

**An analysis of household and government
spending on education in South Africa**

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This dissertation is submitted in partial fulfilment of the requirements of the Master of Commerce degree in Economics.

Declaration

I, **Alice Sejake**, declare

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- (ii) This dissertation has not been submitted for any degree or examination at any other university.
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Declaration of funding

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Declaration of conflict of interest

The author has declared no conflict of interest.

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Abstract

Education is one of the largest components of government spending across developing and developed countries. Differences in spending on education are often cited as the key contributors to achievement gaps between countries and individuals in the same country. In South Africa, education has been central to government's socio-economic redistributive policies following the end of apartheid. The problem of insufficient funding particularly for higher education combined with a high demand for education have led to shared costs between households and government. To this effect, the study analyses the relative roles of spending across schooling levels between households and the government. The study further examines attendance and expenditure patterns on education between private and public institutions. Using household level data from the South African Living Conditions Survey 2014/2015, Tobit regressions using a number of household characteristics (such as the gender of the household head, their employment status, population group, level of education, the number of children attending and settlement type of the household) are estimated to examine if and to what degree the determinants of educational expenditure differ by income groups. In addition, income elasticities of education spending are calculated to determine the sensitivity of household's spending to changes in income. The results show that spending of richer households on education is likely to be more sensitive to changes in household income than poorer households.

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Chapter 1: Introduction

1.1 Introduction

The need for increased access to ¹quality education in both developed and developing countries has been emphasized through various policies aimed at achieving universal basic education. In developing countries, educational attainment and quality remain relatively low in comparison to developed countries. Educational attainment in developed countries is 10% higher, on average, than in developing countries. This increases the labour force's productivity and, in turn, incomes, thereby contributing to better economic growth in developed countries (Idress and Siddiqi, 2013). Many developing countries, including South Africa, struggle to fund education at an adequate level due to their poorly performing economies characterized by low growth and high levels of inequality in educational attainment and income. The consequence of this is that levels of educational attainment remain low. For example, in the Middle East and North Africa, the average years of schooling for the population over the age of 15 is just 7.1 years, well below the average of 7.8 in developed countries (Assaad et al., 2019).

In South Africa, since the demise of apartheid, the new government has committed itself to the redistribution of economic resources, redressing imbalances in the educational system, and prioritizing education as a basic right as a critical redistributive tool. The Reconstruction and Development Programme (RDP) of 1995 sought to redress the inequalities through human resource capacity development. The RDP was later replaced by the Growth, Employment and Redistribution (GEAR) policy of 1996 and subsequently by the Accelerated and Shared Growth Initiative for South Africa (ASGISA) of 2005. In 2010, the New Growth Path was developed to stir South Africa into a stable growth path and then the National Development Plan of 2010.

Making basic education a constitutional right in South Africa has increased enrolments in both primary and secondary schools and, in turn, increased demand for higher education. For example, between 2002 and 2017, enrolment for basic education increased by 39% while enrolment for higher education and training increased by 3.9% during the same period (Statistics South Africa, 2019). South Africa has one of Africa's highest educational attainment

¹ The definition regarding the quality of education differs across education literature. In this study, quality refers to the desired cognitive skills that learners acquire through their years of schooling which can be assessed through a series of mathematical, scientific and reading tests.

levels in Africa (Motala and Sayed, 2012), but the education system is not without challenges. Despite improvements, it remains a concern as to whether, given the low quality of education, especially in public schools that results in low literacy and numeracy, the education system in South Africa can produce the necessary skills for individuals to participate competitively in the labour market. One of the contributing factors to the problems in the education system can in part, be attributed to the legacy of the apartheid government (Glaser, 2015).

1.2: Aims and Objectives

This study explores government and households' spending on education in South Africa. Before an accurate analysis of school attendance and spending on education can be provided, the study will explore the history of the South African education system. The history of the South African education system will provide insight to how some of the policies developed during apartheid affected spending on education and subsequently affected the attendance of individuals ultimately causing disparities in educational outcomes across the different races in South Africa. Following the end of apartheid, the new government has prioritised access to quality education, particularly to previously disadvantaged individuals. To achieve this, the government has allocated a significant proportion of its spending towards funding education. The study will analyse the differences in the spending patterns between the current government and the apartheid government, by so doing, determine if the current government has been successful in addressing the inequalities in the education system. Then, the study will compare spending on education in South Africa to that of other countries (both developed and developing) to determine the differences in spending on education (as a percentage of GDP), in particular determine which level of schooling is prioritised by developed and developing countries respectively.

To investigate the correlates of educational attendance in South Africa, the study uses data from Statistics South Africa's Living Conditions Survey (LCS) 2014/2015. Attendance and non-attendance of individuals will be analysed by the gender, population, province, settlement type, sector of educational institution and levelling of schooling. Analysing school attendance has important implications for education expenditure as spending on education differs across private and public institutions and by level of schooling. For individuals who are not currently attending an educational institution, the reasons for non-attendance will be discussed, particularly looking at the number of individuals who are not currently attending an educational institution because of lack of financial resources. In addition, the reasons for non-attendance

will also provide insight to some of the issues (in addition to lack of funding) faced by individuals who are currently not attending an educational institution which further perpetuate the inequalities in the South African educational system. For individuals currently attending an educational institution, the study will determine if they pay for their own educational costs by identifying if the households from which these individuals reside in pay for school fees and, if not, present the reasons for non-payment of fees.

The analysis is done at individual and household level across both public and private institutions. An analysis of spending of education across private and public institutions is important due to the fact that private institutions are typically attended by individuals from affluent households while individuals from middle-to-lower class are not explicitly excluded from attending such institutions, the method of funding might differ as these institutions are unaffordable to middle-to-lower class households in South Africa. To explain further, the study will determine how education is financed (either by household income/loans or non-refundable bursaries/government grants or both), this analysis is across private and public institutions. Spending on other educational items such as school uniforms, transport costs, stationery, textbooks etc. are also analysed and whether these items are funded by households or subsidized by the government.

Finally, the study analyses the determinants of household spending on education across income groups as well as income elasticities of education spending. The study makes an important contribution to the economics of education literature in South Africa, where the spending on education by both government and households seems inadequate to meet with the growing demand for education across all levels of schooling. Analysing expenditure patterns by government will assist in identifying the progress made by the South African government with regard to education (i.e., ensuring universal access to primary school education, ensuring equitable access to education across gender and race) and assist in the development of policies aimed at addressing the insufficiencies from current policies. On the other hand, an analysis of spending by households will provide insight to the degree in which household characteristics influence education expenditure and how the costs associated with schooling affect attendance (both at private and public institutions) and non-attendance. Therefore, the specific objectives are:

- Determine if the government has been successful in redressing the inequalities in the educational system since the end of apartheid;
- Investigate the correlates of educational attendance in South Africa;
- Analyse government spending on education across all levels of schooling using national budget estimates and data collected from the LCS 2014/2015;
- Analyse the differences in spending on education between developed and developing countries including South Africa as a percentage of GDP.
- Investigate the determinants of spending on education by households in developing countries;
- Analyse the relative roles of government and household spending on education across all levels of schooling and between private and public institutions in South Africa.

In so doing, the study will help understand if government spending on education in South Africa has increased access, particularly for individuals from low-income households who lack the financial resources to finance their studies. Furthermore, this will help the government identify and eradicate some of the issues preventing individuals from attending an educational institution.

1.3: Research Questions

The study explores government and household spending on education in South Africa using data from the LCS 2014/2015. In order to achieve this, the study aims to address the following questions:

- What are the patterns of education spending by households, and how do they differ across private and public institutions?
- What are the relative roles of government and households in paying for education across schooling levels?
- What are the determinants of household spending on education in South Africa?

1.4: Ethical clearance

The South African Statistical Quality Assessment Framework (SASQAF) requires StatsSA to ensure that they collect data in an ethical manner and ensure the quality of any data or statistics released. This entails the adaptation of principles and ethical standards that govern the methods

and procedures on the collection, processing, storage and presentation of statistical data. Furthermore, StatsSA is required to maintain accountability and transparency to maintain the correct interpretation of data and prevent the misuse of statistics. This includes making the legislation and laws under which statistical systems operate public knowledge. In addition, StatsSA is required to maintain strict confidentiality of individuals and only use their information exclusively for statistical purposes (South African Statistical Quality Assessment Framework, 2010).

1.5: Summary and concluding remarks

The first chapter provided an introduction to education and denoted the differences in educational attainment between developed and developing countries. The chapter described how the demand for education in South Africa has increased since the end of apartheid and the policies developed to ensure increased access to education across the country. The chapter has also detailed what the aims and objectives of this study are.

The second chapter will analyse the financing model providing the foundation for this research, particularly investigating the differences on the financing models between private and public institutions. The chapter will then provide a historical overview of the economic and political conditions starting from 1948 when the Nationalist Party came into power and subsequently launched a commission to investigate and make recommendations for the education of African children in South Africa. The chapter will discuss the Group Act of 1950 amongst a plethora of segregation acts regarding their impact on the education system across all races in South Africa.

Subsequently, an overview of the current educational system will be analysed with respect to the previous educational system's consequences and how the current government is seeking to address these issues. This is done by reviewing how the government allocates its budget on education from Basic Education to Higher Education and Training, including the current education system's framework. The discussion will include initiatives from the government to ensure increased access to quality education, particularly for children from previously disadvantaged backgrounds. Finally, the second chapter will review education spending in developed and developing countries, including South Africa, and the determinants of household spending on education.

The third chapter of this study will introduce the proposed research strategy that will be used to analyse attendance and spending among individuals between public and private institutions. Furthermore, this chapter will discuss how information relating to education was collected by the LCS 2014/2015 and thereby define some of the advantages and limitations of the chosen dataset relating to expenditure on education.

The fourth chapter will report the descriptive statistics of the individuals in the population. This will include individuals in the population who are not currently attending an educational institution and the reasons for non-attendance. This chapter will also report on whether individuals who are currently attending an educational institution are financed by the household in which they reside and provide reasons for non-payment of school fees among households with at least one-member of their household currently attending an educational institution. Then, spending on education will be disaggregated between private and public institutions by household income/loans or non-refundable bursaries/government grants or both, including some household characteristics such as the population group of the household head, their age, education level, employment status and gender etc.

The fifth chapter will look at the distribution of household spending on education and how it differs across the income distribution. Then the chapter introduce the empirical technique used to analyse the determinants of household spending on education. The chapter will detail the advantages of the chosen econometric regression for the study. The aims and objectives of this study will be highlighted with an evaluation and interpretation of the results. Finally, the concluding chapter will summarise the main findings of this study and provide policy implications for spending on education in South Africa.

Chapter 2: Literature Review

2.1 Introduction

Before analysing spending on education in South Africa, this chapter will discuss the conceptual framework by Checchi (2006) on financing education between private and public institutions and its relation to the current study. The section will then review the literature relating to the history of the South African education system, notably how the previous government allocated spending on education across racial groups. This will, in part, explain some of the issues in the current educational system and how the current government allocates spending on education to eradicate these issues. Therefore, this chapter will be divided into the following sections: (1) The financing model; (2) The history of the South African education system; (3) The current state of the South African education system; (4) Education spending in developed countries; (5) Education spending in developing countries; (6) Determinants of household spending on education; (7) Education spending in South Africa.

2.2 The financing model

The conceptual framework providing the foundation for this research is from Checchi (2006), who presents an overlapping generational model of education to explain the differences in spending on education between private and public schooling. The assumption is that in the first period, individuals obtain their education, and during the second period, they enter the labour market, start a family, leave an inheritance, and die. The first period's education level determines the amount of income earned in the second period. A person's innate ability determines their level of education in the first period, and in the second period, the individual's level of education determines their labour market earnings. Given the positive relationship between education and labour market earnings, the higher an individual's education level in the first period, the higher their income level in the second period. The second period's income level indirectly influences attendance at either a public or private school; other factors include institutional settings and taxes. Given that this study analyses spending on education between public and private institutions, both private and public schooling models' insights are relevant.

2.2.1 Private schooling

In this model, the provision of private schooling is set-up in such a way that individuals decide on their desired level of education. The underlying assumption of this model is the absence of public schools. The model is simplified by assuming that individuals are homogenous and that the only difference is family income. Another assumption is that there are no financial markets for families to borrow money to invest in their children's education. In the absence of financial markets, the only asset that a household can transfer across generations is an investment in their children's education. The labour market earnings that determine attendance at a private school depend on the level of education acquired in the first period. For simplicity, the level of education acquired in the first period can be thought of as equivalent to human capital formation. The continuance of educational attainment across generations is based on family wealth as well as cultural background. Therefore, a higher level of family wealth leads to increased economic activity, given the high level of productivity as a result of a high level of education acquired in the first period.

This model provides insight for the current study in the following ways: given that parents' level of education influences their labour market earnings, it be expected that household heads who are highly educated earn relatively higher income, on average, compared to household heads have relatively low levels of education. Therefore, individuals who live in wealthy/affluent households have a higher probability of attending private institutions compared to individuals from low-income households. While it is difficult to measure an individual's innate ability, which is said to determine their level of education, individuals who perform well academically are typically awarded scholarships. Scholarships provide them with the opportunity to attend private institutions and ultimately obtain a high level of education regardless of their family background/wealth. Other scholarships can be awarded for outstanding performance in sport or cultural activities. Considering this information, this study will identify individuals who are currently attending private institutions and determine if their education is financed through household income/loans or through non-refundable bursaries/government grants.

Bursaries/ scholarships make private school attendance affordable to many individuals; however, some individuals may not receive these bursaries/scholarships and may reside in a household that cannot afford the high fees charged at private schools. For this reason, some individuals attend public schools because they are more affordable because of high government subsidisation the government highly subsidises them. Therefore, the following section will discuss the public schooling model provided by Checchi (2006) and its relation to the current study.

2.2.2 Public schooling

In contrast to the private schooling model, government intervention is required to subsidise education through taxes in this model. The assumption in this model are that the educational offering is identical regardless of the family income. As in the previous model, the level of education acquired in the first period determines the second period's income. The income earned in the second period directly influences the amount of taxes received by the government that is used to subsidize public school education, reducing the financial burden on households. This ensures that the education of children is equally distributed regardless of family wealth.

While the current study does not explicitly analyse government revenue earned through taxes, the subsidization of education through grants and other policy initiatives play an important role in ensuring that individuals receive an education regardless of their family wealth. Furthermore, the study identifies individuals currently attending an educational institution that do not pay for fees because they attend a “no-fee” school. No-fee schools are public schools that receive a significantly high percentage of government subsidization than other public schools to compensate for the non-payment of fees by households. Another important point of consideration is that the South African government subsidizes higher education and training extensively through the National Student Financial Aid Scheme (NSFAS) to students who cannot afford the high tuition fees associated with attending institutions of higher education and training. Other indirect forms of government subsidization on education such as the feeding scheme, infrastructure development and training of teachers might not be analysed in detail but are reflected in the national budget estimates.

This section has provided a theoretical discussion on the private and public schooling models that explain how education is financed between educational institutions. The South African educational system has a mix of private and public institutions where private institutions

typically cater to individuals from affluent families. To understand the differences in the attendance and spending of individuals across private and public institutions and across racial groups, it is important to examine the previous government's actions concerning education and its implications for the current educational system. This will explain the current inequalities in the education system and why spending on education in South Africa is a huge priority for the government.

2.3 The history of South Africa's education system

The inequalities in the South African education system result from a long period of discrimination and unequal opportunities because of Apartheid. Under the apartheid government, Africans were assigned into inferior occupations and received job opportunities limited to unskilled labourers and an education system that would deny them the opportunity to compete with their White counterparts (Murphy, 1992). Initially, financial exclusion was not official policy, many of the schools built by the government required the payment of fees, and the fees at these schools were not affordable to many African households (Phillips, 1999).

To cope with the expensive costs of schooling, many African children started attending schools operated by missionaries funded by the government. The disadvantage of turning to missionary schools were that non-Christian children could not attend because of religious differences. This resulted in many non-Christian children not attending school because of religious conflicts and the fact that their families could not afford to send them to schools that were not operated by missionaries. In 1948, when the Nationalist Party came into power, the government sought policies that would formalise African children's exclusion from schools that offered quality education that White children received (Murphy, 1992).

The first Act, which resulted in indirect segregation of school attendance between the races was the Group Act of 1950, this Act imposed control over property occupation. The objective of the Group Act was to eliminate multi-racial societies and encourage racially segregated neighbourhoods. This made it challenging for African children who mainly resided in rural areas to attend better-resourced schools in suburban areas. Many of the schools in townships, where most African students were attending had poor infrastructure, lacked teaching materials, had less qualified teachers, and overcrowded classrooms (Christie and Collins, 1982). Due to inadequate funding from the government and the increasing number of African children attending these schools, the quality of education offered to African children was of a

subminimum standard to that of White children. In contrast, White children were attending better-resourced schools that had fewer children in each classroom.

The poor quality of education offered to African children at lower levels of schooling resulted in poor performance at the end of secondary school, which hindered their chances of admission at higher education and training institutions. This was exacerbated by the fact that the system was characterised by racial discrimination with very few Africans who could afford to pay tuition fees (Unterhalter, 1990). The government appointed a commission to investigate and make recommendations for African children's education; this report became known as the Eiselen commission.

The Eiselen commission reported in 1951, it emphasised the need for government to create an education system that would ensure the implementation of segregated socio-economic development for Africans. The Eiselen report was divided into three main parts: (1) the Bantu and the present system of education pertaining to the number of individuals attending educational institutions, their exam scores, and how much the government spent on education. Furthermore, the report details how national income would be distributed in order to implement the Bantu Education Act; (2) critical appraisal of the system of education which detailed how the school syllabi would need to be amended in order for the Bantu Education Act to be implemented (3) proposals and recommendations, which detailed the organisation and administration of the Bantu Education Act upon its implementation (Seroto, 2013).

One of the most notable contributions of the Eiselen report was the suggestion that the government should take control of schools from the missionaries to implement their desired segregated educational system. Under the Bantu Act, the Nationalist Party developed an education system that was believed to meet the needs of the African population. It was suggested that Africans be taught in their own mother tongue and physical work to be integrated into their syllabus (Carrim, 1998). At first, Bantu Education was opposed by English-speaking missionaries, who owned most of the schools attended by African children. These schools received subsidies from the government that was used for the payment of teacher's salaries. However, they were unsuccessful in opposing the system.

Under the Bantu Education Act, the curricula differed between races as it was the Nationalist Government's objective to culturally and geographically remove the education of its constituents from that of other races (Christie and Collins, 1982). To ensure the implementation

of a racially segregated society, the Bantu Education Act was extended in the 1960s with the Coloured Education Act of 1963 and the Indian Education Act of 1965. The implementation of these Acts along with the Bantu Education Act meant that schools were racially segregated in such a manner that “Black” schools were generally located in “Black” areas catering to Black children and “White” schools were located in “White” areas catering to White children (McKeever, 2017).

The four classifications of race (White, Coloured, Indian and black) would each have their own Department of Education to ensure that the allocation of funds would differ across race as well as regulation across the schools. The difference in the regulation of schools favoured Whites instead of Africans. For example, it was compulsory for Whites to attend school while it was not for Africans. Furthermore, the allocation of funds differed across races, education was free for Whites, which was fully paid for by the government, but Africans received less per capita subsidies, which required more direct payments to finance their studies. In addition to this, African children were required to buy their stationery and textbooks, which was not required of children from other races (Unterhalter, 1990).

The government provided financing by collecting taxes and allocating these at a national level. Due to the increasing number of Africans having access to education as a result of the Bantu Education Act, the demand for education among the African population was growing at a significantly higher rate compared to other races. However, although government funding was increasing, it remained insufficient to keep up with the growing demand (Christie and Collins, 1982). The Bantu Education Act made it possible for the government to fund education according to racial groups by opening a Bantu Education Account, which would ensure that the budget allocated to Africans' education came directly from Blacks' taxes.

Initially, four-fifths of the taxes collected was allocated to the Bantu Education fund and later this amount increased (Christie and Collins, 1982). However, only 5% of Africans had graduated from university compared to 89.4% of White graduates in 1979 while the enrolment of African children across all schools from 1955 to 1965 doubled from one million to two million (Carrim, 1998). This meant that the tax collected from Africans was insufficient to provide the educational needs of the African population because of the relatively lower taxes collected from Africans who were employed in low-skilled jobs.

Table 2.1 shows expenditure on African Education from 1930 to 1959. Although it is missing enrolment figures from 1930 to 1945, the table shows that following the implementation of the Bantu Act in 1953, spending on education increased as well as the number of enrolments from 1953 to 1959. The increase in enrolments required more spending on education from the government, increasing the amount of government spending per student.

Table 2.1: Per capita expenditure on black education

Year	Expenditure (in Rands)	Enrolment	Cost per pupil (in Rands)
1930	1223 610	-	4.27
1935	1368 464	-	3.85
1940	2088 044	-	4.43
1945	4637 962	-	7.78
1953-54	16 032 494	938 211	17.08
1955	15 769 550	1005 774	15.68
1956	17 277 660	1090 601	15.88
1957	18 036 350	1143 328	15.78
1958	17 990 126	1259 413	14.28
1959	18 457 830	1308 596	15.10
1950-1960	19 473 200	1411 157	13.08

Source: Christie and Collins (1982: 73).

Table 2.1 shows that per-pupil expenditure on African children prior to the implementation of the Bantu Education Act was relatively low; however, following the implementation of the Act, expenditure increased. However, the increase in expenditure was to compensate for the growing demand for education and not improve education quality. Table 2.2 shows expenditure on education from 1953-1987 across the four-classification race to understand the differences in spending across different races. Note that the figures for Coloureds, Indians, and Whites from between 1953-1955 are not available.

Table 2.2: Spending on education in South Africa by race

Year	African	Coloured	Indian	White
1953	16	-	-	-

1955	15.8	-	-	-
1960	19.5	24.3	7.9	79
1965	24.9	30.9	14.3	252.3
1970	66.3	45	19.8	366
1975	160.2	104.9	43.8	738.7
1980	553.0	247.1	122.7	1360.9
1985	1816.0	724.1	324	2973.7
1986	2453.4	868.3	367.1	3057
1987	3400.3	1007.6	404.7	3321

Source: Unterhalter (1990:68); Notes (1) Spending is in millions of Rands; (2) Spending is on an aggregate level.

In 1953 when the Bantu Act was implemented, spending on education for Africans was 16 million; however, the other races' figures are missing, making it challenging to compare expenditure across races until 1960. From 1960, Table 2.2 shows that spending on education for Africans was R19.5 million, while for Whites, it was R79 million, a difference of R59.5 million between the two racial groups. From the four racial groups, Indians received the lowest spending mainly because Indians constitute a small percentage of the population compared to Africans and Whites. As the years progressed, spending on education increased across the races, as indicated by the above table. In 1987, spending on education for Africans was even higher than that of Whites, but so were the enrolments among African children (Unterhalter, 1990).

It is evident that spending on education for Africans following the implementation of the Bantu Education Act increased, the expansion of the education system (increasing participation of Africans in education) and creating separate schools for the different races required money from the government. The government was spending a substantial amount on education across all races than before the Bantu Education Act was implemented. The introduction of this Act increased the enrolment rates for Africans, which was growing faster than that of other races, this required the government to keep increasing its spending to provide mass education to African children. However, the increases in the spending could not keep up with the rapid

expansion. In the early 1980s, the provision of Bantu Education was under severe pressure with growing demand in secondary education enrolment rates, educators who had very little or no training at all, overcrowded classrooms, and inadequate reading materials (Christie and Collins, 1982). Pressure on the Bantu Education system was further exacerbated by resistance of the system by students in the form of protests and boycotts around the country.

Realising that the education system was failing, in 1986, the government announced a ten-year plan to increase spending on education for Africans by 4.1% to be in par with that of Whites (Unterhalter, 1990). However, given that the economy was only growing at 1% and a large share of government spending was allocated to military and security forces, this increment was impossible. The government was facing a challenge of inadequate funding and growing demand for education, particularly for secondary education. In addition to this growing demand for education, there was a huge shortage of teachers because many of the qualified teachers decided to leave the profession following the implementation of Bantu Education Act (Christie and Collins, 1982).

In the early 1990s, it became evident that the country was undergoing a political transition that would require restructuring the education system. Under the Bantu Education Act, the government had complete control of schools but under the impending political transition, the government started moving the power to schools and the parents of the learners attending those schools. The parents and the school's management were to decide on the admission requirements, which meant admitting learners from different racial and cultural backgrounds (Carrim, 1998). This was done by the government to preserve the schools which were attended by predominantly White children. These schools were better-resourced than the schools in the townships attended by predominantly African children. The “better resourced” schools were now classified according to “Clase Models”, Model A schools were classified as private schools while Model B schools were classified as state or public schools (Carrim, 1998).

Model C schools were schools that were semi-private or semi-public. These schools received a lot of subsidisation from the government to pay for school facilities' maintenance, pay for the appointed teachers in those schools, and other operating costs. Most Model C schools received approximately 80% of government funding, while the 20% had to be raised by the schools, which was financed directly through the payment of school fees from households. (Murphy, 1998). The opposite of Model C schools were Model A schools that remained fully private and mostly catered to White children. Model B schools stayed as public schools whose admission

requirements were decided by the parents and received subsidisation from government through the payment of teacher's salaries. Finally, Model D schools had no admission requirements because they mainly catered for African children and received full government funding.

Since the end of Apartheid, there have been improvements in enrolments, for example, more than 11 million learners finished matric in 2016 compared to only 3.7 million in 1996. During the same period, enrolments at institutions of higher education and training have increased from 1.3 million to 6 million. Furthermore, training more teachers, allocating more funds to the development of school infrastructure and reducing drop-out rates are a top priority for the government. However, South Africa is lagging behind with education provision both in terms of quality and quantity compared to other developing countries (Ramnarian and Hlatwayo, 2018).

South Africa spends a significant amount of its Gross Domestic Product (GDP) on education. On average, 6% of South Africa's GDP is allocated to education compared to 3.1% in OECD countries; higher education is a priority in these countries with 0.9% of their spending on higher education compared to only 0.6% in South Africa (Ramnarian and Hlatwayo, 2018). This has translated in higher tertiary education attainment in OECD countries in comparison to South Africa with only 7%, on average, of the South African population having a tertiary qualification which is significantly lower than 38%, on average, in OECD countries (Ramnarian and Hlatwayo, 2018).

Since the end of apartheid, the South African government has made significant progress in ensuring increased access to quality education for all its citizens. To achieve this, the previous government's educational framework had to be abolished and a new framework was implemented. The next section discusses the current educational framework and differentiates between the two types of schools in the South African education system (i.e., private and public schools). Furthermore, the section analyses spending on education in South Africa by the government.

2.4 The Current State of the South African Education System: An Overview

After years of oppressive and discriminatory laws, the end of Apartheid marked a new beginning which implied redressing socio-economic inequalities. Central to this was the formulation of the Bill of Rights, which states that basic education and adult basic education

and training are a basic human right. The education system in South Africa is governed by several education Acts to promote access to education, which is non-racist and non-sexist. For example, the South African Schools Act (SASA) of 1996 states that education is compulsory for children from the age of 7 to age 15 or grade 9, whichever comes first (Lomofsky and Lazarus, 2001). Therefore, education for all 7 grades in primary school is compulsory with an additional 2 years of compulsory secondary education, even though provision for secondary education is for 5 years and ends in grade 12 (Department of Basic Education, 2019).

The South African Qualifications Authority (SAQA) Act of 1995 provides the foundation for the National Qualifications Framework (NQF) which comprises of ten levels. The first level is the General Education Certificate (GEC), which is awarded after a certain number of credits have been obtained from pre-school to grade 9; for adult education the GEC is awarded through the Adult Basic Education and Training (ABET). Levels 2-4 consist of the senior secondary programme that ends at grade 12. General and specific programmes taken at colleges and programmes offered at regional training centres (usually obtained by attending courses offered at work) fall under the GEC.

Level 5 is the higher certificates and advanced national (vocational) certificate; level 6 is the national diploma and advanced certificates. Levels 7-10 consists of a bachelor's degree (advanced diplomas, post-graduate certificate and B-tech degree), honours degree (post-graduate diploma and professional qualifications), master's degree, and doctor's degree, respectively. Included in the provision for education are children with special needs and over-age students, (the latter is to cater to the needs of those who didn't have access during apartheid). At the heart of the SASA is the notion of democratic governance, which is achieved through the implementation of School Governing Bodies (SGBs).

SGBs consist of parents, teachers and students often elected into the Representative Council of Learners (RCL). The SGB has a range of responsibilities, including deciding on schools' fees if the school requires fees (Department of Basic Education, 2019). While the Act allows schools to charge fees, it also prohibits schools from denying or excluding children who are unable to pay school fees. The SGB must comply with the requirements set out by the Members of Executive Council (MECs). Furthermore, the SASA has outlined funding norms that are set in place to ensure that government funding is allocated to poverty-stricken schools. This is further enforced by the National Norms and Standards for Funding (2000) as well as the Education Amendment Act (2006) which ranks schools according to five quintiles by the socio-

economic status of the surrounding area such as the level of employment in the community. Quintile 1, 2 and 3 represents the poorest schools which are “no-fee” schools and are allocated a larger percentage of government expenditure.

