Iranian Economic Review, Vol.10, No. 12, Winter 2005

The Growth Dynamism in the Islamic Countries (1950-1998)

Zahra Afshari*
Elham Foroughi Pour**
Iman Sheibani***

Abstract

This paper has examined the phenomenon of convergence of per capita out put levels across the IC countries for the 1960-1998 periods. Three concepts of convergence, i.e., sigma beta and relative beta, have been used.

The estimated beta values reveals only a very weak convergence (λ=.0014) across IC for 1960-1998 period. But when a more homogeneous group of countries were selected, the results somehow improved the estimated beta value. For PEC s β was.005.

The sigma values reveal that the per capita out-put decreases across IC had an increasing trend over the 1950-1998 periods. It means that the poorer members did not demonstrate strong output convergence for the full or part of the period. For SAARC the output variation revealed a diminishing trend, but for the OPEC countries it showed an increasing trend.

The results of relative convergence (toward the countries steady state position) reveal that only for 15 countries the convergence hypothesis is confirmed. The average speed of convergence was .33.

The results provide a weak evidence of convergence across the IC, it means more attempt in various fields of cooperation: political, economic, cultural, social and scientific, is required to meet the OIC goals.

Keywords: Growth Dynamism, Islamic Countries, convergence, per capita output.

---

* - Professor of Economics, Alzahra University.

**- Alzahra University.

***- B.S. Student, Sharif University of Technology.

I- Introduction

This paper investigates the question of whether there has been any convergence of per capita output levels across Islamic countries (IC) since 1950's or not so far as we are aware of there has been no study on this and other related issues for Islamic countries yet In section one the socio economic indicators of These countries have provided growth impetus to different countries evenly given their factor endowments and structural characteristics.

The rest of the paper is organized as follows. Section two outlines the concept of Convergence in a historical context. Section three defines phenomenon of convergence that are used for empirical analysis. Section four tests convergence of Per capita output levels within and across Islamic countries at different time intervals. Section six summarized the major findings.

The Socio Economic Indicators of the Islamic Countries

The organization of the Islamic Conference (OIC) is an inter-governmental organization grouping fifty-six states. It was established in 1969. The organization aims to enhance cooperation in the Political, economic, Social, cultural and scientific fields in order to reach the growth convergence across the IC.

There are significant differences in the values of various socio economic indicators of IC (Table A-1). The area of IC is 31 million kilometers, 23% of the world area. Total population of IC in 1999 was more than 1200 millions, i.e. 21% of the world population. Total GDP of these countries was more than 1400 billion dollars in 2000. In 1998 the average GDP per capita for IC was 3369 dollars. Twenty-seven IC categorized as low-income countries (less than 725$ in 2000), twenty-one classified as middle income countries (725-8955$). Only four countries, i.e. Brunei, Kuwait, Qatar and UAE are classified as high income countries (Ash Guveli, Sedar Kilickaplan, 2000, 97-114). The adult literacy rate is different among IC, varied from 99.1% to 15.3% in 1999. The life expectancy at birth for the period 1995-2000 ranged from 75.5 years to 37.1 years.

The economies structure of IC is similar to the low and middle income countries.

Convergence in Historical Context

The word convergence has been used in the literature to mean different things in different context. Baumol (1986: 1075) points out those forces accelerating the growth of nations who are late comers to industrialization and economic development give rise to a long-run tendency.

In the nineteenth century, Karl Marx and Stuart Mill and in twentieth century economists like Alexander Gerschenkron were optimistic about convergence of developing countries (De Lang, 1988). David Hume introduced transfer of technology as a vehicle for the convergence among developing nations (Elmslie, 1995). In the modern growth Literature, The concept of convergence started with The Harrod-Domar and Solow growth models (Domar, 1946, Harrod, 1939 and Solo, 1956). According to neoclassical growth model, Countries with lower capital-Labor ratios would grow faster than countries with higher capital-Labor ratios. Free trade and capital flows will accelerate the convergence among nations. If income differentials result from technological differences, by flowing technological know-how from technologically advance countries to developing countries, the poorer countries would grow faster than richer countries (Romer, 1996). In the neoclassical model, an absolute convergence of per capita income occurs when the rate of saving and the growth rate of population and technology are identical across countries (Obstfol and Rogoff, 1996).

The growth experience across IC

The average real GDP per capita for IC countries in 1960 was 1174 dollars. The highest GDP per capita was for (Saudi Arabia), which was ten times of Togo the lowest value.

In 1998, the average real GDP per capita for IC countries was 3369 U.S. dollars, which was three times of its 1960 level. The highest figure was 24054 U.S. dollars (U.A.E) which was 110 times of the lowest figure (219$ belong to Tajikistan (Human Development report, 2000).

Table (A-2) reports rate of growth of the IC countries over different time period the annual growth rates of the real GDP per capita for these countries, ranging from .25 percent for Uzbekistan to -.23 for Tajikistan in 1950-1988. Twenty five member countries have experienced positive growth rates in 1998.

