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# **Gendered Educational Participation and Attainment in South Africa**

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# Gendered Educational Participation and Attainment in South Africa

## Abstract

*Across much of the developing world, and in sub-Saharan Africa in particular, there are large gender disparities in educational participation and achievement. Educating girls has powerful externalities, which, if scaled, can act as a catalyst for socioeconomic development. It is therefore important to understand the reasons for the widespread gender disparity in education. South Africa appears to be unusual in that it has successfully achieved gender parity in educational enrolment. This paper finds that South Africa's gender parity in enrolment is not as unique as it might seem. Whilst it is distinctive geographically, in comparison with most African countries, it is not so distinctive economically. Other middle-income countries in Africa and elsewhere tend also to have achieved gender parity in education. Over time, also, South Africa seems to be a typical middle income country in terms of its gender disparity in education. The paper also demonstrates that girls' success in terms of educational enrolment and attainment is matched by girls' superior test scores and record in grade progression.*

## Introduction

In 1992, Lawrence Summers, the chief economist of the World Bank, published *Investing in All People*, which detailed why the “investment in girls’ education may well be the highest return investment available in the developing world” (Summers, 1994: 1). The report argued that the underinvestment in girls’ education results in “a vicious cycle caused by distorted incentives” and that reversing this trend could change individual lives while presenting the possibility to transform a society (Summers, 1994: 1). Investing in girls’ education has the potential to unleash a butterfly effect by benefitting the educated girl, her family and community and, if properly scaled, her nation. The catalyst for this butterfly effect is providing girls with equal opportunities to participate in, and achieve through, educational pursuits. Commonly known as the ‘Girl Effect’, it is widely heralded as a cornerstone of successful socio-economic development (Klasen and Lamanna, 2009; Summers, 1994; Herz and

Sperling, 2004; Psacharopoulos and Patrinos, 2004; Husmann, Tyson and Zahidi, 2010).

The development community has recognized that the latent power of educating and empowering women goes beyond getting girls into schools. Enrolment in school is not enough if girls are not provided with a supportive environment to facilitate their success. Across much of the developing world, girls have lower enrolment, literacy, and completion rates. This is generally attributable to gender inequalities, which prevent, hinder and discourage girls' educational achievement.

Regionally, sub-Saharan Africa has the largest educational gender disparities and historically, has been the slowest in achieving progress (United Nations, 2003/4). In fact, research has found that "In Africa, more than half of girls – 54 percent – don't complete even a primary education" (Herz and Sperling, 2004: 18). If they do complete primary school, their chances at the next level grow even worse as "only 17 percent of girls in Africa are enrolled in secondary school" (Herz and Sperling, 2004: 17). In the face of such dismal statistics, it is important to remember that Sub-Saharan Africa is not homogenous. Rather, it is comprised of countries with distinct histories, cultures and traditions. Furthermore, while overall the region may be failing girls, there is reason to believe that South Africa has bucked this trend.

In a 2008 report, the South African Department of Education stated that "the GPI<sup>1</sup> for total school enrolment (Grade 1 to Grade 12) indicates that gender parity has been achieved", with an overall score of 1.006 (Department of Education, 2008: 16). Furthermore, the report shows that "the number of female learners passing Grade 12 is higher than their male counterparts" (Department of Education, 2008: 17). In the context of sub-Saharan Africa's enrolment and completion rates, South Africa's achievement stands out. In fact, the GPI for total school enrolment is comparable to the levels achieved in OECD countries (the world's most developed). This clearly shows that South Africa's achievements in this regard are not merely successful when compared to the geographic region but are comparable to the international standard.

In contrast to the region, South Africa's achievement of gender parity sets an extraordinary example. Since gender inequalities typically prevent gender parity from being attained, factors which are internal and external to the education system, the South Africa case raises key questions. First, are South Africa's

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<sup>1</sup> GPI stands for Gender Parity Index, an internationally recognized statistic that provides the ratio of the "female-to-male value of a given indicator" (UNESCO, 2003/4: 384)

gender rates in enrolment truly remarkable? Second, are South Africa's gender achievements in education contained to enrolment or is there parity in other measurements of educational achievement? This paper will focus on exploring these main questions.

It should be acknowledged that the presence of, and experiences resulting from, gender biases may not be consistent across population groups. In South Africa, the legacy of apartheid often means that population groups have separate histories and trajectories – many of which are highly visible in today's society. While this is a highly valuable area of research, there is not sufficient scope to address appropriately these issues in this paper. Therefore, while differences may exist between population groups in regard to gender disparities, this paper will only address the disparities that exist across gendered lines.

## **What is 'Gender Equality' in Education?**

It is first necessary to explore what 'gender equality in education' means. The most commonly used global statistic to assess this is the Gender Parity Index (GPI), which is the "female-to-male value of a given indicator" (UNESCO, 2003/4: 384)<sup>2</sup>. In education, it is typically applied to enrolment, survival and completion rates, failure or repeat rates, and overall attainment levels in education. In this context, parity "reflects 'formal' equality" in that it provides a quantitative measure of access and participation (Subrahmanian, 2005: 397-400).

To fully consider gender equality, both the 'formal' and 'informal' aspects must be explored – not just 'access' but also the 'experience' of participation. In an effort to quantitatively capture the multi-dimensional nature and consequences of gender inequality, this paper considers indicators of both participation and achievement. Enrolment GPI values will be explored, in addition to the achievement-based indicators of literacy and numeracy assessments, patterns of progression through school and Matric exam performance. Looking at achievement-based metrics provides a way to quantitatively explore the experience and results of participation.

Before GPI values are considered, however, it is necessary to establish why girls' education and the resulting Girl Effect are so important. First and foremost, gender equality is a development goal in its own right. Internationally

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<sup>2</sup> A GPI below one favors boys, while a value above one favors girls. Ratio values between .97 and 1.05 are considered to represent parity between the sexes (UNESCO, 2003/4: 384).

and domestically, policies and laws call for “the promotion of gender equality and the advancement of the status of women” in and through the educational system (South African Department of Education, 1996: 4). The reality is that there are “deep links between education and other social institutions and processes” (Subrahmanian, 2005: 405). The education system is a highly influential and effective means to cultivate social attitudes and values in the next generation. Therefore, institutionalizing policies and practices of gender equality in the education system establishes the social norm for this important human rights issue.

The second way in which gender equality in education plays a vital social role is through the consequences of the Girl Effect. As previously mentioned, the catalyst for the Girl Effect is providing girls with equal access to, and opportunities for, success through education, which subsequently result in increased female employment. There are two viewpoints from which one can understand the resulting benefits of the Girl Effect: the first, from a macroeconomic perspective, and the second, through the externalities.

From a macroeconomic perspective, “female education is associated with higher productivity, higher returns to investment, better agricultural yields and more favorable demographic structure” (Lawson, 2008: 2). Prohibiting girls from educational participation and success artificially reduces the economy’s pool of talent, which means that “the average innate ability of educated children is lower than it would be if boys and girls had equal education opportunities” (Klasen, 2002: 351). In fact, some have argued that the economic success of the Asian Tigers<sup>3</sup> can be partly attributed to the increasing educational attainment, and thus employability, of women (Sequino, 2000a). Furthermore, some economists have estimated that in the developing regions of the world, between 0.3% and 0.9% of annual growth has been forfeited because of gender inequalities and disparities (Psacharopoulos and Patrinos, 2004). In the African context, “this means that actual per capita income growth has only half its potential level” (Lawson, 2008: 10). Thus, from a macroeconomic standpoint, there is much to be gained financially from discouraging gender inequalities and disparities in education.

The second way in which the Girl Effect addresses development goals is through the resulting externalities<sup>4</sup>. Contrary to the argument that investing in a

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<sup>3</sup> Hong Kong, Singapore, Taiwan and South Korea

<sup>4</sup> An excellent visual representation of these externalities and their chain reaction from Lawrence Summer’s article *Investing in All the People* is included as Appendix A

girl's education is an empty investment<sup>5</sup>, the return on investment for a secondary level of education for women is 18%, while for men it is only 14% (Psacharopoulos and Patrinos, 2004: 113). As the share of resources that women bring into their households increases, so does their power to determine how those resources are allocated. Globally, it has consistently been shown “that women allocate more resources to food and to children's health and education than to men” (Lawson, 2008: 7).

In fact, increasing a woman's share of household income, and subsequently her bargaining power, “reduces the share going to alcohol and cigarettes, controlling for income and other factors” (Herz and Sperling, 2004: 38). A higher level of maternal educational attainment typically starts a virtuous cycle, while a low level of maternal educational attainment is most likely the continuation of a vicious cycle (see Appendix A). When born into a vicious cycle, it is extremely difficult to capture the benefits and opportunities of an education – especially for daughters (Morrison *et al.*, 2007: 7).

Another powerful externality is the relationship between education and fertility rates. It has been shown that “for every two to three years of education, a woman is likely to have one less child” and that women who reach the secondary education level tend “to have more control over the spacing of children, which leads to better health for both the mother and the child” (Lawson, 2008: 7). With increased control over fertility rates, the dependency burden per worker decreases. This allows for increased investments in human capital in the form of education, health and nutrition – a chain of events known as a ‘demographic dividend’ (Klasen, 2002: 353).

In summary, ensuring that girls not only have access to education, but that they also receive equal treatment and opportunities once they are enrolled, has dramatic consequences. The essential point here is that while girls benefit on the individual level, the benefits of their success are shared in such a way that their families, communities and economies can also reap positive results. Therefore, making sure that education systems are free from gender inequalities is in the interest not only of individual families but national policymakers as well.

## **Gender Parity in Enrolment**

Over the last thirty years, the development community has focused intently on the gendered nature of educational enrolment in sub-Saharan Africa. Not only

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<sup>5</sup> Herz and Sperling, 2004; Martineau, 1997; Morrison, 2008; Levine *et al.*, 2008

do regional statistics show a vast gendered disparity, but the region has made very slow progress in rectifying this gap (United Nations, 2003/4). Within this context, South Africa's achievement of gender parity in total school enrolment, and high female enrolment at the secondary level, appears to be extraordinary.

The problem with these statistics and facts is that they treat sub-Saharan Africa as a homogenous entity. By reporting educational statistics at a regional level, South Africa's achievements are hidden from view. If a regional perspective can gloss over the reality of enrolment in South Africa, are these achievements truly anomalous or do other countries have similar, but equally hidden, achievements?

To assess accurately South Africa's enrolment rates, they need to be considered in the context of three groups – the sub-Saharan African region, other middle-income countries and OECD countries. Comparing South Africa's outcomes regionally will provide a clearer picture of the true patterns that exist and whether South Africa is the only geographic outlier. Alternatively, examining middle-income and OECD countries will provide an economic context – one comparable and the other aspirational. This will provide insight as to whether South Africa's achievements are related to its economic strength. Next, historical enrolment trends in South Africa will be compared against the region and other middle-income countries. This will provide an understanding of the relationship between gender parity in enrolment and the movement of GDP per capita over time. Overall, examining enrolment rates in geographic, economic and historic contexts will reveal important insights into whether South Africa's achievements are truly unique.

## **Geographic Comparison**

In 2008, the South African Department of Education reported that GPI at the primary level is .966, 1.058 at the secondary level and 1.006 for total school enrolment (Grade 1 through Grade 12) (Department of Education, 2008: 16). As this statistic is the ratio of the male value to the female value, it is a metric that can be used in cross-country evaluations.

Across the sub-Saharan region, there are vast differences in geography, culture and wealth – all of which influence the priority of education and who participates in each society. There are dramatic differences in rates of GDP per capita across the region, with 2008 levels ranging from \$154 (Burundi) to



\$27,130 (Equatorial Guinea)<sup>6</sup>. Despite this wide range, 81% of the region has a GDP per capita of less than \$3,000 per year and 79% has a GDP per capita of less than \$2,000 per year<sup>7</sup>. Given that providing a population with equitable access to education requires financial investments from both the government and individual citizens, the hypothesis here is that the higher a country's GDP per capita, the more likely it is that gender parity in enrolment will be achieved.

