Democracy and Growth: Global Causal Evidence for Heterogeneous Political Regimes and Economic and Social Policy

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ABSTRACT

The relationship between democracy and growth is of great importance to development of economic and social well-being policy but its directional causality is still generating lively debate conceptually and empirically. The paper introduces a simple simultaneous-equation model of democracy and growth for open economies and uses global data and system estimation to provide new evidence on democracy-growth causality and importantly the effects of different democratic institutions on it for strategic economic and social policy analysis. The findings confirm democracy causes growth globally but this causality is mixed for countries with heterogeneous political regimes. Regime-specific policy is therefore recommended for appropriate decision-making.

Keywords: Democracy and growth, Lipset/Aristotle and virtuous cycle, heterogeneous political regimes, simultaneous-equation modelling.

JEL Classification: O10, O40, P16

1. Introduction

The nexus between democracy (political freedom and equality for all) and growth (real income per head or living standard and its rate of change) is an important issue in economics and political economy and with relevance to economic and social well-being policy. It has generated a large theoretical and empirical literature and ongoing lively academic and policy-making debates. The debates range from the definition of democracy arising from the immensely influential polyarchy concept of Dahl (1970) and the causality of democracy and growth (Rigobon & Rodrik, 2005; EIU, 2015). Equally important is the fact in the current empirical literature that the findings to verify this nexus have also been mixed and sometimes controversial (Barro, 1996; Persson & Tabellini 2007; Acemoglu et al., 2008; Narayan et al., 2011; Acemoglu et al., 2014).

Explanations for the variation of findings and suggestions for improvement in empirical study are numerous. They include the neglect of relevant variables and their nonlinear relationships (Barro, 1996), omission of key control variables that simultaneously affect both growth and democracy (Acemoglu et al., 2008), heterogeneous political-economic development paths of the countries in the sample (Persson & Tabellini 2007), and importantly, possibly a lack of circular causality hypothesis between democracy and growth (Barro 1996; Acemoglu et al., 2008). These are the current gaps on an important global issue that require further study and verification for meaningful economic and social policy study.

To address these major gaps in the empirical literature, the paper develops a simple multi-equation model with conventional testable causal postulates that are comprehensively based on the current democracy-growth

causality hypotheses for open economies. Significantly, the model also assumes circular causality in the form of a simultaneous-equation model to address the possible multi-directional impact or virtuous cycle hypothesis between democracy, growth and income (see also Rigobon & Rodrik, 2005).

For empirical study with cross-sectional data reflecting thus implicitly long-run or equilibrium-state outcomes, the paper uses the 2008 international data for 162 countries and system estimation to provide evidence on the democracy and growth relationship, and importantly, on this relationship for four non-overlapping component regimes of these countries on the hypothesis that different democratic regimes may be characterised by different causality and therefore require different policy (see detail below). The 2008 data are used on the observation that 2008 was the start of the slowing down of the decades-long democratisation process globally (EIU, 2008) and also known as democratic recession (Diamond, 2008), and the emergence of the global financial crisis resulting in a sharp and protracted recession that could threaten democracy in some parts of the world.

The paper's findings confirm that bi-directional causality exists between democracy and growth for the 162 countries combined, and that this causality is mixed for different groups of countries with heterogeneous political regimes and thus requires regime-specific policy. Some analysis with economic and social policy implications is then briefly discussed.

2. The Model and Its Features

A simple three-simultaneous-equation model of democracy, growth and per capita real income, based

importantly on the key conventional and testable postulates for open economies in the current literature and specifically addressing the major specification and circular causality issues above, can be written arbitrarily in implicit form as $(Y, D, YH, EF, XY) = 0$. After normalising for three key variables ($Y, D \ and \ YH$) and using the usual stochastic linear form[1], it can be written as

$$Y = \alpha_1 + \alpha_2 D + \alpha_3 YH + \alpha_4 EF + \alpha_5 XY + u_1 \qquad (1)$$

$$D = \beta_1 + \beta_2 Y + \beta_3 YH + \beta_4 EF + \beta_5 XY + u_2 \qquad (2)$$

$$YH = \delta_1 + \delta_2 D + \delta_3 Y + \delta_4 EF + \delta_5 XY + u_3 \qquad (3)$$

Where

Y is growth (rate of change in real GDP per capita),
D is democracy composite index,
YH is real GDP per head or, approximately, initial income,
EF is economic freedom composite index, and
XY is exports/GDP or trade intensity.
$u_1, u_2 \ and \ u_3$ are the error terms or omitted variables with conventional cross-country and cross-equation correlation.

