

1-1-2012

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The Impact of the Interaction between Economic Growth and Democracy on Human Development: Cross-National Analysis

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Abstract

This paper evaluates the effects of economic growth and democracy on human development using panel data over 170 countries for the period 1980-2010. Our results show that democracy enhances human development in any level of economic development. However, economic growth increases human development only in developing countries. The interaction effect between economic growth and democracy shows that democracy increase human development in developing countries where growth level is low.

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1. Introduction

Human Development Report 2002 first identifies the significance of politics in the process of economic development. It claims that sustained poverty reduction requires an equitable distribution of growth but at the same time it necessitates that poor people have the political power. The best way to achieve that goal is to build up strong and deep forms of democratic governance at all levels of society consistent with human development objectives. There is no other way that human rights can be secured other than through a country's democratisation process.

There has always been a controversy over the question whether democracy enhances economic development. One popular view is that democracy enhances human development (Lipset 1959; Lenski 1966; Muller 1988; Boix 2001; Lake and Baum 2001; Brown and Hunter 2004; Dreze and Sen 2004; and Brown and Mobarak 2009). However, recently, several studies claim that there is no positive correlation between regime type and various measure of human development¹ (Gauri and Khaleghian 2002; McGuire 2004; Shandra et al. 2004; and Ross 2006). The real world evidence provides support of this claim as the most dramatic improvement in human development transpires under the authoritarian rule for example, in the East Asian non communist countries (Gerring, Thacker and Alfaro 2011). On the other hand, many democratic countries in the developing world encounter widely persistent disparities in wealth and high level of poverty (e.g. India and many Latin American countries).

Despite of the fact that many developing countries observe the considerable progress of human development and democratic transformation in the last decade, there exists a vast difference in the quality of life between developed and developing countries. Thus the question arises, does democracy and economic growth of a country improve the quality of life for its citizen? The conventional wisdom presumes that democracy would lead to higher

¹ Barro (1997) finds that growth is increasing in democracy at low levels, but the relation turns negative once a moderate amount of political freedom is attained. There is also a view that democracy is a luxury to be enjoyed only by countries rich enough to afford it, which is especially popular in the developing world (for instance, in Singapore).

social spending and this in turn would enhance the welfare of the poor. However, recent research has found that there is little or no correlation between public spending and human development outside the OECD countries (Gerring, Thacker and Alfaro 2011). This paper revisits the democracy and economic growth relationship and analyses their effects on human development. In particular we estimate the interaction effect of economic growth and democracy to examine whether democratisation process along with economic development accelerates human development by employing a cross-nation analysis approach for over 170 countries. We postulate that a slow process of economic development in developing countries can be mitigated through democratisation process and stronger institutional quality. The cross-sectional panel data has been used for a larger sample of countries for the period 1980-2010 to test the theoretical prediction.

The rest of the paper is structured as the next section discusses the models, data and methodology, followed by empirical results and conclusion in the final section.

2. Models, Data and Methodology

The empirical analysis evaluates various hypotheses proposed in the study to examine the effects of democracy and economic growth on human development. To measure the human development this study uses human development index as the dependent variable. The estimation period is 1980-2010 and using a panel data set over 170 countries.

We begin with a set of regressors that include real per capita GDP growth, democracy and some economic control variables. The base model is formed by incorporating democracy and growth of real GDP per capita and their interactive term as the right-hand-side explanatory variables. The specification is as follows:

$$HDI_{i,t} = \alpha_1 + \alpha_2 DEMO_{i,t} + \alpha_3 RGDPPCg_{i,t} + \alpha_4 DEMO * RGDPPCg_{i,t} + \alpha_5 CONTROL_{i,t} + \varepsilon_{i,t} \quad (1)$$

where HDI is human development index, DEMO is composite democracy index, RGDPPCg is growth rate of real GDP per capita and CONTROL is control variables and i is country and t is the time period and ε is error term. Control variables are government consumption share

of GDP (PPP adjusted) and openness. These variables are expected to explain the role of government expenditure and globalisation in enhancing human development.

The sign and significance of α_2 , α_3 and α_4 are of interest. Theories of development suggest that a higher level of democracy and economic growth improve human development and thus it is expected that the coefficients of democracy and economic growth are positive. The main focus of the equation is the interaction effect which is measured by the coefficient α_4 and the expected sign of the coefficient is positive.