The mean value of the Rate growth of per capita GDP for the IC was -.005 with standard deviation of 0.9 OIC. Per capita GDP growth of 25 countries was above average. Indonesia and Malaysia had experienced a steady and stable growth rate, while in the remaining countries the growth path was not steady and stable.

Empirical evidence

Empirical evidence suggests that convergence of income levels is not a universal phenomenon. While in the results of the developed countries, like U.S. states since 1880, The Prefectures of Japan since 1930 and the regions of eight European countries indicate that absolute Beta convergence is the norm. (Barro and Salamartin, ch.11). Furthermore in recent decades some middle income developing countries showed evidence of convergence of per capita income levels, while low income developing countries showed little evidence of convergence (Zind, 1991).

The reasons behind the weak convergence is that first, the forces of convergence work well only when the political and economic institutions in poor countries are supportive of inward flows of foreign capital and technology (Zind, 1991). Zind finds that the factors that contributed to income convergence within thirty developing countries include the relative size of government, population and investment level. The second explanation relies on the differences in the level of Human capital per worker among countries. Thus, when externalities related to human capital are strong; richer countries achieve higher output levels due to high human capital endowment per worker and are able to maintain enough saving and investment compared with Poorer countries (Romer, 1986, 1990).

The Model

According to the Solow growth model, if y_s is the level of per capita output on the balanced growth path and y (t) is the level of per capita output at time t, then y converges to y_s at the rate β.

Equation (1) implies that Ln y (t) approaches Ln y_s expotentially:

$$\left(\frac{1}{t}\right) \text{Ln } y_{(t)} - \text{Ln } y_s = e^{-\beta t} (\text{Ln } y_{(0)} - \text{Ln } y_s) \qquad (1)$$

Where $y_{(0)}$ is the value of y at some initial date. By adding ($\text{Ln } y_s - \text{Ln } y_{(0)}$) to both sides of (1) and dividing by t yield an expression for the average growth rate of per capita output during the time interval (o, t).

$$(\text{Ln } y_{(t)} - \text{Ln } y_0) = -(1 - e^{-\beta t})(\text{Ln } y_0 - \text{Ln } y_s)\left(\frac{1}{t}\right) \qquad (2)$$

Equation (2) implies conditional convergence of per capita output levels across countries. It means, countries with initial outputs that are low relative to their balanced growth paths have higher growth rates.

Barro and Sala-i-Martin (1991) have used the following specification for estimation of the convergence coefficient across countries by non-linear least squares:

$$\frac{1}{T}\,\text{Ln}\left(\frac{y_{i,t}}{y_{i,t-T}}\right) = \alpha - (\text{Ln } y_{i,t-T})(1 - e^{-\beta t})\left(\frac{1}{T}\right) + U_{i,t} \qquad (3)$$

Where $y_{i,t-T}$, is the level of per capita output in country i at the beginning of the interval, $y_{i,t}$ is the level of per capita out put in country i at time t, T is the length of the observation interval, α is a constant that represent the steady-state per capita growth rate, β is the convergence coefficient, and $U_{i,t}$, is the stocastic error term with zero mean. Given the speed of convergence, the time required for the variable ($\text{Ln } y_{(t)} - \text{Ln } y_s$) to fall in half is approximately the solution to $-(1 - e^{-\beta t}) = .5$, where β is the rate of decrease. Taking logs of both sides, $t^* = \text{Ln}\left(\frac{.5}{\beta}\right) = \frac{.69}{\beta}$ (Romer, 1996).

Tests for Convergences

Three concept of convergence have been used in this paper. Sigma and Beta convergences have been used to measure across countries convergence and a Relative convergence to measure convergence within the country.

1- Sigma Convergence

Sigma convergence concerns with cross-sectional dispersion of per capita income levels. If the dispersion of per capita income levels decreases over time, there exists a sigma convergence. (Barro and Sala-i-Martin (1991-92), Baumol 1986, Obstfeld and Rogoff 1996).

In order to test for sigma convergence the standard deviation of (log of) per capita out put across countries has been calculated for each year for the period under consideration.

2- Beta convergence

As defined earlier, Beta convergence concerned with cross-section regression of time averaged income growth rate on the initial per capita income. If the coefficient of initial level per capita income bears a negative sign, it means countries with lower initial income levels grow faster than the countries with higher initial levels.

3- Convergence within Country

One Fundamental assumption behind β convergence is that all countries have the same steady-state growth path for per capita out put. However if the assumption relaxed, the economies with lower levels of per capita income (expressed relative to their steady-state levels of per capita income) tend to grow faster in per capita term.

