

Economic Development, Political Cost, and Democratic Transition Theory, Statistical Testing, and a Case Study

Baizhu Chen* and Yi Feng**

This study extends a mathematical model to examine the relationship between economic development and political regime change. The two major theoretical implications from the model are that economic development will ultimately lead to democratization and that the reduction of the political cost of replacing an authoritarian regime is conducive to democratic transition. An empirical test is conducted on 56 developing countries; the statistical results confirm the two implications of the theoretical model. Finally, a case study of the political and economic development in China is discussed to complement the theoretical model and statistical analysis.

I. Introduction

The study of the political economy of growth usually treats the main aspects of political institutions such as political systems, regime stability or government capacity as parameters and keep them fixed in the investigation of economic growth and development. For example, Weede (1983), Kormendi and Meguire (1985), Scully (1988), and Grier and Tullock (1989) use political rights and civil liberties as independent variables for economic growth. Barro (1991, 1996) treats economic

* School of Business Administration, University of Southern California, Los Angeles, California, U.S.A.

** Corresponding author. Center for Politics and Economics, Claremont Graduate School, Claremont, California, U.S.A. He was an Edward Teller National Fellow at the Hoover Institution, Stanford University during 1996-97 and was grateful for the generous research support provided by the Program. The authors are thankful to the editors and reviewers of *Journal of Economic Development* for very thoughtful comments. Jacek Kugler and Mark J. Gasiorowski have kindly made their data sets available for empirical testing in this paper.

growth as endogenous while raising the possibility of reverse causality for political systems and instability. Cukierman, Edwards and Tabellini (1992) make the explicit assumption that political institutions tend to be exogenous. "Political institutions, culture, tradition, underlying conflicts, cleavage of population into organized groups, and the extent of political participation and the involvement of the citizens are all semipermanent features of a country" (Cukierman, Edwards and Tabellini, 1992, 550).¹

Compared to economic performance, change in political systems may be gradual and incremental over time. Nonetheless, a fundamental change in political institutions can ultimately occur, causing a discontinuity in the political order of the country. South Korea and Taiwan have become democratic after years of authoritarian rule, for instance. While there are many other factors which may account for political change, economic development has been regarded as a major stimulant for democratic transition in the political system. The modernization thesis initiated by Lipset (1959) argues that development will lead to democracy. While statistical evidence is mostly consistent with the modernization thesis, "theoretical models of this relation are not well developed."² Our work offers an attempt to model this relationship formally and theoretically, followed by hypothesis testing and a case study.

In this paper, we have extended a formal model by Chen and Feng (1995) to study the transition to democracy. The model shows democratic transition as the result of the rational choices of individuals, interest groups, and political parties with their own incentives and constraints. In this sense, the change of the political system in a nation is endogenous to its citizens' demands and decisions, subject to certain constraints.

Our theoretical result indicates a sufficient, rather than necessary, condition for democracy; the theoretical result implies that economic

1. Realizing the endogeneity problems, some studies investigate the relationship between growth and political institutions through simultaneous equations estimation (Londregan and Poole, 1992; Pourgerami, 1992; Alesina, Özler, Roubini, and Swagel, 1996; Feng, 1996) or through instrumental variable estimation (Helliwell, 1995; Knack and Keefer, 1995; Chen and Feng, 1996).

2. Robert J. Barro, "Democracy and Growth," *Journal of Economic Growth*, 1, 1996, 1-27.

development eventually will bring about democracy. Keeping everything else constant, if a nation is in the initial stages of economic development, and, particularly, if its citizenry is poorly educated, the nation is more likely to choose a dictatorship than otherwise. As the nation develops and accumulates reproducible capital, it will tend to move toward democracy. Also, as the cost of democracy becomes lower and lower over time, a democratic system is likely to be chosen as the political infrastructure for social and economic development. The model also allows policy change of an autocratic government such that it could remain in power. The result is consistent with the Haggard and Kaufman's (1995) argument that the course of both regime change and economic policymaking is ultimately determined by the strategic choices of key actors - the supporters and opponents of the incumbent government - as constrained by economic circumstances and existing institutions (Haggard and Kaufman (1995), 5).

The organization of the paper is as follows. Section II examines the relationship between economic development and political democracy using a mathematical model abstracted on a single issue: wealth distribution. Section III conducts a statistical analysis of two implications from the theoretical models in the preceding section. Section IV is a case study of China in the context of development and democracy. Section V concludes the study.

II. The Models

In this section, a benchmark of costless democracy is set up, based on Persson and Tabellini's (1992) work on income distribution and economic growth. Then this benchmark model is extended to reflect the position typically taken by an authoritarian regime. The indirect utility of the people living in the benchmark model is next compared to the indirect utility of the people living in the autocracy model. Finally, a dynamic relationship between economic development and political regime change is derived from the above models.

