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A Critical Analysis of Higher Education Sector in Libya: A Socio-Economic Analysis

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ABSTRACT

This paper attempts to analytically high-light, measure and evaluate some of the imbalances between output and outcome of the state-run education sector in Libya under the previous regime. Since the early 1970s, one of the regime's most commonly means of propaganda was to claim for their high regard and massive spending on primary to higher education across Libya. Indeed, the UN statistics do support this view indicating that over the period 1970-2010 nearly 7-10 percent per annum of Libya's GDP was allocated to and spent on education programmes. Although these figures on education spending and outputs place Libya amongst the top countries of the world, the reality (outcome) has been somewhat different. Since the end of the old regime, it has been reported that teaching innovation is and has been almost absent, even at the higher education level. In an attempt to measure the extent of poor outcome of education in Libya, the study has conducted a survey of up to 200 university and college teachers/instructors/lecturers in five Libyan institutions using a simple questionnaire. Most of these educators hold postgraduate degrees – majority from Libyan Universities - and have been involved in teaching in Libyan higher education sector for more than 5 years. Our findings show that nearly 80% of all these educators declared that they had made no attempt at producing new lecture notes or think of developing any new teaching method. Using a hill-climbing logistic model, the research shows that low wages and job dissatisfaction have been the two major determinants of such poor delivery. These findings tend to be in line with the recent study by Saad (2012) which indicates that lack of innovative teaching has been regarded by nearly 82% of all university students (based on a sample of 600 students in three large universities) as the most important factor in student dissatisfaction and poor performance across board. The policy implications arising from this study are two-folds and should be considered by the new regime seriously: (1) the education system should be based on merits and not on relationships and contacts; (2) education policy must be based on quality enhancement and regular monitoring of teachers/lecturers teaching approaches and students' satisfaction criteria, and nothing else.

1. Introduction

For over forty years, the previous regime of Muammar Gaddafi had claimed that it had placed education and health on the top of the nation's list of priorities. Since the early 1970s, education in Libya has been free to everyone from elementary school up to university level, at home or abroad. Schools were deliberately spread out throughout the country, with the policy of education reaching out even to nomadic hard-to-reach areas. Undoubtedly, as supported by the World Bank statistics, the literacy rate of 40% back in 1970, has now reached a staggering rate of 89% and this is significantly higher than that of the average MENA of around 77%[1].

Furthermore, according to the UN statistics, over the period 1970-2000 nearly 7-10 percent per annum of Libya's GDP was allocated to and spent on different education and training programmes. Moreover, on the basis of the estimated measure of welfare, usually referred to as the "human development index" – HDI consisting of a weighted average of life expectancy, adult literacy, and GDP per capita - Libya scores 0.8 out of 1.0, slightly higher than that of the average MENA of 0.75, placing it among the top 50 nations in the world[2].

However, since the opening up of Libya back in the early 2002 and the subsequent fall of the old regime in 2011, the validity and quality of such educational claims have been seriously doubted. Since then, due to availability of more channels of information and general transparency, a large number of schools and colleges have been identified as having delivered extremely poor quality of teaching and management of their resources.

Following a thorough investigation[3], it has recently been reported that between the two poles of primary school and postgraduate education, the system is "corroded by corruption, lack of

[1] World Bank (2012)
[2] *Op Cit.*
[3] Linvill (2013)

teachers' motivation and poor management"[4]. This issue was also highlighted in Porter (2006) report on Libyan economy, stating that education policy "has failed to provide a job ready workforce, since the education system is disconnected from market demand". It is further argued that education policy decisions have "negatively affected education in important areas for business such as IT and foreign languages"[5].

Teaching innovation and pedagogical development has been almost absent, even at the higher education level. This problem has been severely worsened since the early-1980s when the then regime ordered schools to stop teaching foreign languages, hence denying the nation of any progressive methods of teaching adopted by the Westerners[6]. Moreover, such policy had a detrimental effect on development and publication of academic research across board. In short, closeness to the regime rather than merits has been the main criterion for job security and promotion in public sector; and that had led to general demise of incentives and innovative efforts by teaching staff across the country.

In the light of these controversies, this paper attempts to analytically highlight, estimate and evaluate some of the imbalances between output and outcome of the state-run higher education sector in Libya under the previous regime. In so doing, the research has used a survey questionnaire of up to 200 lecturers/teachers/instructors and has applied a hill-climbing logit model to measure the causes and the extent of the poor quality in Libyan education system[7].

The paper is structured in four parts. Part 2 addresses some of the main issues relating to Libyan education system, highlighting, in particular, aspects of budget allocation and productivity. In part 3 we present the survey data, econometric model and analysis of

[4] Pinto (2012)
[5] Porter (2006: 72).
[6] Suwaed (2011: 23)
[7] We are very much indebted to Ibrahim Saad for letting us have access to part of his survey.

findings. Finally, part 4 offers the final discussions and policy implications of the study.

