

Access, Equity and Competitiveness: The Case of Higher Education in Egypt

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Abstract

For decades academics and policymakers alike have recognized the importance of education in developing human capital, alleviating poverty, improving income distribution and in more recent literature, enhancing national competitiveness. Higher education in particular is playing a larger role than ever when it comes to national prosperity. Egypt has made significant progress in improving access and enrollment in institutions of higher education. College enrollment has risen steadily from 6.9 percent in 1970 to 20% percent in 1995 to 27.5 percent in 2005. However, access is not equal among all segments of society – to the detriment of Egypt's national competitiveness.

This study seeks to examine the link between equal access to higher education, and national competitiveness in Egypt. Data from household income and expenditure surveys from the years 1994 /1995 and 2004/ 2005 is used to shed light on the progress in access during the past ten years. Emphasis is placed on the distribution of educational opportunities according to a) income groups b) gender and c) geographic regions. It is shown that access to higher education is biased against poor income quintiles and rural geographical regions. A key conclusion is that quality and equality in higher education are mutually reinforcing goals that are necessary for competitiveness. With a relatively small portion of the Egyptian population receiving quality higher education future prospects for growth and prosperity will be jeopardized.

I. Introduction

Education is an important tool in any country's national development strategy. It provides an important mechanism through which to reduce poverty and generate growth that is long-term and equitable. Higher education in particular is playing a larger role than ever when it comes to national prosperity. This is because of its unique role in creating a skilled workforce able to innovate and stay up to date with the latest scientific and technological advancements.

Contemporary value chain analysis offers key insights as to why this is the case. In order to benefit from globalization countries must first insert their industries into global markets and commodity chains, then upgrade to higher value added activities (Kaplinsky, 2000). In today's

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markets value added within these chains comes more and more from intangible activities that are knowledge and skill based, including research and development, technological applications, product design and marketing (Gereffi, 2002). These sources of value depend heavily on the capabilities that only higher education and advanced training can provide.

National competitiveness reflects the ability of a country to maintain high and rising living standards for its citizens. It provides a useful framework through which we can understand economic performance and explain the global variation in development levels. Higher education, because of its role in industrial upgrade and generating value added, is an important source of national competitiveness. A strong system of higher education, characterized by quality instruction and equal access, can provide the human capital necessary for a productive economy. This study seeks to examine the link between equal access to higher education, and national competitiveness in Egypt. Data from household income and expenditure surveys from the years 1994 /1995 and 2004 /2005 is used to shed light on the progress in access during the past ten years. Emphasis is placed on the distribution of educational opportunities according to a) income groups b) gender and c) geographic regions. The research also seeks to provide a descriptive analysis of the reasons behind the unequal educational access and its impact on national competitiveness. A key conclusion to be drawn is that quality and equality in higher education are mutually reinforcing goals that are necessary for competitiveness. With a relatively small portion of the Egyptian population receiving quality higher education future prospects for growth and prosperity will be jeopardized.

Sections two, three and four will describe the current system of higher education, patterns of public spending and higher education enrollment trends in Egypt. The fifth section will examine the persistence of highly unequal access to higher education despite the relatively good enrollment rates and despite "free education." It is argued in section six that a major cause for the disparity is the low quality of education. Finally section seven discusses the correlation between unequal access and Egypt's low national competitiveness followed by a conclusion that draws important lessons and policy recommendations.

II. The Higher Education System in Egypt

The Egyptian higher education system is composed of public and private universities as well as a number of medium and higher institutes. Total enrollment across all higher education institutions reached 2,752,761 in 2006. There are 17 public universities with 302 different faculties, making up 61.1% of total higher education enrollment (1,680,812 registered students). Al Azhar University is somewhat unique as the country's largest government-funded religious university. It is administered by the Ministry of Religious Endowments. Public universities are the central focus of the present study.

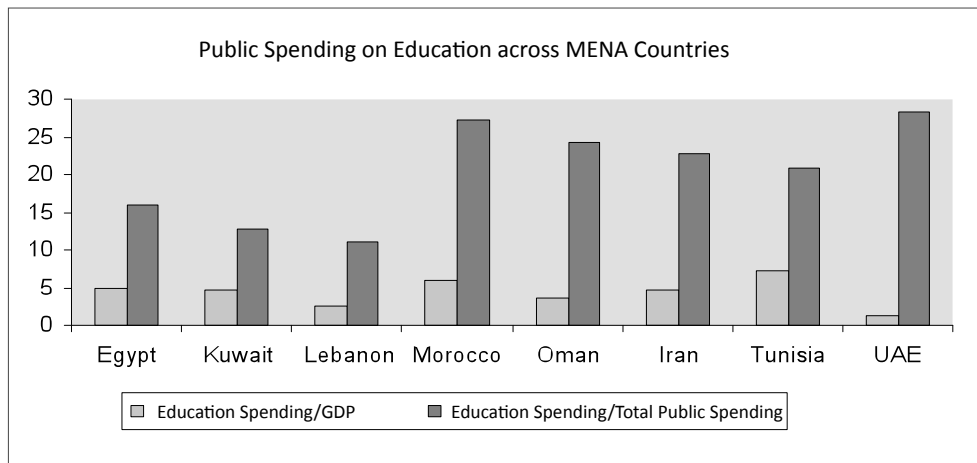
There are also 14 non-governmental private universities in Egypt enrolling just 1.8% of students. The American University in Cairo is an example of a long-established private university however most are relatively new and tend to be concentrated in the Greater Cairo area.

Medium and higher institutes offer technical or vocational degrees in lieu of a university education. Higher institutes are four years while medium institutes are only two years. According to government statistics, there are 107 private higher institutes in Egypt, 11 private medium institutes and 57 government medium institutes. Together they attract 602,622 registered students or 21.9% of higher education enrollment (Abdel Hameed, 2007).

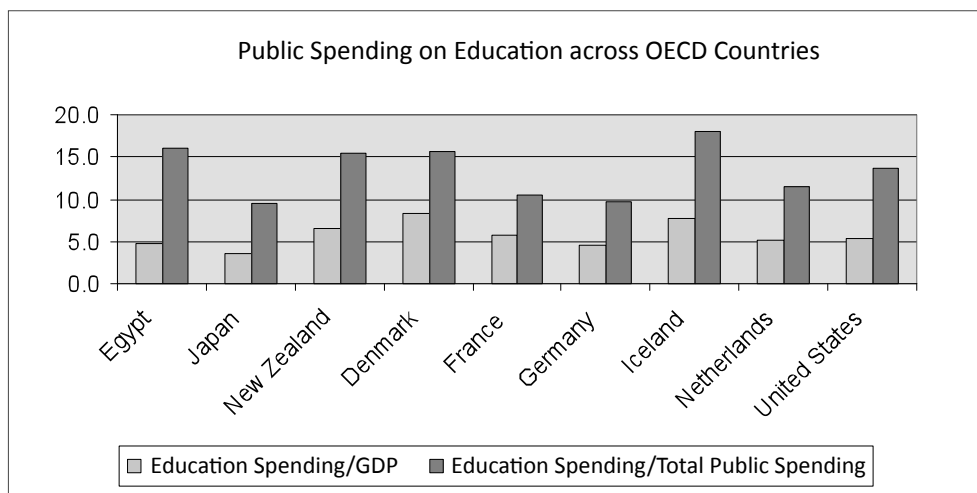
III. Public Spending on Higher Education in Egypt

Public spending on education in Egypt as a share of total public spending and of GDP is quite high, reaching 16% and 4.8% respectively in 2005 (UNESCO website). These figures are slightly higher than the MENA average (although lagging behind regional neighbors such as Morocco, Oman and the UAE) and comparable to many OECD countries. This large allocation, however, comes after several decades of drastic underinvestment in education (El Baradei 2004). During the late 1970's and 1980's budgetary allocation to education decreased steadily in real terms causing long-lasting damage to the quality and efficiency of the education system. By 1990 education was only 9.5% of total public spending (World Bank 2008).