Suppose that the absolute convergence for a group of economies holds. In discrete time, corresponding for example to annual data, the real per capita income for economy i can then be approximated by the process:

$$\text{Log } y_{it} = a + (1-b).\text{Log}\,(y_{i,t-1}) + \mu_{it} \qquad (4)$$

Where a, b are constant, with $0<b<1$, μ_{it} is a disturbance Term. It picks up temporary shocks to the production function, the saving rate and so on. The condition $b>0$ implies absolute convergence because the annual growth rage, log $(\frac{y_{it}}{y_{i,t-1}})$, is inversely related to log $(y_{i,t-1})$. A higher coefficient (b) corresponds to

a greater tendency toward convergence. The condition b<1 rules out a leapfrogging or overshooting effect, whereby an economy that starts out behind another economy would be predicted systematically to get a head of the other economy at some future time (Robert, Barro and Xavier sala-i-Martin, 1995).

Convergence across the IC

We now use the data on per capita income for the IC, to estimate. Sigma and β convergence.

A. Sigma convergence

We want to assess the extent to which there has been sigma convergence across the IC. Table (1) shows the cross sectional standard deviation for the log of per capita income for the IC from 1950 to 1998. The dispersion increased from .43 in 1950 to 1.18 in 1998.

If the more homogeneous group of the IC were selected, the dispersion declined for example for SAARC[1] member countries, the dispersion declined over time. For OPEC[2] member countries the dispersion increased over time and for ASEAN[3], for some limited periods, the dispersion declined.

Beta Convergence

As indicated earlier, sigma convergence does not necessarily imply a beta convergence. Therefore we use the data on per capita income for the IC to estimate the speed of convergence, Beta. That is, if we estimate a linear relation between the growth rate of income and the log of initial income, we obtain estimates of Beta from the nonlinear form of equation 3.

1- SAARC: Bangladesh, Pakistan and Malaysia.
2- OPEC: Oil Producing and Exporting Countries
3- ASEAN :Association of south-east Asian Nations

Table (1) - Dispersion of real per capita income across the IC

Obs	Variation	Standard deviation
1950	0.180966	0.425401
1951	0.184645	0.429703
1952	0.169333	0.411501
1953	0.300141	0.547851
1954	0.296155	0.544201
1955	0.304941	0.552215
1956	0.293158	0.541441
1957	0.305082	0.552342
1958	0.326763	0.571632
1959	0.301323	0.548929
1960	0.346686	0.588800
1961	0.355484	0.596225
1962	0.359689	0.599741
1963	0.363392	0.602820
1964	0.397539	0.630507
1965	0.415099	0.644282
1966	0.434508	0.659172
1967	0.427641	0.653943
1968	0.519116	0.720497
1969	0.528221	0.726788
1970	0.524987	0.724560
1971	0.523894	0.723805
1972	0.552233	0.743124
1973	0.585063	0.764894
1974	0.607202	0.779232
1975	0.720467	0.848803
1976	0.779307	0.882784
1977	0.776172	0.881006
1978	0.750627	0.866387
1979	0.759395	0.871433
1980	1.253262	1.119492
1981	1.151390	1.073028
1982	1.088213	1.043174
1983	1.083593	1.040958
1984	1.111041	1.054059
1985	1.056747	1.027982
1986	0.989234	0.994602
1987	0.950660	0.975018
1988	0.894086	0.945561
1989	0.931306	0.965042
1990	0.960486	0.980044
1991	1.032478	1.016109
1992	1.837406	1.355509
1993	1.624286	1.274475
1994	1.686146	1.298517
1995	1.720073	1.311516
1996	1.385400	1.177030
1997	1.519398	1.232639
1998	1.391892	1.179785

Table (2) shows nonlinear least squares estimates in the form of equation 3 for the IC for various time periods. The first row corresponds to the 48-year period between 1950 and 1998. The estimated β coefficient is .0028. The next four rows of table (2) divide the sample into sub periods. The first two are 30 and 20 years long. The remaining two sub periods are 19 and 10 years long. The coefficient has the wrong sign ($\beta<0$) for only one of the sub periods, 1990-98. The estimated coefficients are significant for all sub periods except the first one. Therefore for the remaining sub periods, the results suggest the existence of a weak Convergence across the IC. It means it takes 231 and 693 years to fill out one half of the gap across the IC.

The estimated Beta value for the OPEC member countries for 1981-98 is .005; therefore it takes 139 years for filling half of the gap across the OPEC members.

Table (2) - convergence across the IC

Period	Beta	t	R^2
1950-98	.002773*	1.3828	.28
1960-98	.002423	5.5755	.49
1970-98	.00113034	6.896255	.56
1980-98	.0014434	.00144394	.87
1990-98	-.001895	10.19129	.66
** not significant*			

The convergence within the countries

As mentioned before, there is a shortcoming in the specification of testing the convergence of per capita output levels across the IC within the neoclassical growth theory, i.e. it imposes the restriction that the steady state growth path is identical for all these countries. In order to measure convergence within the countries, equation (4) has been estimated by using the historical per capita out put growth rate as the dependent variable. Table (3) shows that all b's bear positive sign, (and remain significant except for nine countries). It implies tendency toward convergence. A higher coefficient b corresponds to a greater

tendency toward convergence. The highest and lowest coefficient belongs to Oman and Morocco respectively.