2. Libyan Education System: Success or Failure

Of the total population of approximately 6 million in Libya, nearly 1.7 million are students. The latest figures suggest that of the total number of students, around 16% study at tertiary level, including those in the higher technical and vocational sector. The number of such students has been growing at a phenomenal rate of 2.5% per annum since 1975.[8]

Pre-university schooling is divided into three sections of primary, preparatory and secondary; for which the first nine years of education are compulsory and are known as basic education. The primary school is for six years, followed by the two-three year cycles of secondary school. Thus, the basic education consists of 6 years of primary and 3 years of secondary schooling. The basic level then allows students who drop out before completing the full nine years of the opportunity to enrol in vocational programmes of one to three years in length. Intermediate vocational training centres train students for various skills-based professions. Vocational schools offer programmes for 44 different vocations in seven major fields[9].

Higher education in Libya is provided by universities (both general and specialised) and higher technical and vocational institutions. The higher education system is financed by, and under the authority of, the state. Policymakers have in recent years allowed the establishment of private institutions of higher education through what are known as educational cooperation. Since the late 1990s, there has also been considerable research into the possibility of developing partnerships between the public and private sectors to finance higher education, which resulted in the establishment of more than five private university colleges and higher education institutes by the early 2000s. Education is free up to end of Bachelor's Degree, but

[8] Eljarh (2012).
[9] British Council (2013)

post-graduate studies are up to 75% subsidised. Supply of free or subsidised higher education has led to massive rise in number of students in both universities and higher technical colleges. Between 2000 and 2010, the total number of higher education students rose from 256,000 to 330,000, representing an average increase of 3% per annum[10].

Examination of other quantitative indicators published by the World Bank are also indicative of the fact that Libya had performed slightly better than the average MENA in rates of progression from primary to secondary schooling, and pupils/teacher ratio[11].

Table 1 offers a summary of the contributions to health, housing and education through public service budgets, over 2002-2008. As these statistics suggest, in 2002, of the total GDP of 30 billion Libyan Dinars (€18 billion), a total sum of LYD 7.6 billion (25%) was allocated to all public service provisions; of which the share of education, being the smallest, is around 17% of total public spending, and just over 4% of GDP. By the end of 2008, however, when the real value of GDP was estimated at just over LYD 97 billion, the public services share of GDP dropped by 10 point percentage compared to that of 2002. The education spending, though increased in nominal term to LYD3.3 billion, it only represented 3.4% of GDP – a real 1 point percentage drop compared to 2002. Thus, the education sector in real term has experienced a significant decline in its budget despite the fact that GDP has trebled in 2008 compared with that of 2002. Similar picture is demonstrated in this table regarding housing and health sectors. On the whole, the relatively much higher decline in public spending may raise the issue that the regime may well have squandered the national wealth.

In relation to table 1, it can be said that over the same period, literally no or very little

[10] General Education Committee (2010).
[11] World Bank (2012)

privatisation in education took place, having raised the issue that how the government fabricated and massaged their data, claiming high spending and investment in education and other public services. On the whole, as reported by IMF (2008), throughout the period of 2000-08, the real fixed capital formation in education was substantially lower than one billion Libyan Dinars per annum, representing only around 1% of GDP, and that being significantly lower than the average MENA of 2.5%.

Table 1: Libya's Public service Provisions - 2002 and 2008 (Billion LYD)

	2002	(%GDP)	2008	(%GDP)
GDP	30.3		97.1	
Public Services	7.6	(25.2)	14.4	(14.8)
Housing	3.8	(12.6)	5.5	(5.6)
Health	2.3	(7.6)	5.6	(5.7)
Education	1.3	(4.3)	3.3	(3.4)

Sources: World Bank (2010); Central Bank of Libya (2010); IMF(2008)

In a market or a quasi-market environment, the budget allocation is justified by the productivity per employee in any given activity, be they public or private sectors. Naturally, it is anticipated, even in the most sophisticated market orientated public sectors, that productivity in the private sector to be higher than the public sector. However, the concept of productivity does not apply to the case of Libya, as housing, health, education and most manufacturing activities are and have been owned and controlled by the state. A better concept here to use is the budget per-head, assuming all public sector employees are of similar abilities and productivity.

Table 2 presents the latest (2008) data on total workforce in the economy and in different

activities of the public sector. Including the non-Libyan nationals, the total employees stand at 1.8 million, with nearly 1 million working in the public services (55% of total workforce). The largest employment is in the education department with nearly half million workers, sharing between them LYD 3.3 billion, making a per capita of only LYD 6,800 – nearly one-third of that of housing; one-quarter of the health sector and less than half of the overall public services employees.