Figure 1: International Comparison of Public Expenditure on Education, 2005

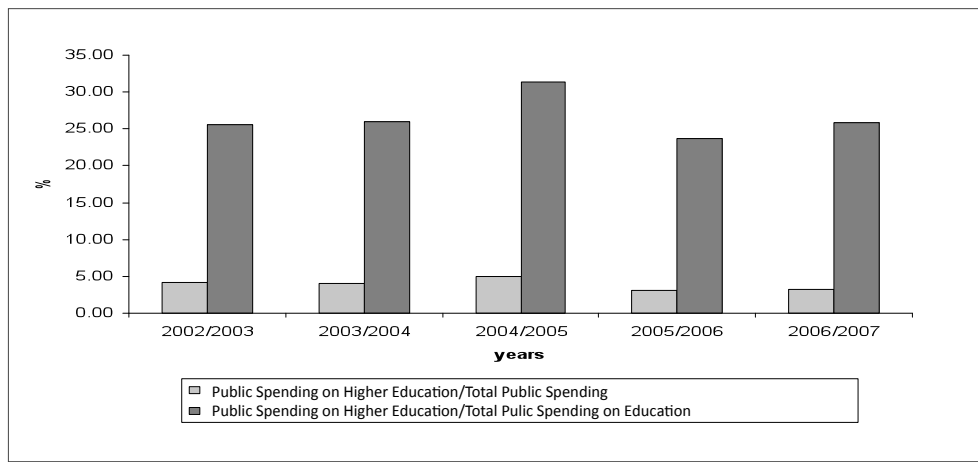


Source: UNESCO Institute for Statistics website. Countries selected according to data availability.



Higher education receives a sizable share of the government budget. Expenditure on higher education in Egypt has risen steadily from 1992/1993 to 2006/2007 with the exception of notable drops in 2002/2003 and 2005/2006. Government spending on higher education as a share of total government budget and as a share of the education budget also peaked in 2004/2005, reaching 5.02% and 31.42% respectively, before falling drastically in 2005/2006 to 23.69% and 3.12% respectively. In 2006/2007 these ratios increased but were still lower than 2003/2004 and 2004/2005 levels.

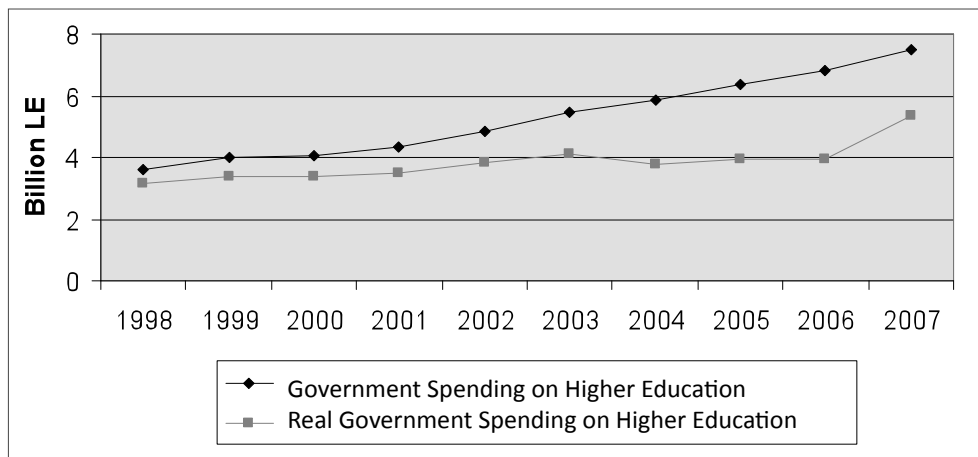
Figure 2: Public Spending on Higher Education as a Percentage of Total Public Spending and of Public Spending on Education, 2002/2003 – 2006/2007



Source: Calculated from the Functional distribution of the Government budget 2006/2007, Ministry of Finance.

Nominal and real public spending on higher education has been increasing albeit at a slower rate since 2004. In 2007 public spending on higher education reached 5.33 billion LE in real terms.

Figure 3: Nominal and Real Public Spending on Higher Education 1998 - 2007



Source: Ministry of Higher Education and CPI data

The share of public expenditure on higher education as a percentage of the government education budget is quite high in comparison to other countries in the MENA region and even quite similar to some OECD countries such as France, Germany and the United States.

**Table 1: Share of Public Expenditure on Higher Education
(as a Percentage of Total Public Expenditure on Education) Across Countries**

Country	Share of Public Expenditure on Higher education (as a percentage of total public expenditure on education)
Middle East and North Africa	
Djibouti	14% (2005)
Iran	15% (2005)
Lebanon	29% (2005)
Morocco	17%(2005)
Tunisia	24%(2005)
Egypt	26% (2006)
Europe	
Italy	17%(2004)
France	21%(2004)
Germany	25%(2004)
Sub-Saharan Africa	
Eretria	55% (2005)
Rwanda	31% (2005)
South Africa	15% (2005)
High Income Countries	
United States	27%(2004)
United Kingdom	19%(2004)
Kuwait	35%(2004)
Japan	18%(2004)
Israel	16%(2004)

Source: World Bank Edstats

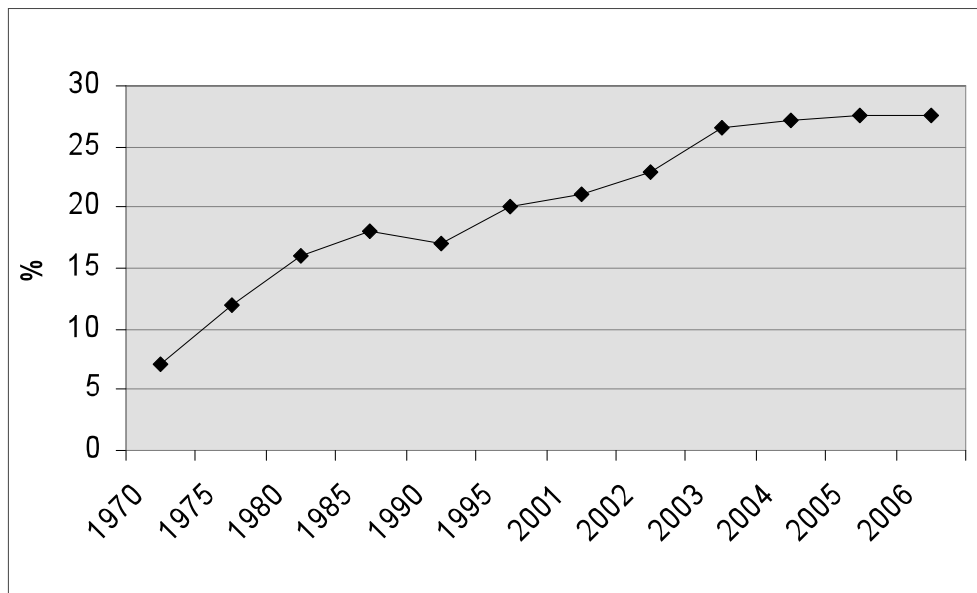
IV. Enrollment in Higher Education in Egypt

Under the 1961 Constitution, all education levels, including secondary and university, was made free of charge to ensure more equal access across various segments of the Egyptian society. This resulted in a large surge in secondary school enrollment during the 1960's and set the stage for a similar increase in university enrollments in the following decade. University enrollment increased by nearly three fold between 1970 and 1985 (Richards, 1992).

Gross enrollment rates have increased across all education levels. At the tertiary level gross enrollment rates went from 20% in 1995 to 27.5% in 2005, a 28% increase over the past decade (Abdel Hameed, 2007)². In 2004 /2005 the net tertiary enrollment rate was 24.1%.

Tertiary enrollment in Egypt continues to exceed the MENA average; however, Egypt's enrollment in higher education is much lower than OECD countries including Denmark, Finland and France, all with enrollment rates above 50% (Abdel Hameed, 2007).

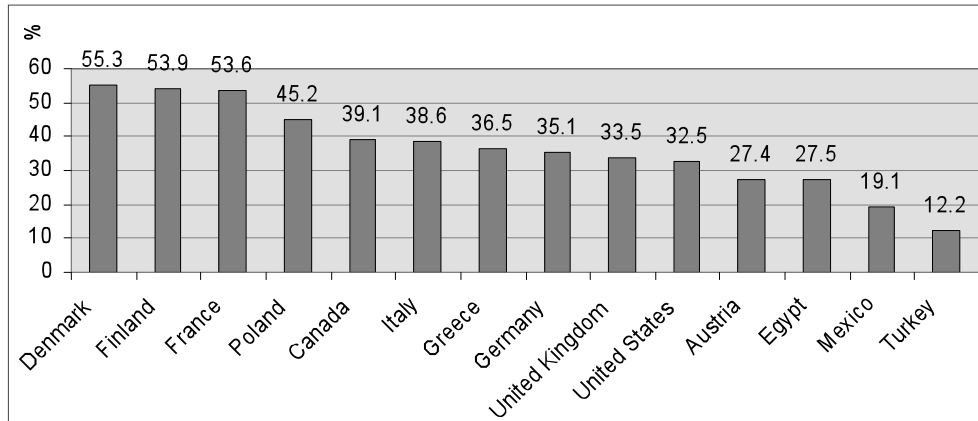
Figure 4: Gross Tertiary Enrollment Rates in Egypt 1970 - 2006