As for its structural specification, the model conceptually encompasses and addresses the main testable hypotheses of growth, democracy and income and their circular causality in the literature. These hypotheses include more specifically, (a) the Barro's (1996) hypothesis of democracy affecting growth $D \rightarrow Y$ (D causes Y) and also income $D \rightarrow YH$; (b) the Lipset/Aristotle hypothesis (Acemoglu et al., 2008) of growth

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[1] A log form (Acemoglu et al., 2014) may be inappropriate as Y can be negative as a result of a financial crisis or recession

and income affecting democracy $Y \rightarrow D$ and $YH \rightarrow D$; (c) the virtuous cycle hypothesis of D-Y circular causality ($D <=> Y$) (Jaunky, 2013), and (d) depending on their empirical findings, the sceptic, compatibility and conflict hypotheses (Narayan et al., 2011). In addition, as the model is for open economies, it allows for the testable hypotheses of (i) the effect of trade (exports) intensity representing a country's level of openness or globalisation on growth and income; $XY \rightarrow Y$ and $XY \rightarrow YH$ (Acemoglu et al., 2008), and on democracy, $XY \rightarrow D$, and as political and economic freedoms may be jointly correlated, of (ii) economic freedom on growth and income, $EF \rightarrow Y$ and $EF \rightarrow YH$ (Azman-Saini et al., 2010).

As the model of three structural and jointly dependent equations for Y, D and YH, it should be estimated appropriately by a system method such as the three-stage least-squares (3SLS) or the generalised method of moments (GMM) incorporating factors or instruments that are, for econometric parametric estimation consistency, both exogenous and simultaneously affect growth, income and democratic processes (Barro, 1996; Acemoglu et al., 2008, 2014). Nonlinearity can be introduced into the model by simply using the polynomials of Y, D and YH as additional determinant variables (see Barro, 1996 for this suggestion). An important focus of the paper is that it is assumed that variation in democracy-growth causality may exist due to the heterogeneous characteristics from a political economy perspective of the in-sample countries as measured by their various levels of democratic institutions or dictatorship (Persson & Tabellini, 2007; EIU, 2008; Acemoglu et al., 2014). This proxy aspect of deepening democratic institutions as a major contribution to economic success is the paper's major focus for empirical testing in a structural system framework and for evidence-based policy analysis.

In addition, as a generalisation of Acemoglu et al. (2008, 2014)'s modelling-by-IVs strategy, the IVs in our model may include influencing IV indicators such as population, the country's world GDP share (to allow for country size weight), and export share (to allow for the effect of trade intensity or level of openness). These IVs must satisfy the relevance and exogeneity criteria as required for econometrically asymptotically consistent system estimates of identified equations. For pragmatic reasons that also satisfy the econometric requirements, the IVs in our model's three-stage least-squares estimation are simply polynomials of the jointly dependent variables (see Johnston & DiNarno, 1997).

3. The Data and Estimation Issues

The whole data are cross-sectional for 2008 and for a sample of 162 countries. The data for Y and YH are from the US-Department of Agriculture-Economic Research Service database. The data for exports and GDP are retrieved from the United Nations Explorer datasets. The countries' export shares (X/GDP) are calculated from these data. Democracy index (D) is obtained from the Economist Intelligence Unit (EIU) online, and economic freedom index (EF) from the Heritage Foundation. Acemoglu et al. (2014) have provided further discussions on the reliability of these indexes and their alternatives.