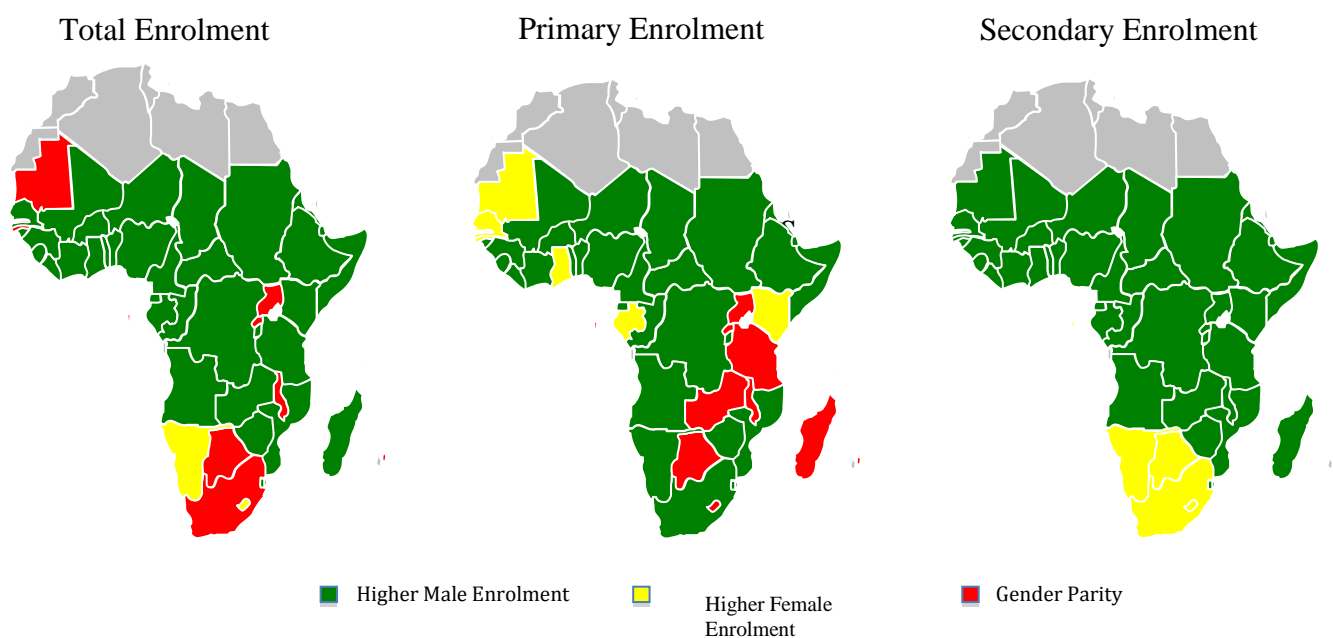
Across the region, ten countries (20%) (including South Africa) achieved gender parity in total school enrolment. Thirty-six countries (73%) had higher male enrolment, while only three (6%) had higher female enrolment. In primary school enrolment, fifteen countries (30%) were able to achieve gender parity. Thirty-one (63%) countries had higher male enrolment (including South Africa) and three (6%) had higher female enrolment. In secondary school enrolment, only one country (2%) was able to achieve gender parity. Conversely, forty-one countries (83%) had higher male levels and seven (14%) had higher female enrolment.

Figure 1 illustrates the GPI for each country in the region at each enrolment level. As can be seen, the higher male enrolment is typically consistent across school levels for the majority of the region. However, there is some variation at a micro-regional level along the coasts, with gendered enrolment changing for each school level.

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<sup>6</sup> UN Division of Statistics, accessed April 7, 2011

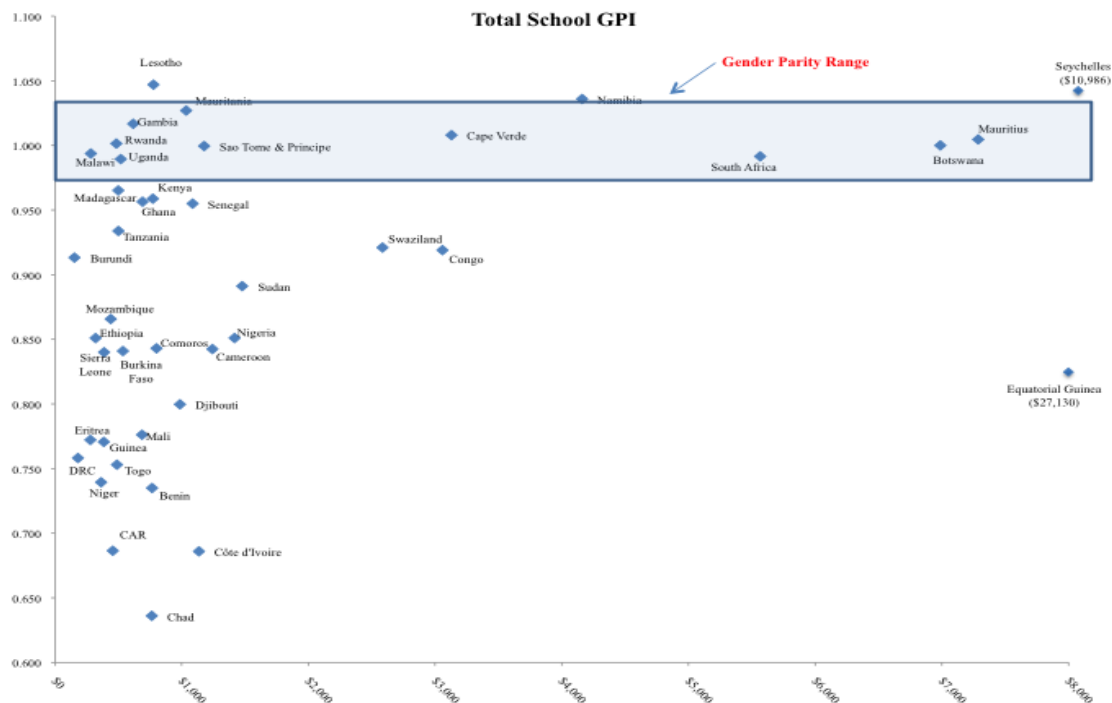
<sup>7</sup> Percentages of countries with GDP per capita of less than \$3,000 per year and \$2,000 per year are based on 43 countries in sub-Saharan Africa with available data (UN Division of Statistics, accessed April 7, 2011).



Source: UNESCO UIS

*Figure 1: Gender Parity Index for sub-Saharan Africa*

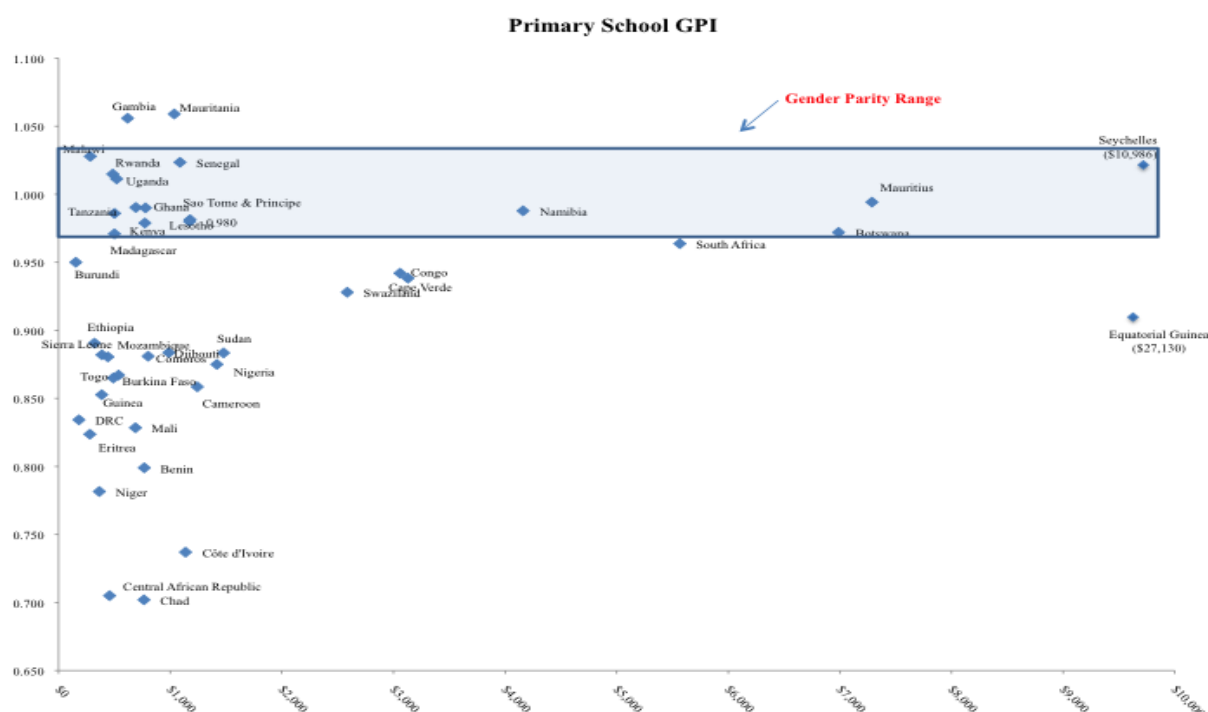
One pattern to note is that each country with more girls at the secondary level has either parity or more boys enrolled in primary school. The South African Department of Education attributes this to more boys repeating primary school grades. This means that although equal proportions of boys and girls enter the school system, a higher proportion of girls transition to the secondary level (Department of Education, 2008: 16). The consistency of this pattern across the region suggests that it is common for more girls to progress to the secondary level and that there might be a common phenomenon behind this micro-regional trend. Thus, Figure 1 shows that South Africa is not the only country in the region to achieve success in gender parity in enrolment.



Source: UNESCO UIS

**Figure 2: 2008 Total School GPI by 2008 GDP/capita for sub-Saharan Africa**

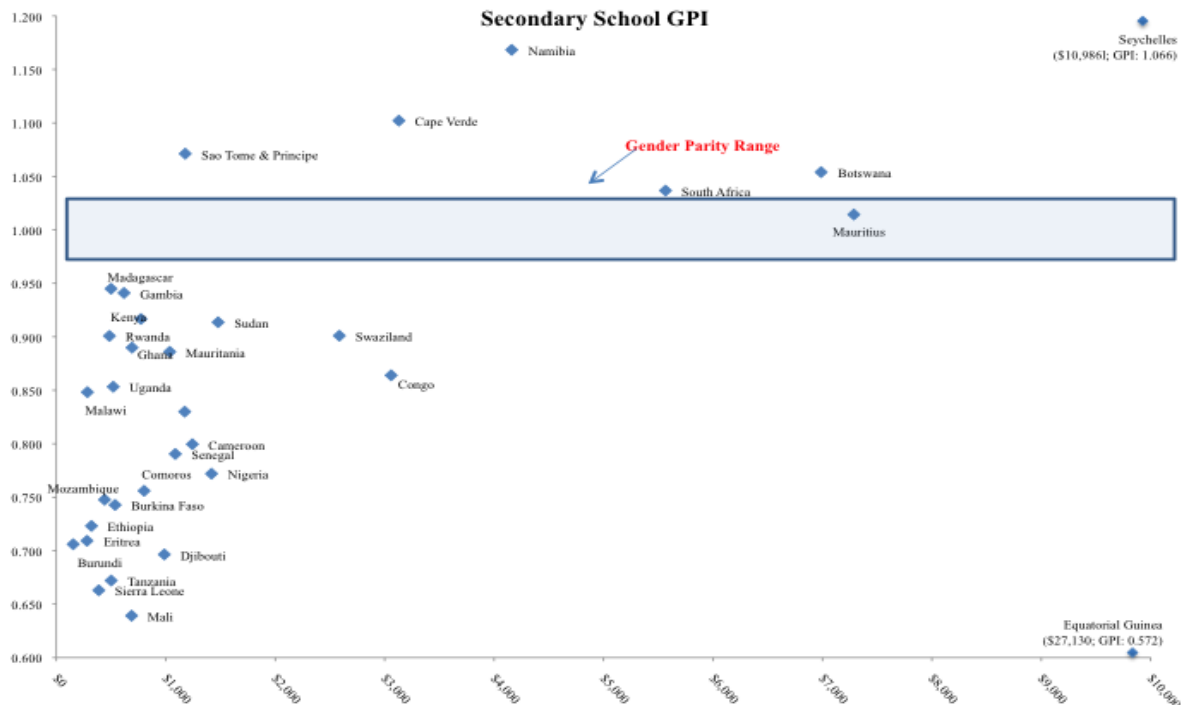
Now that it has been shown that gender parity in enrolment is not regionally unique to South Africa, the next step is to examine parity in the context of economic strength. Figures 2, 3 and 4 all illustrate the GPI value relative to GDP per capita. All of the countries at the high end of the GDP per capita range (with the exception of Equatorial Guinea) achieve gender parity. Though it is less common, a low GDP per capita does not necessarily translate into a large gender disparity, since a handful of low-income countries have achieved gender parity at the total and primary school levels. However, these few exceptions appear to be bucking the general trend, which demonstrates that having a high GDP per capita is associated with achieving gender parity in total and primary school enrolment. Overall, this establishes that higher male enrolment at the total and primary school levels is common in low GDP per capita countries.



Source: UNESCO UIS

*Figure 3: 2008 Primary School GPI by 2008 GDP/capita for sub-Saharan Africa*

In secondary enrolment, only Mauritius is able to achieve gender parity. Figure 4 illustrates what appears to be a link between high income and secondary level female enrolment; six of the seven countries with gender parity or more girls have a GDP per capita above \$3,000 per year. Conversely, with the exception of Equatorial Guinea and Congo, all of the countries with more boys enrolled in secondary school have a GDP per capita of less than \$3,000 per year. Taken together, this evidence shows that having a high income is more influential on female enrolment in the higher stages of education.