Source: Ministry of State for Economic Development website; 2003 -2006 figures are from Abdel Hameed 2007

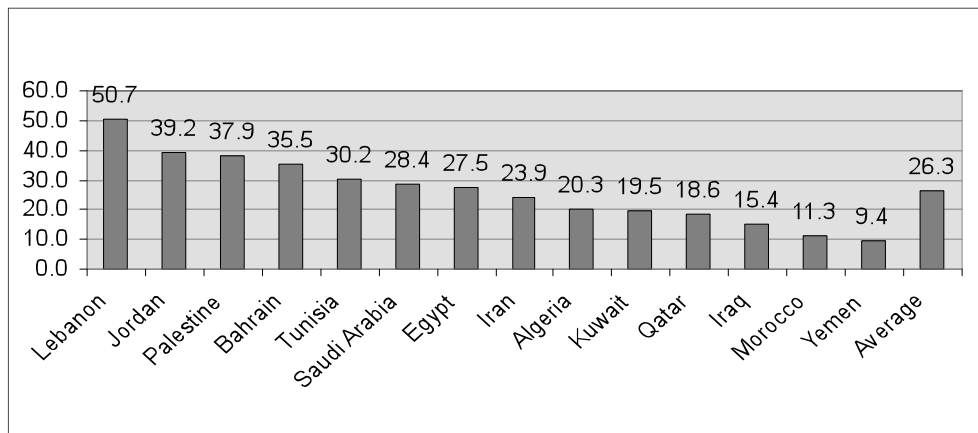
² Gross tertiary enrollment rates include all higher education institutions in Egypt and are calculated as a percent of number of individuals between the ages of 18 - 23.

Figure 5: Gross Enrollment in Higher Education across a Sample of Countries, 2006



Source: Abdel Hameed 2007

Figure 6: Gross Tertiary Enrollment Rates in Arab Countries, 2005



Source: World Bank 2008; Egypt figures from Abdel Hameed 2007

V. Access to Higher Education in Egypt

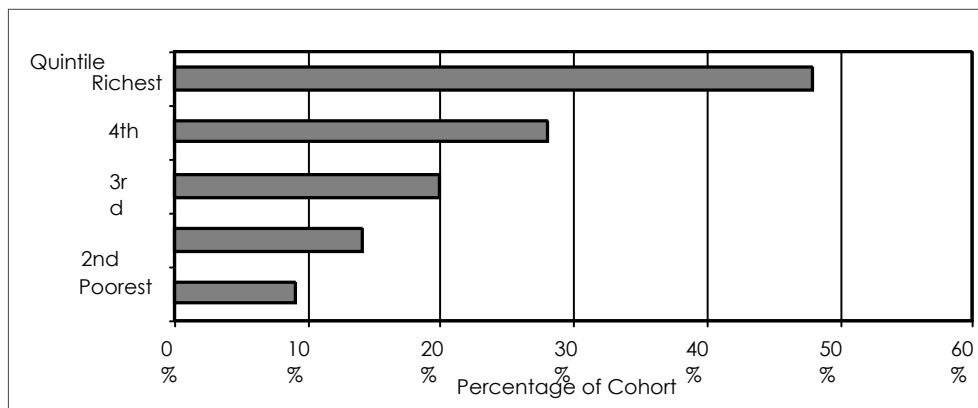
Access to higher education, as measured by enrollment rates, is increasing in Egypt. However, less is known about the distribution of opportunities within the higher education system. This begs the question: how is access to higher education distributed among income groups, regions and gender?

1. Access to Higher Education by Income Group

Access to basic education is relatively equal across income quintiles. In 2004 85.15% ,2005/ of children in the poorest quintile completed basic education, just 6.41% less than the richest quintile. This is not the case with higher education. While the net university enrollment rate for the richest quintile reached 47.95% (up 6.74% from 1995) the poorest income quintile had a net university enrollment rate of just 9.07%.

Unequal access to higher education also represents an unequal distribution of benefits to public spending on higher education. The benefits of education subsidies accruing to each income group will depend on their enrollment rates. The richest quintile, with the highest university enrollment rate benefits the most from public spending on higher education. The poorest quintile with the lowest university enrollment rate benefits the least. This means public spending on higher education in Egypt is regressive in nature.

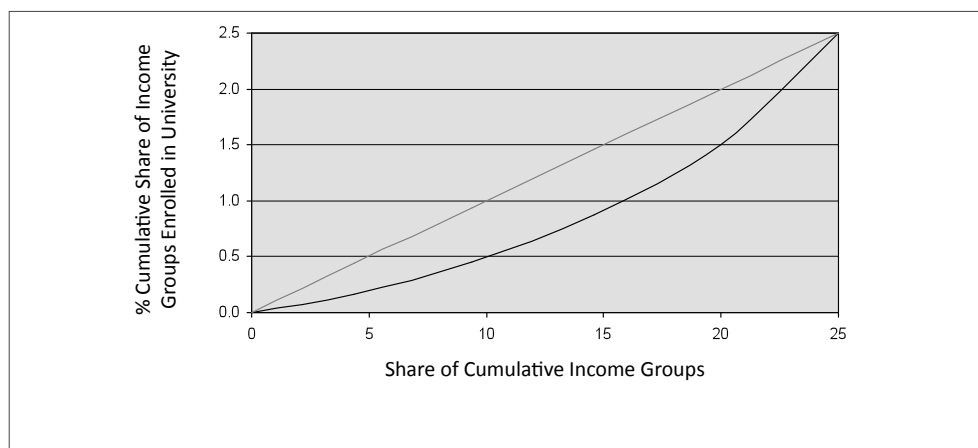
Figure 7: Net University Enrollment Rates by Income Quintile 2004 /2005



Source: 2004 /2004 HIECS

A Lorenz Curve can be used to show the degree of inequality in university enrollments. The line at the 45° degree angle represents a perfectly equal distribution of university enrollments across income groups. The curve, which represents the actual distribution, indicates a fair amount of inequality in the distribution of university enrollments.

Figure 8: Lorenz Curve of Percent Cumulative Share of Income Groups Enrolled in Universities 2004 /2005

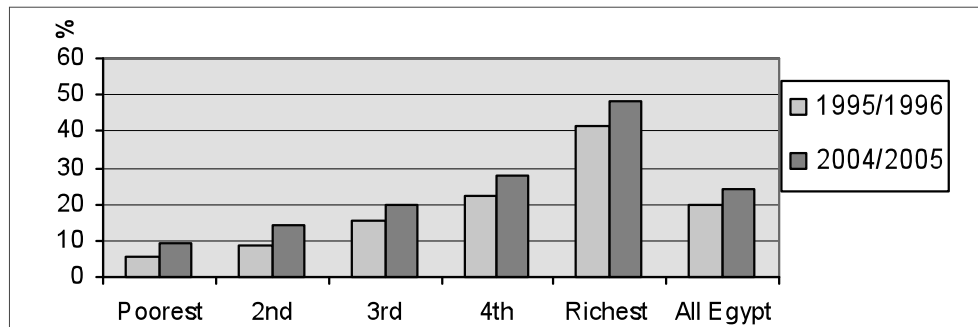


Source: Calculated from 2004 /2005 HIECS



Inequality of university access has increased between 1995 /1996 and 2004 /2005. The poorest quintile had the smallest percent increase of enrollments at the university level – just 3.55% over the decade. On the other hand, the richest quintile experienced a 6.74% increase in enrollments. Thus, not only is access to higher education skewed toward the rich, this inequality has in fact risen since 1995. Figure 9 shows how university enrollment rates have changed for each income quintile between 1995 /1996 and 2004 /2005.

Figure 9: Net University Enrollment from 1995 /1996 and 2004 /2005 by Income Quintiles



Source: Calculated from the 1995 /1996 and 2004 /2005 HIECS

2. Access to Higher Education by Region

Across all education levels, enrollment rates are lowest in rural areas, particularly upper rural, and highest in metropolitan areas. The difference is greatest at the university level where metropolitan enrollment is 29% higher than upper rural. Over time, however, regional inequality in higher education access has been declining. In all regions university enrollment increased from 1995 /1996 to 2005 /2006, but the largest percent increase 35.4% was in lower rural Egypt, followed by metropolitan (14.1%) and finally upper rural (11.2%) Egypt.

