



The Impact of Public Expenditure on the Quantity and Quality of Education in Kuwait

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Abstract:

This study investigates the relationship between education spending and educational performance. It examines the impact of education spending on the quantity and quality of education in Kuwait. The yearly data sample covers the period between 1979 and 2014. The paper tests whether higher government spending on education in Kuwait can lead to improved educational performance over the long term. The estimated model is tested using the Johansen cointegration technique to determine the long-term relationship. The findings show that increasing Kuwaiti government spending on education does not improve the quality of education but instead leads only to an increase in its quantity.

1. Introduction

Education is a well-intentioned investment by governments, as it results in great improvements to social and economic welfare. Improving the quality of education has become a controversial issue among researchers. Specifically, they investigate whether increased government spending on education leads to an improvement in the quality of education. It is plausible that the primary obstacle to improving public education is the absence of funding. Improvement in the quality of education is achieved through better allocation of spending on education (World Bank, 2013). This would encourage the

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debate on how spending may improve education quality (i.e. Hanushek, 1986; Pablos and Martinez, 2010; Haddad, Freguglia, and Gomes, 2016; and Ali, Hakim, and Abdullah, 2017).

Long-term investment in education improves the level of economic development of a country (Nijkamo and Poot, 2004). However, evidence supporting the proposition that increased spending on education improves the quality of education is weak. Hanushek (1986) provides evidence that spending money on education does not improve the quality of schools or student outcomes. Many other studies find that educational attainment has a weak relationship with government spending (Landau, 1986; Noss, 1991; Tan and Mingat, 1992; Mingat and Tan 1998; and Flug, Spilimbergo, Wachtenheim, 1998; Amate and Guarnido, 2011). In contrast, Greenwald, Hedges, and Laine (1996) find that the quality indicator of per-pupil expenditures is positively associated with better educational outcomes. Jackson, Johnson, and Persico (2016) show that spending leads to improved school quality, lower student-to-teacher ratios, and higher teacher salaries. Similar results have been obtained by other studies, such as those of Morales, Fortes and Rueda (2013), Gil de Pablos and Martinez (2010). In Brazil, there is no evidence of educational spending to enhance quality of education (Haddad, Freguglia, and Gomes, 2016). Similarly, Dufrechou (2016) argues that education outputs have not been achieved in upper-middle income Latin American countries.

In the case of oil-rich countries, education quality can be related to spending patterns in which large education budgets are used for the wages of teachers and allowances. Higher government spending on the wages of teachers can be influenced significantly by a considerable increase in the total number of newly graduated teachers entering the job market. Historical trends show that Kuwaiti spending on education was usually high during the period between 1979 and 2014. This large increase in the education budget of Kuwait was due to increased oil revenues. However, patterns of spending on education should be revisited to determine whether they lead to improvements in the quality of education.

This study draws on and extends the literature to investigate

the degree to which spending on education impacts the quality of education in Kuwait. Investigating this topic is important for several reasons. Moreover, because of the importance of the trend of increased government spending on education in Kuwait, the study examines whether it impacts the quality and quantity of education to gain a better understanding of the links between educational achievements and public spending. To the best of our knowledge, this is the first empirical study that links quality of education to public education spending in Kuwait.

Furthermore, this study empirically examines the long-term relationship between public education spending and the quality and quantity of education in Kuwait for the period from 1979 to 2014. Findings of the long-term obtained using the estimated model show that increasing government spending on education does not improve the quality of education but instead leads only to an increase in its quantity in Kuwait.

The remainder of the paper is organized as follows. Section II explains the issue of research. Section III is a brief discussion of previous studies. Section IV is an overview of the educational environment in Kuwait. Section V explains the methodology. A data description is provided in Section VI. The empirical results are explained in Section VII. In Section VIII, the conclusion and policy implications are provided.

II. THE ISSUE OF REASEARCH

Among the most important challenges facing the Kuwaiti education system at present is the growth of the population which is considered among the highest rates in the world. So as population growth increases, demand for education increases as well. Thus, it is assumed that the development in the education system should cope with the growth in the population; otherwise, the efficiency of the education process and the degree of student achievements in schools may be affected negatively.

Despite the massive government spending on the public education sector, currently parents prefer private and foreign schools for their

kids to avoid the modest education quality provided by public schools that no longer corresponds to the ambitions of many parents.

In fact, the Kuwaiti government is increasing its annual expenditure on the public education sector continuously. Such spending has been constantly reflected in an increased number of schools, classrooms, teachers, and education facilities.