Since 1994, there has been an increase in education access, with the country reaching near-universal access. In 2018, 94.7% of learners were in school until Grade 9 (compulsory education) and at least 74.5% of learners finished Grade 12 (the final grade before higher education). At least 21.4% of the increase in attendance at primary school level can be attributed to the implementation of “no-fee” schools. This has significantly reduced the financial burden on low-income households enabling them to spend on other educational items such as transport and school uniforms. By 2018, 67.2% of primary school learners were in “no-fee” schools, (National Treasury, 2019). In addition to this, the portion of African students receiving education has increased more relative to other racial groups. Between 2000 and 2016, enrolments among African students at educational institutions increased by 106.9% closely followed by Coloured’s with 103.4%. Enrolments among Indians increased by 27.8% while enrolments among Whites declined by 6.2%.

Despite these increases in enrolments across educational institutions, the drop-out rates of Africans and Coloureds remains a significant problem causing disparities in educational achievement across racial groups. Whites remain more educated compared to other races, in 2016, 38% of Whites had post-secondary school education compared only 12% of Africans (National Treasury, 2019). Furthermore, compared to other countries, South Africa is performing poorly. In 2011, South Africa ranked at the 8th position among 15 countries in Africa, on the performance of mathematics and science; in terms of literacy and reading, it came in 10th. In 2012, the Department of Basic Education stated that Grade 9 students scored on average 13% in mathematics (National Treasury, 2019).

South Africa’s education system is characterised by a mix of public and private schools. Most private schools provide education to the elite because they are unaffordable for children from the middle class to lower class households; however, children from the middle and lower classes can sometimes access these schools through scholarships and bursaries related to sport, cultural activities, and academics. In contrast, public schools mostly cater to the lower class even though there are number public schools such as former Model C schools that arguably on par with some private schools and charge relatively high school fees but less than in private schools (Languille, 2015).

While it is recognised that there are several role players in financing education, households and government make up the two most essential domains in funding education in South Africa. The relationship between household and government spending on education is so mutually dependent that without the contribution of either one, there would be a shortage in the provision education (Oluwakemi et al, 2015). While the government's budget allocation on education has increased over the years, it has been unable to keep up with the rapidly increasing demand for education, particularly higher education. Between 2011 and 2018, the government's total budget allocation on education increased by R149.7 billion. Basic Education remains the most prioritised level of education with R216.7 billion spent in 2018. Spending on higher education comes in second with R31.6 billion allocated to higher education through direct university transfers and an additional R15.3 billion allocated to students through the National Student Financial Aid Scheme (NSFAS). However, during the same period, the cost of higher education almost doubled. The number of enrolments at public universities has significantly increased from 237 058 in 2009 to over 1 million, with over 100 000 of these students starting with their undergraduate degrees for the first time (Statistics South Africa, 2018).

Due to the increasing costs of education, most households are therefore required to supplement the provision of education through the payment of school fees. In lower levels of schooling (pre-primary, primary and secondary schooling), uniform, textbooks, meals, boarding fees, and transport costs add to the spending and these costs are likely to increase as the learner advances to another level (Languille, 2015). In developing countries where government expenditure on education remains relatively low compared to developed countries, household spending accounts for a larger percentage of total spending on education. High educational costs often result in low-income households being unable to send their children to school or having the child drop-out of school (Statistics South Africa, 2018). Those who can complete secondary schooling might not enrol at higher education institutions because of rising tuition fees.

In 2017, 51% of young people between the ages of 18-24 who met the minimum requirements to be enrolled at an institution of higher education cited lack of funds to pay for tuition fees as the reason for non-enrolment. Lack of education decreases an individual's probability of obtaining a higher skilled occupation. This implies that more than half of the young people in the country will be employed in low-skilled occupations or unemployed; the employment rate of young people with a tertiary qualification is 85% higher than those without (Statistics South Africa, 2018). As a result, the inequalities in the education system persist even though

government spending on education has increased over the years to redress the previous government's inequalities.

The current section discussed the educational framework in South Africa, including public and private schools. The section also highlighted how South Africa compares to other developing countries in literacy and numeracy assessments. In addition, the section analysed government spending on education, which differs between the Department of Basic Education and the Department of Higher Education and Training. Furthermore, households' role in financing education was discussed, particularly the labour market outcomes of individuals from both low-income and high-income households. The following section discusses government spending on education in developed countries to contrast the South African experience and situate the above.

2.5. Education spending in developed countries

The need for universal access to basic education necessitated that governments in developed and developing countries fully subsidize education at this level. Research indicates that in developed countries, spending on education is, on average, 4.8% of GDP in public schools across all levels while in developing countries, spending on education is, on average 3.2% of GDP (Al-Samarrai et al., 2019). Basic education is compulsory in most countries and is typically free to households. This applies to public schools as private schools mostly function independently and can therefore, charge school fees at this level. Most developed countries have very few private schools at primary level except for Belgium, France, Denmark and the Netherlands which have private primary schools. In the United Kingdom (UK), Spain and Greece, there are several private schools that are almost fully funded by the household's tuition fees and can therefore charge high fees (Eicher, 2000).

Developed countries compared to developing countries, have higher GDP growth and higher enrolments in secondary and tertiary education compared to developing countries. Mimoun (2007) suggests that income and well-developed financial markets (access to credit) play a significant role in the variation of enrolment rates between developed and developing countries. Research on education spending in developed countries suggests that government spending on education in developed countries is skewed to secondary and tertiary education while developing countries typically focus on providing primary school education. Furthermore, the

public sector plays a significant role in financing higher education as compared to the private sector and spending on higher education is dependent on political factors.

Largely based on political factors, Busemeyer (2007) and Goksu and Goksu (2015) study education spending in different countries. The former study investigates the determinants of education spending in 21 OECD countries from 1981-2001 using various data sets available in each country, while the latter studies different methods of financing higher education across countries from 1998-2010. Both studies find public spending on education has decreased significantly and that educational grants and direct subsidies have been replaced by student loans, especially in the UK and the US. McCall and Yang (2014) substantiate that socio-demographic factors such as population growth have increased the demand for higher education, particularly in the US, making it challenging for the government to meet with the increase in the demand for higher education.

In the past, higher education in most developed countries was free, apart from administrative fees. There are still several countries that still do not charge tuition fees such as Denmark, Finland, Norway, Sweden, and some parts of Europe. The main reason for this is that private returns to higher education are relatively low in these countries, so to encourage students to attend universities, the government covers the full cost associated with studying at these institutions which require high taxation (Vossenteyn, 2004). However, in the face of limited financial resources due to slow economic growth, rising inflation, and the competition of state funds to other sectors of the economy, the allocation of government funds to higher education has declined. In 1980, the UK announced a 15% cut in higher education expenditure, the first cut in government spending since the second world war. (Zhang et al., 2016). Recent research has shown that after the global financial crisis of 2008, the United States (US) also reduced its spending on higher education by 23% (Best and Best, 2016).

To compensate for the reduction in government spending on higher education, universities have increased their tuition fees. Facing such fees, students often rely on loans to finance their education or give up the hopes of attending a tertiary institution. Developed countries (such as Sweden and Australia) have introduced income-contingent loans to reduce students' burden considering rising tuition fees (Zhang et al., 2016). However, McCall and Yang (2014) argue that market imperfections may result in underinvestment in education if banks are reluctant to award loans to students, particularly those from low-income households who often lack the collateral to back their borrowing.

Additionally, uncertainty regarding abilities and opportunities makes it challenging for students to be eligible for loans because their future earnings is not guaranteed. Such a method of financing higher education poses a problem in overcoming disparities in family backgrounds. Van Long (2019) suggests that government intervention is necessary to overcome inequalities in economic development. Government operated loans dependent on the debtor's future income level are a great way of improving efficiency and equity in situations where the private market is affected by asymmetric information.

The current section has discussed how governments in developed countries allocate spending on education. The next section looks at education spending in developing countries, specifically, how spending on education differs between developed and developing countries. The section will also provide a brief discussion on the relative roles of government and households in financing education. In addition, the following section will look at some of the issues related to government spending on education and how these affect the quality of education offered at public schools.

2.6 Education spending in developing countries

In many developing countries, children from low-income households tend to be less educated than those from affluent households. This arises from the fact that developing countries are characterised by low-income levels, high unemployment, and poverty. Parent's level of income, which is indirectly related to their level of education, is found to positively influence education expenditure (Mimoun, 2007). Additionally, the parents' genetic characteristics, which are passed down to children, give them better indirect inputs into their educational attainment. Typically, generic characteristics of children from low-income households are below that of children from affluent households but slightly higher than that of their own parents.

While generic characteristics might determine education attainment, direct costs related to education spending determine attendance at educational institutions. In developing countries, the costs of secondary education are often the responsibility of the household, and school fees at this level of education has been cited as one of the main reasons for non-attendance. In addition, uniform, transport, and textbooks, are mostly compulsory in developing countries in Africa. These costs are often the responsibility of the household while the government pays for teachers' salaries and infrastructure development of schools (Mimoun, 2007). Gutierrez and

Tanaka (2009) find that increasing public expenditure on secondary and higher education might increase socio-economic inequalities by broadening the gap between children who can and cannot attend school. Furthermore, increasing government expenditure on education does not necessarily translate into quality education. Ciro and Garcia (2018) find that even though governments in developing countries have invested significantly in education, the inefficiency in the use of public funds has resulted in little change.

At primary and secondary level, the private contributions to education are almost similar between developed and developing countries, implying that the improvement in the efficiency of spending on education should come from the public sector. For example, Duerrenberger and Warning (2018) find that in developing countries such as India, corruption and high teacher absenteeism has negatively affected the quality of education while in the Sub-Saharan region in Africa, misallocation of state resources as a result of political instability has undermined the effectiveness of government spending on education. This has resulted in an increase in enrolments at private institutions for households who are able to afford it.

For this reason, two kinds of inequalities exist. First, between children who come from extremely poor households who cannot afford to attend any type of educational institution (public or private). For many children from low-income households in developing countries, school attendance is the opportunity cost of foregone income or household chores. Second, there are inequalities between those individuals who attend public schools and those individuals who attend private schools. Because of the perceived differences in education quality between public and private schools, those coming from private institutions are more likely to earn high returns in the labour market (Duerrenberger and Warning, 2018).

The section has discussed spending on education in developing countries mainly from the government and has briefly touched on how the perceived differences in the quality of education between private and public schools affect spending on education. The next section focuses on the determinants of household spending on education in developing countries. The section discusses how household characteristics influence spending education. In addition, this section will discuss gender bias in spending on education in developing countries.

2.7 Determinants of household spending on education

With many studies showing a decline in government expenditure on education, the cost of education is pushed towards households; therefore understanding the determinants of education spending has become crucial and necessary. The studies on the determinants of education spending also provide an ideal framework which helps determine how households allocate their funds for education. Therefore, the next stage of this literature review will be exposition and

review on papers discussed on the variables that determine household spending on education. Table 2.3 summarizes the findings of various studies relating to the determinants of household spending on education.

Table 2.3: Determinants of household spending on education

Author	Year	Purpose	Sample/ Data	Method of estimation	Explanatory Variables	Results
Donkoh and Amikunzo	2011	To measure how much households, spend on education and to study the probability of spending on education	Ghana Living Standard Survey (GLSS)	Logit Regression	Gender, age, marital status, employment status, level of education of the household head, geopolitical zone and area of residence	The probability of spending on education increases with the employment status, level of education and age of the household head. Households in urban areas spend more on education than rural households. In addition, female-headed household have a higher probability of spending in education even though they spend less than male-headed households.
Oluwakemi et al.	2015	To study the determinants of spending on education	Harmonized Nigeria Living Standards Survey (HNLSS)	Ordinary Least Squares (OLS) regression	Gender, age, marital status of the household head, geopolitical zone, household size and area of residence	Age, marital status and household size is negatively related to spending on education.
Acar et al.	2016	To study whether determinant of	Turkish Budget Surveys	Tobit regression	Age, gender, level of education and employment status of the household head. Income, household size, area of residence	Household size is negatively related to spending on education while the level of education, employment status and age is positively related. There is no discernible

		spending differ by income			and the gender of the children in the household	discrimination in spending between females and males
Bayar and Ihlan	2016	Determinants of household education expenditure: do the poor spend less on education?	Household Budget Survey	Tobit regression	Log of household income, log of household income squared, gender, marital status, education level and employment status of the household head, the education level of the mother, number of children in the household	Income, employment status, the education level of the household head and mother are significant determinants of education spending. However, male-headed households spend less than female-headed households. Households in urban areas spend more on education than households in rural areas.
Ebaidalla	2018	Understanding household education expenditure: Do poor and rural households spend less on education?	National Baseline Household Survey (NBHS)	Tobit regression	Income, age, education and gender of head, education of spouse, number of children in the household, profession of head, settlement type of the household, household size, room size, marital status and access to electricity	Age, education of the household head and spouse have a positive impact on education expenditure. Households with children at secondary school and university tend to spend higher on education than those in lower levels of schooling. Households in urban areas spend more on education than households in rural areas.
Fernandez and Kambhampti	2018	To determine the role of agency, gender and ethnic groups	Indonesia Family Life Survey (IFLS)	Pooled data model and a fixed effects model	Age, income and education of different ethnic groups. Household income, asset ownership, parents' level of education, employment status	Spending on education is positively related to the level of education, income and employment status. Spending increases in female-headed households.

					and the number of children in the household.	
Iddrisu	2018	To investigate gender bias in spending on education in developing countries	GLSS	Probit model, OLS and Hurdle model	Household size, level of education and gender of the household head, income, area of residence, gender of children in the household	Probability of spending on education increases with household size, and income. There is no gender bias in spending on education in lower levels of schooling but in higher levels, gender bias favours males.
Kaul	2018	To investigate gender bias on the allocation of household resources	India Human Development Survey (IHDS)	Fixed effects model	Household size, income, gender of the household head, area of residence, gender and birth order of the children in the household.	Female-headed households spend more on education. Gender bias is more prevalent in rural areas and in urban areas favours males as more attend private schools than females.

In the analysis of the determinants of education expenditure, household income, the level of education, and the household head's employment status are all positively related to spending on education. Using the Ghana Living Standard Survey (GLSS) of 2006/2007, Donkoh and Amikunzo (2016) find that the employment status, level of education and age of the household head are positively related to spending on education. One possible explanation for this is that more educated household heads have a higher probability of finding employment in the labour market, which means the household has a constant income source to spend education. Another explanation regarding the household head's education is that household heads who are highly educated realise the benefits and returns of education and will therefore have a greater incentive to invest in the education of their children (Oluwakemi et al., 2015).

The area of residence of the household also plays a significant role in education spending; this is because, in many developing countries, households' level of income in rural areas is significantly lower compared to households in urban areas. Rural areas, particularly those in developing countries, have cultural beliefs that often exclude females from going to school, which indirectly affects household spending. Another key determinant of education expenditure is household size. Using the Harmonized Nigeria Living Standards Survey (HNLSS) 2010, Okulwakemi finds that household size is negatively related to spending on education, i.e. larger households spend less on education than smaller households. Similarly, Acar et al., (2016) using Turkish Budget Survey from 2003 find household size is negatively related to expenditure. Both studies substantiate that household income has to be prioritised to other expenditure items such as clothing and food, resulting in less of the total household income available for spending on education in larger households.

In contrast, a recent study by Iddarisu (2018) found that the probability of spending on education increases as the household size increases. Using a later than Donkoh and Amikunzo (2016), specifically the GLSS 2012/2013, the study finds that the probability of spending on education increases as household size increases. The explanation for this is that households with more children will have more to spend on education than smaller households. The differences in the findings between Oluwakemi et al. (2015); Acar et al. (2016), and Iddarisu (2018) might be rationalised by the difference in the method of estimation.

Oluwakemi et al. (2015) uses an OLS regression in analysing the determinants of household expenditure on education, he finds a negative relationship between marital status and spending

on education. That is, spending on education in households where the household head is either single or widowed is higher than households where the household head is married. Furthermore, the study finds that in developing countries such as Nigeria, spending on education is significantly less in households where the household head has more than one spouse, compared to households with just one spouse. One disadvantage of using an OLS is that it implies a constant relationship between the dependent variable and explanatory variables. Acar et al. (2016) uses a Tobit regression that corrects possible left-censoring of data given that many poor households do not spend on education. Finally, Iddarrisu (2018) uses a probit model which is a binary outcome evaluating the probability of spending on education occurring. For example, households with recorded zero spending on education will be assigned a value equal to one, while households who spend on education are assigned a value equal to one. An advantage of such a method of estimation is that it predicts the probability of education spending occurring given explanatory variables.

Studying the determinants of education expenditure, Bayar and Ihlan (2016) using Household Budget Survey (HBS) from different years (2002, 2010 and 2013) estimates a Tobit regression and finds that income is a positive and significant determinant of education expenditure. The study further calculates the income elasticities of households according to their level of income to measure the sensitivity of households spending on education to changes in income. The study finds that poorer households are more sensitive to changes in income than richer households. Using the National Baseline Household Survey (NBHS) of 2009, Ebaidalla (2018) also found income to be a significant determinant of education expenditure. In addition, the study finds that households in different regions have different spending patterns based on their household income. The study looks at the income elasticities of education expenditure and find that, the income elasticity of education expenditure is higher in urban areas compared to rural areas. This suggest that households living in urban areas tend to spend more on education than households in rural areas.

Spending on education among rural households in developing countries has been a concern because such households typically believe that girls should stay at home and help with household chores while boys are sent to school. Studying gender bias using India Human Development Survey (IHDS) 2011/2012, Kaul found that gender bias is prevalent in rural areas where there are cultural beliefs in terms of gender roles. In this study, gender bias favours males in contrast to females, that is, more spending is allocated to males compared to females. In

contrast, Fernandez and Kambhampati (2018) using Indonesia Family Life Survey (IFLS) found that there is no gender bias in the lower levels of schooling but as children advance to higher grades, gender bias is prevalent and favours males. This implies that more spending on education by households is allocated to males compared to females. In urban areas where most households typically earn a high income, boys are more likely to be sent to private schools while girls stay at public schools. In contrast, Acar et al. (2016) using the Ghana Living Standard Survey (GLSS) of 2006/2007 found no discernible discrimination in boys and girls' education spending.

Differences in spending on education also exist between male-headed and female-headed households. Fernandez and Kambhampati (2018) using Indonesia Family Life Survey (IFLS); Kaul (2018) using the Indian Human Development Survey (IHDS) all find that spending on education increased when the household head is female. One possible explanation for this is that females place higher regard for education given its private returns and thus spend more on their children's education. In contrast, Donkoh and Amikunzo (2016) find that male-headed households spend more on education than female-headed households. This is because females tend to earn less compared to males, therefore, decreasing the actual amount spent on education, but the probability of spending is higher in female-headed households compared to male-headed households. The study finds that female-headed households have a greater incentive to send their children to school than male-headed households. The reason for this is that the private returns to education, particularly for females, are higher than males. The returns to education for males are only higher than that of females at primary schooling.

This section has discussed the important household characteristics which influence household spending on education in developing countries. The next section focuses on education in South Africa. The section will discuss how the government allocates its budget on education across the various Departments of Education in South Africa and how spending compares to other developing countries. In addition, how this spending has improved accessed to education since the implementation of “no-fee” schools where children from low-income households do not have to pay school fees. This will also include a discussion on how South Africa compares to other developing countries on numeracy and literacy assessments designed to monitor how children perform at school. Before the section concludes, it provides a discussion on the impact of the HIV/Aids pandemic on the education system, particularly how it affected the supply of

teachers. Finally, the section discusses how the demand for higher education and training has impacted student financial aid in South Africa.

2.8 Education in South Africa

Looking at the provision of education in South Africa, there have been significant improvements since the end of apartheid in terms of per capita state funding on education, enrolment rates, decreasing drop-out rates, and improving accessibility to higher education (Salisbury, 2016). To ensure accessibility to education across all schooling levels, the government has significantly increased its spending on education over recent years. In 2019, government expenditure on basic education was R24.5 billion amounting to an average of 5.2% of GDP. A large portion of the allocation of funds to basic education was to expand enrolments in Grade R, improve school infrastructure, train more teachers, provide meals for learners, improve matric completion rates, and increase the number of “no-fees” schools.

“No-fee” schools have been effective in easing the burden on low-income households. Before the “no-fee” school policy came into effect, schools in the lowest quintile would pay an average of R152 in school fees compared to R2363 for schools in the highest quintile. Since the implementation of the “no-fee” policy, the government has ensured that over 20 000 primary schools in the country are “no-fee” schools (Van Dyk and White, 2019). However, there have been problems with the allocation of state funds according to the quintile ranking where for example, the school is located in a suburban area but caters to predominantly African children who commute to school from townships, and their general socio-economic status range from the lower middle class to poor (Van Dyk and White, 2019).

In such cases, a school located in a suburban area may be classified as an upper quintile school based on its location but caters to children from low-income households. Such schools receive less funding from the government even though they should be classified in lower quintiles so that they receive more funding from the government given the nature of children the school caters to. The underfunding leads to overcrowded classrooms and resources becoming insufficient for the children attending these which undermines the effectiveness of the “no-fee” policy and compromises the quality of teaching and learning (Wills, 2017).

The quality of education remains a concern despite high state expenditure on education. Generally, schools in the upper quintile rankings are better-resourced than those in the lower

quintiles. Given that South Africa spends over 6%, on average, of its GDP on education, which is higher than most developing countries in Sub-Saharan Africa, it is concerning that these countries have better educational outcomes. More than half of the learners who start Grade 1 in South Africa drop-out before completing secondary school while more than a quarter of those who sit for their final matric exam fail. This results in less than 5% of those learners having a tertiary qualification (Mlachila and Moeletsi, 2019). Internationally, South Africa participates in several educational achievement assessments to compare the knowledge of its learners to that of learners from other countries. These assessments include the Progress in International Reading and Literacy Study (PIRLS), the Southern and Eastern Africa Consortium on Monitoring Educational Quality (SACMEQ), and the Trends in International Mathematics and Science Study (TIMSS) (Letseka, 2014).

The latest SACMEQ for South Africa (2017) reported that there had been improvements in literacy and numeracy; however, there are still discrepancies in the quality of education between rural and urban areas. For example, in 2017, 78% of Grade 4 learners in South Africa could not read in any language; furthermore, out of 39 countries that participate in Mathematics assessments, South African ranked second last. In rural areas, 41% of learners were illiterate compared to 13% of learners in urban areas. In addition, learners in Grade 6 performed poorly in literacy and numeracy tests compared to other developing countries such as Kenya and Tanzania even after considering the differences in enrolment and drop-out rates between the countries (Mlachila and Moeletsi, 2019).

Furthermore, there are still inequalities across racial groups, only 11% of White learners are illiterate than 50% of African learners. Most illiterate learners struggle to keep up with the curriculum after Grade 4 as the first three Grades focus on teaching learners how to read. Most of these learners are promoted to higher grades despite the poor performance in numeracy and their illiteracy. As they advance through the school system, these backlogs become more evident as they are more likely to repeat grades or drop-out. In 2011, 76% of Grade 9 learners did not have a basic understanding of whole numbers, graphs and decimals. Overall, the average South African Grade 9 student performs two grades below the average Grade 8 student in other developing countries. According to the Human Capital Index (HCI), which assesses a country's losses due to lack of education and health, South Africa ranks 126th out of 157 countries (World Bank, 2019). Even though these assessments use different methods to assess

outcomes, they all indicate the relatively low quality of education in South Africa compared to other developing countries.

The quality of education also depends on the type of educational institution attended. Private schools in South Africa are considered to offer a better education than most public schools. However, private schools cater for 25% of learners compared to 75% of learners who attend public schools. Looking at the differences in the quality of education between private and public schools, in Grade 3, 60% of learners in poverty-stricken areas cannot perform at an adequate level compared to learners in private schools (Letseka, 2014). This gap widens as learners progress through the school system. The differences in the quality of education between educational institutions further perpetuate the inequalities created by the apartheid government, given that most children in disadvantaged areas are African. Learners from such disadvantaged backgrounds have limited upward social mobility prospects, given that they are stuck in a poverty trap. The low-quality of education given to these children limits their chance of obtaining a higher qualification and exacerbates the challenges of finding employment. In contrast, children from better schools (usually fee-charging public schools and private schools) have a better chance of obtaining a higher qualification and finding employment (Mlachila and Moeletsi, 2019).

There is a direct relationship between affluence and educational quality in South Africa, with most children from affluent families attending private schools while children from low-income households attend “no-fee” schools. The disparities between these schools is incredible. The top 200 high schools in the country achieve more distinctions in Mathematics and Physical Science than the remaining 6600 schools combined. These top 200 high schools charge considerable school fees that are only afforded by wealthy families, and most of the learners enrolled in these schools are White (Spaull, 2018). The inferior quality of education is directly correlated to labour prospects as learners who receive quality education are more likely to advance into institutions of higher education, increasing the opportunity of getting employed, while learners from low-income households are often required to drop-out which means working in jobs that require low skills, earning significantly less and unable to break the cycle of poverty. For example, 7.4% of graduates are from the most impoverished families compared to 36% of graduates from wealthy families (Statistics South Africa, 2016).

Spending on education varies across households with different incomes and different levels of schooling. The level of schooling and type of educational item affects spending, for example,

high income households spend more on fees while low-income households spend more on uniforms (Letseka, 2014). One possible explanation for this is the fact that many low-income households send their children to “no-fee” schools where they are exempted from paying school fees while many high-income households send their children to private schools where fees are significantly higher than in public schools. This implies that low-income households who are exempted from paying school fees can allocate their income to other education items such as uniforms, transport, and textbooks. For middle-class households, transport to schools constitutes a larger portion of their household income (Letseka, 2014).

In low-income households, spending on education remains relatively constant up to Grade 9, which is the end of compulsory education. At the end of Grade 9, about 20% of children from low-income households do not continue with secondary school (Statistics South Africa, 2016). For most households, the average spending on education increases from primary to secondary school. This can in part be explained by the fact there are fewer secondary schools in South Africa compared to primary schools, which implies that learners have to travel outside their neighbourhoods to attend school. This coupled with the fact that secondary schools generally have higher school fees than primary schools (and that the “no-fee” policy is only effective till Grade 9), requires more spending from households. Another factor is the high repetition rates and low performance of learners, especially those learners who do not have adequate learning materials.

The DBE has identified several reasons for the poor performance of learners across most public schools. Factors such as access to textbooks and other learning materials, curriculum coverage, the school's physical infrastructure, school libraries, budget plans, and school management significantly impact the performance of learners. In many poorly managed schools, the average teaching time is less than the actual total time required for effective teaching and learning. This is exacerbated by the fact that many schools do not have textbooks or adequate learning materials (Van Dyk and White, 2019). There have been issues regarding the delivery of textbooks across public schools in different provinces, lack of textbooks implies that learners cannot complete their class activities and homework resulting in low quality of education. It is common that in such schools, the libraries are not equipped with adequate learning materials or computers. About 78.7% of public schools do not have libraries, and over 71.7% of public schools have improper infrastructure (Letseka, 2014).

Improving school infrastructure has been an important priority for the current government given that learners in disadvantaged areas are taught in decrepit buildings with no water, electricity, toilet facilities, and adequate learning materials. To this effect, two infrastructure programmes were launched, namely: The Provincial Schools Building Programme and the Accelerated Schools Infrastructure Delivery Initiative (ASIDI). Since the implementation of these programmes, 989 new schools have been built as well as 784 new and replacement schools. Furthermore, over 76% of schools that previously didn't have water and electricity now have access and sanitation (Department of Basic Education, 2019).

To understand the contribution of government spending on education, Figure 2.1 represents public spending on education as a percentage of GDP. The graph shows that spending on education from 2009 there was a sharp increase in spending on education, which declined slightly in 2013. Since then, there have been moderate fluctuations in spending on education in the country. From 2017, spending increases but is not as high as between 2012-2013. A high percentage of government spending on education implies that education takes high priority. In some cases, government spending on education decreases when households and the private sector increase their education expenditure.

Figure 2.1: Public spending on education in South African as a percentage of GDP



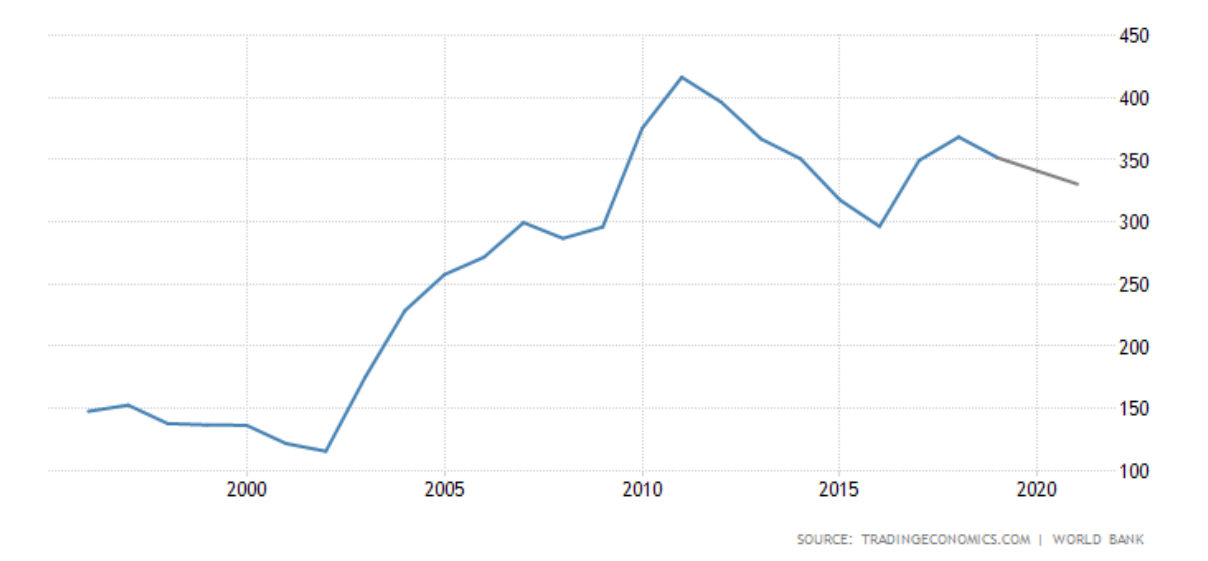
Source: Trading economics (2021).