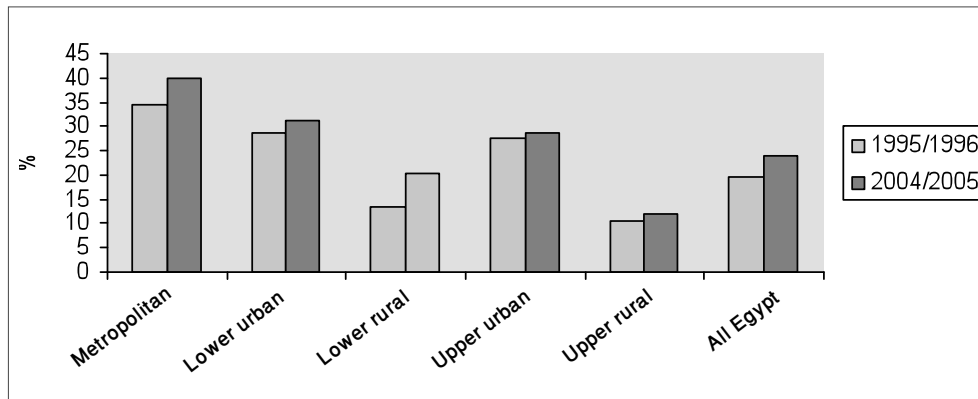
Table 2: Net Enrollment Rates by Region 1995 /1996, 2004 /2005

	Net enrollment rate in 1995 /1996			Net enrollment rate in 2004 /2005		
	Basic education	Secondary	University	Basic education	Secondary	University
Metropolitan	85.24	63.49	34.36	95.6	65.7	40
Lower urban	84.17	63.3	28.55	95.6	65.4	31.3
Lower rural	80.2	51.7	13.25	93.2	61	20.5
Upper urban	83.29	59.62	27.76	93.7	62.8	28.7
Upper rural	69.09	41.5	10.57	85.9	48.7	11.9
All Egypt	78.36	53.21	19.74	91.6	59	24.1

Source: 1995 /1996 and 2004 /2005 HIECS



Figure 10: Net Enrollment Rates in Higher Education by Region 1995 /1996, 2004 /2005



Source: Calculated from the 1995 /1996 and 2004 /2005 HIECS

The persistence of unequal access between geographical regions is often related to income – more so than other variables such as university proximity or quality. University enrollment rates are lowest in Menia, Fayoum, Beni Suef and Beheira governorates and highest in Cairo and Alexandria. This corresponds to the findings that in 2004 /2005 Menia had the highest number of poor persons across all Egyptian governorates followed by Beni Suef and Beheira (UNDP, 2008). The general underdevelopment of rural regions and high levels of poverty behind the regional disparity in enrollment may also explain the unequal male and female enrollment rates in rural regions examined in the following section. Although gender enrollment rates are relatively equal across urban and metropolitan regions, rural areas lag behind in terms on gender parity. This is because socio-economic status has a large impact on gender equality and female enrollment rates. Specifically, wealth can increase the gaps in female and male education among the poor (Filmer, 1999). In Egypt, the percentage of poor and near poor is highest in upper rural regions, more than three times than metropolitan regions. However once poor females complete basic education they are more likely to complete their education than males - who often drop out at secondary and tertiary education levels in order to find work (El Baradei, 2002). In other words, although income constraints may lower female tertiary enrollment in rural areas, the high completion or survival rate among females can offset this tendency.

Table 3: Percentage of Poor and Near Poor by Region

	1995/1996	1999/2000	2004/2005
Metropolitan	35.6	19.6	18
Lower Urban	33.5	27.7	27.2
Lower Rural	57.1	42	41.1
Upper Urban	44	28.9	28
Upper Rural	65.3	63.5	64.6
All Egypt	51.4	42.6	40.5

Source: World Bank, 2008-b

3. Access to Higher Education by Gender

As a nationwide average, female enrollment is higher than male enrollment at the basic education level. At the university level, female enrollments are 0.94% less than male. However the female university enrollment rate increased by 19.5% between 1995 /1996 -2004 /2005 compared to 16.9% for male enrollment, marking significant progress.

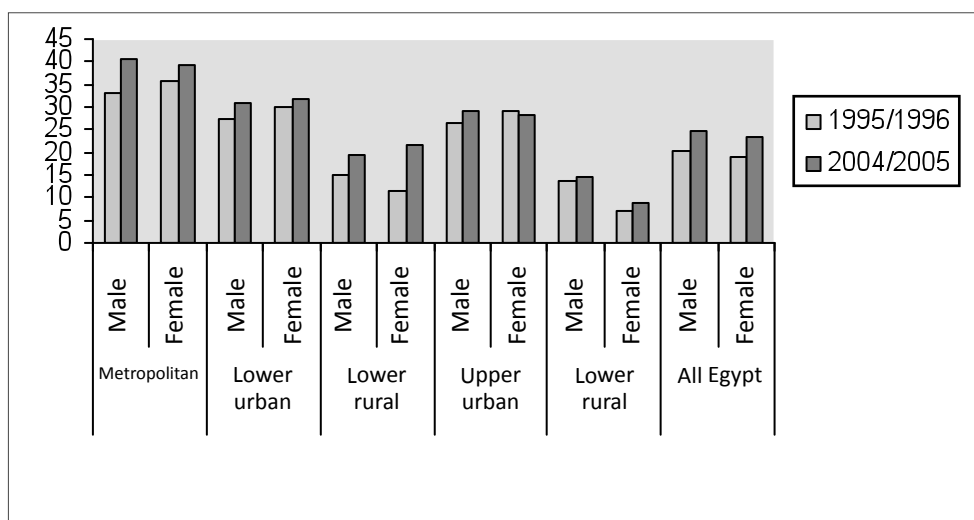
Table 4: Changes in Net Enrollment between 1995 /1996 and 2004 /2005 by Gender

	Basic Education		Secondary Education		University		
	1995/1996	2004/2005	1995/1996	2004/2005	1995/1996	2004/2005	% increase
Male	81.34	84.8	54.29	60.63	20.39	24.54	16.9
Female	75.16	89.79	52.10	57.22	19.01	23.62	19.5

Source: 1995 /1996 and 2004 /2005 HIECS

Female university enrollment rates have grown significantly in both urban and rural areas over the past decade. In rural regions, especially upper rural, female enrollment rates are still much lower than male. In all other regions female university enrollment rates are much closer to male enrollment rates. Also, since 1995 /1996 female enrollment has improved at much faster rate than males' across Egypt, meaning the gender gap has been narrowing over the past decade. In upper rural areas female and male university enrollment grew by 19% and 8% respectively while in lower rural areas enrollment grew by 48% and 23% respectively.

Figure 11: Net Enrollment Rate by Region and Gender 1995 /1996, 2004 /2005

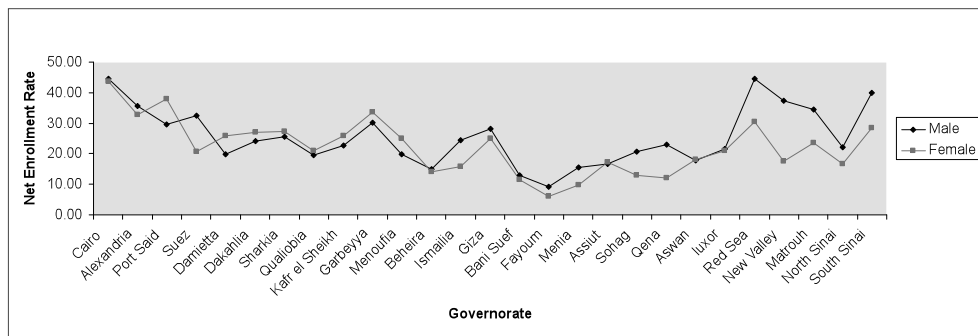


Source: Calculated from 1995 /1996 and 2004 /2005 HIECS



Across Egypt's governorates, female university enrollment is the same or higher than male enrollment in 14 out of 27 governorates. Female university enrollment is lowest in the rural governorates of Fayoum, Beni Suef and Menia, overlapping with the previous findings of generally low enrollment in these governorates. Low female enrollment in rural regions can be attributed to the higher poverty rates as well as cultural or social barriers. However, studies have shown that being poor is a bigger obstacle to female enrollment as girls from wealthy or non-poor families receive schooling regardless of region. The level of disparity, however, is greatest in the Red Sea and New Valley and Matrouh governorates.