For the IC, which confronted with sharp socio-economic fluctuations dummies were introduced. The results with dummies are shown in column 6. The results reveal that for fifteen countries b is greater than one. But for the remaining countries $0<b<1$. This means the convergence hypothesis is confirmed. For these countries the b values are, ranging between .86 and .0015. For the IC the mean value of b was .33 with the standard deviation of .25. The b value for nineteen countries was above the mean value.

Table (3:) Growth Convergence within the IC

	Country	B	t value	R^2	b (with dummies)	t value	R^2
1	**Afghanistan**	0.351195	2.532072	0.42	1.947911	12.75816	0.96
2	**Albania**	0.372757	2.321993	0.40	0.863436	5.277499	0.90
3	**Algeria**	0.084825	13.83462	0.84	0.36144	20.76647	0.93
4	**Azerbaijan**	0.268764	3.698452	0.60	2.58918	12.72252	0.96
5	**Bahrain**	0.142911	7.375123	0.72	0.168349	10.11687	0.84
6	**Bangladesh**	0.012836	15.78855	0.87	0.271043	20.92251	0.93
7	**Benin**	0.786515	1.332739	0.04	1.037611	2.628444	0.54
8	**Brunei**	0.2973335	3.605081	0.59	0.36112	6.327216	0.84
9	**Burkina Faso**	0.250027	6.468514	0.53	0.585173	9.380465	0.73
10	**Cameroon**	0.119551	12.43653	0.81	0.714172	22.59700	0.94
11	**Chad**	0.088999	12.49653	0.81	0.273338	17.19715	0.90
12	**Comoros**	0.209606	6.645691	0.55	0.383568	10.55050	0.81
13	**Djibouti**	0.114903	12.92596	0.86	0.17154	16.13950	0.91
14	**Egypt**	0.057588	20.65234	0.90	0.364906	19.50793	0.92
15	**Gabon**	0.140967	16.00449	0.88	0.190551	18.69517	0.92
16	**Gambia**	0.105239	12.57576	0.81	0.21231	16.02619	0.88
17	**Guinea**	0.065742	16.35692	0.88	0.160468	17.87106	0.90
18	**Guinea-Bissau**	0.072955	9.779040	0.73	0.381668	13.03865	0.87
19	**Guyana**	0.097685	11.32338	0.73	0.225689	14.39163	0.82
20	**Indonesia**	0.039611	24.74961	0.94	0.039611	24.74961	0.94
21	**Iran**	0.291069	6.349772	0.49	2.697832	25.53515	0.95
22	**Iraq**	0.358624	5.621420	0.42	1.557641	12.13057	0.79
23	**Jordan**	0.073342	25.67222	0.94	0.406798	34.63964	0.97
24	**Kazakhstan**	0.373047	2.642242	0.44	2.269033	12.13353	0.96
25	**Kuwait**	0.357675	3.616165	0.45	1.213112	3.776661	0.75

	Country	B	t value	R^2	b (with dummies)	t value	R^2
26	**Kyrghizistan**	0.272509	3.457493	0.57	2.682234	27.84494	0.99
27	**Lebanon**	0.334275	2.727180	0.45	0.830129	6.471881	0.91
28	**Libya**	0.634278	1.219112	0.14	0.280619	3.617495	0.80
29	**Malaysia**	0.010347	47.18666	0.98	0.010347	47.18666	0.98
30	**Maldives**	0.052245	50.11059	0.99	0.052245	50.11059	0.99
31	**Mali**	0.309157	5.601865	0.46	0.510389	8.535778	0.72
32	**Mauritania**	0.050935	8.270875	0.65	0.347635	9.915823	0.82
33	**Morocco**	0.001631	49.23294	0.98	0.001631	49.23294	0.98
34	**Mozambique**	0.017203	23.49392	0.94	0.017203	23.49392	0.94
35	**Niger**	0.006084	12.99345	0.82	0.36084	16.88466	0.90
36	**Nigena**	0.016425	25.23229	0.93	0.016425	25.23229	0.93
37	**Oman**	0.643454	5.161833	0.48	0.2871	5.806029	0.62
38	**Pakistan**	0.00326	52.21108	0.98	0.00326	52.21108	0.98
39	**Palestine**	---	---	---	---	---	---
40	**Qatar**	0.991384	0.035705	0.000	3.255861	0.079707	0.90
41	**Saudi Arabia**	0.10152	23.11796	0.94	0.10152	23.11796	0.94
42	**Senegal**	0.375218	4.336603	0.34	0.687764	6.705729	0.68
43	**Serria Leone**	0.24838	4.752242	0.39	0.435243	6.577604	0.61
44	**Somalia**	0.167919	9.500169	0.71	0.720758	11.40036	0.83
45	**Sudan**	0.230509	6.136911	0.59	1.964071	8.805848	0.77
46	**Suriname**	0.564469	2.925600	0.19	2.788882	12.88063	0.86
47	**Syria**	0.162516	10.79703	0.76	0.630214	16.93814	0.89
48	**Tajikistan**	0.304368	3.259634	0.54	3.271158	14.41890	0.97
49	**Togo**	0.176968	10.98236	0.77	0.412951	14.70346	0.87
50	**Tunisia**	0.002011	51.59213	0.99	0.002011	51.59213	0.99
51	**Turkey**	0.018633	34.72981	0.96	0.018633	34.72981	0.96
52	**Turkmenistan**	0.310549	3.101162	0.52	1.821919	5.080326	0.79