Public spending on education includes direct spending on educational institutions and indirect spending, such as grants from the government given to households. Spending includes

expenditure on schools, universities, and other public and private institutions. Spending on education from the government depends mainly on GDP, and in recent years, the South African economy has been very stagnant. The graph illustrates that spending on education dropped from 2000-2002 and around 2003, spending increased slightly before decreasing again in 2005. Surprisingly, spending increased despite the global financial crisis of 2008/2009 dropping around 2011. Following the student-led “fees must fall” protest of 2015, government spending on education increased slightly and has been on a downward trend since 2016.

As the economy struggles to grow, unemployment and poverty become inevitable, households struggle with the costs of education and the government has less financial resources to allocate to spending on education. To illustrate further, Figure 2.2 shows the GDP growth of South Africa for the past 20 years. The graph shows around 2016, the economy had a drop in GDP. Around 2018, there was a decline in economic growth, and since then, the economy has been struggling to grow.

Figure 2.2: GDP growth in South Africa

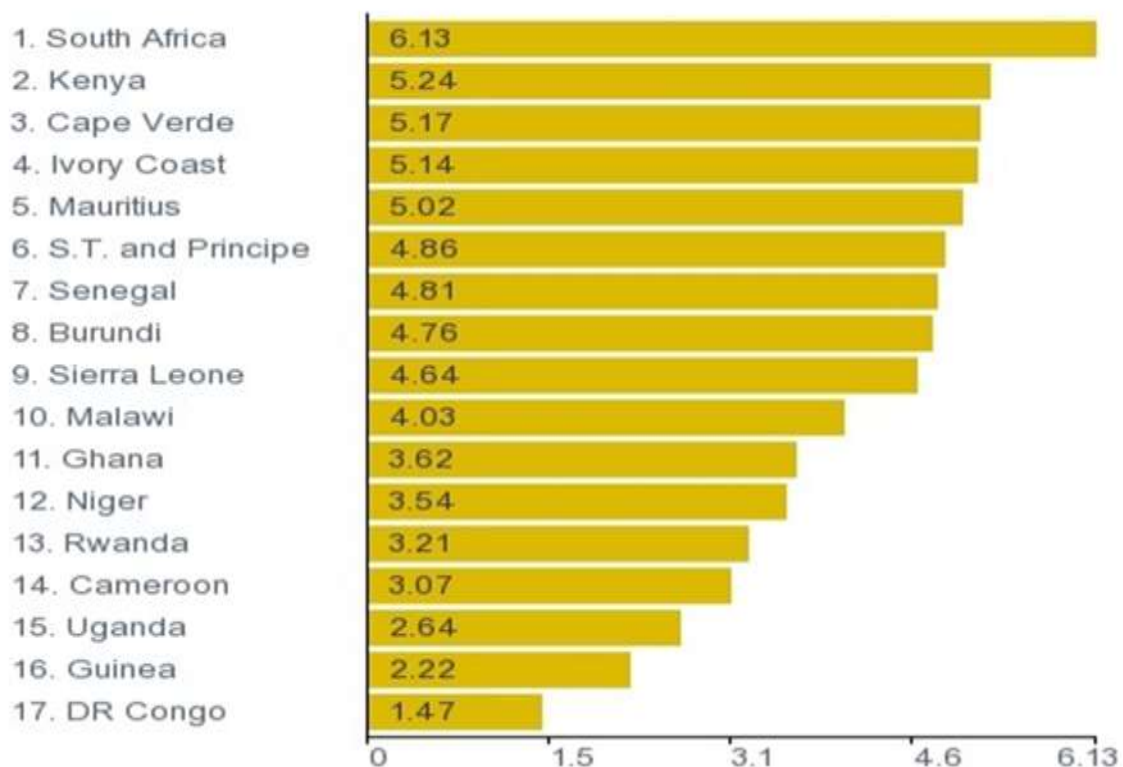


Source: Trading Economics (2021).

Despite the sluggish economic growth in the country, South Africa’s spending on education compared to other developing countries in Africa remains high. Collectively, African countries spend, on average, 5% of their GDP on education while South Africa spends on average, 6% of GDP on education (World Bank, 2019). The high government spending on education in Africa has increased enrolments and the average years of schooling, but it has not resulted in

better educational outcomes, especially for South Africa (World Bank, 2019). Efficiency in spending has been cited as the reason for the lack of better educational outcomes; improving efficiency on spending on education can improve the quality of education and reduce repetition rates. Figure 2.3 presents public spending on education in developing countries in Africa as a percentage of GDP for 2017.

Figure 2.3: Public Spending on education in developing countries as a percentage of GDP



Source: The Global Economy (2020)

The figure indicates that South Africa has the highest spending on education compared to other developing countries in Africa. Kenya has the second-highest spending on education with 5.24%, while the lowest recorded spending on education is from the Democratic Republic of Congo with just 1.47%. Even though Kenya and DR Congo spend less on education than South Africa, their GDP was 4.87% and 2.9%, respectively, in 2017, which is considerably higher than South Africa which was at 1.4%.

Together with the government, households spend a significant portion of their income on education. While the government is mainly responsible for the payment of teacher's salaries,

infrastructure, and the subsidisation of learning materials such as textbooks, households are responsible for paying fees (in schools that require fees), transport costs, school uniforms, and stationery, including textbooks. For low-income households, such costs become unaffordable, which causes children to drop-out; this is particularly true in rural communities where a household may stay far from the school. These additional expenses increase the risk of dropping out.

On the supply side, poorly trained or qualified teachers, outdated curricula, and infrastructure means that the quality of secondary education has deteriorated (Fredriksen and Fossberg, 2014). Furthermore, the HIV/AIDS pandemic in South Africa has affected the quality of education as the number of experienced teachers have left the profession due to HIV/AIDS related illness. In 2005, it was estimated that among the 375 000 teachers in South Africa, 12% are HIV positive. By 2010, over 53 000 teachers died from HIV/AIDS-related illness; due to the stigma of the disease, some teachers do not know their status, this implies that figure is likely to increase as the pandemic continues (Louw et al., 2009). Among teachers who are infected or affected by the disease, there is a high absenteeism rate, which means that these teachers cannot fulfil their teaching duties. This often requires that other teachers carry their workload, increasing the number of learners in the classroom, compromising the quality of education.

The stress associated with dealing with large classrooms in turn contributes to the poor health status of teachers who are not HIV positive (Louw et al., 2009). New teachers entering the profession lose out on the opportunity to be trained and mentored by their experienced colleagues. In addition to this, teachers are also leaving the profession as a result of inadequate remuneration with an increasing workload and the lack of student discipline, especially in secondary schools (Johnson and Naidoo, 2017). These are some of the factors that the South African education system is facing which makes it difficult for the country to achieve its set goals regarding education.

Despite this, there has been an increase in the demand for secondary education as a result of the increase in primary school enrolment. It is expected that number of students who matriculate is going to increase exponentially and this requires significant contributions from both the private and public sectors. Firstly, the government will be required to increase their allocation of government spending on education and work towards growing the economy. The challenge is that increasing the allocation of government spending requires more tax revenue

which remains a problem in a country where there is high unemployment. Another problem is the lack of sustained economic growth required to finance education which is why private contributions in the provision of education are necessary. In a survey collected from sixteen countries in the Sub-Saharan Africa, it was found that households spend 30% of their total household income on primary school education, 49% on secondary school education and only 22% on tertiary education (Fredriksen and Fossberg, 2014).

With regard to higher education in South Africa, in the 2018/2019 financial year, R38.7 billion was spent on higher education. This amount is expected to increase to R47.5 billion in the 2020/2021² financial year (National Budget Estimates, 2019). The expenditure will focus on improving quality at institutions of higher learning and increasing financial aid to students. In 2015, during the fees must fall protests, students called on government to ensure that higher education is free for all eligible South Africans students. This was motivated by the Freedom Charter of 1955 which was written by the African National Congress which stipulated that education must be free for all (Bitzer and Jager, 2016).

To improve participation in institution of higher education and training, especially for students coming from low-income households, NSFAS was introduced in 1990 as a loan program which funds previously disadvantaged students who were academically deserving. The aim of the financial aid scheme was to ensure that deserving students from disadvantaged backgrounds were able to access higher education institutions. From an economic point of view, student loans are more effective since they must be repaid and thus increase the budget that can be allocated to higher education over time. Ten years after its introduction, an estimated 83 251 of student loans were given out by the financial aid scheme. By the end of the 2016 academic years, over 1.7 billion students were funded by NSFAS (Department of Higher Education and Training, 2018). However, the financial aid scheme experienced low loan repayments, in the same year, an estimated R7.2 billion worth of student loans was still outstanding in historical debt. The primary reason for this was the fact that many students were struggling to find employment to earn enough income to start the loan repayments. According to the loan repayment framework, loan repayments start at 3% once the debtor's salary over R30 000 per annum and adjusted according to earnings reaching a maximum of 8% with earnings over R59 300 or more per annum (Department of Higher Education and Training, 2018).

² These figures may have been adjusted as a result of the corona virus pandemic.

From the beginning of 2015, student led protests in many public universities across South Africa took centre stage with student demanding “fee free higher education”. These protests were motivated by the fact that between 2013-2015 over 71 000 students studying through NSFAS across the country were facing financial exclusion for owing over R2.5 billion which prevented them from registering for the 2016 academic year. This caused the government to increase their allocation to higher education from R9.5 billion in 2015 to R10 billion in the 2016/2017 financial year. Additional funds amounting to R2.54 billion were allocated to the students who were facing financial exclusion (Department of Higher Education and Training, 2018). It became evident that the current method of financial aid was failing and the demand for higher education was increasing rapidly. Despite the additional funds allocated to aid students in higher education students, there were persistent administrative backlogs causing students to go for period of up to 8 months without receiving their funding, again causing major disruptions at higher education institutions. The government started developing plans to restructure the financial aid scheme to ensure that students who were previously under-funded or not funded received financial assistance (Department of Higher Education and Training, 2018).

By the end of 2017, government announced fee free higher education for students from poor households. This meant that from the beginning of 2018, all returning students funded by NSFAS would have their student loans converted to bursaries while new applicants whose combined family income was less than R350 000 per annum would receive fully subsidised bursaries from NSFAS. However, student loans taken prior to 2017 would not be converted to bursaries and outstanding loans would be written off. Increasing the household income threshold from R122 000 to R350 000 per annum to identify students in need of financial aid as well as increasing government spending on higher education from 0.68% (as a percentage of GDP) to 1% over the next five years is to ensure the implementation of the new Department of Higher Education (DHET) bursary scheme through NSFAS.

2.9 Summary and conclusion

The purpose of this chapter was to provide a background on the past and current education system in South Africa which resulted high levels of education discrimination across race and gender. The theoretical discussion revealed that while the apartheid government spent significantly less on the education of Africans per pupil, it increased access to education for many African children. Since the end of apartheid, the new government had to create policies

that would ensure that everyone in South Africa is not discriminated from acquiring an education and to further dismantle the inequalities created by the previous government.

To achieve their set goals, the government had to increase spending significantly over the past years and spending is expected to increase in the future. The theoretical discussions revealed the government has had success in ensuring that learners who cannot afford to pay school fees are not denied access to education. For this reason, the government has spent considerable amounts to increase the number of “no-fee” schools, this has impacted positively on enrolments at primary school level. However, the quality of education in these “no-fee” schools remains a concern when compared to fee-charging public and private schools. The perceived better-quality education in private schools have resulted in many learners from affluent families attending these types of institutions and have progressed significantly better than their counterparts in resource constraint public schools. The poor quality of education in South Africa extends beyond public and private schools, South Africa performs poorly when compared to other developing countries on the African continent. This is concerning because South Africa spends a higher percentage of its GDP on education compared to these countries.

On the other hand, supply side factors such the supply of teachers and dealing with the HIV and Aids pandemic, the mismanagement of government funds, poor infrastructure and lack of delivery of learning materials have undermined government’s effort in ensuring improved access to quality education. This translates to less projected enrolments for higher education and training. While there has been an increase in the demand for higher education compared to previous years, the student led “fees-must-fall” protests have challenged government to deliver on their promise to ensure free education for all South African citizens. For this reason, NSFAS which initially started as a loan-repayment student aid scheme has been changed into a bursary scheme for students who come from low-income households. Furthermore, fiscal constraints have forced governments across the world to significantly reduce spending on education. This has shifted the financial burden to households and in a developing country such as South Africa, indirect costs such as school uniforms, textbooks and transports forced learners to drop-out of school because they cannot keep up the increasing cost of education.

Lastly, the socioeconomic status of household has direct implications for spending on education. Empirical evidence shows that factors such as household income, the level of education of the household head, their age, gender, marital status positively influence spending on education. Other factors, such as the number of children in the household, household size

and geographical location mostly negatively affect spending on education. Gender bias in terms of spending on education has been recorded in developing countries that are characterised by religious and cultural beliefs. For many households in developing countries, the cost of education simply becomes unbearable resulting in non-attendance, high drop-out rates and ultimately low education attainment.

To analyse attendance and spending on education in South Africa between households and government across all schooling levels, the following chapter looks at the dataset that will be used as well as its advantages and limitations. The chapters also compares the chosen dataset among other datasets in South Africa and how information relating to education was collected and its impact on the analysis of school attendance and education spending for this study.

Chapter 3: Research methods and data

3.1 Introduction

The chapter presents a description of the data collection process. It provides information concerning how the data relating to education was collected. This chapter also defines the limitations of the research design and how attendance and spending on education will be analysed. The first section looks at the survey that will be used for the analysis, how it differs from other household surveys in South Africa and why it was preferred over the rest. The second section clarifies how the household information was collected as well as how information related to education was collected, which poses some limitations in respect of the research design.

3.2 Data collection and analysis

To analyse the attendance and cost of education across all school levels, between public and private institutions, the LCS of 2014/2015 will be used. There are a few household surveys in South Africa that capture information on education expenditure. For example, the General Household Survey (GHS) was first introduced in 2002 in order to track the developmental progress of South Africa since the end of apartheid in 1994. For this reason, information on education is collected by whether individuals attend educational institutions and the highest level of education attained for individuals.

On the other hand, the Income and Expenditure Survey (IES) collects information that provides for a detailed analysis of personal and household income, however, information relating to education such as attendance between private and public institutions is only disaggregated at school level and not at other levels of schooling. As it is the objective of this study to analyse attendance across all school levels between public and private institutions, the LCS was preferred over the other surveys because of the way the information at attendance educational institutions and education expenditure is captured and disaggregated according to the type of expenditure household income/loans or non-refundable bursaries/government grants) across both private and public institutions.

The LCS was conducted by Statistics South Africa (Stats SA) between 13 October 2014 and 25 October 2015. The LCS was designed with the purpose of understanding living conditions and poverty in South Africa by collecting and examining expenditure information of households. This is done by obtaining detailed information regarding household consumption expenditure across twelve areas such as health, transport, communication, education, recreation

and culture etc. The information obtained can be disaggregated across geography (province and settlement type) and by the demographics of the household head (gender and population group).

To collect information from households, the LCS uses three instruments namely: household questionnaire, the weekly diary and summary questionnaire. The household questionnaire was divided into four modules, with each module given to the household at the beginning of each week. The first module that was given to households was to collect information on the composition of the household, i.e., capturing the particulars of individuals in the household, such as their level of education and employment status. The second and third modules collected information expenditure such as clothing, housing, transport, furniture, telecommunications, education, and healthcare etc. The fourth module collected information on income, food security, banking, and the living conditions of the households. The survey covered 32 906 households, but only 27 527 households were used as the rest were classified as out of scope by the LCS for a number of reasons such as listing errors Statistics South Africa (Stats SA) (2016).

For the purposes of determining which households and which individuals should be included in the survey, the Household Roster (section 1 of Module 1 of the LCS questionnaire) requires that respondents “give the name and surname of every person who resides in this dwelling and was part of this household at least four nights a week on average and has done so over the last four weeks” Statistics South Africa (2014-2014): 2. Explicit instruction is given to include: “babies, the bedridden, domestic workers who are paid in-kind only and the elderly persons” Statistics South Africa (2014-2014): 2. In terms of defining a household, this is defined as “all persons who live together and provide themselves jointly with food or other essentials for living or a single person living alone” Statistics South Africa (2014-2014): 2. Respondents are instructed to “not include persons in special dwellings, like boarding schools, retirement homes, hospitals, prisons, teachers’ quarters, nurses’ homes, etc” Statistics South Africa (2014-2014): 2. In addition, question 1b explicitly asks: “Has been part of this household for at least four nights on average per week during the last four weeks?” Statistics South Africa (2014-2014): 2.

Any individuals who did not reside in the household for an average of at least four nights a week over the past four weeks are not considered for further interview. In terms of this study, one concern to be noted is that a) if scholars resided in boarding houses in the four weeks prior to their household being interviewed, they would have been excluded from the definition of

the household used in the survey and b) students residing in University residences may also have been excluded from the definition of the household used in the survey if they had been residing on campus in the four weeks prior to their household being interviewed. As such, some of the results presented in this study should be treated with caution.

Section 2 of the questionnaire collects information on the education of household members, such as the highest level of education completed by members of the household, if the household member is currently attending an educational institution as well as the different education levels (e.g. primary, secondary, tertiary) and whether attendance is at a private or public institution. Additionally, questions related to whether the household pays for fees or not is collected under this section. For those households with individuals who are not attending an educational institution, the reasons for non-attendance were also collected. Additional information focusing on household expenditure related to education and training in the private and public sectors in the twelve months prior to the survey is collected in Section 16 of the questionnaire. Information on the household's education expenditure on, *inter alia*, tuition at different education levels (e.g. primary, secondary, tertiary), is collected together with information on boarding fees and excursion fees, for both private and public institutions. In addition, respondents are required to specify whether this expenditure was financed by the household (for instance through loans) or through non-refundable bursaries/ government grants.

Some educational expenditure items are not captured in Section 16 of the questionnaire. Spending related to transport costs for educational purposes are recorded under Section 19, while spending on school uniforms and stationery are recorded in Section 12 and 17, respectively. Additional information focusing on whether the household has certain items such as school uniforms and if the household does not have these items, state whether they do not want the item or cannot afford it, is collected in Section 6. Transport costs are divided according to different modes of transport (taxi, bus, train or own transport) but not according to the type of education institution or level of schooling (e.g. primary, secondary or tertiary). In addition to this, the information collected on transportation includes rented public vehicles (taxis, buses, aircrafts, boats and trains) as well as the value discounted on transport.

In addition to the concern mentioned earlier in respect of the definition of the household potentially excluding scholars and University students because they were not resident in the household during the four days prior to the survey, another concern with the LCS is that the information collected on education expenditure is collected at household level, rather than in respect of each person in the household. As such, it is difficult to determine whether there is a

gender bias in terms of education spending within households. Therefore, estimating the difference in spending within households by gender becomes challenging and open to bias. In addition, for households who have more than one child at the same level of schooling (for example, primary school), it is not possible to determine how much the household spends on each child at each grade unless these were funded separately.

Another setback was the poor response to the LCS survey compared to the IES, especially in the Gauteng province. This is important given that Gauteng makes up a third of total consumption in the country which means that there might be an under-representation of households in the survey, especially high-income households (Statistics South Africa, 2016). To correct this, Statistics South Africa used non-response adjustments so that the respondent households could be accurately expanded to represent the entire population.

The LCS was released in five files, namely: households, household assets, persons, personal income, and total. The household file contains all the household characteristics, while the persons contain the particulars of the persons who responded to the survey. The personal income file captured all the information on income at a personal level, and the household assets captured all the information regarding the assets acquired by the household. Finally, the total file has all the expenditure information.

The expenditure information was coded according to the Classification of Individual Consumption According to Purpose (COICOP), which made it possible to identify and import expenditure information related to education. This expenditure information on education along with information collected from the persons, households, and household assets files were merged together using Stata, which resulted in 99 055 observations. After dropping variables that will not be used in this study, the resulting dataset contains information on 88 906 households which includes all the households with and without individuals currently attending educational institutions.

3.3 Data analysis

To provide an accurate analysis of attendance patterns in education across all levels of schooling and between private and public institutions, the next chapter will provide descriptive analysis of individuals currently attending an educational institution and those individuals who are not currently attending an educational institution. Furthermore, among individuals who are not currently attending an educational institution, reasons for non-attendance will be presented to provide insight to the degree which financial and non-financial reasons affect school

attendance in South Africa. The analysis will include the characteristics such as the gender, population group, settlement type and income of individuals. In addition, among individuals who are currently attending an educational institution, the analysis will be done at private and public institutions and across the level of schooling. The analysis will also identify households who pay for school fees among individuals who are currently attending an educational institution and other sources of funding that are used to finance the education of individual who are currently attending an education institution in the population. Then household characteristics such as the gender, age, employment status, level of income of the household head will be analysed as well as the settlement type of the household etc.

Given that there are households in the population who have individuals currently attending an education institution but are not pay for any costs associated with schooling (because of government subsidization or bursaries), there will be households that record zero spending. To analyse the distribution of household spending on education, kernel density estimation (KDE) will be used. The KDE graphs will further analyse spending on education by households across income quintiles and by per capita income quintiles. Finally, the determinants of household spending on education in South Africa will be iteratively estimated using a Tobit model. The analysis will also include the sensitivity of households to changes in income across households in South Africa since the natural logarithms of total household spending on education and of per capita income will be used in the Tobit model, the estimated coefficient of the log of per capita income shows the income elasticity of total education spending.

3.4 Summary and conclusion

The purpose of this chapter was to introduce the data, specifically how the LCS 2014/2015 data was collected, the advantages and limitations of the chosen dataset with respect to the aims and objectives of this dissertation. The next chapter uses the available information to provide descriptive statistics related to education. Before analysing spending between private and public institutions and across the level of schooling, first, an analysis of the characteristics of the individuals in the population not attending and those currently attending an educational institution will be presented. In addition, reasons for non-attendance at educational institutions will be provided for the individuals in the population who are not currently attending an educational institution. This will be followed by an analysis of household characteristics for households with at least one-member of the household who is currently attending an educational institution. Then an analysis on education expenditure will be provided before the chapter concludes.

Chapter 4: Descriptive analysis and findings

4.1 Introduction

The purpose of this chapter is to provide individual and household descriptive statistics on information related to education. Sampling weights are used in the analysis to ensure that the results shown are representative of the population. The descriptive statistics in this section will include information related to attendance, non-attendance, fee-payment, including reasons for the non-payment of fees by the individuals currently attending an educational institution if applicable. For those individuals who are not currently attending an educational institution, reasons for non-attendance will be provided. Characteristics of the household head such as the age, gender, and employment status for households with at least one-member currently attending an educational institution will be presented. Finally, this section considers expenditure on education in order to show the relative roles of spending on education between households and government and between private and public institutions. Therefore, this chapter is divided into three sections, namely: (1) Descriptive statistics for individuals in the population; (2) Descriptive statistics for households with at least one-member currently attending an educational institution and (3) Spending on education among households with at least one-member currently attending an educational institution.

Section 4.2: Descriptive Statistics for Individuals in the Population

Characteristics of individuals currently attending an educational institution will provide useful information such as the education sector (i.e., private or public) that they are currently attending, the type of educational institutions (primary, secondary, university etc.). This will be helpful in explaining spending patterns when expenditure on education is analysed as spending differs between institutions and across levels of schooling. Furthermore, this section will provide useful information relating to the reasons for non-payment of fees among households in which individuals currently attending reside in. For those individuals who are not currently attending an educational institution, reasons for non-attendance will be analysed.

Attendance at educational institutions has important implications for the educational attainment of individuals; therefore, many countries use education indicators such as attendance and enrolment rates to mention educational progress. The most commonly used educational indicators internationally are enrolment rates which can be used to assess equality of access to education typically by gender. However, the LCS does not ask whether individuals are enrolled at an educational institution but rather if the individual is currently attending an educational

institution or not. To this effect, it is possible to determine the number of individuals currently attending educational institutions across private and public institutions and according to their level of schooling. Therefore, Table 4.1 shows the distribution of individuals in the population who are currently attending an educational institution and those who are not.

Table 4.1: Frequency and distribution of individuals by attendance at educational institutions

Education institution attendance	Population estimates (in 000s)	Percentage
Does not currently attend	35 34 (0.12)	65
Attends	18 99 (0.15)	35
Total	54 34	100

Source LCS 2014/2015, author's calculations, (1) Figures are weighted to population levels, (2) Standard errors are presented in parenthesis, (3) Due to rounding, some estimates may not correspond with the actual figure.

Of the 54 million individuals in the population, only 35% are currently attending an educational institution, while 65% are not. Overall, South Africa's attendance rates have improved significantly over the past decade (Wills, 2017). One possible explanation for the improvement in attendance rates is the government's commitment to achieving universal enrolments for primary school children. This has been achieved through a number of ways, one being increasing the number of "no-fee" public schools so that individuals from disadvantaged backgrounds are not excluded from attending an educational institution. However, attendance at secondary schools remains sluggish. This coincides with the end of compulsory schooling, where about 17% of learners above the age of 15 drop-out of school (Statistics South Africa, 2016). Furthermore, the "no-fee" policy ends at Grade 9, which might, in part, explain the drop-out rates at secondary school. The attendance and non-attendance of individuals in the population has important implications for spending on education by both household and government. Firstly, for individuals who are currently attending an educational institution, there are a number of costs incurred by the household and the government. On the other hand, individuals who not currently attending an educational institution will fail to obtain an educational qualification which further perpetuates the inequalities in the South African education system and leads to poor labour market outcomes for such individuals (Mlachila and Moeletsi, 2019).

The characteristics of individuals currently attending an educational institution can be analysed by race, gender, province, age etc. An analysis of educational attendance by gender will provide insight as to whether school attendance among girls has increased as gender bias in school attendance has been recorded in many developing countries. Table 4.2 depicts the frequency and gender distribution of individuals currently attending an educational institution.

Table 4.2: Frequency and distribution of individuals attending educational institutions, by gender

Gender	Does not currently attend		Attends		Total	Percentage Total
	Population estimates (in 000s)	Percentage	Population estimates (in 000s)	Percentage		
Male	17 12 (0.12)	48.4 (0.3)	9 46 (0.08)	49.8 (0.4)	26 57 (0.13)	48.9 (0.2)
Female	18 23 (0.12)	51.6 (0.3)	9 54 (0.08)	50.2 (0.4)	27 76 (0.13)	51.1 (0.2)
Total	35 34	100	18 99	100	54 34	100

Source LCS 2014/2015, author's calculations, (1) Figures are weighted to population levels, (2) Standard errors are presented in parenthesis, (3) Due to rounding, some estimates may not correspond with the actual figure.

The results from Table 4.2 show that attendance is almost equitably balanced between females and males. Notwithstanding that these figures reveal that attendance is almost equal between males and females, there has been a documented significant improvement in the national level of female attendance. In previous years (2001 to 2011) a much smaller percentage females were attending educational institutions compared to males (Statistics South Africa, 2016). This was especially true in rural areas where it is believed that females need to take care of household chores (Fernandez and Kambhampati, 2018).

In many rural areas, the opportunity for a female to go to school is often hampered by domestic responsibilities such as childminding, working in the fields, and cooking. This coupled with the relatively low quality of education in rural areas results in low educational progression among females. For example, Zuze (2020) using data from South African Demographic and Health Survey from 2016, found that only 2% of females residing in rural areas complete secondary schooling compared to 34% of females who reside in urban areas (Zuze, 2020).

Furthermore, differences in attendance exist between racial groups in South Africa. Analysing attendance by the population group of individuals currently attending is important given the historical discrimination of the South African schooling system, which affected the attendance and completion of school of Africans, Coloureds and Asians differently from that of Whites. The varied experiences of individuals from different racial groups, particularly for previously disadvantaged individuals, underlie some of the redistributive policies for the current government, which affects government spending on education. Therefore, Table 4.3 shows the frequency and distribution of attendance of individuals by population groups.

Table 4.3: Frequency and distribution of attendance and non-attendance of individuals by population group

Population group	Does not currently attend		Currently attends		Total	Percentage total
	Population estimates (in 000s)	Percentage	Population estimates (in 000s)	Percentage		
African	27 53 (0.13)	77.9 (0.2)	16 17 (0.10)	85.1 (0.3)	43 69 (0.13)	80.4 (0.2)
Coloured	3 38 (0.04)	9.6 (0.1)	1 39 (0.03)	7.4 (0.2)	4 78 (0.05)	8.8 (0.1)
Indian/Asian	1 02 (0.03)	2.9 (0.1)	0 33 (0.02)	1.7 (0.1)	1 35 (0.04)	2.5 (0.1)
White	3 41 (0.08)	9.6 (0.2)	1 10 (0.04)	5.8 (0.2)	4 51 (0.09)	8.3 (0.2)
Total	35 34 (0.14)	100	18 99 (0.11)	100	54 34	100

Source LCS 2014/2015, author's calculations, (1) Figures are weighted to population levels, (2) Standard errors are presented in parenthesis, (3) Due to rounding, some estimates may not correspond with the actual figure.

