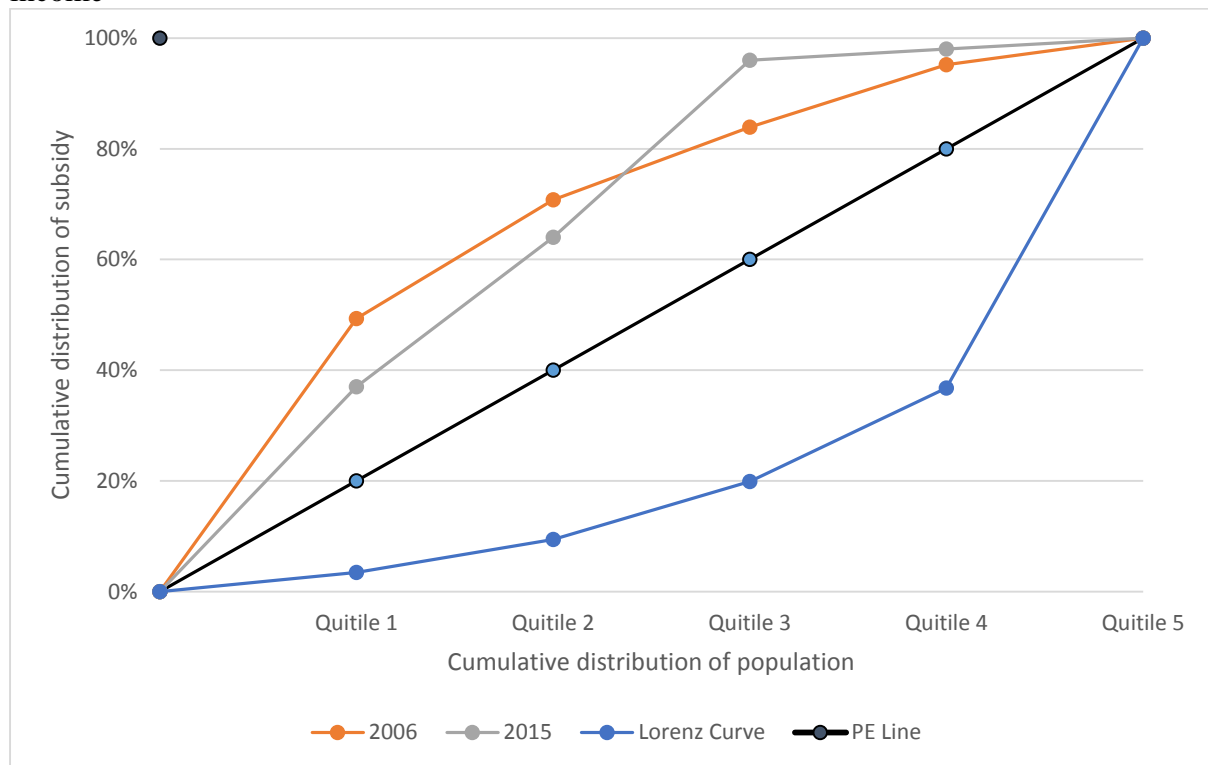
	2006			2015		
	Primary	Secondary	Total	Primary	Secondary	Total
Share of public spending	67.3%	32.7%	100.0%	66.7%	33.3%	100%
Share of spending by quintile						
Q1 (poorest)	49.3%	46.0%	48.2%	37.1%	33.0%	35.7%
Q2	21.5%	19.0%	20.7%	27.1%	26.0%	26.7%
Q3	13.1%	14.2%	13.5%	31.5%	32.9%	32.0%
Q4	11.3%	11.7%	11.4%	2.6%	3.5%	2.9%
Q5 (richest)	4.8%	9.1%	6.2%	1.8%	4.5%	2.7%
All quintiles	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: Free State Department of Education, 2016

Targeting and progressivity – using graphics

Benefit incidence results will be portrayed in graph form in this section. Tracking the cumulative distribution of household incomes against the cumulative population ranked by per capita income gives the income *Lorenz curve*. Such a curve for the Free State province is shown in figure 3 below. This provides a point of comparison with which to judge the distribution of education spending in the province. The distribution of education spending is shown in the concentration curves in the figure.

Figure 3: Distribution of government expenditure on primary education and distribution of income