	Country	B	t value	R^2	b (with dummies)	t value	R^2
53	Uganda	0.178215	9.460929	0.67	0.449519	11.80045	0.76
54	United Arabia	0.283889	0.993482	0.69	0.250528	8.362674	0.82
55	Uzbekistan	0.399012	2.443511	0.40	2.896651	8.025868	0.92
56	Yemen	0.131567	9.260971	0.76	0.595036	18.44129	0.93

Summary and conclusion

This paper has examined the phenomenon of convergence of per capita out put levels across the IC countries for the 1960-1998 periods. Three concepts of convergence, i.e., sigma beta and relative beta, have been used.

The estimated beta values reveals only a very weak convergence (λ=.0014) across IC for 1960-1998 period. But when a more homogeneous group of countries were selected, the results somehow improved the estimated beta value. For PEC s β was .005.

The sigma values reveal that the per capita out-put decreases across IC had an increasing trend over the 1950-1998 periods. It means that the poorer I members did not demonstrate strong output convergence for the full or part of the period. For SAARC the output variation revealed a diminishing trend, but for the OPEC countries it showed an increasing trend.

The results of relative convergence (toward the countries steady state position) reveal that only for 15 countries the convergence hypothesis is confirmed. The average speed of convergence was .33.

The results provide a weak evidence of convergence across the IC, it means more attempt in various fields of cooperation: political, economic, cultural, social and scientific, is required to meet the OIC goals.

Table (A.1) socio economic Indicators across the OIC

	Countries	Joining date to OIC	Area (sq.km)	Population (millions)	Annual population growth rate (%)		Adult literacy (% age 15 and above)	Infant mortality rate (per 100 live births)	Life expectancy at birth (years)	GDP per capita (ppp Uss)	GDP composition by sector (%) (1996-98)		
				1999	1975-99	1999-2105	1999	1999	1995-2000	1999	agriculture	Industry	Services
1	Afghanistan	1969	647500	---	---	---	---	---	---	---	53	28.5	18.5[d]
2	Albania	1992	28750	3.1	1.1	0.6	84	29	72.8	3.189	56	21	23
3	Algeria	1969	2381740	29.8	2.6	1.5	66.6	36	68.9	5.063	12	51	37
4	Azerbaijan	1992	86600	8.0	¼	0.6	97.0[b,c]	35	71.0	2.850	22	18	60
5	BAHRAIN	1972	620	0.6	3.5	1.5	87.1	13	72.9	13.688[a]	1	46	53
6	Bangladesh	1974	144000	134.6	2.4	1.9	40.8	58	58.1	1.483	30	17	53
7	Benin	1983	112620	6.1	2.9	2.7	39.0	99	53.5	933	--	--	--
8	Brunei	1984	5770	0.3	2.9	1.6	91.0	8	75.5	--	5	46	49
9	Burkina Faso	1974	274200	11.2	2.5	3.1	21.0	106	45.3	965	--	--	--
10	Cameroon	1974	475440	14.6	2.7	2.1	74.8	95	50.0	1.573	--	--	--
11	Chad	1969	1284	7.6	2.6	3.0	41.0	118	45.20	850	--	---	--
12	Comoros	1976	2170	0.7	3.2	2.8	59.2	64	58.08	1.429	40	14	46
13	Djibouti	1978	22000	0.6	4.5	0.8	63.4	104	45.5	--	3	20	77
14	Egypt	1969	1001450	66.7	2.3	1.5	54.6	41	66.3	3.220	16	31	53
15	Gabon	1974	267667	½	2.9	2.4	63.0[b,c]	85	52.4	6.024	--	--	--
16	Gambia	1974	11300	1.3	3.5	2.1	35.7	61	45.4	1.580	--	--	--
17	Guinea	1969	245857	8.1	2.8	2.1	35[b,c]	115	46.5	1.934	--	--	--
18	Guinea-Bissau	1974	36120	½	2.6	2.4	37.7	128	44.1	678	--	--	--
19	Guyana	1998	214970	0.8	0.1	-0.1	98.4	56	63.70	3.640	--	--	--
20	Indonesia	1969	1919440	209.3	1.8	1.1	86.3	38	65.1	2.857	18.8	40.3	40.9
21	Iran	1969	1648000	69.2	3.0	1.4	75.7	37	68.0	5.531	--	--	--
22	Iraq	1975	437072	--	--	--	--	--	--	--	--	--	--

