Remittances, Growth and Convergence: Evidence from Developed and Developing Countries

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Abstract

This study investigates the relationship between workers' remittances and economic growth by using 7 years average annual data of 113 countries from the period 2003 to 2009. Results indicate the positive and significant relationship between workers' remittances and economic growth in sample of low income, middle income, high income and all countries. Results also show that the workers' remittances are more contributing in high income countries as compare to low and middle income countries. Sensitivity analysis has been performed to test the consistency of initial results and confirms that the results are robust. Unconditional convergence results confirm the convergence in all categories. Results confirm that countries are coming together with respect to per capita income. Results of conditional convergence based on workers' remittances model suggest the low and middle income countries are converging each other more rapidly. Conversely, results show that high income and all countries models are converging each other but at slower pace in conditional model with workers' remittances as compare to unconditional model.

Key words: Remittances, Economic Growth, Cross Country Analysis

JEL Classification: F24, F43, O47

1. Introduction

Workers' remittances have become an increasingly important source of income for the economic growth of countries. Remittances are more valuable for economic growth because of its stable nature as compare to other external capital inflows like foreign loans, aids and foreign direct investment. In 2009, over $440 billion of workers' remittances were transferred through

official channels.[1] For last two decades, the workers' remittances have grown rapidly in positive direction. In last five years, foreign direct investment have fall sharply due to economic recession in many developing countries whereas, workers' remittances are continuously increasing. Even in some developing countries the workers' remittances are more than their foreign direct investment.

Most of empirical studies have argued on positive relationship between workers' remittances and economic growth.[2] Workers' remittances are found to be main source of increasing investment and consumption in recipient countries. This increase in consumption and investment are major signs of economic development and both are increasing by efficient usage of workers' remittances. Workers' remittances have been proved to be a source of alleviating poverty in developing countries.[3] The private investments also increase by the increase in the transfer amount of workers' remittances. In the period of economic downturn and adversity, the workers' remittances are still increasing and less volatile as compare to foreign direct investment in those countries that have high marginal propensity to invest.

Conversely, some empirical studies also argued the negative relationship between workers' remittances and economic growth. Waheed and Aleem (2008) argue that workers' remittances are only beneficial in short run. In long run the policy makers should focus on export earning instead of workers' remittances as a source of foreign exchange earnings for continues and stable growth. Sofranko and Idris (1999) conclude that workers' remittances fail to create sufficient savings required for rapid economic growth because remittances are mainly used for consumption not for investment. Ahortor and Adenutsi (2009) argue that workers' remittances

[1] Source: World Bank (World Development Indicators) 2010
[2] Fayissa and Nsiah (2010), Faini (2006), Jongwanich (2007), Ahmed et al. (2011) and Azam and Khan (2011)
[3] Imai *et al.* (2011), Jongwanich (2007),

also create over dependency on external economy or income that's creating voluntary unemployment.

The reviews of previous studies shows that the most of the empirical studies use the cross country data[4] but some time series[5] studies have been also conducted to analyze the relationship between workers' remittances and economic growth.

Insert figure 1 here

From above figure no clear relationship has been found between workers' remittances and economic growth. The question is, does workers' remittances plays important role to enhance economic growth and reduce the gap between high middle and low income countries with respect to per capita income. In this study, we reexamine the relationship between workers' remittances and economic growth by using a large sample of 113 countries. Additionally, convergence hypothesis has also been tested based on workers' remittances.

The rest of the paper is organized as follow: following introduction section 2 review some selected studies, section 3 discuss empirical strategy, section 4 shows estimations and results, section 5 performs sensitivity analysis, section 6 discuss the results of convergence and the final section conclude the study and provide some policy implications.

2. Review of Literature

Chami *et al.* (2003) investigate the remittances as a source of capital development by using the panel data of 113 countries from the period of 1970 to 1998. Regression results indicate the negative and significant impact of workers' remittances on economic growth in long run. They conclude that remittances do not act as source of capital for economic development and there are significant obstacles to transfer these resources into significant source of capital.

[4] Faini (2006), Fayissa and Nsiah (2010), Chami et al. (2003), Mohammed (2009).
[5] Ahmed et al. (2011), Karagoz (2009), Azam and Khan (2011) and Waheed and Aleem (2008).