We define democracy in this paper as a representative government whose policy on redistribution completely agrees with the median voter's preference. Such a definition of democracy is consistent with

Schumpeter's (1942) argument that a democracy is a political system such that the government is chosen by means of competitive bidding for people's votes. Given the majority rule and the median voter theorem, a government that positions itself at the median voter's position is consistent with Schumpeter's definition of a democratic government. We first consider a *benchmark* model in which the democratic decision making in a nation is costless. All external costs are absent and political institutions are ideally efficient. North (1990) argues that the institutional structure most favorable to approximating the zero transaction cost model for economic efficiency is the modern democratic government with universal suffrage. Citizens of this state live for two periods and have the same preferences. It is assumed that individual i born in period $t-1$ maximizes the following utility function:

$$V_B^i = u(c_{t-1}^i, d_t^i) \quad (1)$$

where c is the consumption when the individual is young, d the consumption when old, and B is a nation for the benchmark model. In each period, a younger generation coexists with an old generation. We assume that at $t-1$ only the younger generation makes political decisions on the policy variable in t , as in the second period t , the old generation at $t-1$ will all be deceased. In this sense, the model we have adopted here is a standard overlapping generation model.³ The utility function is assumed to be concave, linear homothetic. The budget constraints facing the individual are:

$$c_{t-1}^i + k_t^i = y_{t-1}^i = (w_{t-1} + e_{t-1}^i)k_{t-1} \quad (2)$$

$$d_t^i = r_t((1-\theta_t)k_t^i + \theta_t k) \quad (3)$$

where k^i is the individual's accumulation of reproducible capital, which is a composite of human and physical capital,⁴ w is an exogenous

3. This benchmark model draws heavily on the model in Persson and Tabellini (1994).

4. The theory of reproducible capital focuses on the fact that the way an individual allocates

endowment of "basic skills," measuring the productivity of utilizing the total accumulated capital, e^i is the individual's specific skill assumed to follow a distribution with a zero mean and negative median (c.f. Persson and Tabellini, 1994), and k_t is the average accumulation of reproducible capital in the economy.⁵

In (3), $\theta \in \Theta$ reflects the government's redistribution policy and Θ is a compact set of all the permissible redistribution policy variables. A higher value of θ implies a more extractive policy by the government. The increase in the redistribution θ leads to a decrease in the income from the individual's investment but an increase in the income from the return to the average investment. Homothetic preferences imply that the ratio of consumption in the two periods can be written as: $\frac{d_t^i}{c_{t-1}^i} = D(r_t, \theta_t)$, for all i , with $D_r > 0$ and $D_\theta < 0$,

Thus

$$c_{t-1}^i = \frac{r_t((1-\theta_t)y_{t-1}^i + \theta_t k_t)}{D(r_t, \theta_t) + r_t(1-\theta_t)}, \quad (4)$$

$$d_t^i = \frac{r_t D(r_t, \theta_t)((1-\theta_t)y_{t-1}^i + \theta_t k_t)}{D(r_t, \theta_t) + r_t(1-\theta_t)}, \quad (5)$$

where $k_t = \frac{w_{t-1}D(r_t, \theta_t)}{r_t + D(r_t, \theta_t)} k_{t-1}$. Notice that the growth rate of

capital, $g_t = \frac{k_t}{k_{t-1}} - 1 = \frac{w_{t-1}D(r_t, \theta_t)}{r_t + D(r_t, \theta_t) - 1} = G(w_{t-1}, r_t, \theta_t)$, can

be positive or negative. It is easy to check that $G_w > 0$, $G_{r_t} > 0$ and $G_\theta < 0$. Thus, the average skills w and the growth rate g are positively related, whereas government takings θ and the growth rate

her time over various activities in the current period affects her productivity in future periods (Romer (1986), Lucas (1988)).

5. k_t is the average capital accumulation which individual agents take as given. Implicitly in this model as in others (e.g., Persson and Tabellini (1992)), the individual's input is sufficiently small.

g are negatively related. Finally, a higher gross rate of return to capital may increase or decrease growth, depending on whether the substitution effect dominates the income effect.

Since preferences are linear homothetic, we have $u(c_{t-1}^i, d_t^i) = c_{t-1}^i u(1, D(r_t, \theta_t))$, which implies that the individual's utility depends on not only current consumption but also future consumption growth. Therefore, the indirect utility function $V_B^i(\theta)$ is a function of redistribution policy in the following way:

$$V_B^i(\theta) = (F(\theta_t)w_{t-1} + G(\theta_t)e_{t-1}^i)u(1, D(r_t, \theta_t))k_{t-1} \quad (6)$$

where $F(\theta_t) = \frac{r_t}{r_t + D(r_t, \theta_t)}$ and $G(\theta_t) = \frac{r_t(1 - \theta_t)}{D(r_t, \theta_t) + r_t(1 - \theta_t)}$.

Besides, $F'(\theta_t) > 0$, $G'(\theta_t) \geq 0$, and $u_\theta < 0$. This indirect utility function implies that individual preferences for redistribution can be ranked by their endowment e_t^i . The equilibrium policy variable θ^* is hence the value preferred by the median voter, who was born with the median endowment e_{t-1}^m (see Grandmont (1978), Persson and Tabellini (1994));

$$\begin{aligned} \theta^* &= \arg \max V_B(\theta_t) \\ &= [F(\theta_t)w_{t-1} + G(\theta_t)e_{t-1}^m] u(1, D(r_t, \theta_t))k_{t-1}, \quad \forall \theta_t \in \Theta. \quad (7)^6 \end{aligned}$$

Obviously, θ^* is not a function of k_{t-1} . Thus (7) implies that,

6. It is easy to show that the equilibrium policy θ^* is implicitly defined by the following equation:

$$-\frac{D(r_t, \theta)e_{t-1}^m}{D(r_t, \theta) + r_t(1 - \theta)} + \frac{\theta D_\theta(r_t, \theta)w_{t-1}r_t}{(r_t + D(r_t, \theta))^2} = 0, \quad \text{where the first term is the}$$

marginal benefit of redistribution for the median citizen and second term, the marginal cost of the redistribution. It can be verified the θ^* is larger than, equal to, or smaller than zero, as e^m is smaller than, equal to, or large than zero. Thus, the internal solution for θ^* exists and the corner solution is ruled out.

