Democracy, Regime Stability and Economic Growth: A Cross Country Dynamic Panel Data Analysis.

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Abstract

This study assesses the impact of democracy on the economic growth in a dynamic panel data of 132 countries from 1970 to 2010 using fixed effects (FEM) and simultaneous equation model (2SLS); controlling for the unobserved individual heterogeneity and simultaneity bias. Further, the impact of democracy on economic growth is reassessed by augmenting the models with Regime Stability. The results obtained indicate that democracy has a positive impact on the economic growth when the Regime Stability is controlled for. The incorporation of the reverse causality and individual heterogeneity further increases the democracy coefficient. On the other hand, economic growth has been found as insignificant determinant of the democracy.

Keywords – Democracy, Regime stability, Economic growth, Panel data analysis.

1.   Introduction

The relationship between democracy and economic growth has gained pivotal importance in the last five decades. The clear division in theoretical stances and cross-country empirical investigations is an evidence of the inconclusive character of the debate. Majority of the literature is strictly divided among those who consider democracy as a determinant of economic growth or those who consider economic growth as a determinant of democracy. A very few empirical studies Feng (2003), Helliwell (1994), Li and Reuveny (2009) incorporates the possibility of a reciprocal nature of the relationship and explore it in a co-evolutionary context. Therefore, if such a possibility exists, the claims based on single-equation models, in which the simultaneity bias is ignored, are erroneous. This study provides theoretical and econometric basis of such a relationship and thus, attempt to answer the question in an expansive framework.

Moreover, a conjecture is proposed in this study which claims that if the stability of the regime is observed, the impact of democracy on the economic growth may improve. The rationale behind this conjecture is that political continuity is imperative for economic growth. The majority of present economically successful countries are those who either have been democratic or autocratic for long period of time without radical regime-change interruptions. Whereas, the democracies who are struggling economically are predominantly those who have witnessed regime instability: reoccurring regime changes. This conjecture is empirically tested in this study by controlling regime stability and examining the democracy's impact in this context.

This study applies a Simultaneous Equation Model (SEM) framework which incorporates the simultaneity bias and control for the regime stability and individual heterogeneity among the cross-sections. Certain methodological discrepancies in the existing studies of Helliwell (1994) and Feng (2003) who employed SEM are rectified in this work. Helliwell used 1960 values of the variables as instruments for the endogenous variables but a SEM requires instruments which are based on all the exogenous variables (Li and Reuveny, 2009). Further, both models in these studies are cross-sectional, using average values of over 20 years of the data; such a design is incapable of incorporating time-varying changes which holds importance in this debate (Feng, 2003). Therefore, I use the complete set of exogenous variables as instruments and conduct the analysis on a panel data involving 132 countries over 41 years; from 1970-2010 to measure the impact of democracy on the economic growth when the reciprocal nature of the relationship is assumed and regime stability is controlled for.

The study is divided into following parts. Part 2 reviews the existing literature on the relationship of democracy and economic growth identifying relevant theories and presentation of theoretical arguments on the causality of the relationship. Part 3 provides a critical explanation of the research methodology employed involving model

specifications, estimation techniques, equation specifications, data sources and limitations. Part 4 presents the results of the econometric analysis followed by a discussion on relating these results with existing literature. Part 5 identifies the limitations of the study. Before the concluding chapter, Part 6 provides a comparative analysis between India and Pakistan using intra-elite conflict as an instance of the omitted variable bias. The purpose of this chapter is to make the reader aware of the limited approach of the topic.

2. Literature Review

2.1.   Determinants of Economic Growth

The income disparity among countries has attracted scholarly attention since "The Wealth of Nations" (Smith 1999) but the substantial increase in between-country income inequality since WWII (Bourguignon and Morrison, 2002) has stimulated theoretical explanations of the question.

Neo-classical growth theory (Solow, 1956) through production functions approach, identifies proximate determinants such as capital, labour and exogenously determined technological progress as the major source of income variations among countries with a specific focus on the 'conditional convergence' hypothesis[1].

Following Solow (1956) text book model:

$$Y(t) = K(t)^{\alpha} (A(t)L(t))^{1-\alpha} \qquad\qquad 0 < \alpha < 1$$

Where Y is the output K is the physical capital and L is labour; α is the output elasticity of respective K or L; A and L are assumed to grow exogenously at the rate g and n respectively.

$$L(t) = L(0)e^{nt} \qquad and \qquad A(t) = A(0)e^{gt}$$

The capital accumulation equation in per-capita terms and the steady state value of capital derived from the capital accumulation equation are as follows:

$$k^{\wedge}(t) = s\, y^{\wedge}(t) - (n+d+g)k^{\wedge}(t)$$

$$k^* = (s/n+d+g)^{1/1-\alpha}$$

Where 's' is the fraction of output saved and invested assuming a closed economy and 'd' is the rate of depreciation of capital. Hence, upon substitution, the steady state per capita income expression in logs is as follow:

$$ln[Y(t)/L(t)] = ln\, A(0) + gt + \alpha/1-\alpha\, ln\,(s) - \alpha/1-\alpha\, ln\,(n+d+g)$$

Mankiw et al (1992) justify the above Solow model suggesting that the changes in the saving and labour growth rates explains a large fraction of income disparities among countries by using cross-section regressions. However, the assumption that countries are at the steady state is central to the use of cross-section regressions which may not hold when the reality that countries are actually on a transition path leading to their steady state at a given point is considered. These growth dynamics are accommodated by Islam (1995) who provides a panel-data framework.

Further, endogenous growth theory led by Romer (1986, 1987, 1990) and Lucas (1988) endogenizes the previously unexplained technological progress in an attempt to explicate sustained growth. Therefore, investment in human capital emerged as a key input by having *'knowledge spill-over'* effects on the economic development of countries resulting in reduced diminishing returns (constant returns) to capital. Cross country empirical studies e.g. Barro (1991, 1996) accepts the conditional convergence hypothesis of neo-classical growth theory and accords well with the constant-returns to scale assumption of endogenous growth theory and validate the importance of human capital (technological progress). Thus, the growth theory focuses on the proximate determinants of economic growth in the form of inputs which creates Economic Growth as an output as shown in the figure 1.

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[1] The conditional convergence hypothesis by Solow model states that countries converge towards a steady-state path. Technological progress determines the growth rate of this path. However, its levels responds to the changes in other variables e.g. savings rate; population growth.

However, these proximate sources in particular and the whole institution of economics in general, operate in a more generic atmosphere. It includes geographical, demographic, socio-cultural and institutional factors which simultaneously manoeuvre these sources. These factors are, thus, the fundamental sources of growth.