Accordingly, although the continued government spending on education by Kuwaiti government, findings of the local follow-up assessment for the efficiency of the education system in Kuwait as well as results of students' performance in the international specialized tests show poor achievements for local students. This means that there is a problematic issue related to government spending on education and its impact on the government education system. Based on Table (1), the World Economic Forum ranks countries according to their education performance. The table reveals the rank of Kuwait by different related educational indicators over time.

Table (1)
Educational Indicators for Kuwait

Year	Quality of Primary Education	Quality of Education System	Quality of Math and Science Education
2008	92	94	93
2009	88	81	89
2010	79	88	89
2011	90	108	94
2012	89	104	104
2013	104	105	102
2014	102	104	102

Source: World Economic Forum

According to Table (1), Kuwait is at lower ranks among around 144 countries in the world for some important educational indicators such as quality of primary education, quality of education system, and

quality of math and science education. It is also noticed from the table that over time the rank of Kuwait has been decreasing dramatically by these indicators. According to Table (1), data for quality of education system shows that the rank of Kuwait decreases by 10 levels within only 6 years from 94 rank in 2008 to rank of 104 in 2014. Also, the data for quality of math and science education indicates that the rank of Kuwait decreases by 9 levels within only 6 years from 93 rank in 2008 to rank of 102 in 2014. Finally, the rank of Kuwait has dropped by 10 levels for quality of primary education indicator from rank of 92 in 2008 to rank of 102 in 2014.

These modest results raise many cases of exploitation of the efficient management for the education institutions. The financial spending is clearly noticed toward this sector but outputs in quantitative terms are low. Therefore, it is clear that Kuwait needs to raise the efficiency of its education system in order to support its competitiveness in this sector. In particular, efforts need extraordinary progress in order to align the education system with the needs of a competitive economy.

III. RELATED LITERATURE

Since an early study by Coleman (1966), numerous studies have examined whether education spending influences student outcomes. A considerable body of literature has examined the relationship between education spending and educational performance. Most of the evidence shows that the impact of public spending on education quality is positive, but some studies find a negative relationship between the quality of education and government spending. A study by Morales, Fortes and Rueda (2013) investigates the factors influencing public spending on education in the case of thirty-three OECD countries from 1996 to 2009. Their findings show that institutional quality is associated with higher education spending.

Another study by Gil de Pablos and Martinez (2010) examines the relationship between higher education outcomes and public expenditure on education. They find strong evidence for a relationship between achieving a high level of education and high public spending on

education. A similar study by Gordon and Vegas (2004) provides evidence that high spending on education is associated with higher grades for grades 5-8. Additionally, findings show that spending on education is associated with a smaller class size; however, the results do not support the conclusion that there is an impact from education spending on the share of teachers for grades higher than primary education. A study by Baker (2012) investigates the relationship between student outcomes and school funding. He finds that, on average, education spending per pupil is positively associated with better student performance in the USA. However, he states that the size of the effect differs across student outcomes.

By using data from developing and transition countries, Verhoeven, Gupta, and Tiongson (1999) find that education expenditure enhances education as well as health. Particularly, higher spending on primary and secondary education leads to an improvement in enrollment rates and student persistence. In addition, Ogbu and Gallagher (1991) investigate the relationship between public spending on education and enrollment rates for five African countries. Findings show that spending on education leads to higher enrollment rates in these countries. The same results are obtained in a study by Mehrotra (1998) examining ten countries.

Additionally, Murnane and Olson (1989) investigate the link between teacher wages and teacher recruitment. Their results show that higher wages result in more teaching positions. Findings of other studies, such as Figlio (1997, 2002) and Ferguson (1991), show that greater spending on teacher wages results in more highly qualified teachers, and thus improved education quality.

Guryan (2001) finds that increased spending per pupil improves test results for math, reading, science, and social studies for grades 4-8. Another study by Downes, Zabel, and Ansel (2009) examines the impact of school spending on student outcomes. Their findings confirm that districts characterized by low spending on education are associated with a rising level of student achievement due to educational reform. A study by Glewwe and Kremer (2006) investigates education expenditures in developing countries. They find that the health of education systems is associated with increased education spending.