	Countries	Joining date to OIC	Area (sq.km)	Population (millions)	Annual population growth rate (%)		Adult literacy (% age 15 and above)	Infant mortality rate (per 100 live births)	Life expectancy at birth (years)	GDP per capita (ppp Uss)	GDP composition by sector (%) (1996-98)		
				1999	1975-99	1999-2105	1999	1999	1995-2000	1999	agriculture	Industry	Services
23	Jordan	1969	89213	4.8	3.8	2.5	89.2	29	69.7	3.955	6	30	67[c]
24	Kazakhstan	1995	2717300	16.3	0.6	-0.1	99[b,c]	35	64.1	4.951	--	--	--
25	Kuwait	1969	17820	1.8	2.5	2.5	81.9	11	75.9	--	0	55	45
26	Kyrghizistan	1992	198500	4.8	1.6	½	97.0[b,c]	55	66.9	2.573	47	12	41
27	Lebanon	1969	10400	¾	0.9	1.3	85.6	28	72.6	4.705[a]	4	23	73
28	Libya	1969	1759540	5.2	3.1	1.9	79.1	19	70.0	--	5	55	40
29	Malaysia	1969	329750	21.8	2.4	1.5	87.0	8	71.9	8.209	13	46	41
30	Maldives	1976	300	0.3	3.0	3.0	96.2	60	65.4	4.423[a]	22	15	63[f]
31	Mali	1969	1000024	11.0	2.4	2.9	39.8	143	50.9	753	--	--	--
32	Mauritania	1969	1030700	2.6	2.6	2.9	41.6	120	50.5	1.609	26	31	43
33	Morocco	1969	446550	29.3	2.2	1.6	48	45	66.6	3.419	14	33	53
34	Mozambique	1994	801590	17.9	2.3	1.7	43.2	127	40.6	861	--	--	--
35	Niger	1969	1000267	10.5	3.2	3.6	15.3	162	44.2	753	--	--	--
36	Nigena	1986	923768	110.8	2.9	2.5	62.6	112	51.3	853	--	--	--
37	Oman	1972	212460	2.5	4.3	3.2	70.3	14	70.5	--	2	50	48
38	Pakistan	1969	803940	137.6	2.8	2.5	45.0	84	59.0	1.834	24.2	26.4	29.4
39	Palestine	1969	360	--	--	--	--	--	--	--	--	--	--
40	Qatar	1972	11437	0.6	4.9	1.4	80.8	12	68.9	--	1	29	50
41	Saudi Arabia	1969	1960582	19.6	4.2	3.0	76.1	20	70.9	10.815	6	53	41
42	Senegal	1969	196190	9.2	2.7	2.4	36.4	68	52.3	1.419	--	--	--
43	Serria Leone	1972	71740	4.3	1.6	3.2	32.0[b,c]	182	37.3	448	--	--	--
44	Somalia	1969	637660	--	--	--	--	--	--	--	59	10	31
45	Sudan	1969	2505810	30.4	2.5	2.1	56.9	67	55.0	--	33	17	50[R]
46	Suriname	1996	163270	0.4	0.5	0.3	93[b,c]	27	70.1	4.178[a]	--	--	--

	Countries	Joining date to OIC	Area (sq.km)	Population (millions)	Annual population growth rate (%)		Adult literacy (% age 15 and above)	Infant mortality rate (per 100 live births)	Life expectancy at birth (years)	GDP per capita (ppp Uss)	GDP composition by sector (%) (1996-98)		
				1999	1975-99	1999-2105	1999	1999	1995-2000	1999	agriculture	Industry	Services
47	Syria	1972	185180	15.8	3.1	2.4	73.6	25	70.5	4.454	26	21	53
48	Tajikistan	192	143100	6.0	2.3	1.0	99.1	54	67.2	--	--	--	--
49	Togo	1997	56785	4.4	2.8	2.5	56.3	80	51.3	1.410	--	--	--
50	Tunisia	1969	163610	9.4	2.1	1.2	69.9	24	69.3	5.957	14	28	58
51	Turkey	1969	780580	65.7	2.1	1.2	84.6	40	69.0	6.380	14.4	28.7	56.9
52	Turkmenistan	1992	488100	4.6	2.5	1.7	98 [b,c]	52	65.4	3.347	18	50	32
53	Uganda	1974	235880	22.6	3.1	3.4	66.1	83	41.9	1.167	--	--	--
54	U.A.E.	1972	82880	2.6	6.8	1.5	75.1	8	74.6	17.162 [a]	3	52	45
55	Uzbekistan	1996	447400	34.5	2.3	1.4	88.5	45	68.3	2.251	26	27	47
56	Yemen	1969	527970	17.6	3.9	3.9	45.2	86	59.4	806	16	46	38

Sources: UN. Human Development Report 2001, world Bank 2001, CIA fact book 2001.

b Data refer to a year or period other than that specified, differ from standard definition or refer to only part of a country

c NICFF 2000

Table (A-2) - the Real GDP per capita growth rates in the OIC (1950-1998)