Empirical literature provides firm evidence on the importance of institutions, geographical factors, (Rodrik and Subramanian, 2004) cultural influences on adaptation of particular institutions and their impact on proximate determinants e.g. physical and human capital accumulation and technological change (Hall and Jones, 1999). Further Acemoglu *et al.* (2005) argues institutions as the main determinant of growth in the long run. They find that once the institutional structures are controlled for, geographical factors have no robust impact on the economic development.
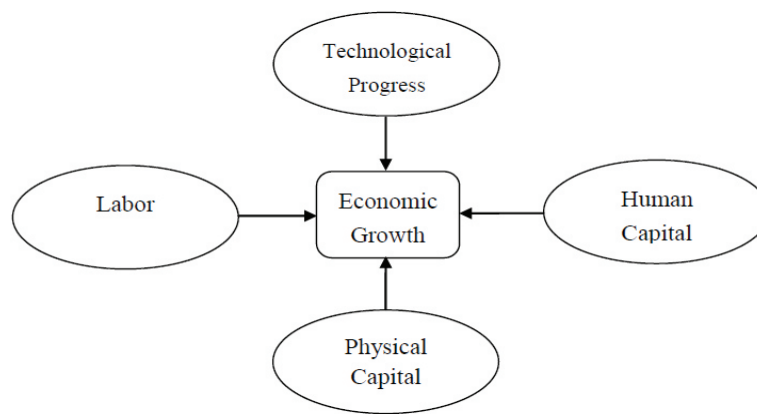

Figure 1: Determinants of Economic Growth

Acemoglu and Robinson (2006) provide a distinction between the political and the economic institutions where the later are determined by the former. Therefore, the political institutions, specifically regime type as the scope of the study compels, is an important determinant of the economic growth.

2.2. Issues in defining and measuring Democracy:

The task of conceptualizing democracy has remained subjective where no consensus is achieved on a universal domain of the term; consequently the measurement of the term is still a live debate. The obvious drawback of no agreement is that a particular quantified indicator of the concept may not be similar to the researcher's perspective of inquiry, thus leading to the so called validation problem of operationalization.

The fundamental conflict in this debate is weather democracy is a dichotomous concept or a continuous one. The regime-change measure arranged by Gasjorowski (1996) and the indicator of democracy in Przeworski *et al.* (2000) consider the concept as a discrete one whereas; the popular indices of Polity Index, Gastil Index and Bollen Index are the examples of the continuous operationalization of the concept. Linz (1975, 184-185) and Huntington (1991, 11-12) are among the leading scholars who support the idea of dichotomy. They base their arguments on the pillars of *'validity'* and *'reliability'* (Przeworski *et al.*, 2000). Validity claim suggest that the concept of democracy is fundamentally an issue of 'kind' rather than 'degree' and therefore, measuring the degree across different regime is invalid (Alvarez *et al.* 1996, 21-22). Hence, the maxim of *'classify before quantify'* prevail Sartori (1970, 1036-1040). The reliability claim prefers dichotomous measures over the continuous on the basis of measurement error (Alvarez *et al.* 1996, 31).

However, Elkins (2000) evaluates these claims by using cross national data and finds that continuous measures conform most to the desired explanatory role of democracy in the validity tests and are more reliable when the factors affecting measurement error are clarified.

Further, the continuous measures allow for precise measurement of gradations made possible due to advancements in the data collection methods. Furthermore, the democratic transitions are incremental and sometimes partial and these details cannot be accounted in a discrete measure of democracy. Methodologically, presenting countries with different levels of the indicators of democracy as one is controversial (Feng, 2003).

The widely used continuous measures of democracy are Polity Index (PI) and Freedom House Index (FHI).

Polity is a composite indicator using the difference between Democracy and Autocracy scores of 167 countries[2] from 1800-2011 using weights explained in Table 1.

The resulting index takes the values from +10 (highly democratic) to -10 (highly autocratic). This measure takes the institutional definition of the term encompassing three dimensions: i) presence of institutions and procedures for effective expression of citizens regarding alternative policies and leaders; ii) presence of institutional constraints on the power of the executive; iii) guaranteed civil liberties to all citizens in daily life and in political participation. Hence, the operational indicator includes the attributes of; competitiveness of political participation; the openness and competitiveness of executive recruitment; and constraints of the chief executive.

FHI, on the other hand includes 191 countries ranked from points 1 to 7 since 1972. This measure encompasses two dimensions of democracy; political rights (using 9 attributes) and civil liberties (using 13 attributes[3]). Countries with score from 1 to 2.5 are considered 'free'; 3 to 5 are 'partly free' and 5.5 to 7 are 'not free'.

Although the correlation among these two measures is very high (Casper and Tufis, 2003), there are some discrepancies which need to be addressed. The inclusion of multidimensional attributes in the FHI, such as socio-economic rights, property rights, freedom from war, freedom from gross socioeconomic inequalities etc puts this measure into *'a maximalist definition'* category. The obvious drawback of such a measure is that this overburdening of the concept makes it one with no empirical referent (Munck and Verkuilen, 2002). On the other hand, PI as a minimalist measure makes it easy to find instances of the concept and quantitative analysis possible. However, minimalist definitions are prone to the problem of omitted attributes. Moreover, the FHI is criticised to use these attributes as 'checklist' with no thought given to the relationships among them (Ryan, 1994, 10). Further, PI is also preferred over FHI due to its clarity on the coding rules, which are not specified in FHI, making the interpretation of scales possible for researchers.

Table: 1 Polity Index (PI) of Democracy and Autocracy (Marshall and Jaggers, 2013)

Autocracy		Democracy	
Authority coding	Scale weight	Authority coding	Scale weight
Competitiveness of Executive Recruitmen (XRCOMP): (1) Selection	+2	Competitiveness of Executive Recruitmen (XRCOMP): (3) Election (2) Transitional	+2 +1
Openness of Executive Recruitment (XROPEN): Only if XRCOMP is coded selection (1) (1) Closed (2) Dual/Designation	+1 +1	Openness of Executive Recruitment (XROPEN): Only if XRCOMP is Election (3) or Transitional (2) (3) Dual/ Election (4) Election	+1 +1
Constraints on Chief Executive (XCONST): (1) Unlimited Authority (2) Intermediate (3) Slight to moderate limitations	+3 +2 +1	Constraints on Chief Executive (XCONST): (7) Executive parity of subordination (6) Intermediate Category (5) Substantial limitations (4) Intermediate Category	+4 +3 +2 +1
Regulation of Participation (PARREG) (1) Restricted (2) Sectarian	+2 +1		
Competitiveness of Participation (PARCOMP) (1) Repressed (2) Suppressed	+2 +1	Competitiveness of Political Participatio (PARCOMP) (5) Competitive (4) Transitional (3) Factional	+3 +2 +1

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[2] The Polity Index only includes the countries with population greater than 500,000.
[3] For detailed list of the attributes, see Gastil l (1991, pp. 26, 32-33) and Ryan (1994, 10-11).

2.3. Causality Direction: Theory and Empirical Evidence

The issue of causality in the democracy-economic growth nexus is of fundamental importance to ensure effective and precise policy implications. It creates two possibilities; either economic growth causes democracy or democracy increases/undermine economic growth taking democracy endogenous and economic growth exogenous or economic growth endogenous and democracy exogenous respectively. There has been convincing theoretical arguments on both sides supported by empirical studies. However, the simultaneous endogenous nature of both concepts is partially ignored and produces a possibility of a reciprocal relationship between democracy and economic growth. This section provides a review of theoretical arguments on the both sides along with identification of relevant empirical studies.