Table 2: Workforce and Budget Allocation in Libya, 2008

	Workforce (000)	Allocation per capita (LYD)
Economy	1,490	54,200
Public Services	985	14,600
Housing	290	18,900
Health	210	26,700
Education	485	6,800

In short, the education sector has, for years, been offered significantly lower pay or allocated much smaller capital investment than the rest of the public services. Indeed, it must be borne in mind that such differences in budget per head, in part, may be due to differences in unit costs of the service provision. For example, provision of health care per unit is significantly higher than schooling. Although unit cost differences are critical, the extent of it bound not to be as high as shown in table 2. The findings in table 2 may be regarded as one of the reasons why the education sector in Libya has been lacking incentive, innovation and development.

3. Survey Data, Econometric Approach and Estimated Results

The data used in this study are derived from a survey questionnaire, distributed among teachers/instructors and lectures in five major universities in Libya, in June 2012. By the end

of September 2012, out of a total of 320 questionnaires distributed, 200 were received fully completed. For the purpose of efficiency and accuracy, a large number of questionnaires were distributed and collected online, through skype and email.

Prior to this survey, a pilot study of 40 teaching staff of two universities (Tripoli and Gharyan) was conducted in May 2012, aiming to identify the major quality problems with the higher education institutions. Following the findings from the pilot study, the final form of the questionnaire was developed. One of the main issues raised by most participants of the pilot study was that academic research appeared to be either absent or insignificant. However, a small number of staff stated that teaching (quantity and not necessarily quality) may be considered as a means of promotion and higher salary. Moreover, the findings from the pilot study reveals that 83% of participants regarded low wages and poor promotion scheme as the two most deterministic factors in their lack of motivation in teaching and cognitive learning development.

In the final survey, for the purpose of econometric application, the participants were asked to answer the following question, formulating our binary dependent variable:

Y: Have you recently considered to develop or to produce any new teaching methods or material for students?

In the final part of the questionnaire, the participants were asked if they could rate their perceptions about low wages and poor promotion schemes, based on the Likert scale (between 1 and 5, where 1 being highly dissatisfied, and 5 being highly satisfied). These two variables are therefore considered as our independent variables, as follows:

X: How satisfied are you with your current wages?

Z: How satisfied are you with the promotion scheme at work?

The summary descriptive statistics relating to these three variables are presented in table 3. Two main interesting points emerge from this table. First and foremost, according to this table, only 22.5 % of participants stated that they had recently offered to their students some form of innovative teaching. Secondly, as for the independent variables, with the means of below 2.0, participants have clearly stated their dissatisfaction with their academic system in so far as wages and promotion are concerned. These estimated means are, according to this table, surrounded by small standard errors indicating that they are statistically significant.

Table 3: Descriptive Statistics of the Questionnaire Variables

Variable	MEAN	MEDIAN	St. Err	CV%
Y	0.225	0.00	0.031	13.8
X	1.565	1.00	0.049	3.2
Z	1.935	2.00	0.054	2.8

Thus, in the light of our binary dependent variable, the appropriate estimation method is a hill-climbing logistic regression. In building our econometric model, we may argue that, as stated by the participants, wages and promotion scheme should be considered as factors causing poor teaching quality. In a simple means deviated form, the logistic model can be shown as[12]:

$$y_i = \alpha x_i + \beta z_i + \varepsilon_i \qquad \varepsilon_i \sim NID(0, k) \qquad (1)$$

[12] Among many, see : Cramer (1991).

In expression (1), α and β are the parameters attached to x and z, representing partial elasticities within the logistic regression[13]. The error term, ε, is normally and independently distributed with mean of zero and fixed (k) variance.

On the other hand, as received as feedback from the questionnaire, in small number of cases teaching is assumed to lead and has led to promotion in a few number of higher education institutions. This means that teaching can causally determine promotion, hence it can be shown that:

$$z_i = \gamma\, y_i + \upsilon_i \qquad \upsilon_i \sim \text{NID}\,(0, \lambda) \qquad (2)$$

where γ is the coefficient relating teaching to promotion; and υ_i is a normally independently distributed error term with zero mean and fixed (λ) variance.

Expressions (1) and (2), therefore, form a simultaneous equations system, leading to the following reduced form equation for the purpose of estimation[14]:

$$y_i = \theta\, X_i + \xi_i \qquad (3)$$

where $\theta = \{\alpha/(1-\beta\gamma)\}$ and $\xi_i = \{(\beta\upsilon + \varepsilon_i)/(1-\beta\gamma)\}$.

Recall that the ordinary least squares approach will be inappropriate here as it will lead to inconsistent and biased estimation of θ. However, the logistic regression model based on a non-linear maximum likelihood approach is capable of producing unbiased estimator and minimum sum squared residuals under this condition. Therefore, the final logistic model for estimation, through reduced form approach is expression (3), implying that wages would solely determine the changes in teaching quality enhancement.