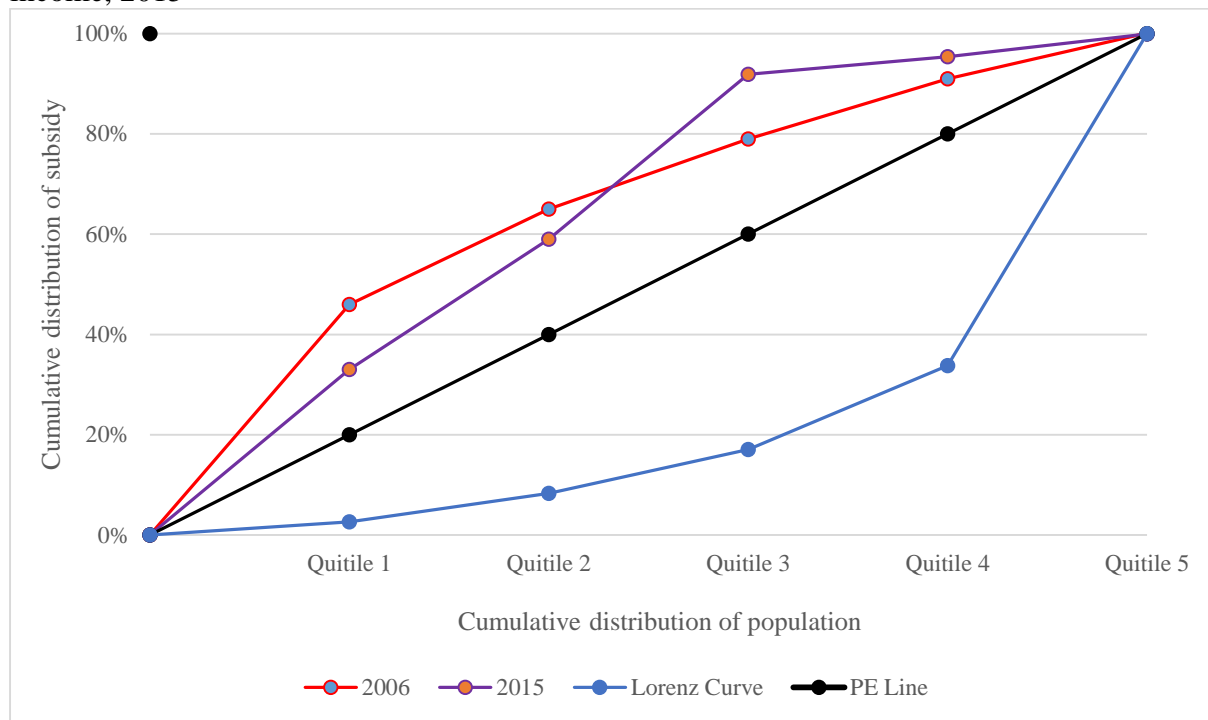
Source: Free State Department of Education, 2016; IHS Global Insight Regional eXplorer, 2016 and own calculations

Primary education spending in the Free State was progressive and relatively well targeted in 2006. This conclusion is expressed graphically in figure 3 above, by means of the Lorenz curve (the cumulative proportion of income from the poorest to the richest quintile), as well as the concentration curves for different levels of education expenditure (showing the proportion of spending for these groups).

The figure above verifies that government spending on primary education is pro-poor in absolute terms since the concentration curve for primary education lies above the diagonal or perfect equality (PE) line. Government spending on primary education is both progressive and targeted at the poor because the concentration curve for primary schooling lies above the Lorenz curve and also the perfect equality curve (see figure 3).

However, looking at the distribution of government spending in 2015 paints a different picture. Although spending on primary education remains pro-poor in a sense that the poorest quintile received the largest share of the spending at 37.1%, its share has declined by 12.2 percentage points from 49.3% in 2006. The share of quintile 3 has increased significantly by 18.4 percentage points between 2006 and 2015. Overall, spending on primary education has become less pro-poor as a result of the surge in spending on quintile 3. Government spending on primary education in the Free State remains progressive, because the concentration curve lies above the Lorenz curve, and also targeted at the poor, but to a lesser extent as the share of the poorest, though remains the largest, has declined.

Figure 4: Distribution of government expenditure on secondary education and distribution of income, 2015



Source: Free State Department of Education, 2016; IHS Global Insight Regional eXplorer, 2016 and own calculations

Spending on secondary schooling is also found to be progressive and well-targeted to the poor. However, the extent of the progressivity of secondary schooling is less relative to primary schooling, but this does not take away from the fact that it is progressive and targeted at the poor as the poor benefit more than proportionally to their numbers.

Looking at the trends, there has been a decline in the extent of the pro-poorness of spending on secondary education. The share of the poorest population (Q1) has declined by 13 percentage points from 46.0% in 2006 to 33.0% in 2015, whilst the shares of Q2 and Q3 has increased by 7.0 and 18.7 percentage points respectively. On the other end of the spectrum, the shares of the richest population, represented by Q4 and Q5, decreased by 8.2 and 4.6 percentage points respectively. As the poorest 20% receives 33.0% of the spending, we can conclude that government spending on secondary education is pro-poor. However, since the share of the poorest 20% has decreased from 46.0% to 33.0% between 2006 and 2015 it is clear that spending on secondary education is less pro-poor in 2015 than it was in 2006.

All in all, government spending on basic education (i.e. primary and secondary schooling) in 2006 was pro-poor as government spent proportionally more on the poorest schooling communities than on the richest.

Similar trends were observed in 2015. The concentration curves show the cumulative proportion of spending going to the same groups:

- Both primary and secondary schooling spending is progressive because the concentration curves lie above the Lorenz curve.
- The concentration curves, in addition, also lie above the perfect equality line, making spending well-targeted at the poor.