	Countries	Period	Number of observations	1950-58			1960	1970	1980	1990	1998
				Average	Max	Min					
1	Afghanistan	1988-98	11	0.201876	0.377339	-4.8965	--	--	--	0.251944	0.154776
2	Albania	1988-97	10	0.167039	0.3347	-0.4379	--	--	--	-0.425758	--
3	Algeria	1961-98	38	0.031811	0.1668	-0.3926	--	-0.003838	-0.017404	0.149061	0.031764
4	Azerbaijan	1988-98	11	-0.132446	0.5015	-11.400	--	--	--	-0.017886	0.035382
5	BAHRAIN	1976-98	23	0.028689	0.1949	-0.1251	--	--	-0.010445	0.058937	0.010994
6	Bangladesh	1960-98	39	-0.045164	0.2183	-0.2731	0.019169	0.082107	-0.003687	0.036486	0.033759
7	Benin	1960-98	39	-0.039393	0.2582	-0.4341	0.048535	0.047059	0.060764	0.162162	0.047838
8	Brunei	1988-98	11	0.060623	0.1422	-0.2816	--	--	--	0.142172	-0.281580
9	Burkina Faso	1960-98	39	0.06512	0.2864	-0.6011	-0.118162	-0.096515	-0.13129	0.158249	0.054146
10	Cameroon	1961-98	38	-0.041839	0.2329	-0.8250	--	-0.003731	0.101255	0.074940	0.074663
11	Chad	1961-98	38	0.065536	0.24205	-0.3884	--	-0.149390	-0.087287	0.145349	0.068182
12	Comoros	1961-98	38	-0.039149	0.1795	-0.4103	--	-0.018625	0.031696	0.179523	0.008791
13	Djibouti	1971-98	28	-0.020322	0.1762	-0.1782	--	--	-0.000653	0.035570	0.004541
14	Egypt	1951-97	48	0.031840	0.1286	-0.6474	0.042289	0.046472	0.073467	-0.498136	0.035272
15	Gabon	1961-98	38	0.05448	0.2094	-0.3255	--	0.012456	-0.009994	0.209450	0.024241
16	Gambia	1961-98	38	0.033581	0.1870	-0.2111	--	-0.004121	-0.015671	0.071289	-0.022318
17	Guinea	1960-98	39	-0.03853	0.1835	-0.11134	0.120939	-0.111349	0.069767	0.083333	-0.038815
18	Guinea-Bissau	1961-98	38	-0.080004	0.199170	-0.390244	--	-0.051136	-0.187723	0.133094	0.037791
19	Guyana	1951-98	48	-0.05245	0.200622	-0.28899	0.098475	0.020971	0.021921	0.036601	-0.031570
20	Indonesia	1961-98	38	-0.05219	0.174495	-1.225772	--	0.046154	0.068643	0.096290	-1.225772
21	Iran	1956-98	43	0.078516	0.28684	-13.1342	0.105792	0.109304	-0.364861	0.257897	0.139796
22	Iraq	1957-98	45	-0.0775	0.339308	-3.5357	0.137588	-0.015862	-0.183157	0.071711	0.105161
23	Jordan	1955-98	44	-0.04573	0.310713	-0.4931	0.022453	-0.183544	0.048716	-0.056238	0.028233
24	Kazakhstan	1988-98	11	-0.127085	0.483003	-6.9973	--	--	--	-0.038573	0.010234