2.3.1. Economic Growth Causes Democracy:

The theoretical link from economic growth to democracy is first established under the modernization theory proposed by Lipset (1959). He argues that higher levels of economic wealth are a pre-requisite for a sustained democracy in any particular society. Later, Rostow (1960) claimed that this relationship is linear and inevitable, followed by the importance of middle class in the relationship suggested by Moore (1966).

Several theoretical arguments attempt to discover the justification through which economic growth causes democracy; partly identified by Li and Reuveny, (2009). The fundamental justification could be termed as *'Education Channel'* which states that as the economy develop the demand for skilled labour increase which rises the spending on education. Improved education levels, in turn, foster "*receptivity to democratic political tolerance*" (Lipset 1959, 83–84) as well as rises demand for greater government transparency, political participation and freedom (Diamond *et al.*, 1987); all basic features of democracy. This demand is supplied for by the elite/industrialist class by giving the middle class power through democratization in an attempt to avoid the threats of revolt (Acemoglu and Robinson, 2004). Dahl (1989) extends the view by enquiring how increased economic performance leads to decentralization of government power and dissemination of democratic ideas.

Further, economically underdeveloped societies are prone to polarization and choose violence as a desperate measure to safeguard survival and social mobility. Such socio-economic tensions lead to political instability and even to civil wars (Li and Reuveny, 2009). To keep the violence under control, governments have to take aggressive measures and coercive strategies which reduce democracy (Huntington, 1991; Haggard and Kaufman, 1995). Furthermore, the economic repression in these countries diminishes people's confidence on the regime and increases the likelihood of transition towards autocracy, making the democracy suffer (Linz, 1978; Seligson and Muller, 1987). Hence economic prosperity positively affects democracy by avoiding all these tensions.

Moreover, the concept of sustained democracy is credited to higher levels of economic prosperity as richer economies are found to be significantly stabilized than dictatorships. Przeworski and Limongi (1997) confirms this evidence by finding that democracies with higher GDP per capita (more than $6055) have never been fallen to dictatorships while poor democracies were found historically to have a high tendency to make a transition towards autocracy. Boix and Stokes (2003) expand the sample to 19th century and add that the income levels are a significantly positive determinant of democratization process.

On contrary, the hypothesis of a positive impact of income on democracy is challenged by Acemoglu *et al.* (2008) who argue that the causality from income to democracy fades away when country-specific heterogeneity is fixed suggesting these heterogeneities as the source of this positive relationship.

However, causality from economic growth to democracy is strongly supported by empirical studies. Leading earlier quantitative studies by Jackman (1973), Bollen (1979, 1983), Bollen and Jackman (1985) and Brunk *et al.* (1987) all find economic growth as statistically and substantially significant determinants of democracy. Later studies by Burkhart and Lewis-Back (1994), Londregan and Poole (1996), Feng (1997), Przeworski and Limongi (1997), Przeworski *et al.* (2000), Boix and Stokes (2003), Hadenius and Teorell (2005) and Inglehart and Welzel (2006) confirm these results.

2.3.2. Democracy Causes Economic Growth

There is no consensus on the direction of the causal link from democracy to economic growth. Literature is divided into two views; the compatibility view considers democracy to have a positive effect on economic growth and the conflict view claims that democracy hinders economic growth.

Hobbes (1651) is considered to be the pioneer of the conflict view[4] who believed that autocratic regimes' interests are generated from the public and thus, they have strong incentive to swell their economic development. Later, implying on North (1989); Acemoglu *et al.* (2004) explains that political institutions are chosen by the groups who control the power. These groups construct those economic institutions which maximise their own rents and not those which are required for economic development e.g. property rights. Huntington (1968) accelerated this view forward by suggesting democratic regimes to have fragile political institutions which follow popular demands at the expense of productive investments. Other arguments of conflict view include:

First, democratic rulers tend not to implement radical and unpopular policies which are necessary for the economic growth, in order to maintain their stay in the office depending on the electoral system (Hewlett, 1979; Rao, 1985). For instance, China's infamous 'one-child policy' which is argued to have a major contribution in its economic success (Ding and Knight, 2011) might not have been possible for a democratic regime. Similarly, Indian family-planning program (infamous for forced sterilization) was made possible only when the democratic rights were temporarily suspended (1975 to 1977) despite repeated recognition of the issue in previous governments. Although the program achieved its immediate targets but in following elections Indira Gandhi's defeat is largely blamed to the hatred of this program (Banerjee and Duflo, 2012). Hence, autocratic rulers are in a better position to implement these kinds of measures which are unpopular but required for the development of economy.

Secondly, it is argued that under democratic regimes the redistribution of the resources from productive investment and development expenditures towards social welfare, due to populist pressure, hinders economic growth (Alesina and Rodrik, 1994; Persson and Tabellini, 1994; Barro, 2000; Haggard, 1990). This argument is better justified in least developed countries (LDCs) where development spending on infrastructure, technology, development of financial markets etc is inevitable for economic growth despite low levels of social welfare. Therefore, autocracies are better equipped to delay social welfare and increase investments (Chirot, 1977; Cohen, 1985).

Thirdly, the issues of self-interest and rent-seeking undermine economic growth in democratic regimes. Self-interests manipulate the political system in order to draw resources from the public to themselves whereas; rent-seeking wastes resources which are required for productive investments (Olson, 1982; Lal, 1983; Jackman, 1993). Moreover, the manipulation of electoral procedure is also found to impede economic performance (Nordhaus, 1975).

Finally, Pye (1966) and Hewlett (1980) argue that democratic governments have less freedom to control social unrest due to the protection of democratic trait of civil liberty. This, in consequence, hampers production and looses appeal of investors, thus, laying a negative impact on economic growth.

Moreover, democracy asserts an indirect positive impact on the economic growth through secured property rights. Democracies tend to have better institutional capacity and performance which protects individual as well as property rights which in turn increase savings, investments and trade; all fundamental sources of economic growth (North, 1990; Olson, 1993; Li and Resnick, 2003). Further, due to well developed institutions, the transparency of the policy making allows scrutiny and positive evolution of economic policies (Whittman, 1995; Baba 1997).

Similar to the theoretical debate, there is no consensus in the empirical investigation of the relationship from democracy to economic growth. Studies are divided into three categories finding positive link, negative link or no link at all[5]. Barro (1996) found the democratic coefficient small and statistically insignificant. Whereas, Feng (2003) and Papaioannou and Siourounis (2008) finds a statistically significant and positive correlation from democracy to economic growth. Rodrik and Wacziarg (2004) finds a delayed (considerable only after a certain time lapsed) but positive impact of democracy on growth. On the other hand, studies by Huntington and Dominguez (1975), Grier and Tullock (1989) finds a negative relationship whereas Helliwell (1994) De Haan and Siermann (1995) find no relationship at all.

2.4.   Making a Case for the Co-evolution of Democracy and Economic Growth

The above mentioned theoretical arguments tested by relevant empirical studies for both cases, if considered plausible, create the possibility of a reciprocal relationship between democracy and economic growth. This

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[4] Cited in Kurzman *et al.* (2002)
[5] For detailed list refer to Kurzman *et al.* (2002)

means that both the elements affect each other in a simultaneous manner or in other words co-evolve. However, there are only a couple of studies[6] (Helliwell, 1994; Feng 2003) who have incorporated this nature of the relationship. These studies used Simultaneous Equation Modelling (SEM), with a few discrepancies identified in the introduction, which accounts for the reciprocity. On the other hand, a huge majority of the studies employ single-equation models and consider either of these two variables as exogenous to keep the direction of the variables tractable. But, political or economic institutions are largely debated as endogenous.

