International Journal of Science Academic Research
Vol. 05, Issue 12, pp.8791-8797, December, 2024
Available online at http://www.scienceijsar.com

ISSN: 2582-6425

Research Article

DOES HOMEWORK FRUITLESS ON READING PRIMARY OUTCOMES: CASE OF DEVELOPING COUNTRIES

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Received 18th October 2024; **Accepted** 11th November 2024; **Published online** 27th December 2024

Abstract

This study delves into the influence of homework on reading literacy among primary school students in developing nations. Leveraging data from the 2016 Progress in International Reading Literacy Study (PIRLS) by the International Association for the Evaluation of Educational Achievement, we utilize ordinary least squares (OLS) regression and quantile regression to estimate education production functions for each country individually. This approach enables us to assess how coefficients on explanatory variables vary across the spectrum of test scores. Our analysis reveals that socioeconomic status, as indicated by access to learning resources, significantly shapes students' reading achievement. In addition, the frequency of homework assignments per week, as set by teachers, exhibits no noteworthy impact on reading performance in six developing countries and even yields adverse effects in Oman and Kuwait. The study also identifies positive effects of homework frequency and time spent on reading achievement in countries like Saudi Arabia and Egypt. Additionally, dedicating 16-30 minutes or 31-60 minutes to homework is associated with notable enhancements in reading achievement across the majority of developing countries.

Keywords: Homework, Primary school, Reading literacy, Developing countries, PIRLS 2016.

INTRODUCTION

Historically, homework began in America culture except it had seen badly policy by parents and children. In 1901, the California legislation prohibited doing homework to elementary through eighth grades. But, in 1950s, the consensus in American education was overwhelming in favor of issuing homework to students of all grade levels. The role of homework in academic achievement is an age old debate (Walberg *et al.,* 1985). The purpose of homework is summed up by Cooper (1989), who states that homework is used for practice, preparation, extension and integration. Subsequently, other authors have supported Cooper's view, for instance, that practice homework reinforces material that has already been presented in class (Pytel, 2007) and helps students prepare for tests (Metlife, 2007). Preparation homework is used to prepare learners for new work (Pytel, 2007) and extension homework enables them to apply learned skills in different contexts (Cooper, 2 Ndebele Robinson & Patall, 2006; Shellard & Turner, 2004). Integration homework allows learners to do projects that apply several skills (Shumow, Schmidt & Kackar, 2008). Other authors argue that homework is used to evaluate the learners' knowledge of the subject matter (Metlife, 2007; Shumow et al., 2008). In other words, teachers use it to determine whether learners have understood a lesson and have mastered the required skills; they use homework to regularly monitor the learners' progress (Plato, 2000; Thomas, 1992). Pytel (2007) sees homework as introducing learners to new material that the teacher will present in the future. It also considered us an instrument that reinforces learning and helps promote proper study methods and autonomous work capacities (Cooper 2001, Cooper, Robinso and Patall, 2006).

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In the other hand, Zentall and Goldstein (1999) view homework both as a window through which parents can observe their children's education, as well as an opportunity for schools to let parents know what their children are learning. All these exceptional purposes of homework predict to have positive empirical relationship between homework and achievement. There is a widespread belief that time on homework is associated with greater achievement gains(Cooper, 1989; Cooper, Robinson and Patall, 2006; Hattie and Clinton, 2001; Walberg and Paschal,1995), but empirical support for homework achievement realation is not unequivocal (e.g., Cooper, Lindsay, Nye, & Greathouse, 1998; De Jong, Westerhof, & Creemers, 2000; see Trautwein & Ko¨ller, 2003a). While there appears to be a purpose for homework in high schools, the function of homework in the primary school has been debated by several authors. For instance, Bempechat (2004) states that the impact of homework in academic achievement at primary school level is unclear. Noting that the dynamics of homework appear to vary at different levels of schooling and subject, as well as, the great value of reading literacy as a basic and essential subject to all others, our present research paying particular attention to the relationship between homework and reading achievement in the fourth years of primary schooling across MENA countries.