Jongwanich (2007) investigate the impact of remittance on economic growth and poverty reduction by using the panel data of 17 developing Asia Pacific countries from period 1993 to 2003. Generalized methods of moments (GMM) has been used. Results show the positive and significant impact of workers' remittances on poverty reduction. Results also indicate the significant positive but only a marginal impact of workers' remittances on economic growth.

Ramirez and Sharma (2008) investigate the impact of remittances on economic growth by using the panel data of 23 Latin American and Caribbean countries from period 1990 to 2005. They divided their sample into; low income and high income countries. Results indicate the significant positive relationship between workers' remittances and economic growth in both groups of countries.

Pradhan *et al.* (2008) investigate the relationship between workers' remittances and economic growth by using the panel data of 39 developing countries from 1980 to 2004. Results of panel regression indicate the significant positive relationship exist between workers' remittances and economic growth. Mohammed (2009) investigates the impact of workers' remittances on economic growth in seven MENA countries by using the panel data regression over the period of 1975 to 2006. Results indicate the positive and significant relationship of remittances and economic growth in MENA countries.

Mundaca (2009) investigate the effect of workers' remittances on economic growth by using the panel data of 25 Latin American and Caribbean countries from period 1970 to 2002. They divided the countries into low, middle and upper middle income countries. Results indicate the positive and significant relationship between workers' remittances and economic growth in all groups.

Ahortor and Adenutsi (2009) empirically examine the impact of workers' remittances on economic growth by using the data from 1996 to 2006 of 31 developing countries. Two groups of countries namely; Latin American and Caribbean countries and Sub Saharan African countries are considered. Generalized methods of movement (GMM) has been used. Results show that workers' remittances are contributing to promote economic growth in both groups but the magnitude of impact is higher in Latin American and Caribbean countries as compare to Sub Saharan African countries. They recommended that effective system is vey needed for increase the inflows of remittances

Fayissa and Nsiah (2010) empirically examine the impact of workers' remittances on economic growth by using the panel data of 18 Latin American countries (LACs) from the period of 1980 to 2005. Regression results suggest the significant positive long run relationship exist between workers' remittances and economic growth. They concluded that remittances are another source of financial investment in less developing countries.

Imai *et al.* (2011) empirically investigate the effect of remittances and its volatility on economic growth by using the panel data of 24 Asian and Pacific countries from the period of 1980 to 2009. They use panel fixed and random effect model. Results indicate the positive relationship between workers' remittances and economic growth but the volatility of workers' remittances is found harmful for economic growth. They also found significant negative relationship of workers' remittances with poverty.

3. Empirical Framework

The model to investigate the impact of workers' remittances on economic growth is estimated by using the production function framework.

$$Y = f(A, L, K) \qquad (3.1)$$

Where Y is the annual growth rate of per capita income, L is the labor force, K is the capital stock and A is the total factor productivity. It is assumed that impact of workers' remittances on economic growth operates through A.[6] The model for empirical estimation is developed as follow:

$$Y_t = \beta_0 + \beta_1 L_t + \beta_2 K_t + \beta_3 R_t + \varepsilon_t \qquad (3.2)$$

Whereas ε_t is the error term. L is the total labor force and R represents the workers' remittances. Data of capital stock is not available so real gross fixed capital formation as percentage of *GDP* is used as a proxy of capital stock.[7] The positive sign is expected for L and K while, the sign of R is to be determined.

7 years average annual data of 113 countries from the period of 2003 to 2009 have been used. All the data are collected from the official database of World Bank. Countries are further divided into three groups; low income, middle income, high income countries. Furthermore, 52 countries are classified in low income, 29 countries are classified in middle income and 32 countries are classified in high income countries.[8] Selection of countries is based on availability of data. The list of all countries is provided in table 3.1.

Insert table 3.1 here

4. Estimations and Results

Ordinary least square estimation procedure has been used to examine the relationship between workers' remittances and economic growth. The results are reported in table 4.1.[9]

Insert table 4.1 here

[6] See, Kohpaiboon (2003), Waheed and Aleem (2008) and Jawaid and Waheed (2011).
[7] See Jawaid and Waheed (2011).
[8] World Bank has divided the countries in 4 groups namely high, upper middle, lower middle and low income countries. In this study lower middle and low income countries are considered as a low income countries.
[9] To check the problem of heteroscedasticity, White heteroscedasticity test has been applied. Test results suggest that heteroscedasticity does not exist in all four models.