Ignoring the simultaneity issue in modelling by using single-equation models can produce biased coefficients and that may have been the major reason of disagreement in the democracy-economic growth nexus debate. Hence, there is a strong justification to incorporate the theoretical possibility of a reciprocal relationship by using appropriate econometric techniques to arrive at true estimates.

2.5. Controlling for Regime Stability

One of the key aspect of the research questions of this study is that democracy may perform economically better once regime stability is insured avoiding the episodes of drastic regime changes during its evolution. The motivation for this conjecture can be achieved by the contrast of economic progress and regime changes. For example, the polity oscillations of Asian economic successes of India and China and economically advanced United Kingdom show that regardless of their regime-type (China being autocratic while India and United Kingdom as democratic), these countries have avoided any radical regime change. On the other hand, Pakistan with extreme and continuous variations in the polity scores is struggling economically. Similarly, the African economic miracle of Botswana also avoided regime-changes and enjoyed economic success.

Huntington (1968) has influenced this argument by claiming that political stability is what actually matters for economic growth and not the regime type. Hence, if political order is maintained, despite the regime type, economy will prosper. This view is extended by Grier and Munger (2006) who claim that democracies grow longer and faster than autocracies. Moreover, empirical investigation by Alesina and Perotti (1997) finds evidence that major changes in the government (regime instability) are the actual factor influencing growth.

3. Research Methodology

This chapter provides an explanation of the research methodology used to answer the research question. First section will describe the specification of the basic model followed by relevant extensions: controlling individual heterogeneity, regime stability and simultaneity, in the subsections. The second section provides the specifications of the economic growth and democracy equation used in the SEM respectively followed by the final section describing the variables, sources and expected signs.

3.1. Model Specification:

Panel data regression has been applied over a sample of 132 countries for the period of 1970-2010. The complete set of country names is available in Appendix. Data availability for the economic growth variables and an intention to minimise omitted observations in the data are the reasons of specifying the sample period from 1970. The generic form of the basic dynamic panel model is as below:

$$y_{it} = \alpha \, DEM_{i,t} + \beta \, y_{i,(t-1)} + \gamma \, x'_{i,t} + \mu_{i,t} \quad \text{--------- Model I}$$

Where the subscripts 'i' denotes the cross-sections (countries) and 't' represents time-periods. The dependent variable 'y_{it}' is the economic growth and 'DEM' is democracy as the variable of interest. '$y_{i,(t-1)}$' shows the inclusion of lagged economic growth and '$x'_{i,t}$' is a vector of economic growth control variables.

3.1.1. Extension I: Controlling for unobserved individual heterogeneity:

As Acemoglu *et al.* (2008) claim, the foremost source of potential bias in the regression relationship of democracy and economic growth are the omitted cross-section specific factors i.e. cultural, geographic, political-historical and socioeconomic, which impacts both the economic structures and political institutions. Panel data techniques of Fixed Effect Model (FEM) or Least Square Dummy Variable Model (LSDM) are used in this study to econometrically account for this unobserved country heterogeneity by incorporating dummy variables for all cross section units allowing separate intercept value for every cross-section. However, the intercept value for

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[6] Claimed in Li and Reuveny (2009)

every country does not change its value over time, hence, fixed effect model only control for the time-invariant omitted factors and thus allow a partial panacea for the omitted variable bias. Random Effect Model (REM) which is suggested as a better measure in efficiency – when N (cross-sections) is large and T (time periods) is small - as in our case cannot be employed due to its strong assumption of no covariance between independent variables and the heterogeneous factors.

$$Cov\ (x_{it},\ a_i) = 0 \quad \text{where} \quad x_{it} = \text{independent variables; } a_i = \text{heterogeneous factors}$$

In the case of this study, the omitted factors are highly likely to have an effect on the independent variables for instance colonization history on democracy - through property rights institutions (Acemoglu *et al.* 2001). Therefore, this assumption does not hold in this sort of setting making the use of REM invalid. Moreover, Hausman Test conducted by Li and Reuveny (2009) suggests FEM over REM in a similar model. Therefore, incorporating cross section-specific and period-specific fixed will lead to the following FEM:

$$EG_{i,t} = \beta_{1i,t} + \beta_2 EG_{i,t-1} + \beta_3 DEM_i + \beta_4 P\_CAP_{i,t} + \beta_5 POPG_{i,t} + \beta_6 H\_CAP_{i,t} + \beta_7 TRADE_{i,t} + \boldsymbol{\beta_c}\,CE + \boldsymbol{\beta_t}\,YE + \mu_{i,t}$$
--- Model II

Note the subscript *'i'* and *'t'* denoting the separate intercepts for each country and year and $\boldsymbol{\beta_c}$CE, $\boldsymbol{\beta_t}$YE reflecting the inclusion of these effects.

3.1.2 . Extension II: Controlling Regime Stability:

As discussed in the literature review, the conjecture that if the regime stability is ensured, democracy will have a more positive effect on the economic growth. The incorporation of the regime stability is denoted by the addition of 'DUR_t' variable. Hence, the augmented model is termed as Model III. The effect of this inclusion will be estimated in the analysis section.

$$EG_{i,t} = \beta_{1i,t} + \beta_2 EG_{i,t-1} + \beta_3 DEM_{i,t} + \beta_4 P\_CAP_{i,t} + \beta_5 POPG_{i,t} + \beta_6 H\_CAP_{i,t} + \beta_7 DUR_{,t} + \beta_8 TRADE_{,t} + \boldsymbol{\beta_c}\,CE$$
$$+ \boldsymbol{\beta_t}\,YE + \mu_{i,t}\ \text{----------Model III}$$

3.1.3. Extension III: Controlling for the simultaneity:

In accordance with the causality discussion in Section 2.3 and 2.4 the co-evolution/reciprocal relationship of economic growth and democracy requires a nuanced approach to traditional single-equation models. The endogeneity of democracy compels to have a multiple-equation model/simultaneous equation model (SEM). This model consist of two equations: a growth equation where the dependent variable is economic growth and democracy is taken as an endogenous right hand side variable; and a democracy equation where democracy is the dependent variable and have economic growth as its endogenous regressor. The issue of simultaneity has been handled by employing *Two-Stage-Least-Square* (2SLS) estimator which accommodates the reciprocal relationship of growth and democracy. 2SLS is a *limited information method* which estimate each equation in the SEM separately taking into account the restrictions placed by the exclusion criterion of identification discussed above of one equation at a time (Gujarati and Porter, 2009). SEM used in the study is mentioned below:

$$EG_t = \beta_{10} + \beta_{12} DEM_t + \beta_{13} EG_{t-1} + \beta_{14} P\_CAP_{t-1} + \beta_{15} POPG_{t-1} + \beta_{16} H\_CAP_{t-1} + \beta_{17} DUR_t + \beta_{18} TRADE_{t-1}\ \mu_{1t}\ ---$$
$$---Eq.\ 1$$

$$DEM_t = \beta_{20} + \beta_{22} EG_t + \beta_{21} DEM_{t-1} + \beta_{23} INF_{t-1} + \beta_{24} TRADE_{t-1} + \beta_{25} DIFF_{t-1} + \mu_{2t}\ \text{--------} Eq.\ 2$$

