(HDI)

(2004 -1975)

Human development

(UNDP) (HDI) index

20 177 2004-1975

. (HDI)

" (T.F.R)

(HDI) . (49-15)

(HDI)

. (T.F.R)

409

:

(UNDP)

(132) 177

(Indicators)

..

[1] 184

Human development Index (HDI)

: wight Average

life) (education index)
(GDP Index) (expectancy index

(HDI)

.

:

2004 (177)

)

. 2004-1975 (

(1) www.undp-pogar.org/arabic/stats

)

(HDI) (

:

. 2004-2000-1995-1990-1985-1980-1975

2004

2004

177 (T.F.R)[1] *

:

(order)

(1)

T.F.R		1 2	2 3	3 4	4 5	5 6	6 7	7 8
Order	1	2	3	4	5	6	7	8

(HDI)

(HDI) T.F.R

.

(9)

:

-3 **-2** **-1**

-5 **-4**

. **-8** **-7** **-6**

(HDI)

.

: *

(15-49)

. 66 1993 (1)

411

Simple linear regression model

2004   (HDI)   (T.F.R)

least squares method (O.L.S)

Auto correlation   Homoscedasticity

.

(HDI)

(1)   2004

one way analysis of variance

normality   (data)

. Homogeneity

(L.S.D) last significant difference

multiple comparisons

. T.F.R

:(   )

(UNDP)   network   (   )

:

www.undp.org/hard2006/statistics/indicators

(T.F.R)   (HDI)

:

جدول رقم **(2)** بيانات الدراسة وعدد الدول والقيم المفقودة

	1975	1980	1985	1990	1995	2000	2004
N	101	112	120	134	144	137	177
MISS	76	65	57	43	33	40	0

Missing data :

(HDI)

:

:

$$HDI = \frac{1}{3}\,{}^{\bullet}\text{(life expectancy index)} + \frac{1}{3}\text{ (education index)} + \frac{1}{3}\text{ (GDP index)}$$

:

(L.E.I)

:

L.E.I = (Country e_0 - Min world e_0) / (Max world e_0 - Min world e_0)

:

e_0

$\text{Country } e_0$ (L.E.I)

$\text{Max world } e_0$ $= 85$

$\text{Min world } e_0$ $=25$

(3)

e_0 L.E.I

(3)

e_0	30	40	50	60	70	80	85
L.E.I	0.083	0.25	0.417	0.583	0.75	0.917	1

:

∗ internet site : Human Development Report 2006- HDI calculator :http://
hdr.undp.org/hdr2006/statistics/indices

Education Index   :

:

Adult literacy index   -

A.L.E=(country (L) perc – Min world (L) perc) / (Max world (L) perc - Min world (L) perc)

: Country perc

(0)   : Min world perc

%100   : Max world perc

Gross enrolement Index   -

:

G.E.I=(country (E) perc – Min world (E) perc) / (Max world (E) perc- Min world (E) perc)

:

: Country (E) perc

(0)   : Min world (E) perc

(100 %)   : Max world (E) perc

(E.I)   :

$$\text{E.I}^* = \frac{2}{3} \ (\text{A.L.I}) + \frac{1}{3} \ (\text{G.E.I})$$

GDP Index

.

414

G.D.P Index = [Log(yearly average income in person in the country $) – log(Min average in the world)] / [log(Max average in the world) – log (Min average in the world)]

:

100 $

:   G.D.P Index   **(4)**

(4)

$	100	1000	2000	3000	4000	5000	10000	20000	40000
GDP INDEX	0	0.384	0.5	0.568	0.616	0.653	0.769	0.884	1

:

(HDI)

0.499 - 0.1   (ı)

.   0.999-0.8   0.799-0.5

:

(HDI)

2004-1975

(HDI)

Non-parametric   Kolmogorov - Semirnov

:   (D)   Goodness fit test

$$D = Sup \mid F_S(X) - F_T(X) \mid$$

$F_T(X)$ $F_S(X)$:

.   (5)

.   2006   (1)

(**5**)   Test of Normality

	Kolmogorov – Semirnov Test		
	Statistic (D)	d.F	Sig = p-value
HDI 1975	0.088	101	0.052
HDI 1980	0.097	112	0.012
HDI 1985	0.092	120	0.014
HDI 1990	0.106	134	0.001
HDI 1995	0.102	144	0.001
HDI 2000	0.115	137	0.00
HDI 2004	0.125	177	0.00

:   Spss

$\alpha = 0.05$ p-value

1975   (1) Normal Q-Q

plot   2004   observed value (HDI)

HDI   .