Results of table 4.1 suggest the positive and significant relationship between workers' remittances and economic growth in all as well as high, middle and low income countries. The findings are consistent with Fayissa and Nsiah (2010), Faini (2006), Jongwanich (2007), Ahmed et al. (2011) and Azam and Khan (2011). The coefficient of workers' remittances of high income countries is greater than middle income countries. At the same time, coefficient of middle income countries is greater than low income countries that's confirm the more efficient usage of workers' remittances in high income countries.

5. Sensitivity Analysis

The results of ordinary least square methods confirm the contribution of workers' remittances in the economic growth across countries however, the presence of larger variation in the data because of large sample size of 113 countries demanding to check the robustness of initial results. The degree of confidence between dependent and independent variable is tested through sensitivity analysis [Leven and Renelt (1992)]. The variables are said to be robust if the coefficients provide same sign and significance after putting additional variable in the model. If coefficient of focus variable does not give same sign and significance then results are said to be fragile. We used following model to perform sensitivity analysis.

$$Y_t = \beta_0 + \beta_1 L_t + \beta_2 K_t + \beta_3 R_t + \beta_3 Z_t + \notin_t \qquad (5.1)$$

Where Y is the average growth rate of per capita income, L is the total labor force, K is the gross fixed capital formation as percentage of GDP, and R is the average annual growth rate of workers' remittances. Z represents a subset of variables that are theoretically related with the economic growth. Barro (1996) consider fertility rate, life expectancy, inflation and primary enrollment; Adeniyo and Abiodun (2011) consider health expenditure and Yanikkaya (2003)

consider export share as percent of *GDP* as a major determinants of economic growth. Furthermore, Jawaid and waheed (2011) also use same variables for sensitivity analysis as determinants of economic growth. In this study primary enrollment (*PEN*), fertility rate (*FER*), export as percentage of *GDP* (*EXP*), life expectancy (*LEX*), inflation (*INF*) and health expenditure (*HEX*) are considered as additional determinants of economic growth. Table 5.1 represents the results of sensitivity analysis.

Insert table 5.1 here

Table 5.1 shows the results of sensitivity analysis comprises of 15 models. Results indicate the consistency of focus variable R in both sign and significance in all 15 models which shows the robustness of the results.

6. Convergence

In this section two different test of convergence have been performed namely unconditional convergence and conditional convergence. Convergence hypothesis argues that the per capita income of poorer economies is tend to grow faster than richer economies. Consequently, all economies should ultimately converge in terms of per capita income. [10]

6.1 Unconditional Convergence

Table 6.1 represents the findings of unconditional convergence in all countries, as well as high, middle and low income countries.

Insert table 6.1 here

Results indicate that the role of initial per capital income is significantly negative in all, low income and middle income countries. On the other hand negative and insignificant relationship is found in high income countries. The negative coefficients of initial per capita

[10] To test convergence hypothesis we used data of 92 countries then 113. It depends upon availability of initial per capita income for the year of 1980. Furthermore in convergence hypothesis, 38 countries are classified in low income, 28 countries are classified in middle income and 26 countries are classified in high income countries.

income indicate convergence in all four categories. Results confirm that countries are coming together with respect to per capita income.

6.2 Conditional Convergence based on Workers' Remittances

This section represents the results of effects of initial per capita income of a country on growth of per capita income, when remittances are also taken into account. In low and middle income countries the initial per capita income is significantly negative in the model. The coefficients of initial per capita income are increasing in low and middle income countries model in the presence of workers' remittances. In high income countries the initial per capita income is remains negative and insignificant but the p-value is higher in conditional model. This shows that chances of convergence in high income countries decreases in the presence of workers' remittances. On the other hand, in all countries model the coefficient is slightly low in conditional results. This indicates that with the existence of workers' remittances, countries converge with the low rate.

Insert table 6.2 here

However, low (middle and low) income countries get more benefit from workers' remittances than their loss of skilled labor, while, high income countries have already using their resources efficiently, so, the loss of skilled labor and their productivity is more than their benefits of workers' remittances.