As we use the concept of heterogeneous political institutions for testing the potential variation of democracy-growth causality, we adopt the EIU (2008) classification of these institutions and data availability in empirical study. The four non-overlapping subsamples of the 162 countries with differential democratic institutions as defined by the EIU (2008) are based, for each country, on the average score (0-

10) of 60 indicators in five categories reflecting democracy: electoral process and pluralism, civil liberties, the functioning of government, political participation, and political culture. The index values for the four regimes are: full democracies (8-10), flawed democracies (6-7.9), hybrid regimes (4-5.9), and authoritarian regimes (below 4). As described earlier, the main motivation of this division is to shed more light on the hypothesis that democracy-growth causality is potentially affected by the countries' stages of democratic processes (Acemoglu et al., 2014) and also to provide potential and appropriate regime-specific prescriptions. More specifically, these four regimes and their number of included countries are: full democracies (30 countries), flawed democracies (50), hybrid regimes (36), and authoritarian regimes (51). These regimes represent almost all of the world's population. We note that the selected sub-sampling may not be optimal but it simply represents one useful definition of democratic states with available data that provides, as an advantage over its alternatives, considerable differentiation of scores even among developed countries (EIU 2008). This definition has been usefully adopted in the paper to empirically study the diversity of democracy and growth causality for economic and social policy analysis.

4. Empirical Findings and Political Economy Policy Implications

The model (1) - (3) for testing bi-directional causality between democracy, growth and income has been estimated by the 3SLS method based on the whole sample of 162 countries and separately for the four sub-samples as described above. While 'pure or clean' IVs with economic-theoretic relevance and statistical exogeneity features for system estimation are theoretically desirable for obtaining

asymptotically consistent parameter estimates, they are elusive (Bazzi & Clemens, 2013) in empirical studies due to the inherent Marshallian or Haavelmo interdependence characteristics of economic activities. Extensive discussions of major issues with IVs and remedial recommendations in practice for acceptable estimation and analysis have been provided in the literature (see for example Murray (2006), Acemoglu (2010), Bazzi and Clemens (2013), and Acemoglu et al. (2014), among others). In the paper, a number of combinations of economically relevant IVs and their polynomials had been experimented with and tested for exogeneity. The final accepted IV proxies satisfying the relevance and exogeneity econometric criteria are, for pragmatic and illustrative-system-estimation reasons, simply the polynomials of the variables in the model. The simple use of endogenous variable polynomials (or lags with time series data) as appropriate IVs have been suggested as satisfying the relevance and exogeneity requirements for asymptotically consistent system estimation in the econometric literature (see Johnston & DiNardo, 1997; Wooldridge, 2009). The final findings, conditional on these IVs, are reported in table 1.

When the whole sample of 162 countries was used for estimation ignoring thus the political-economic heterogeneity among these countries, the findings confirm the validity of the hypotheses of Barro ($D \rightarrow Y$ and $D \rightarrow YH$), Lipset/Aristotle ($Y \rightarrow D$ and $YH \rightarrow D$) and virtuous cycle ($Y <=> D$) (Jaunky, 2013). In other words, democracy itself contributes significantly to improving growth and living standard, and higher economic growth and income in these countries also promote deepening democratic institutions. Interestingly, the countries' export intensity or openness has no statistically significant effect on growth, democracy or income, and free-market environment is found to enhance democracy

(confirming the link between economic freedom and political freedom) and not growth or income.

The findings from the four separate classes of regimes show, however, the diversity of democracy-growth causality for heterogeneous democratic institutions. First, for full-democracy economies which consist of mainly developed economies, the findings almost mirror the causality found in the overall sample for growth, democracy and income and the positive impact of economic freedom, and the insignificance of openness. Second, for flawed democracies (where some major South East Asian countries such as Indonesia, Malaysia, the Philippines, Thailand and some South Asian countries such as India and Sri Lanka belong), bi-directional causality between growth, democracy and income is also found, but, significantly and unlike full democracy regimes, economic freedom does not promote democracy but it enhances income for this group. Third, for hybrid regimes, the diversion from the overall findings for causality appears prominent. For example, democracy appears to hinder growth and weakly impacts on income. Growth and especially income also have only weak effects on democracy. While economic freedom has no significant effect on democracy and income, the level of openness however strongly increases income for this group. Finally, for authoritarian regimes, an interesting observation is that, unlike the overall and other regimes, all included key variables are statistically significant but with sometimes opposite causality. More specifically, democracy affects growth but reduces income, and growth promotes democracy but higher income hinders it. For the countries in this regime, openness assists growth but not income, and more economic freedom enhances democracy and income but not growth.