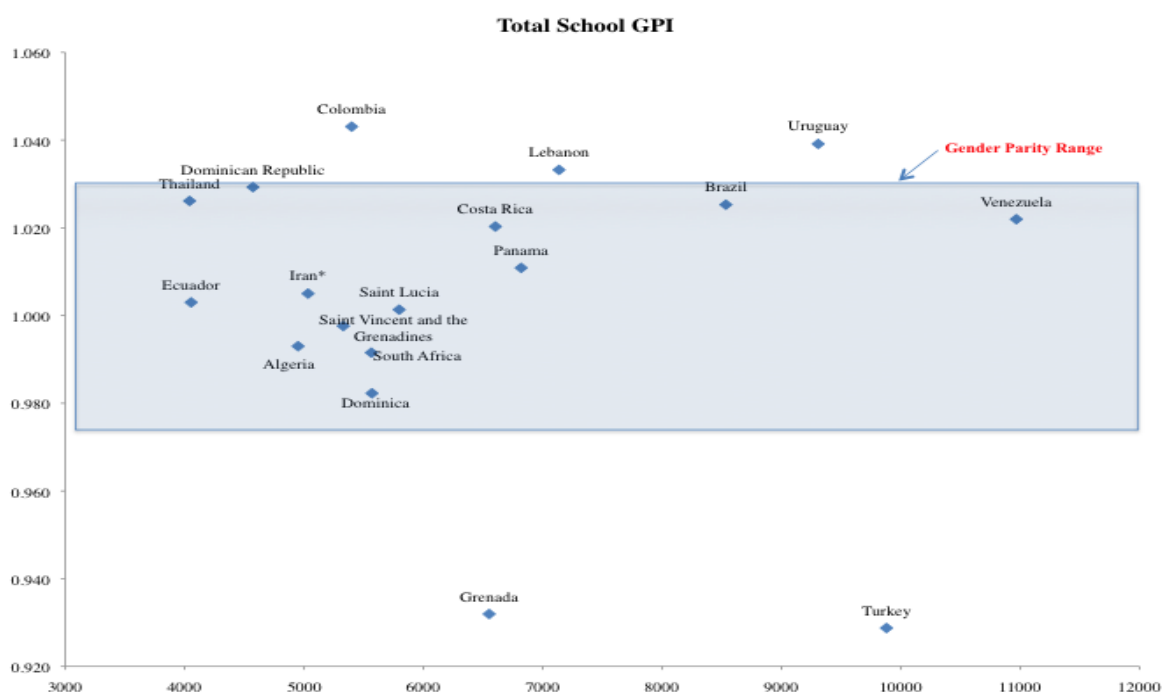
Source: UNESCO UIS

**Figure 4: 2008 Secondary School GPI by 2008 GDP/capita for sub-Saharan Africa**

Overall, the relationship between gender parity and GDP per capita in sub-Saharan Africa demonstrates that for low GDP per capita countries gender parity is generally confined to the primary level. For countries with more economic development, gender parity (or more girls enrolled) is prevalent at the secondary level. The geographic context illuminates that while South Africa is not the sole country in the region to achieve gender parity in total school enrolment, it is joined by only a handful of countries. However, when the region is narrowed to countries with similar income levels, this accomplishment is much more common. Thus, while South Africa's achievement is geographically unique, it is economically typical.

## Economic Comparison

The next level of examination is to compare South Africa's enrolment rates to those of countries with similar rates of GDP per capita. To choose comparable countries, GDP per capita rates were examined from 2002 to 2008, which corresponds to the period of South Africa's Cape Area Panel Study (CAPS). Within this time period, 17 countries were within 10 rankings of South Africa<sup>8</sup>, making these countries comparable in both income and growth.



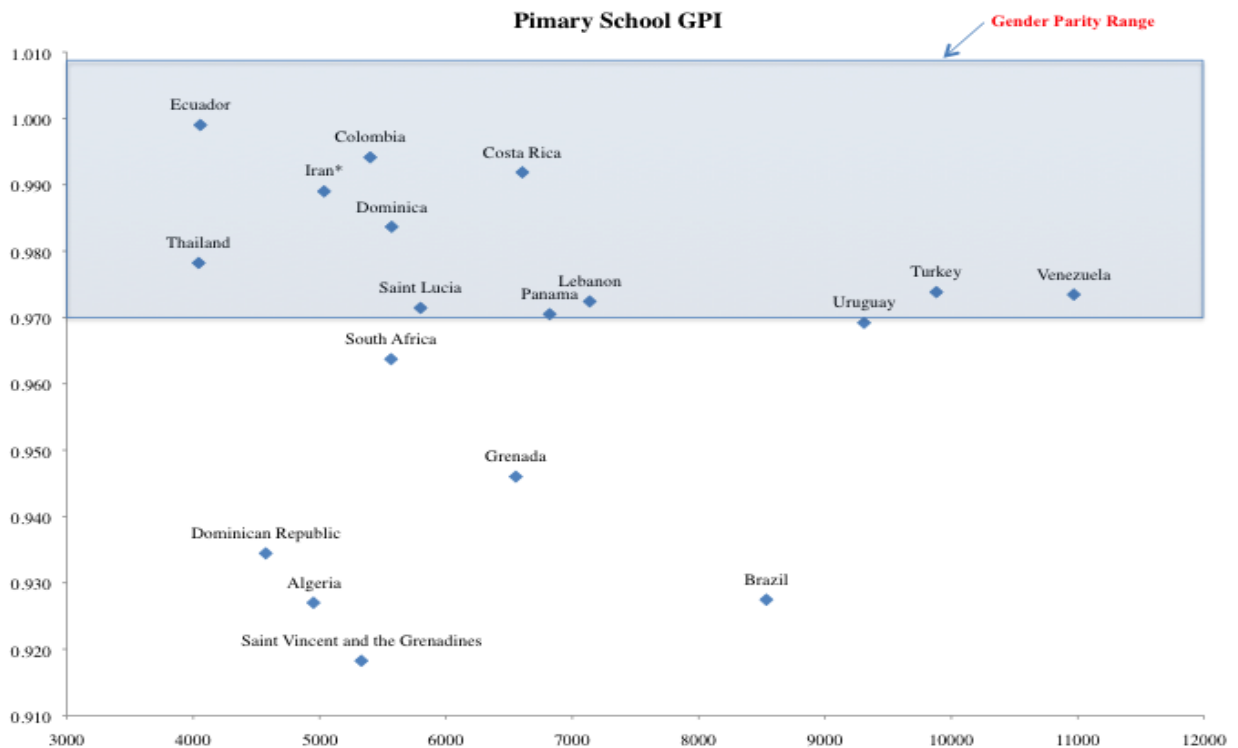
Source: UNESCO UIS

*Figure 5: 2008 Total School GPI by 2008 GDP/capita for middle income countries*

Figure 5 illustrates the relationship between GPI and GDP per capita for South Africa and other comparable countries. For total school enrolment, thirteen countries (72%) achieve gender parity. Only two countries (11%) have more boys in total school enrolment, while three (17%) have more girls. Compared to

<sup>8</sup> Algeria, Brazil, Colombia, Costa Rica, Dominica, Dominican Republic, Ecuador, Grenada, Iran, Panama, Saint Lucia, Saint Vincent and the Grenadines, Thailand, Turkey, Uruguay and Venezuela

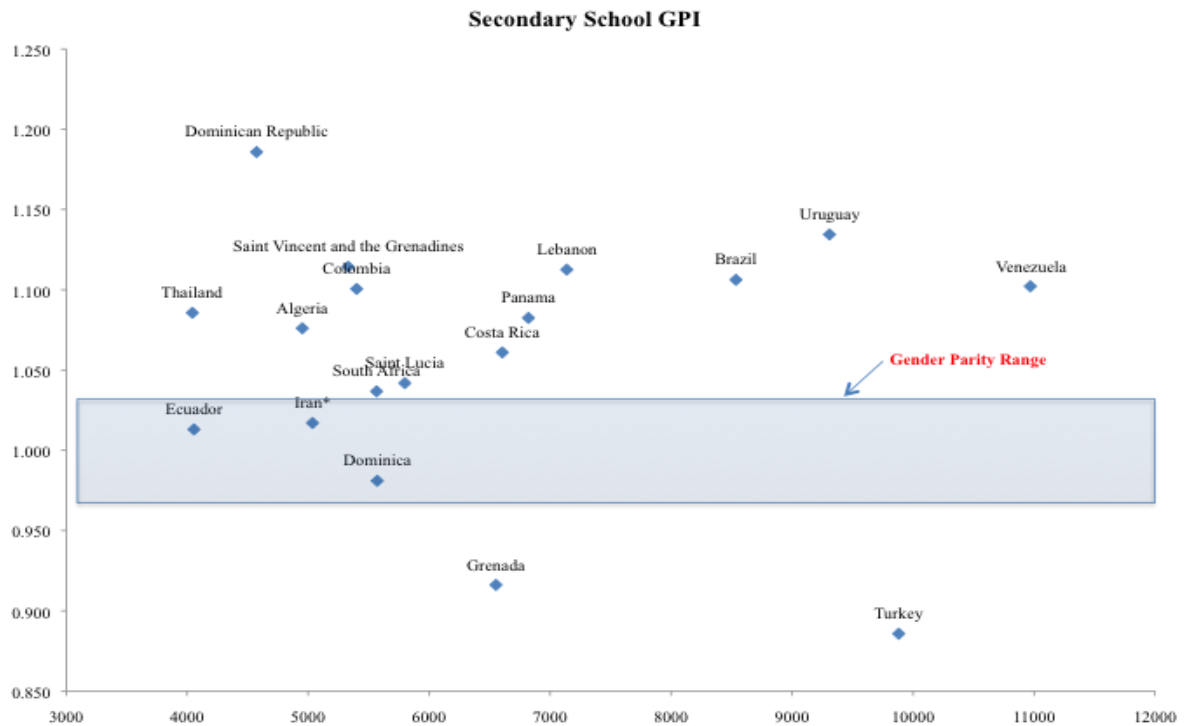
sub-Saharan Africa, more countries achieve gender parity and fewer have more boys enrolled at the total school level, indicating more equitable enrolment.



Source: UNESCO UIS

*Figure 6: 2008 Primary School GPI by 2008 GDP/capita for middle income countries*

For primary school enrolment, eleven countries (61%) achieve gender parity. Seven of the countries (39%) have more boys and none have more girls enrolled at the primary school level. For secondary school, only three countries (17%) achieve gender parity. Two countries (11%) have more boys and thirteen countries (72%) have more girls enrolled. Figures 5, 6 and 7 demonstrate that in the transition from the primary to secondary level, fewer countries are able to achieve gender parity and more countries have higher female enrolment in secondary schools. Therefore, even for middle-income countries it is more difficult to attain gender parity in secondary schools, and once a country is a middle-income country, GDP per capita is less influential on gender parity.

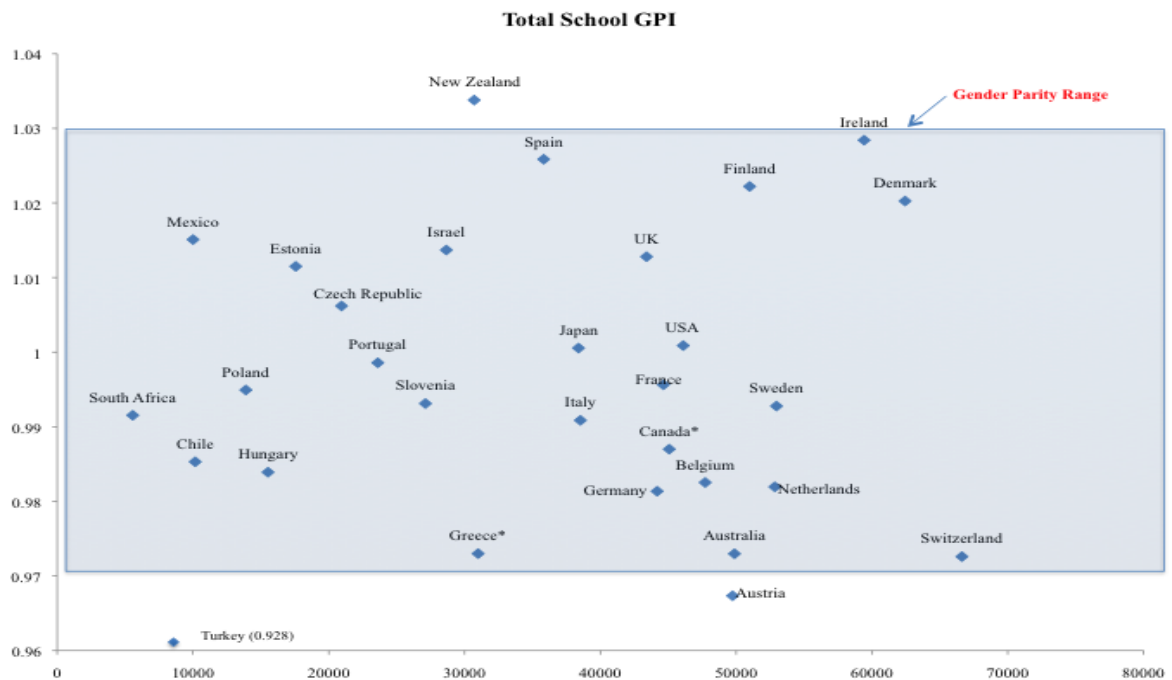


Source: UNESCO UIS

*Figure 7: 2008 Secondary School GPI by 2008 GDP/capita for middle income countries*

The data show that the pattern for middle-income countries is to achieve gender parity at both the total and primary school levels, while having higher female enrolment at the secondary level. While male repetition at the primary level could be the culprit, very few countries have more boys at the primary level. Thus this pattern is most likely the result of greater male attrition at the secondary level. As these countries are all middle-income and ‘developing,’ perhaps this scenario is linked to labour market demands and the employment of unskilled or semi-skilled labourers. However, the conclusion drawn from this comparison is that South Africa’s pattern of enrolment is consistent with that of other middle-income countries.