[13] Taghavi (2010)
[14] Barreto and Howland (2010: Chap. 24)

On the other hand, one can estimate these two simultaneous equations using a two-stage method[15]. In the first stage, expression (2) is estimated using OLS leading to $\hat{z}$. In the second stage, $\hat{z}$ is incorporated in expression (1), and the model is estimated using logistic regression. In this case, the second stage expression is presented as:

$$y_i = \alpha\, x_i + \beta\, \hat{z}_i + \varepsilon_i \qquad (4)$$

For the purpose of comparison of the two approaches (the reduced form, and the two-stage), here we produce the estimated coefficients derived from the two approaches, presented in table 4. According to this table, both methods produce highly statistically significant estimators at the 1% level of significance. In the reduced form estimated equation, the estimated coefficient of wage (which incorporates the promotion within) has turned out to be just over 1.5, implying that, *ceteris paribus*, a one percent increase in wages could lead to 1.5% increase in teaching innovation. On the other hand, the two-stage approach has led to estimated value for wage as 1.146 and for promotion as 0.818, indicating that the cumulative effect of wage and promotion together is as much as 2.0%. This is to say that if wages and promotion both increase by 1%, the teaching innovation could increase by 2.0%. The two methods yield almost similar low probability of around 40-42 percentage for teaching to improve following changes in wages and promotion schemes.

Table 4: Estimated Models – Reduced Form and Two-Stage

Coefficient	Reduced Form	Two-Stage
Constant	- 3.8532	- 5.5533
	(.5488)	(.7742)
Wage	1.5143	1.1464
	(.2789)	(.3003)
Promotion	-------	0.8182
		(.2093)

[15] Foster (199

4. Discussion and Policy Implications

The claims by the previous regime over massive spending and investment in education may have been valid, but certainly not over the period under this study. Over the period 2002-08, on average, between 3 and 4 percent of GDP was allocated to education. Moreover, as shown earlier, per-capita spending in this sector was by far the lowest in the overall economy. Years of under-resourcing and poor management has now left the Libyan education sector in a dire position. Coupled with corruption and injustice, the overall quality of education provision is now seriously questioned.

The findings from our survey questionnaire have clearly shown that low wages and unfair promotional schemes have led to lack of incentive and severe decline in innovative teaching and research. In particular, in our sample of 200 teachers/instructors and lecturers in higher education institutions, over three-quarters stated that they had produced no new teaching material; and nor have they attempted any enhancement in their teaching delivery. These findings are compatible with those of Saad (2012) which reports that lack of innovative

teaching has been regarded by over 80% of all university students (based on a survey questionnaire of 600 students in three large Libyan universities) as the major source of their dissatisfaction and poor performance across board.

Our estimated elasticities using a logistic regression model are indicative of the fact that, other things equal, teaching quality and innovation is found to be sensitive to wages and promotional schemes. On the whole, it was found that a 1% increase in wages and promotion enhancement could lead to nearly 2% increase in teaching innovation. These estimated findings are shown to be highly statistically significant and can, therefore, be used as reliable tools of analysis for policy-makers.

Libya was run as a closed economy for well over 40 years until November 2011. Those years of isolation led to severe decline in provision of quality in all aspects of the economy; and education was indeed of no exception. Quality education, like any other commodity, whether offered by the state or the private sector, cannot be maintained unless factors of production – here being teachers/lecturers and capital – are directly and fairly rewarded. Particularly since the early 1980s, under payment, widespread corruption, and banning of teaching of foreign languages from schools had led to serious lack of incentives, hence decline in quality of education delivery.

As for policy implications arising from this research, two main issues are worth noting here. First, low public pay is a main source of bribery, poor service quality and corruption. Particularly, in the light of gradual rising of prices of basic commodities since the uprising of 2011, it is vitally important for the policy-makers to review and to index wages in accordance with projected inflation rates. Introduction of efficient and fair monetary reward system is

one of the fundamental bases for improved productivity and hence enhanced quality teaching. It should be borne in mind that decisions on building new schools or colleges in different corners of this massive country is justified, if and only if adequate facilities and quality human resources are made available.

Second, policy-makers must make every effort in introducing an effective, transparent and workable national promotion mechanism for appreciation of quality service in teaching and research. To ensure that corruption has no place in this new system, constant supervisory quality enhancement procedures, preferably conducted by independent watchdogs supported and monitored by the end consumers, must be implemented and supported. One way of achieving this objective may be found by making closer collaboration with institutions in other countries to achieve excellent quality assurance systems and accreditation of educational programmes.

In short, education policy must be based on quality enhancement and regular monitoring of teachers/lecturers teaching approaches and students' satisfaction criteria, and nothing else. This way, the existing massive gap between output and outcome in education is anticipated to be reduced in the medium term.

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