$V_B(\theta^*) > V_B(\theta)$, for any $\theta \neq \theta^*$.⁷ Hereafter, we extend the notion of the median voter to that of the median citizen, who is defined as the individual representing the center of political forces; the median citizen would be the median voter, should there be a democratic voting system. We define a dictatorship as a regime which deviates from the median citizen's position on wealth redistribution; the dictatorship in this context refers to a political regime where the government policy does not converge toward the median voter's preference.

Let's assume that at time $t-1$ a dictatorship exists whose redistribution policy differs by $\Delta\theta$ from the policy that would have been chosen in our benchmark model. In period t , the likelihood that the current regime is changed to a democratic regime depends on the rational decision of the median citizen of the generation born in period $t-1$.⁸ If the current dictatorship remains in office in period t , the individual m born in period $t-1$ has the following decision:

$$\begin{aligned} \max \quad & u(c_{t-1}^m, d_t^m) \\ \text{s.t.} \quad & c_{t-1}^m + k_t^m = (w_{t-1} + e_{t-1}^m)k_{t-1}, \\ & d_t^m = r_t [(1 - \theta^* - \Delta\theta)k_t^m + (\theta^* + \Delta\theta)k_t] \end{aligned} \quad (8)$$

where θ^* is the benchmark redistribution preferred and committed to by the democratic process in the benchmark model and $\Delta\theta$ is the excess redistribution chosen by the dictator; it measures the severeness of dictatorship. Comparing problem (8) with the benchmark model (1), we have

$$\begin{aligned} V_T = [& F(\theta_t^* + \Delta\theta)w_{t-1} + G(\theta_t^* + \Delta\theta)e_{t-1}^m] \\ & u(1, D(r_t, \theta_t^* + \Delta\theta))k_{t-1} \end{aligned} \quad (9)$$

7. In the following analysis we rule out multiple equilibria and assume that the solution θ^* is unique. A broad variety of utility functions (e.g., the Cobb-Douglas type utility functions) have this property.
8. Note that, in $t-1$ the old generation who was born in $t-2$ is not assumed to participate in making redistribution policy regarding period t , as they will be deceased by the end of period $t-1$.

where T denotes dictatorship and V_T is the median citizen's indirect utility under dictatorship. According to the definition of θ^* , we have

$$V_T(\Delta \theta) < V_B(\theta^*), \quad \forall \Delta \theta \neq 0. \quad (10)$$

The change of the current dictatorship into a democracy, however, requires a per capita cost of Φ_t by each individual born at $t-1$. Therefore, Φ can be regarded as the cost of overthrowing the current regime or the cost of installing democracy. In this paper, this cost is termed the *cost of democracy*.⁹ Individual i born in period $t-1$ has the following decision to make:

$$\begin{aligned} \max u(c_{t-1}^m, d_t^m) \\ \text{s.t. } c_{t-1}^m + k_t^m + \Phi_t = y_{t-1}^m = (w_{t-1} + e_{t-1}^m)k_{t-1}, \\ d_t^m = r_t [(1 - \theta)k_t^m + \theta k_t], \end{aligned} \quad (11)$$

where θ , a redistribution policy variable chosen by the costly democracy, is set by the median citizen of $t-1$ generation at the time of regime change. Comparing problem (11) with the benchmark model, we derive the median citizen's indirect utility

$$\begin{aligned} V_M = [F(\theta_t)(w_{t-1} - \Phi_t) + G(\theta_t)e_{t-1}^m k_{t-1}]u(1, D(r_t, \theta_t)) \\ - \Phi_t F(\theta_t)u(1, D(r_t, \theta_t)), \end{aligned} \quad (12)$$

where M denotes a costly democracy. The equilibrium redistribution policy variable θ^{**} in a costly democracy is chosen by

$$\max_{\theta_t \in \theta} V_M(\theta_t). \quad (13)$$

9. In this study we treat the cost of democracy as exogenous. We do not preclude the possibility of relations between the cost of democracy and reproducible capital accumulation; we hesitate, however, to make any ad hoc assumption about a functional form for these relations.

Note that for any θ_t ,

$$V_M(\theta_t) < V_B(\theta_t). \quad (14)$$

At the beginning of period $t-1$, the younger generation born in that period makes the decision to reelect the current regime for the next period or to replace it with a different regime. Suppose the current government is a dictatorship, then if

$$V_M(\theta_t^{**}) > V_T(\Delta \theta_t), \quad (15)$$

a costly democracy is selected to replace the dictatorship. Otherwise, the current dictatorship is reselected to be in office. Note that

$$V_M(\theta_t^{**}) - V_T(\Delta \theta_t) = (f(\theta_t^{**}) - f(\theta_t^* + \Delta \theta_t))k_{t-1} - \phi_t g(\theta_t^{**}) \quad (16)$$

can be positive or negative, i.e., either a dictatorship or democracy could be selected. However, the following propositions imply that (16) will eventually be positive as k_{t-1} increases.¹⁰

Propositions

Proposition (i) : If the first order derivative functions F_θ , G_θ , and u_θ are continuous, then $g'(\theta_t)$ and $f'(\theta_t)$ are continuous, and $g'(\theta_t^{**})$ exists. Thus

$$\lim_{k_{t-1} \rightarrow \infty} \theta_t^{**} = \theta_t^*, \quad \text{and} \quad \lim_{\phi_{t-1} \rightarrow 0} \theta_t^{**} = \theta_t^*.$$