In contrast, several studies show a weak relationship between education expenditures and the quality of education. A study by Amate and Guarnido (2011) provides evidence that higher spending does not assure a higher quality of educational systems. Hanushek (1986) examines the outcomes for elementary and secondary schools in the United States. Findings show that spending more on education does not necessarily enhance the quality of the school and outcomes of students. Interestingly, Noss (1991) finds no evidence that links the quality and quantity of education to changes in government spending for some African countries. Similar results have been found in other studies, such as Landau (1986), Tan and Mingat (1992), Mingat and Tan (1998); and Flug, Spilimbergo, and Wachtenheim (1998). Furthermore, some recent papers extend the literature by looking at different aspects of education spending analysis. A study by Ali, Hakim, and Abdullah (2017) uses Johansen cointegration test to find a long-run relationship between public education expenditure and GDP growth which supports the effect of education in enhancing the GDP. Another study by Haddad, Freguglia, and Gomes (2016) investigates whether higher education quality of public primary schools can be a result of higher educational spending in Brazil. They find no evidence of educational spending to enhance quality of education in Brazil. The efficiency of education is also examined by Dufrechou (2016). The study finds that due to lack of resources, education outputs have not been achieved in upper-middle income Latin American countries compared with high-income countries

IV. Overview of Education Environment in Kuwait

Education plays a key role in the preparation of generations of students to engage in the labor market and contribute to increased production and a higher level of development of the country. The primary task of the education sector is to produce a qualified and a competitive generation of students. The education system should also have a combination of consistent educational system elements. This efficient system should consist of the teacher, curriculum, teaching methods and educational climate.

Due to the importance of the education sector, nations, especially developed countries, allocate large budgets to the development of the education and training sector. The Government of Kuwait provides a large annual budget to the education system. The most important challenges facing the current Kuwaiti education system is population growth, which is among the highest in the world. Population growth leads to an increased demand for education, which means that the education system expands with population growth in order to not overcrowd classrooms and increase class effectiveness. Crowded classrooms might reflect negatively on the efficiency of the educational process and the educational achievements of students.

Despite high government spending on the education sector, its efficiency is declining. This is evidenced by the preference of parents to enroll their children in foreign schools or branches of foreign schools to avoid a public education system that no longer supports the goals of many parents regarding their aspirations for the education levels of their children.

As shown by Graph (1) in Appendix (A), the share of education expenditure to GDP has an unstable trend over time. The period prior to the Iraqi invasion of 1990 shows a positive trend for the share of education expenditure to GDP. This reflects a period of development for Kuwait of primary sectors and infrastructures after expanding oil exports to the world in the early seventies. Due to the Iraqi occupation of Kuwait, almost all natural resources and infrastructure in Kuwait were destroyed. After liberation in 1991, total spending on education increased by 8.3 percent of GDP, almost five times its share in 1979. This was due to the adoption by the Kuwaiti government of a reconstruction plan to rebuild the country. Spending on the education sector has increased since then, especially during the early liberation period, to compensate for the loss of equipment and damaged buildings. Then, until 2008, the share of education spending shows a downward trend due to a drop in oil prices. After 2008, the share of education spending has increased again.

Over the same period, as shown by Graph (2) in Appendix (A), total enrollment in primary education increased over time. However,

Graph (3) in Appendix (A) shows that the proportion of pupils to teachers in Kuwait has a downward trend. The data suggests that, over time, the quality of education does not improve as measured by the pupil to teacher ratio; instead, the quantity of education in Kuwait increases, as measured by the school enrollment ratio.

Accordingly, it is noteworthy that the weakness of the relationship between the educational system and the labor market in Kuwait is clear. The education system in Kuwait, across all levels of university and applied education and professional training, does not provide employees with skills needed by the market. It also leads to graduates that might not be needed by the labor market. Additionally, the link between the education system and the labor market is weak and sometimes does not exist despite the potential for some educational institutions, such as universities, to recognize the needs of the labor market. However, these efforts are not reflected by structural changes in the education system, which currently lack a specific mechanism to force students to study majors needed by the labor market or to prevent the study of majors not needed by the labor market. Therefore, this research examines the link between government efforts through increasing expenditures on education and the quality and quantity of education.

V. METHODOLOGY

The objective of this paper is to investigate whether higher spending on education leads to improvement in the quality of education in Kuwait or is reflected by an increase in the quantity of education. Hence, we employ various strategies to address our set of research questions. First, we are careful to note the time series properties of the data by using unit root and co-integration tests. To investigate whether the data have unit roots, the Augmented-Dickey Fuller (ADF) test is applied. This test employs an appropriate number of lagged dependent variables, which are selected following the Schwarz Information Criterion (SIC), and a fitted constant for each series, which are government spending on education, the pupil to teacher ratio, and the school enrollment ratio of the entire sample, using equation (1),

$$\Delta y_t = a + \gamma y_{t-1} + \sum_{k=1}^p B_k \Delta y_{t-k} + \varepsilon_t \quad (1)$$

Where Δy_t is the series of each variable, denotes the number of lags used, and ε_t is a white noise error term with a zero mean and a constant variance. Then, we test the null hypothesis of the existence of a unit root, such that $H_0 : \gamma = 0$.