Equation 1 and Equation 2 are the growth and democracy equations respectively. In Stage − 1, the endogenous variables (EG_t and DEM_t) are regressed, using OLS, on all the exogenous variables in the system yielding Equation 3 and Equation 4 below, these equations have generated the proxy variables (IV) for our endogenous independent variables which are not correlated with the error terms:

$$EG_t = \widehat{\Pi}_{10} + \widehat{\Pi}_{11} EG_{t-1} + \widehat{\Pi}_{12} P\_CAP_{t-1} + \widehat{\Pi}_{13} POPG_{t-1} + \widehat{\Pi}_{14} H\_CAP_{t-1} + \widehat{\Pi}_{15} DUR_t + \widehat{\Pi}_{16} DEM_{t-1} + \widehat{\Pi}_{17} INF_{t-1} +$$
$$\widehat{\Pi}_{18} TRADE_{t-1} + \widehat{\Pi}_{19} DIFF_{t-1} + \widehat{\mu}_{1t}\ ---Eq.\ 3$$

$$DEM_t = \widehat{\Pi}_{20} + \widehat{\Pi}_{21} DEM_{t-1} + \widehat{\Pi}_{22} P\_CAP_{t-1} + \widehat{\Pi}_{23} POPG_{t-1} + \widehat{\Pi}_{24} H\_CAP_{t-1} + \widehat{\Pi}_{25} INF_{t-1} + \widehat{\Pi}_{26} TRADE_{t-1} + \widehat{\Pi}_{27}$$
$$DIFF_{t-1} + \widehat{\Pi}_{28} DUR_t + \widehat{\Pi}_{29} EG_{t-1} + \widehat{\mu}_{2t}\ ---Eq.\ 4$$

In Stage – 2, the variables DEM_t and EG_t in Equation 1 and Equation 2 respectively are replaced with the estimated values of these variables (IVs) from Equation 3 and Equation 4 respectively and a regression of the following equations using OLS is conducted.

$$EG_t = \beta_{10} + \beta_{12} \widehat{DEM}_t + \beta_{13} EG_{t-1} + \beta_{14} P\_CAP_{t-1} + \beta_{15} POPG_{t-1} + \beta_{16} H\_CAP_{t-1} + \beta_{17} DUR_{t-1} + B_{18} TRADE_{t-1} + \mu^*_{1t}$$
$$\text{---Eq. 5}$$

$$DEM_t = \beta_{20} + \beta_{21} \widehat{EG}_t + \beta_{22} DEM_{t-1} + \beta_{23} INF_{t-1} + \beta_{24} TRADE_{t-1} + \beta_{25} DIFF_{t-1} + \mu^*_{2t}$$
$$\text{---Eq. 6}$$

Where $\qquad \mu^*_{1t} = \mu_{1t} + \beta_{12} \hat{\mu}_{2t} \qquad \& \qquad \mu^*_{2t} = \mu_{1t} + \beta_{21} \hat{\mu}_{1t}$

Moreover, $\widehat{EG}_t$ and $\widehat{DEM}_t$ are the fitted values obtained from Eq. 3 and Eq.4.

3.2.   Specification of Growth Equation

As discussed in the Section 2.1, following Solow (1956) and Mankiw et al (1992); investment in physical and human capital and population growth are expressed as the proximate determinants of economic growth and thus considered as the control variables on the right hand side of the growth equation. Moreover, regime stability is used to test the contextual condition in the research question.

Further, country specific and period specific effects are also employed to deal with the individual heterogeneity across countries as specified by Mankiw et al (1992). Literature does not provide any reason to include these effects in the democracy equation mainly due to the fact that democracy changes slow over time and fixed effects are likely to absorb most of the variations in democracy (Li and Reuveny, 2009).

Moreover, Islam (1995), suggest a lagged GDP growth variable as a regressor to control for the tendency of economic growth to exhibit inertia due to factors such as transportation and production delays, time required to develop the taste of products etc. Thus these factors are accommodated by employing a lagged dependent variable. The lagged variable is further used in the computation of the long run impact in the Empirical Analysis section.

In addition, the control variables are also used in lagged forms in Model IV to assuage the potential endogeneity caused by the indirect effects of democracy on the economic growth. This includes the impact of democracy on growth through investment and education (Feng, 2003). This incorporation makes the model a dynamic panel model. However, the inclusion of fixed effects in a dynamic panel model creates a serious bias which is discussed in the sub section 4.2.1.

3.3.   Specification of Democracy Equation:

The democracy equation is specified on the basis of comparative politics literature. Following Li and Reuveny (2009), the equation involves two kinds of variables; economic performance, slow-moving structural and external influences. Inflation and economic growth rate are used as a proxy to economic performance[7]. The remaining variables tend to stay stable over time suggesting a tendency of democracy to exhibit path dependence which is incorporated by using a lagged variable of democracy (Li and Reuveny 2009). The international influences are expressed by Trade (TRADE) and Democratic Diffusion (DIFF) variables. Democratic diffusion represents the dissemination of democratic ideas and norms among neighbouring countries within a region; an important phenomenon in political literature[8].

3.4.   Data, Sources and Expected Signs

3.4.1   . Endogenous (dependent) Variables:

In model III and IV where the simultaneity bias is accounted for, there are two endogenous variables: Economic Growth (EG) and Democracy (DEM).

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[7] See Gasiorowski (1995), Londregan and Poole (1996) for detailed rationale of using inflation and economic growth in democracy models.

[8] See Starr (1991) for detailed discussion and effect of democratic diffusion.

EG is measured by the Purchasing Power Parity (PPP) converted Real Gross Domestic Product Per Capita (Chain Series), at 2005 constant prices data available at Penn World Tables (PWT 7.1) with the code '*rgdpch*'. This variable is further configured as $EG_t = log(RGDPCH_t / RGDPCH_{t-1})$ to represent the growth rate. Log difference is preferred over the annual percentage change in line with the models of leading empirical studies of (Barro 1997; Mankiw *et al.* 1992)[9]. Few of the discrepancies of GDP-per-capita as an indicator of economic growth include the bias in favour of production over consumption, ignorance towards the quality of production and no account of distributive or social aspects growth (Kurzman *et al.* 2000). Despite these shortcomings this measure is selected because of the unavailability of other measures in required time formats.

Democracy (DEM) measure by Polity IV data series (version 2012) is preferred as a better continuous measure (preferred over dichotomous measure in accordance with theoretical conception of this research) over the Freedom House Index in line with the discussion in Section 2.2. The '*Polity*' variable in the dataset is used which is constructed by subtracting the Autocracy score of a country from the Democratic score. The resulting scale takes the values from +10 (strongly democratic) to -10 (strongly autocratic). As Marshal and Jaggers (2013) suggested, the "*standardized authority codes*" of -66 (missing), -88 (transition), -77 (interregnum) are transformed into 'NA', average score before and after the transition, and '0' respectively[10].