Data and empirical model

The Progress in International Reading Literacy (PIRLS) 2016 carried out by the International Association for the Evaluation of educational Achievement (IEA), an independent organization, collects data on students at fourth grade for a large sample of countries to give comparative assessments dedicated to improve teaching and learning in reading for students around the world. The sample design of PIRLS is based on a two-stage random sample design, with a sample of school chosen as a first stage and one or more intact classes of

students from each of the sampled schools as a second stage. Table 1 provides sample sizes, target populations' assessed reading literacy, the number of schools and students assessed on PIRLS 2016. The largest sample size of students assessed was on United Arab Emirates while Malta features the lowest number of students. Also, we can recognize that some schools and student were not able to assess PIRLS trend.

Education Production Function

Using the education production function model proposed by Hanushek (1979) to investigate the effect of homework on reading achievement, conceptually the model is defined as the cumulative influence of input given by:

$$Y_i = \beta_0 + \sum_{j=1}^{m} \beta_j X_{ij} + \mu_i$$

where Yi is a test score of student (i = 1,…..N), X_{ij} are the score determinants which influence pupils' educational achievements, β_j are the estimated coefficients and μ_i is the residual term.

The education production function was estimated by the OLS technique at the first step, however this estimation method does not inform about the heterogeneity of the educational determinants effect on a long score distribution. Koenker and Basset (1978) have extended the OLS estimation to a robust regression technique notably the quantile regression. Contrary to the OLS estimation which evaluates the impact of explanatory variables on the mean of the outcome variable, the quantile regression technique allows to estimate the impact of explanatory variables on educational attainment at different parts of the conditional distribution of output variable.

Quantile regression seeks to evaluate if a given explanatory variable affects more or less student at the rth quantile of conditional score distribution than student at (1-r)th quantile.
Instead the quantile regression provides some robustness to heteroscedastic problem since estimated marginal effects of exogenous variables differ across the different parts of conditional outcome distribution. Moreover the quantile regression is more efficient than the OLS technique in the case when the error terms are not normally distributed.

Conceptually the quantile regression model is defined as a linear function of covariates given by:

$$y_i = x'_i\beta_\theta + \mu_{\theta i}$$
$$Quant_\theta(y_i \mid xi) = x'_i\beta_\theta, i = 1, \dots\dots, n, \theta\epsilon\ (0,1)$$

Where $Quant_\theta(\frac{yi}{xi})$is a given quantile θ of the dependent variable $y_i$conditional on the explanatory vectorx_i. For the distribution of the error term$\mu_{\theta i}$, it is only assumed satisfying the following restriction $Quant_\theta(\mu_{\theta i}|xi)$. like the OLS estimation where the sample mean is defined as the solution to the minimization of the sum of squared residuals, the median is defined as the solution of this minimization of the sum of absolute residual for the quantile (Koenker and Hallak (2001). Buchinsky (1998) has proposed the following optimization problem to be solved to obtain coefficient vectorβ_θ.

$$\min_\beta \frac{1}{n} = \left\{ \sum_{i:y_i \geq x'_i\beta} \theta|y_i - x'_i\beta| + \sum_{i:y_i < x'_i\beta} (1-\theta)|y_i - x'_i\beta| \right\}$$

By varying weights among residuals the Education Function Production is estimated at different quantiles (θ= 10%, 25%, 50%, 75%, 90%) of achievement distribution. It follows that for estimating the 25th percentile positive residuals are weight by 25% and the negative residuals are weighted by 75%. Where all residuals receive the same weight, we obtain the median of the score distribution.

Sample

Ten developing countries participated in PIRLS 2016. The table below presents clearly the number of pupils and schools that participated in PIRLS assessment. We can noted that not all student selected to assess are present due to the exclusion of some school which are not geographically accessible and very small or for student with disability.

Description of variables used

Homework variables: PIRLS (2016) surveys asked tow questions, the first was about the frequency of homework assignment: "How often does your teacher give you reading homework?" response categories were:

(a): I do not assign reading for homework
(b): less than once a weak
(c): 1or 2 times a week
(d): 3 or 4 times a week
(e): every day

The second was about the amount of time were spent on doing homework when it is given with" how many minutes do you usually spend on your homework?" response categories were:

(a):15 minutes or less
(b): between 16-30 minutes
(c): between 31-60 minutes
(d): more than 60 minutes

Also, we cannot of course ignore the fundamental determinants of educational achievement which are the indicators of socioeconomic like parents' level education or occupation and the individual characteristics (age and sex)

According to PIRLS the socioeconomic status is approached by home resources for learning when pupils scored by the availability of five home resources:

- Many Resources corresponding to more than 100 books in the home, having both their own room and an Internet connection, more than 25 children's books, at least one parent having completed university, and one with a professional occupation, on average.