Furthermore, this paper utilizes the Johansen method (Johansen, 1998) to gain insights into the long-term equilibrium relationship effect of government spending on education on both the quality and quantity of education indicators. This can be done, especially after testing the stationarity of each series and finding that they are all integrated by the same order (I(1)), by testing for the existence of co-integrated relationships between each pair, government spending on education and the quality (or the quantity) of education, using the Johansen method. Hence, to perform the Johansen method, we consider the following VAR representation of order p for each pair of spending variables on education and quality or quantity, as in equation 2, where the optimal lag (is identified using the SIC method.

$$y_t = \mu + A_1 Y_{t-1} + A_2 Y_{t-2} + \dots + A_p Y_{t-p} + \varepsilon_t \quad (2)$$

Where y_t is an $n \times 1$ vector of variables (in our case, $n=2$, either government spending on education and the quality of education or government spending on education and the quantity of education) that are integrated of the same order (I(1)), and ε_t is an $n \times 1$ vector of innovations. The VAR representation can be re-written as shown by equation 3:

$$\Delta y_t = \mu + \Pi y_{t-1} + \sum_{k=1}^{p-1} \Gamma_k \Delta y_{t-k} + \varepsilon_t \quad (3)$$

where

$$\Pi = \sum_{k=1}^p A_k - I \text{ And } \Gamma_k = \sum_{j=k+1}^p A_j$$

If the coefficient matrix Π has a reduced rank, $r < n$, then there exists $n \times r$ matrices α and β , each with rank r , such that $\Pi = \alpha\beta'$ and $\beta'y_t$ is stationary (I(0)). However, if the rank of the Π matrix is equal to zero, this implies that all y_t 's are non-stationary. Moreover, r is the number of co-integration relationships (the co-integration rank), each column of β is a co-integration vector, and the elements of α are the adjustment parameters in the Vector Error

Correction Model. Hence, the Johansen method is used to estimate the matrix from an unrestricted VAR and to test whether we can reject the restrictions implied by the reduced rank of Π . In this context, Johansen and Juselius (1990) suggest two types of test statistics, the trace and the maximum eigenvalue statistics, to determine the number of co-integration vectors,

$$J_{trace} = -T \sum_{i=r+1}^n \ln(1 - \hat{\lambda}_i) \quad (4)$$

$$J_{max} = -T \ln(1 - \hat{\lambda}_r) \quad (5)$$

where T is the sample size and $\hat{\lambda}_i$ is the i^{th} largest eigenvalue of the Π matrix. The trace statistic tests the hypothesis that there are, at most, r co-integration vectors against the alternative hypothesis that there are n (full rank) co-integration vectors, while the maximum eigenvalue statistic examines the null hypothesis that there are r co-integration vectors against the alternative hypothesis of $r+1$ co-integration vectors.

Importantly, the trace statistic and the maximum eigenvalue statistic do not provide any contradictory results in the analysis of co-integration. Hence, in this paper, the Johansen co-integration results are displayed based on the trace statistic test.

Finally, we normalize the cointegrating coefficients using Johansen normalization to estimate the long run coefficients as in equation 6,

$$z_i = \alpha + \beta x_t \quad (6)$$

Where z_i , ($i = 1$ and 2) are proxies for the quality and quantity of education, that is, the pupil to teacher ratio and the school enrolment ratio, respectively, x_t is government spending on education, β is the coefficient that captures the long run impact of government spending on education on the indicators of both the quality and quantity of education (the Johansen normalized co-integration coefficients).

VI. DATA

The yearly data for the education and government spending variables are obtained from a number of sources. In this paper, the sample belongs to Kuwait for the period from 1979 to 2014, as shown in Table (2).

Table (2)
Description of the Variables

Variable	Period Coverage	Variable Description	Source
Share of Government spending on education	1979-2014	Data for government spending on education are in the local currency and then converted to the US dollar. Measured by the share of education expenditure to GDP.	Kuwait Central Statistical Office
Pupil-teacher ratio	1979-2014	Measured for primary education according to a headcount.	World Bank data base
Total Enrolment	1979-2014	Measured for primary education for both sexes (using numbers).	World Bank data base

This period includes all available data for Kuwait; thus, it includes the largest dataset possible. Data for government spending on education are in the local currency and then converted to the US dollar. The variable, pupil-teacher ratio, is measured for primary education according to a headcount. The total enrolment is measured for primary education for both genders (using numbers). Share of education spending is measured by the share of education expenditure to GDP. Data for the pupil-teacher ratio and total enrollment are obtained from the World Bank database, while the share of education spending is obtained from the Kuwait Central Statistical Office.