7. Conclusion and Policy Recommendations

This study investigates the relationship between workers' remittances and economic growth by using seven years average annual data of 113 countries from the period 2003 to 2009. Results indicate the positive and significant relationship between workers' remittances and economic growth in all, high income, middle income, low income countries. The workers'

remittances are more contributing in high income countries as compare to middle and low income countries because of their efficient utilization. Sensitivity analysis confirms that results are robust.

Results of unconditional convergence indicate that convergence exist in all, high, middle and low income countries. Results confirm that countries are coming together with respect to per capita income. Results of conditional convergence based on workers' remittances suggest that the low and middle income countries are converging each other more rapidly. Conversely, results suggest that high income countries and aggregate sample countries are converging each other but at slower pace in conditional model with workers' remittances as compare to unconditional model.

At this stage we can set the directions of future research that there is a need to find the indicators which play important role to converge the countries than workers' remittances. Because inflows of workers' remittances does not ensure the capital formation and eventually economic growth in the country. Furthermore, there are well known difficulties with cross country data so there is need for more long time series studies on the subject.

References

Adeniyi, O.M. Abiodun, L.N. (2011) Health Expenditure and Nigerian Economic Growth, *European Journal of Economics, Finance and Administrative Sciences,* 30, pp. 125-129.

Ahortor, C.R.K. Adenutsi, D.E. (2009) The Impact of Remittances on Economic Growth in Small-Open Developing Economics, *Journal of Applied Sciences* 9(18), pp. 3275-3286.

Ahmed, J. Zaman, K. Shah, I.A. (2011) An Empirical Analysis of Remittances-Growth Nexus in Pakistan Using Bound Testing Approach, *Journal of Economics and International Finance* 3(3), pp. 176-186.

Azam, M. Khan, A. (2011) Workers' Remittances and Economic Growth: Evidence from Azerbaijan and Armenia, *Global Journal of Humanities and Social Scienc*es 11(7).

Barro, R.J. (1996) Determinants of Economic Growth: A Cross-Country Empirical Study. *NBER* Working Paper No: 5698.

Chami, R. Fullenkamp, C. Jahjah, S. (2003) Are Immigrant Remittances Flows a Source of Capital for Development?. *International Monetary Fund,* Working Paper: WP/03/189.

Faini, R. (2006) Migration and Remittance: The Impact on the Countries of Origin, Paper Presented at Fourth AFD/EUDN Conference on "Migration and Development: Mutual Benefits?" held on November 08, 2006, Paris, France.

Fayissa, B. Nsiah, C. (2010) Can Remittances Spur Economic Growth and Development? Evidence from Latin American Countries (LACs), *Middle Tennessee State University* Working Paper Series: March 2010.

Imai, K. Gaiha, R. Ali, A. and Kaicker, N. (2011) Remittances, Growth and Poverty: New Evidence from Asian Countries, *Research Institute for Economics and Business Administration KOBE University,* Discussion Paper No. 30.

Jawaid, S.T. Waheed, A. (2011) Effects of Terms of Trade and its volatility on Economic Growth: A Cross Country Empirical Investigation, *Transition Studies Review* 18(2),pp. 217-229.

Jongwanich, J. (2007) Workers' Remittances, Economic Growth and Poverty in Developing Asia and the Pacific Countries, *UNESCAP* Working Papers, WP/07/01.

Karagoz, K. (2009) Workers' Remittances and Economic Growth: Evidence from Turkey, *Journal of Yasar University* 4(13), pp. 1891-1908.

Kohpaiboon, A. (2003) Foreign Trade Regimes and The FDI-Growth Nexus: A Case Study of Thailand, *Journal of Development Studies* 40(2), pp. 55-69.

Levine, R. Renelt, R.D. (1992) A Sensitivity Analysis of Cross Country Growth Regression, American Economic Review 82(4), pp. 942-963.

Mohamed, S.E. (2009) Workers' Remittances and Growth in MENA Labor Exporting Countries, *International Network for Economic Research* Working Paper, 2009.10.

Mundaca, B.G. (2009) Remittances, Financial Market Development, and Economic Growth: The Case of Latin America and the Caribbean, *Review of Development Economies* 13(2), pp. 288-303.

Pradhan, G. Upadhaya, M. Upadhaya, K. (2008) Remittances and Economic Growth in Developing Countries. *The European Journal of Development Research* 20, pp. 497-506.