Proposition (ii) : For any given ϕ_t and $\Delta \theta$, there exists a level \bar{k} , such that when $k_{t-1} > \bar{k}$,

$$V_M(\theta_t^{**}) > V_T(\Delta \theta_t).$$

10. The proof of propositions (i) and (ii) is provided in the appendix; the proof of propositions (iii) is obvious.

Proposition (iii) : For any given k_{t-1} and $\Delta \theta$, there exists a level $\bar{\phi}$, such that when $\phi_t < \bar{\phi}$,

$$V_M(\theta_t^{**}) > V_T(\Delta \theta_t).$$

Proposition (i) implies that as the reproducible capital accumulates or as the cost of democracy decreases, the redistribution policy chosen by the majority rule under a costly democracy will tend toward the benchmark redistribution policy. Proposition (ii) implies that for a given level of cost of democracy and a given degree of dictatorship, there exists a level of reproducible capital accumulation such that beyond this level of capital inherited by the younger generation, a costly democracy will be chosen to replace the current dictatorship. Proposition (iii) implies that, for a given level of reproducible capital accumulation and a given degree of dictatorship, if the cost of democracy is lowered to a certain point, the economy will choose a costly democracy to replace a dictatorship. As the dictatorship is assumed to be costless, the model gives a conservative estimate of the inevitability of choosing a costly democracy and moving toward the benchmark democracy when the cost of democracy goes down to a certain level.¹¹ All the three propositions are based on the concept of the median citizen introduced in the beginning of this section. As the indirect utility of individuals can be ranked linearly according to e_i and in the light of the definition of democracy in this paper, the political regime (the dictatorship or the costly democracy) whose policy position translates into greater utility for the middle of the population than the other regime will be selected under the assumption of the simple majority rule. Based on this deduction, democratic transition occurs when costly democracy is able to make the median citizen better off than the dictatorship.

11. It should be noted that the dictator has the option of choosing a distribution policy in accordance with the median citizen's preference so that he could forestall a revolution and avoid the fate of being ousted. In this case, a democratic transition tends to occur in the form of evolution. The dictator could also choose a sufficiently large excessive redistribution $\Delta \theta$, possibly resulting in a negative growth rate of per capita capital. In this case, the dictatorship is likely to be overthrown by another dictatorship. See Londregan and Poole (1990) and Feng (1996).

III. Empirical Testing

The theoretical model delineates a situation in which the accumulation of reproducible capital and the reduction of political cost will eventually lead to a democratic political system. Political institutions are, however, both complex and sophisticated. In addition to economic factors, they are conditioned also by cultural values and traditions, histories of institutions, ideologies, external security threats, ethnicity homogeneity, and many other important elements which vary from country to country. It is difficult to identify and to generalize these country specific variables. Karl (1991), for instance, points out that in addition to economic modernization, preconditions accounting for democracy also include a political culture characterized by tolerance and trust that is conducive to democracy, historical conditions which lead to the weakening of the landed aristocracy, and external influences exemplified by a strong position of the United States in international politics.¹²

Plausibly, each country should have a different wealth threshold for becoming a democracy, contingent upon a wide variety of these and other intervening factors. The model predicts that in the long-run, continued and sustained economic development will turn an autocratic political system into a democratic one. Even when other factors are held constant, economic development is seldom even or sustained in reality, which creates uncertainty for political as well as economic development. When all elements are combined, the exact path to democracy is hard to predict, if not intractable. One example is Peru. The country started out as an autocracy in 1824, began to liberalize in 1945, then reverted to authoritarian rule three years later, once again liberalized in 1956, went back to autocracy in 1962, liberalized for a third time in 1963 before autocracy was restored in 1968; then from 1977 to 1980, the country was in a transition period; finally in 1980, Peru became for the first time a democracy, which lasted till 1992 when the country was thrown back into its former autocratic political system.¹³

12. See Terry Karl, "Getting to Democracy," in *The Transition to Democracy: Proceedings of a Workshop*, Washington, DC: National Academy Press, 1991, 29-40.

Given all the complexity and intricacy involving political development, the statistical testing in this section should be regarded as some exploratory effort in seeking inferences from data concerning the implications of the model. Two theoretical implications of the model are that economic development increases the likelihood of a democracy and that the cost of overthrowing an autocracy decreases the chance of a democracy. In reality, we would expect that a country of more wealth is more likely to become a democracy than a country of less wealth, and that a country where the autocratic government is strong is less likely to experience a democratic transition than a country where the autocratic regime is relatively weak.

The first implication is related to the modernization thesis of the democratic literature. This thesis originates in Lipset (1959) and is maintained by Dahl (1989) and Huntington (1991). While Jackman (1973), Bollen (1979, 1983), Bilson (1981), Bollen and Jackman (1985), Brunk, Calderia, and Lewis-Beck (1987), and Burkhart and Lewis-Beck (1994) empirically find that economic development emerges as a statistically significant determinant for the degree of democracy, Arat (1988) and Gonick and Rosh (1988) find that "increasing levels of economic development do not necessarily lead to higher levels of democracy, even for the less developed countries"¹⁴ and that "economic development ... is not the most important factor affecting the degree to which a political system can be characterized as a 'liberal democracy.'"¹⁵ In a recent work, Londregan and Poole (1996) find that though the effect of economic development on democracy is significant, the impact is far less pronounced than the modernization thesis would suggest.