Missing data for education spending are constructed from the general Kuwaiti budget. However, the data regarding education expenditures do not separate spending for primary education and secondary education. Therefore, the data for education expenditures include both expenditures.

VII. EMPIRICAL RESULTS

The summary of descriptive statistics is shown in Table (3). The results from Table (4) suggest the existence of a unit root for all data. More specifically, the ADF unit root test hypothesis failed to be rejected at any convenient level of significance for government spending on education, the quality of education, and the quantity of education.

These findings imply that these series are non-stationary or have a unit root. However, when we evaluate the first difference, our findings show that the ADF unit root test hypothesis is rejected at the 1% significance level for government spending on education and the quality of education series and at 5% for the quantity of education series, indicating that government spending on education, the quality of education, and the quantity of education series are integrated of order one (I(1)).

Table (3)
Descriptive statistics results.

Variable	Mean	STD.DEV	Min	Max
Government spending on education	19.86	.65	18.90	21.40
Quality of education	2.62	.29	2.12	2.95
Quantity of education	12.01	.21	11.64	12.38

Table (4)
ADF unit root tests on levels and first difference for each variable series over the entire sample period.

Variable	levels	First Difference
Government spending on education	2.50	-3.86**
Quality of education	-.070	-3.90**
Quantity of education	-1.06	-3.2*

MacKinnon Critical Values are -2.97 and -3.69 for the 5% and 1% levels, respectively.

* & ** indicates rejection of the null hypothesis of the existence of a unit root test at 5% and 1% levels respectively.

Table (5) shows the empirical results of the Johansen co-integration (which tests the null hypothesis) that there is no co-integration between each of the two education indicators (the quality and the quantity) and government spending on education ($r = 0$) against the alternative hypothesis that there is at most one co-integration vector ($r = 1$). If the estimated values of the trace statistic are larger than the comparable critical values at any appropriate level of significance, then we reject the null hypothesis of no co-integration.

Table (5)

Johansen Co-integration results between Government spending on education and quality and quantity indicators of education.

Variable	$J_{trace} (r = 0)$	$J_{trace} (r = 1)$
Quality of education	19.58*	2.07
Quantity of education	20.2**	5.8

* and ** indicate rejection of the null hypothesis of no co-integration at the 10% and 5% levels. (17.79) and (19.99) are the critical values of the null hypothesis at the 5% and 1% significance levels, respectively.

In this context, the trace statistic value for the quantity of education is 20.2, indicating that the null hypothesis of no co-integration is rejected at the 5% level of significance. This finding is considered hard evidence for the existence of a long-term equilibrium relationship effect of government spending on the quantity of education. However, the trace statistic value for the quality of education is 19.6, implying that the null hypothesis of no co-integration is rejected at the 10% level of significance. These interesting results indicate that the quality of education has a lower co-integration strength than the quantity of education with government spending on education. Hence, the long-run impact of government spending on education is stronger on the quantity of education than on the quality of education.

Table (6)

Johansen Normalization for long-term effect of government spending on both quality and quantity of education.

Statistics	Quality of education	Quantity of education
Long-term effect ($\hat{\beta}$)	-1.55*	1.32*
(Std.error)	(.033)	(.026)
$P > Z $	0.003	0.00
95% Conf. Interval for ($\hat{\beta}$)	[-2.2 - .80]	[.48 2.17]
Number of Observations	36	36

*Indicates 1% significant level.

Table (6) shows the estimated normalized cointegrating coefficients ($\hat{\beta}$) of equation (6), which captures the long-term effect of government spending on both quality and quantity of education. Findings show that the long-term coefficient ($\hat{\beta}$) for the quality of education is statistically significant at the 1% level, with a value of 1.32. This means that an increase of 10% of government spending on education will lead to an increase in the quantity of education of 13.2%. However, for the quality of education indicator, the long-term effect ($\hat{\beta}$), though statistically significant at the 1% level, surprisingly has a negative value and is equal to -1.55, which means that an increase of 10% of government spending on education will lead to a decrease in the quality of education of 15.5%.