The human development index (HDI) is a composite index which measures the well-being especially the quality of life. The index is obtained from the United Nations Development Programme report. HDI combines indicators of life expectancy, educational attainment and income in to a composite index. The HDI index ranges from 0 to 1 and the highest possible outcome is 1. Democracy variable (DEMO) is constructed by combining Freedom House political rights and civil liberties indices. The political rights include the electoral process and the political pluralism and functioning of government. The civil liberties encompass freedom of expression and belief, associational and organisational rights, rule of law and personal autonomy and individual rights. Each of the components of political rights, civil liberties and press freedom is based on multiple criteria.² The composite democracy index is scaled from 1 to 10, where a higher score indicates a higher level of freedom.

Moreover, Polity IV(DEMOP4) data is used as an alternative democracy index for robustness check. The Polity IV data consists of six component measures that record key qualities of executive recruitment, constraints on executive authority, and political competition. The data ranges from -10 to +10, however, we rescaled the index to make it compatible with Freedom House democracy index (DEMOF), i.e., from 1 (strongly autocratic) to 10 (strongly democratic).³ Economic variables i.e. real GDP per capita (RGDPPC), government consumption spending (GS) and openness (OPEN) are obtained from Penn World Table version 7.1. The descriptive statistics of all variables are presented in Table 1. It can be seen from Table 1, the variables GS, OPEN, DEMOF and DEMOP4 exhibit higher standard deviation relative to HDI and real GDP per capita, with OPEN being the highest in terms of standard deviation. Real GDP per capita has the highest kurtosis and the skewness, indicating that positive growth of real GDP per capita is more prevalent. We have conducted the panel

² See <http://www.freedomhouse.org> for details.

³ See <http://www.systemicpeace.org/polity/polity4.htm> for details.

unit root test by applying the Levin–Lin–Chu (LLC) test, and the results show that all the series are stationary.

We then turn to test the hypothesis that democracy and economic growth affect human development by estimating panel data models for consecutive, nonoverlapping, five year periods from 1980 to 2010.⁴ All variables are averaged over each five-year period. Our benchmark model (equation 1) is estimated with panel least square (PLS), fixed effects (FE) and random effects (RE). Using panel FE model is advantageous because FE can control for unobserved time invariant country specific effects. We also estimate the random effect to capture the influence of unobserved factors that may produce heterogeneity across the countries.

Table 1 Descriptive statistics

| | HDI | RGDPPCg | GS | OPEN | DEMOF | DEMOP4 |
|---|---------|----------|---------|---------|---------|----------|
| Mean | 0.608 | 0.037 | 12.663 | 77.683 | 5.044 | 7.020 |
| Median | 0.635 | 0.017 | 9.989 | 67.984 | 4.650 | 7.250 |
| Maximum | 0.941 | 3.554 | 65.803 | 432.740 | 10.000 | 10.000 |
| Minimum | 0.174 | -0.256 | 1.668 | 1.546 | 1.000 | 2.000 |
| Std. Dev. | 0.182 | 0.225 | 8.680 | 49.022 | 3.115 | 2.150 |
| Skewness | -0.353 | 9.226 | 2.154 | 2.085 | 0.232 | -0.023 |
| Kurtosis | 2.162 | 107.457 | 8.814 | 11.310 | 1.695 | 1.792 |
| Panel Unit root test (Null hypothesis: panel series is non-stationary) | | | | | | |
| LLC t-statistics | -24.864 | -506.581 | -24.600 | -6.061 | -21.221 | -126.168 |
| Probability (LLC) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Observations | 957 | 1131 | 1156 | 1156 | 1140 | 1015 |

3. Empirical Results

In order to estimate the impact of democracy and per capita growth on human development we start with an all country case using least square and the results are reported in Table 2. Column (1) shows that the coefficient of real GDP per capita growth is positive and significant, suggesting that the growth of per capita income increases human development significantly. Likewise, Freedom House democracy coefficient is positive and significant at the 1% level, implying that greater democracy enhances human development. The result is consistent with the theory and *Human Development Report 2002*. The control variables show some mixed results. Interestingly, the sign of government spending to GDP is negative.

⁴ The periods are: 1980-84, 1985-89, 1990-94, 1995-99, 2000-04, and 2005-10.

However, it is assumed that higher government spending should improve human development. The positive sign of OPEN coefficient indicates that globalisation helps in fostering human development.