As suggested by previous empirical studies, the expected sign of democracy's impact on growth could be positive, negative or insignificant whereas, growth could affect democracy positively or negatively.

3.4.2. Regime Stability (DUR):

Regime stability measure is obtained from Polity IV data series (version 2012) denoted by DURABLE. This variable is measured by the number of years since a country went through a substantive regime change; defined by a three point change in the Polity score over a period of three years or less. The expected sign of this variable is positive.

3.4.3. Growth Control Variables:

Investment (P_CAP):

The investment in physical capital is measured as a one-year lagged percentage share of PPP converted GDP Per Capita at 2005 constant prices from PWT 7.1 coded as '*ki*'. The expected sign of investment is positive.

Education (H_CAP):

Education level in a country is measured by average years of total schooling in the whole population and obtained from Barro and Lee (2000). The variable is also lagged one year and expected to have a positive impact on growth.

Population Growth (POPGR):

In accordance with leading growth modelling, the growth of labour force is estimated by the population measure obtained by the POP variable in PWT 7.1 and transformed into population growth by using $popgr_t = log(pop_t / pop_{t-1})$ lagged one year. Interpolations are used to cover for missing data points where population censuses are not conducted every year. The expected impact of POPGR on EG is negative.

3.4.4 . Democracy Control Variables:

Inflation (INF):

Inflation is measured by the percentage inflation rate from the Consumer Price Index (CPI) lagged one year obtained from World Development Indicators (World Bank, 2002). The effect of inflation on democracy is still under debate (Haggard and Kaufman, 1995).

Trade (TRADE):

Trade measure is obtained by adding the values of imports and exports of a country as a ratio of its GDP at 2005

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[9] Further, methodological arguments by (Jackman 1980; Firebaugh and Beck 1994) also support this method.

[10] Londregan and Poole (1996) and Li and Reuveny (2003) also use this method in their studies.

constant prices in percentage lagged one year. PWT 7.1 source is used where the variable is coded as 'openk'. The effect of this variable on democracy is also in disagreement Gasiorowski (1995).

Table 2: Variables, their description and expected relationship

Variable Type	Variable name	Model name	Proxy
Endogenous Variables	Economic growth	*EG*	Annual per capita PPP converted GDP growth rate
	Democracy	*DEM*	Polity Index (PI) described in table-1
	Regime Stability	*DUR*	Number of years since a country went through a substantive regime change
Growth Control Variables	Investments	*P_CAP*	One-year lagged percentage share of PPP converted GDP Per Capita
	Education	*H_CAP*	Average years of total schooling in the whole population
	Population growth	*POPGR*	Growth of labour force
Democracy Control Variables	Inflation	*INF*	Annual inflation (consumer prices) rate
	Trade	*TRADE*	imports and exports of a country as a ratio of its GDP
	Democratic Diffusion	*DIFF*	Average size of the gap of democracy score of target country and each of its neighbours

Democratic Diffusion (DIFF):

DIFF is constructed by taking the average size of the gap of democracy score of target country and each of its neighbours estimating the magnitude of direction of the pressure exerted on neighbour countries for or against democracy. The data for the measure is extracted from Brinks and Coppedge (2006). Economic relations, tourism and communication networks serve as the channel for the dissemination of democratic norms.[11]

4. Empirical Analysis

This chapter provides a brief overview of the results of the models constructed in Chapter 3. The first section explain the handling of the issues related to residual diagnostics as well as provide econometric basis of the reverse causality by conducting Granger Causality Test. Section 2 shows the model-wise results of the regressions in its subsections. Section 3 links the econometric findings with the literature review and provide a critical discussion.

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[11] See Starr (1991) and Gasiorowski (1995) for detailed discussion.

4.1. Residual Diagnostic:

The panel data structure exposes the residual discrepancies such as Serial Correlation (SC) and Heteroskedasticity (Het). Beck and Katz (1995a, 1995b, and 2004) suggests that dynamic panel models such as Model I, II, III, IV (including lagged dependent variable as a regressor) mitigates the risk associated with the problem of serial correlation.

Moreover, the robust standard errors are used employing the White (cross-section) coefficient covariance method which corrects the standard errors adjusting for clustering over countries also known as Huber-White Sandwich estimator. This method produces cross section heteroskedasticity and contemporaneous correlation consistent standard errors Wiggins (1999).

Further, unit root tests were conducted to identify non-stationary series and growth rates (for GDP-per capita and population variables) and first-difference of the non-stationary variables are used to avoid this problem. However, in Model IV, the 2SLS estimation technique produces valid estimates even if the EG or DEM variables are left non-stationary or co-integrated (Hsiao, 1997: 385).

4.2. Estimation Results

4.2.1. Fixed Effects Model:

In Table 3 we present the results of fixed effects model using 41 years (1970-2010) data of 132 countries producing 4,819 country-year observations. Our model explains 16.84% of the variations in economic growth. Except the human capital and degree of democracy all the control growth variables are found statistically significant with approximately similar coefficient estimates to the existing literature. Trade coefficient (*TRADE*) is found to be negatively related to growth adding evidence to the debate in disagreement. However, previous GDP growth, physical capital and population growth are found to be positively related with GDP growth. The degree of democracy was found negatively associated with GDP growth but insignificant.

Table 3: Results of Fixed Effects Model

Variables	GDP Growth		
	Coef.	T stat.	Prob.
Constant	0.002	6.325	0.000
Lag GDP Growth	0.014	7.313	0.000
Degree of Democracy	0.001	-0.390	0.696
Physical Capital	0.001	18.871	0.000
Human Capital	0.006	-0.204	0.838
Trade	0.000	-9.955	0.000
Population Growth	0.078	4.630	0.000
Adjusted R-Sq	0.1684		
No. of observations	4,819		
No. of countries	132		

The R-square (16.84%) value of our fixed effects model is very low because, the issue of dynamic panel model with fixed effect as identified earlier suggest that the estimates will be inconsistent and variants of LSDV model (FEM) such as Kiviet estimator and Anderson and Hsiao estimator are recommended. However, an important work by Beck and Katz (2004) finds that no basis could be identified that LSDV estimator is less efficient or consistently invalid as compared to other estimators in the panel data with more than 20 time periods. Further, they claim that the OLS estimates in a dynamic panel data model with fixed effects are not problematic. Furthermore, a Monte Carlo study by Judson and Owen (1993) shares the same findings when the time periods are larger than 30. The sample in this model includes 41 time periods, therefore, this issue could be easily ignored and the OLS estimates provided in the Table 3 are accepted as valid.

4.2.2. Model III (Controlling Regime Stability):

The incorporation of regime duration controlling for the regime stability confirms the conjecture placed in the

Introduction. As shown in the Table 4; the sign of the democracy coefficient changes to positive when *'DUR'* variable is introduced although it stays marginally insignificant. The direct effect of regime stability is as expected, positive and statistically significant at 1% level of significance. Therefore, we have empirical evidence that once regime stability is assured, the impact of democracy on economic growth becomes positive justifying the importance of political stability in the democracy-growth nexus. Grier and Munger (2006) identifies that this effect of regime duration is dependent on regime type, where dictatorships grow slower than democracies. However, the sign of population growth remains strangely positive contradicting the existing literature.