Ramirez, M.D. Sharma, H. (2008) Remittances and Growth in Latin America: A Panel Unit Root and Panel Cointegration Analysis, *Department of Economics Yale University,* Working Paper No. 51.

Sofranko, A.J. Idris, K. (1999) Use of Overseas Migrants' Remittances to the Extended Family for Business Investment: A Research Note. *Rural Sociology* 64: 464-481.

Waheed, A. Aleem, A. (2008) Workers' Remittances and Economic Growth: Empirical Evidence from Pakistan. *Journal of Social Science and Humanities* 47(1), pp. 1-12

World Development Indicators (various years)

Web Link: http:// http://data.worldbank.org/data-catalog/world-development-indicators

Yanikkaya, H. (2003) Trade Openness and Economic Growth: A Cross-Country Empirical Investigation. *Journal of Development Economi*cs 72, pp. 57– 89.

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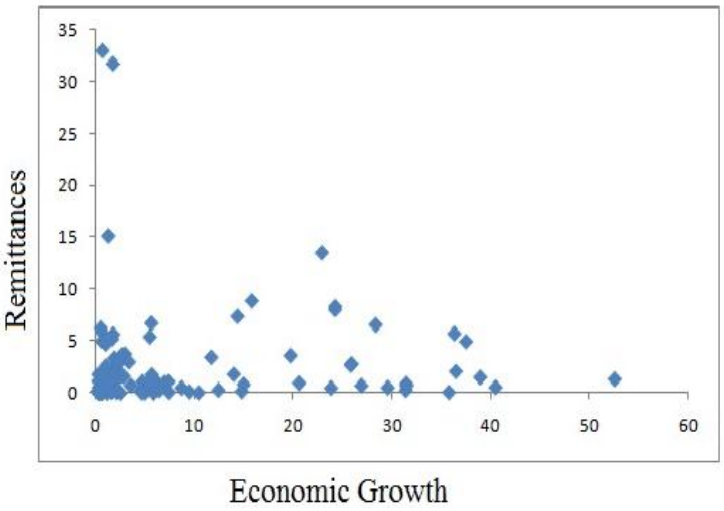

Fig. 1 Remittances and Economic Growth for the Sample of 113 Countries

Table 3.1: Sample of 113 high, middle and low income countries

	High Income				
1	Austria	39	Chile	77	Ghana
2	Barbados	40	China	78	Greece
3	Belgium	41	Colombia	79	Guatemala
4	Croatia	42	Costa Rica	80	Guinea
5	Czech Republic	43	Dominican Republic	81	Guyana
6	Denmark	44	Jordan	82	Honduras
7	Finland	45	Kazakhstan	83	India
8	France	46	Latvia	84	Indonesia
9	Germany	47	Lebanon	85	Kenya
10	Hong Kong SAR, China	48	Lithuania	86	Kyrgyz Republic
11	Hungary	49	Macedonia, FYR	87	Lao PDR
12	Iceland	50	Malaysia	88	Lesotho
13	Ireland	51	Mauritius	89	Moldova
14	Israel	52	Namibia	90	Mongolia
15	Italy	53	Panama	91	Morocco
16	Japan	54	Peru	92	Mozambique
17	Korea, Rep.	55	Russian Federation	93	Nepal
18	Luxembourg	56	South Africa	94	Nicaragua
19	Macao SAR, China	57	St. Lucia	95	North America
20	Malta	58	St. Vincent and the Grenadines	96	Pakistan
21	Netherlands	59	Thailand	97	Papua New Guinea
22	New Zealand	60	Tunisia	98	Paraguay
23	Norway	61	Uruguay	99	Philippines
24	Poland		**Low income**	100	Rwanda
25	Portugal	62	Armenia	101	Senegal
26	Slovak Republic	63	Bangladesh	102	Sierra Leone
27	Slovenia	64	Benin	103	Sri Lanka
28	Spain	65	Bolivia	104	Sudan
29	Sweden	66	Cambodia	105	Swaziland
30	Switzerland	67	Cape Verde	106	Syrian Arab Republic
31	United Kingdom	68	Congo, Rep.	107	Tajikistan
32	United States	69	Cote d'Ivoire	108	Tanzania
	Middle Income	70	Cyprus	109	Tonga
33	Albania	71	Ecuador	110	Uganda
34	Algeria	72	Egypt, Arab Rep.	111	Ukraine
35	Argentina	73	El Salvador	112	Vietnam
36	Belarus	74	Estonia	113	Zambia
37	Bosnia and Herzegovina	75	Ethiopia		
38	Bulgaria	76	Georgia		