Table 2 Human development indicator, economic growth and democracy 1980-2010

| | PLS (1) | PLS (2) | FE (3) | FE (4) | RE (5) | RE (6) |
|------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| RGDPPCg | 0.049** (2.307) | 0.046*** (5.536) | -0.009* (1.820) | -0.005 (1.014) | -0.008 (1.071) | -0.005 (0.662) |
| lnGS | -0.041*** (4.596) | -0.053*** (4.596) | -0.014** (2.202) | -0.022*** (3.692) | -0.021** (2.136) | -0.029*** (2.871) |
| lnOPEN | 0.056*** (7.393) | 0.060*** (5.261) | 0.091*** (14.148) | 0.092*** (15.102) | 0.085*** (10.362) | 0.087*** (8.154) |
| DEMOF | 0.037*** (25.142) | | 0.007*** (4.592) | | 0.011*** (9.051) | |
| DEMOP4 | | 0.054*** (17.645) | | 0.011*** (4.368) | | 0.014*** (5.744) |
| Constant | 0.265*** (7.119) | 0.066*** (3.214) | 0.220*** (4.882) | 0.188*** (4.252) | 0.245*** (4.012) | 0.196*** (3.576) |
| Adjusted R ² | 0.452 | 0.433 | 0.951 | 0.953 | 0.323 | 0.953 |
| Wald test (<i>p</i> -value) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Observations | 922 | 857 | 922 | 857 | 922 | 857 |
| Countries | 172 | 154 | 172 | 154 | 172 | 154 |

t-statistics are in parentheses. ***, **, * indicate the level of significance at the 1%, 5% and 10%, respectively.

Column (2) estimates the base equation using Polity IV democracy index and the results remain about the same. The positive sign of Polity IV democracy index shows that democracy increases human development and the result is consistent with Freedom House Democracy index. Columns (3)-(4) and (5)-(6) estimate the fixed effects and random effects respectively and the coefficients of real GDP per capita growth and democracy index display the same sign but lost the significance level for RGDPPCg. This result suggests that democracy is crucial for improving human development than income per capita growth.

In the next step, the total list of countries under examination is divided into developed and developing countries and we repeat the same estimation for each group of countries to find out if there is any difference in the effects of growth and democracy. Table 3 reports the results. In Table 3, Columns (1)-(2) presents the results for developing countries using PLS, and Columns (5)-(6) for developed countries. It is noted from Table 3 Columns (1)-(2) that the variables under study exhibit very similar effects on HDI in the developing countries in comparison with the whole sample case. Interestingly, the magnitude of the RGDPPCg coefficient is relatively greater indicating that economic growth is much needed in improving

human development in developing countries. On the other hand, the coefficient of RGDPPCg in the developed countries (Columns (5)-(6) is negative and significant, which indicates that that growth in income in the developed countries reduces human development. This finding seems to be consistent in some sense with the growth model that the human development of an economy converges towards a steady state rate of development, implying that the human development in the developing countries will be able to “catch up” with that of the developed nations. The results also indicate that the government spending helps in enhancing human development. The OPEN coefficient is positive for both developing and developed country cases. However, large OPEN coefficient in developing countries suggests that globalisation is more required in these countries than developed countries. In what followed, we explore further the interaction effect to confirm how income per capita growth and democracy work together in affecting human development.

Table 3 Human development indicator, economic growth and democracy in developing countries 1980-2010

| | Developing countries | | | | Developed countries | | | |
|------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | PLS | | | | PLS | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| RGDPPCg | 0.122*** (7.185) | 0.104*** (2.822) | 0.190*** (3.823) | 0.665*** (2.865) | -0.021*** (4.207) | -0.015*** (3.130) | -0.084** (1.959) | -0.037 (0.389) |
| lnGFC | -0.037*** (6.653) | -0.056*** (9.322) | -0.036*** (6.646) | -0.057*** (9.124) | 0.021*** (2.560) | 0.009 (1.490) | 0.020*** (2.747) | 0.009 (1.513) |
| lnOpen | 0.079*** (7.909) | 0.071*** (8.483) | 0.079*** (8.003) | 0.069*** (8.164) | 0.019*** (0.005) | 0.033*** (5.074) | 0.019*** (3.946) | 0.033*** (5.129) |
| DEMOF | 0.020*** (8.960) | | 0.021*** (9.907) | | 0.015*** (12.911) | | 0.014*** (14.094) | |
| DEMOP4 | | 0.029*** (6.832) | | 0.030*** (8.252) | | 0.022*** (15.224) | | 0.022*** (19.871) |
| DEMOF*RGDPPCg | | | -0.021** (1.996) | | | | 0.007 (1.450) | |
| DEMOP4*RGDPPCg | | | | -0.076*** (2.740) | | | | 0.002 (0.228) |
| Constant | 0.194*** (7.956) | 0.154*** (8.611) | 0.190*** (7.750) | 0.158*** (8.833) | 0.562*** (11.570) | 0.451*** (8.923) | 0.566*** (12.477) | 0.453*** (9.591) |
| Adjusted R ² | 0.250 | 0.269 | 0.250 | 0.283 | 0.333 | 0.312 | 0.332 | 0.309 |
| Wald test (<i>p</i> -value) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Observations | 663 | 619 | 663 | 619 | 259 | 238 | 259 | 238 |
| Countries | 129 | 115 | 129 | 115 | 43 | 39 | 43 | 39 |

t-statistics are in parentheses. ***, **, * indicate the level of significance at the 1%, 5% and 10%, respectively.