The results show that 85% of individuals currently attending an educational institution are African, with Indians/Asians constituting the least of the attendance rates at almost 2%. It is not surprising that the majority of individuals currently attending an educational institution are African, given that they constitute the highest percentage of individuals in the population. It is worth noting that a higher percentage of Whites are not currently attending an educational

institution compared to those who are currently attending an educational institution. Similarly, a relatively higher percentage of Coloureds and Indians/Asians are not currently an educational institution compared to those who are currently attending an educational institution. In contrast, a higher percentage of Africans are currently attending an educational institution compared to those who are not. This might be explained by the fact that the government has committed itself to ensuring access to education for previously disadvantaged individuals (who were predominantly African). However, it worth noting that a significant portion of the population, particularly Africans do not attend an educational institution. For South Africa to meet its own constitutional obligation with respect to education and narrowing the gap between educational attainment across the different races in South Africa, a major change is needed in ensuring increased attendance which will require a significant spending on education by both households and government (particularly for individuals coming from household that lack the financial resources to finance their school attendance).

To further explain the disparities in education attendance by individuals of different population groups, Table 4.4 shows the frequency and distribution of individuals currently attending an educational institution by population group and education sector.

Table 4.4: Frequency and distribution of individuals currently attending educational institutions by population group and education sector

Population Group	Public		Private		Total	Percentage total
	Population estimates (in 000s)	Percentage	Population estimates (in 000s)	Percentage		
African	14 14 (0.09)	86.6 (0.3)	1 76 (0.04)	75.4 (1.1)	15 91 (0.11)	15.6 (0.3)
Coloured	1 22 (0.03)	7.5 (0.2)	0 16 (0.01)	6.7 (0.5)	1 37 (0.03)	7.4 (0.2)
Indian/Asian	0 27 (0.02)	1.6 (0.1)	0 05 (0.01)	2.4 (0.4)	0 32 (0.02)	1.7 (0.1)
White	0 71 (0.04)	4.3 (0.2)	0 36 (0.03)	15.6 (1.1)	1 07 (0.05)	5.7 (0.2)
Total	16 34 (0.11)	100	2 34 (0.05)	100	18 68	100

Source LCS 2014/2015, author's calculations, (1) Figures are weighted to population levels, (2) Standard errors are presented in parenthesis, (3) Due to rounding, some estimates may not correspond with the actual figure.

Based upon the presented statistics, it can be inferred that a higher percentage of Africans and Coloureds attend public institutions compared to private institutions. In contrast, a higher percentage of Indians/Asians and Whites attending private institutions compared to public institutions. Overall, the results indicate the attendance is significantly higher at public institutions compared to private institutions. Private institutions have a more prestigious academic reputation due to the high perceived quality education offered at these institutions; however, the fees charged at these private institutions make them unaffordable to many individuals from low-income households. While there are some public institutions that charge considerably high fees, most individuals who cannot afford to pay for fees enrol at “no-fee” schools which are public institutions. For “no-fee” schools to be accessible to many individuals from low-income households, it requires high subsidization by the government. In addition, households are responsible for the payment of indirect educational costs such as school uniform, transport, textbooks and stationery.

Given that different provinces have different population rates and different challenges pertaining to their educational institutions, attendance and non-attendance of individuals by province can provide important insight to the spending patterns of government and households in these provinces. Therefore, Table 4.5 shows the frequency and distribution of individuals who are currently attending and those who are not attending educational institutions by province.

Table 4.5: Frequency and distribution of attendance and non-attendance of individuals at educational institutions by province

Province	Attends		Does not currently attend		Total	Percentage Total
	Population estimates (in 000s)	Percentage	Population estimates (in 000s)	Percentage		
Western Cape	1 84 (0.039)	9.7 (0.2)	4 30 (0.058)	12.2 (0.2)	6 15 (0.068)	11.3 (0.1)

Eastern Cape	2.74 (0.047)	14.4 (0.2)	4.07 (0.056)	11.5 (0.2)	6.82 (0.072)	12.5 (0.1)
Northern Cape	0.36 (0.01)	1.9 (0.1)	0.79 (0.016)	2.3 (0.0)	1.15 (0.019)	2.1 (0.0)
Free State	0.97 (0.022)	5.1 (0.1)	1.83 (0.032)	5.2 (0.1)	2.80 (0.038)	5.2 (0.1)
KwaZulu Natal	3.98 (0.059)	21.0 (0.3)	6.78 (0.077)	19.2 (0.2)	10.76 (0.094)	19.8 (0.2)
North West	1.22 (0.028)	6.4 (0.1)	2.46 (0.041)	7.1 (0.1)	3.68 (0.049)	6.8 (0.1)
Gauteng	3.99 (0.077)	21.0 (0.3)	9.06 (0.12)	25.6 (0.3)	13.05 (0.14)	24.0 (0.2)
Mpumalanga	1.52 (0.003)	8.0 (0.2)	2.72 (0.044)	7.7 (0.1)	4.24 (0.054)	7.8 (0.1)
Limpopo	2.37 (0.039)	12.5 (0.2)	3.31 (0.048)	9.4 (0.1)	5.68 (0.061)	10.5 (0.1)
Total	18.99 (0.12)	100	35.34 (0.15)	100	54.34	100

Source LCS 2014/2015, author's calculations, (1) Figures are weighted to population levels, (2) Standard errors are presented in parenthesis, (3) Due to rounding, some estimates may not correspond with the actual figure.

Overall, the results indicate that Gauteng has the highest percentage of individuals residing in that province followed by KwaZulu Natal. In contrast, the Northern Cape has the lowest percentage of individuals residing the province. The results from the table show that provincial variation in attendance is widely dispersed; however, Gauteng and KwaZulu Natal have the highest attendance rates of 21% out of the nine provinces. The Northern Cape has the lowest percentage of individuals attending with only 1.9%. Turning to non-attendance, Gauteng and KwaZulu Natal have the highest percentage of individuals not currently attending an educational institution with 26% and 19%, respectively. Provinces also differ in terms of settlement type, for example, KwaZulu Natal has more rural settlements compared to Gauteng,

which affects attendance. Table 4.6 shows the frequency and distribution of individuals currently attending an educational institution by province and settlement type of the household.

Table 4.6: Frequency and distribution of individuals currently attending an educational institution by province and settlement type of the household

Province	Settlement type								Total
	Urban formal		Urban informal		Traditional area		Rural formal		
	Population estimates (in 000s)	Percentage	Population estimates (in 000s)	Percentage	Population estimates (in 000s)	Percentage	Population estimates (in 000s)	Percentage	
Western Cape	1 61 (0.04)	16.8 (0.5)	0 15 (0.01)	10.2 (0.9)	0 (0.0)	0.0 (0.0)	0 087 (0.008)	12.6 (1.2)	1 84 (0.04)
Eastern Cape	0 87 (0.03)	9.0 (0.3)	0 16 (0.01)	11.0 (0.9)	1 69 (0.04)	23.4 (0.4)	0 02 (0.003)	2.5 (0.5)	2 74 (0.05)
Northern Cape	0 25 (0.08)	2.7 (0.1)	0 02 (0.003)	1.2 (0.2)	0 07 (0.005)	1.0 (0.1)	0 01 (0.002)	2.0 (0.3)	0 36 (0.01)
Free State	0 76 (0.02)	7.9 (0.2)	0 058 (0.005)	4.0 (0.3)	0 10 (0.006)	1.4 (0.1)	0 05 (0.008)	6.9 (1.1)	0 97 (0.02)
KwaZulu Natal	1 31 (0.04)	13.6 (0.4)	0 41 (0.02)	28.1 (0.1)	2 05 (0.04)	28.2 (0.4)	0 22 (17224.9)	31.3 (2.0)	3 98 (0.06)
North West	0 54 (0.02)	5.7 (0.2)	0 023 (0.005)	1.7 (0.3)	0 58 (0.02)	8.1 (0.2)	0 06 (0.008)	9.3 (1.1)	1 22 (0.03)
Gauteng	3 39 (0.07)	35.4 (0.6)	0 49 (0.03)	33.4 (1.5)	0 06 (0.007)	0.8 (0.1)	0 05 (0.009)	7.2 (1.3)	3 98 (0.08)
Mpumalanga	0 53 (0.020)	5.5 (0.2)	0 09 (0.007)	6.6 (0.5)	0 77 (0.02)	10.6 (0.3)	0 13 (0.01)	18.1 (1.7)	1 52 (0.03)

Limpopo	0.32 (0.02)	3.3 (0.2)	0.05 (0.01)	3.7 (0.7)	1.93 (0.03)	26.5 (0.4)	0.07 (0.01)	10.1 (1.5)	2.37 (0.04)
Total	9.57 (0.09)	100	1.46 (0.04)	100	7.28 (0.06)	100	0.69 (0.023)	100	18.99

Source LCS 2014/2015, author's calculations, (1) Figures are weighted to population levels, (2) Standard errors are presented in parenthesis, (3)

Due to rounding, some estimates may not correspond with the actual figure.

Based upon the presented statistics, it can be inferred that attendance varies between settlement types in different provinces. For example, Gauteng has the highest percentage of individuals currently attending an educational institution residing in urban formal and urban informal areas amongst the nine provinces. However, KwaZulu Natal has the highest percentage of individuals residing in traditional areas and rural formal areas out of the nine provinces. In contrast, the Northern Cape has the lowest percentage of individuals currently attending an educational institution out of all the settlement types amongst the nine provinces except for traditional areas, where the Western Cape has 0%. The settlement type of the household and school attendance is important given that individuals residing in urban areas have access to better-resourced schools compared to individuals residing in informal areas where schools often lack resources resulting in academic backlogs (Maarman, 2009). In addition, most of the individuals who reside in informal settlements come from low-income households where the household head is might not be employed and as a result rely on social grants from government. Such households cannot afford most of the educational items associated with attending school and in some cases, individuals from such households have to take care of household responsibilities causing high levels of absenteeism. For example, the GHS (2010) found that children living in informal settlements are more likely to be absent from school for ten days at a time compared to children residing in urban areas (Statistics South Africa, 2016). Another factor affecting attendance, especially in rural areas is the fact that children often have to walk long distances to get to school, which affects their attendance, particularly during the rainy seasons and extremely cold winter days. It is worth noting that there might be individuals currently attending an educational institution in a province that differs from their parent's place of residence, this is especially true for individuals attending private boarding schools. Table 4.7 shows the distribution of individuals currently attending an educational institution by province and between private and public institutions.

**Table 4.7: Frequency and distribution of individuals currently Attendance by Province
Between Private and Public Institutions**

Province	Public Institution		Private Institution		Total	Percentage total
	Population estimates (in 000s)	Percentage	Population estimates (in 000s)	Percentage		
Western Cape	1 61 (0.04)	9.8 (0.2)	0 21 (0.01)	9.0 (0.6)	1 82 (0.04)	9.7 (0.2)
Eastern Cape	2 49 (0.04)	15.3 (0.3)	0 21 (0.01)	9.1 (0.6)	2 70 (0.05)	14.5 (0.2)
Northern Cape	0 32 (0.009)	2.0 (0.1)	0 03 (0.003)	1.3 (0.1)	0 35 (0.01)	1.9 (0.1)
Free State	0 80 (0.02)	4.9 (0.1)	0 15 (0.01)	6.6 (0.5)	0 96 (0.02)	5.1 (0.1)
KwaZulu Natal	3 64 (0.06)	22.3 (0.3)	0 26 (0.02)	11.1 (0.7)	3 90 (0.06)	20.9 (0.3)
North West	1 04 (0.03)	6.3 (0.2)	0 16 (0.01)	6.8 (0.4)	1 19 (0.03)	6.4 (0.1)
Gauteng	3 03 (0.07)	18.6 (0.4)	0 88 (0.04)	37.5 (1.2)	3 91 (0.08)	20.9 (0.3)
Mpumalanga	1 28 (0.03)	7.8 (0.2)	0 22 (0.02)	9.5 (0.6)	1 50 (0.03)	8.0 (0.2)
Limpopo	2 12 (0.04)	13.0 (0.2)	0 21 (0.01)	9.1 (0.6)	2 34 (0.04)	12.5 (0.2)
Total	16 34 (0.11)	100	2 34 (0.05)	100	18 68	100

Source LCS 2014/2015, author's calculations, (1) Figures are weighted to population levels, (2) Standard errors are presented in parenthesis, (3) Due to rounding, some estimates may not correspond with the actual figure.

The results indicate that Gauteng has the highest percentage of individuals attending private institutions out of the nine provinces. One possible reason for the high private institution attendance in Gauteng is that it is the wealthiest out of the nine provinces therefore, slightly more households from this province can afford the high fees charged at private institutions. KwaZulu Natal has the second highest percentage of individuals attending private institutions. Gauteng, North-West, Mpumalanga and the Free State are the only provinces where attendance

at private institutions is higher than attendance at public institutions. It is worth noting that Mpumalanga and Limpopo had relatively lower total attendance rates, but attendance at private institutions is relatively high in Mpumalanga at almost 10% followed by Limpopo and the Eastern Cape both at 9%. In contrast, public institution attendance is high in KwaZulu Natal, followed by Gauteng and the Eastern Cape with 22%, 19% and 15% respectively.

Attendance can be further disaggregated by the type of educational institution (i.e. the level of schooling attended by the individual) and by race. Table 4.8 depicts the distribution of attendance by the type of educational and by the racial group of the individual currently attending an educational institution.

Table 4.8: Frequency and distribution of individuals currently attending an education institution by race and type of education sector

Type of Educational Institution	African		Coloured		Indian/Asian		White		Total	Percentage total
	Population estimates (in 000s)	Percentage	Population estimates (in 000s)	Percentage	Population estimates (in 000s)	Percentage	Population estimates (in 000s)	Percentage		
Pre-school	1 95 (0.04)	12.1 (0.2)	0 17 (0.01)	12.2 (0.7)	0 03 (0.006)	7.8 (1.8)	0 17 (0.02)	15.1 (1.5)	2 31 (0.05)	12.2 (0.2)
School	12 62 (0.09)	78.4 (0.3)	1 08 (0.03)	77.9 (1.0)	0 23 (0.02)	71.8 (3.0)	0 69 (0.04)	63.3 (2.1)	14 63 (0.10)	77.4 (0.3)
Adult basic training and learning centre	0 12 (0.009)	0.7 (0.1)	0 01 (0.003)	0.8 (0.2)	0 0005 (0.0005)	0.2 (0.2)	0 004 (0.003)	0.4 (0.3)	0 13 (0.01)	0.7 (0.1)
Literacy	0.006 (0.002)	0.0 (0.0)	0 0007 (0.001)	0.1 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0 007 (0.002)	0.0 (0.0)
Higher education and training	0 62 (0.03)	3.8 (0.2)	0 0067 (0.008)	4.8 (0.5)	0 052 (0.009)	16.1 (2.5)	0 167 (0.02)	15.4 (1.6)	0 90 (0.03)	4.8 (0.2)
Further education and training	0 54 (0.02)	3.3 (0.1)	0 03 (0.005)	2.2 (0.3)	0 0089 (0.003)	2.7 (0.9)	0 023 (0.006)	2.1 (0.6)	0 59 (0.02)	3.2 (0.1)

Other College	0.23 (0.02)	1.4 (0.1)	0.02 (0.004)	1.8 (0.3)	0.002 (0.001)	0.7 (0.3)	0.026 (0.008)	2.4 (0.7)	0.29 (0.02)	1.5 (0.1)
Home-based learning	0.001 (0.003)	0.1 (0.0)	0.003 (0.002)	0.2 (0.1)	0.002 (0.002)	0.7 (0.6)	0.02 (0.005)	1.4 (0.5)	0.032 (0.006)	0.2 (0.0)
Total	16.09 (0.11)	100	1.38 (0.03)	100	0.32 (0.02)	100	1.09 (0.05)	100	18.90	100

Source LCS 2014/2015, author's calculations, (1) Figures are weighted to population levels, (2) Standard errors are presented in parenthesis, (3) Due to rounding, some estimates may not correspond with the actual figure.

The results indicate that attendance at school (which includes both primary and secondary schooling) is the highest across all racial groups with Africans constituting the highest percentage (78%), followed by Coloured (77%), then Indians/Asians (71%) and then finally Whites (63%). The high percentage of attendance in this category can again be alluded to the increased efforts from the government to ensure universal primary school enrolments. This may, in turn, improve attendance at secondary schools.

Pre-school is the second most attended level of schooling across all racial groups with Whites making up the highest percentage (15%), closely followed by Coloured and Africans with both at 12%, and finally, Indians/Asians making up the least percentage of attendance almost at 8%. When it comes to higher education and training, Indians/Asians constitute the highest percentage of attendance at this level of schooling with at 16% followed by Whites at 15%, then Coloured at almost 5%, and finally Africans at almost 4%. Attendance varies between the type of institutions within each racial group. For example, attendance among Africans is higher at school followed by preschool, then higher education and training. A similar trend is observed among Coloureds. However, attendance among Indians/Asians and Whites is higher at school, followed by higher education and training then preschool.

The low attendance of Africans at institutions of higher education and training compared to other types of educational institutions (i.e. the level of schooling) is an artefact of the policies of apartheid that left many Africans living in destitute circumstances. This resulted in many African children attending poorly resourced schools and living in communities where there were negative peer influences, violence and other external factors which ultimately leads children to drop out of the school system (Maarman, 2009). Those who stay in schools might not qualify to attend these institutions of higher education and training because of the low-quality of education received in their primary and secondary schooling years. This relatively

low attendance of Africans at institutions of higher education and training compared to other types of educational institutions further perpetuates the social inequalities in the country.

Table 4.9: Frequency and distribution of individuals currently attending an educational institution by sector and type of educational institution

Type of Educational Institution	Public institution		Private institution		Total	Percentage total
	Population estimates (in 000s)	Percentage	Population estimates (in 000s)	Percentage		
Pre-school	1 25 (0.03)	7.7 (0.2)	0 97 (0.032)	41.9 (1.1)	2 22 (0.045)	11.9 (0.2)
School	13 67 (0.09)	83.9 (0.3)	0 85 (0.034)	36.9 (1.1)	14 52 (0.10)	78.1 (0.3)
Adult basic training and learning centre	0 12 (0.009)	0.7 (0.1)	0 011 (0.003)	0.5 (0.1)	0 13 (0.01)	0.7 (0.1)
Literacy	0 0066 (0.002)	0.0 (0.0)	0 00040 (0.0004)	0.0 (0.0)	0 007 (0.0021)	0.0 (0.0)
Higher education and training	0 67 (0.029)	4.1 (0.2)	0 21 (0.017)	9.0 (0.7)	0 88 (0.034)	4.7 (0.2)
Further education and training	0 47 (0.022)	2.9 (0.1)	0 10 (0.097)	4.4 (0.4)	0 57 (0.024)	3.1 (0.1)
Other College	0 09 (0.011)	0.6 (0.1)	0 14 (0.012)	6.1 (0.5)	0 24 (0.017)	1.3 (0.1)
Home-based learning	0 08 (0.002)	0.0 (0.0)	0 024 (0.006)	1.0 (0.2)	0 032 (0.006)	0.2 (0.0)
Total	16 29 (107750.7)	100	2 31 (0.052)	100	18 59	100

Source LCS 2014/2015, author's calculations, (1) Figures are weighted to population levels, (2) Standard errors are presented in parenthesis, (3) Due to rounding, some estimates may not correspond with the actual figure.

Overall, the table shows that more than 16 million individuals attend public institutions and that attendance at school at public institutions (includes primary and secondary school) is the highest. This might in part, be explained by the fact that the “no-fee” and fee-exemption policy is effective at this level of schooling. Attendance at institutions of higher education and training as well as FET colleges is relatively low considering the number of individuals attending at school level. As mentioned before, a number of individuals do not complete secondary schooling because education is only compulsory until Grade 9 (or at the age of 15).

Furthermore, “no-fee” schools cater for individuals until Grade 9 which implies that there might be individuals who cannot afford to complete secondary schooling. This coupled with the admission requirements at institutions of higher education and training as well as FET colleges might explain the relatively low attendance at these institutions. At private institutions, pre-school and school are the highest attended educational institutions at 42% and 37%, respectively. Attendance at institutions of higher education and training, FET colleges and other colleges is relatively high compared to other types of institutions at private institutions but still relatively lower than at public institutions considering that attendance at public institutions is higher than at private institutions.

Turning to attendance by age categories, Table 4.10 shows the distribution and frequency of individuals currently attending an educational institution by age.

Table 4. 10: Frequency and distribution of individuals currently attending an educational institution by age

Age Categories Aligned with Schooling Categories	Population estimates	Percentage
Younger than 6	2 98 (0.05)	15.7 (0.3)
Aged 6 to 12	7 42 (0.08)	39.0 (0.3)
Aged 13 to 17	4 82 (0.06)	25.4 (0.3)
Age 18 and older	3 77 (0.06)	19.9 (0.3)
Education Categories		
No Schooling	2 62 (0.05)	13.9 (0.2)
Grade R	1 71 (0.04)	9.1 (0.2)
Grade 1-7	8 12 (0.08)	43.0 (0.3)
Grade 8-11	4 90 (0.06)	26.0 (0.3)
Grade 12 or equivalent	1 01 (0.03)	5.3 (0.2)
Grade 12 plus certificate or diploma	0 23 (0.02)	1.2 (0.1)

Bachelors or equivalent	0.17 (0.02)	0.9 (0.1)
Postgraduate or equivalent	0.10 (0.01)	0.6 (0.1)
Total	18.88 (0.12)	100

Source: LCS 2014/2015, author's calculations, (1) Figures are weighted to population levels, (2) Standard errors are presented in parenthesis, (3) Due to rounding, some estimates may not correspond with the actual figure

The results show that attendance by age is high between the ages of 6-12 followed by ages between 13-17, which are consistent with the high attendance at primary and secondary school in the previous table. Attendance decreases significantly for individuals between the ages of 18 and older. The decrease in attendance for individuals 18 years or older is consistent with the low rate of completion of secondary school (Grade 12 or equivalent) (Branson and Lam, 2017). This further pushes down the percentage of individuals who have a tertiary diploma or degree.

The condition for acceptance at an institution of higher education and training is that an individual must have completed Grade 12 or equivalent to gain admission. Depending on what is studied and the type of tertiary institution, additional criteria become important. For a university, matric points, which depend on both subject choice and performance in Grade 12 are key. There is a positive relationship between the level of education that an individual has as well as their labour market earnings, this is especially true in South Africa where an additional year of school increases earnings by 9%, on average (Depken, et al., 2019). Furthermore, earnings are substantially higher for females relative to males; however, this is only true for females residing in urban areas. A significant disadvantage with using attendance rates to measure educational outcomes such as educational attainment is that they fail to measure the frequency of school attendance and therefore cannot measure the drop-out and repetition rates of individuals in the education system (Branson and Lam, 2017). Therefore, a high percentage of attendance does not necessarily translate into high education attainment of the population.

Attendance at an educational institution is dependent on a number of factors, one of the main reasons for attendance is the availability of financial resources to pay for the costs associated with schooling. It is well known that not all households in South Africa can afford to send their children to school and the financial burden increases as the child progresses through the schooling system. This is particularly true for low-income households, the “no-fee” policy at

public institutions eases the financial burden for many low-income households and makes it possible for individuals from these households to attend educational institutions without being financially excluded. Other incentives include bursaries or scholarships received for academic or sports merit. Table 4.11 summarises the reasons for non-payment of fees for individuals between public and private institutions.

Table 4.11: Reasons for non-payment of fees for individuals currently attending an educational between public and private institutions

Reason for non-payment of fees	Public		Private		Total	Percentage Total
	Population estimates (in 000s)	Percentage	Population estimates (in 000s)	Percentage		
Cannot afford to pay	0 18 (0.013)	1.9 (0.1)	0 006 (0.003)	4.4 (1.8)	0 18 (0.01)	1.9 (0.1)
Do not want to pay	0 08 (0.01)	0.9 (0.1)	0 002 (0.001)	1.4 (0.7)	0 08 (0.008)	0.9 (0.1)
No fees school (school did not ask for fees)	8 74 (0.05)	91.8 (0.3)	0 04 (0.006)	29.0 (3.7)	8 78 (0.05)	90.8 (0.3)
Received a fee exemption	0 17 (0.01)	1.8 (0.1)	0 005 (0.002)	3.4 (1.5)	0 17 (0.01)	1.8 (0.1)
Received a bursary/scholarship covering fees	0 21 (0.01)	2.2 (0.2)	0 034 (0.006)	23.3 (3.7)	0 25 (0.02)	2.6 (0.2)
Paid by non-household member	0 10 (0.01)	1.1 (0.2)	0 038 (0.007)	25.7 (4.1)	0 14 (0.01)	1.5 (0.1)
Other	0 04 (0.007)	0.4 (0.1)	0 02 (0.005)	12.8 (3.0)	0 05 (0.008)	0.6 (0.1)
Total	9 52 (0.05)	100	0 15 (0.013)	100	9 67	100

Source LCS 2014/2015, author's calculations, (1) Figures are weighted to population levels, (2) Standard errors are presented in parenthesis, (3) Due to rounding, some estimates may not correspond with the actual figure.

Based upon the presented statistics, it can be inferred that non-payment of fees is more prevalent at public institutions compared to private institutions. The majority of individuals

(92%) attending public institutions state that the reason for non-payment of fees is because the school does not require fees. Similarly, the most common reason for non-payment of fees at private institutions is that the school does not require fees. Despite this, there are still individuals at both public and private institutions who cannot afford to pay for school fees. This is concerning, particularly at public institutions where there over 40% of public schools in South Africa are “no-fee” schools (Statistics South Africa, 2016). One plausible explanation is the fact that some parents are not aware of the exemption policy at fee-charging public institutions. Furthermore, some public institutions failed to implement the regulations for fee-exemptions in order to ensure that children from low-income households are exempted from paying school fees (Veriava, 2010).

In addition, the number of individuals who cannot pay for fees at public institutions might suggest that the number of no-fee schools is not sufficient to keep up with the demand for education at this level; therefore, individuals are forced to attend fee-charging public schools or that other indirect costs of education do not alleviate the financial pressure for individuals from low-income households, particularly after Grade 9 where the “no-fee” school policy is no longer effective. Attendance at “no-fee” schools directly affects spending on education by both the government and the household. First, to ensure accessibility of “no-fee” schools requires high government subsidization. Second, households are responsible for the payment of indirect education costs resulting in education expenditure. Therefore, while attendance at “no-fee schools” reduces the financial burden on many low-income households, it does not directly translate to zero education expenditure. This suggests that the patterns of education expenditure might suggest low spending on education by households who have members attending at “no-fee” public institutions and/or schools where the fee-exemption policy is in effect (which includes private institutions) but high spending at schooling levels where the “no-fee” policy is not in effect because government subsidization is not as high at this level of schooling. Finally, among individuals who are currently attending a private institution whose fees are not paid for by the household which they reside in, bursaries/scholarship and payment of fees by a non-household member are the most prevalent reasons for the non-payment of fees.

While financial resources play a significant role in the attendance of individuals at educational institutions, money is not the only factor that hinders individuals from attending educational institutions. To better understand why some individuals do not attend educational institutions, Table 4.12 summarizes the reasons for non-attendance by population group of individuals in the population.