Figure 12: Net University Enrollment Rate by Gender and Governorate, 2004 /2005



Source: 2004 /2005 HIECS

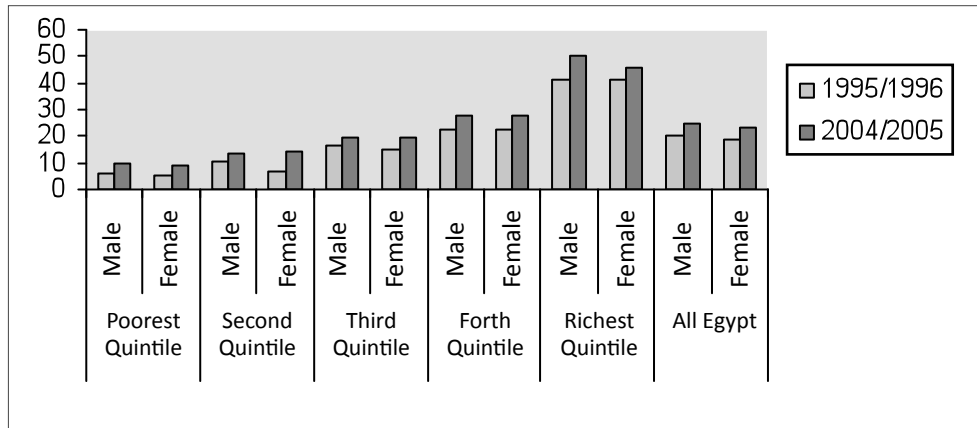
Among income quintiles, females have only slightly lower university enrollment rates in the poorest quintile. Interestingly, the largest disparity between male and female enrollment is in the richest quintile where male enrollment is 4.6% higher. This could be due to the fact that females at poor income levels, once past the basic education stage, tend to have lower drop out rates than boys (El Baradei, 2002). Males on the other hand, due to the high opportunity cost of secondary and higher education, often leave school to find work. Because males in higher income quintiles are not under as much pressure to find employment their enrollment rates continue to be high. Between 1995 /1996 and 2004 /2005 female university enrollment rates grew at a faster rate than male for the second, third and fourth income quintiles. The opposite was true at the poorest and richest quintiles where male and female enrollment grew at 40% and 38.8% respectively and 18.3% and 10% respectively. In general, access to higher education is becoming much more equal for males and females with some slight exceptions. This marks a drastic improvement from past levels of gender inequality and indicates increasing interest in higher education on the part of females.

Key findings of this section include:

- Access to higher education is highly unequal among income groups. Tertiary enrollment is 47.95 at the richest income quintile and only 9.07% at the poorest. Most importantly, this inequality has also grown in the period between 1995 /1996 and 2004 /2005.
- Enrollment in higher education is unequal among regions. Metropolitan and urban regions continue to have higher tertiary enrollment than rural regions. Upper rural areas have the lowest tertiary enrollment rates (29% lower than metropolitan enrollment rates) indicating a correlation between regional enrollment patterns and the level of poverty and development. This inequality has, however, decreased in the period between 1995 /1996 and 2004 /2005.



Figure 13: Net Enrollment Rate by Gender and Income Quintiles 1995 /1996, 2004 /2005



Source: Calculated from 1995 /1996 and 2004 /2005 HIECS

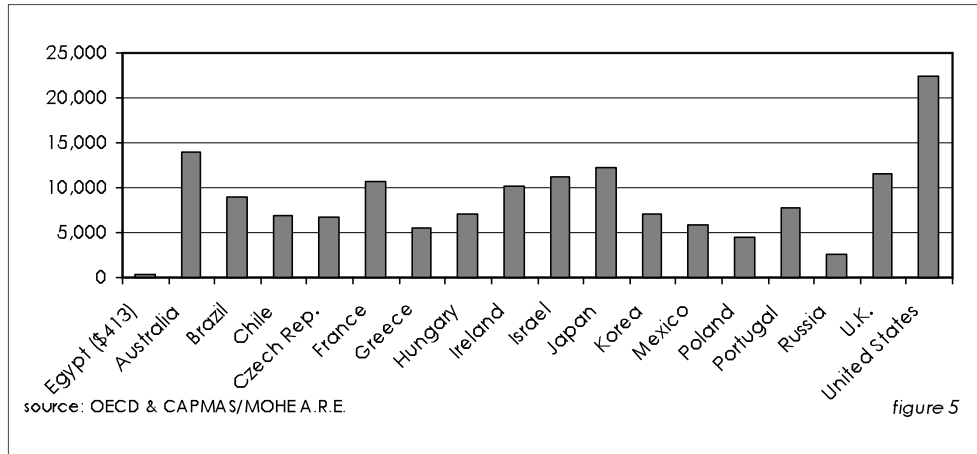
- Female tertiary enrollment rates have improved across most income quintiles and all regions since 1995 /1996. The largest disparity exists at the richest income quintile and in rural regions. Upper rural regions in particular have the highest disparity between male and female tertiary enrollment.

VI. Reasons for Inequality in Higher Education Access in Egypt

It can be concluded that although Egypt's tertiary enrollment has grown over the past years, so has inequality of access. The preceding analysis shows that students from poor families and/or rural regions are disadvantaged by Egypt's higher education system. There are several reasons for the unequal access to higher education among income groups and regions, a number of which are briefly explored below.

The principal reason behind the exclusion of low income groups from higher education is the generally poor quality across all levels of education. Since the decision to expand the education system and make education free of charge, Egyptian schools and universities have been overwhelmed. Public spending on education in the 1970's and 1980's was very low. As a result not enough schools and universities were built and the entire system witnessed significant deterioration both in terms of infrastructure and teaching quality. The government is still struggling to reverse the damage done in earlier years. The poor quality affects both the internal and external efficiency of higher education institutions. One indicator of internal efficiency is the extremely high students to faculty ratio. The average ratio across 24 fields of study is 77.25:1 (Abdel Hameed 2007). While medical faculties have the lowest ratio of 8:1, faculties of law have an alarming ratio of 321:1. Per student expenditure is another widely used proxy indicator of internal quality. Egypt spends an average of US\$ 413 per student which is excessively low especially when compared to OECD countries which spend over US\$ 10,000 per student (Lewis 2008).

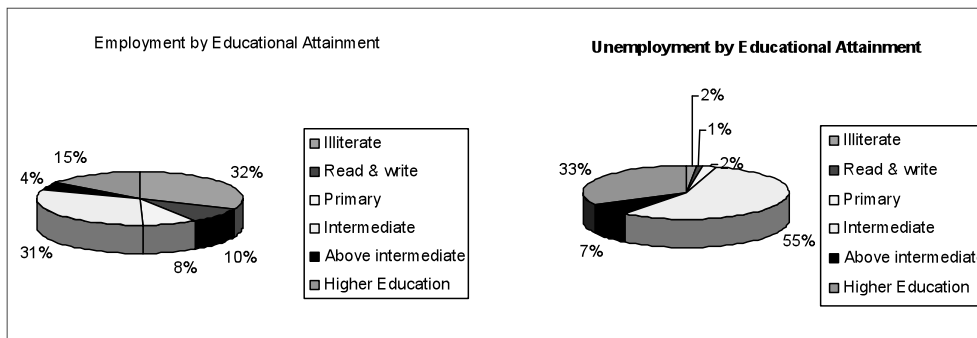
Figure 14: University education: Expenditure per Student (2004 constant prices, \$USD)



Source: Lewis, 2008

The external efficiency of the higher education system is reflected in a significant mismatch between education outcomes and labor market needs. As shown below, higher education graduates constitute 33% of Egypt's unemployed compared to just 15% of the employed workforce.

Figure 15: Employment and Unemployment in Egypt by Educational Attainment, 2007

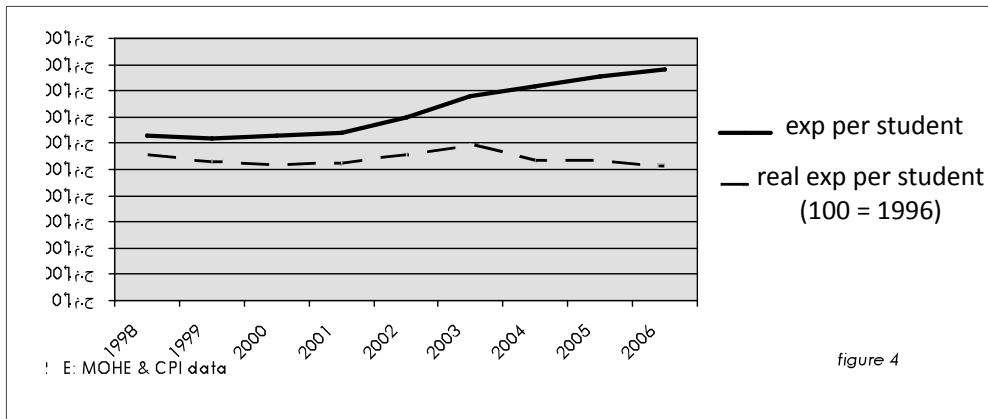


Source: Egyptian Labor Market Panel Survey 2008

While the unequal access can be attributed to poor quality at all levels of education, the declining quality of higher education poses a particular threat for the nation's competitiveness. In the Global Competitiveness Index Egypt's rank in terms of quality of the educational system under the Higher Education and Training pillar got progressively worse over the last three years. Egypt ranked 106 out of 128 in 2007, 119 out of 131 in 2008 and finally 125 out of 134 in 2009. The deterioration of quality was caused by a) decreasing levels of real government expenditure per student and b) a misallocation of public spending on higher education.