The second implication of our model focuses on the cost of installing a democracy. The higher the cost of overthrowing a dictatorship, the less likely the initiatives will be taken to establish a democracy. This variable has so far been neglected in the literature. Nonetheless, it is a major reason that autocracy can linger longer than

13. The chronology is based on Mark J. Gasiorowski, "An Overview of the Political Regime Change Data set," *Comparative Political Studies*, 29, 1996, 469-483.

14. Zehar F. Arat, "Democracy and Economic Development: Modernization Theory Revisited," *Comparative Politics*, 21, 1988, 21-36.

15. Lev S. Gonick, and Robert M. Rosh, "The Structural Constraints of the World Economy on National Political Development," *Comparative Political Studies*, 21, 1988, 171-199.

people expect. In East Germany, Czechoslovakia, and Hungary, for instance, democracy was long over-due and should have occurred but for the tremendous costs of installing a democracy while under Soviet domination. During the Cold War period, there were two major attempts to open up the political processes in Eastern Europe. One was the Hungarian revolution of 1956 and the other the Czechoslovakian evolution of 1968. Both were suppressed by the tanks of the Soviet Union; the two renegade communist countries paid huge political costs for their rebellion and quest for freedom. Clearly, economic development as a condition for democratic transition has to be controlled by political costs involved in the transition. Likewise, the model implies that a democratic political system could be true if the cost of ousting the dictatorship is extremely low, even though economic development of the country has not reached a relatively high level. For instance, Bulgaria and Mongolia became democratic, not as a result of economic development but as the consequence of low political costs.

In addition to utilizing the concept of the cost of overthrowing an autocracy, this work is different from other works on the relationship between economic development and political democracy in two major ways. First, the work here implies that economic development is ultimately a *sufficient* condition for democracy while other works treat economic development as a requisite, or a necessary condition, for democracy. For example, according to workshop dedicated to democracy, "democracy will not occur until everyone has a per capita income of approximately \$250 in 1970 dollars. A country must reach that threshold before it can have political democracy."¹⁶ Second, the empirical test involves democracy as a dichotomous variable, whereas other works tend to treat democracy as a continuous variable. Whether democracy should be used as a dichotomous or continuous variable should be determined by conceptual concerns. Elsewhere, the indices for "institutionalized democracy" (Gurr, 1990) and "liberal democracy" (Bollen, 1980, 1990, 1993) were used as an indicator of degrees of democracy or political freedom to show the consequence of incremental change of freedom on the economy. When it comes to the relationship

16. See Terry Karl, "Getting to Democracy," in *The Transition to Democracy: Proceedings of a Workshop*, Washington, DC: National Academy Press, 1991, 29-40.

between development and political regime change, a categorical variable indicating regime change is desired, as we should focus on the fact whether a political system remains autocratic or changes into a democracy.

In this section, we use the political regime data set developed by Gasiorowski (1996). This data set was developed for use in time series and/or cross-national studies of the causes and consequences of political regime and regime change. It consists of all ninety-seven developing countries whose populations exceed one million. For each of these countries, coverage begins with the date of independence or coincides with the start of a modern state and ends in 1992. Unlike the institutionalized democracy indicator in Polity III or the liberal democracy index by Bollen, or the political rights and civil liberties variables in the Freedom House data, the single political variable in Gasiorowski (1996) has four *mutually exclusive* categories: democratic, semi-democratic, authoritarian, and transitional. The conceptual and theoretical underpinnings of these categories are the work by Diamond, Linz, and Lipset (1989). Democratic regime is defined to be a regime which satisfies three conditions. First, meaningful and extensive political competition exists for all effective positions of government power regularly and nonviolently. Second, political participation in selection of leaders and policies is inclusive; no major social group is excluded. Third, a sufficient degree of political and civil rights exists. A semi-democratic regime is defined to be a polity in which a substantial degree of political competition and freedom coexists with limited power of the elected officials, restricted political and civil rights, or a lack of fairness in the election process, resulting in a major discrepancy in the policy preference between the government and the electorate, or a failure for some political orientations and interest groups to organize and express themselves. An authoritarian regime is one in which little or no meaningful political competition exists. Finally, Gasiorowski (1996) creates a category for a transitional regime which is changing from one regime to another.

The focus of the empirical testing is on developing countries. The developed countries became democratic a long time ago. They are excluded from the study, as the other data than democracy, such as

GDP per capita or political capacity in the past are not available. Also, empirically it is more interesting to investigate the conditions for the current less developed countries to become democracies than delving into the relationship between economic development and democracy two centuries ago, which may be entirely different today.¹⁷ Also excluded from the sample for this study are the former communist countries. As mentioned earlier, these countries remained communist largely because of the external military and political control by the Soviet Union. The political system there used to be of a different kind of dictatorship from the one that existed among the third world countries; it was described as totalitarian rather than authoritarian. The other reason that these former communist countries were not selected is that the economic data corresponding to the political data are not currently available.

The two major independent variables are economic development and political cost. Despite the fact that development is multidimensional, the proxy for development is normally Gross Domestic Product (GDP) per capita or Gross National Product (GNP) per capital. Here GDP per capita is used. A major indicator of the wealth of the nation, GDP per capita is expected to be highly correlated with other aspects of economic and social development. To avoid the reverse causality problem, a lag of real GDP per capita is used and is expected to have a positive effect on the prospect of democratic transition. The data on GDP is from Summers and Heston (1995).