Table 4.1: Determinants of Economic Growth

Variables	All Countries			High Income			Middle Income			Low Income		
	Coeff.	t-stats	Prob.	Coeff.	t-stats	Prob.	Coeff.	t-stats	Prob.	Coeff.	t-stats	Prob.
C	-1.913	-1.865	0.065	-12.919	-3.311	0.003	-4.462	-2.253	0.034	-2.306	-1.645	0.107
L	0.249	2.024	0.045	0.158	2.324	0.029	0.098	2.222	0.036	0.473	2.373	0.022
K	0.205	4.648	0.000	0.164	1.751	0.093	0.139	2.354	0.027	0.185	3.215	0.002
R	0.451	3.362	0.001	1.343	4.248	0.000	0.544	2.249	0.034	0.143	3.717	0.001
Adj. R^2	0.275			0.519			0.494			0.373		
F-stats (prob.)	13.781(0.000)			8.653(0.000)			7.809(0.000)			9.525(0.000)		

Source: Authors' estimation.

Table 5.1: Results of Sensitivity Analysis

Models	All Countries				High Income				Middle Income				Low Income			
	Coeff. Of R	t-stats. (prob.)	R^2	F-stats. (prob.)	Coeff. Of R	t-stats. (prob.)	R^2	F-stats. (prob.)	Coeff. Of R	t-stats. (prob.)	R^2	F-stats. (prob.)	Coeff. Of R	t-stats. (prob.)	R^2	F-stats. (prob.)
Basic Model	0.450	3.362 (0.001)	0.274	13.781 (0.000)	1.343	4.248 (0.000)	0.519	8.653 (0.000)	0.543	2.248 (0.034)	0.493	7.809 (0.000)	0.142	3.717 (0.000)	0.373	9.525 (0.000)
EXP	0.484	3.521 (0.000)	0.282	10.641 (0.000)	1.206	3.625 (0.001)	0.548	6.985 (0.000)	0.536	2.200 (0.038)	0.507	5.916 (0.002)	0.145	3.752 (0.000)	0.380	7.210 (0.000)
FER	0.431	3.110 (0.002)	0.277	10.356 (0.000)	1.272	3.854 (0.000)	0.533	6.565 (0.001)	0.548	2.225 (0.036)	0.497	5.691 (0.002)	0.144	3.701 (0.000)	0.375	7.057 (0.000)
HEX	0.384	2.897 (0.004)	0.316	12.404 (0.000)	1.118	3.270 (0.003)	0.571	5.845 (0.001)	0.542	2.277 (0.032)	0.530	6.493 (0.001)	0.143	3.691 (0.000)	0.374	7.024 (0.000)
INF	0.332	2.553 (0.012)	0.359	15.172 (0.000)	1.278	3.932 (0.000)	0.536	6.648 (0.000)	0.498	2.181 (0.039)	0.570	7.627 (0.000)	0.140	3.718 (0.000)	0.405	8.025 (0.000)
LEX	0.322	2.425 (0.016)	0.348	14.445 (0.000)	1.370	3.624 (0.001)	0.521	6.229 (0.001)	0.576	2.252 (0.034)	0.498	5.717 (0.002)	0.147	4.164 (0.000)	0.476	10.692 (0.000)
PSE	0.460	3.374 (0.001)	0.286	10.622 (0.000)	1.279	3.875 (0.000)	0.531	6.509 (0.000)	0.550	2.305 (0.030)	0.526	6.404 (0.001)	0.143	3.705 (0.000)	0.377	7.115 (0.000)
EXP, FER	0.461	3.295 (0.001)	0.255	8.672 (0.000)	1.172	3.413 (0.002)	0.555	5.479 (0.002)	0.542	2.186 (0.039)	0.402	4.644 (0.004)	0.149	3.780 (0.000)	0.318	5.773 (0.000)
EXP, HEX	0.392	2.823 (0.005)	0.284	9.843 (0.000)	1.174	3.413 (0.002)	0.554	5.464 (0.002)	0.538	2.219 (0.037)	0.428	5.050 (0.003)	0.145	3.717 (0.000)	0.313	5.655 (0.000)
INF, PSE	0.341	2.560 (0.011)	0.339	12.310 (0.000)	1.232	3.643 (0.001)	0.544	5.250 (0.002)	0.506	2.238 (0.035)	0.597	6.529 (0.000)	0.141	3.711 (0.000)	0.411	6.425 (0.000)
PSE, LEX	0.334	2.455 (0.015)	0.356	11.649 (0.000)	1.335	3.479 (0.002)	0.532	5.021 (0.003)	0.575	2.271 (0.033)	0.529	4.953 (0.003)	0.148	4.189 (0.000)	0.486	8.707 (0.000)
PSE, HEX	0.379	2.807 (0.006)	0.338	10.632 (0.000)	1.366	3.615 (0.001)	0.541	5.187 (0.002)	0.549	2.363 (0.027)	0.571	5.853 (0.001)	0.143	3.671 (0.000)	0.377	5.583 (0.000)
EXP, FER, HEX	0.392	2.789 (0.006)	0.317	8.152 (0.000)	1.084	3.069 (0.000)	0.576	4.772 (0.003)	0.549	2.262 (0.034)	0.555	4.370 (0.005)	0.149	3.739 (0.000)	0.385	4.706 (0.000)
PSE, INF, HEX	0.308	2.274 (0.025)	0.406	11.740 (0.000)	1.335	3.469 (0.002)	0.552	4.305 (0.005)	0.505	2.318 (0.030)	0.645	6.358 (0.000)	0.142	3.676 (0.000)	0.412	5.247 (0.000)
PSE, LEX, HEX	0.305	2.307 (0.023)	0.392	11.094 (0.000)	1.335	3.469 (0.002)	0.551	4.304 (0.005)	0.557	2.246 (0.035)	0.571	4.660 (0.003)	0.148	4.127 (0.000)	0.486	7.108 (0.000)
EXP, LEX, FER	0.351	2.764 (0.006)	0.435	13.655 (0.000)	1.147	2.729 (0.012)	0.554	4.363 (0.005)	0.593	2.259 (0.034)	0.524	3.847 (0.009)	0.118	3.593 (0.000)	0.597	11.107 (0.000)
EXP, LEX, INF	0.379	2.843 (0.005)	0.375	10.589 (0.000)	1.158	2.819 (0.010)	0.571	4.663 (0.003)	0.562	2.349 (0.028)	0.599	5.239 (0.002)	0.147	4.120 (0.000)	0.493	7.298 (0.000)