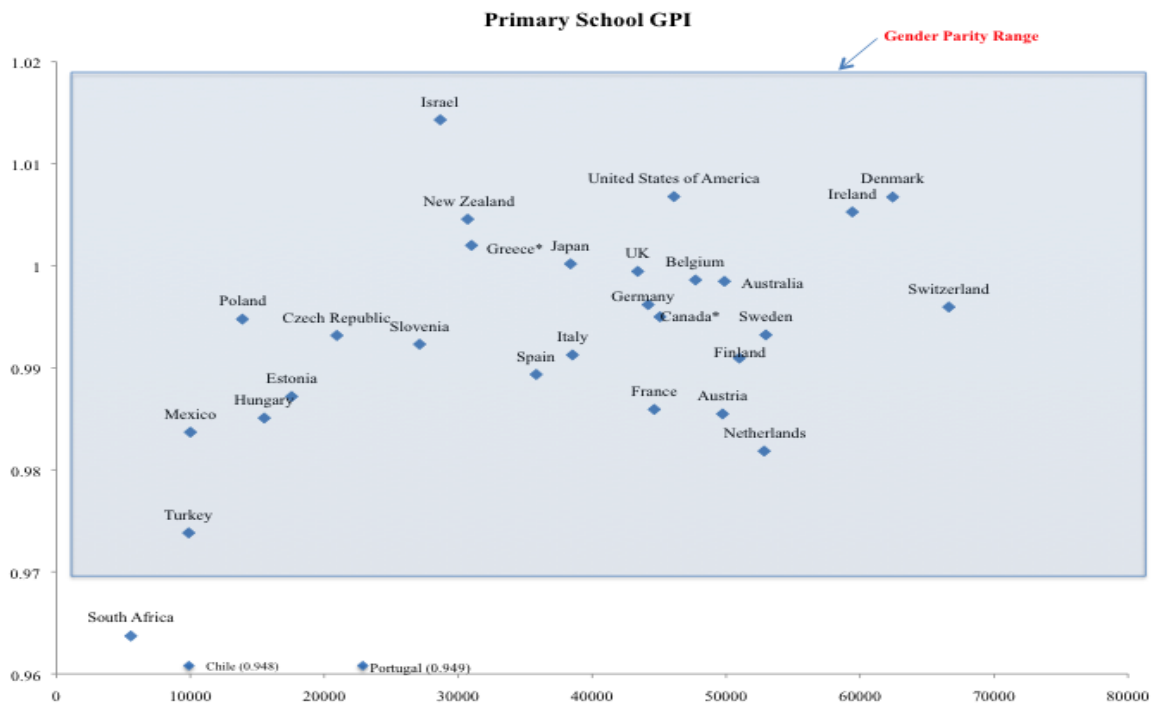


Source: UNESCO UIS

**Figure 8: 2008 Total School GPI by 2008 GDP/capita for OECD countries and South Africa**

In Figure 8, South Africa's enrolment rates are compared to those of high-income, or OECD countries. Out of thirty-one countries, twenty-eight (90%) achieve gender parity in total school enrolment. Comparatively, two countries (6%) have a higher male rate and one (3%) had more girls. As can be seen, three countries lie outside of the gender parity range, with only Turkey as a true outlier<sup>9</sup>. In primary school enrolment, twenty-nine countries (94%) achieve gender parity and only two (6%, Chile and Portugal) have higher male enrolment rates.

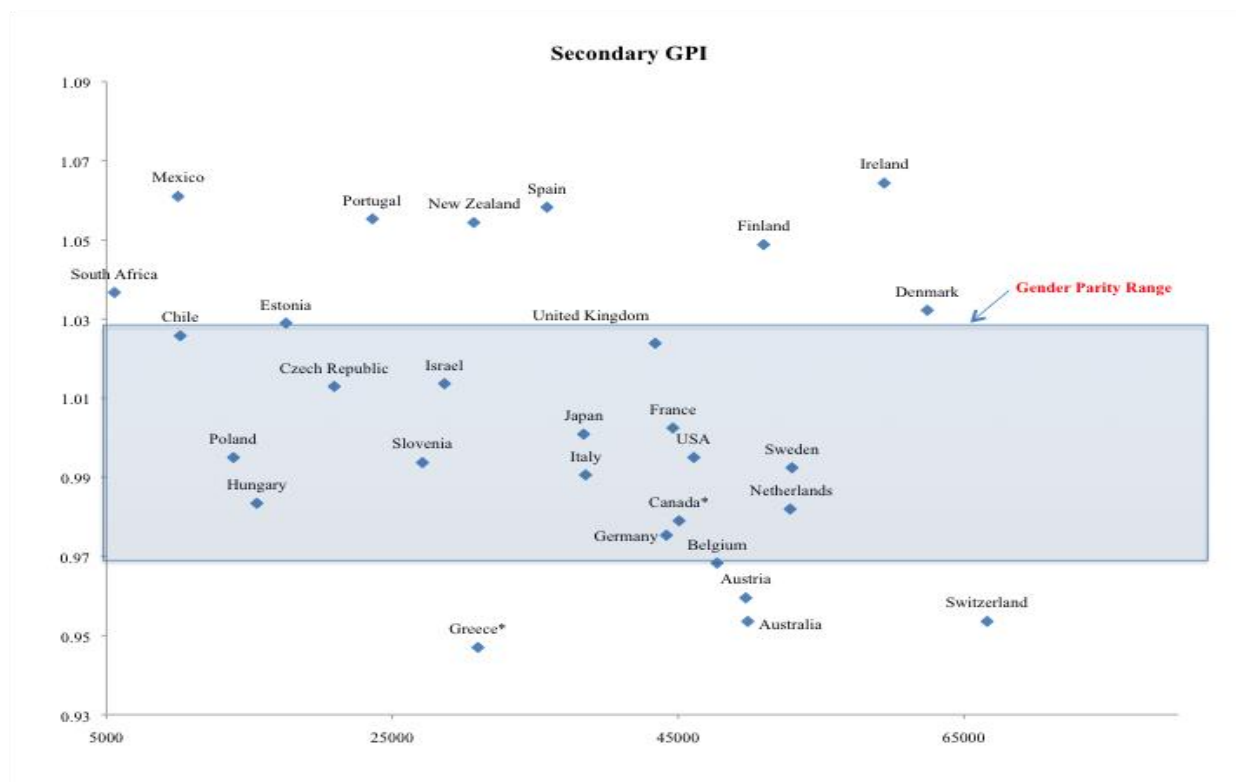
<sup>9</sup> Austria has more males and is -0.003 away from gender parity, while New Zealand has more females and is 0.004 outside the gender parity range.



Source: UNESCO UIS

**Figure 9: 2008 Primary School GPI by 2008 GDP/capita OECD countries and South Africa**

At both the total and primary school levels, the majority of the OECD countries lie within the gender parity range, and Figures 8 and 9 demonstrate that the relationship between GPI and GDP per capita is very similar. However, Figure 10 shows that at the secondary level this relationship results in a very different pattern. At the secondary level, only seventeen countries (55%) are able to achieve gender parity. Conversely, six countries have a higher male rate (19%) and eight countries (26%) have a higher female rate. Thus, just over half are able to achieve gender parity while the rest have gender disparity. As the countries outside the gender parity range are not concentrated at either end of the GDP per capita range, the implication is that the gender disparity is not attributed to income level.



Source: UNESCO UIS

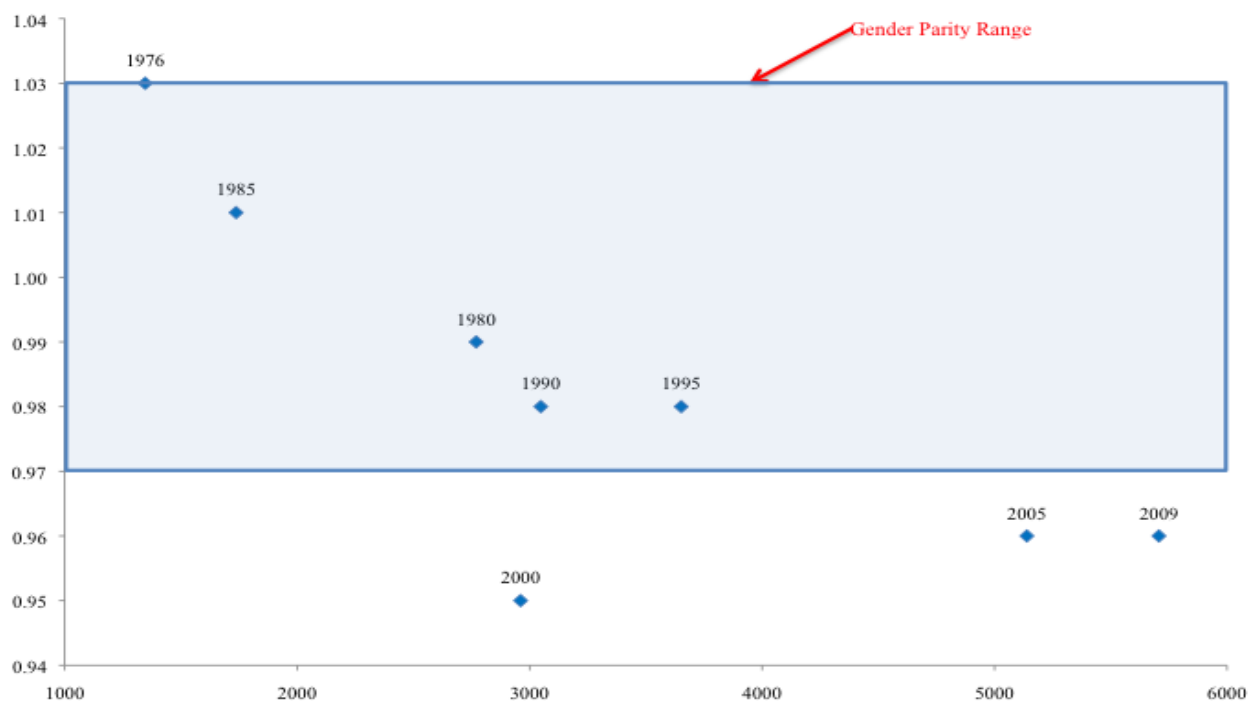
*Figure 10: 2008 Secondary School GPI by 2008 GDP/capita OECD countries and South Africa*

What this shows is that achieving gender parity at the secondary level is difficult, even for high-income countries. If gender parity is not achieved, it is more common to display a higher female enrolment rate at the secondary level. As this is consistent with the findings of middle-income but not low-income countries, this further suggests that once a country is past the threshold to middle-income status, other social, cultural, or labour force factors become more influential in attaining gender parity at the secondary level.

## Historical Comparison

This paper has focused on examining GDP per capita and GPI values from 2008, and therefore only provides a view of current circumstances. By extending this examination over a period of time, it is possible to explore the progression of these figures so as to allow for deeper insight into how GDP per capita has influenced primary and secondary enrolment.

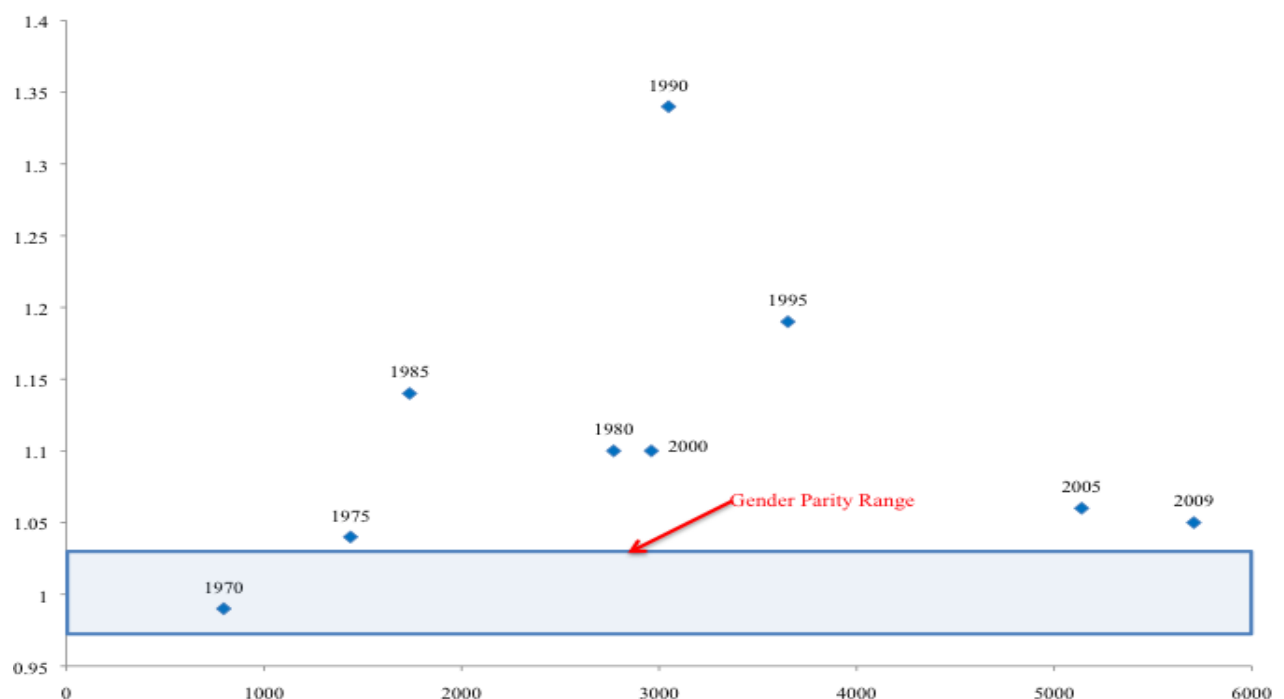
Figure 11 charts the changes in South Africa's primary school GPI value for the total population from 1976 to 2009; the general trend has been for the GPI value to decrease. In 1976, South Africa achieved primary school gender parity with a GPI value of 1.03. The GPI value remains within the gender parity range until 2000, when it falls to a value of 0.95, which coincides with a sharp GDP per capita decrease from 1995. From 2000, the GPI value remains just below gender parity with slightly higher male enrolment. The general trend from 1976 to 2009 is a rising GDP per capita and a falling primary GPI value. After 2000, however, even though the GDP per capita rises back above the 1995 level, the GPI does not return to the parity range. In 1985, when GDP per capita fell sharply from its 1980 level, the GPI value increased. Conversely, in 2000 when GDP per capita fell from its 1995 level, the GPI value decreased. Overall, this seems to indicate that GDP per capita was not directly linked to the GPI value. Furthermore, after 1995 the primary school GPI value has not budged, despite major gains in GDP per capita. This supports the previous conclusion that GDP per capita is influential until a stable, inflation-adjusted economic level is reached; after that point, other factors such as political climate and labour demands are more influential.