Expected **Z** score

(HDI)   29   HDI>0.9

(0.965)   (0.96)   (0.957)   (0.956)

(0.903) .

N o r m a l Q - Q P l o t o f H D I 2 0 0 4

1

416
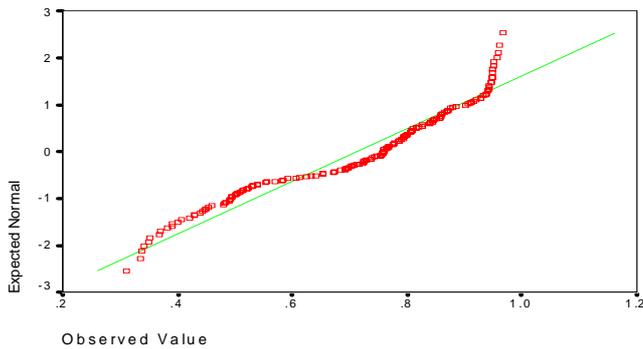
(6)

HDI

Negative skewness

1975 sk=-0.17

（Frequency ） 2004 － 0.531

（HDI）

.

/6 /

HDI2004	HDI2000	HDI1995	HDI1990	HDI1985	HDI1980	HDI1975		
177	137	144	134	120	112	101	Valid	N
0	40	33	43	57	65	76	Missing	
.71164	.69918	.67986	.66916	.64649	.63296	.59751	Mean	
.013335	.015530	.015274	.015821	.016952	.017825	.019591	Std. Error of Mean	
.75900	.73900	.72400	.70700	.68200	.66100	.61500	Median	
.774(a)	.775	.742	.682(a)	.868	.861	.868	Mode	
.177409	.181774	.183287	.183145	.185696	.188644	.196886	Std. Deviation	
.031474	.033042	.033594	.033542	.034483	.035586	.038764	Variance	
-.531	-.465	-.462	-.499	-.388	-.344	-.170	Skewness	
.183	.207	.202	.209	.221	.228	.240	Std. Error of Skewness	
-.809	-.861	-.857	-.864	-.962	-1.049	-1.215	Kurtosis	
.363	.411	.401	.416	.438	.453	.476	Std. Error of Kurtosis	
.654	.688	.682	.683	.669	.643	.650	Range	
.311	.268	.254	.246	.240	.250	.232	Minimum	
.965	.956	.936	.929	.909	.893	.882	Maximum	
125.961	95.788	97.900	89.667	77.579	70.892	60.349	Sum	
.44380	.42680	.41650	.39200	.37880	.35940	.31380	10	Percentiles
.51080	.50320	.47900	.46300	.45080	.44460	.41340	20	
.54600	.52750	.52200	.51400	.48450	.47750	.42800	25	
.62880	.60280	.58550	.58300	.53680	.51280	.46420	30	
.71720	.69020	.67900	.65100	.61640	.57520	.52540	40	
.75900	.73900	.72400	.70700	.68200	.66100	.61500	50	
.78880	.77500	.74900	.74000	.70420	.70820	.67260	60	
.81900	.82280	.79200	.80450	.78570	.77260	.73840	70	
.84550	.84100	.81875	.81300	.80500	.80025	.77300	75	
.86540	.86940	.85500	.82800	.82980	.82840	.82860	80	
.94000	.93260	.91450	.89500	.88070	.86670	.85260	90	

a Multiple modes exist. The smallest value is shown

1975-2004 （2） Box plot

（Q1）

（11.5 %） 1980 /1975

（6 %）（Q1） 1990/1985 2.3 %

（1.2 %）
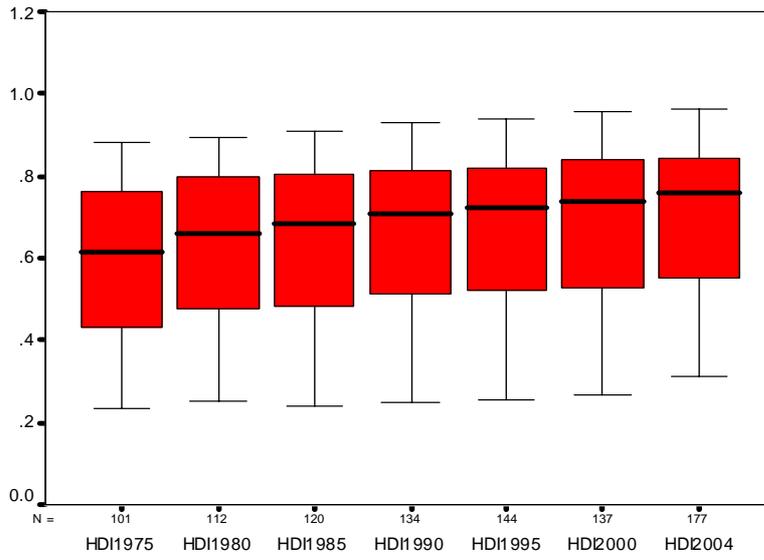
/ 2 /

(Q3)

interquartile Range   **.%0.33**   2004−1975

.   HDI   Q3-Q1

(7)