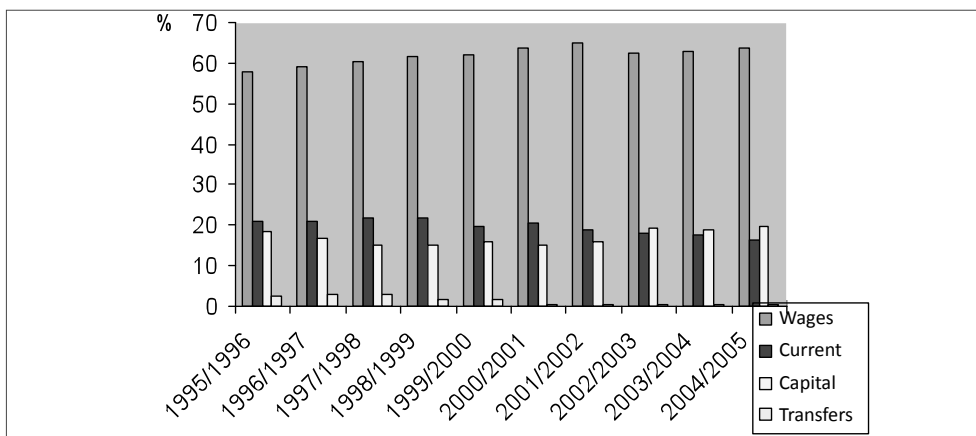
The higher education system suffered from shortages of financial resources well before the 1990's when public spending on higher education increased significantly. It is important to note that the deterioration that took place in the 1980's continues to affect the quality of the system today. Also, despite the fact that between 1998 and 2006, the gross budget for higher education in Egypt increased by 24% in real terms, real expenditure per student fell by almost 8%.

Figure 16: Gross v. Real Government Expenditure per Student



The Misallocation of resources is another reason for the poor quality of higher education in Egypt. Firstly, there is a strong bias toward current expenditures and in particular wages and salaries. The misallocation peaked in 2001 /2001 when wages and salaries received 64.92% of public spending on higher education, other current expenditures received 18.83% and investment or capital expenditures received just 15.82%. In 2004 /2005 wages and salaries constituted 63.6% of public spending, other current expenditures received 16.25% while 19.61% went toward investment or capital expenditures. Between 1995 /1996 and 2004 /2005 wages and salaries increased by 8.8% compared to a 5.9% increase in investment expenditures.

Figure 17: Allocation of Public Expenditure on Higher Education, 1995 /1996 -2004 /2005



Source: Abdel Hameed, 2007

Second, in Egypt the lion's share of wages and salaries goes to non-academic staff. In 2006/2007 the ratio between academic and non-academic staff was 1:1.07 an improvement on past years, but still quite high. The result is that professors in Egypt are highly underpaid and unmotivated which jeopardizes the quality of instruction (World Bank, 2007). The lack of investment spending has also led to inadequate teaching facilities including assets, maintenance and infrastructure. This is particularly problematic in science, engineering and medical faculties where high-tech laboratory equipment is essential to a high-quality education.

Third, government educational expenditure is not only unequal across educational stages but also between universities. It was previously shown that rural regions, particularly in the south, have the lowest tertiary enrollment rates. Besides being poor, one possible factor for the low enrollment in these regions is the geographic distribution of resources and facilities. Cairo University enrolls 16% of university students yet receives 20.1% of the government university budget. Ain Shams and Alexandria Universities, also in metropolitan cities, receive 16.2% and 11% of the budget respectively. In contrast the rural universities of Tanta, Zagazig, and Helwan all received a smaller percent of the government budget than the percent of students they enrolled. The more limited funding for universities in rural regions could mean lower quality, higher non-tuition costs and a generally lower private rate of return for the poor (El Baradei, 2007).

The poor quality of the education system is reflected in the rising household expenditure on education, low private returns to education and the increased demand for humanities. Each of these is explored in more detail below.

1. Rising Household Expenditure on Education

Despite education being free of charge household expenditure on education has increased since the 1980's. The growing expenditure on education is caused by increases in school fees and private tutoring as well as other education related expenditures such as textbooks, uniforms and school supplies. Fees and tutoring expenditures in particular have grown consistently in real terms and as a proportion of household expenditure.

According to 2004 /2005 HIECS data, the average Egyptian household spends 8% of total household expenditure on education. This figure varies greatly according to income quintile. The richest quintile spends approximately seven times more than the poorest quintile on education. As a share of household expenditure the poorest and richest quintiles spend about 4.8% and 11.8% on education respectively. Over the past decade household educational costs have doubled. In 1995 /1996 the average household spent 498.4 LE on education in comparison to 1051 LE in 2004 /2005. The growing costs of education can be prohibitive for many poor Egyptian families. As a result, it is common among the poorest income quintile to pursue only basic schooling. This is one very early cause for the unequal access to higher education.

Private tutoring is a particularly notable obstacle - especially at the preparatory and secondary stages where tutoring costs peak across all income quintiles. There exists a large variation in the amount of spending on tutoring among the richest and poorest income quintiles. According to El Laithy (2006) "the richest quintile spends about six times as much as the poorest quintiles on private tutoring, yet private tutoring represents 19% of education expenditure of the richest quintile, compared to 24% of the poorest quintile." In addition, the poor spend a larger share of their income on books, transportation and fees while wealthier families spend a larger share on tutoring and private lessons. Because they have less private tutoring, children from low-income households are disadvantaged in terms of being accepted into secondary schools and university. A majority of students from low-income households do not achieve the minimum grades that

would qualify them for a general secondary degree due to the high tutoring costs at preparatory stages. They are instead funneled into government funded technical and vocational schools.

Table 5: Annual Average Private and Group Tutoring by Education Levels and Quintiles (L.E.), 2004 /2005

	Poorest Quintile	2 nd	3 rd	4 th	Richest Quintile	All Egypt
Primary	34.45	69.03	94.11	133.73	211.08	97.11
Preparatory	57.89	106.53	156.42	232.98	445.91	177.87
Secondary	74.71	174.98	268.02	425.33	1114.85	427.15
University	0.82	1.73	5.79	20.72	175.07	42.43
All levels	79.16	185.81	267.56	389.9	820.8	344.85

Source: El Laithy 2006

The Egyptian Ministry of Education launched the Technical and Vocational Education program to reduce enrollment pressures on secondary schools. Students who perform poorly on their preparatory exams (equivalent to American junior high or pre-secondary schooling) have since been funneled into vocational/technical tracks. Vocational education in Egypt is considered very inferior to general secondary and university degrees. It has been widely criticized for its irrelevant syllabi, inadequate teaching facilities and very low caliber of students (Abdel-latif, et al. 2006). In Egypt about 60% of secondary students pursue vocational degrees. This is very high in comparison to other MENA countries. Research confirms that most vocational track students are from low income households and that poorer governorates have a larger percent of vocational students than wealthier regions (ETF 2005). In fact, poor students constitute 55% of enrollment in technical schools, compared to 37% in general secondary schools (El Baradei 2001). Many of these students are also female.

Once on the vocational track very few students meet minimum university admission requirements. However some do enroll at higher technical institutes in lieu of college. One reason for the general failure of vocation and technical education is inadequate funding. Vocational school costs 10 to 15% more than general secondary school but receives the same amount of government spending (El Baradei, 2003). The result is that there is not enough money to upgrade equipment, provide teacher training and update the curriculum to reflect new developments in the respective fields. Finally, tutoring costs are also problematic at the secondary level which determines university access. For those who gain admission into general secondary schools, doing well on the final 'thanawiya amma' exam (needed to earn a secondary degree) is once again a matter of being able to pay for private tutoring. Although the system is in theory merit-based, poor families, unable to afford good quality private tutoring are greatly disadvantaged in terms of gaining university admission. As a result, access to general secondary education and university education has become dependent upon academic achievement as well as family income.