The cost of overthrowing the dictatorship is difficult to measure. Such costs should include not only the immediate costs such as losing lives in fighting for democracy but also the opportunity costs which

17. For instance, Gerschenkron (1963) suggests that the more advanced the world economy, the greater the entry costs for development. Therefore, while the early industrializer Britain adopted a liberal political infrastructure for the development of its economy, Germany, a late-comer, had to resort to a centralized political system in order to catch up with Britain. Moore (1966) extends Gerschenkron's argument by suggesting that bourgeois democracy, fascism, and communism are successive modes of modernization, rather than options available to any given country at a particular moment. Their arguments may be right regarding some countries at some historical moments; nonetheless they fail to offer a dynamic explanation of the changeability and reversibility of political systems. If their theories were true, then it would be very difficult to account for the political change that has taken place in the third wave of democratization.

involve the utility lost living under an autocracy. In addition, the cost of not having political freedom can be subjective, because of the intrinsic value and utility associated with freedom under a democracy. In this section, we use the Relative Political Extraction (RPE) developed by A.F.K. Organski and Jacek Kugler (1980) as a proxy for the cost of overthrowing a dictatorship. Relative political extraction measures the efficiency and strength of a government in extracting resources from the pool produced by a society. The variable is orthogonal to political systems. We can have ~~efficient~~ and capable dictatorships, just as we can have equally ~~efficient~~ and capable democracies. Similarly, some autocracies and democracies are relatively weak in their capabilities of extracting resources from the people. A strong autocracy has the capacity to maintain its authoritarian rule over the people efficiently, thus making it costly to overthrow the government. It is expected that the relative political extraction, indicative of the cost of overthrowing the authoritarian regime, is negatively related to the transition to democracy. To avoid the endogeneity problem, we use a lagged form of RPE and the data are from Arbetman and Kugler (1996), who operationalize the concept of relative political extraction, with a higher score of RPE indicating a more capable government.

Also, as control variables, we include a dummy variable for the oil-producing countries. Oil-producing countries are considered "outliers" in the pattern of growth. The natural endowment of underground resources brings wealth into the nation, but the pre-industrial tradition remains intact and prevalent in the nation's political and social life. This variable is expected to take a negative sign. Keeping everything else constant, the threshold for the regime transition to democracy should be higher in the oil-producing countries than others. In other words, for the same level of real GDP per capita, the likelihood of a democratic transition is lower in the oil-producing countries than others. The data on oil-producing countries are from Barro (1991).

We also include a dummy variable to distinguish countries that had democratic experience in the past. Democracy involves vertical and horizontal learning. While the former refers to learning from the past experience of democracy in the nation, the latter learning from the experience of other countries. It is difficult to pin down and thus

control for learning from other countries, as the examples of democracy from other countries have existed for a long time. In testing, we particularly focus on learning from the country's own experience of democracy. For the countries in the same sample, some of the current democracies were ruled by a democratic government in the past, perhaps for a very short period of time before the democratic system broke down, whereas others had never had any experience in a democratic government before the most recent democratic transition occurred. It can be argued that it is easier for democratic transition to take place in a country which has had some democratic experience in the past than in a country which has never had a democratically elected government before. The sign on this dummy variable is expected to be positive. The data on democratic experience are from Gasiorowski (1996).

Finally, a dummy variable for Islam is included as a control, for the reason stated by Huntington (1991). The reason given by Huntington (1991) for the negative impact of Islam on democracy is that "Islam ... rejects any distinction between the religious community and political community ... To the extent that governmental legitimacy and policy flow from religious doctrine and religious expertise, Islamic concepts of politics differ from and contradict the premises of democratic politics."¹⁸ While *ISLAM* may not be a significant variable to account for the incremental changes in political freedom, it could be a determinant for a discrete change from autocracy to democracy. An autocracy may allow certain political freedoms and civil liberties without giving up its authoritarian rule; similarly, a semi-democracy as defined by Gasiorowski (1996) may have to exercise autocratic control and sacrifice freedom in order to gain control of the nation or to put through a particular policy agenda. Under these circumstances, the variable *ISLAM* may not be quite telling in the sense of isolating the two cases mentioned above. A regime transition from autocracy to democracy, however, offers a categorical situation implying that the transition either occurs or does not take place.¹⁹ If Huntington's

18. Samuel P. Huntington, "Democracy's Third Wave," *Journal of Democracy*, 2, 1991, 12-34.

19. Though the transition state in the regime variable in Gasiorowski (1996) indicates a stage between two political systems, it is not a steady state political outcome by

cultural thesis is correct, it can be expected that Islam could have a more significant effect on regime transition from autocracy to full democracy than from autocracy to democracy which includes semi-democracies. To test this difference, two regressions will be run, one with the dependent variable taking a value of one for both democracy and semi-democracy and the other one with the dependent variable taking a value of one for only full democracy. The variable ISLAM is hypothesized to take a negative sign.

The empirical methodology adopted in testing the two implications is the survival analysis, which was designed for studies in qualitative change located in a time frame (such as deaths and arrests). The survival analysis is suitable for studying democratic transition, which involves some qualitative change in the political order of a nation. The dependent variable used in the survival analysis is dichotomous. It is convenient to consider the duration of an authoritarian rule as a state and the transition from the authoritarian rule to a democratic system as a termination of the state. The survival analysis thus is literally a study of the survival of autocracy. In this study, we assign the value of zero to the state of autocracy and the value of one to the regime transition to democracy.