In summary, this paper provides evidence that increasing Kuwaiti government spending on education over the long-term does not improve the quality of education but leads only to an increase in the quantity of education. Knowing whether government spending on education affects the quality of education is of particular interest for policymakers who can gain insights to use when either evaluating a current policy or designing a future policy regarding government spending on this sector.

These results imply that, in the long-term, while government spending has a positive effect on the quantity of education, it has a negative effect on its quality. More precisely, this paper provides evidence that the higher the level of government spending, the lower the quality of education in Kuwait. In other words, although higher government spending effectively improves the quantity of education, it reduces its quality in the long term.

The government of Kuwait allocates a large annual budget to education. This education spending is growing over time to all expenditure recipients, primarily the Ministry of Education, Authority of Applied Education, and Kuwait University. However, it is noted that the bulk of this budget is primarily directed towards salaries and wages for teachers or educational and administrative bodies. Nevertheless, the spending ratios to total annual education expenditure are

very limited in aspects related to the development of books, curricula, teaching methods, teachers, and school activities and expansions.

From information about the public education system, we know that the number of schools in Kuwait increased from 631 in 2001 to 788 in 2011, an average growth rate of approximately 2.5%. Since this rate is less than the population growth rate in Kuwait, it was expected to result in an increase in student density in classrooms and a declining proportion of the number of students to each teacher in public schools, but this low growth in the number of schools is associated with a higher growth in the number of open classrooms per year, from 9352 classroom in 2001 to 14,542 classrooms in 2011, with an average growth rate of 5.1% annually. This is captured in the study through the increase in the quantity of education, that is, an increase in the number of school enrollments that are associated with an increase in education spending.

Given the results from the analysis of the primary indicators of education in Kuwait and with regard to the quality of education, education spending is supposed to result in a greater improvement in the efficiency of the public education sector, particularly as a result of the increased number of students in each school, as well as the number of students per teacher, compared with the private education sector. However, the results of the evaluation of the education system in Kuwait as well as the results of the follow-up regarding the performance of students on international specialized tests prove the opposite. This may mean that there is something wrong with the public education system that leads to the current results. According to the global competitiveness report issued by the World Economic Forum, Kuwait has the lowest rank among nations for the quality of basic education, with an average rank during the previous seven years of 91 among 144 countries. Additionally, the world rank of Kuwaiti enrollment rates in basic education was 96 on average for the previous five years, which is a very low rank. Moreover, the general quality of the educational system has declined significantly over the past seven years. On average, Kuwait had a rank of 98 worldwide, a result that does not match with how much the government allocates annually to the educational system.

Moreover, math and science education may be considered the most important subjects of education. Thus, the competitive and innovation capacity of the country may depend heavily on these two subjects. Therefore, developed countries allocate more resources to these subjects and emphasize them appropriately. However, according to the global competitiveness report, the rank of Kuwait for the quality of math and science education has fallen alarmingly. The rank for Kuwait fell from 93 in 2008 to 102 in 2014, for an average of approximately 96 over the last seven years. Additionally, the quality of administrative colleges scored, on average, an approximate rank of 93 over the last seven years. It is clear that Kuwait needs to reallocate its education budget toward increasing the efficiency of education.

VIII. CONCLUSION AND POLICY IMPLICATIONS

This paper empirically investigates the long-term relationship between public education spending and the quality and quantity of education in Kuwait. The data sample includes the period from 1979 to 2014. In this study, estimates are examined using the Johansen Co-integration test. Long-term findings using the estimated model show that education spending does not lead to a higher quality of education. However, education spending increases the quantity of education in Kuwait.

The findings of the Johansen Co-integration test provide evidence for a long-term relationship between the quantity and quality of education and government spending on this sector, suggesting that the quality of education has lower co-integration strength than the quantity of education with government spending. In addition, using Johansen normalized co-integrating coefficients, findings show that government spending leads to an increase in the quantity of education, whereas it leads to a decrease in the quality of education.

Currently, public schools in Kuwait represent approximately 58% of the total number of schools, at a time when the number of students enrolled in private education is approximately 59% of the total students enrolled in public education. However, open classes in private education schools equal approximately 48% of the total open classes in

public education. These developments indicate a structural change to the role of private education in Kuwait and reflect the growing interest of parents in registering their children in private education, away from public education, to avoid the lowered efficiency of education.

In general, the spending on education to total public expenditure ratio has fluctuated over the last twelve years but is approximately 9.8% on average, which is a high value compared with the global standard. Accordingly, this high ratio is assumed to reflect the growth of educational facilities in Kuwait. The bulk of the annual budgets pay for wages and salaries, which account for approximately 90% of school budgets, while an allocation of 10% or less is applied to other elements of the educational process. Recently, there has been an increase in the salaries of school teachers, and this funding, without doubt, was compensated for by reducing the budgets for other aspects of the education system.