Despite yielding a substantive change in the democracy measure, as expected, the conceptual domain of the measure *'DUR'* is restricted to the longevity of the regime and only represents a partial dimension of the overall concept of regime stability. The lack of ideal operationalization of the concept and data availability hinders the confidence to make a comprehensive claim.

Table 4: Results of Fixed Effects Model (controlling for regime stability)

Variables	GDP Growth		
	Coef.	T stat.	Prob.
Constant	0.011	6.583	0.000
Lag GDP Growth	0.102	7.291	0.000
Degree of Democracy	0.001	1.465	0.143
Physical Capital	0.004	18.415	0.000
Human Capital	-0.001	-0.233	0.815
Trade	-0.001	-9.845	0.000
Population Growth	0.294	3.777	0.000
Regime Stability	0.002	7.793	0.000
Adjusted R-Sq	0.1794		
No. of observations	4,814		
No. of countries	132		

4.2.3   . Model IV (Controlling for the simultaneity):

The incorporation of reverse causality and the lagged positions of the control variables (to avoid endogeneity between the explanatory variables) in the Model IV improves the estimates significantly. Except the physical capital, all other variables are statistically significant. Moreover, the magnitude of democracy's impact on the economic growth has increased considerably from 0.000734 to 0.004501 justifying the claims of using the SEM. In order to understand the coefficient estimates of democracy let's assume a scenario where an autocratic country with the polity score of, say, -10 has transitioned[12] to democracy to a score of, say, +6. This transition reflects an increase of 16 units. Therefore, the immediate impact of this increase in the democracy of a country would exert an increase of 0.07% (16*0.004501) in the economic growth of that country where economic growth variable is in logged difference (percentage change). In order to compute the long run impact, the following formula provided by Li and Reuveny (2009) is used:

Long-run Percent Change in GDP per capita

= 100 × Change in democracy × [democracy coef. / (1 − prior gdp per-capita growth coef.)]

= 100 × 16 × [0.004501 / (1-0.080605)] = 7.8%

Therefore, the successful transition towards democracy would increase the economic growth of a country by 7.8% in the log-run. This is a significant positive impact in the context of the magnitude of economic growth of world's leading economies.

Moreover, all control variables exhibit expected signs except the human capital, whose explanation has been provided above. The regime stability indicator's positive impact is also improved from 0.001690 to 0.003516

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[12] The level mostly used by authors to indicate the transition of a country to democracy (Li and Reuveny, 2009).

when the 2SLS estimators and lagged values of explanatory variables are employed as compared to the estimates of Model III. Further, the sign of population growth is also corrected back to negative when the endogeneity among the control variables is avoided in this model.

Table 5: Results of SEM (2SLS) (controlling for simultaneity)

Variables	GDP Growth		
	Coef.	T stat.	Prob.
Constant	0.003	0.033	0.974
Lag GDP Growth	0.081	3.641	0.000
Degree of Democracy	0.005	3.181	0.001
Physical Capital (-1)	0.001	0.543	0.587
Human Capital (-1)	-0.030	-1.672	0.095
Trade (-1)	0.001	5.400	0.000
Population Growth (-1)	-0.426	-3.21	0.001
Regime Stability	0.003	6.664	0.000
Adjusted R-Sq	-0.4710		
No. of observations	4,797		
No. of countries	132		

However, the R^2 or the *adjusted-R^2* in the 2SLS estimation or any other IV estimation is not relevant and usually negative as found in this model. Thus, it cannot also be further used to compute the F-test of joint restrictions. Wooldridge (2006) explains that the negative R^2 is the result of the fact that in the IV estimations of this kind, the Sum of Squared Residuals (SSR) is larger than the Total Sum of Squares (SST)[13]. Therefore, the negativity of this indicator, does not relate with the invalidity or misspecification of the model as interpreted in OLS.

On the other hand, the democracy equation generate positive and statistically significant estimates for economic growth as a determinant of democracy but the positive and significant link disappears when the FE are taken into account (see Table 6). Moreover, the democratic diffusion and trade are found as positive determinants of the democracy. The measure of inflation could not produce statistically significant results.

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[13] The formula for *R*-squared is $R^2 = $ SSM/SST where

SSM = model sum of squares = SST − SSR and
SST = total sum of squares = sum of $(y − ybar)^2$ and
SSR = residual (error) sum of squares = sum of $(y − Xb)^2$

For model IV, **SSM** is negative, so R^2 would be negative and **SSM** is negative because **SSR** is greater than **SST.**

In 2SLS, some of the explanatory variables are used as instruments in parameter estimation. The actual values instead of the instrument values are used to compute SSM. The model's residuals are computed from the variables other than those used to fit the model. Thus, a constant-only model of the dependent variable is not nested within the 2SLS model despite the inclusion of the intercept term. Therefore, the SSR are not bound to be smaller than SST.

Table 6: Model IV (SEM) Democracy Equation regression result without and with fixed effects

| Variables | Democracy | | | | | |
| | Without fixed effects | | | With fixed effects | | |
	Coef.	T stat.	Prob.	Coef.	T stat.	Prob.
Constant	-1.207	-2.653	0.008	1.969	0.514	0.608
GDP Growth	0.201	3.565	0.000	-0.216	-0.463	0.644
Degree of Democracy (-1)	0.946	118.240	0.000	0.878	72.327	0.000
Inflation (-1)	1.02E-05	0.157	0.875	6.29E-05	0.913	0.362
Trade (-1)	-0.003	-2.841	0.004	0.006	1.648	0.099
Diffusion (-1)	0.025	1.799	0.072	0.091	3.493	0.000
Adjusted R-Sq	0.9373			0.9397		
No. of observations	2,135			2,135		
No. of countries	117			117		

It is important to note that the sample size is automatically adjusted to 1974-1997 (24 years) and 117 countries by the EVIEWS 7 statistical package on the inclusion of democratic diffusion indicator in the democracy equation of Model IV. The restricted data of the indicator and resulting adjusted sample is roughly similar to the (Acemoglu *et al.*, 2008) paper.

4.3. Discussion of the Results:

The findings of the initial models supports the conflict view of this relationship as discussed in the literature review. The democracy measure was found to have a negative impact on the economic growth as proposed by the early prominent theoretical pioneers of the view such as Hobbes (1651), Huntington (1968), North (1989) etc. Though, the channels through which democracy has this negative impact as identified by these works were not in the scope of the study and hence no conclusive evidence could be provided on the validity of the claims of indirect effects. In the empirical literature, the negative direction of the relationship from democracy to economic growth was identified by Huntington and Dominguez (1975) and Barro (1996) and the initial two models of this study conform to these findings.