Table 1. Democracy, Growth and Income – 3SLS Estimates

	Const	Y	D	YH	EF	XY	RSQ
All Countries							
Y	1.910		0.528**	-0.169**	-0.010	0.003	0.100
D	1.411*	0.214**		0.108**	0.048**	-0.004	0.408
YH	-2.783	-3.795***	4.783**		-0.082	0.020	0.347
Full Democracies							
Y	-4.981		1.736**	-0.119**	-0.080	0.010	0.340
D	5.435***	0.137**		0.032***	0.029***	-0.001	0.442
YH	-86.682***	-6.702***	19.893***		-0.696*	0.067	0.530
Flawed Democracies							
Y	3.457		1.739***	-0.065	-0.195**	0.002	0.142
D	5.713***	0.069***		0.094***	0.010	-0.002	0.342
YH	-43.328***	-0.125	5.158***		0.216**	0.001	0.451
Hybrid Regimes							
Y	14.291**		-1.342*	0.170	-0.068**	-0.010	0.132
D	5.587***	-0.085*		0.058	-0.006	-0.002	0.123
YH	-10.814***	0.289*	1.599*		-0.021	0.080***	0.771
Authoritarian Regimes							
Y	-3.173		2.960***	0.446***	-0.124**	0.044**	0.076
D	1.143	0.336**		-0.140***	0.039***	-0.014***	0.041
YH	2.843	1.841***	-4.604***		0.264***	-0.091***	0.125

Note: **=significant at the 5% level, *=significant at the 10% level. RSQ=R-squared.

As democracy and growth are crucial components of economic and social well-being, the findings appear to have important related policy implications. First, for total (162 countries) and as mirrored by full-democracy (30 countries) findings, the world's population seems to enjoy the mutual benefits of positive growth, income and democracy relationships while in fact only 14.4 per cent of its population enjoys this beneficial causality environment and its affordability. Economic and social policy that is based on the total or aggregate data findings as reported by the majority of studies in this area and used by policy-makers is therefore at least misleading. Second, while half of the world's population lives in a democracy of some sort, our evidence shows that for flawed democracy countries (50 countries or 35.5 per cent of the population and concentrating in Latin America, Eastern Europe, and to a lesser extent in Asia), a disturbing result is that a policy of more economic freedom has no impact on deepening democracy which, according to the EIU survey, was still generally characterised by low political participation and weak democratic culture (EIU, 2008). Interestingly, the same result is also found for hybrid regimes.

Third, significantly for hybrid regimes (36 countries or 15.2 per cent which together with authoritarian regimes dominate in the countries of the former Soviet Union), the relationships between democracy, growth and income are weak, and the only economic and social policy that is compatible with our significant findings and enhances income is related to more openness. This policy may have obstacles however due to the geo-political situation of these countries and the conflicting influence of Russia and the West. The weak relationships could also be attributed to the 'colour revolution' during the period being petering out. Fourth, paradoxically for authoritarian regimes (51 countries

or 34.9 per cent), the empirical findings are, unlike for other regimes, statistically and uniformly more robust, due to perhaps the wide differentiation of the democracy index scores among the regime members. For these members, any policy is, according to our findings, complex and needs careful balancing as it always involves minuses and pluses. For example, a policy of more democracy and more openness will promote growth but will reduce income, and a policy of more economic freedom will promote democracy and higher income but will reduce growth.