	Countries	Period	Number of observations	1950-58			1960	1970	1980	1990	1998
				Average	Max	Min					
25	Kuwait	1981-98	18	0.091718	0.443386	-0.639141	--	--	--	-0.327565	-0.254547
26	Kyrghizistan	1988-98	11	-0.11116	0.229607	-12.7977	--	--	--	0.019534	-0.046448
27	Lebanon	1988-98	11	-0.134450	0.299539	-0.9696	--	--	--	0.299539	0.032974
28	Libya	1988-98	11	0.058319	0.158057	-0.16366	--	--	--	0.100506	0.031703
29	Malaysia	1956-98	43	-0.04911	0.168019	-0.406278	0.061036	0.160631	0.086202	0.092775	-0.406278
30	Maldives	1988-98	11	0.08389	0.129264	-0.04444	--	--	--	0.099259	0.044444
31	Mali	1961-98	38	-0.04373	0.22535	-0.48051	--	0.043062	-0.035714	0.146865	0.044170
32	Mauritania	1961-98	38	0.031090	0.176577	-0.316716	--	0.024000	-0.052213	0.017341	-0.190388
33	Morocco	1951-98	48	-0.03443	0.179104	-0.119284	0.006061	0.014053	0.032391	0.097169	0.047348
34	Mozambique	1961-98	38	0.038269	0.189394	-0.30538	--	0.000	-0.173724	0.067773	-0.021875
35	Niger	1961-98	38	0.04860	0.185915	-0.56401	--	0.140898	0.016736	0.102703	0.011029
36	Nigena	1951-98	48	-0.06318	0.347699	-0.198758	-0.057143	0.185137	0.032033	0.029412	0.0000
37	Oman	1968-98	31	-0.06833	0.65484	-0.189423	--	0.046168	0.097224	0.161689	-0.155337
38	Pakistan	1951-98	48	0.03276	0.1572	-0.0824	0.071429	0.079689	0.050405	0.088643	-0.032239
39	Palestine	--	--	--	--	--	--	--	--	--	--
40	Qatar	1981-98	18	-0.10170	0.9182	-7.6190	--	--	--	0.078638	-0.099767
41	Saudi Arabia	1961-98	38	0.04051	0.1825	-0.2842	--	0.087533	0.046201	0.047561	0.000485
42	Senegal	1961-98	38	-0.03502	0.1782	-0.4832	--	0.096690	-0.035273	0.168135	0.035996
43	Serria Leone	1962-98	37	-0.068491	0.4335	-0.4350	--	0.200834	-0.033020	-0.285324	-0.435028
44	Somalia	1961-98	38	-0.082920	0.4389	-0.7483	--	0.091503	-0.273954	-0.096647	0.044260
45	Sudan	1971-98	28	-0.126073	0.8160	-5.7953	--	--	0.031915	0.233783	0.066381
46	Suriname	1961-98	38	0.065495	0.5125	-14.1795	--	0.053912	0.010593	0.109617	0.160966
47	Syria	1961-98	38	-0.071731	0.2374	-1.0349	--	-0.009582	0.070007	0.196269	0.023311
48	Tajikistan	1988-98	11	-0.22775	0.5250	-23.789	--	--	--	0.014904	0.287671
49	Togo	1961-98	38	-0.05951	0.21053	-0.3500	--	0.089577	0.075342	0.168582	0.049296
50	Tunisia	1961-98	38	-0.038231	0.16307	-0.0824	--	0.080388	0.063636	0.163070	0.040252
51	Turkey	1951-98	48	-0.036324	0.2751	-0.40264	-0.037771	0.019074	-0.029596	0.275085	0.24715

	Countries	**Period**	**Number of observations**	**1950-58**			**1960**	**1970**	**1980**	**1990**	**1998**
				Average	**Max**	**Min**					
52	Turkmenistan	1988-98	11	0.18541	0.6343	-4.728	--	--	--	0.008036	0.228522
53	Uganda	1951-98	48	0.03790	0.40134	-0.90104	0.013424	-0.009274	-0.067416	-0.456973	0.011494
54	United Arab Emirate	1981-98	18	0.038658	0.1572	-0.19267	--	--	--	0.157252	-0.083105
55	Uzbekistan	1988-98	11	0.251003	0.5720	-14.6729	--	--	--	-0.028644	-0.408511
56	Yemen	1970-98	29	-0.056711	0.16813	-1.15009	--	0.150794	0.051790	0.168138	0.007762

References

1- Barro, R.J. and X. Sala-i-Martin, 1991, "Convergence across States and Regions," Brookings Papers on Economic Activity, 1: 107-58

2- Barro, R.J. and X.Sala-i-Martin, 1995, Economic Growth Mac Grow Hill, inc.

3- Baumol, W.J., 1986, "Productivity Growth, Convergence, and Welfare: What the Long-Run Data Show? "American Economic Review, 76(5): 1072-58.

4- CIA factbook, 2001

5- De long, J, B., 1988, "Productivity Growth, Convergence, and Welfare: Comment," American Economic Review, 78(5): 1138-54.

6- Domar, E.D., 1946, "Capital Expansion, Rate of Growth, and Employment", Econometrica, 14 (April): 137-47.

7- Elmslie, B.T., 1995, "The Convergence Debate between David Hume and Josiah Tucker," Journal of Economic Perspectives, 9 (4): 207-16.

8- Harrod, R.F., 1939, "An Essay in Dynamic Theory," Economic Journal, 49 (March): 14-33.

9- Obstfeld, M. and K. Rogoff, 1996, Foundations of International Macroeconomics (Cambridge, Massachusetts: The MIT Press).

10- Romer, D., 1996, Advanced Macroeconomics, New York: Mc Graw-Hill.

11- Romer, P.M., 1986, "Increasing Returns and Long-Run Growth," Journal of Political Economy, 94: 1002-37.

12- Solow, R.M., 1956, "A Contribution to the Theory of Economic Growth," Quarterly Journal of Economics, 70: 65-94.

13- Summers, Robert and Heston, Alan, 1993, Measuring Final Product Services for International comparison, University of Chicago press, 493-516.

14- U.N. (2000) Human Development Report, 2000.

15- U.N. (2000) Juman Development Report, 2001.

16- UNESKO, 2000, World Education Report 2000.

17- World Bank, 2001, correspondence on GDP per capita growth rates, March, Washington, DC.

18- Zind, R.G., 1991 "Income Convergence and Divergence Within and Between LDC Groups," World Development, 19(6): 119-74.