Accordingly, Kuwait needs to increase the efficiency of its education system through paying more attention to specific challenges regarding financial and educational processes. With respect to the financial aspect, Kuwait should improve its education spending through looking at the ways to increase efficiency and performance of education. Kuwait needs to adopt a strategy for reallocating resources toward higher education levels and increasing scholarships for studying abroad. Finally, policy makers should increase investment in the technology of schools.

As far as the educational process is important, improving the education system in Kuwait consists of four main pillars. These include educational programs, curriculum, teaching methods and aids, and schools independence.

First of all, educational programs, specifically education process and curriculum, at schools must to be developed in accordance to international standards. Also, courses need to be developed with all its components at all stages to guarantee the efficient transition for students from a specific level to other higher level courses. In addition, there is a need to increase the number of teaching hours for math and science courses in schools. Furthermore, the hours of the school day

should be increased to conform to internationally recognized standards. Finally, encouraging educational programs toward thinking and criticism, so classrooms would include times for students dedicated to debates and means of persuasion, rational thinking, and communication with others.

Second, the curriculum needs to be developed in order to include linkages between educational courses at different stages, which enables the transition from one course to another without obstacles that may affect the efficiency of the educational process. In addition, it needs to develop the contents of the curricula in line with the recent global developments in the scientific field of the courses.

Third, teaching methods and aids should be developed to stimulate students to interact and develop different educational skills. This includes the use of effective teaching methods with students, and engaging them in a permanent dialogue. It also includes the use of modern techniques in the presentation teaching materials in the classroom. Importantly, there is a need for continuous training of teaching staff in modern teaching methods.

Finally, the education system in Kuwait does not give a decent weight to school administrations views. Therefore, there is an essential need to increase the degree of independence of schools. This might include giving a greater role to schools in the process of selecting teachers and administrators, and allowing schools to play a greater role in the transition of teachers and administrators between schools.

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REFERENCES

- Ali, A., Hakim, R. A., & Abdullah, H. (2017). Relationship between Government spending on education and economic growth of Pakistan. *ASIAN JOURNAL OF MULTIDISCIPLINARY STUDIES*, 5(2).
- Amate, i. and Guarnido, A. (2011), Determining Factors in Economic & Social Development, Malaga: Analistas Economicos de Andalucia.
- Baker, B. D. (2012). Revisiting the Age-Old Question: Does Money Matter in Education? Albert Shanker Institute.
- Coleman, James S., Ernest Q. Campbell, Carl F. Hobson, James McPartland, Alexander M. Mood, et al. (1966). Equality of Educational Opportunity. Washington: US Office of Education.
- Downes, T. A., Zabel, J., & Ansel, D. E. (2009). Incomplete grade: Massachusetts education reform at 15. Mass INC.
- Dufrechou, P. A. (2016). The efficiency of public education spending in Latin America: A comparison to high-income countries. *International Journal of Educational Development*, 49, 188-203.
- Flug, K., Spilimbergo, A., & Wachtenheim, E. (1998). Investment in education: do economic volatility and credit constraints matter?. *Journal of Development Economics*, 55(2), 465-481.
- Ferguson, R. F. (1991). Paying for public education: New evidence on how and why money matters. *Harv. J. on Legis.*, 28, 465.
- Figlio, D. N. (1997). Teacher salaries and teacher quality. *Economics Letters*, 55(2), 267-271.
- Figlio, D. N. (2002). Can public schools buy better-qualified teachers?. *Industrial & labor relations review*, 55(4), 686-699.
- Glewwe, P., & Kremer, M. (2006). Schools, teachers, and education outcomes in developing countries. In *Handbook of the Economics of Education*, 2, 945-1017.
- Greenwald, R., Hedges, L., Laine, R. (1996). The Effect of School Resources on Student Achievement. *Review of Educational Research*, 66 (3), 361-396.