5. Conclusion

To address the gaps in the empirical literature on democracy and growth causality, a simple structural simultaneous-equation model of democracy, growth and income with major relevant determinants for open economies in the world is developed to provide empirical evidence to their causality and with a special focus on the effects of heterogeneous democratic institutions. This evidence is useful to develop appropriate economic and social policy analysis as democracy and growth are crucial components of economic and social well-being. The findings confirm the bi-directional causality for overall data and full and flawed democracies, but are mixed for countries with less democratic institutions. The study shows the relevance of these institutions on promoting growth and also that caution is required in interpreting causality from overall global panel data and in developing appropriate economic and social policy. As an example, an average global democracy index of 5.55 in the scale from 0 to 10 was recorded for both 2008 and 2015 even though the latter is more in the age of anxiety with more diverse country-specific scores (EIU, 2015). Endogenous switching regime modelling in the time-series

domain may be a further related interesting research with available data but it is in another perspective (Jochmann & Koop, 2014).

References

Acemoglu, D. (2010). Theory, General Equilibrium, and Political Economy in Development Economics. *Journal of Economic Perspectives*, Vol. 24, No. 3, pp. 17-32.

Acemoglu, D., Johnson, S., Robinson, J. A. and Yared, P. (2008). Income and Democracy. *American Economic Review*, Vol. 98, No. 3, pp. 808-42.

Acemoglu, D., Naidu. S., Restrepo, P., and Ronbinson. J. A. (2014). Democracy Does Cause growth, NBER Working Paper Series No. 20004. Retrieved from http://www.nber.org/papers/w20004 .

Azman-Saini, W.N.W., Baharumshah, A.Z. and Law, S.H. (2010). Foreign Direct Investment, economic Freedom and Economic Growth: International Evidence. *Economic Modelling,* Vol. 27, pp. 1079-1089.

Barro R. J. (1996). Democracy and Growth. *Journal of Economic Growth*, Vol. 1, pp. 1-27.

Bazzi, S and Clemens, M A. (2013). Blunt Instruments: Avoiding Common Pitfalls In Identifying the Causes of Economic Growth. *American Economic Journal: Macroeconomics,* Vol. 5, No. 2, pp. 152-186.

Dahl, R. A. (1970). *Polyarchy*. New Haven: Yale University Press.

Diamond, L. (2008, March-April). "The Democratic Rollback". *Foreign Affairs*. Retrieved from https://www.foreignaffairs.com/articles/2008-03-02/democratic-rollback

Economist Intelligence Unit (2008). "Index of Democracy". Retrieved from http://graphics.eiu.com/PDF/Democracy%20Index%20 2008.pdf

Economist Intelligence Unit (2015). "Democracy Index". Retrieved from http://www.yabiladi.com/img/content/EIU-Democracy- Index-2015.pdf

Jaunky, V. C. (2013). Democracy and Economic Growth in Sub-Saharan Africa: A Panel Data Approach, *Empirical Economics*, Vol. 45, pp. 987-1008.

Jochmann, M. and Koop, G. (2014). Regime-switching *Cointegration. Studies in Nonlinear Dynamics and Econometrics*, Vol. 19, No. 1.

Johnston, J. and DiNardo, J. (1997). *Econometric Methods*, 4th Ed, New York: McGraw-Hill.

Murray, M. P. (2006). Avoiding Invalid Instruments and Coping with Weak Instruments. *Journal of Economic Perspectives,* Vol. 20, No. 4, pp. 111-132.

Narayan, P. K., Narayan, S. and Smyth, R. (2011). Does Democracy Facilitate Economic Growth or Does Economic Growth Facilitate Democracy? An Empirical Study of Sub-Saharan Africa. *Economic Modelling*, Vol. 28, pp. 900-910.

Persson, T. and Tabellini, G. (2007). The Growth Effect of Democracy: Is It Heterogeneous and How Can It Be Estimated?, NBER Working Paper Series No.13150. Retrieved from http://www.nber.org/papers/w13150

Rigobon, R. and Rodrik, D. (2005). Rule of Laws,
Democracy, Openness and Income: Estimating
Interrelationships. *Economics of Transition*, Vol. 13,
No. 3, pp. 533-564.

Wooldridge, J. M. (2009). On Estimating Firm-level
Production Functions using Proxy Variable Control for
Unobservables. *Economics Letters,* Vol. 104, No. 3, pp.
112–114.