Table 4.12: Reasons for non-attendance by population group of individuals

Reason	Population Group								Total	Percentage total
	African		Coloured		Indian/Asian		White			
	Population estimates (in 000s)	Percentage	Population estimates (in 000s)	Percentage	Population estimates (in 000s)	Percentage	Population estimates (in 000s)	Percentage		
Too old/young	8 77 (0.08)	32.6 (0.3)	1 17 (0.03)	35.3 (0.7)	0 34 (0.02)	34.6 (1.7)	1 31 (0.05)	39.1 (1.2)	11 59 (0.09)	33.5 (0.2)
Has completed education	1 58 (0.039)	5.9 (0.1)	0 42 (0.02)	12.6 (0.5)	0 12 (0.01)	12.1 (1.1)	0 68 (0.04)	20.2 (1.0)	2 80 (0.06)	8.1 (0.2)
School is too far	0 10 (0.0089)	0.4 (0.0)	0 05 (0.0002)	0.2 (0.1)	0.0 (0.0)	0.0 (0.0)	0 0081 (0.005)	0.2 (0.2)	0 12 (0.01)	0.3 (0.0)
Difficulties to get to school	0 09 (0.009)	0.4 (0.0)	0 07 (0.0002)	0.2 (0.1)	0 0006 (0.0007)	0.1 (0.1)	0 004 (0.004)	0.1 (0.1)	0 11 (0.01)	0.3 (0.0)
No money for fee/textbooks/school	6 47 (0.08)	24.1 (0.3)	0 45 (0.02)	13.6 (0.5)	0 123 (0.01)	12.8 (1.6)	0 23 (0.02)	7.0 (0.6)	7 28 (0.08)	21.1 (0.2)
He/she is working	3 89 (0.06)	14.5 (0.2)	0 69 (0.02)	21.0 (0.6)	0 25 (0.02)	24.9 (1.6)	0 660 (0.04)	19.8 (1.0)	0 55 (0.08)	15.9 (0.2)
Don't have time	1 07 (0.03)	4.0 (0.1)	0 11 (0.009)	3.2 (0.3)	0 05 (0.009)	5.4 (0.9)	0 22 (0.02)	6.7 (0.6)	1 45 (0.04)	4.2 (0.1)
Family commitment	1 67 (0.04)	6.2 (0.1)	0 19 (0.01)	5.8 (0.3)	0 05 (0.007)	4.7 (0.7)	0 11 (0.02)	3.3 (0.5)	2 02 (0.04)	5.8 (0.1)
Education is useless	0 52	1.9	0 06	1.8	0 004	0.4	0 009	0.3	0 59	1.7

	(0.02)	(0.1)	(0.006)	(0.2)	(0.002)	(0.2)	(0.004)	(0.1)	(0.02)	(0.1)
Unable to perform at school	0 81 (0.03)	3.0 (0.1)	0 03 (0.004)	0.8 (0.1)	0 005 (0.002)	0.5 (0.2)	0 004 (0.002)	0.1 (0.1)	0 84 (0.03)	2.4 (0.1)
Illness	0 43 (0.02)	1.6 (0.1)	0 04 (0.005)	1.2 (0.2)	0 02 (0.004)	1.6 (0.4)	0 03 (0.006)	0.8 (0.2)	0 51 (0.02)	1.5 (0.1)
Injury	0 032 (0.005)	0.1 (0.1)	0 002 (0.001)	0.1 (0.1)	0.0 (0.0)	0.0 (0.0)	0 003 (0.003)	0.1 (0.1)	0 038 (0.06)	0.1 (0.0)
Pregnancy	0 28 (0.02)	1.0 (0.1)	0.02 (4066.9)	0.6 (0.1)	0.003 (2505.3)	0.3 (0.3)	0.004 (2798.7)	0.1 (0.1)	0.31 (0.02)	0.9 (0.0)
Failed exam	0 35 (0.02)	1.3 (0.1)	0 03 (0.004)	0.9 (0.1)	0.0 (0.0)	0.0 (0.0)	0 001 (0.001)	0.0 (0.0)	0 38 (0.02)	1.1 (0.0)
Got married	0 09 (0.009)	0.4 (0.0)	0 005 (0.002)	0.1 (0.1)	0 005 (0.002)	0.5 (0.2)	0 014 (0.006)	0.4 (0.2)	0 12 (0.01)	0.4 (0.0)
Disability	0 26 (0.02)	1.0 (0.1)	0 036 (0.005)	1.1 (0.1)	0 008 (0.003)	0.9 (0.3)	0 02 (0.006)	0.8 (0.2)	0 33 (0.02)	1.0 (0.0)
Violence in school	0 02 (0.005)	0.1 (0.0)	0 002 (0.0008)	0.1 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.1)	0 02 (0.005)	0.1 (0.0)
Not accepted for enrolment	0 11 (0.009)	0.4 (0.0)	0 005 (0.002)	0.2 (0.0)	0 002 (0.002)	0.3 (0.2)	0 008 (0.004)	0.2 (0.1)	0 13 (0.01)	0.4 (0.0)
Expelled/suspended	0 03 (0.005)	0.1 (0.0)	0 008 (0.0022)	0.3 (0.1)	0 00005 (0.00005)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0 037 (0.005)	0.1 (0.0)
Other	0 29 (0.02)	1.1 (0.1)	0 036 (0.006)	1.1 (0.2)	0 008 (0.003)	0.9 (0.3)	0 022 (0.006)	0.7 (0.2)	0 36 (0.02)	1.0 (0.1)
Total	26 89 (0.13)	100	3 31 (0.05)	100	0 99 (0.04)	100	3 35 (0.08)	100	34 56	100

Source LCS 2014/2015, author's calculations, (1) Figures are weighted to population levels, (2) Standard errors are presented in parenthesis, (3) Due to rounding, some estimates may not correspond with the actual figure.

The table shows that reasons for non-attendance vary considerably; overall, the most common reason for non-attendance is that the individual is too young/old (33%). The second most common reason for non-attendance is lack of money for school or textbooks (21%). This is despite the fact that the government has developed a number of “no-fee” schools and a number of public and private schools have a fee-exemption policy for individuals who cannot afford to pay for fees.

Lack of money for school is more prevalent among Africans compared to other population groups at 24%, followed by Coloureds at almost 17%, then Indians/Asians at almost 13% and finally only 7% of Whites cited lack of financial resources as the reason for non-attendance. Similarly, a marginally higher percentage of Africans (0.7%) state difficulties getting to school as the reason for non-attendance compared to only 0.1% of Whites, citing this as the reason for non-attendance. Furthermore, the table indicates that more Africans than Whites have completed their education and do not need to attend an educational institution.

In contrast, a higher percentage of Africans and Coloured cite education as being useless, both at almost 2% compared to Indians/Asians and Whites, both at less than 0.5%. This attests to the fact that African children are exposed to negative influences regarding education which leads them to change their perception of education and ultimately not attend an educational institution. Furthermore, the unemployment rate in South Africa has increased to 32.5%, while the graduate unemployment rate among those between the ages of 15-34 is 63% (Statistics South Africa, 2021). Under the circumstances of high unemployment and low economic growth, the formal sector fails to create job opportunities, and the informal sector becomes a viable option for many unemployed graduates. For this reason, more individuals see education as useless.

Summary

Analysing individuals’ characteristics showed that the majority of individuals in the population (65%) are not currently attending an educational institution. Among those who are attending an educational institution, there is parity in terms of overall attendance between females and males. When analysing attendance by population groups, it was noted that Africans constitute the highest percentage of individuals who are currently attending an educational institution between both private and public institutions. However, attendance at public institutions is higher compared to private institutions among Africans who are currently attending an educational institution. A similar pattern can be observed across the other population groups.

The analysis revealed that financial resources are an important determinant of attendance at educational institutions. Among the individuals who are not currently attending an educational institution, the second common reason for non-attendance is lack of money for school or textbooks. Lack of financial resources for school is more prevalent among Africans compared to other racial groups. This suggests that there are individuals who do not have access to the “no-fee” schools or that there are individuals (18-year olds) who have completed secondary schooling but do not have the financial resources to further their education. Similarly, slightly more Africans cited difficulties to get to school as the reason for non-attendance compared to other racial groups.

Given that attendance at educational institutions financially impacts the household, especially for those households with individuals currently attending an educational institution. The next section analyses the household characteristics with at least one-member attending an educational institution.

Section 4.3: Descriptive statistics for households with at least one-member currently attending an educational institution

A number of characteristics of the household head such as age, gender, race, level of education, employment status as well as the settlement type and size of the household are said to influence spending on education. Therefore, this section will be analysing the characteristics of households with at least one-member currently attending an educational institution. In order to achieve this, it is important to distinguish households with members currently attending an educational institution and those households without members currently attending an educational institution. Therefore, Table 4.1.1 shows the distribution and frequency of households with and without individuals currently attending an educational institution.

Table 4.1.1: Distribution and frequency of households with and without individuals attending an educational institution

Education institution attendance	Population estimates	Percentage
Does not currently attend	7 15 (0.084)	43 (0.4)
Currently attends	9 47 (0.08)	57 (0.4)
Total	16 62	100

Source LCS 2014/2015, author's calculations, (1) Figures are weighted to population levels, (2) Standard errors are presented in parenthesis, (3) Due to rounding, some estimates may not correspond with the actual figure.

Table 4.1.1 shows that there are 16 million households in the population, and more than half of these households (57%) have at least one-member in the household who is currently attending an educational institution. Due to a number of factors related to education spending such as scholarships, grants and “no-fee” schools as well as the fee-exemption policy at public institutions, not all households in the population who have at least one-member currently attending an educational institution will pay for costs related to education. Table 4.1.2. shows the distribution of households both with and without individuals currently attending and whether these households pay for fees or not.

Table 4.1.2: Frequency and distribution of households who pay for school fees

Fee payment by household	Attends		Does not currently attend		Total	Percentage Total
	Population estimates (in 000s)	Percentage	Population estimates (in 000s)	Percentage		
Does not pay for fees	4 18 (0.049)	45.9 (0.5)	0 (0.0)	0.0 (0.0)	4 18 (0.049)	45.9 (0.5)
Pays for fees	4 93 (0.065)	54.1 (0.5)	0 000956 (0.0006)	100 (0.0)	4 93 (0.065)	54.1 (0.5)
Total	9 12 (0.061)	100	0 000956 (0.0006)	100	9 11	100

Source LCS 2014/2015, author's calculations, (1) Figures are weighted to population levels, (2) Standard errors are presented in parenthesis, (3) Due to rounding, some estimates may not correspond with the actual figure.

From the households with at least one-member currently attending an educational institution, 54% of these households pay for school fees while 46% do not pay for fees. There are a number of reasons for non-payment of fees among households with at least one-member currently attending an education institution. As noted before, the government has developed a “no-fee” schools which cater to children from low-income households who cannot afford to pay for fees at public institutions. However, there a number of public institutions who charge considerable fees. Fees vary considerably between public and private institutions; therefore, Table 4.1.3

depicts the distribution and frequency of fee payment by household between public and private institutions.

Table 4.1.3: Frequency and distribution of households who pay for household between public and private institutions

Fee payment by household	Public		Private		Total	Percentage total
	Population estimates (in 000s)	Percentage	Population estimates (in 000s)	Percentage		
Does not pay for fees	0 26 (0.015)	44.9 (2.5)	0 027 (0.006)	16.6 (3.5)	0 28 (0.015)	38.5 (2.1)
Pays for fees	0 31 (0.021)	55.1 (2.5)	0 14 (0.013)	83.4 (3.5)	0 45 (0.02)	61.5 (2.1)
Total	0 57 (0.021)	100	0 17 (0.014)	100	0 74	100

Source LCS 2014/2015, author's calculations, (1) Figures are weighted to population levels, (2) Standard errors are presented in parenthesis, (3) Due to rounding, some estimates may not correspond with the actual figure.

The results indicate that fee payment by households is considerably high at private institutions (83%) compared to households who do not pay for fees (16%). Similarly, a higher percentage of households indicated that they pay for fees in public institutions (55%) compared to household who do not pay for fees (44%). Overall, there are more households in the population with at least one-member currently attending a public institution compared to a private institution. One possible explanation for this is the fact private institutions mainly cater to individuals from affluent households whose households can afford the high fees charged at these institutions. Those households who reported not paying fees at private institutions might be due to scholarships/bursaries received for outstanding academic/sport activities. On the contrary, public institutions have a number of policies aimed at ensuring that individuals from low-income families are able to get an education despite their lack of financial resources. To explain further, Table 4.1.4 shows the distribution of households who pay for fees and those who do not pay for fees among households with at least one-member currently attending an education institution by the type of educational institution.

Table 4.1.4: Frequency and distribution of households that pay for fees and who do not pay for fees among individuals currently attending an educational institution by type of institution

Type of Educational Institution	Does not pay for fees		Pays for fees		Total	Percentage total
	Population estimates (in 000s)	Percentage	Populations estimates (in 000s)	Percentage		
Pres-school	0 (0.0)	0.0 (0.0)	0 0008 (0.0008)	0.2 (0.2)	0 0008 (0.0008)	0.1 (0.1)
School	0 144 (0.010)	48.6 (3.1)	0 029 (0.005)	7.9 (1.4)	0.173 (0.011)	26.2 (1.8)
Adult basic training and learning centre	0 020 (0.0047)	6.8 (1.5)	0 010 (0.005)	2.9 (1.4)	0.0307 (0.007)	4.6 (1.0)
Literacy	0 0008 (0.00056)	0.3 (0.2)	0 (0.0)	0.0 (0.0)	0 0008 (562.2)	0.1 (0.1)
Higher education and training	0 038 (0.007)	12.8 (2.4)	0.205 (0.017)	56.4 (3.4)	0 243 (0.018)	36.8 (2.4)
FET colleges	0 076 (0.096)	25.7 (2.9)	0 084 (0.011)	23.0 (2.9)	0 160 (0.0143)	24.2 (2.0)
Other colleges	0 015 (0.005)	5.1 (1.8)	0 035 (0.008)	9.7 (2.0)	0 05 (0.009)	7.6 (1.4)
Home-based learning	0 002 (0.0001)	0.7 (0.4)	0 (0.0)	0.0 (0.0)	0 002 (0.001)	0.3 (0.2)
Total	0 297 (0.015)	100	0.364 (0.021)	100	0 660	100

Source LCS 2014/2015, author's calculations, (1) Figures are weighted to population levels, (2) Standard errors are presented in parenthesis, (3) Due to rounding, some estimates may not correspond with the actual figure.

From the table, the results show that the largest percentage of households who pay for fees are for individuals attending higher education and training, followed by FET colleges with 56% and 23% respectively. The reason for this might be explained by the high tuition fees charged at these institutions requiring households to spend significantly more at this level of schooling. This might also reflect that NSFAS was effective in providing financial aid to many individuals who reside in households who might not have been able to pay the high tuition fees at institutions of higher education and training. None of the households in the population pay fees for literacy classes and the lowest percentage of payment of fees by institution type is for individuals attending adult basic training and learning centres. One possible explanation for this is the fact that attendance at these institutions remains relatively low compared to attendance at other levels of schooling, which provides an explanation to the low percentage of households reporting paying fees at these types of institutions.

There is a relatively high percentage of households (48%) who do not pay for fees for individuals attending at school and only 8% of households pay for fees at this level. This can be explained by the “no-fee” and fee exemption policy is effective at these levels of schooling. The payment of fees by households is dependent on a number of factors such as the employment status of the household head, their level of education etc. To explain further, Table 4.1.5 depicts the characteristics of households with at least one-member in the household attending an educational institution.

Table 4.1.5: Household characteristics with at least one individual attending an educational institution

Variable	Estimates/Mean	Percentage
Age of the household head	48.8619 (0.06613)	
Average Annual Income of household head	R 82007.15 per annum (2550.376)	
Income of male-headed households	R 117 078.6 per annum (4376.286)	
Income of female-headed households	R 48711.09 per annum (2630.294)	
Average household size	5.821 (0.0121)	
Sex of the household head		
Male	4 809	50.8

	(0.07)	(0.5)
Female	4 659 (0.06)	49.2 (0.5)
Population group of household head		
African	7 905 (0.07)	83.5 (0.4)
Coloured	0 779 (0.02)	8.2 (0.2)
Indian	0 164 (0.0140)	1.7 (0.2)
White	0 617 (0.034)	6.5 (0.3)
Settlement type		
Urban formal	5 382 (0.07)	57 (0.5)
Urban informal	0 846 (0.03)	8.9 (0.4)
Traditional area	2 911 (0.034)	30.7 (0.4)
Rural formal	0 327 (0.02)	3.5 (0.2)
Education categories for the household head		
No Schooling	0 854 (0.022)	9.1 (0.2)
Grade R	0 028 (0.005)	0.3 (0.1)
Grade 1-7	2 076 (0.04)	22.0 (0.4)
Grade 8-11	3 277 (0.06)	34.7 (0.5)
Grade 12 or equivalent	1 824 (0.05)	19.3 (0.5)
Grade 12 plus certificate or diploma	0 608 (0.03)	6.4 (0.3)
Bachelors or equivalent	0 445 (0.03)	4.7 (0.3)
Postgraduate or equivalent	0 319	3.4

	(0.02)	(0.2)
Broad employment status of the household head		
Economically inactive	0 334 (0.021)	38.4 (2.0)
Unemployed	0 425 (0.027)	48.9 (2.1)
Employed	0 110 (0.013)	12.6 (1.4)
Strict employment status of the household head		
Economically inactive	0 411 (0.023)	47.3 (2.1)
Unemployed	0 425 (0.027)	48.9 (2.1)
Employed	0 033 (0.0007)	3.8 (0.8)

Source LCS 2014/2015, author's calculations, (1) Figures are weighted to population levels, (2) Standard errors are presented in parenthesis, (3) Due to rounding, some estimates may not correspond with the actual figure.

The descriptive statistics show that the average number of household members is 5.8 and the average age of the household head is 48 years. From these results, 13% of household heads are employed as defined by the broad employment status and about 50% of household heads are male. The majority of household heads are African (84%), while Indian/Asian household heads constitute the least of the population group, with only 1.7% household head heads belonging to this racial category. Regarding education attainment, 9% of household heads have no schooling while 22% have completed primary school. Furthermore, 35% of household heads have not completed secondary school, while 19% have completed Grade 12 or equivalent. However, the number of household heads with a tertiary qualification is relatively low and this number decreases significantly for postgraduate qualifications with about 5% of household heads having a bachelor's degree compared to only 3% with a postgraduate degree.

Based upon the statistics presented for the household, it can be inferred that for households with at least one-member attending an educational institution, the majority of households (57%) reside in urban formal areas compared to only 3.5% who reside in rural formal areas. This means that a small percentage of children currently attending an educational institution might be subjected to the poorly resourced schools in rural areas which offer low-quality

education (Zuze, 2020). This is only true if the children residing in rural areas attend educational institutions in those areas. Some children from rural areas might commute to attend school in urban areas, which adds to education costs. Finally, the results show that the average income of the household head is R 82 007.15 per annum, male-headed households have an income of R 117 078.6 per annum compared to R 48 711.09 for female-headed households. Income is one of the main determinants of poverty which determines the living conditions of individuals and has important implications for spending on education.

Children from low-income households are indirectly excluded from private institutions unless they are awarded a scholarship/grant or funded by a non-household member. The low earnings of female-headed households imply that expenditure from these households is expected to be relatively lower compared to that of male-headed households. Furthermore, compared to children living in male-headed households, children living in female-headed households are two times less likely to complete school (Statistics South Africa, 2016). To further explain the role of household income on spending on education, Table 4.1.6 shows the average income of household heads by race. The results show that White-headed households earn the highest income at R 327 906.2 per annum, followed by Indian-headed households at R 168 112.5. Households headed by Coloureds earn R92 552.09 per annum, while African households earn the least of all the racial groups at R58 875.68 per annum. White-headed households earn about five times more than African-headed households, while Indian-headed household earn almost three times more compared to African-headed households.

Table 4.1.6: Household income by the population group of the household head with at least one-member currently attending an educational institution.

Population Group of the Household Head	Estimates
African	R 58 875.68 per annum (2077.052)
Coloured	R 92 552.09 per annum (5167.217)
Indian/Asian	R 168 112.5 per annum (21596.77)
White	R 327 906.2 per annum (20625.29)

Source: LCS 2014/2015, author's calculations. Notes (1) Estimates are weighted to population levels.

White-headed households earn more than two times more than the average of households with at least one-member currently attending an educational institution. This means that parents who can afford to send their children to well-functioning public institutions or private institutions are predominantly White. This, in turn, provides them with better opportunities in the labour market while children from low-income households are predominately African. African children who reside in low-income households might attend better resourced schools that are financed differently (maybe by grants, bursaries, or scholarships) than children who reside in wealthy households due to the differences in the earnings of the households they reside in. Without alternative methods of spending on education and government intervention in the provision of education in South Africa, the inequalities created by the apartheid education system would remain unabated.

Given that financial resources are an important consideration when making education investment decisions, Table 4.1.7 presents the distribution of individuals who attend by per capita income quintile.

Table: 4.1.7: Distribution of individuals who attend by per capita income quintile of their household

Annual Income per capita quintile	Estimates	Percentage
R 5 878	2 49 (0.04)	30.6 (0.2)
R 11 422	2 37 (0.04)	26.0 (0.2)
R 21 383	1 74 (0.04)	18.0 (0.2)
R 51 843	1 44 (0.04)	13.8 (0.2)
More than R 51 843	1 44 (0.05)	11.6 (0.2)
Total	9 47 (0.08)	100

Source: LCS 2014/2015, author's calculations. Notes (1) Estimates are weighted to population levels, (2) Standard errors are presented in parenthesis.

The results show that most households with at least one-member currently an educational institution belong to the lowest income quintile and the least number of households with at least member currently attending an educational institution belong to the highest income

quintile. This has important implications for spending on education because households who belong in the lowest income quintiles are more likely to be attending public institutions, particularly “no-fee” schools. In contrast, individuals currently attending an educational institution whose households belong in higher income quintiles are not restricted to attending public institution because their households can afford to pay the high fees charge at private institutions. The expenditure of households and individuals differs considerably depending on the quintile in which the household belongs to. However, expenditure is aggregate therefore, it becomes challenging to determine what portion of income is allocated to education among households in the different income quintiles. Table 4.1.8 depicts the distribution of individuals attending by per capita expenditure.

Table 4.1.8: Distribution of individuals who Attend an educational institution by per capita expenditure quintile of their households

Annual Expenditure per capita quintile	Estimates	Percentages
R 6 173	2 69 (0.05)	28.4 (0.5)
R 10 749	2 17 (0.04)	22.9 (0.4)
R 18 717	1 73 (0.04)	18.2 (0.4)
R 39 146	1 46 (0.04)	15.4 (0.4)
More than R39 146	1 43 (0.05)	15.1 (0.5)
Total	9 47 (0.08)	100

Source: LCS 2014/2015, author’s calculations. Notes (1) Estimates are weighted to population levels.

The results show that just more than 28% of households with individuals currently attending an educational institution have an annual expenditure of R6 173. One possible explanation for this might be the fact that households in the lower-income quintiles tend to have more household members which decrease the per capita expenditure. In contrast, households belonging to upper expenditure quintiles tend to have fewer household members, which increases their per capita expenditure.

Summary

The analysis revealed that the majority of individuals currently attending an educational institution are predominately African. However, African-headed households earn substantially lower than their White, Indian, and Coloured counterparts. Furthermore, a relatively small percentage of household heads have a degree or postgraduate degree, while most of the household heads have completed Grade 8 to Grade 11.

As an individual progress through the schooling system, the cost of education increases (Van Dyk and White, 2019). This is particularly true for institutions of higher education and training which remain unaffordable to many low-income and middle-income households. For this reason, some households will acquire loans to help with the cost of education. However, most low-income households struggle to acquire loans from financial institutions because they lack the assets to back their borrowing. Most of these households benefit from government initiatives such NSFAS (which before 2018, was a student loan scheme) and/or other forms of grants which, like the “no-fee” and fee-exemption policy, are aimed at providing access to individuals from disadvantaged backgrounds. Without government intervention, individuals from these households would not be able to attend such institutions.

It is well-known that there are disparities in expenditure between private and public institutions and that expenditure differs according to the item in question. In the next section, household spending on education will be analysed between private and public institutions as well as the method of expenditure that the household uses (i.e. household income/loans or non-refundable bursaries/government grants or a combination of both). The analysis is restricted to households with at least one-member currently attending an educational institution.

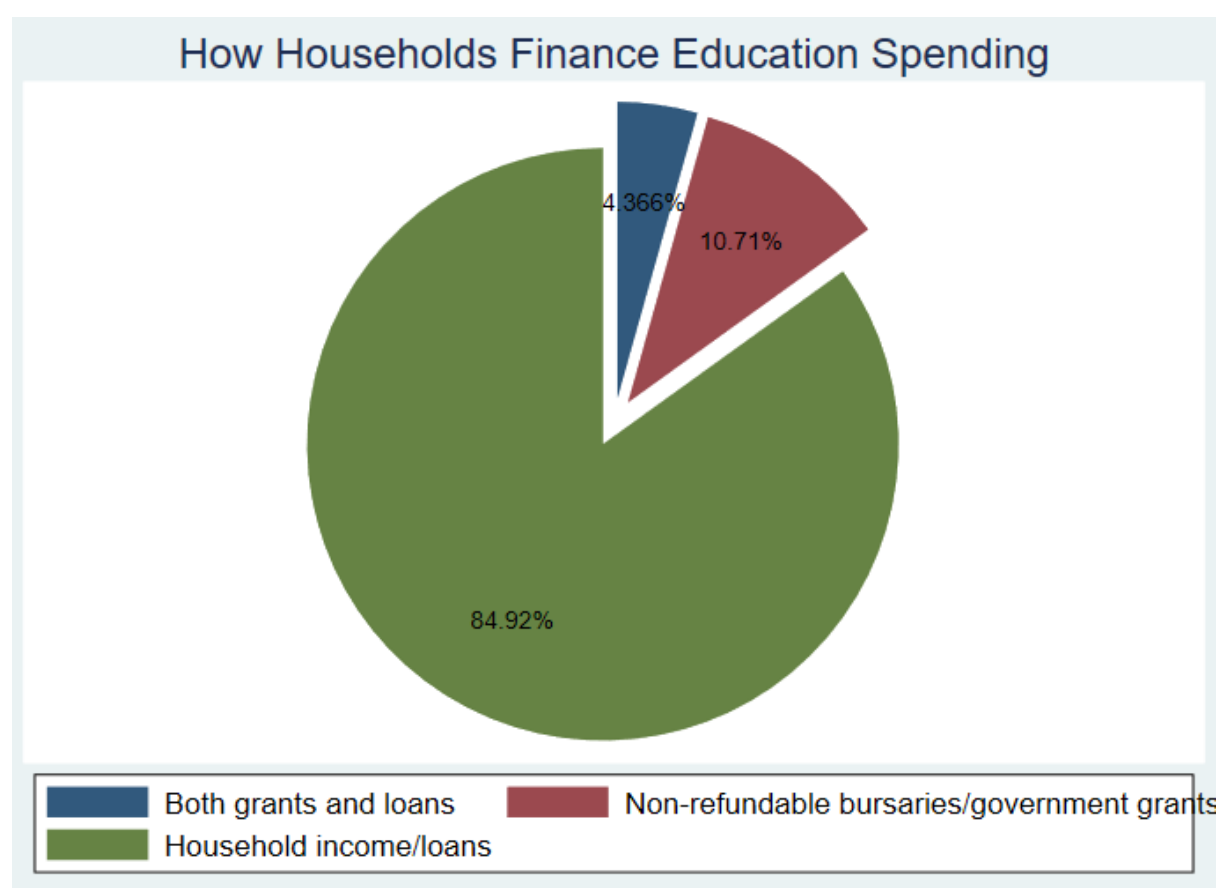
Section 4.4: Spending on education among households with at least one-member currently an educational institution

The following section provides an analysis of spending on education. Spending on education can either be by household income/loans or by non-refundable bursaries/government grants. Loans refer to payments by households either through household income or by loans acquired by the households to pay for education while grants refer to non-refundable bursaries/scholarships and other forms of government subsidisation. However, there are some households who use a combination of household income/loans and non-refundable bursaries/government grants either because household income is not enough to cover the full

cost of education or because the non-refundable bursaries/government grants need to be supplemented with household income. Spending can further be disaggregated across private and public institutions and by institution type. In order to analyse the patterns of spending on education and how they differ across geographical areas, population group and level of schooling. First, the method of spending by households will be analysed (i.e., by means of household income/loans or non-refundable bursaries/government grants or both) then total spending on education by households disaggregated by provinces and settlement type will be analysed. Then spending will be analysed by the spending item before the chapter concludes.

Figure 4.1 shows the method of spending by household income/loans or non-refundable bursaries/government grants or both for households with at least one individual attending an educational institution.

Figure 4.1: Method of spending by households with at least one-member currently attending an educational institution



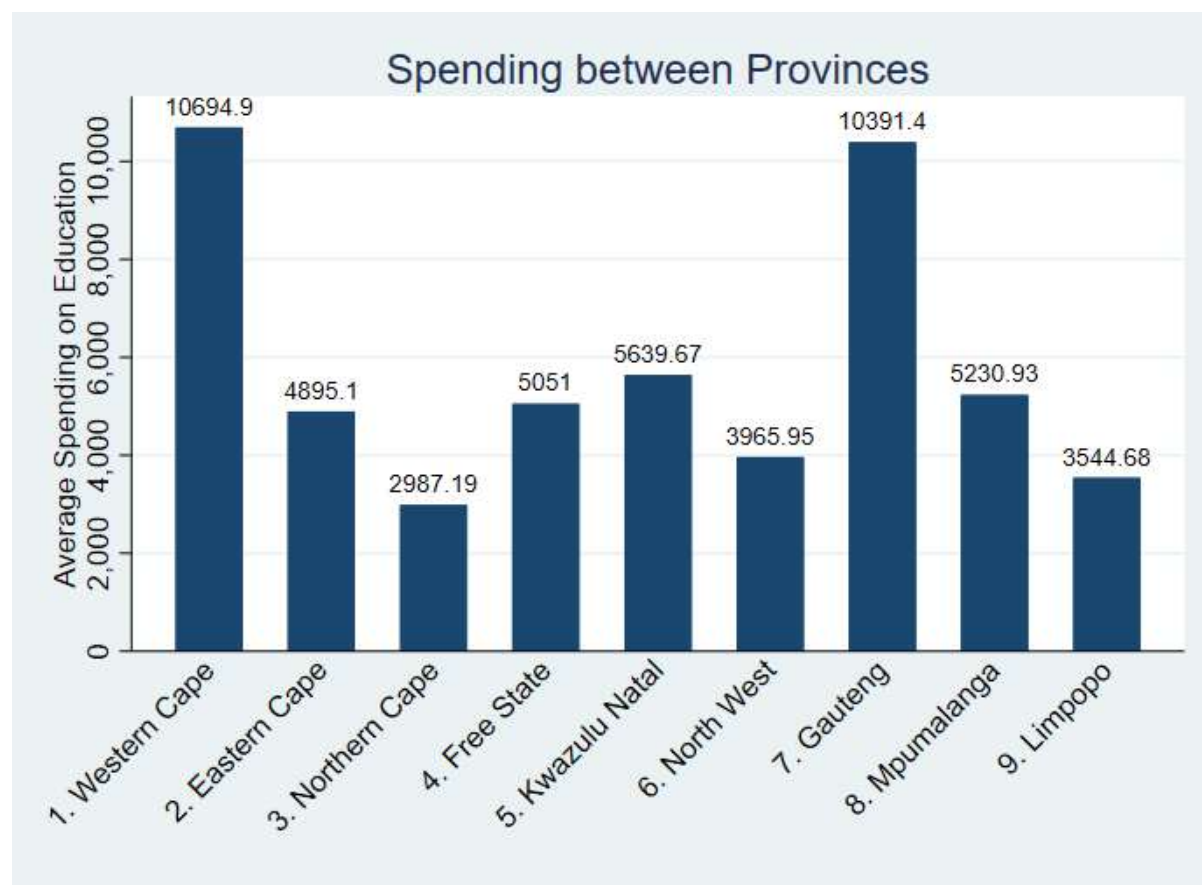
Source: LCS 2014/2015, author's calculations. Notes (1) Estimates are weighted to population levels.