- Few Resources corresponds, on average, to having 25 or fewer books, neither of the home study supports, 10 or fewer children's books, neither parent having gone beyond upper secondary school, and neither having a business, clerical, or professional occupation.

Table 1. Sample size from PIRLS 2016

Developing Country	Number of Schools in Original Sample	Total Number of Schools that Participated	Number of Students Excluded	Number of Eligible Students	Number of Students Absent	Number of Students Assessed
Bahrain	184	182	148	5 567	87	5 480
Egypt	160	160	0	7 171	214	6 957
Iran, Islamic Rep. of (Combined)	274	271	10	8 883	117	8 766
Literacy			4	4 441	60	4 381
PIRLS			6	4 442	57	4 385
Kuwait	187	177	14	5 002	393	4 609
Malta	97	95	223	3 793	146	3 647
Morocco (Combined)	361	360	0	11 176	234	10 942
Literacy			0	5 586	133	5 453
PIRLS			0	5 590	101	5 489
Oman	308	306	67	9 406	172	9 234
Qatar	218	216	205	9 343	266	9 077
Saudi Arabia	208	202	23	4 984	243	4 741
United Arab Emirates	482	468	232	17 060	589	16 471

Source: IEA's Progress in International Reading Literacy Study- PIRLS 2016

Table 2. Descriptive data

Countries	Frequency of reading assigned as homework in %					Amount of minutes spent on doing homework in %			
	I do not assign reading for homework	less than once a week	1 or 2 times	3 or 4 times a weak	every day	15 minutes or less	Between 16-30 minutes	Between 31-60 minutes	More than 60 minutes
Bahrain	10.91	14.05	51.79	12.45	10.80	24.35	61.98	13.33	0.34
Egypt	0.73	3.94	24.25	29.28	41.80	17.30	55.72	21.62	5.36
Iran	4.41	10.45	32.72	26.90	25.52	23.60	46.36	26.68	3.35
Kuwait	12.09	11.47	36.33	19.24	20.88	43.59	43.52	9.68	3.21
Malta	11.57	10.50	22.25	12.88	42.80	11.37	57.38	21.46	9.79
Morocco	2.02	5.20	25.88	27.79	39.11	13.78	51.12	29.19	5.91
Oman	2.99	17.27	33.85	25.39	20.50	19.46	62.12	16.13	2.99
Qatar	9.40	8.39	44.10	21.51	21.59	22.79	46.58	23.89	6.74
Saudi Arabia	4.15	17.33	47.36	17.42	13.74	35.33	45.23	16.68	2.77
United Arab Emirates	3.37	12.23	42.62	18.58	23.19	23.76	57.57	14.60	4.07

All this qualitative variables are considered as dummy variable in the regression model. The average mean of the 5 plausible values was used as dependant variables. For "I do not assign reading for homework category" was considered as a residual category. Concerning the time spent on homework "15 minutes or less" is considered as residual category.

The table 2 above presents a descriptive statics of homework variables. The frequency of homework given by teacher to their pupils was different. As we can the majority teacher's request homework from their pupil's but with diverse percentage such as Malta has the highest percentage "42.80%" pupils required to do homework every day compared to Bahrain only 10.80%. The fact that almost all teacher set homework every day to their pupils that reveals that homework assignments are a common practice. According to the time spent on doing homework, most pupils spent between 16-30 minutes doing homework.

RESULTS

In this section we present OLS regression and quantile regression estimate of the impact of individual characteristics, home resources for learning and homework on reading outcomes. We report coefficient of OLS estimations (column1). The estimation of different coefficients at 10th, 25^{th}, 50^{th}, 75^{th}, and at 90^{th} quantiles are presented in the next columns.

Pupils characteristic and reading achievement

Table below presents the relation between reading scores and individual characteristics of each developing country.

Regarding, the gender characteristics the estimation of different coefficients in the results from OLS and QR regression suggest that girls performer better than boys in reading performance in all developing countries. According to age, there is a positive relation between age and reading outcomes suggested by OLS and QR regression in most developing countries except in Iran and Morocco a negative relationship exists between reading performance and student's age, wich means that the older the age, the lower students' performance gets so as pupils get older the performance drops off (White, 1982).

Home resources for learning and reading performance

Table A.2 : presents the estimation results of the OLS and quantile regressions at 10%, 25% 50%, 75%, 90% conditional quantile of the score's distribution..