Source: Central Statistics Service & Statistics South Africa

**Figure 11: Historical GDP/capita by Primary GPI (Total Population) for South Africa**

Figure 12 illustrates the relationship between GDP per capita and secondary enrolment in South Africa between 1970 and 2009. The general trend is for the GPI value to increase, peak and then decrease, while the GDP per capita steadily increases. The only point in this period when gender parity is achieved is in 1970. From that point on, there is a distinct, and sometimes very pronounced, female advantage. From 1980 to 2000, the GPI value remains above 1.10 and peaks at 1.34 in 1990. This peak cannot be attributed to fluctuations in birth rate, and is therefore the result of other factors.



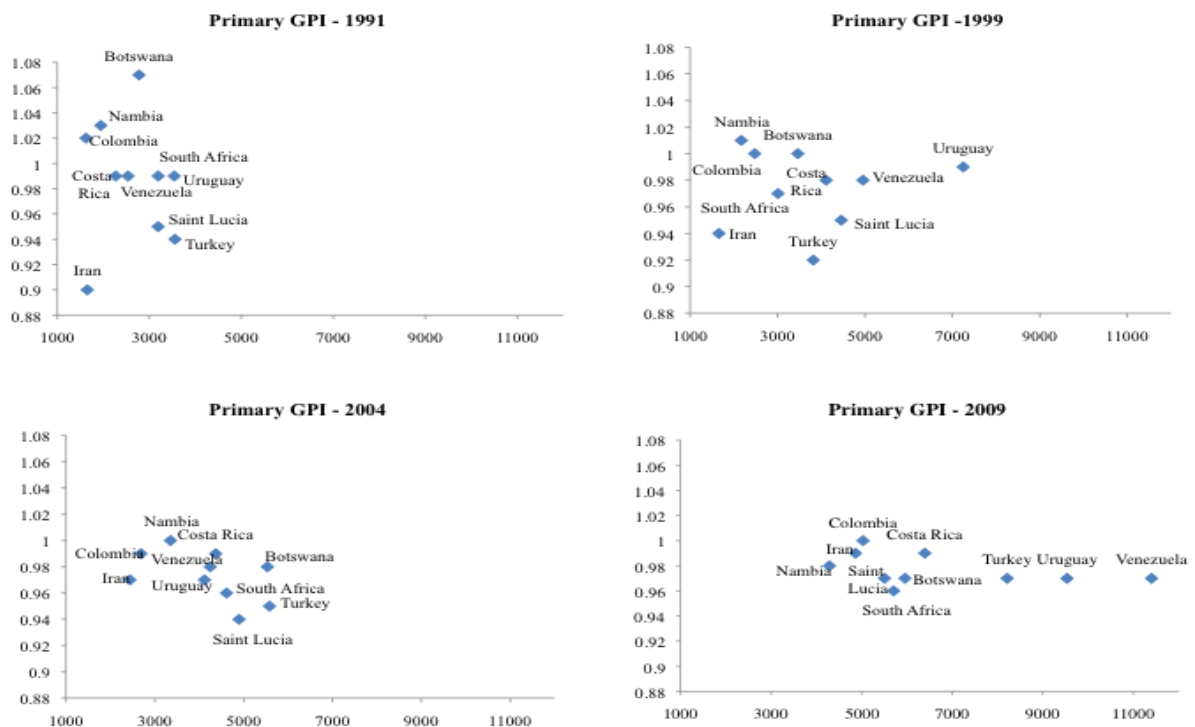
Source: Central Statistics Service & Statistics South Africa

**Figure 12: Historical GDP/capita by Secondary School GPI (Total population) for South Africa**

As mentioned during the previous discussion of primary school GPI, there are sharp decreases in GDP per capita from 1980 to 1985 and from 1995 to 2000. The changes in the secondary GPI value mirror those of the primary GPI, with an increase from 1980 to 1985 and a decrease from 1995 to 2000. However, at the secondary level, these GPI shifts are consistent with the general trend, which is not the case at the primary level. From 2000, there has been little change in the GPI value, despite large gains in GDP per capita, and the GPI value remains just outside the gender parity range. This also supports the conclusion that once a stable level of economic development has been attained, GDP per capita becomes less influential on attaining gender parity. Therefore, the overall

conclusion here is that GDP per capita plays a role in gender parity in enrolment only up to a point after which, other factors gain influence over enrolment levels.

Now that South Africa's patterns have been examined, it is necessary to compare its journey to other economically and geographically similar countries. Nine countries<sup>10</sup> were chosen – seven are middle-income countries and two are within close geographic proximity – to serve as the yardstick for comparison. The changes in GDP per capita and GPI are illustrated for the primary level in Figure 13 and for the secondary level in Figure 14. The axis values were kept consistent across the time period so that changes and patterns are easier to identify.



Source: Statistics South Africa & UNESCO UIS

**Figure 13: GDP/capita by Primary School GPI across multiple countries from 1991-2009**

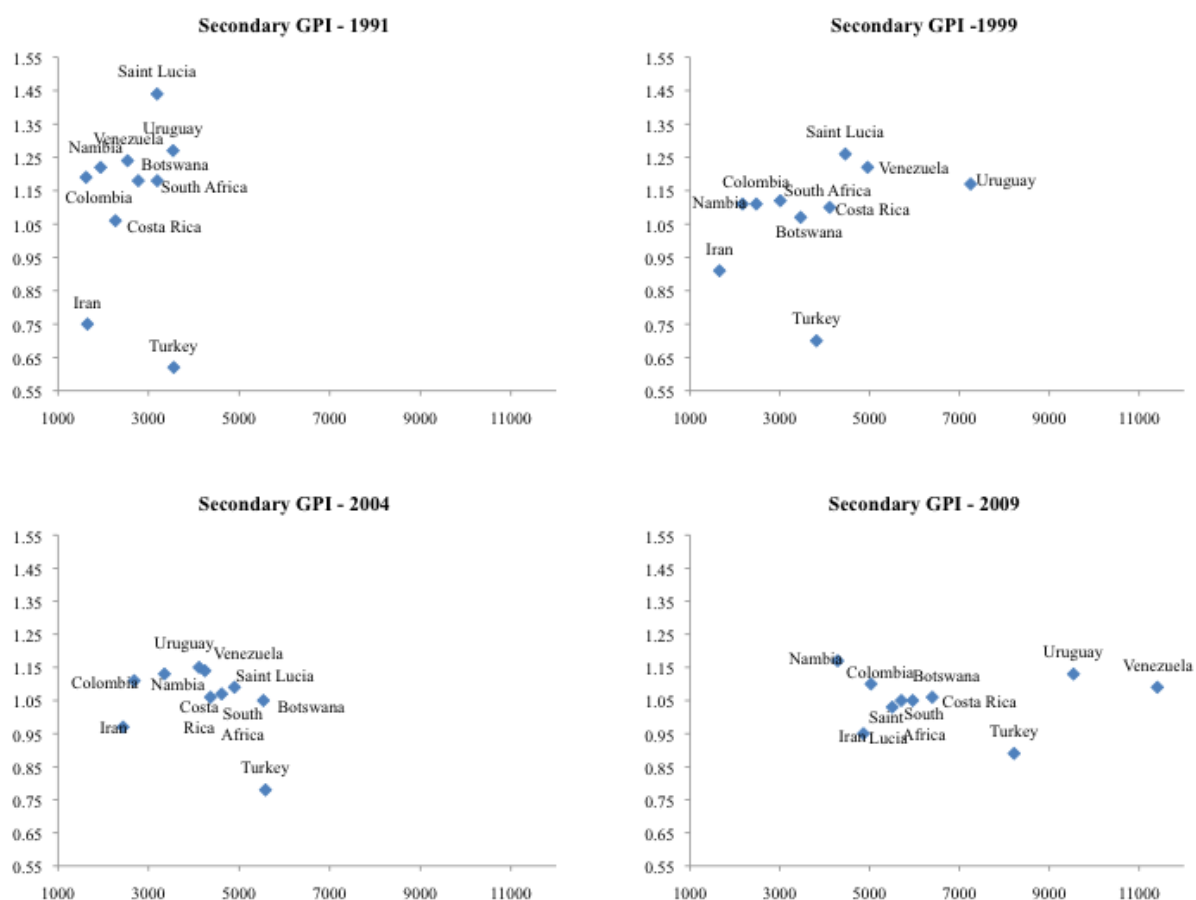
The GDP per capita and GPI values display a visible shift over the time period. As can be seen, Columbia, Costa Rica, Uruguay, Venezuela and Namibia consistently achieve gender parity in primary school enrolment. In 1991, six countries achieved parity, three had a male advantage and one had a female advantage. By 2009, all of the countries achieved parity – except for South

<sup>10</sup> Botswana, Columbia, Costa Rica, Iran, Namibia, Saint Lucia, Turkey, Uruguay and Venezuela

Africa, which had a slight male advantage. When viewed together, there is an obvious pattern of movement over the time period. In 1991, the data points are heavily concentrated at the low end of the GDP per capita range, with vertical GPI value variation. As time progresses, the data points shift so that by 2009, they are vertically concentrated within the gender parity range but vary horizontally along the GDP per capita range.

Furthermore, Figure 13 illustrates that South Africa's GDP per capita had a relatively small increase over the time period. In 1991, South Africa was positioned at the high end of the GDP per capita range with a GPI of .99. By 2009, its relatively slower rate of GDP per capita growth places it at the low end of the GDP per capita range, and it is the only country outside the gender parity range. The only country with a slower GDP per capita growth rate is St. Lucia, and it was able to achieve gender parity in 2009 with a score of .97. This comparison suggests that other factors in South Africa, combined with a relative slow GDP per capita growth rate, have negatively impacted gender parity in the country's primary school enrolment.

As can be seen in Figure 14, the changes in distribution at the secondary level exhibit the same general pattern as at the primary level. From 1991 to 2009, the GPI values grow increasingly vertically concentrated toward the gender parity range, while GDP per capita values become horizontally varied. However, despite the overall trend of GPI concentration, only St. Lucia is able to achieve gender parity with a ratio of 1.03. Given that St. Lucia experienced the slowest rate of GDP per capita growth, this is a surprising finding. Overall, the general pattern found at the secondary level once again suggests that at this level, GDP per capita is less correlated to enrolment and that achieving gender parity at this level is more difficult.



Source: Statistics South Africa and UNESCO UIS

**Figure 14: GDP/capita by Secondary School GPI across multiple countries from 1991 – 2009**

South Africa's historical pattern of enrolment is consistent with comparable countries at the secondary level but not at the primary level. At the secondary level, most countries are not able to achieve parity and instead display a female advantage. However, at the primary level, most countries display and maintain gender parity. For South Africa, the general trend at the primary level is a decreasing GPI value in which the male advantage grows. This departure from similar countries signals that there is something external to GDP per capita that is causing this trend. When South Africa's secondary rates were examined alone, the pattern seemed troubling and unique. However, the common pattern exposed at the secondary level is extremely interesting, as it demonstrates that South Africa's pattern is not unique but rather in line with comparable middle-income countries.



In summary, this examination reveals that South Africa's enrolment rates are regionally anomalous, as a minority of countries achieved comparable GPI values in 2008. Comparisons across economic lines show that a relatively high GDP per capita is associated with achieving gender parity at the primary level. However, at the secondary level gender parity is much more difficult to achieve, regardless of the income level. The examination of secondary level rates suggests that after reaching a relatively stable economic status, other factors play a role in achieving gender parity. However there does seem to be a connection between the type of gender advantage displayed and the GDP per capita at the secondary level. In general, countries with a low GDP per capita displayed higher male rates, while countries with a relatively high GDP per capita displayed higher female rates. This indicates that once a stable economic level is attained, a larger proportion of girls enrol at the secondary level. The hypothesis for this trend is that this is most likely due to more economic opportunities and earlier male employment, but this presents an area of further research.

The historical examination revealed several interesting insights regarding changes in South Africa's enrolment rates over time. At the primary level, it is particularly interesting that South Africa's gender parity value has followed a general pattern of decline, currently displaying a male advantage. The comparison with regionally and economically similar countries showed that the general pattern is to achieve and maintain gender parity, thus making South Africa's trend anomalous in this respect.

At the secondary level, South Africa's general trend is in line with the comparison countries, and recent progress toward parity is promising. However, if the trend at the primary level continues to grow increasingly skewed, it could be problematic for enrolment parity. Therefore, policy makers and educators need to address this worrisome trend so that the disparity does not continue to grow. If this scenario were to develop, South Africa's enrolment rates would no longer be regionally anomalous and instead would be regionally typical.