2. Household Higher Education Expenditures

The household costs of higher education, despite higher education being free, have grown even more than primary and secondary education. Between 1995 and 2000, expenditure on higher education grew by 38.9%. Most of this increase has to do with the growing need for private

tutoring and supplementary classes at the tertiary level. It is likely that expenditure will continue to rise as educational quality deteriorates.

**Table 6: Change in Household Spending on Higher Education
1995 /1996 – 1999 /2000**

Year	Higher Education Spending
1995/1996/ (current LE)	246.9
1999/1996/1995) 2000/ constant LE)	343
Percent change	38.90%

Source: World Bank, 2002-b

Not everyone can afford the costly supplementary classes demanded by the Egyptian higher education system. In fact, the level of private spending on higher education increases, in both absolute and relative terms, at higher income quintiles. In 2004 /2005 the richest quintile spent 75% of household education expenditure on higher education compared to just 1.8% at the poorest quintile. The richest quintile also spent about 200 times more on tutoring costs alone (see Table 7). These high and rising indirect costs of education are a major obstacle for most low income households leading to skewed tertiary enrollment rates.

**Table 7: Distribution of Household Spending on Higher Education
by Income Quintiles 2004 /2005**

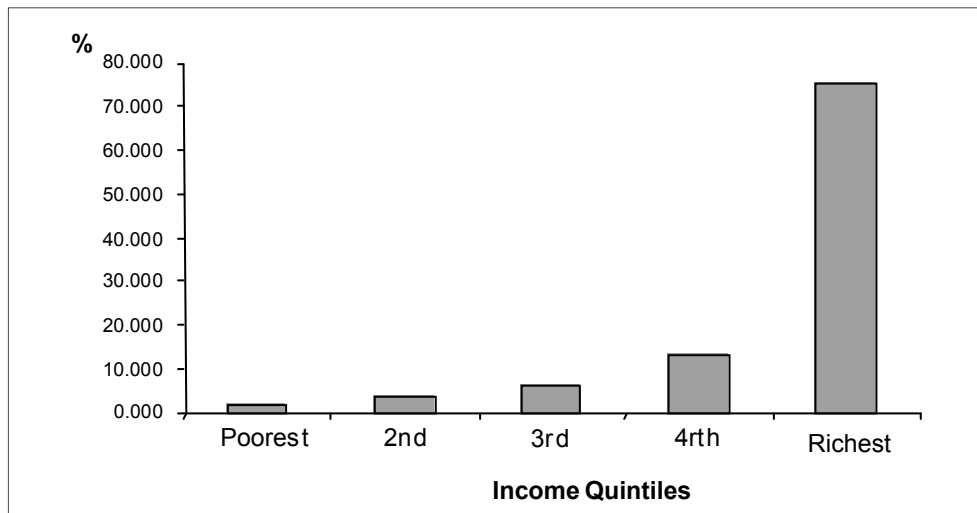
Income quintiles	% of total spending on higher education
Poorest	1.788
2 nd	3.621
3 rd	6.268
4 th	13.244
Richest	75.079

Source: Calculated from 2004 /2005 HIECS

3. Low Private Rates of Return to Higher Education

Because of both the poor quality and rising costs of education, private rates of return continue to be very low. In 1999 /2000 the average rate of return for basic, secondary and university education were -3.39%, 0.67% and 7.1% respectively. Although the return rates increased between 1995 and 2000 to -.11%, 2% and 8% respectively, this is still very low in comparison to other countries especially for university education where the rate of return is usually between 10 -12% and can reach 30 or 40% (El Baradei, 2003).

Figure 18: Distribution of Total Household Spending on Higher Education by Income Quintiles 2004 /2005



Source: Table 7

Table 8: Private Rate of Return to Education in Egypt 1995 -2000

	1995 /1996	1999 /2000
Basic Education	-3.39	-0.11
Secondary	-0.67	2
University and Above	7.1	8

Source: El Baradei 2003 p. 9

The low rates of return are caused by poor educational quality as well as rising educational costs. Opportunity cost is an important part of these costs. In Egypt the opportunity cost of learning is too high for many young adults that work to contribute to household income. Average forgone earnings for university students reached 11780.97 LE in 2000 (El Baradei, 2003).

Table 9: Forgone Earnings by Level of Education (LE), 1995 /1996 and 1999 /2000

	1995/1996	1999/2000	% Increase
Basic (illiterate)	10497.4	8672	(-18)
Basic	9245.8	10894.7	17.8
Secondary	5871.8	6882.5	17.2
University	8974.7	11781	31.1

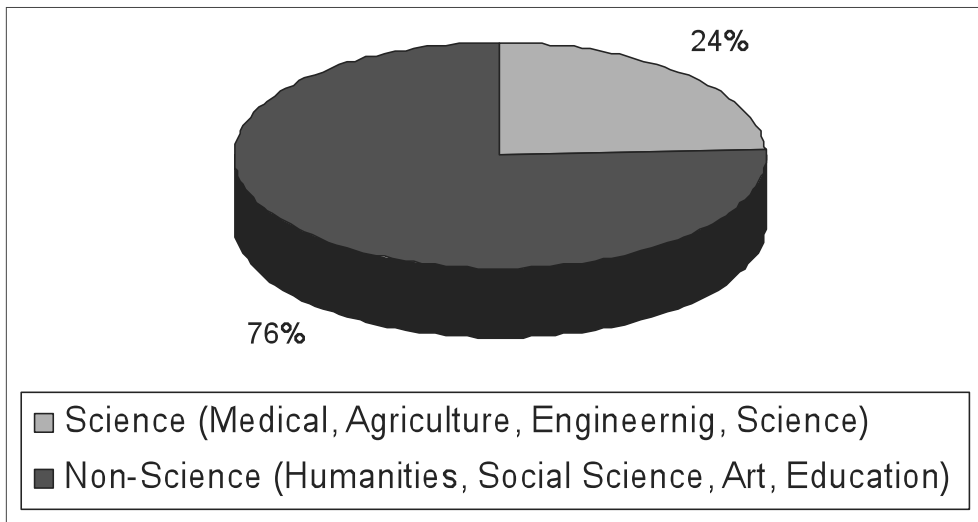
Source: El Baradei, 2003 p. 22

Even after graduation, the prevalent misalignment between labor market needs and educational outcomes means finding employment can be yet another obstacle. This is supported by the fact that 90% of the unemployed population falls under the category of first time job seekers and according to the 2004 Household Income, Expenditure and Consumption Survey (HIECS) unemployed youth account for 70% of total unemployment. According to one study, university education had a private rate of return exceeding 10% in 1988 before dropping significantly in 1998. In 2006 the rate of return was about 8.5% (Said, 2007).

4. Increasing Demand for the Humanities versus Science

A final notable outcome of the poor quality higher education in Egypt is a large deficiency in the number of science and engineering fields. These disciplines often take longer to complete - for example five years for an engineering or pharmaceutical degree and seven years for a medical degree. There are greater education costs associated with books, materials, and private tutoring. In addition the “thanawiya amma” scores needed to gain admission into science and engineering schools are very high – most students who achieve these scores rely on costly private tutoring at the secondary level. The result is that a minority of students - only 24% - graduate from these fields which are especially important for technological upgrading and innovative capacity.

Figure 19: Tertiary Students Enrolled in Science vs. Non-Science Fields



Source: Abdel Hameed 2007

VII. Competitiveness of the Egyptian Higher Education System

The Global Competitiveness Report defines competitiveness as “that collection of factors, policies and institutions which determine the level of productivity of a country and that, therefore, determine the level of prosperity” (WEF, 2008). The report’s Global Competitiveness Index, developed in 2004 by Professor Xavier Sala-i-Martin, seeks to aggregate the variables

influencing national productivity in order to create a metric with which to assess and compare the performance of countries. It combines both micro and macroeconomic factors into what is known as the 12 pillars of competitiveness³. Each pillar encompasses a number of sub-variables (a total of 113) and is weighted according to the country's level of development.

In the 2008 /2009 Global Competitiveness Report Egypt ranked 81 out of 134 countries in terms of its international competitiveness. This represents a significant decline since 2006 /2007 when Egypt ranked 65th out of 128 and 2007 /2008 when it was 77th out of 131. Egypt had varied performance across each of the twelve pillars that make up the Global Competitiveness Index. The main reasons for the decline are Egypt's poor performance in the labor market efficiency, macroeconomic stability and higher education and training pillars where Egypt ranked 134, 125 and 91 out of 134 countries respectively. Higher education and training also experienced the largest deterioration in rank falling 11 positions from last year.