This figure includes the total per annum expenditure on education between private and public schools which also includes indirect spending items such as uniforms, textbooks, excursions, laptops and other spending items for educational purposes. The chart shows that the majority of households finance the education of their household members by household income/loans and a small percentage of households rely on non-refundable bursaries/government grants for educational expenditure and a very small percentage use both methods of spending. If household spending on education is through loans, the interest rates charged on these loans increase the cost of education by households when they have to be repaid.

It is worth noting that prior to 2018, NFSAS was a loan scheme which means that the financial aid received by households would be reflected as loans and not grants from the government. As such, it is likely that in the figure above, a significant portion of overall expenditure being attributed to household income/loans may well be government-aided. In contrast, the relatively low percentage of spending by non-refundable bursaries/grants might be explained by the fact that a substantial number of individuals in the population reported not paying for fees because they attend a “no-fee” school. In such a situation, the government directly subsidises the “no-fee” schools; therefore, the amount spent by the government at these “no-fee” schools is not directly reflected by household spending.

To illustrate the differences in household spending, Figure 4.2 shows the differences in educational expenditure between provinces among households with at least one-member currently attending an educational institution.

Figure: 4.2: Spending on education by households with at least one-member currently attending an education institution by provinces

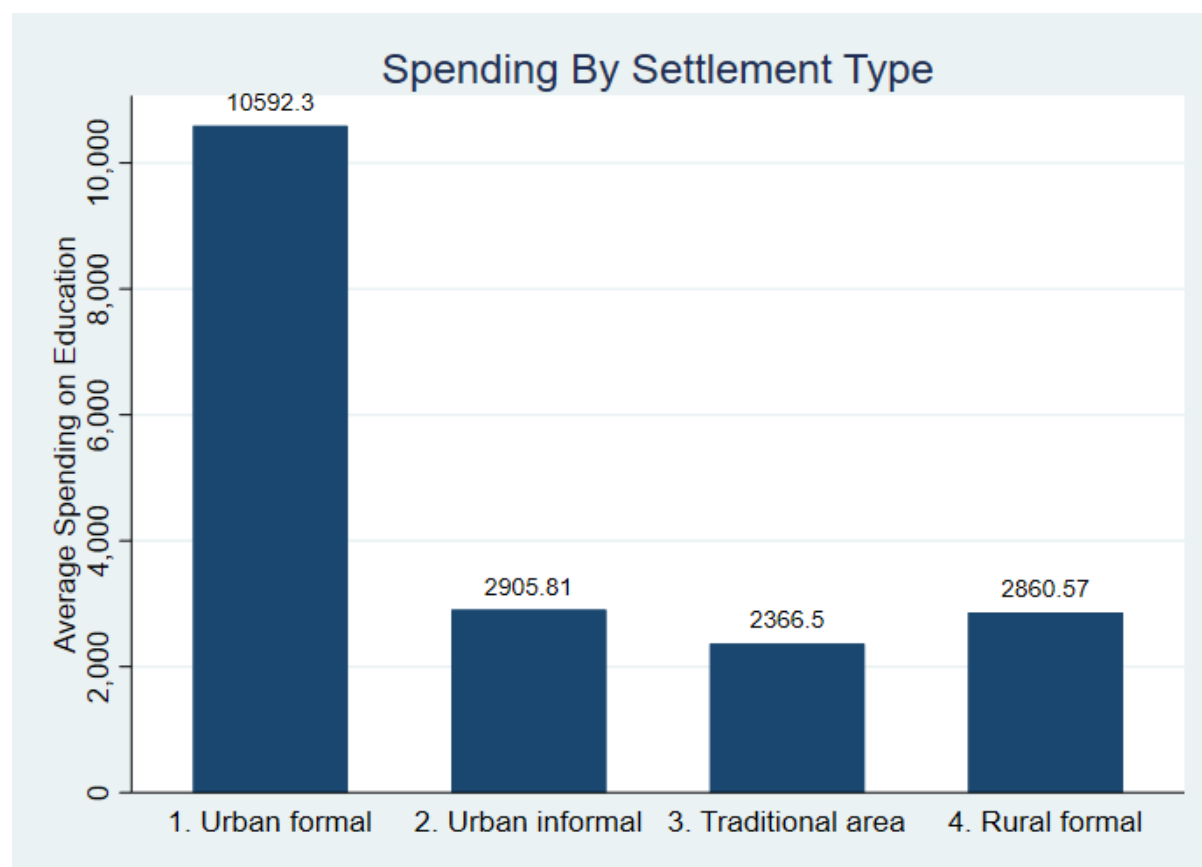


Source: LCS 2014/2015, author's calculations. Notes (1) Estimates are weighted to population levels, (2) Estimates are in millions of Rands per annum.

The graph reveals that households in provinces such as the Western Cape and Gauteng spend more on education compared to households in other provinces. Meanwhile, households in Limpopo, the Northern Cape and Free State spend the least on education. Households in the Western Cape spend about three times more than households in the Northern Cape. The relatively low level of household spending on education in the Northern Cape is not surprising given that the province has the lowest attendance rates out of the nine provinces, as shown earlier in Table 4.5. However, Gauteng and KwaZulu Natal have the highest attendance rates, but households in these provinces spend less on education, on average than households in the Western Cape. This might be explained by the fact that a number of top private schools are in the Western Cape, and as the fees charged at these private institutions is considerably higher than the public institutions, household spending on education at these institutions is relatively

high. To illustrate the differences in spending by different areas, Figure 4.3 illustrates spending on education by the settlement type of the household.

Figure 4.3: Spending on education by the settlement type of the household conditional on at Least one individual currently attending an educational institution

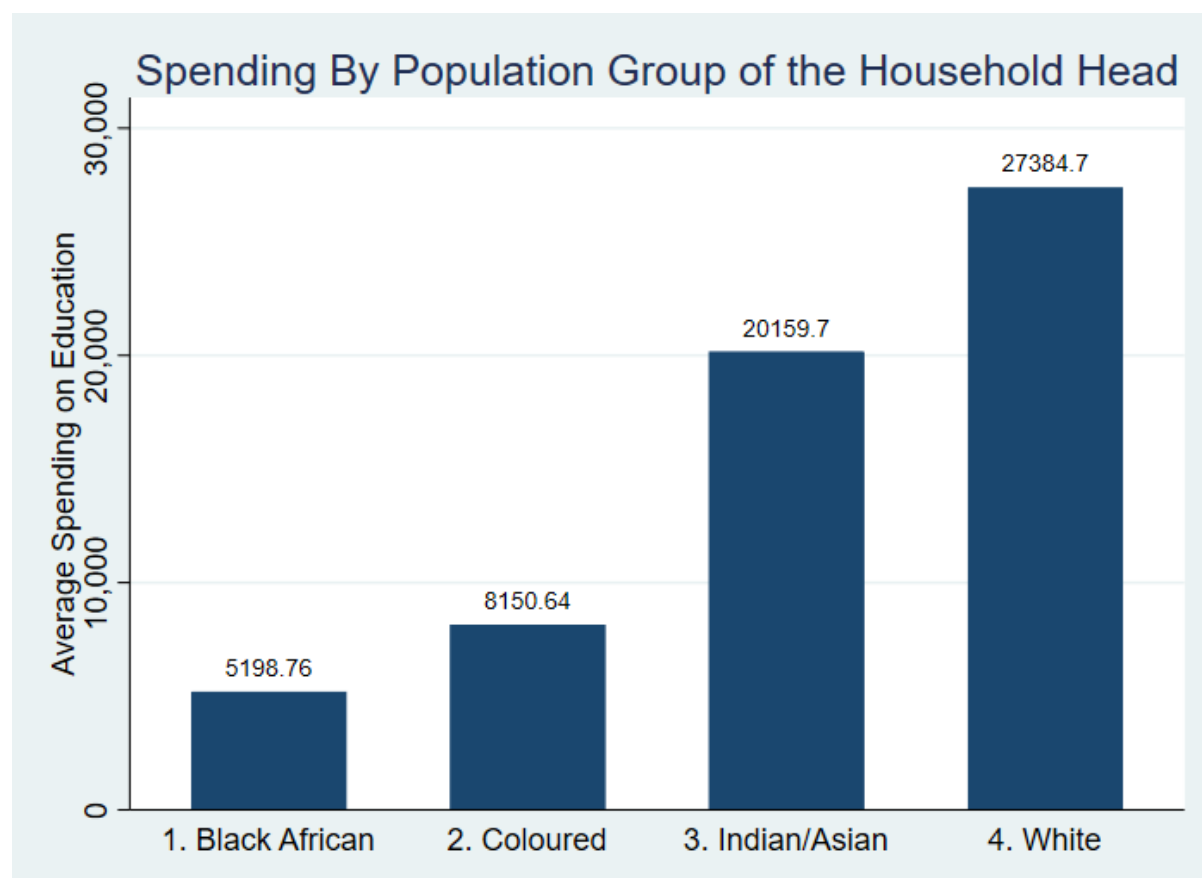


Source: LCS 2014/2015, author's calculations. Notes (1) Estimates are weighted to population levels, (2) Estimates are in millions of Rands.

The figure shows that spending varies considerably between households residing in different settlement types. Households that reside in urban formal areas have the highest spending, followed by households residing in urban informal areas, which have slightly higher spending compared to rural formal areas. Households residing in traditional areas spend four times less than households in urban formal areas. This might be explained by the fact that in most remote and underdeveloped areas, most of the children walk to school which reduces the amount of money the household must spend on education. Furthermore, most of the schools in rural formal and traditional areas have fewer facilities and, therefore, charge relatively lower fees than schools in urban areas. Additionally, households residing in urban formal areas have better labour market opportunities and earn substantially higher incomes relative to households in

rural formal and traditional areas, which translates into higher spending on education (Zuze, 2020). When spending is further disaggregated by the population group of the household head as in Figure 4.4, it shows that spending varies considerably between the different population groups of the household head.

Figure 4.4: Household spending on education by population group of the household head



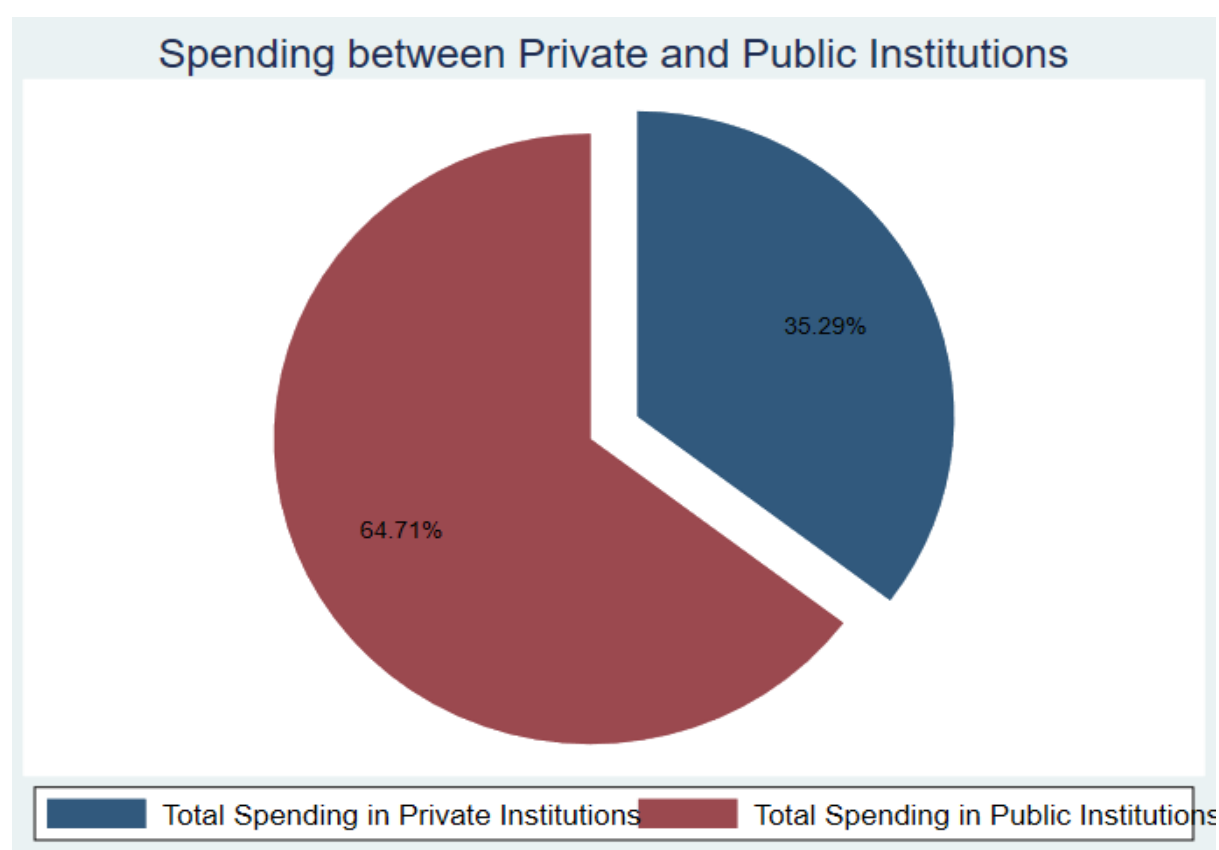
Source: LCS 2014/2015, author's calculations. Notes (1) Estimates are weighted to population levels, (2) Estimates are in millions of Rands per annum.

The results show that spending on education is the highest among White-headed households while African-headed households constitute the least spending across all racial groups. This is despite the fact that Africans have the highest attendance rates at educational institutions. This can be explained by the differences in income across the population groups. As shown earlier in Table 4.1.7, African-headed households earn the lowest household income across all population groups, and White-headed households earn at least three times more than African-headed households. There are inequalities in educational outcomes between children from low-income households and those from affluent households and given the differences in spending on education; these educational outcomes are different according to population group. For

example, only 44% of children from African-headed households are able to complete secondary school compared to 88% of White children. Furthermore, White children have 3678 times higher odds of completing higher education levels than African children (Statistics South Africa, 2016). If households fail to invest in the quality of their children's education, then these children are at a disadvantage.

Spending can be further disaggregated between private and public institutions given the variation in the amount of fees charged at these institutions. Figure 4.5 shows total spending on education between private and public institutions.

Figure 4.5: Household spending on education by type of education sector



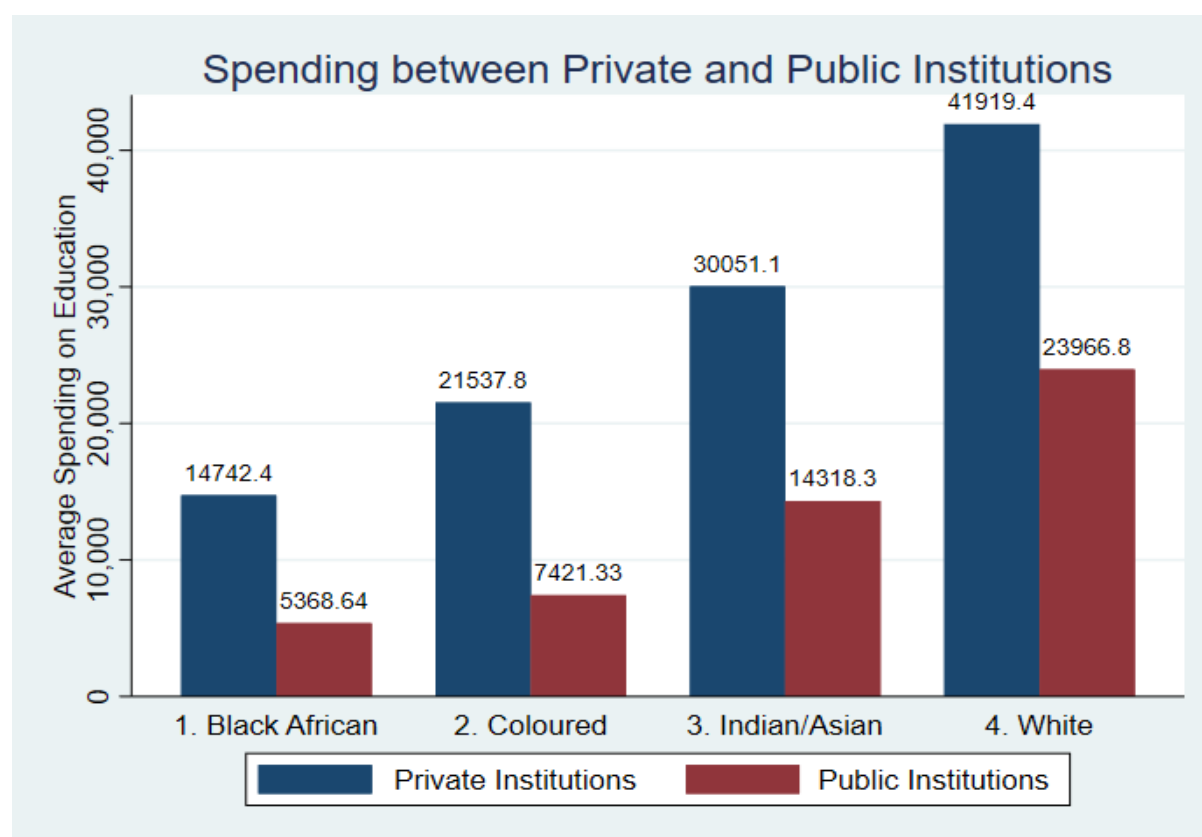
Source: LCS 2014/2015, author's calculations. Notes (1) Estimates are weighted to population levels, (2) Estimates are in millions of Rands per annum.

The figure shows that spending at public institutions is significantly higher than that of private institutions. As shown earlier in Table 4.9, over 16 million individuals attend public institutions compared to just over 2 million individuals. This might in part explain why spending at public institutions by households is higher compared to spending at private institutions. Attendance

at pre-school and school³ (which includes both primary and secondary schooling) constitute the highest percentage at 42% and 37% respectively for whose individuals attending private institutions. In contrast, attendance at school for whose individuals currently attending a public institution is over 80%. The differences in fees paid among the different levels of schooling might further explain the differences in household spending at private and public institutions.

Given the racial inequalities in terms of attendance of individuals by the sector of the institution (i.e. private and public institutions) and the income of household heads, spending between private and public institutions is expected to vary considerably between races since households with high income can afford to send their children to private institutions, Figure 4.6 shows the differences in household spending between private and public institutions by the population group of the households head.

Figure 4.6: Households spending on education by the population group of the household head with at least one individual currently attending an educational institution



³ Despite the fact that over 90% individuals at public schools state that they do not pay for fees, the amount reflected here is not limited to school fees, as such transport costs and other educational items at public institutions might push up spending at these types of educational institutions.

Source: LCS 2014/2015, author's calculations. Notes (1) Estimates are weighted to population levels, (2) Estimates are in millions of Rands per annum.

Spending on education at public institutions is, on average, higher among White-headed households compared to other population groups. One possible explanation for this is the fact most children from White-headed households attend former Model C schools which are well-resourced and fee-charging schools (Hofmeyer, 2018). While these schools are mixed race schools, school zoning and income can indirectly affect attendance at these schools by children from other races. Similarly, White-headed households spend about three times more on private institutions than African-headed households and a similar pattern can be observed for spending on public institutions between White-headed households and African-headed households.

Second to White-headed households are Indian/Asian households who also spend more on private institutions than public institutions. African-headed households have the least spending on education compared to all other three population groups but still spend more on private school education, on average, than public school education. Given that private institutions charge considerably high fees compared to public institutions, it is expected that spending on private institutions will be higher. Additionally, higher attendance at public institutions does not necessarily translate to higher household spending at these institutions because of the “no-fee” and fee-exemption policy at public institutions which exempts low-income households from paying fees. Furthermore, fee-charging public schools may subsidise households who cannot afford to pay for school fees in order to ensure that learners are not discriminated against because they cannot afford to pay for fees. This, in turn, decreases the amount that a household spends on education. However, paying for indirect educational items such as school uniforms, library fines, stationery and transport remain the responsibility of households. Table 4.1.9 shows spending on other educational items

Table 4.1.9: Spending on Other Educational Items

Description	Means
Other (School uniforms, library fines, and stationery).	577.323 (13.8752)
Transport	1038.73 (32.0079)

Source: LCS 2014/2015, author's calculations. Notes (1) Estimates are weighted to population levels, (2) Standard errors are in parenthesis, (3) These spending items are not disaggregated by loans or grants.

The results from the table shows that on average, households spend R1038.73 on transport. This includes taxis, lift clubs, trains, buses, maxi taxis, boats and aircrafts for educational purposes. These are not disaggregated by the level of schooling or by grants or loans,. As “no-fee” schools are highly subsidised by the government, transport costs constitute the highest spending on indirect spending items. On average, households spend R 577 on other spending items such as school uniforms, library fees and stationery.

4.4 Summary and conclusion

The purpose of this chapter was to analyse attendance across public and private institutions and across provinces and provide reasons for non-attendance among individuals who not currently attending educational institutions. The analysis revealed that among individuals who are not currently attending an educational institution, lack of financial resources is the reason for non-attendance. This is more prevalent among African compared to other racial groups. When considering individuals who are currently attending an educational institution, the analysis revealed that attendance at public institutions is significantly higher compared to attendance at private institutions. Notably, attendance is equitably distributed between males and females. When analysing attendance by province, the analysis revealed that Gauteng and KwaZulu Natal have the highest attendance rates both at public and private institutions. Despite these high attendance rates in these provinces, spending on education is high among households who reside in the Western Cape.

As expected spending on education among households who reside in urban formal areas was relatively higher than that of households residing in rural formal areas. When looking at spending by households by the population group of the household head, the analysis revealed

that White-headed households spend significantly more on education at both private and public institutions compared to African-headed households. An important finding of this chapter is that spending on education by household income/loans is significantly higher than other methods of spending on education, suggesting that household income or the ability for a household to acquire a loan is important for education spending. To further analyse the relative roles of spending between households and the government, the next section introduces the empirical technique that will be used to examine the determinants of household spending on education and presents the findings before the chapter concludes.

Chapter 5: Empirical analysis and results

5.1 Introduction

The purpose of this chapter is to introduce the empirical technique that will be used to determine the factors that influence household expenditure on education in South Africa. In addition, examine if there is a difference among income groups in education expenditure. First, the chapter will introduce the chosen method of estimation. Specifically, the advantages of the econometric regression, how it relates to the data set and why it is preferred over other types of estimation. The first estimation method will analyse the distribution of total spending on education taking into account the differences in household income and household size using kernel density estimation (KDE). Second, the chapter defines the variables that will be used to analyse the determinants of household spending on education in South Africa, followed by a brief discussion of how the said variables are expected to influence education expenditure. Finally, the chapter presents the results from estimated regression which control for income, the level of schooling, the method of financing used by households and the sector of education institution attended by household members as well as other indirect educational costs. In addition, the sensitivity of households spending on education resulting from changes in household per capita income is presented before the chapter concludes. Therefore, chapter is divided into the following sections (1) Estimation technique, (2) Definition of variables. (3) Empirical results.

5.2 Estimation technique

To provide a description of the distribution of total household spending on education, kernel density estimation (KDE) will be used. The first KDE graph will look at the distribution of total household spending on education. However, spending typically differs across households with different income distribution; therefore, the second KDE graph will analyse total household spending on education across income quintiles. Then, to account for the differences in spending on education across household size, a KDE graph showing the distribution of household spending on education per capita income quintile will be shown in the analysis. While the KDE distribution analysis gives insight into the differences in spending on education by households across the income distribution, one of the key objectives of this dissertation to analyse the determinants of household spending on education in South Africa; therefore, another empirical estimation is used.

The analysis before indicated that a number of households in the population have zero expenditure for education because they do not have any household members currently attending an educational institution while some households have zero expenditure even though some members of their household are attending an educational institution. This is because of the “no-fee” policy, the fee-exemption policy and the fact that some individuals study through bursaries/scholarships or are financed by a non-household member. Despite policy initiatives from the government, there is a substantial number of individuals who are currently attending an educational institution but cannot afford the costs associated with school attendance.

Because not all households spend on education (households have zero education expenditure), there will be zero observations in the data resulting in censored sample problem. An empirical estimation strategy that ignores this left-censoring in the data may result in biased estimates. This is because the assumptions of OLS become invalid in the presence of censoring. To overcome this, a Tobit model is used in the analysis of the determinants of education expenditure by households. The dependent variable in a Tobit model is continuous and can only be observed above or below a certain value: in this case, education expenditure is zero for some households and positive for others. The underlying Tobit model may be expressed by:

$$y_t = X_t\beta + \mu_t \text{ if } X_t\beta + \mu_t > 0$$

$$=0 \quad \text{if } X_t\beta + \mu_t \leq 0$$

$t= 1, 2, \dots, N,$

where N represents the number of observations, y_t is the dependent variable, X_t is the vector of independent variables and β is the unknown coefficients. Finally, μ_t is the error term which is assumed to have a constant variance and zero mean (McDonald and Moffitt, 1980).

Tobit models are estimated by maximum likelihood (ML), which assumes that the error term is homoscedastic and normally distributed (Ebaidalla, 2018). The likelihood function consists of two parts: the product of the probabilities that households do not spend on education and the product of the probabilities that the household spends on education (Ebaidalla, 2018). As mentioned above, not all households in the population spend on education despite their household members attending an educational institution. For this reason, a Tobit model will be advantageous in the analysis. The use of a probit model would require the dependent variable to be binary (equal to zero for households who do not spend on education and equal to one for households that spend on education), the Tobit model is preferred given that the dependent

variable is continuous and can be observed above a certain value (greater than zero). This means that households who do not spend on education because of government subsidization or non-refundable bursaries will be included in the analysis of the determinants of household spending on education.

To provide a more detailed description of the analysis of education spending by households in South Africa, the next section provides a summary of the variables that will be used.

Section 5.3: Description of the variables

For the determinants of household spending on education, the results of the Tobit regression are shown iteratively. This is done to report on the change in the size and direction of income and other control variables as more explanatory variables are added. Furthermore, the equations are estimated separately for each income quintile because the factors affecting education expenditure including income, may affect expenditure in different ways across the distribution of education expenditure. Therefore, some of the explanatory variables listed in Table 5.1 are not used across all estimated regressions.

Table 5.1: Summary of explanatory variables

Variable	Description
Dependent variable	
Ln Total education cost	Total spending on education by households
Explanatory variables	
Ln Income per capita	Log of income per capita
Ln Income per capita (squared)	Log of income per capita squared
Age	Age of each household member
Age (squared)	Age of each household member squared
Gender of the household head	Equal to 0 if male; equal to 1 if female
Education level of the household head	Measured as 8 dummy variables reflecting education levels Grade R, Grade 1-7, Grade 8-11/equivalent, Grade 12/equivalent, Grade 12 plus certificate/diploma, bachelors/equivalent, postgraduate/equivalent. The base category is no schooling.
Marital status of the household head	Measured as 4 dummy variables reflecting marital status living together as married partners, never married, separated, divorced. The base category is married.

Broad employment status of the household	Measured as 3 dummy variables reflecting the employment status employed and unemployed. The base category is economically inactive.
Settlement type of the household	Measured as 4 dummy variables reflecting the settlement type urban informal, rural formal and traditional area. The base category is urban formal.
Preschool	Number of children in the household attending at preschool
School	Number of children in the household attending school (including both primary and secondary school)
Adult	Number of individuals in the household attending adult literacy classes
Literacy class	Number of individuals in the household attending literacy classes
Higher education and training	Number of individuals in the household attending higher education and training
FET colleges	Number of individuals in the household attending FET colleges
Other colleges	Number of individuals in the household attending other colleges
Home School	Number of individuals in the household being home schooled
How households finance education	Measures as 3 dummy variables reflecting if spending is by grants only or grants only. The base category is both loans and grants.
Other spending	Dummy variable equal to 0 if households do not spend on other educational items and equal to 1 if household spends on other educational items
Public spending on education	Dummy variable equal to 0 if spending is at private institutions, equal to 1 if spending is at public institutions
Income per quintile	Household income ranked by magnitude (low to high) and dividing the distribution by 10 with the lowest decile representing the lowest income category
Income per capita quintile	Household income for the past 12 months divided by the number of individuals in the household

Source: LCS 2014/2015.

Income is one of the most important determinants of spending on education. Despite the fact that many public institutions in South Africa are highly subsidised by the government, spending

on other educational items such as transport, school uniform, textbooks, stationary etc. are largely dependent on household income. Furthermore, given that the “no-fee” school policy is only effective until Grade 9, income plays an important role in ensuring that individuals are able to complete secondary schooling and progress to institutions of higher education and training (provided that they gain admission). Another important point of consideration is the differences in the fees charged between private and public institutions, it is expected that individuals from affluent households are likely to attend private institutions.