Source: Authors' estimation.

Table 6.1: Results of Unconditional Convergence

Variables	All Countries			High Income			Middle Income			Low Income		
	Coeff.	t-stats	Prob.	Coeff.	t-stats	Prob.	Coeff.	t-stats	Prob.	Coeff.	t-stats	Prob.
C	9.306	7.797	0.000	5.710	1.875	0.073	11.945	3.379	0.002	9.091	3.394	0.002
G80	-0.840	-5.553	0.000	-0.498	-1.550	0.134	-1.056	-2.298	0.030	-0.881	-2.219	0.033
Adj. R^2	0.255			0.091			0.169			0.120		
F-stats (prob.)	30.837(0.000)			2.401(0.134)			5.279(0.029)			4.925(0.033)		

Source: Authors' estimation.

Table 6.2: Results of Conditional Convergence

Variables	All Countries			High Income			Middle Income			Low Income		
	Coeff.	t-stats	Prob.	Coeff.	t-stats	Prob.	Coeff.	t-stats	Prob.	Coeff.	t-stats	Prob.
C	9.162	7.507	0.000	4.499	1.299	0.207	11.933	3.357	0.003	9.552	3.472	0.001
G80	-0.829	-5.423	0.000	-0.381	-1.063	0.299	-1.067	-2.308	0.030	-0.899	-2.250	0.031
Adj. R^2	0.283			0.113			0.192			0.136		
F-stats (prob.)	15.502(0.000)			1.465(0.252)			2.971(0.069)			2.765(0.076)		

Source: Authors' estimation.