Focusing on the socio-economic status measured by the home resources for learning, both results OLS and quantile regression had the expect sing. Pupils with many resources means that have more 100 books in their home, having both own room and internet connection, more than 25 children's books, at least one parent having completed university, and one with a professional occupation, on average performer better than the others with few home resources. Subsequently, many resources for learning is a positive determinant for reading outcomes for all developing countries

Homework variables and reading outcomes

From tables A.3, it is possible to extract some clear results about the effects of homework on reading performance.

Table A.1. Average reading scores and individual characteristics (Significant levels *1%; **5%; ***10%)

VARIABLES		MLT	UAE	BAH	QAT	SA	IRA	OMN	KWT	MAR	EGT
Age	OLS	9.478*	22.68***	2.133	18.04***	-0.352	-16.04***	11.83**	18.32***	-29.47***	18.04***
		(5.342)	(3.999)	(5.017)	(4.302)	(5.036)	(5.433)	(4.859)	(6.336)	(2.635)	(4.302)
	q10	-9.878*	19.20***	-8.947***	14.97***	-13.58***	-21.22***	-0.853	27.40***	-22.73***	14.25***
		(5.766)	(2.843)	(2.794)	(3.882)	(3.891)	(7.353)	(6.260)	(8.986)	(3.443)	(3.514)
	q25	9.590	23.44***	-4.024	16.99***	-3.409	-18.16***	5.015	19.02***	-28.21***	16.99***
		(6.048)	(3.347)	(5.152)	(3.472)	(4.587)	(6.516)	(3.824)	(5.530)	(2.304)	(3.472)
	q50	18.29**	28.00***	3.171	20.18***	4.675	-11.45***	14.34***	15.04**	-31.92***	20.18***
		(7.130)	(2.199)	(6.732)	(3.319)	(5.498)	(3.911)	(4.462)	(5.892)	(2.656)	(3.319)
	q75	11.49***	28.52***	16.66**	27.65***	11.45**	-9.591*	16.36***	27.37***	-30.23***	27.65***
		(4.399)	(1.980)	(6.772)	(3.182)	(5.470)	(5.618)	(4.295)	(7.373)	(3.133)	(3.182)
	q90	11.43***	28.54***	18.58**	23.15***	5.698	1.394	19.95***	27.43***	-26.36***	23.15***
		(3.891)	(2.100)	(8.316)	(3.610)	(4.030)	(4.030)	(4.799)	(6.652)	(2.348)	(3.610)
VARIABLES		**MLT**	**UAE**	**BAH**	**QAT**	**SA**	**IRA**	**OMN**	**KWT**	**MAR**	**EGT**
Girl	OLS	20.74***	23.93***	38.97***	30.31***	58.63***	45.73***	47.15***	33.53***	18.65***	30.31***
		(3.755)	(5.572)	(6.123)	(5.319)	(9.207)	(6.243)	(3.003)	(10.63)	(4.661)	(5.319)
	q10	23.77***	37.91***	66.41***	45.79***	65.35***	55.54***	65.23***	65.95***	26.10***	45.79***
		(7.920)	(2.853)	(5.517)	(6.428)	(3.788)	(6.553)	(3.566)	(10.65)	(6.512)	(6.428)
	q25	32.71***	27.82***	62.15***	43.43***	69.76***	44.23***	59.16***	41.54***	26.24***	43.43***
		(6.325)	(2.228)	(4.469)	(4.411)	(4.187)	(5.563)	(2.580)	(5.216)	(3.973)	(4.411)
	q50	21.75***	20.27***	42.86***	34.08***	61.80***	38.53***	47.01***	31.69***	25.90***	34.08***
		(5.172)	(1.873)	(4.367)	(5.282)	(4.976)	(4.703)	(2.557)	(6.497)	(4.708)	(5.282)
	q75	11.42***	11.82***	24.24***	26.17***	51.42***	30.57***	33.84***	17.01***	18.90***	26.17***
		(2.720)	(2.278)	(3.744)	(2.951)	(4.290)	(3.423)	(2.724)	(5.428)	(4.657)	(2.951)
	q90	7.137***	7.138***	16.97***	18.03***	49.72***	23.38***	26.17***	7.695	14.25***	18.03***
		(2.329)	(2.500)	(5.189)	(2.802)	(4.100)	(4.110)	(3.801)	(6.084)	(3.514)	(2.802)