The report highlighted weak human resources as a major obstacle to Egypt's competitiveness. In higher education and training Egypt ranked 91 out of 134 countries, just below countries like Morocco, Peru and Kenya. Specifically, the country placed 125th in terms of the quality of the educational system and 92 for tertiary enrollment. Egypt's performance along this pillar has progressively gotten worse since 2005 /2006 when it ranked 62 out of 117 countries. Also notable is the rapid deterioration in the quality of math and science education which is measured independently by the index. This variable fell by 10 positions each year and reaching 116 out of 134 countries in 2008 /2009.

Table 10: Competitiveness and Higher Education and Training Rankings 2006 -2009

	2006/7 Out of 128	2007/8 Out of 131	2008/9 Out of 134
Overall competitiveness	65	77	81
Higher Education and Training (Total)	77	80	91
Secondary enrollment	61	65	97
Tertiary enrollment	57	59	92
Quality of the educational system	106	119	125
Quality of math and science education	96	106	116
Quality of management schools	89	100	109
Internet access in schools	NA	82	111
Local availability of research and training services	80	83	110
Extent of staff training	84	81	120

Source: Global Competitiveness Reports 2006 /2007, 2007 /2008 and 2008 /2009

³ The 12 pillars are: Institutions, Infrastructure, Macro economy, Health and Primary Education, Higher education and training, Market Efficiency, Technological Readiness, Labor Market Efficiency, Financial Market Efficiency, Market size, Innovation and Business Sophistication.

The low competitiveness of the Egyptian higher education system is caused by the pervasive problems of poor quality and higher levels of inequality. Rising private tutoring and educational expenditure, large class sizes and high student-teacher ratios, all symptoms of the poor quality, are creating a vicious cycle of low rates of return – especially for the poor. Moreover, the labor market is now saturated with educated but unskilled labor that is overqualified for manual blue-collar jobs and insufficiently qualified for salaried professional jobs. The resultant mismatch between the higher education system and the labor market and diminished earnings are detrimental to the competitiveness of the education system and the nation as a whole.

1. The Effect of Unequal Higher Education Access on National Competitiveness

Egypt's generally low competitiveness scores and inadequate levels of human capital may have a lot to do with the unequal access to higher education and the resultant unequal distribution of skills. This section discusses the mechanisms through which inequality in higher education enrollment and national competitiveness might interact.

An obvious ramification of Egypt's unequal distribution of tertiary education is the reinforcement of existing social inequalities. The nation's poor cannot afford to invest in their own or their children's human capital due to a credit constraint – a situation where anticipated future earnings or human capital cannot be used as collateral for student loans. The result is diminished social mobility and an intergenerational cycle of poverty, unequal capital accumulation and income inequality. Without government intervention, the state of the poor will only get worse. As international and local labor markets demand more highly skilled labor, better incomes will be even more dependent on higher education and, as the costs of higher education grow, even fewer will be able to afford it.

The correlation between unequal distribution of skills and income inequality is by no means unique to Egypt. Trickle down approaches to human capital accumulation have also failed in other parts of the world, especially in Latin America (Birdsall and Londono, 1997). As such, even with continued GDP growth, if access to higher education does not become more equal Egypt can expect persistently higher poverty rates and little improvements in living standards for the poorest quintile.

Several hypotheses exist about the relationship between inequality and economic performance. Classical economists have popularized the view that equality may be an important social goal but can be compromised at the early stages of development in order to allow for more rapid capital accumulation. There exists, they argue, an initial trade off between equality and efficiency which evens out over time as efficiency gains trickle down (demonstrated by the well known Kuznets curve). This perspective encountered extensive criticism. Classical economic theories are now being challenged by empirical findings illustrating the negative impact that inequality can have on productivity growth (Lloyd-Ellis, 2003). While in the short term an equity-efficiency tradeoff may exist, equality is an important way of ensuring that economic gains are not concentrated in certain sectors and dependant upon the productivity of a small segment of society with little or no reduction in poverty. This is critical for national competitiveness which is not about short term growth, but long-term improvements in living standards.

Thus unequal access to higher education can reinforce, or worsen, a skewed distribution of income (and productivity) which is in turn correlated to slower rates of growth and lower competitiveness. Recently, a supplementary body of literature has emerged testing the direct

relationship between unequal educational attainment and growth (Galor and Zeira, 1993). Using data from 108 countries over five year intervals from 1960 to 2000, Castello and Domenech (2001) found that human capital inequality had a statistically significant negative effect on growth mainly by lowering the average investment rate. The findings further support the argument that income inequality and unequal access to higher education, whichever comes first, can harm national competitiveness by causing slower and less even economic growth.

2. Distribution of Skills, Innovation and Productivity

Greater equality in skill distribution can generate long-term dynamic externalities that have a positive effect on growth and productivity rates. Conversely, unequal access to higher education can have a negative impact on competitiveness by limiting these externalities. First of all, the exclusion of large segments of society from tertiary education greatly reduces the overall availability of skilled labor. Only a small segment of society has the opportunity to build the human capital necessary for a competitive economy and, with the exception of a limited number of well-educated elite, the workforce will remain far below its productive potential. On the other hand, in countries like South Korea, Israel and Taiwan having a large and relatively well distributed human capital base has been a key factor behind their impressive competitiveness rankings (WEF, 2008 /2009). In Egypt, on the other hand, unequal access to higher education is creating a very limited pool of skilled labor. This problem is further exasperated by the presence of technical institutes. Created to reduce enrollment pressure on Egyptian universities, these institutes offer low quality instruction and have little credibility in the labor market. In addition to deflecting students away from college education, the poor quality of education provided at these institutes generates unskilled graduates with negative rates of return.

The distribution of skills in an economy can also have a significant effect on the rate and type of innovation that takes place (Romer, 1990). Because R&D, the returns to R&D investments depend on the size of the workforce able to use the new technology. If not enough skilled labor is available fewer investments in innovative capacity will be made. In other words, an insufficiently skilled workforce will hinder the introduction and dissemination of new technologies to the detriment of long term productivity growth (Lloyd-Ellis, 2000).

Another dynamic explored by Lloyd-Ellis (1999) is the rise in wage inequality associated with an unequal distribution of skills. It was observed that as new technologies are introduced into an economy, wages of those with the most skills will rise dramatically, particularly if they are in short supply. This rise in skilled labor wages in turn drives up the relative costs of R&D. The result is a decline in R&D investments and innovation growth rates. Although limited empirical evidence exists to support this argument, it presents a useful example of the types of dynamic externalities that more equal access to higher education can have.

VIII. Conclusion

Despite growing tertiary enrollment in Egypt and universities being free of charge, access to higher education is highly unequal among income groups and regions. This inequality has also been increasing over the past decade. Gender inequality, however, has fallen significantly.

The current distribution of skills in the Egyptian economy perpetuates existing income and wealth inequalities and can damage national competitiveness. With the government effectively subsidizing a small group of highly skilled elite, the productive potential of the rest of the population remains largely untapped. As a result, smart and talented youth often cannot afford

the costs of higher education. They have no access to credit or scholarships since the education system is already “free,” and creates a workforce that is largely composed of low-wage unskilled labor. In addition to this inefficient distribution of resources, the lack of highly skilled graduates, especially in the sciences, means the country loses out on dynamic externalities related to innovation and technology adoption. The short supply of qualified workers will reduce the incentive to invest in new technologies. The shortage may also drive up wages that will in turn raise the costs of R&D in Egypt.

The government of Egypt must work to widen access to higher education instead of just focusing on increased enrolments. This requires universities to diversify their sources of funding. A suitable combination of both private and public resources is needed to cover the costs of increased enrollment rates while simultaneously reducing inequality. A number of options exist. Intellectual property and patents, endowments, philanthropic fundraising, rent on property, consulting services and, most notably, fees and tuition are all examples of non-governmental sources of funding that universities world-wide are turning to. In particular, the gradual introduction of tuition will ensure that those receiving the benefits of higher education – prestige and higher incomes - are the ones paying for it. A standard tuition fee will also reduce the perverse incentives created by the system of private tutoring.

With more alternative sources of funding, government expenditure can be redirected toward merit-based or means-tested grants, scholarships, student loans and financial aid schemes, which will improve the chances for students from low-income households to receive a high-quality tertiary education. A greater share of public budgets can be used for capital investments and upgrading the quality of instruction at Egyptian universities.

In sum, reforming higher education in Egypt and making access more equitable is an important goal for long-term national competitiveness. The problem of unequal access to higher education can no longer be seen as separate from national competitiveness and economic welfare.

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