A number of characteristics of the household head such as the gender, age, level of education, employment status and marital status of the household are used in the analysis. Given the differences in earning between males and females, it is expected that male-headed households will spend more on education compared to female-headed⁴ households. The age of the household head is used because younger household heads are likely to have children attending at lower levels of schooling or no children at all, therefore, spending on education among relatively young household heads is likely to be less compared to slightly older household heads who have children at more advanced levels of schooling due to the differences in fees charged between levels of schooling. However, as the household head grows older spending on education is likely to decrease as children exit the education system. For this reason, the age of the household head is squared and added as one of the explanatory variables. The level of education and employment status of the household head are expected to positively influence household spending on education. First, household heads who are highly educated tend to have better labour market outcomes compared to household heads with relatively little education. This in part can be explained by the human capital theory which suggests that education or training increases the knowledge and skills of workers thereby increasing their productivity which in turn increases their future income and lifetime earnings (Donkoh and Amikuzuno, 2011). Therefore, spending on education is likely to increase as the level of education of the household head increases.

The marital status of the household head might also explain the differences in spending on education. For example, the spouses of married household heads are likely to be employed and contribute to household income, thereby increasing the financial resources that can be used to finance education expenditure. The settlement type of the household is also important because

⁴ The female-headed households may be larger, their composition could be different to male-headed households (perhaps having more elderly household members) which could affect spending on education. Furthermore, if female-headed households are such because of divorced/being widowed then resources are likely to be scarce.

households in urban areas are closer to better-resourced schools (usually fee-charging) and the earnings of urban households are likely to be higher compared to the earnings of households in rural areas. Therefore, spending on education by urban households is expected to be higher than spending on education by households in rural areas.

Another important determinant in education spending is the level of schooling that is attended by the member of the household. It is expected that households with individuals attending at institutions of higher education and training spend relatively more compared to households with individuals who are attending lower levels of schoolings. Similarly, households with members who are attending private institutions are likely to spend more on education compared to household with members attending public institutions. Finally, given the different methods of spending on education available to households in the population, a categorical variable capturing how households finance their education is included in the analysis to determine if there are any discernible differences in education across the different methods of education spending.

The next section reports on the results from the KDE graphs to show the distribution of total spending on education among households. This includes an analysis of the distribution of total household spending on education across different income quintiles, the education sector attended by household members and the way in which households finance their education. Then results from the different estimated Tobit models are discussed before the chapter concludes.

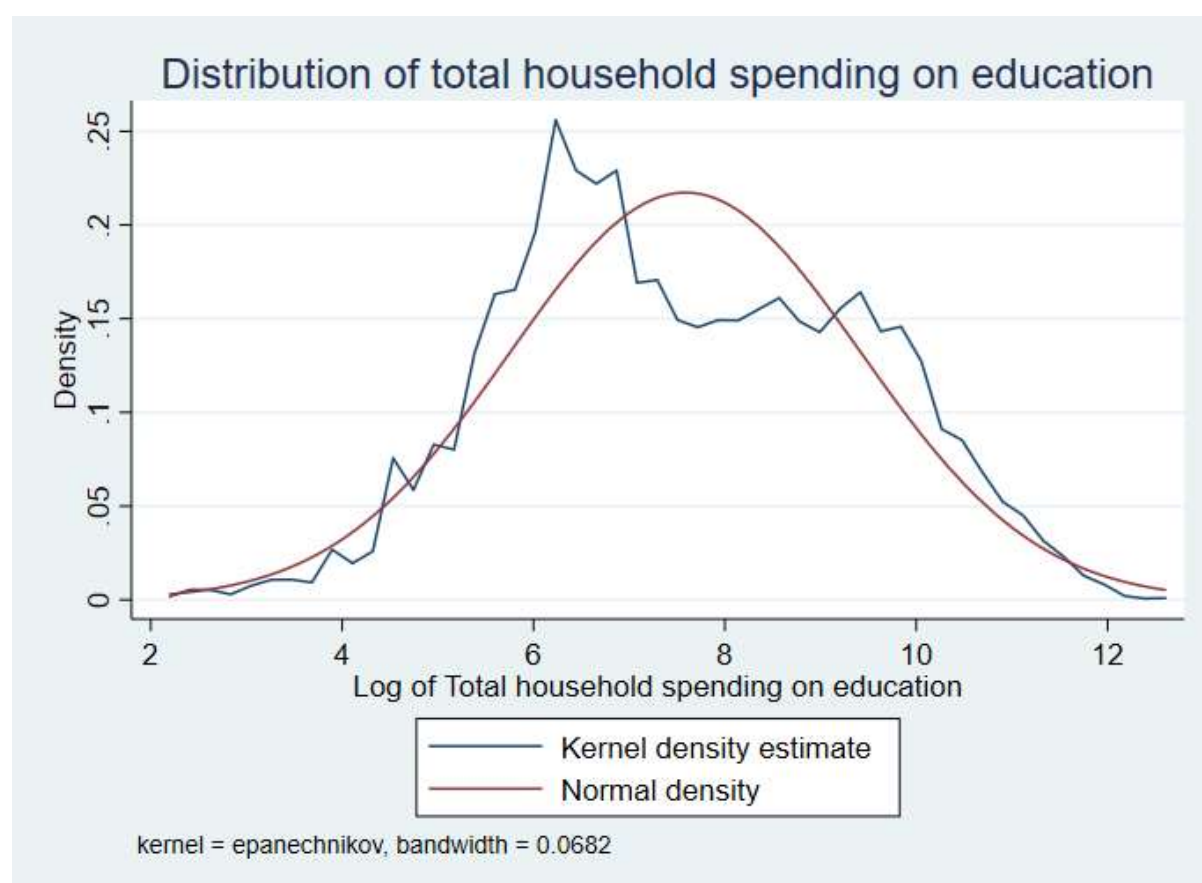
Section 5.4: Empirical results

The purpose of this section is to report on the empirical results obtained from the KDE graphs and estimated Tobit regression models. Given that the primary objective of this dissertation is to investigate the determinants of household spending on education in South Africa while examining the difference in education spending across income groups, various Tobit models are regressed across income quintiles, controlling for the way which households finance their education and controlling for the education sector attended by members of the household. Therefore, the section is divided into the following sections: (1) Distribution of total household spending on education using Kernel density graphs, (2) Determinants of household spending on education, (3) Summary and conclusion

In South Africa, the affordability of school attendance has been investigated in a number of studies (Mimoun, 2007; Gutierrez and Tanaka, 2009; Letseka, 2014; Languille, 2015; Spaull,

2018; Van Dyk and White, 2019). These studies substantiate that most of the households in South Africa cannot afford to pay for fees charged at educational institutions. As a result, the government and private sector have introduced various policies aimed at easing the financial burden for low-income households and ensuring that everyone in South Africa has access to education regardless of their financial background. This has in turn, reduced or eliminated the payment of educational expenses among many households in South Africa. To illustrate the distribution of household spending on education, Figure 5.1 shows the distribution of total household spending education⁵. Total spending on education includes fees charged at both public and private institutions, school uniforms, transport costs, stationery, library fees etc.

Figure 5.1: Distribution of total household spending on education



Source: LCS 2014/2015, author's calculations. Notes (1) Figures are weighted to population levels.

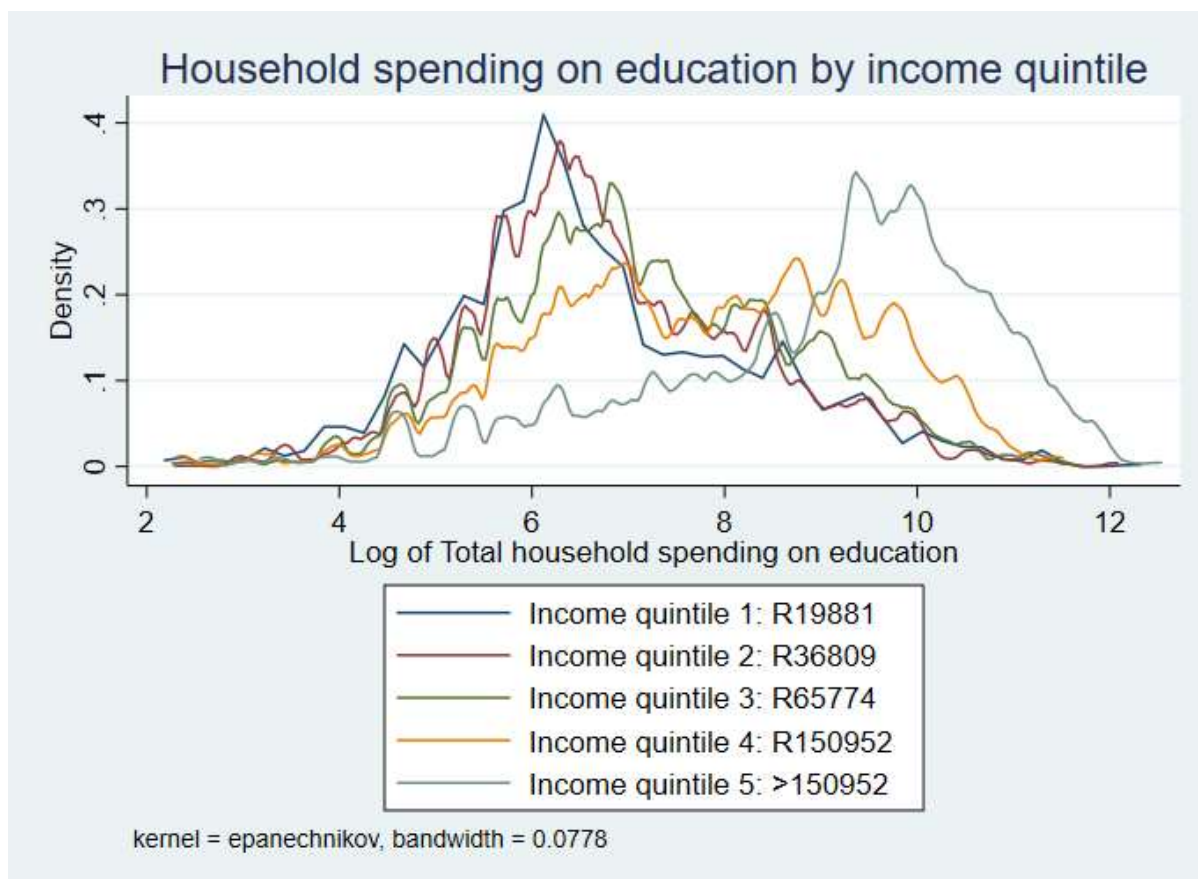
⁵ The natural logarithmic of expenditure is used because spending on education is highly skewed. Note that households with zero education expenditure are excluded from the kernel density graphs.

The graph above shows that distribution⁶ of total household spending on education is somewhat skewed to the right and slightly bimodal: the peak of the spending distribution occurs at a low level of spending. The distribution then tapers off and plateaus before declining at a higher spending level. This suggests that the majority of households in South Africa spend less on education compared to a few households that have high education expenditure. As shown earlier, more than 16 million individuals attend public institutions and over 90% of these individuals do not pay for school fees because they attend a “no-fee” school. Furthermore, 2% of individuals who attend public institutions received a fee-exemption. The non-payment of fees reduces the amount that households have to spend on education which might in part explain why the peak of the distribution is at a lower level of spending.

To account for the differences in household spending on education across the income distribution, the Figure 5.2 shows the distribution of total household spending on education by the income quintile of the household.

Figure 5.2: The distribution of total household spending on education by the income quintile of the household

⁶ Due to the fact that the natural logarithmic of expenditure on education is used, a 0.1 difference in log expenditure is approximately a 10% difference in expenditure.

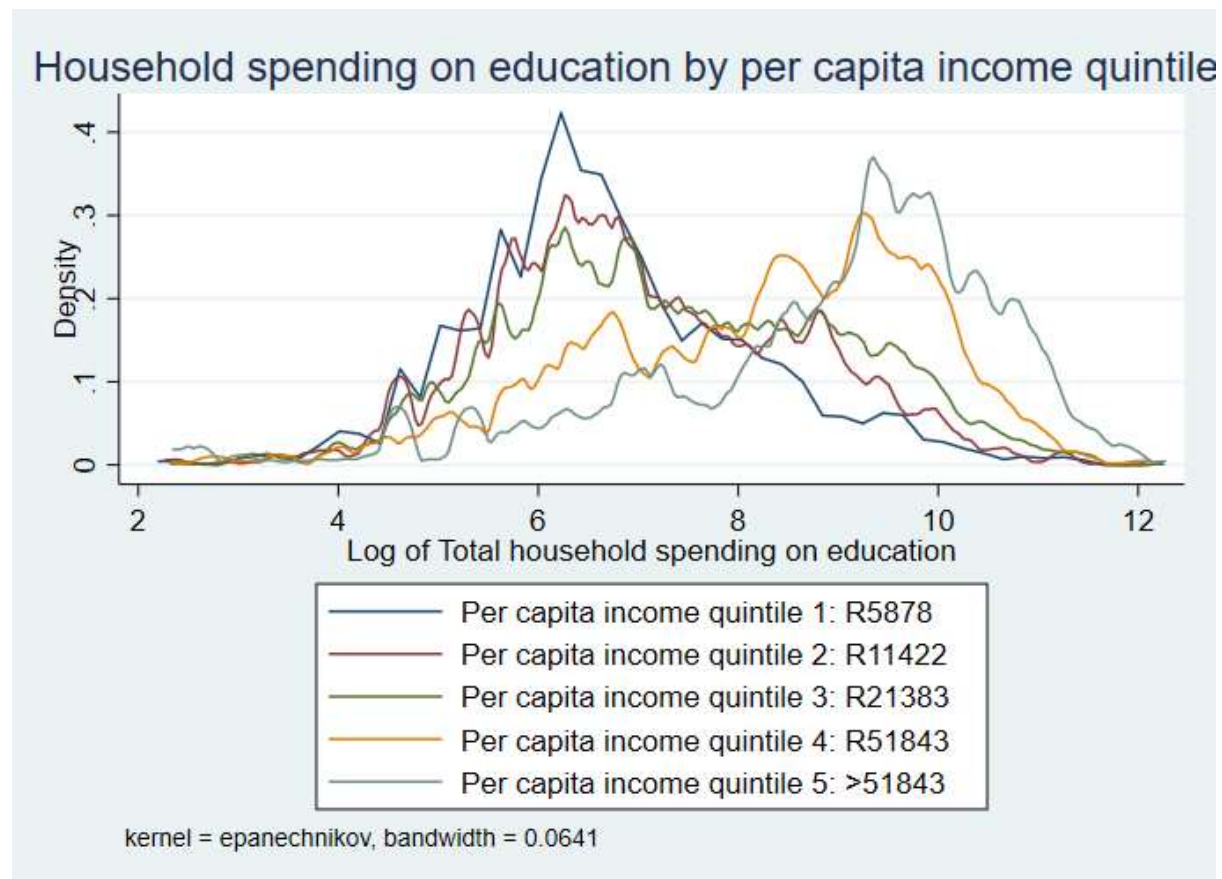


Source: LCS 2014/2015, author's calculations. Notes (1) Figures are weighted to population levels, (2) The legend reflects the upper household income value in each quintile.

The kernel density graph in the figure above shows spending differs on education across income quintiles. The graph shows that spending on education in low-income households (quintile 1-3) is skewed to the right while spending on education in households at the top of the income distribution (quintile 5) is skewed to the left. Spending on education by households in quintile 4 is slightly bimodal but is relatively flatter when compared to spending by households in the lower income quintiles. The distributions depict the vast difference in spending on education across income quintiles. For example, the modal point of log expenditure for households in the first income quintile is around 6 while the modal point for households in the highest income quintile is just over 9.

A number of studies (Oluwakemi et al., 2015; Acar et al, 2016; Iddrisu, 2018; Kaul, 2018) show that household size affects spending on education. To account for the differences in education spending by household size, Figure 5.3 shows the distribution of household spending on education by the per capita income quintile of households.

Figure 5.3: The distribution of household spending on education by the per capita income quintile of the household



Source: LCS 2014/2015, author's calculations. Notes (1) Figures are weighted to population levels, (2) The legend reflects the upper household income value in each quintile.

The graph shows that spending on education by households in the lower per capita income quintiles (quintile 1-3) is skewed to the right while spending on education by households in the upper per capita income quintiles is skewed to the left. Spending on education among low-income households declines at higher levels of spending which suggests that individuals from low-income households might not progress past Grade 9 (the no-school policy ends at this level) and therefore, might not make it into institutions of higher learning⁷ because of financial constraints or may not get admission because of poor performance as a result of low-quality education. The relatively high spending on education by households in the upper per capita income quintiles (quintile 4-5) is likely to be indicative of these household's spending on

⁷ As shown earlier, prior to 2018, NFSAS was a loan scheme which means that the financial aid received from government would have been reflected as household loans. As such, if individuals from low-income households attended institutions of higher education and training, spending on education at higher levels among low-income households would be relatively higher.

education at private institutions and institutions of higher education and training. Because private institutions charge relatively high fees compared to public institutions, individuals from low-income households typically do not attend private institutions unless they receive a bursary/scholarship, or their fees are paid by a non-household member.

To provide a more detailed analysis of household spending on education, particularly, the determinants of household spending on education, the rest of the section will report on the results from the estimated Tobit regression models. Since the natural logarithms of total household spending on education and of per capita income are used, the estimated coefficient of the log of per capita income shows the income elasticity of total education spending. As such, the section also reports on the sensitivity to changes in income across the per capita income distribution.

Table 5.2 presents the results of household expenditure on education⁸. The natural logarithmic of total education expenditure is regressed with the logarithmic of per capita household income, household per capita income squared, the income per capita quintiles, the settlement type of the household, the number of people employed in the household, the age, gender, marital status, education level, employment status, population group of the household head, the number of children in the household according to their respective level of schooling.

⁸ The results in this table assume that the influence of the explanatory variables is constant across the distribution of household education spending. The Appendix shows results where separate regressions were estimated for each quintile – note that the coefficients on the log of per capita income and its square are particularly sensitive to splitting the sample. This is because of the overall shape of the distribution of spending. In general, where other characteristics are shown to be significant in the separate estimations, the directions of these largely align with the findings previously discussed

Table 5.2: Tobit estimation results of household education expenditure

Variables	Model 1	Model 2	Model 3	Model 4
Ln income per capita	1.457*** (0.282)	1.918*** (0.324)	0.874*** (0.297)	0.712** (0.301)
Ln income per capita (squared)	-0.0835*** (0.0150)	-0.135*** (0.0177)	-0.0348** (0.0158)	-0.0328* (0.0193)
Age		0.231*** (0.0262)	0.0351 (0.0215)	0.0375* (0.0214)
Age (squared)		-0.00249*** (0.000254)	-0.000519** (0.000206)	-0.000556*** (0.000206)
Gender of the household head		3.125*** (0.161)	1.545*** (0.132)	1.539*** (0.132)
Coloured		0.966*** (0.188)	1.008*** (0.156)	1.007*** (0.156)
Indian/Asian		-1.196** (0.545)	-0.300 (0.402)	-0.254 (0.403)
White		-1.671*** (0.358)	-0.596** (0.279)	-0.533* (0.281)
Grade R		0.751 (0.986)	1.422 (0.904)	1.450 (0.922)
Grade 1- Grade 7		0.237 (0.209)	0.769*** (0.183)	0.737*** (0.182)
Grade 8-11 or equivalent		0.519** (0.226)	1.072*** (0.196)	1.041*** (0.194)
Grade 12 or equivalent		2.313*** (0.277)	1.972*** (0.237)	1.967*** (0.236)
Grade 12 plus certificate/diploma		3.674*** (0.388)	2.527*** (0.315)	2.535*** (0.316)
Bachelors or equivalent		4.835*** (0.441)	3.089*** (0.364)	3.092*** (0.363)
Postgraduate or equivalent		6.094*** (0.506)	3.624*** (0.408)	3.649*** (0.408)
Living together like married partners		-2.460*** (0.234)	-0.972*** (0.190)	-0.986*** (0.190)
Never married		-4.341*** (0.183)	-2.009*** (0.154)	-1.988*** (0.154)
		-2.599*** (0.221)	-1.284*** (0.174)	-1.253*** (0.174)
Separated		-3.586*** (0.394)	-1.680*** (0.330)	-1.652*** (0.332)
Divorced		-3.302*** (0.433)	-1.494*** (0.345)	-1.480*** (0.345)
Economically inactive		0.733*** (0.226)	0.345* (0.187)	0.279 (0.186)
Employed		0.187 (0.185)	0.236 (0.150)	0.163 (0.150)
Urban formal			0.207	0.199

Variables	Model 1	Model 2	Model 3	Model 4
			(0.217)	(0.218)
Traditional area			-0.779*** (0.120)	-0.762*** (0.120)
Rural formal			-0.972*** (0.298)	-0.996*** (0.296)
Preschool			1.460*** (0.109)	1.452*** (0.109)
School			2.596*** (0.0452)	2.606*** (0.0455)
Adult literacy classes			2.536*** (0.365)	2.531*** (0.366)
Literacy classes			3.114** (1.448)	3.103** (1.444)
Higher education and training			4.971*** (0.200)	4.975*** (0.201)
FET colleges			4.925*** (0.249)	4.889*** (0.248)
Other Colleges			2.776*** (0.401)	2.770*** (0.402)
Home schooling			4.221*** (1.110)	4.178*** (1.116)
Number of employed			0.157*** (0.0300)	0.158*** (0.0299)
Quintile 2 (R 11 422)				0.973*** (0.191)
Quintile 3 (R 21 383)				0.635** (0.277)
Quintile 4 (R 51 843)				0.510 (0.391)
Quintile 5 (More than R 51 843)				0.842 (0.600)
var (In total education spending)	52.02*** (0.693)	45.78*** (0.662)	28.71*** (0.475)	28.62*** (0.472)
Constant	-4.892*** (1.346)	-9.538*** (1.684)	-8.634*** (1.528)	-7.792*** (1.457)
Observations	23,380	23,284	23,284	23,284

Source: LCS 2014/2015, author's calculations. Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Across all the models⁹, the coefficient of household per capita income and the squared coefficient of household per capita are both statistically significant. The coefficient for the log of household per capita income is positive across all models, indicating that as the log of per capita household income rises, total household spending on education increases. Across all models, the positive coefficient for household per capita income taken together with the negative coefficient for the square of household income per capita reveals a non-linear relationship between total household spending on education and per capita household income. As per capita household income increases, spending on education also increases but at a decreasing rate. The magnitude of the coefficients on the income variables varies across the models suggesting that there is likely to be a correlation between per capita household income and the variables which are being included iteratively into the estimation.

The results overall suggest that there are various characteristics of the household head that have a significant influence on the overall spending of the household on education. Households where the head is older, on average, typically spend more on education (this is across all models), but the relationship between the age of the head and spending on education is non-linear. This is likely because once the household head reaches a certain age¹⁰ (typically 60), they retire and might not afford to pay for the fees of their household members. However, in model 3, the age of the household is not significant when controlling for settlement type of the household. The gender of the household head is also a critical factor influencing household's spending on education as the table reveals that female-headed households typically spend more on education, on average, than male-headed households. This is despite the fact that females earn almost three times more than males, as shown in the descriptive analysis earlier.

Interestingly (especially in consideration of South Africa's history) the results suggest, across all models, that households where the head is White spend significantly less than in African households. There is, however, a strong correlation between race and income in South Africa, and this finding is conditional on household's per capita income.

A critical determinant of a household's education spending is in respect of the education of the household head. Notwithstanding that the households where the head has only a Grade R level of education do not spend significantly more or less on education than households where the

⁹ The base categories are male, African, no schooling, married, unemployed, urban formal, per capita quintile 1 (R 5 878)

¹⁰ There is no official retirement age in South Africa, but at age 60 individuals become eligible for South Africa's old-age pension (access to which is determined on a means-tested basis)

head has no education, it is evident across the models that as the education level of the head increases, the expenditure of the household on education increases significantly (i.e. the magnitude of the coefficients on the education control variables increases as the level of education increases across all the model specifications). Finally, in respect of the head's characteristics, households whose heads are married typically spend more on education than households whose heads have reported a different marital status.

In addition to the characteristics of the household head featuring as influential factors influencing households' education spending, characteristics of the households themselves are also relevant. In addition to controls for per capita household income, and for characteristics associated with the head of the household, models 3 and 4 also control for factors specific to the household. Households in traditional areas and rural areas spend significantly less than households in urban formal areas. Predictably, as the number of individuals in the household attending in each educational facility increases, household spending on education in these facilities increases, with the largest drivers being the number of individuals in the household attending FET Colleges, higher education institutions and, surprisingly, undertaking home-schooling. In respect of the latter, it is possible that the profile of spending on this sort of education is somewhat different when compared to spending associated with enrolment in a typical school.

In model 4¹¹, an additional control for the income quintile of the household is included. *Ceteris paribus*, the findings for this model suggest that households in quintiles 2 and 3 spend significantly more on education than households in quintile 1, but that there is no significant difference in education spending between households in quintiles 4 and 5 compared to households in quintile 1. However, this estimation does control for the per capita income level of the household.

Across all models, total expenditure and per capita household income and the squared per capita income variables are in logarithmic form. This suggest that the parameter estimates for the household expenditure variable denote the income elasticities of households' education expenditure. Therefore, it is possible to calculate the sensitivity of households spending on education resulting from changes in household per capita income. Using results from model 3,

¹¹ The results in the table above are from different Tobit models, estimated by adding explanatory variables while the dependent variable (logarithmic of total education spending) and the household income per capita and the household income per capita (squared) remain constant.

Table 5.3 shows the sensitivity of education expenditure to change in per capita income, calculated at the mean education expenditure within each quintile.

Table 5.3: Income elasticities of education expenditure by per capita household income

Per capita household income	Mean of log of per capita income in each per capita household income quintile	Income elasticity of education expenditure
Quintile 1 (R 5 878)	7.924	1.426
Quintile 2 (R 11 422)	9.169	1.513
Quintile 3 (R 21 383)	9.871	1.562
Quintile 4 (R 51 843)	10.672	1.617
Quintile 5 (More than R 51 843)	11.945	1.706

Source: LCS 2014/2015, author's calculations.

In order to calculate the income elasticity of education expenditure across per capita income, a general formula can be expressed as: $(\ln \text{income per capita}) - 2 * (\ln \text{income per capita squared}) * (\ln \text{income per capita mean})$ e.g. quintile 1 $(0.8743874 - 2 * (-.0348304) * (7.924241))$. Despite the income elasticity¹² being greater than one across all household per capita income quintiles, the results in the table indicate that spending on education in lower income quintiles is less sensitive to changes in income compared to upper income quintile households. This implies that a 1 percent increase or decrease in per capita household income among upper income households (quintile 4 and quintile 5) will affect the spending of these households on education by more than a 1% increase (or decrease) in per capita income will affect the spending of lower income households on education. Put more simply, household spending on education is more sensitive to changes in per capita income at the top end of the per capita household income distribution. This is likely reflective of large differences in South Africa's education system, with private education being significantly more expensive than in the public education.

It is likely that households at the top end of the per capita household income distribution send their children to private institutions because of the perceived better-quality education at these educational institutions. However, a temporary change in the income of these household could result in children being moved from private institutions to public institutions. In contrast, sensitivity to change in income among households at the lower end of the income distribution

¹² The sensitivity to changes in income on education expenditure can be calculated by the following formulae: quintile 1 $(0.8743874 - 2 * (-.0348304) * (7.924241))$; quintile 2 $(0.8743874 - 2 * (-.0348304) * (9.169811))$; quintile 3 $(0.8743874 - 2 * (-.0348304) * (9.871147))$; quintile 4 $(0.8743874 - 2 * (-.0348304) * (10.6723))$; quintile 5 $(0.8743874 - 2 * (-.0348304) * (11.94517))$

is likely to reflect aspects of education expenditure not related to fees such as uniforms, transport costs as these households are highly subsidized by the government through the “no-fee” and fee-exemption policies.

The previous discussion focussed on all households, recognising that there were some households where household spending on education was truncated at zero. The next section of analysis considers only those households with positive spending¹³ on education in order to determine the influence of loans/grants in driving the magnitude of household expenditure on education while also determining the role of additional spending on education in contributing to overall education expenditure. Furthermore, the analysis will ascertain the extent to which spending in private/public sector education drives overall education spending by households.

Differences in spending on education is attributable to a number of factors, with income being one of the most critical factors influencing spending. However, for many households, income is often insufficient to cover all the costs associated with spending on education. The various methods of spending available to households for the purpose of education expenditure (household income/loans or non-fundable bursaries/government grants or both) make education spending affordable allow to households who would otherwise be unable pay for educational expenses. To understand the determinants of household spending on education by how education is financed by households, Table 5.4 shows household expenditure by households controlling for the way which education is financed¹⁴.

¹³ Given that the models include households with positive education expenditure, the results are the same as if an OLS regression is estimated.

¹⁴ Table A1 in the appendix shows household spending on education across income quintiles not controlling for the way households finance education or the sector of the educational institution attended by the household member.