Compared to other estimation methods concerning a limited dependent variable, the major advantage that the survival analysis holds has to do with data censoring. In the case of democratic transition, the dependent variable has two outcomes: either the transition occurs or does not occur. The data span in the empirical testing is from 1960 to 1992.²⁰ Almost all developing countries were ruled by autocratic governments in 1960. During this period, if democratic transition occurred, the state of autocracy ended; if it did not occur, the data then terminate at 1992, the last year in Gasiorowski's (1996) data set. The countries that did not become democracies in 1992 are said to be right-censored, as observation is terminated before transition occurs. Logit or probit models are often used to estimate the probability of

definition.

20. Very few developing countries were democracies in 1960, thus mitigating the implications caused by the left-censoring problem, which occurs because the event has already happened by the time the empirical observations start.

some qualitative change. The two methods, however, do not take the timing of change into consideration, though the countries which became democracies sooner after independence are assumed to have a greater propensity for democracy than those which became democracies toward the end of this period.

It is possible to bypass this problem of timing by using a variable indicating duration (e.g., years, months, etc.), which would control the length of time that a country remains autocratic. This practice, however, would not take into account the countries which are likely to change into a democracy beyond the data termination point. In other words, right-censoring occurs. The survival analysis estimation builds the timing factor into its model and produces more precise results than other limited dependent variable estimation. The estimation model of the survival analysis is:

$$STATUS_i(t) = \lambda_0(t) \exp\{\beta_1 GDP_i(t) + \beta_2 RPE_i(t) + \beta_3 OIL_i + \beta_4 LASTDEM_i + \beta_5 ISLAM_i\}$$

where *STATUS* takes the value one for the termination of autocracy and zero otherwise; *GDP* is lagged real *GDP* per capita and *RPE* is lagged relative political extraction, both taking the form of natural logarithm; *OIL* is a dummy variable which takes the value of one for oil producing country and zero otherwise; *LASTDEM* is a dummy variable which takes the value of one for the country which has had democratic rule in the past and zero otherwise; *ISLAM* is a dummy variable taking the value of one for the country where the largest religious sub-population is Islamic and zero otherwise; *t* is the time operator, taking into consideration the duration of the authoritarian government so as to account for the censored cases. In this model, *GDP* and *RPE* are time-dependent covariates; *OIL*, *LASTDEM*, and *ISLAM* are fixed dummy variables. The model indicates that the hazard at time *t* depends on the values of these dummy variables as well as the values of *GDP* and *RPE*.

As mentioned elsewhere, only developing countries are studied.²¹

21. Another reason for the exclusion of developed countries in this study is to avoid the

Among the developing countries, those which were democracies or semi-democracies upon or very close to the independence of the nation are excluded. These countries were for example Jamaica, Trinidad and Tobago, Papua New Guinea, Israel, and Singapore. The available data result in 26 Sub-Saharan African countries, 12 Central and Southern American countries, 6 Middle Eastern countries, 9 Asian countries, and 3 Southern European countries. Democratic transitions or semi-democratic transitions have occurred in 29 countries and right-censoring occurs in 27 countries where no democratic transitions have taken place as of 1992, when the data set ends.

Table 1 presents the results of the PHREG procedure; ** and * indicate the error level at 0.01 and 0.05, respectively. Note that there is no intercept, which is characteristic of partial likelihood estimation. The intercept is part of $\alpha(t)$, the function of time, which cancels out of the partial likelihood estimation.

Though only one of the two policy variables are highly statistically significant, both of them take the expected signs. While the real GDP per capita is positive and statistically significant at 0.001 level, relative political extraction is negative and statistically close to the 15 percent level. The relatively low statistical significance level of *RPE* may be due to the loss of the information in partial likelihood estimation, which discards the intercept and treats the rest of the model as though it were an ordinary likelihood function. This process leaves out some information about the parameter estimates β in the discarded portion, usually resulting in a larger standard error for the parameter estimate than in other forms of estimation.²²

Based on statistical results, it is easier for a country where the level of development is relatively high to move to democracy than for a country where accumulated wealth is relative low. Also, a nation where the

complicated case of left-censoring. By focusing on developed countries and using 1960 as the starting year, we include in the sample most of the developing countries; particularly, these which gained independent in and after 1960.

22. The gain of the process is the robustness of the estimates; they are consistent and asymptotically normal. Since partial likelihood estimates depend on the ranks of the event times, any monotonic transformation of the event times will have about the same parameter estimates. See Paul D. Allison, *Survival Analysis Using the SAS® System: A Practical Guide*, Cary, NC: SAS Institute, 1995, 115.

government capacity for political extraction is low has a better chance for the transition to democracy than does the nation whose authoritarian government is politically strong and efficient. The control variables all take the expected signs. The nation which has had a democratic history is more likely to have the current democratic transition than nations with no experience in democracy; the parameter estimate on this variable is highly significant. As expected, the dummy variable *OIL* has a negative sign; the democratic prospect for oil producing countries is less than others, keeping everything else constant. Finally, being a Muslim nation has a lower probability of democratic transition, though the parameter estimate is not statistically significant.