## **Other Educational Outcomes**

The previous section firmly established that South Africa's enrolment rates are geographically unique and generally economically typical. The next step is to consider other educational outcomes on an international platform. The logic here is to consider whether there are gender differences in other measures of educational achievement. The issue of 'access', as captured by enrolment rates,

has long been researchers' and policy makers' focus, while less attention has been given to achievement. The previous section demonstrated that South Africa has conquered the obstacle of participation, and so this investigation will consider whether South Africa's success of gender parity in enrolment is consistent across achievement-related educational outcomes.

The first achievement-related outcome to be examined is learner performance in literacy and numeracy evaluations. As with enrolment rates, these evaluations will be considered at national, regional and international levels in order to provide rich context and yield meaningful insights. The second outcome will focus exclusively within South Africa and will be a comparison of male and female progression rates through the school system. The objective is to determine whether one gender's progression is more heavily impeded than the other's. The final outcome will also focus exclusively on South Africa, as an exploration of Matriculation exams. This will focus on participation, level and pass rates and will consider the exam subjects that boys and girls write. The objective is to explore whether there are gendered disparities in either performance or subject choice.

## **Learner Numeracy and Literacy**

The first educational outcome examined is literacy and numeracy scores, and the investigation will discern whether there are gender disparities in either subject. Several assessments will be considered so that South Africa's scores can be assessed in the context of its global peers. One evaluation will focus solely on mathematics scores, while two others will consider both subject areas.

The first assessment considered is the Trends in International Mathematics and Science Study (TIMSS). This cross-country study was conducted in 1995, 1999, 2003 and 2007 in order to evaluate performance and knowledge in mathematics and science. South Africa partook in this study in 1999 and 2003 at the eighth grade level. To be comparable to the other numeracy assessments, this report will focus exclusively on the 2003 wave of the TIMSS.

In 2003, 8,912 grade 8 learners from forty-six countries participated in the TIMSS mathematics and science study (TIMSS, 2003). In both subjects, South Africa recorded the lowest scores, with an average score of 264 in mathematics and 244 in science – both of which were lower than the 1999 results (TIMSS, 2003). Singapore had the highest scores in both subjects, with an average score of 605 in mathematics and 578 in science. In regional comparisons, Botswana scored an average of 366 in math and 365 in science while Ghana scored 276 in

math and 255 in science (TIMSS, 2003). Botswana, Ghana and South Africa were the only sub-Saharan countries to participate and were ranked in the three last spots, respectively, in both subject areas (TIMSS, 2003).

*Table 1: TIMSS 2003 Grade 8 scores (TIMSS)*

|                             | <b>Mathematics</b> | <b>Science</b> |
|-----------------------------|--------------------|----------------|
| South African Average Score | 264                | 244            |
| International Average Score | 466                | 473            |

Only thirty-four of the countries reported disaggregated score results by gender. In the mathematics section, girls outperformed boys in nineteen countries, scoring on average 7.4 points higher (TIMSS, 2003). In the science section, boys outperformed girls in twenty-eight countries and on average scored 12.4 points higher (TIMSS, 2003). This indicates that not only did boys perform better than girls in the science assessment, the average score disparity was also larger. However, amongst South African learners, boys outperformed girls with an average score two points higher in both subject areas; however, such a small disparity indicates there is no gender bias (TIMSS, 2003). Therefore, although South Africa has the lowest scores, it appears that when compared globally there is less gender bias in South African learner performance.

The second assessment of learner literacy and numeracy is through the Southern and Eastern African Consortium for Monitoring Education Quality (SACMEQ). In 2000 and 2007, 15 African countries participated in the SACMEQ, which evaluated learner performance in reading and mathematics with a predetermined mean score of 500. When the results were analysed, “South Africa’s achievements in these areas were poor” with learners ranking in the bottom half of participating countries (Department of Education, 2008: 31). To compare learner performance along gender lines, each country’s disparity has been “calculated by subtracting the boys’ scores from the girls’ scores” (Saito, 2010: 1). When the difference is positive, it indicates that girls earned better marks, and when the difference is negative boys earned better marks.

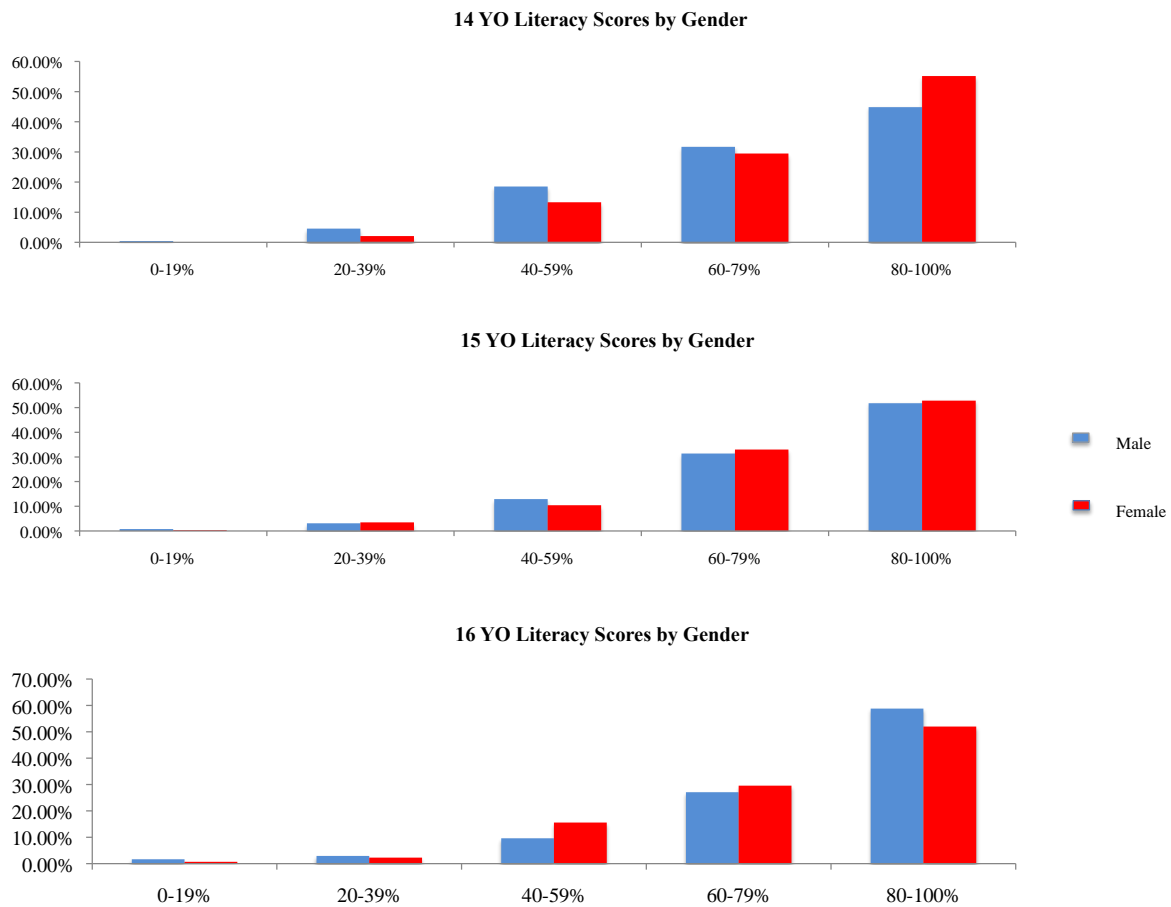
In South Africa, girls outperformed boys in both subjects in both years. In both waves of the study, the gender disparity was larger in reading than in math scores (Saito, 2010: 2). Additionally, girls in Seychelles, Mauritius, Botswana and Lesotho outperformed boys in both subjects, both years. Seychelles reported the largest disparities, in both subjects and years, while the remaining countries displayed disparities similar to that of South Africa’s performance. All countries

display a female advantage or gender parity in their secondary school enrolment. Perhaps this distinct female advantage in performance is the result of their enrolment advantage. Overall, there is no conclusion here regarding gender disparity in numeracy and literacy, as one assessment indicates that there is virtually no bias, while the second suggests a female advantage.

The final measure of learner literacy and numeracy is an investigation into the scores of participants aged 14 to 16 (to isolate school-going observations) in the first wave of the CAPS conducted in 2002. Participants were asked to complete a series of forty-five questions (twenty-two focused on literacy and twenty-three focused on numeracy) designed to assess their literacy and numeracy abilities. Across the total age group, there is very little difference between male and female scores. Girls answered slightly more questions correctly in the literacy evaluation, and boys had slightly more correct answers in the numeracy evaluation. The mean number of correct answers for the literacy assessment was 16.96 for girls and 16.73 for boys, while the mean number of correct answers in the numeracy assessment was 8.76 for girls and 9.19 for boys. This supports the finding that learners' numeracy skills are very weak in South Africa (Department of Education, 2008).

Therefore, out of the three studies that examined numeracy performance, two found very little gender difference and one found that girls perform better. However, both assessments (SACMEQ and CAPS) that considered literacy found girls to outperform boys. While there is not an overwhelming consensus on the gender differences across both subjects, there is in the literacy assessments. Therefore, it can be concluded that this review supports the finding that girls slightly outperform boys in literacy assessments (Marks, 2008: 90).

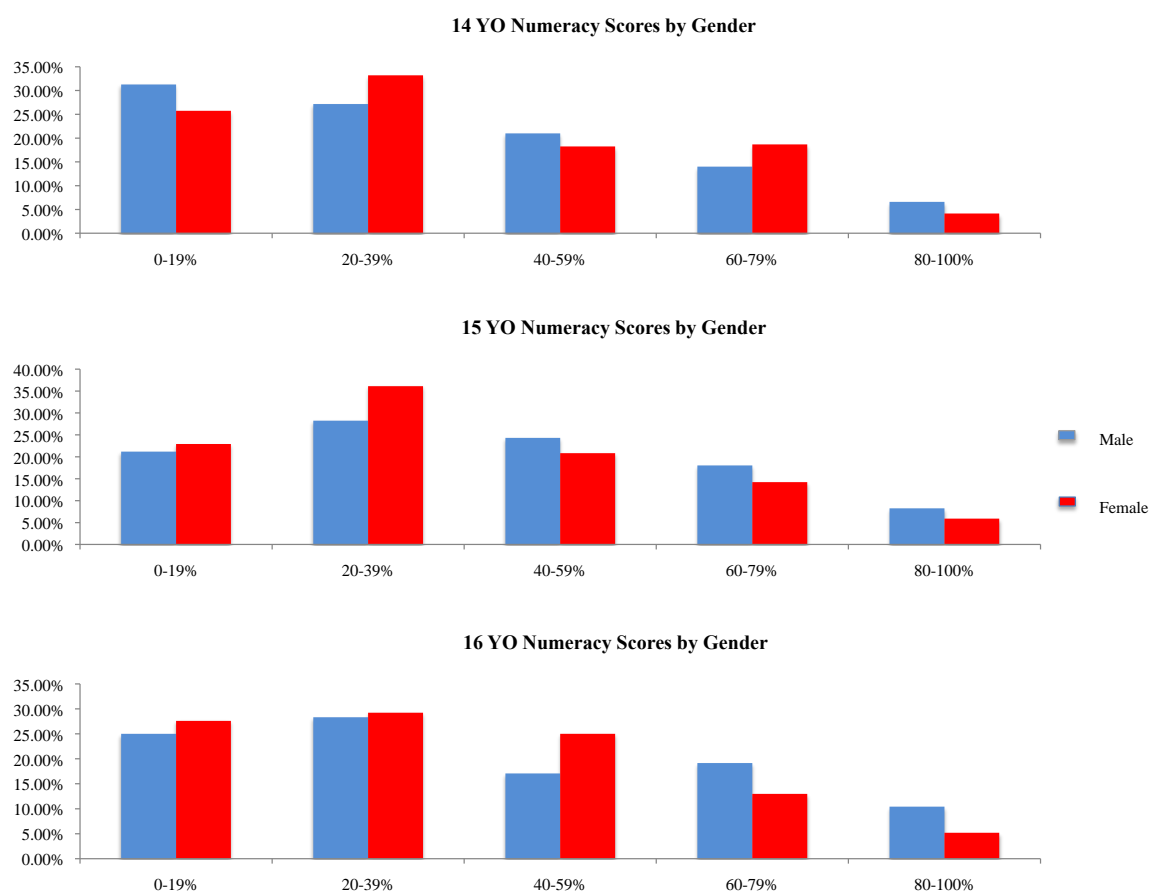
As there is little gender difference in the total cohort's literacy and numeracy scores, it is necessary to examine the scores by gender and age. Figure 15 conveys that all age groups follow the same general pattern - heavy skewness toward the high end of the score range. Overall, there is very little variation between the age groups. There are slight gender differences in the 14-year-old cohort, where girls perform better, and in the 16-year-old cohort, where boys perform better. However, these differences are very small and not statistically significant, suggesting that, as with the total cohort, there is no gender bias in the sample's literacy scores.