Table 5.4: Tobit estimation results of household expenditure on education controlling for the way which education is financed by households

Variables	Ln total education spending	Income quintile 1	Income quintile 2	Income quintile 3	Income quintile 4	Income quintile 5
Ln income per capita	-0.188 (0.119)	-0.0657 (0.166)	1.674 (16.55)	-11.31 (23.97)	10.98 (12.44)	2.370 (2.307)
Ln income per capita (squared)	0.0159** (0.00725)	0.00503 (0.0149)	-0.0719 (0.904)	0.621 (1.213)	-0.490 (0.581)	-0.0908 (0.0952)
Age	-0.00492 (0.00880)	0.0175 (0.0155)	-2.92e-05 (0.0142)	-0.0188 (0.0172)	0.0159 (0.0202)	-0.0421 (0.0287)
Age (squared)	6.15e-05 (8.49e-05)	-0.000156 (0.000153)	7.86e-06 (0.000135)	0.000204 (0.000165)	-0.000163 (0.000209)	0.000501* (0.000299)
Gender of the household head	0.0512 (0.0516)	0.0701 (0.0989)	-0.0579 (0.0960)	0.227** (0.107)	-0.0134 (0.101)	0.171 (0.124)
Coloured	-0.0915 (0.0567)	-0.455*** (0.147)	-0.148 (0.126)	-0.195* (0.116)	-0.258** (0.107)	0.275*** (0.107)
Indian/Asian	0.519*** (0.108)	1.581*** (0.359)	0.813** (0.323)	0.460** (0.223)	0.309* (0.167)	0.538*** (0.192)
White	0.740*** (0.0906)	1.664*** (0.508)	1.024 (0.822)	0.694** (0.272)	0.592*** (0.146)	0.672*** (0.110)
Grade R	-0.0116 (0.465)	0.445 (1.022)	0.236 (1.012)	-0.241 (0.485)	-1.741*** (0.434)	0.535 (0.377)
Grade 1- Grade 7	0.282*** (0.0773)	0.105 (0.119)	0.290** (0.123)	0.148 (0.160)	0.523 (0.398)	0.726* (0.415)
Grade 8-11 or equivalent	0.414*** (0.0795)	0.272** (0.133)	0.350*** (0.126)	0.376** (0.165)	0.619 (0.400)	0.438 (0.385)
Grade 12 or equivalent	0.743*** (0.0911)	0.661*** (0.182)	0.680*** (0.157)	0.491*** (0.184)	0.937** (0.403)	0.542 (0.370)
Grade 12 plus certificate/diploma	0.893*** (0.114)	1.322*** (0.268)	0.982*** (0.263)	0.642** (0.258)	1.164*** (0.413)	0.618* (0.363)
Bachelors or equivalent	1.056*** (0.124)	1.395*** (0.432)	1.584*** (0.409)	1.150*** (0.315)	1.005** (0.428)	0.855** (0.365)
Postgraduate or equivalent	1.024*** (0.131)	1.012** (0.458)	2.280*** (0.323)	0.753*** (0.274)	1.024** (0.437)	0.954*** (0.369)
Living together like married partners	-0.430*** (0.0771)	-0.402*** (0.151)	-0.189 (0.139)	-0.397*** (0.147)	-0.642*** (0.159)	-0.333 (0.235)
Never married	-0.215*** (0.0618)	-0.357*** (0.129)	-0.0743 (0.124)	-0.206 (0.143)	-0.135 (0.128)	-0.177 (0.146)
Widow/widower	-0.222*** (0.0761)	-0.304** (0.149)	-0.112 (0.133)	-0.122 (0.143)	-0.163 (0.158)	-0.405* (0.240)
Separated	-0.220* (0.128)	-0.237 (0.261)	-0.319 (0.215)	0.278 (0.196)	-0.919** (0.388)	-0.408 (0.327)
Divorced	-0.00565 (0.109)	-0.227 (0.328)	0.00431 (0.296)	-0.257 (0.302)	0.223 (0.187)	0.0861 (0.146)
Economically inactive	0.176** (0.0718)	0.335*** (0.122)	0.120 (0.128)	0.116 (0.166)	0.0642 (0.170)	0.305 (0.497)
Employed	-0.0218 (0.0618)	-0.108 (0.101)	0.0569 (0.117)	0.0807 (0.136)	-0.195 (0.133)	0.297 (0.470)
Urban formal	-0.361*** (0.0837)	-0.0492 (0.142)	-0.224 (0.156)	-0.537*** (0.146)	-0.548*** (0.203)	0.143 (0.333)

Variables	Ln total education spending	Income quintile 1	Income quintile 2	Income quintile 3	Income quintile 4	Income quintile 5
Traditional area	-0.520*** (0.0497)	-0.502*** (0.105)	-0.365*** (0.0861)	-0.514*** (0.113)	-0.623*** (0.128)	-0.187 (0.145)
Rural formal	-0.341*** (0.113)	0.386* (0.230)	-0.619*** (0.156)	-0.162 (0.276)	-0.230 (0.256)	-0.317 (0.232)
Preschool	0.138*** (0.0344)	0.0685 (0.0681)	0.244*** (0.0611)	0.162** (0.0756)	0.0455 (0.0801)	0.206** (0.0883)
School	0.157*** (0.0177)	0.124*** (0.0311)	0.156*** (0.0366)	0.184*** (0.0420)	0.166*** (0.0393)	0.277*** (0.0508)
Adult literacy classes	-0.129 (0.130)	-0.0519 (0.173)	0.164 (0.213)	-0.0906 (0.353)	-0.00927 (0.235)	-0.539 (0.520)
Literacy classes	-0.125 (0.334)	- (0.551)	-0.437 (0.551)	-0.341*** (0.131)	0.479*** (0.115)	
Higher education and training	0.927*** (0.0520)	1.527*** (0.149)	1.434*** (0.179)	1.589*** (0.121)	0.906*** (0.0968)	0.528*** (0.0812)
FET colleges	0.752*** (0.0580)	1.078*** (0.210)	0.972*** (0.122)	0.801*** (0.111)	0.567*** (0.0923)	0.203 (0.144)
Other Colleges	0.750*** (0.0808)	0.926*** (0.315)	0.962*** (0.152)	0.758*** (0.184)	0.802*** (0.131)	0.475*** (0.164)
Home schooling	0.178 (0.278)	- (0.278)	0.552 (0.905)	0.611** (0.278)	0.831** (0.376)	-0.247 (0.239)
Number of employed	0.00150 (0.0112)	0.00642 (0.0165)	0.0221 (0.0217)	0.00442 (0.0245)	0.0101 (0.0277)	-0.0561 (0.0467)
Quintile 2 (R 11 422)	0.135* (0.0761)					
Quintile 3 (R 21 383)	0.281*** (0.105)					
Quintile 4 (R 51 843)	0.614*** (0.143)					
Quintile 5 (More than R 51 843)	0.859*** (0.203)					
Grants only	-0.305*** (0.101)	-0.560* (0.316)	-0.249 (0.155)	-0.118 (0.212)	-0.321* (0.190)	-0.456** (0.225)
Loans only	-0.581*** (0.0808)	-0.870*** (0.304)	-0.567*** (0.137)	-0.444** (0.173)	-0.502*** (0.144)	-0.561*** (0.146)
Other spending	1.043*** (0.0513)	1.153*** (0.103)	1.171*** (0.0995)	1.331*** (0.112)	0.826*** (0.118)	0.695*** (0.108)
var (In total education spending)	1.465*** (0.0326)	1.338*** (0.0766)	1.408*** (0.0584)	1.505*** (0.0604)	1.353*** (0.0601)	1.183*** (0.0812)
Constant	7.099*** (0.607)	6.593*** (0.787)	-2.917 (75.66)	58.02 (118.4)	-54.10 (66.57)	-6.416 (14.02)
Observations	6,629	19,258	19,476	19,777	20,529	21,109

Source: LCS 2014/2015, author's calculations. Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Some household characteristics which were shown to positively influence education spending on education in the previous table become insignificant. For example, the coefficient of household per capita income and the squared coefficient of household per capita are both statistically insignificant across all models. Furthermore, the gender of the household head is only significant in the third income quintile. The age of the household head is also insignificant across all income quintiles with the exception of squared age coefficient which is statistically significant in the fifth income quintile.

Notwithstanding that in some income quintiles, there is no discernible difference in spending between household heads with Grade R and Grade 1-7 when compared to household heads with no schooling, results indicate that the education of the household head continues to be a critical determinant of household spending on education. Across all income quintiles, households who spend on education only through loans or grants only spend less compared to households spend by both loans and grants. This is having controlled for the number of children in the household in each of the educational facilities specified.

One of the most important findings of this table is that spending on other¹⁵ educational items such as transport, school uniforms, stationary etc. is significant across all income quintiles. The coefficient on other spending increases by income quintile (1-4), and slightly decreases in the highest income quintile (5). This suggests that spending on indirect educational cost across income quintiles has a significant influence on overall spending on education, particularly in lower income households.

In addition to the characteristics of the household featuring as influential factors influencing households' education spending, the type of educational sector (private or public) attended by members of the households themselves are also relevant. For this reason, Table 5.5 shows household expenditure on education controlling for the way which education is financed by households and education sector.

¹⁵ Spending on other educational items were classified separately in the data. Spending related to transport costs for educational purposes are recorded under Section 19 while spending on school uniforms and stationery are recorded in Section 12 and 17 respectively

Table 5.5: Tobit results of household expenditure on education controlling for the way education is financed and education sector

Variables	Ln total education spending	Income quintile 1	Income quintile 2	Income quintile 3	Income quintile 4	Income quintile 5
Ln income per capita	-0.137 (0.118)	-0.0110 (0.155)	5.691 (15.51)	-5.903 (21.98)	3.375 (12.07)	3.408* (2.062)
Ln income per capita (squared)	0.0103 (0.00735)	-0.00127 (0.0143)	-0.295 (0.847)	0.342 (1.113)	-0.137 (0.564)	-0.138 (0.0850)
Age	-0.00261 (0.00823)	0.00979 (0.0154)	-0.00283 (0.0138)	-0.0111 (0.0169)	0.0177 (0.0209)	-0.0237 (0.0252)
Age (squared)	4.41e-05 (8.06e-05)	-8.77e-05 (0.000152)	3.31e-05 (0.000131)	0.000146 (0.000161)	-0.000192 (0.000217)	0.000331 (0.000265)
Gender of the household head	0.0347 (0.0477)	0.0706 (0.0908)	-0.0672 (0.0900)	0.227** (0.101)	-0.0374 (0.0959)	0.129 (0.111)
Coloured	0.0152 (0.0555)	-0.351** (0.146)	-0.0857 (0.124)	-0.0992 (0.112)	-0.183* (0.105)	0.428*** (0.104)
Indian/Asian	0.501*** (0.0933)	1.762*** (0.378)	0.501*** (0.171)	0.385** (0.182)	0.259* (0.140)	0.590*** (0.174)
White	0.787*** (0.0855)	1.542** (0.653)	1.094 (0.777)	0.795*** (0.288)	0.574*** (0.151)	0.758*** (0.105)
Grade R	0.0149 (0.468)	0.462 (1.021)	0.349 (0.999)	-0.286 (0.501)	-1.616*** (0.434)	0.523 (0.386)
Grade 1- Grade 7	0.228*** (0.0753)	0.0489 (0.119)	0.279** (0.117)	0.109 (0.161)	0.413 (0.399)	0.238 (0.404)
Grade 8-11 or equivalent	0.359*** (0.0773)	0.183 (0.131)	0.366*** (0.120)	0.308* (0.164)	0.500 (0.403)	0.0238 (0.393)
Grade 12 or equivalent	0.660*** (0.0870)	0.560*** (0.181)	0.666*** (0.150)	0.389** (0.182)	0.807** (0.405)	0.101 (0.384)
Grade 12 plus certificate/diploma	0.796*** (0.110)	1.107*** (0.264)	0.913*** (0.251)	0.586** (0.257)	0.993** (0.415)	0.182 (0.377)
Bachelors or equivalent	0.945*** (0.120)	1.325*** (0.422)	1.528*** (0.416)	1.150*** (0.309)	0.780* (0.427)	0.412 (0.380)
Postgraduate or equivalent	0.858*** (0.127)	0.632** (0.295)	1.753*** (0.318)	0.325 (0.369)	0.825* (0.434)	0.462 (0.382)
Living together like married partners	-0.389*** (0.0732)	-0.428*** (0.155)	-0.167 (0.130)	-0.342** (0.139)	-0.584*** (0.155)	-0.242 (0.222)
Never married	-0.185*** (0.0584)	-0.334*** (0.120)	-0.0603 (0.117)	-0.177 (0.134)	-0.140 (0.124)	-0.124 (0.137)
Widow/widower	-0.248*** (0.0765)	-0.328** (0.140)	-0.105 (0.127)	-0.146 (0.139)	-0.164 (0.149)	-0.477** (0.243)
Separated	-0.229** (0.115)	-0.345* (0.198)	-0.282 (0.210)	0.191 (0.189)	-0.819** (0.376)	-0.406 (0.291)
Divorced	-0.00338 (0.101)	-0.216 (0.337)	0.118 (0.282)	-0.307 (0.293)	0.251 (0.187)	0.0582 (0.126)
Economically inactive	0.175** (0.0691)	0.307** (0.121)	0.204* (0.118)	0.0424 (0.162)	0.104 (0.171)	0.128 (0.481)
Employed	-0.00687 (0.0590)	-0.0923 (0.0991)	0.131 (0.102)	0.0590 (0.133)	-0.180 (0.136)	0.144 (0.457)
Urban formal	-0.332*** (0.0792)	-0.0260 (0.140)	-0.213 (0.146)	-0.514*** (0.138)	-0.497** (0.194)	0.140 (0.340)

Variables	Ln total education spending	Income quintile 1	Income quintile 2	Income quintile 3	Income quintile 4	Income quintile 5
Traditional area	-0.512*** (0.0483)	-0.484*** (0.101)	-0.377*** (0.0831)	-0.493*** (0.108)	-0.660*** (0.124)	-0.210 (0.149)
Rural formal	-0.324*** (0.113)	0.425* (0.230)	-0.586*** (0.166)	-0.114 (0.270)	-0.182 (0.269)	-0.431** (0.193)
Preschool	0.0932*** (0.0332)	0.0336 (0.0654)	0.200*** (0.0622)	0.161** (0.0721)	0.0188 (0.0784)	0.0825 (0.0778)
School	0.155*** (0.0174)	0.132*** (0.0299)	0.170*** (0.0352)	0.184*** (0.0395)	0.161*** (0.0385)	0.236*** (0.0493)
Adult literacy classes	-0.130 (0.126)	-0.0750 (0.161)	0.0518 (0.189)	-0.0797 (0.361)	-0.0375 (0.221)	-0.412 (0.513)
Literacy classes	-0.0639 (0.334)		-0.353 (0.554)	-0.169 (0.129)	0.420* (0.223)	
Higher education and training	0.937*** (0.0507)	1.474*** (0.150)	1.418*** (0.165)	1.551*** (0.124)	0.909*** (0.0943)	0.550*** (0.0790)
FET colleges	0.770*** (0.0560)	1.051*** (0.204)	0.985*** (0.120)	0.848*** (0.108)	0.560*** (0.0915)	0.293** (0.130)
Other Colleges	0.559*** (0.0768)	0.460 (0.306)	0.753*** (0.139)	0.420*** (0.161)	0.703*** (0.130)	0.312** (0.145)
Home schooling	-0.0167 (0.308)		0.254 (0.714)	-0.178 (0.222)	0.789*** (0.292)	-0.421 (0.257)
Number of employed	0.00214 (0.0107)	0.00789 (0.0164)	0.0166 (0.0208)	0.00338 (0.0243)	0.0127 (0.0261)	-0.0591 (0.0434)
Quintile 1 (R 11 422)	0.170** (0.0742)					
Quintile 2 (R 21 383)	0.308*** (0.103)					
Quintile 3 (R 51 843)	0.618*** (0.142)					
Quintile 5 (More than R 51 843)	0.880*** (0.202)					
Grants only	-0.234** (0.0962)	-0.373 (0.261)	-0.156 (0.148)	0.0529 (0.201)	-0.212 (0.202)	-0.528** (0.208)
Loans only	-0.519*** (0.0785)	-0.693*** (0.244)	-0.520*** (0.132)	-0.236 (0.168)	-0.472*** (0.161)	-0.566*** (0.143)
Other spending	1.031*** (0.0484)	1.161*** (0.102)	1.140*** (0.0949)	1.269*** (0.104)	0.832*** (0.114)	0.720*** (0.0998)
Public	-0.889*** (0.0492)	-1.136*** (0.155)	-1.259*** (0.115)	-1.020*** (0.106)	-0.709*** (0.0831)	-0.748*** (0.0768)
var (In total education spending)	1.358*** (0.0309)	1.253*** (0.0720)	1.286*** (0.0559)	1.395*** (0.0575)	1.268*** (0.0590)	1.071*** (0.0749)
Constant	7.809*** (0.594)	7.693*** (0.751)	-19.86 (71.00)	32.35 (108.5)	-12.62 (64.65)	-11.49 (12.54)
Observations	6,629	19,258	19,476	19,777	20,529	21,109

Source: LCS 2014/2015, author's calculations. Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Predictably, spending at public institutions is less compared to spending at private institutions across all income quintiles. Spending on education at public institutions is directly correlated with the level of household income as the magnitude of spending at public institutions decreases in households in the upper income distribution (quintiles 4 and 5). This is likely because households in the upper income distributions typically send their children to private institutions.

5.5 Summary and conclusion

The purpose of this chapter was to determine household characteristics that influence education spending. First the chapter looked at KDE graphs to illustrate the distribution of household spending on education. The analysis revealed that spending on education varies by income quintile of the household with most households in the lower income quintiles (1-3) concentrated at the lower end of the educational spending distribution, in contrast to upper income quintile households which are concentrated at the upper end of spending distribution. This indicates that spending on education in South Africa is directly correlated with household income.

Turning to the determinants of household spending on education; predictably, spending on education increases with the education level of the household head. Interestingly, the results revealed that female-headed households typically spend more on education compared to male-headed households. Furthermore, households where the head is White spend less on education compared to households where the head is African. As expected, the number of individuals attending is a significant determinant of household spending on education with FET colleges, institutions of higher education and training and home schooling being the main drivers of spending. Across all the models, spending on education is positively correlated with household income. Furthermore, the results revealed that household who have access to both methods of spending on education (by both loans and grants), spend more on education compared to households who spend with loans only or grants only.

Predictably, spending at public institutions is less compared to spending on education at private institutions. Furthermore, spending on other educational items such as school uniforms, transport costs and stationery is a significant determinant of spending on education in South Africa. Finally, the analysis shows households in traditional areas and rural areas spend significantly less than households in urban formal areas.

Chapter 6: Conclusion

6.1 Introduction

In this chapter the conclusions derived from this dissertation on the analysis of household and government spending on education in South Africa are described. The conclusions are based on the research questions, the aims and objectives and the results obtained from this dissertation.

6.2 Overview of the study

Over the course of this study, the main objective was the analysis household and government spending on education in South Africa. To do this, several points were addressed. First, relevant literature looking at the history of the South African education system, the state current education system, spending on education between developed and developing countries (including South Africa) were discussed. Second a descriptive analysis of attendance and spending on education was presented; disaggregated between private and public institutions, the level of schooling, and characteristics of the individuals currently attending an educational institution and the households in which these individuals reside. Finally, the study looked at the distribution of household spending using KDE graphs and estimated the determinants of household spending on education using a Tobit model.

6.3 Summary of findings

Checchi (2006) asserted that the educational attainment of individuals in the first period of their life determines their labour market outcomes and their ability to invest in the education of their children in the second period. In the content of this dissertation, the literature revealed that the disproportionate spending on education in South Africa during apartheid resulted in different educational outcomes for different races in the country. The low government spending on education among Africans compared to Whites during apartheid resulted in unequal educational attainment between the different races in South Africa and, subsequently, unequal labour market opportunities. This, in turn, resulted income inequalities between households of different racial groups. The analysis revealed that Whites-headed households earn 3 times more on average compared to African-headed households, which translates to higher household spending on education for Whites compared to Africans.

To combat this, the government introduced a number of policy initiatives aimed at ensuring increased access to education in South Africa, particularly for individuals from low-income

households. Through SASA Act (1996), funding norms are set to ensure that schools in poverty-stricken areas receive a larger portion of government funding. This is further enforced by the National Norms and Standards for Funding as well as the Education Amendment Act through which the introduction and implementation of the “no-fee” and fee-exemption policy take effect. However, the implementation of these policies at some public schools has been ineffective and a number of households are not aware of such policies, which directly undermines the government’s effects in the provision of education.

The literature revealed that spending on education differs between countries, particularly developing and developed countries. The governments of developing countries prioritise universal access to education primary school education while the governments of developed countries prioritise secondary and tertiary education. When compared to other developing countries on the African continent, South Africa’s spending on education as a percentage of GDP is the highest; however, the quality of the South African education system is lagging behind that of other countries in Africa. For example, the performance of South Africa’s Grade 6 learners in numeracy and literacy tests were ranked below that of learners from Kenya and Tanzania (Mlachila and Moeletsi, 2019). Differences in the quality of education in South Africa exist between urban and rural areas, between Africans and Whites and between public and private institutions. First, a higher percentage of rural learners are illiterate when compared to learners in urban areas. Second, a higher percentage of White complete their schooling and have a better chance of obtaining a tertiary qualification compared to Africans. The percentage of Whites who are illiterate is significantly low compared to the percentage of Africans (Mlachila and Moeletsi, 2019).

The differences in the quality of education in South Africa are exemplified through the differences in household spending between private and public schools. Private schools mainly cater to individuals from affluent families while public schools typically cater to middle- and lower-class individuals and this evidence through significant difference in fees charged between these institutions. The majority of learners attending public schools in poverty-stricken areas cannot perform at an adequate level compared to learners attending private (Letseka, 2014). Unless funded by non-household member or financed through non-refundable bursaries or scholarships, private schools remain unaffordable to individuals from low-income households.

The issue of the affordability of sending a child to school, including school fees, transport costs, school uniforms, textbooks and other school supplies remains a concern for many households

in South Africa. The descriptive analysis in Chapter 4 revealed that over 7 million individuals who do not attend an educational institution because of lack of financial resources. Furthermore, over 4 million households who have individuals currently attending an educational institution that do not pay for fees because they cannot afford it. This is despite over 90% of individuals at public institutions not paying for fees because they attend a “no-fee” school.

Finally, when looking at the determinants of household spending on education, the results revealed that various characteristics of the household head play a significant role in determining the amount that households spend on education. For example, female-headed households typically spend more on education compared to male-headed households. Furthermore, the level of education of the household head is a critical determinant of education spending; as the highest level of education attained by household head increases, so does household’s spending on education. More importantly, spending on education varies across the income distribution with households in the upper end of the income distribution spending on education when compared to households in the lower end of the income distribution.

6.4 Policy implications

The study finds that the South African government guarantees education at public schools until Grade 9 or at the age of 15, then from Grade 10 to matric (Grade 12), households are mainly responsible for education expenditure. However, many households cannot afford to pay for education at this level and require government intervention in the provision of secondary schooling. Higher education is highly subsidised by the government through NSFAS at public institutions, but individuals who have not accessed primary or secondary schooling will be ineligible for higher education.

While the increase in government spending on education has increased attendance at educational institutions, the high spending has not translated to better quality education or improved educational outcomes. Therefore, proper implementation of policy initiatives is required. For example, ensuring that schools are appropriately ranked according to income quintiles to ensure that schools that cater to children from low-income households receive a larger percentage of government spending to improve infrastructure, libraries and ensure access to sufficient learning materials. In addition, the government needs to ensure that households are aware of policies aimed at reducing the financial burden on low-income households and that such policies are properly implemented by schools.

Spending of richer households on education is likely to be more sensitive to changes in household income than poorer households. This is likely because for low-income households where attendance is primarily at public schools, the fee burden is already reduced through subsidized schooling in the lower grades. The analysis conditional on households which have positive education expenditure further reveals that one of the main factors driving household's education expenditure is other indirect education items (stationery, transport, school uniforms). This would likely suggest that changes in income (especially at the lower end of the income distribution) is unlikely to affect children's schooling attendance but may affect the provision of resources that children require in order to perform at school. The policy implication of this is that in addition to subsidizing education, initiatives which ensure learners have access to educational resources (books, stationery and uniforms) will go a long way to improve the quality of education learners receive.

The study focuses primarily on household and government spending on education in South Africa. However, there are some other forms of government subsidization such as spending on teacher's salaries, infrastructure and training of new teachers that are not explicitly analysed but may well be included in the government's budget allocation towards education. In addition, topics related to schooling such as the quality of education, educational and labour market outcomes are discussed with reference to the importance of acquiring an educational qualification (which requires financial resources both from households and government) but are not comprehensively analysed.

Appendix

Table A1: Tobit estimation results of household expenditure on education

Variables	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Ln income per capita	0.655* (0.371)	-7.370 (35.47)	-105.7* (59.02)	-28.84 (41.25)	0.151 (8.747)
Ln income per capita (squared)	-0.0144 (0.0314)	0.446 (1.936)	5.405* (2.986)	1.380 (1.930)	0.00498 (0.359)
Age	0.0983*** (0.0305)	0.0336 (0.0299)	-0.0331 (0.0424)	-0.0499 (0.0586)	0.0532 (0.0928)
Age (squared)	-0.000985*** (0.000296)	-0.000246 (0.000284)	0.000217 (0.000406)	0.000465 (0.000565)	-0.00121 (0.000918)
Gender of the household head	1.368*** (0.208)	1.074*** (0.200)	1.676*** (0.249)	1.184*** (0.365)	2.590*** (0.456)
Coloured	0.317 (0.378)	0.738** (0.309)	0.981*** (0.277)	1.129*** (0.331)	1.008** (0.452)
Indian/Asian	3.076** (1.357)	0.824 (1.081)	2.175*** (0.683)	0.0626 (0.706)	-1.529** (0.742)
White	-0.290 (1.796)	-2.067* (1.189)	-2.225** (1.008)	-1.050** (0.532)	0.447 (0.436)
Grade R	1.762 (1.374)	0.623 (1.267)	1.748 (1.173)	3.042 (3.371)	-6.099 (3.826)
Grade 1- Grade 7	0.789*** (0.240)	0.373 (0.247)	1.187*** (0.432)	1.915** (0.773)	-0.417 (1.710)
Grade 8-11 or equivalent	1.065*** (0.275)	0.691*** (0.268)	1.758*** (0.454)	2.005*** (0.733)	-0.600 (1.509)
Grade 12 or equivalent	1.790*** (0.387)	1.457*** (0.359)	2.566*** (0.516)	2.706*** (0.764)	-0.0438 (1.499)
Grade 12 plus certificate/diploma	2.899*** (0.851)	2.624*** (0.639)	3.287*** (0.835)	2.921*** (0.834)	0.369 (1.507)
Bachelors or equivalent	1.269 (1.337)	5.223*** (1.298)	3.986*** (0.919)	3.242*** (0.932)	0.594 (1.516)
Postgraduate or equivalent	-0.214 (1.743)	4.331*** (0.997)	1.994 (2.010)	4.121*** (1.086)	1.434 (1.535)
Living together like married partners	-0.761** (0.335)	-0.242 (0.293)	-1.052*** (0.382)	-0.344 (0.506)	-0.975 (0.625)
Never married	-1.023*** (0.255)	-0.513** (0.249)	-2.250*** (0.322)	-1.803*** (0.418)	-2.349*** (0.512)
Widow/widower	-0.658** (0.267)	-0.529** (0.268)	-1.125*** (0.353)	-1.226** (0.513)	-2.449*** (0.666)
Separated	-1.819*** (0.468)	-1.284** (0.586)	-0.451 (0.634)	-1.241 (0.878)	-1.473 (1.389)
Divorced	-2.301*** (0.751)	0.182 (0.523)	-1.992*** (0.706)	-0.912 (0.698)	-1.566** (0.736)
Economically inactive	0.239 (0.261)	0.313 (0.264)	0.492 (0.453)	-0.302 (0.703)	0.637 (1.071)

Variables	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Employed	-0.779*** (0.221)	0.0568 (0.233)	1.112*** (0.367)	-0.554 (0.554)	0.257 (0.899)
Urban formal	0.0287 (0.372)	0.278 (0.309)	0.431 (0.426)	0.623 (0.638)	0.410 (1.214)
Traditional area	-0.168 (0.219)	-0.542*** (0.189)	-1.148*** (0.255)	-1.220*** (0.318)	-0.574 (0.510)
Rural formal	-0.597 (0.573)	0.0644 (0.471)	-1.112** (0.538)	-0.979 (0.942)	-0.936 (0.883)
Preschool	1.015*** (0.143)	1.072*** (0.170)	2.180*** (0.232)	1.845*** (0.317)	1.859*** (0.449)
School	1.388*** (0.0561)	2.179*** (0.0744)	3.043*** (0.107)	4.219*** (0.156)	4.637*** (0.217)
Adult literacy classes	1.295*** (0.486)	1.287** (0.648)	3.336*** (0.892)	4.189*** (0.949)	4.195*** (1.180)
Literacy classes	3.303* (1.826)	2.361*** (0.787)	2.484*** (0.940)	6.642 (4.335)	-
Higher education and training	4.694*** (0.459)	3.918*** (0.540)	5.168*** (0.461)	4.765*** (0.515)	5.225*** (0.366)
FET colleges	3.187*** (0.548)	4.478*** (0.365)	4.830*** (0.461)	5.630*** (0.515)	5.642*** (0.830)
Other Colleges	0.952 (0.694)	2.039*** (0.680)	1.526 (1.100)	3.189*** (0.732)	4.322*** (0.829)
Home schooling	-	2.879* (1.673)	3.853** (1.562)	8.432*** (1.435)	3.727** (1.519)
Number of employed	0.0640* (0.0377)	-0.0539 (0.0490)	0.0518 (0.0726)	0.268*** (0.0968)	0.623*** (0.164)
Var (ln total education spending)	20.85*** (0.656)	20.03*** (0.630)	25.90*** (0.959)	31.74*** (1.313)	36.13*** (1.667)
Constant	-7.668*** (1.485)	27.57 (162.4)	27.57 (162.4)	146.9 (220.4)	-5.852 (53.13)
Observations	23,368	23,363	23,363	23,355	23,367

Source: LCS 2014/2015, author's calculations. Notes (1) Standard errors in parentheses; (2) *** p<0.01, ** p<0.05, * p<0.1

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