	1975	1980	1985	1990	1995	2000	2004
Q3-Q1	0.345	0.32275	0.3205	0.299	0.299675	0.3135	0.29950

2004/1975   (Q1,Median , Q3)

23.4   27.5%   Q1

box-)   9.3%   Q3   %

                                        (plot

25 %   2004

) 0.546

(

(HDI)

(**8**)

2000/1995

(**8**)

	1980/1975	1985/1980	1990/1985	1995/1990	2000/1995	2004/2000
	5.9	2.1	3.5	1.5	2.8	1.7
	7.4	3.1	3.6	2.4	2	2.7

Kurtosis   Range

.

descriptive   (9)
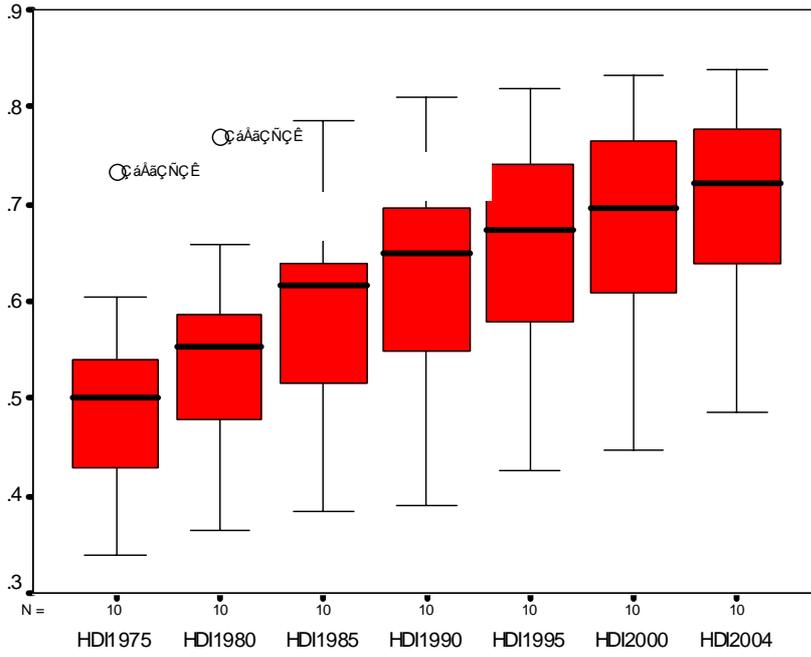
statistics

/ **9** /

Statistics

HDI2004	HDI2000	HDI1995	HDI1990	HDI1985	HDI1980	HDI1975	
17	17	17	15	14	13	11	Valid
0	0	0	2	3	4	6	Missing
.69294	.66882	.64388	.60920	.60836	.58138	.51918	Mean
.032901	.033118	.033129	.034704	.034864	.037681	.041508	Std. Error of Mean
.72800	.70100	.67300	.64600	.62300	.57000	.50600	Median
.760	.447(a)	.425(a)	.390(a)	.623	.363(a)	.340(a)	Mode
.135654	.136550	.136592	.134407	.130448	.135862	.137665	Std. Deviation
.018402	.018646	.018657	.018065	.017017	.018459	.018952	Variance
-.465	-.417	-.336	-.311	-.272	-.073	.612	Skewness
.550	.550	.550	.580	.597	.616	.661	Std. Error of Skewness
-1.260	-1.248	-1.227	-.674	-.609	-.797	-.241	Kurtosis
1.063	1.063	1.063	1.121	1.154	1.191	1.279	Std. Error of Kurtosis
.385	.395	.403	.422	.402	.414	.423	Range
.486	.447	.425	.390	.384	.363	.340	Minimum
.871	.842	.828	.812	.786	.777	.763	Maximum
11.780	11.370	10.946	9.138	8.517	7.558	5.711	Sum
.53600	.51750	.50000	.50600	.51125	.48250	.42900	25
.72800	.70100	.67300	.64600	.62300	.57000	.50600	50
.79350	.76700	.74100	.69500	.69975	.70250	.60300	75

1%

Q1   0.6 %   (177**)**

419

1.78 %

0.94 %

(Q1,Median,Q3)　　　　　　　　　　　　　　　　　　　　　　(HDI)

1975　　　　　　　　Skewness

(HDI)

.　　　　(HDI)　　　　　(8)

شكل رقم 3

(D)　　　　　Kolmogorov - Smirnov

.