Table A.2. Average reading scores and home resources for learning

VARIABLES		MLT	UAE	BAH	QAT	SA	IRA	OMN	KWT	MAR	EGT
home resources for learning1	OLS	31.53***	84.01***	65.87***	67.38***	48.62***	70.67***	80.05***	69.69***	94.11***	79.19***
		(5.622)	(5.601)	(10.86)	(8.483)	(11.19)	(7.857)	(7.682)	(14.98)	(14.76)	(19.08)
	q10	39.74***	106.0***	67.64***	77.86***	55.59***	79.49***	88.66***	55.62**	134.0***	112.4***
		(7.038)	(7.322)	(14.02)	(9.687)	(12.88)	(16.46)	(10.41)	(24.44)	(9.291)	(22.31)
	q25	34.51***	110.3***	73.19***	84.48***	47.51***	81.50***	96.81***	69.83***	113.5***	95.37***
		(7.157)	(4.277)	(8.574)	(7.567)	(14.67)	(13.34)	(6.942)	(18.05)	(27.93)	(21.43)
	q50	31.91***	92.64***	74.83***	77.72***	47.71***	60.97***	81.23***	76.71***	85.24***	68.78***
		(3.731)	(3.194)	(6.564)	(4.790)	(14.54)	(5.659)	(4.672)	(15.22)	(17.01)	(17.77)
	q75	35.20***	69.87***	72.76***	67.71***	53.84***	51.47***	79.80***	68.10***	75.32***	49.68*
		(4.298)	(2.736)	(9.525)	(6.556)	(12.93)	(13.29)	(6.801)	(9.532)	(20.07)	(25.58)
	q90	26.24***	54.93***	73.85***	61.12***	44.54***	68.05***	72.17***	77.77***	74.74***	65.07*
		(3.835)	(2.782)	(9.310)	(6.147)	(12.53)	(13.56)	(4.864)	(10.05)	(24.15)	(35.04)
VARIABLES		MLT	UAE	BAH	QAT	SA	IRA	OMN	KWT	MAR	EGT
home resources for learning3	OLS	-64.05***	-80.48***	-55.41***	-89.86***	-20.65**	-75.38***	-63.34***	-43.45***	-41.58***	-83.29***
		(16.78)	(8.321)	(7.395)	(8.597)	(9.299)	(8.747)	(4.908)	(14.68)	(7.148)	(8.475)
	q10	-103.4*	-80.70***	-57.19***	-70.99***	-32.77***	-80.83***	-70.03***	-59.74**	-26.47***	-83.65***
		(61.79)	(7.775)	(13.65)	(10.53)	(7.505)	(6.464)	(5.192)	(23.42)	(4.666)	(5.068)
	q25	-50.57***	-90.65***	-63.39***	-85.58***	-28.91***	-84.99***	-71.82***	-68.66**	-29.39***	-95.08***
		(13.39)	(5.216)	(13.44)	(14.58)	(8.717)	(6.090)	(4.379)	(27.17)	(3.489)	(3.316)
	q50	-64.80***	-94.52***	-57.62***	-100.5***	-22.21***	-66.54***	-71.62***	-38.91**	-32.69***	-95.71***
		(18.58)	(5.870)	(8.121)	(9.776)	(6.495)	(5.815)	(5.039)	(18.35)	(4.266)	(5.331)
	q75	-67.73***	-90.65***	-61.45***	-101.5***	-21.22***	-57.27***	-69.15***	-31.21**	-34.86***	-83.38***
		(17.00)	(5.248)	(6.846)	(20.27)	(7.600)	(3.890)	(3.968)	(12.91)	(4.704)	(5.716)
	q90	-67.44**	-95.19***	-57.08***	-76.98***	-15.40***	-59.02***	-54.61***	-44.36	-29.12***	-70.43***
		(30.10)	(9.669)	(8.002)	(21.82)	(5.379)	(4.622)	(5.523)	(30.74)	(4.340)	(7.644)

The frequency of homework per week given by teacher was benefit only in some countries, OLS result suggest that "every day" or "3 or 4 times a week" ameliorate reading scores only in Saudi Arabia and Egypt. In Oman and Kuwait when teacher set homework less than once a week has a negative significant effect on reading performance. For the other countries, homework assigned by teacher didn't have any effects on reading outcomes.