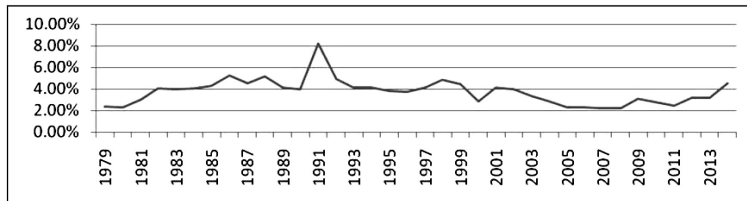
- Guryan, J. (2001). Does money matter? Regression-discontinuity estimates from education finance reform in Massachusetts (No. w8269). National Bureau of Economic Research.
- Gordon, N., & Vegas, E. (2004). Education Finance Equalization, Spending, Teacher Quality and Student Outcomes: The Case of Brazils FUNDEF. In *Education Sector, Human Development Department, Latin America and the Caribbean Region, World Bank, Washington, DC*.
- Gil, M., de Pablos, I. and Martinez, M. (2010). los Determinantes Socioeconómicos de la Demanda de Educación Superior en España y la Movilidad Educativa intergeneracional, *Hacienda Pública Española*, 193 (2), 75-108.
- Haddad, M. A., Freguglia, R., & Gomes, C. (2016). Public Spending and Quality of Education in Brazil. *The Journal of Development Studies*, 1-18.
- Hanushek, E.A. (1986). Economics of Schooling: Production and Efficiency in Public Schools. *Journal of Economic Literature*, 24 (3), 1141-1177.
- Jackson, C. K., Johnson, R. C., & Persico, C. (2016). The effects of school spending on educational and economic outcomes: Evidence from school finance reforms. *The Quarterly Journal of Economics*, 131(1), 157-218.
- Johansen, S. (1988). Statistical analysis of cointegration vectors. *Journal of economic dynamics and control*, 12(2), 231-254.
- Landau, D. (1986). Government and economic growth in the less developed countries: an empirical study for 1960-1980. *Economic Development and Cultural Change*, 35(1), 35-75.
- Mingat, A., & Tan, J. P. (1998). *The mechanics of progress in education: evidence from cross-country data* (No. 2015). World Bank Publications.
- Mehrotra, S. (1998). Education for all: policy lessons from high-achieving countries. *International Review of Education*, 44(5-6), 461-484.
- Morales, A. M., Fortes, I. A., & Rueda, A. G. (2013). Institutions

and Public Expenditure on Education in OECD Countries. *Hacienda pública española* (204), 67-84.

- Murnane, R. J., & Olsen, R. J. (1989). The effect of salaries and opportunity costs on duration in teaching: Evidence from Michigan. *The Review of Economics and Statistics*, 347-352.
- Nijkamp, P. and Poot, J. (2004). “Meta-analysis of the Effect of fiscal Policies on long run Growth”, *European Journal of Political Economy*, 20: 91-124.
- Noss, A. (1991). *Education and Adjustment* (No. 701). World Bank Publications.
- Odior, E. (2011). Government Spending on Education, Economic Growth and Long Waves in a CGE Micro-Simulation Analysis: The Case of Nigeria. *British Journal of Economics, Finance and Management Sciences*, Vol. 1 (2).
- Ogbu, O. M., & Gallagher, M. (1991). On public expenditures and delivery of education in sub-Saharan Africa. *Comparative education review*, 35(2), 295-318.
- Shambaugh, J. C. (2004). The effect of fixed exchange rates on monetary policy. *The Quarterly Journal of Economics*, 301-352.
- Tan, J. P., & Mingat, A. (1992). *Education in Asia: A comparative study of cost and financing*. World Bank Publications.
- Verhoeven, M., Gupta, M. S., & Tiongson, M. E. (1999). *Does higher government spending buy better results in education and health care?* International Monetary Fund.
- World Bank.(2013).Spending more or Spending Better: Improving Education Financing in Indonesia. Report Number 73050.
- Yogish, S. N. (2006), “Education and Economic Development, *Indian Journal of Social Development*, 6 (2): 255-270.

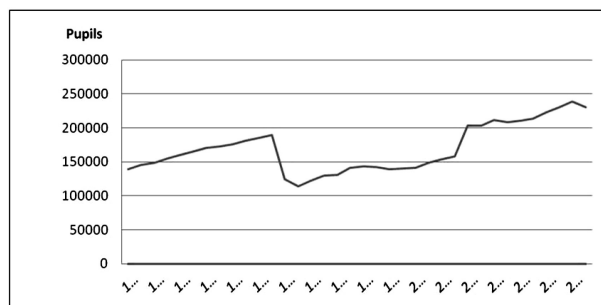
Appendix (A)

Graph (1) - Spending on Education to GDP



Source: World Bank Database

Graph (2) - Enrollment in Primary Education, both genders (number)



Source: World Bank Database

Graph (3) - Pupil-Teacher Ratio in Primary Education (headcount basis)



Source: World Bank Database