(10)

	Kolmogorov – Smirnor		
	Statistic	d.f	Sig
HDI 1975	0.150	10	0.2
HDI 1980	0.149	10	0.2
HDI 1985	0.202	10	0.2
HDI 1990	0.206	10	0.2
HDI 1995	0.193	10	0.2
HDI 2000	0.163	10	0.2
HDI 2004	0.216	10	0.2

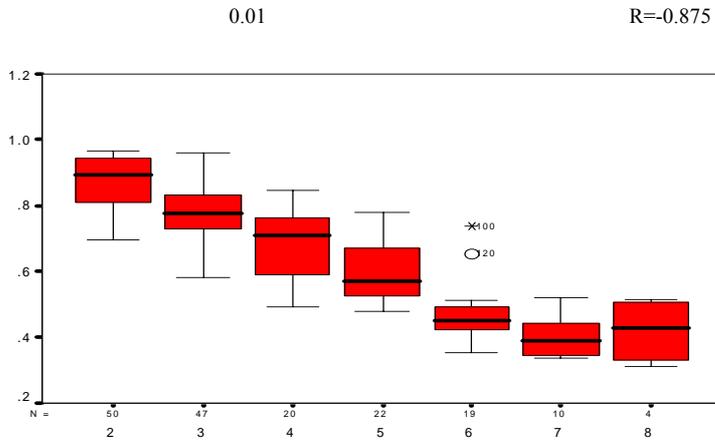:**2004**   (**T.F.R**)

(HDI)   (T.F.R)

(T.F.R)

:   (11)

Descriptives Statistics   **(11)**

	Mean	**Median**	**Q1**	**Q3**
(**T.F.R**)				
2	**0.87546**	**0.894**	**0.808**	**0.94325**
3	**0.78226**	**0.744**	**0.728**	**0.839**
4	**0.6847**	**0.7090**	**0.58025**	**0.76225**
5	**0.59518**	**0.5695**	**0.52125**	**0.67075**
6	**0.46953**	**0.45**	**0.421**	**0.494**
7	**0.4009**	**0.3875**	**0.341**	**0.45225**
8	**0.4185**	**0.4255**	**0.305**	**0.50950**

order

0.894   (HDI)   50 %   (T.F.R)

0.774   (T.F.R)

(HDI)   T.F.R   T.F.R

5

421

5   2

(4)

0.01   R=-0.875

```
1.2
1.0
 .8                                    ✳100
 .6                                    ◯20
 .4
 .2
N =      50     47     20     22     19     10      4
          2      3      4      5      6      7      8
```

/4/

:

(9)

:   (12)

(12)

	Mean	Range	Perc . Rang %
	0.48633	0.531	109
	0.66233	0.418	63
/	0.71963	0.437	60
	0.74732	0.441	59
/	0.77097	0.397	51
/	0.80394	0.191	24
	0.81900	0.287	35
	0.93027	0.109	12
	0.94900	0.002	0.2

422

(HDI)

Least developed countries (LDCS)

. 12 %   109%

                                              35   (LDCs)   51
    . (   )   (5)

Simple linear correlation

:and Regression analysis

                        (HDI 2004)   (T.F.R)

R   R=   -0.875   (172)

    H₀:p=0   P-Value=0   (0.01)

                        (O.L.S)   B₁ B₀

    . ($\hat{Y}$)

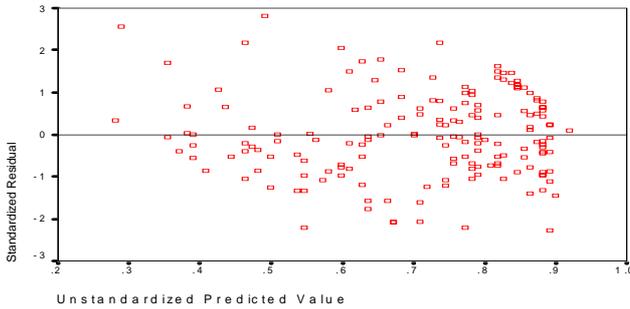   scatter plots   Unstandardized predicted value