Turn on quantile regression, results show clearly that frequency of setting homework weakly related to reading achievement, as we see in table below (A.3)for almost all countries, except some case such as in United Arab Emirates, setting every day homework was no significant in Ols regression while in quantile regressions it became strongly related to reading scores for 25% to 90% distributions.

Focusing on the time spent on homework, results was various, in Oman, Kuwait, and Bahrain ,when pupils spent more than 60 minutes doing homework was significant with negative signs dissimilar to Malta and United Arab Emirates. According to Qatar, spending between 16-30 minutes was positively related to reading achievement. Moreover, Oman's pupils practicing homework between 16-30 minutes or 31- 60 minutes tend to performer better on reading. By contrast in Morocco, Egypt and Saudi Arabia, time spending on homework did not turn out as significant determinant of reading performance. Estimation results with quantile regression were also mixed. For example in some countries spent between 15-30 minutes on homework was not significant in OLS regression while in QR has positive impact on reading achievement like Morrocco in all distribution and Kuwait, Oman, Unated Arab Emirates in some distribution .

Table A.3. Average reading scores and homework

VARIABLES		MLT	UAE	BAH	QAT	SA	IRA	OMN	KWT	MAR	EGT
How often does puipl homework2	OLS	14.51 (28.04)	NS	NS	NS	NS	NS	-19.80* (11.45)	-40.30* (21.06)	NS	NS
	q10	5.136 (64.63)	NS	NS	NS	NS	NS	NS	NS	NS	NS
	q25	NS	NS	NS	NS	NS	NS	NS	NS	NS	33.61** (15.63)
	q50	27.53* (16.09)	NS	NS	NS	-26.17* (14.20)	NS	NS	NS	NS	NS
	q75	NS	NS	NS	-24.13* (14.43)	NS	NS	-27.70* (14.38)	NS	-10.79* (5.965)	NS
	q90	NS	13.62* (7.669)	NS	NS	-17.72* (10.59)	NS	-24.15* (12.40)	-60.75* (35.26)	NS	NS
How often does puipl homework3	OLS	NS	23.97** (10.48)	NS	NS	NS	NS	NS	NS	NS	NS
	q10	NS	NS	NS	NS	NS	NS	NS	NS	20.99* (12.33)	NS
	q25	NS	22.05*** (7.766)	NS	NS	NS	NS	NS	NS	NS	19.24* (10.68)
	q50	NS	27.89*** (10.48)	NS	NS	NS	NS	NS	NS	NS	NS
	q75	NS	24.39*** (9.108)	NS	NS	NS	NS	NS	NS	NS	NS
	q90	NS	23.18*** (8.141)	NS	NS	NS	NS	NS	NS	NS	NS
How often does puipl homework4	OLS	NS	NS	NS	NS	15.51** (7.100)	NS	NS	NS	NS	26.25* (14.78)
	q10	NS	NS	NS	NS	20.14** (9.820)	NS	NS	NS	NS	NS
	q25	-60.07* (33.21)	18.00** (8.477)	NS	NS	25.60*** (7.309)	NS	NS	NS	NS	52.57*** (10.08)
	q50	NS	25.12** (10.38)	NS	NS	NS	NS	NS	NS	NS	43.04* (22.48)
	q75	NS	16.19* (9.373)	NS	NS	NS	NS	NS	NS	NS	NS
	q90	NS	17.99** (7.709)	NS	NS	NS	NS	NS	NS	NS	NS
How often does homework5	OLS	NS	NS	NS	NS	13.20** (6.215)	NS	NS	NS	NS	33.65** (15.08)
	q10	NS	NS	NS	NS	16.82** (6.580)	45.65** (21.30)	NS	NS	28.16** (11.64)	NS
	q25	NS	NS	NS	NS	19.58*** (7.285)	NS	NS	NS	NS	58.40*** (9.967)
	q50	NS	NS	NS	NS	NS	NS	NS	NS	17.34* (9.812)	53.53** (23.81)
	q75	NS	NS	NS	-23.38*** (8.840)	NS	NS	NS	NS	17.80*** (6.749)	27.87* (14.47)
	q90	NS	NS	NS	-30.31** (14.49)	NS		NS	NS	NS	NS
Time spent on homework2	OLS	NS	NS	NS	20.98* (11.04)	NS	33.99*** (12.70)	NS	NS	NS	NS
	q10	-14.40** (6.591)	NS	-12.55*** (4.603)	11.49** (4.488)	NS	17.91** (7.125)	13.24** (5.505)	NS	11.44* (5.881)	-9.122* (5.075)
	q25	NS	17.99** (7.709)	-17.47*** (4.778)	14.32*** (3.626)	11.20** (5.561)	17.87*** (5.148)	6.471* (3.770)	NS	18.39*** (4.890)	NS
	q50	NS	7.031** (3.414)	-12.82*** (4.681)	10.39*** (3.273)	15.03*** (4.702)	12.49*** (3.632)	NS	7.458* (4.185)	22.64*** (5.459)	NS
	q75	NS	NS	NS	NS	23.90*** (5.474)	9.850** (4.192)	NS	NS	27.58*** (5.596)	NS
	q90	NS	NS	NS	NS	18.90*** (6.350)	11.06** (4.492)	NS	NS	26.38*** (4.288)	NS
Time spent on homework3	OLS	NS	50.06*** (11.60)	NS	NS	NS	29.85** (13.38)	NS	NS	NS	NS
	q10	-28.39*** (9.001)	38.24*** (9.371)	NS		NS	25.19** (12.42)	13.32* (7.774)	NS	12.73* (7.207)	-20.81** (8.637)
	q25	NS	47.22*** (4.982)	NS		NS	19.68** (8.395)	15.52*** (5.766)	46.78*** (9.714)	21.46*** (5.093)	-19.80*** (5.326)
	q50	NS	32.81*** (3.996)	NS	13.36*** (5.004)	NS	13.08*** (4.824)	13.64*** (3.762)	33.96*** (10.14)	28.55*** (5.006)	-19.14*** (6.419)
	q75	NS	23.82*** (3.949)	NS	NS	10.92* (6.199)	11.27** (4.637)	14.43*** (4.847)	50.88*** (9.526)	31.89*** (7.857)	NS
	q90	NS	9.093* (4.991)	NS	NS	NS	11.93** (5.475)		39.73*** (13.95)	26.52*** (5.277)	NS