However, as soon as the regime stability is accounted in the later models along with the individual heterogeneity, the relationship becomes positive and statistically significant. This finding provides evidence to the regime stability aspect of the research question. Democracy's performance, thus should only be criticised once its stability has been achieved. Therefore, the countries under transition or at the initial episodes of democracy such as Pakistan, cannot blame democracy as the reason for bad economic performance. Moreover, this finding supports the evidences of Alesina and Perotti (1997) and Feng (2003). However, one should also expect a negative influence of democracy on economy after longer periods of stable democracy through the discourse of the theory of postmaterialism (Inglehart, 1971). Hence an inverted U-shape type relationship could be deduced as shown in the Figure 2 below. The area labelled as *'a'* represents the infant democracy starting with a low economic performance which is the consequence of the regime instability of which this democracy is an offshoot; contemporary Pakistan is a perfect example of such a country. Further, the higher economic growth is incrementally achieved by preserving the democratic stability until the start of the area *'b'*. Similar to the Solow model's steady state of economic growth, the democratic evolution also stabilizes through the area labelled as 'b' where both the economy and the democracy have achieved its maturity. Current developed European countries such as United Kingdom, Norway, and Sweden etc could be the examples. The area 'c' represents Inglehart (1971)'s prediction of a negative impact of a democracy sustained for great period of time.

Furthermore, the account of reverse causality considerably improves the results' statistical significance in general and the magnitude of democracy's coefficient in particular. Hence, if the individual heterogeneity, regime stability and the simultaneity factors are taken into consideration, the results show that democracy is a significant and substantial determinant of economic growth. This observation answers the research question of this study. This effect is the direct effect of democracy ignoring the identification of all the indirect effects through the covariates as provided by the majority of the literature. This study, hence, makes an effort to combine all the identified factors and identify the importance of political regime-type for a country's economic progress. Hence, at the final model (model IV), this study conforms to the compatibility view and empirical evidences provided by Feng (2003); Papaioannou and Siourounis (2008); Przeworski, 1985; Barro (2000) etc. Moreover, the

tendency of differing results on the basis of methodological approaches, variable selection, sample sizes and measurement differences is obvious as identified by several review studies[14].
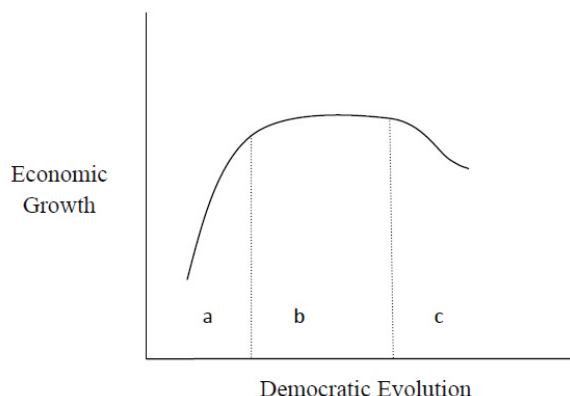

Figure 2: Relationship between Economic Growth and Democracy Evolution

On the other hand, economic growth fails to qualify as a substantive determinant of democracy and the results are in line with the Acemoglu *et al.* (2008). This insignificant behaviour is only visible when the important individual heterogeneity is taken in to account and stays insignificant under the 2SLS estimates.

The results of the control variables are in line with the predictions of Solow model where population growth reduces and investment in physical capital increases the economic growth of the country. However, the augmented human capital in the extended version of Solow model does not produce expected results. The reason for the changing signs of this indicator has been discussed in the sections above. Similarly, the control variables for democracy equation in Model IV shows expected findings with statistical significant and positive impact of democratic diffusion (DIFF) and trade (TRADE). However, inflation indicator (INF) shows a negligible coefficient with no statistical significance.

5. Conclusion

This study finds that democracy has a positive influence on the economic growth of a country when the reciprocal relationship between democracy and economic growth, unobserved individual heterogeneity across cross section and regime stability is controlled for. These findings accord well with the theoretical stance of the compatibility view discussed in the Literature Review. However, consistent with the findings of Acemoglu *et al.* (2008), economic growth is found as an insignificant determinant of democracy. Furthermore, the growth control variables accords well with the existing literature and support the Solow Model predictions.

Moreover, the role of regime stability was found influential, which could significantly change the coefficient of democracy from negative to positive. Hence, this study also adds evidence in favour of the theoretical and empirical claims of Huntington (1968) and Alesina and Perotti (1997) respectively. Therefore, in the earlier years of democracy or even dictatorships, a good economic growth is not expected. The economic growth will co-evolve with the political regime and once the radical regime changes are avoided for a considerable period of time, the economy will prosper. Moreover, at the maturity stage of the political regime, democracies are argued to grow faster and longer than autocracies.

The ignorance towards the simultaneity bias in democracy-growth nexus has been reinforced theoretically and econometrically and the use of single-equation models is suggested to be irrelevant and invalid for this topic.

However, certain conceptual and methodological limitations have been identified which restricts the confidence on unquestionable acceptance of the findings. Despite the employment of the Fixed Effect Models, the omitted variable bias is argued to be still prevalent. A comparative discussion of India and Pakistan identifies deeper and fundamental factors which affected the evolution of democracy and economic growth of both countries in opposite directions. Moreover, data related limitations, estimation restrictions, sample selection bias and

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[14] Brunetti (1997), Sirowy and Inkeles (1990), Kurzman *et al.* (2002), Feng (2003).

measurement error are also identified.

As a recommendation, future studies could add robustness checks with different measures and data transformations of the variables, different sample selections, and region-specific dummy interactions. Further, the scope of the topic could be enhanced from economic growth to economic development involving socio-economic factors e.g. poverty, inequality etc.

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Appendix

Table 7: List of 132 Countries of the sample

Afghanistan	Congo, Dem. Rep.	Guyana	Liberia	Panama	Sweden
Albania	Republic of Congo,	Haiti	Libya	Papua New Guinea	Switzerland
Algeria	Costa Rica	Honduras	Lithuania	Paraguay	Syria
Argentina	Croatia	Hungary	Luxembourg	Peru	Taiwan
Armenia	Cuba	India	Malawi	Philippines	Tajikistan
Australia	Cyprus	Indonesia	Malaysia	Poland	Tanzania
Austria	Czech Republic	Iran	Mali	Portugal	Thailand
Bahrain	Denmark	Iraq	Mauritania	Qatar	Togo
Bangladesh	Dominican Republic	Ireland	Mauritius	Romania	Trinidad &Tobago
Belgium	Ecuador	Israel	Mexico	Russia	Tunisia
Benin	Egypt	Italy	Moldova	Rwanda	Turkey
Bolivia	El Salvador	Jamaica	Mongolia	Saudi Arabia	Uganda
Botswana	Estonia	Japan	Morocco	Senegal	Ukraine
Brazil	Fiji	Jordan	Mozambique	Serbia	United Arab Emirates
Bulgaria	Finland	Kazakhstan	Namibia	Sierra Leone	United Kingdom
Burundi	France	Kenya	Nepal	Singapore	United States
Cambodia	Gabon	Korea, Republic of	Netherlands	Slovenia	Uruguay
Cameroon	Gambia,	Kuwait	New Zealand	South Africa	Venezuela
Canada	Germany	Kyrgyzstan	Nicaragua	Spain	Vietnam
Central African Republic	Ghana	Laos	Niger	Sri Lanka	Yemen
Chile	Greece	Latvia	Norway	Sudan	Zambia
Colombia	Guatemala	Lesotho	Pakistan	Swaziland	Zimbabwe