        (5)   standardized residuals $e = (y - \hat{y})$
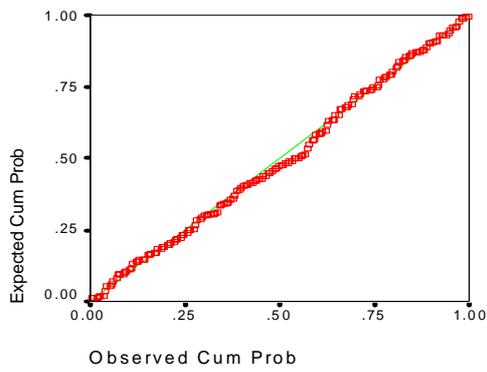

                    /5/

Normal probablity plot (6)

.

Normal P-P Plot of Regression Stand

Dependent Variable: HDI2004

/ 6 /

(13)

Coefficients(a)

95% Confidence Interval for B		Sig.	t	Standardized Coefficients	Unstandardized Coefficients		Model	
Upper Bound	Lower Bound			Beta	Std. Error	B		
1.028	.973	.000	71.387		.014	1.001	(Constant)	1
-.084	-.099	.000	-23.622	-.875	.004	-.091	X26	

a Dependent Variable: HDI2004

$$\hat{y} = 1.001 - 0.091X \quad :$$

424

T.F.R

. 0.091▬ HDI

P-Value=0 （0.001） B₁ B₀

.

: B₁

$$\Pr(-0.089 \le B_1 \le -0.099) = 95\%$$

F （14）

14） . (t) B1

model Summary （15） sig=0 （F） P-value

coefficient of Determination （R²）

: 76.6 %

/ 14 /

ANOVA(b)

Sig.	F	Mean Square	df	Sum of Squares		Model
.000(a)	557.994	4.208	1	4.208	Regression	1
		.008	170	1.282	Residual	
			171	5.490	Total	

a Predictors: (Constant), X26

b Dependent Variable: HDI2004

(15)

Model Summary

Model	R	R Square	Std.Error of the estimate
1	0.875	0.756	0.086839

$$\hat{Y} = 1.008 - 0.087X$$

68.2 % R^2 0.001 B_0, B_1

95 %   (confidence interval for B_1)

$$\Pr(-0.54 \leq B_1 \leq -0.12) = 95\%$$

one way anova:

HDI)   (treatments)

                                        (1)   8   (2004

                                    (16)   (treatments)

/ 16 /

Descriptives

HDI2004

Maximum	Minimum	95% Confidence Interval for Mean		Std. Error	Std. Deviation	Mean	N	
		Upper Bound	Lower Bound					
.965	.694	.89606	.85486	.010251	.072483	.87546	50	2
.960	.581	.80541	.75910	.011505	.078874	.78226	47	3
.844	.491	.73703	.63237	.025001	.111806	.68470	20	4
.778	.479	.63616	.55420	.019706	.092428	.59518	22	5
.736	.353	.51340	.42565	.020883	.091028	.46953	19	6
.520	.335	.44687	.35493	.020323	.064266	.40090	10	7
.512	.311	.58310	.25390	.051721	.103442	.41850	4	8
.965	.311	.73587	.68193	.013662	.179177	.70890	172	Total

Null Hypothesis

.

Leven statistic   Homogeneity of variances

                                            (17)

                                            p-value=0.142

/ 17 /

Test of Homogeneity of Variances

HDI2004

Sig.	df2	df1	Levene Statistic
.142	165	6	1.628

(18) Anova

p-value=0

F=100.550

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ANOVA

HDI2004

Sig.	F	Mean Square	df	Sum of Squares	
.000	100.556	.718	6	4.311	Between Groups
		.007	165	1.179	Within Groups
			171	5.490	Total

Multiple

Least Significant Difference (L.S.D) comparisons

: $^{(1)}$Fisher

$$\overline{X}_1 - \overline{X}_2 \geq t\sqrt{2}\sqrt{\frac{mean \quad Square \quad withen \quad groups}{d.F \quad Betwen \quad groups}}$$

T.F.R (HDI)

$sig_i = 0$, i=1,2,...6

T.F.R   (HDI)

3

sig=0.725

. sig=0.039   sig=0.274

.

.

:**Results**

•   .

•   (HDI)   .

•   (HDI)   .

•   (HDI)   .

•

.

•   T.F.R   (HDI)   0.091

.   177   0.087

•   (HDI)   T.F.R

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- 1993 : "
30/3/1993 .

- 1993 : **66**

- 2006

- : 2000
:

- 1990 :
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- 1995 :
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- 1988 :
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