….. continue

VARIABLES		MLT	UAE	BAH	QAT	SA	IRA	OMN	KWT	MAR	EGT
Time spent on homework4	OLS	15.41**	38.31**	-106.9***	NS		NS	-43.11***	39.73***	NS	NS
		(7.652)	(16.36)	(8.088)				(13.91)	(13.95)		
	q10	19.21*	69.00***	-50.16***	NS	NS	NS	NS	-21.49*	NS	NS
		(10.92)	(8.552)	(12.11)					(12.66)		
	q25	21.14***	56.23***	-95.75***	26.18***		NS	-36.22***	NS	NS	NS
		(7.886)	(5.142)	(29.59)	(9.812)			(9.499)			
	q50	17.32*	26.72***	-146.4***	22.12***	20.54**	NS	-39.01***	-27.99***	NS	NS
		(8.973)	(5.082)	(27.56)	(8.137)	(9.655)		(11.08)	(7.632)		
	q75	14.58**	13.15**	-101.9**	NS	19.68**	NS	-32.59***	-40.99***	27.06**	24.68***
		(7.229)	(5.618)	(41.96)		(8.991)		(11.71)	(10.18)	(12.88)	(8.771)
	q90	15.06*	NS	-125.6***	NS	NS	NS	-41.41***	-56.63***	19.69**	NS
		(8.312)		(34.25)				(13.17)	(15.42)	(8.660)	
Observations		2340	10244	3579	5326	3173	3385	6551	2001	3375	5343
R-squared		0.067	0.16	0.106	0.111	0.127	0.231	0.143	0.080	0.187	0.168
Standard errors in parentheses											
*** p<0.01, ** p<0.05, * p<0.1											

Conclusion

This research investigates education production functions for pupils in ten developing countries. Using PIRLS dataset to seek whether homework affect fourth grader's school in reading outcomes. What all of the countries have in common is relatively very low test reading scores. Addressing the question of homework's effect on pupils achievement concern not only pupils but teacher and parents. Therefore, we expect this kind of study can allows us to clarify some important point to work out the reading performance. Results demonstrated a clear and negative link between frequency of homework assigned and reading achievement around all countries. These findings suggest that there is a need for teacher to rethink to diversify the type of homework for example group item, oral presentation practice in order to motivate pupils. As follow up study, we plan to look at other variables that can taking any sequential pattern, especially "how often parents check Child homework "and "how often homework assignment corrected by teacher.

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