Source: CAPS wave 1

**Figure 11: 2002 CAPS Literacy Scores by Gender and Age**

As with literacy scores, Figure 16 illustrates that all age groups follow a general pattern of being heavily concentrated at the low end of the numeracy score range. However, as participants' ages change, there is a noticeable shift to the higher scores range, indicating that with age participants perform better. As for gender differences, the figure shows that female scores are more concentrated, while there is more variance in male scores. The major gender differences occur at the high end of the score spectrum. For the 14-year-olds there is a very small male advantage, which not only increases as participants age, but occurs sooner along the score spectrum. This suggests that the gender disparity in numeracy scores widens as participants' age increases.



Source: CAPS wave 1

**Figure 12: CAPS 2002 Numeracy Scores by Gender and Age**

Overall, these figures demonstrate that literacy and numeracy scores improve as the participants' ages increase. In a gender comparison, no differences were found in literacy scores, but there is a gap in numeracy scores. As the gap grows with age, this suggests that the male advantage in numeracy gains influence as learners age.

In summary, this analysis of learner performance across a variety of regions and subject areas indicates that gender differences in South African learners' performance echo global findings. Female performance is better in literacy assessments, and male performance is better in numeracy evaluations. However, in most assessments these differences were very small, and it is not possible to conclude that they are significant. Therefore, while the performance of South African learners lags behind their peers, there does not appear to be a gendered effect in performance.

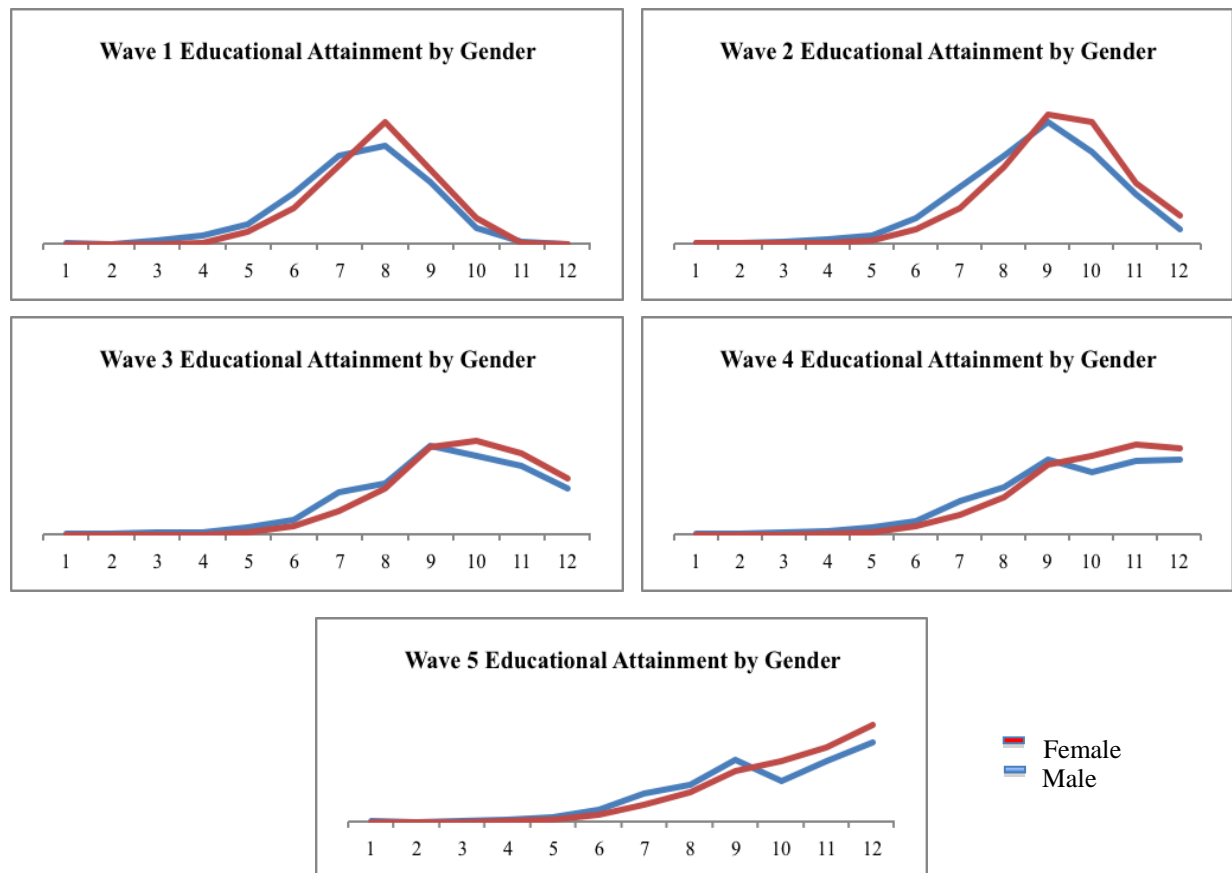
## Educational Progression

Now that it has been established that South African learners' literacy and numeracy performance is not gendered, it is necessary to consider the domestic rate of educational progression. This evaluation will use data from the CAPS and will investigate the educational histories of the 14- to 16-year old boys and girls. The objective is to explore their educational paths to assess if they are progressing at the same rate and sharing a common educational experience. The first step in this process is to inspect how educational attainment differs.

Figure 17 displays both genders' educational attainment in each wave of the study. It is clear that the educational progression of boys and girls follows the same general pattern and shape. In wave 1, for both boys and girls the peak of the distribution occurs at grade 8. As expected, as the waves progress and the cohort ages, the peak occurs later in the education stages. By the final wave, the peak for both sexes occurs at grade 12. Despite these similarities, there are several important differences in their experiences.

First, in all waves, the male curve begins to steeply incline at a lower educational level than the female curve. This indicates that a larger proportion of boys remain in the primary grade levels. Second, after wave 1, there is a consistent peak at grade 9 in the male sample. This is likely because this is the last year of compulsory education, and it is the culmination of their educational pursuits. Third, in the upper grade levels the female curve is consistently above the male curve. This demonstrates that fewer boys make it to the secondary education levels, especially in the later waves. Finally, in each wave, the male curve is relatively lower with a wider peak than the female wave – an indication of more variance in the educational attainment of the male cohort.

Overall, these differences highlight that boys and girls do not have the same experience in educational progression. The analysis here supports the Department of Education's finding that a larger proportion of boys repeat grades at the primary level, which ultimately leads to a higher level of variance in the male cohort (Department of Education, 2007: 16). Conversely, as the waves progress the female cohort moves through the educational levels in a clustered group, and a larger proportion reach the secondary grades. In summary, these findings support the Department of Education's report that more boys remain in the primary grade levels, and a higher proportion of girls transition to, and through, the secondary level.

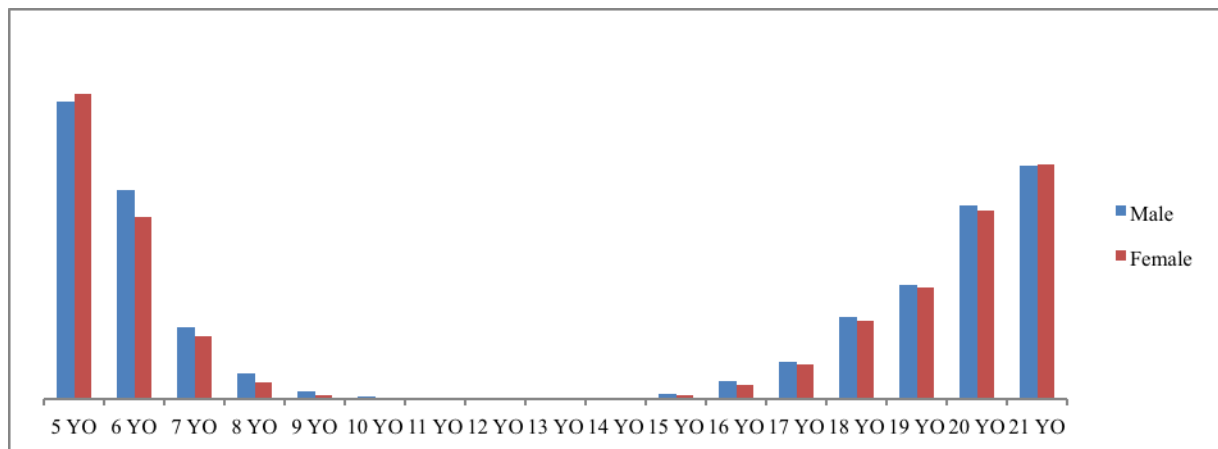


Source: CAPS waves 1-5.

**Figure 17: CAPS Educational Attainment by wave for men and women ages 14 – 16 in wave 1**

The next metric of educational progression considered is the proportion of participants that are not enrolled in an educational institution. Figure 18 depicts the proportions of boys and girls, by age, who are not enrolled and shows that they follow the same general pattern. The percentage of un-enrolled participants drops dramatically from age five to seven when the compulsory Basic Education band begins. The un-enrolled percentage drops virtually to zero and remains there until age 15, which is the last age of compulsory Basic Education. After age 15, the percentage of un-enrolled observations increases dramatically. Overall, after age 5 a consistently higher percentage of boys are not enrolled. This finding demonstrates that girls have a higher rate of enrolment during their school-going years.



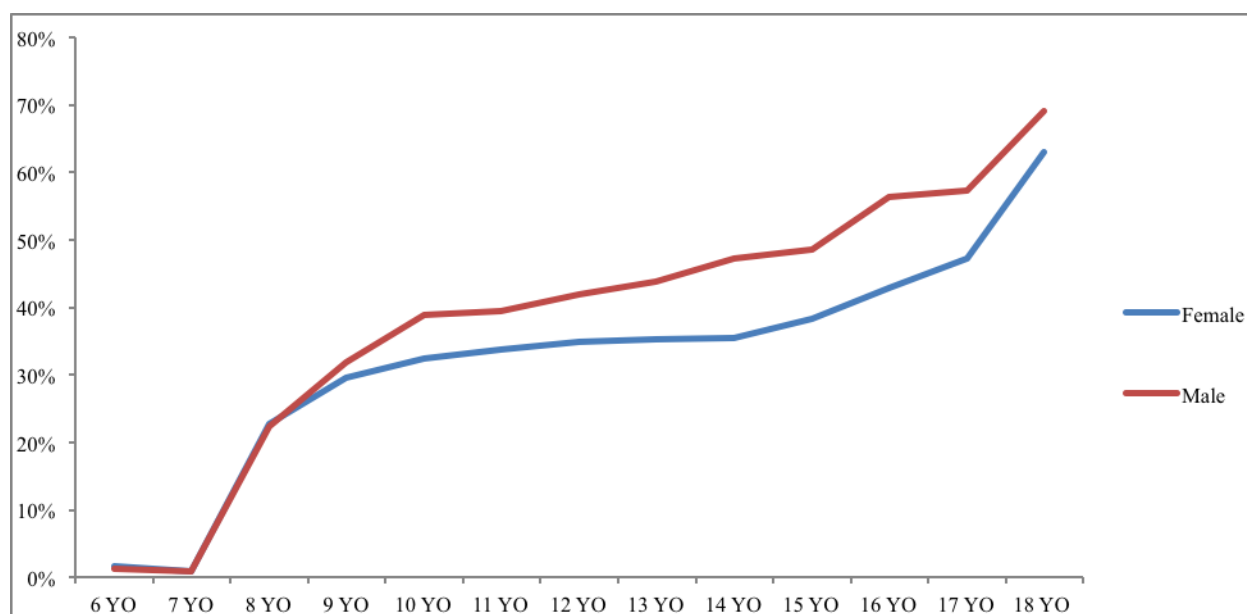


Source: CAPS wave 1.

**Figure 18: Percentage of Participants Not Enrolled in school by Gender and Age**

The final indicator of educational progression is the proportion of participants who were inappropriately aged for their enrolled grade. Given the primary and secondary GPI values, the expectation is that a larger proportion of boys will be inappropriately aged for their enrolled grade, and therefore gender disparity will be wider in the primary grades. An important caveat is that this data was collected in the third wave of the CAPS and the sample is smaller (3,523) than the original (4,752). Also, as the youngest observations are 17-years-old in the third wave, to use the entire wave's sample this metric will be limited to ages five to seventeen. Finally, the appropriate ages for each grade are set by the Department of Education, which defines ages five to seven as the normal age range for Grade 1 entrance. This age band was maintained throughout the grades to define the appropriate ages for enrolment.

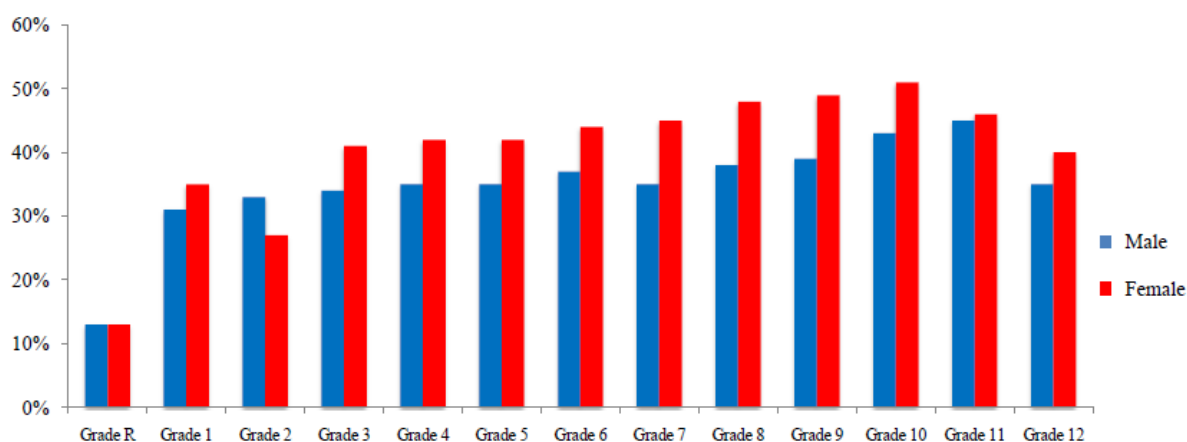
Figure 19 shows the percentage of participants, by age and gender, enrolled in an inappropriate grade for their age. As can be seen, the rate is the same for boys and girls until 8 years old. After this age, the proportion of boys increases faster than the rate of girls. The widest disparities occur at 14 years old (boys 47% and girls 35%) and 16 years old (boys 56% and girls 43%). The male rate increases steadily as participants age, while the female rate stays relatively stable from age 9 till 14. The rates of both genders increase substantially after 14 years old. Once again, the data supports the Department of Education's finding that a larger percentage of boys are enrolled in an inappropriate grade for their age, and the gender gap is widest directly before and after the end of compulsory education (Department of Education, 2008: 16).