Interaction effects

Columns (3) and (4) in Table 3 report the estimation results of the interaction effect of RGDPPCg and DEMO for developing countries. It is found that the interaction term is negative and significant, indicating that the interaction effect of democracy and economic growth reduces human development significantly. However, for the developed countries, the interaction term is positive although not significant (Column (7) in Table 3). It suggests the interaction term improves human development in developed countries. Control variables maintain the similar sign and significance level when the interaction term is added. To explore further we examine the interaction effect at three different levels, i.e., minimum, mean and maximum level, using a partial effect analysis and the results are reported in Table 4.

As it can be seen in Table 4, RGDPPCg increases HDI at all levels of democracy for the whole sample. However, the magnitude of the effect diminishes with an expansion of democracy. That is RGDPPCg increases human development when a country is least democratic. For developing countries RGDPPCg increases HDI and the effect is maximum at a low level of democracy but it decreases HDI when democracy is at its maximum.⁵ The results suggest that RGDPPCg increases human development only when democracy is at a low to medium level. In contrast, RGDPPCg decreases human development at all levels of democracy in the developed countries although the negative effect diminishes with democracy level.

On the other hand, the effect of democracy at different level of RGDPPCg shows that when growth level is at minimum the impact of democracy on HDI is positive and maximum (both for all sample and developing country) and when growth level is maximum democracy affects HDI negatively. In other words, when growth level is low democracy is very effective in increasing human development but the positive effect vanishes with development. The developed countries illustrate an opposite scenario. The effect of democracy on HDI is less when RGDPPCg is minimum but this effect increases with per capita income growth. Overall, the interaction effects suggest that democracy is more crucial in developed countries

⁵ This finding seems to be consistent with the experience of the developing countries. The development experience of Singapore would be a good case study for this scenario.

whereas, economic growth is vital in developing countries. Our results using Polity IV democracy index confirm the finding.⁶ This finding explains why the view remains popular in the developing countries that democracy is a luxury to be enjoyed only by countries rich enough to afford it.

Table 4 Impact of interaction effects on HDI at the minimum, mean and maximum levels of growth and democracy

| | All country | | Developing country | | Developed country | |
|---------|---|---|---|---|---|---|
| Level | $\partial(\text{HDI})/\partial(\text{RGDPPCg})$ | $\partial(\text{HDI})/\partial(\text{DEMOF})$ | $\partial(\text{HDI})/\partial(\text{RGDPPCg})$ | $\partial(\text{HDI})/\partial(\text{DEMOF})$ | $\partial(\text{HDI})/\partial(\text{RGDPPCg})$ | $\partial(\text{HDI})/\partial(\text{DEMOF})$ |
| | DEMOF= mean, max, min. | RGDPPCg= mean, max, min | DEMOF= mean, max, min. | RGDPPCg= mean, max, min | DEMOF= mean, max, min. | RGDPPCg= mean, max, min |
| Minimum | 0.164*** (5.089) | 0.042*** (29.161) | 0.168*** (4.310) | 0.026*** (9.384) | -0.077** (2.019) | 0.013*** (13.272) |
| Mean | 0.094*** (6.207) | 0.037*** (20.265) | 0.104*** (10.806) | 0.020*** (9.340) | -0.028*** (4.423) | 0.015*** (12.271) |
| Maximum | 0.007 (1.105) | -0.025 (1.519) | -0.025 (0.417) | -0.027 (1.084) | -0.016*** (2.562) | 0.038** (2.267) |

t- statistics are in parentheses. ***, **, * indicate the level of significance at the 1%, 5% and 10%, respectively.

4. Conclusion

This paper empirically evaluates the impact of democracy and economic growth on human development over 170 countries for the period 1980-2010. The results show that democracy and economic growth increases human development in the developing countries. In contrast, economic growth reduces human development in the developed nations. The interaction effect results show that democracy and economic growth positively affect human development. The partial effect results illustrate that democracy increases human development at any level of economic growth in developed countries but the effect is maximum when economic growth is at its highest level. In developing countries economic

⁶ The results will be available upon request.

growth enhances human development at the low to medium level of democracy. From the policy perspective, it is suggested that governments in the developing countries should focus on economic growth and development.

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