However, with the reclassification of schools that meant all schools that fell under Q1 to Q3 have become no-fee schools, the schools previously classified as no-fee school (Q1 and quintile 2) are benefiting to a lesser extent. In other words, the inclusion of Q3 schools into the no-fee schools group has meant a lesser share of government spending goes to quintile 1 and quintile 2, which according to NNSF are from the poorest communities. However, the Free State as a province continues to spend more on Q1 in spite of being reclassified to fall in the same group with Q2 and Q3 schools. In terms of the new classifications, 94.4% of spending was on the 'poor' (no-fee schools) in 2005, up from 82.3% in 2006, whilst the share of the 'rich' (fee-paying schools) decreased from 17.7% to 5.6% during the same period. These figures demonstrate the progressiveness of government spending on basic education in the Free State.

5. LIMITATIONS OF THE STUDY

In assessing how education spending benefit the poor, we have to caution that our analysis does not address the quality of such spending. We use government expenditure data on the various forms of education to estimate unit costs of these programs. The analysis thus assumes that the actual benefit received by individuals is equal to the amount spent per capita. As the quality of school infrastructure, teachers, etc. vary across the province, particularly when comparing rural with urban schools, then this is a clear limitation of the analysis.

6. CONCLUSION AND POLICY IMPLICATIONS

Measuring the real level and allocation of public expenditure (subsidy) is key to understanding any government's true expenditure priorities and its consistency with the government's policy objectives. For the purpose of this study, an important sector (education) with which the state pursues a variety of economic, social and political goals was identified and the distributional pattern of government subsidies was analysed. This is because besides the other targeted programmes (i.e. food, healthcare, housing subsidies etc.), access to and provision of basic levels of education (primary and secondary schooling) has been accepted as central to increasing the welfare of the poor. If subsidies to this sector are pro-poor (progressive), it implies that the poor benefit more than the rich and vice versa. The result has revealed the distribution patterns showing who benefits the most from subsidies in education.

This study provided estimates of benefit incidence for public spending for primary and secondary education in the Free State Province. The introduction of no-fee schools has resulted in increased revenue for the poorer schools, whilst simultaneously relieving the burden of school fees on poor parents. Key to the findings is that the bottom quintile (richest) in terms of consumption level only receives about 2.7% of total basic education spending, while the top quintile (poorest) obtains around 35.7% of total spending. Primary and secondary schooling in the province are found to be both progressive and well-targeted at the poor. The good targeting of basic education spending in the Free State partly result from the fact that a large section of the affluent population does not use public services to the same extent as their share of the population. The affluent usually have fewer children who can benefit from public school spending. Notwithstanding the limitations of the study, these results point out the fact that the poor tend to benefit more from public education spending than the better off as is in line with government policy and objectives of reducing inequality and combating poverty.

In the light of inherited inequalities and poverty, the emphasis on shifting fiscal resources to benefit the poor remain critical and the evidence assessed in this study shows that the provincial

government has been effective in accomplishing fiscal transfers to the poor and most vulnerable.

An overall assessment is that government has been effective in terms of shifting resources in education to the poorest. It is recommended that Government should, therefore, continue to expand the budget for primary and secondary schools because the poorest households are likely to benefit more than the richest.

Appendix

Table 1: Summary description of BIA

What is it?	Benefit Incidence Analysis (BIA) estimates the impact of public transfers, taxes, subsidies or policy changes that affect prices. BIA measures the distributional incidence of benefits for different groups of interest, for instance households at different income levels or in different regions. Average (or simple) BIA measures the incidence of all benefits – i.e. of the aggregate benefit. Marginal BIA estimates the incidence of the last (or the next) unit of benefit.
What can it be used for?	BIA is most commonly used to examine the impact of public expenditure and public expenditure reforms. It is also applicable to other policy reforms, including reforms affecting prices that change household income or expenditure and tax reforms. It can be applied to direct transfers as well as to transfers obtained by consuming subsidised goods or services.
What does it tell you?	BIA tells us who benefits from services, transfers, or price changes. When estimating the size of benefits received by different groups, average BIA calculates the benefit received on average (i.e. on the basis of average unit costs); marginal BIA tell you who will benefit from a increase or decrease in benefit (i.e. the marginal change). These two might be very different – typically, additional beneficiaries are more likely to belong to groups not yet covered by the system (i.e. remote areas).
Key elements	BIA proceeds as follows: (1) estimation of the value of the benefit: typically estimated as the cost of providing the service, transfer or subsidy. This can be quite difficult, with issues related to the inclusion of investment and administrative costs, and the treatment of cost recovery. Estimates are sometimes made at regional level to account for cost differences; (2) Identification of the users on the basis of households survey; (3) Aggregation of users into groups of interest (commonly defined as by income levels, region, urban/rural location, poor/non-poor, occupation, ethnicity, etc.); (4) Accounting for household spending, in case of out-of-pocket expenditure to access the benefit. In case of financial transfers, the income groups can be defined pre- or post-transfers, which will yield different results.
Limitations	BIA does not take behaviours into account, i.e. the likely change in demand from households that would result from a policy change.

Source: World Bank, 2003

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