Source: CAPS wave 3.

*Figure 19: Percentage of Participants Enrolled in Inappropriate Grade for their Age by Gender*

Figure 20 provides a comparison between the male and female percentages of participants who were an inappropriate age for their enrolled grade. The general trend is for the rate of inappropriately-aged participants to increase as the grades progress. The male peak occurs at grade 11, and the female peak occurs at grade 12. There is a consistently larger proportion of boys inappropriately-aged for their grade, with the exception of grade 2. Overall, this demonstrates that learners are enrolled in a grade inappropriate for their age almost immediately. When examining the participants by age, at 9 years old one-third are not in the correct grade for their age. Proportionally, by grade, in grade 1 one-third of the learners are outside of the appropriate age band. In the low primary grades, some of this may be attributed to late enrolment, but the steady increase over time indicates a high rate of failures and repeats – particularly for boys.



Source: CAPS wave 3.

*Figure 20: Percentage of Participants Inappropriately Aged for Enrolled Grade by Gender*

This examination of educational progression in the CAPS reveals that boys and girls have different educational experiences. Boys overall have a lower level of educational attainment, are less likely to transition to secondary education, are more likely to not be enrolled, and are more likely to be inappropriately-aged for their grade. Therefore, it can be concluded that girls are more successful in their educational progression.

## Matric Pass Rates

In South Africa, secondary school culminates with a Matriculation (Matric) exam that is offered across a variety of subjects. As previously mentioned, it has been found that subject choice and performance tends to be patterned along gender lines (Marks, 2008: 90). The overarching trend is for girls to participate and perform better in ‘soft’ subjects (languages, home economics, secretarial courses) while boys participate and perform better in ‘hard’ subjects (mathematics, physics, economics). However, as we have seen earlier, regional cross-country generalizations can mask exceptions at the national level. In this context, probing further into gendered subject performance is particularly relevant, as more girls are participating in and completing secondary school. The objective for this metric is to investigate whether there are gendered differences in performance for the ‘soft’ and ‘hard’ Matric subject areas.

*Table 2: Exams (by level) in ‘Soft’ and ‘Hard’ Subject areas for young men and women in Cape Town*

|              | Soft subjects |           | Hard subjects |           |
|--------------|---------------|-----------|---------------|-----------|
|              | Boys (%)      | Girls (%) | Boys (%)      | Girls (%) |
| Higher grade | 87.5          | 83.5      | 29.5          | 28.5      |
| Lower grade  | 12.5          | 16.5      | 70.5          | 71.5      |
| Total        | 100           | 100       | 100           | 100       |

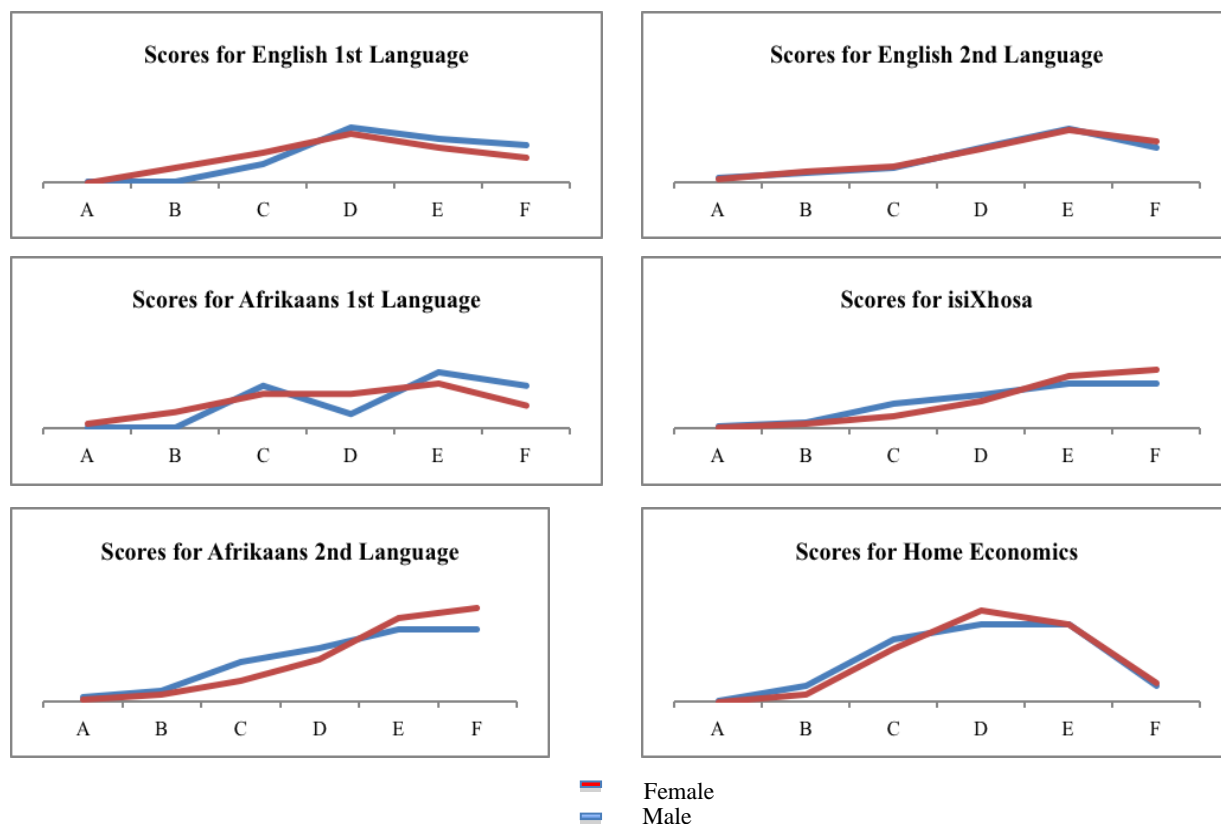
*Source:* CAPS wave 1.

Table 2 shows that, in a sample of young men and women in Cape Town,<sup>11</sup> women were only a little more likely to write soft or hard subjects at the lower rather than higher grade. Most boys and girls write ‘soft subjects’ at the higher grade and ‘hard subjects’ at the lower grade.

The distributions for male and female scores at the higher-grade level in the ‘soft’ subject follow a standard normal curve, with the peak at the C or D mark. There is very little difference in performance, making it clear that that higher level ‘soft’ Matric subject performance is not gendered. At the standard-grade ‘soft’ Matric subjects, there is slightly more variation in the score distribution. Figure 21 shows that girls perform slightly better in first language English and Afrikaans exams, but there is not a significant difference in performance. The other subjects display virtually no gender disparity. Therefore, at both grade levels, performance in the ‘soft’ subject areas is not gendered.

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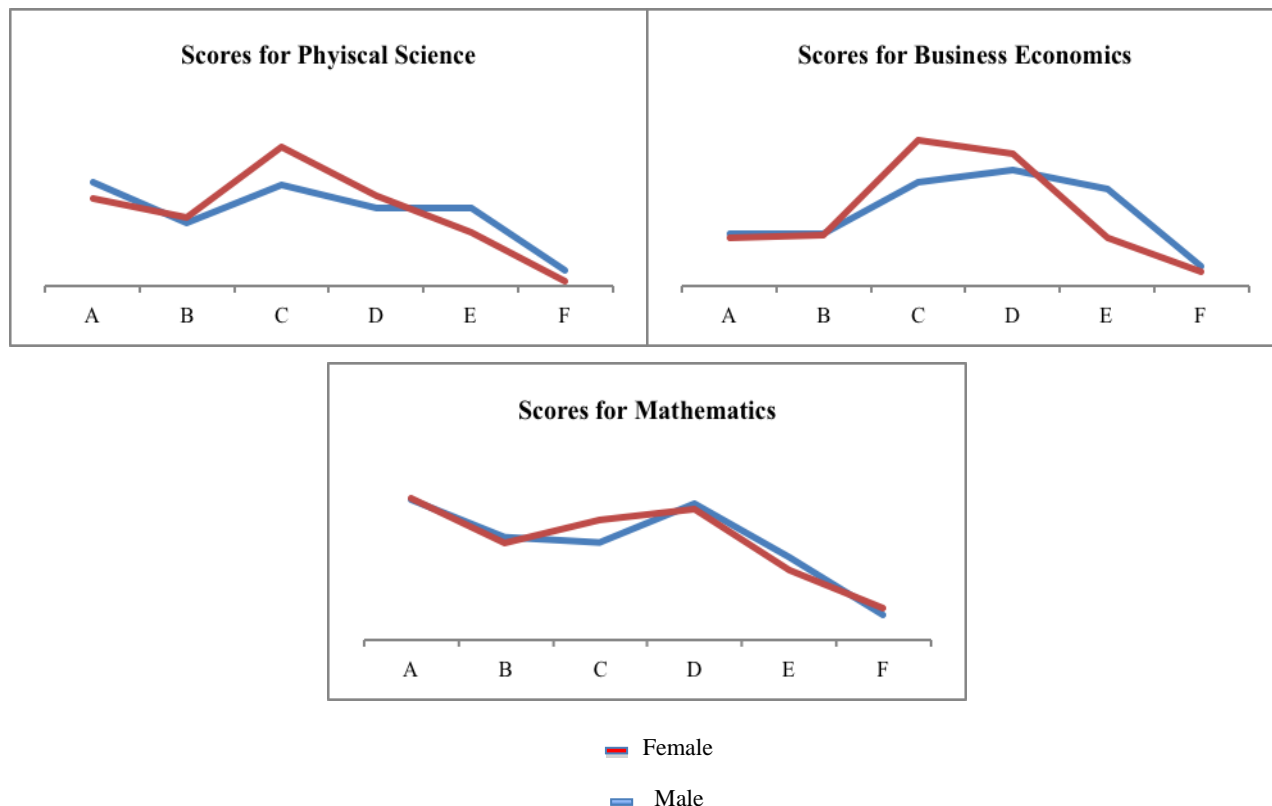
<sup>11</sup> The sample comprised young men and women who had been aged 14-16 in the original first wave of CAPS, and who had subsequently written matric.



Source: CAPS wave 1.

**Figure 21: Standard Grade Level Scores for ‘Soft’ Matric Subjects by Gender**

Male and female performance for the higher-grade level in the hard subject areas is displayed in Figure 22. The graphs illustrate that there is generally a consistent shape to male and female performance. The proportion is relatively high in the A to B mark range, peaks at the C to D range, and then quickly declines over the E to F range. Boys and girls follow this general trend with similar performance in mathematics and with girls performing slightly better in business economics. In the physical science subject area, the male distribution is relatively wide and flat, while the female distribution is highly concentrated, particularly in the A and C marks.



Source: CAPS wave 1.

**Figure 22: Higher Grade Level Matric scores for 'Hard' Subjects by Gender**

However, when the scores are scaled from 1 to 6 (1 being an A and 6 being an F), the average female score was 1.14 while the average male score was 1.18, demonstrating that while there is very little difference in their physical science subject performance, girls did perform slightly better. Therefore, overall in the higher-level 'hard' Matric subjects, it can be concluded that girls perform better, but the difference is not statistically significant. Thus, this investigation has shown that subject choice and performance in Matric exams is not gendered.

In summary, this analysis has revealed that gender bias exists only in educational attainment. Other measures of educational performance show that there is not a gendered effect in South Africa. The female advantage in GPI values and enrolment ultimately is translated into higher female educational attainment. However, these higher rates of participation are not translated into better performance in literacy, numeracy or Matric scores.

## Conclusion

This investigation has revealed that enrolment rates among girls and young women in South Africa are unusual (though not unique) within Africa, but are in line with most other middle-income countries. South Africa is distinctive geographically but not when economics are considered. One surprising finding in this regard is that once a country has progressed beyond the low-income level, it appears that the same pattern of gender parity at the primary level emerges, while there are more girls at the secondary level.

This paper also found that there is no gender bias in South Africa in the performance metrics of literacy and numeracy rates or matric scores. A gender bias was found in educational attainment, with a female advantage. The absence of evident gendered biases in the outcomes of educational attainment does not mean, however, that there is no gender discrimination. Further research should continue into possible gender discrimination and inequalities in education.

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# Appendix A

Source: Summers, Lawrence. 1994. Investing In All The People: Educating Women in Developing Countries. *The Work Bank Economic Development Institute Seminar Paper No. 45*. Washington, DC: The World Bank.

Figure 2: Educating Girls and Economic Development