In the next regression, the variable *STATUS* takes one for the transition to full democracy only. The ten cases of semi-democracy now become censored events, increasing the total censored events to 37 and reducing the uncensored cases to 19. Except for two variables, the findings in Table 1 remain the same. In Table 2, the variable *OIL* is no longer statistically significant and the variable *ISLAM* becomes significant at the 10% error level. This seems to indicate that while being a Muslim nation does face some unfavorable condition for becoming a full democracy, though it does not affect the political outcome in which some limited freedom exists in the nation under the definition of semi-democracy in this paper.

In summary, the statistical results basically confirm the two major implications of the theoretical model in the beginning section of this paper. The testing of the theoretical model is difficult, considering that the model leads to sufficient, rather than, necessary conditions for the transition to democracy. As such, a democratic transition does not have to be contingent upon wealth. For instance, the influence or direct interference by foreign or external forces can lead to the installation of democracy, regardless of the level of development. These effects tend to cancel out the parameter estimates of accumulated wealth and government capacity. Against all these odds, the statistical results turn out to be quite robust in terms of support for the implications of the model. We have more confidence in our power to explain and predict a democratic transition as the result of theorizing and hypothesis testing.

IV. The Case of China

This section uses China as a template to further illustrate our theoretical and empirical results. For the purpose of our discussion, we have chosen an autocracy (i.e., China) rather than a democracy because we believe that it is enlightening to examine an autocracy for its political and economic change which has the potential for democratic transition. Despite the most stellar progress in its economic development over the past nearly two decades, China has not yet developed its political system into a democracy, though political openness has been increased, compared to the totalitarian state in the country from 1949 to 1976. Clearly, China is typical of right-censored cases in terms of the end of the empirical observation for autocracy. A brief discussion of the political strategy and development in the theoretical structure of the second section and in the perspective of the statistical results of the third section of this paper will be conducive toward grasping the nuances of economic and political nexus of the country's current reform and its odds for democracy.

In the 1920s, the Communist Party of China's (CPC) coalition strategy to seize national office, based on an article written by Mao in 1926, called for an effort to win support from semi-tenant peasants, poor peasants, middle peasants, master handicraftsmen, petty intellectuals, students, primary and secondary school teachers, office clerks, junior lawyers and petty traders, and national capitalists.²³ These classes were economic losers under the existing system, they were also politically underrepresented. The median citizen of the country was supposed to come from this political and subsequently military coalition, of which the peasantry was the mainstay.

After Mao assumed the party leadership in 1936, the CPC succeeded in canvassing support from the peasantry who represented over 90% of the Chinese population as well as other "friendly" classes. The CPC's main strategy included carrying out wealth redistribution and fighting against the Japanese invasion. In this process, the pauperized peasantry thus could have a piece of land, "petty

23. Mao Zedong, "An Analysis of Classes in China," in *Selected Works by Mao Zedong*, Vol. 1, Beijing: People's Press, 1966, 1-11.

bourgeois" scholars would be free to pursue idealism, and national capitalists should operate without the competition from the foreign capitalists.²⁴ In other words, the CPC tried to establish a political trust between them and their political partners on the basis of political and materialistic appeals (Yong, 1992). By promising the equilibrium redistribution policy desired by the median citizen, the CPC survived devastating military attacks by the Nationalists, consolidated its power base in the countryside, grew steadily in the war against Japan, and eventually drove the Nationalists to Taiwan.

After the CPC assumed office, it carried out its promise of land redistribution for the sake of consolidating its political leadership.²⁵ The peasants were overjoyed with the land handed to them, the national capitalists were happy with their market shares, and the intellectuals were imbued with national pride which drew many of them back to the "new democracy" from the West.

Soon after the CPC consolidated its position, it shifted its strategy from maximization of popular support to maximization of political monopoly. Land was gradually taken back from peasants, the nationalist capitalists' property was nationalized step by step, and the intelligentsia became the target of political repressions. Chinese society developed into a totalitarian state which reached the peak during the Cultural Revolution. The support from the masses in the early fifties contrasted with the growing political protest by the mid-seventies when the Cultural Revolution proved to be a catastrophe for the nation.

Factions in the CPC have always had different political agendas. The moderates represented by Deng Xiaoping sensed the popular discontent against the totalitarian regime. Ex ante, they knew that they could win support from the median citizen with their moderate policy if they threw the radical rascals out and if they followed the desire and demand of the society for consumption. In this sense, their action in changing the course of China was endogenously determined by the

24. The Communists also carried out their experiments of land redistribution in their controlled areas.

25. It has been pointed out by Huntington that power based in the countryside is more likely to provide stable political structures (Huntington, 1968).

political disenchantment with political repression in the nation. The moderates hoped that they could save the system by moving the stated toward the middle. The policy designed for the agricultural economic reform catered to the interest of the majority of the population, who desired improvement in their individual welfare.

From 1961 to 1976, the average growth rate of real GDP per capita in China was only 0.025; in addition, the growth was uneven, with the standard deviation from the mean as high as 0.12. For six out of sixteen years, the growth rates were even negative. By comparison, China's energy consumption per capita and energy production per capita steadily increased during this period. The former went up by 43% and the latter jumped 67%. The total school enrollment per capita increased from 0.13 in 1961 to 0.22 in 1976. Literacy increased from 62.3% to 83.3% and physicians per capita increased by three times, from one in a thousand to three in a thousand during the period.²⁶

These data show that, by 1976, when the radicals were arrested, China had tremendously increased its reproducible capital accumulation. By contrast, the economic growth was irregular because of political instability and upheavals. The contradiction between the uneven economic growth and the steady increase in human physical capital accumulation is, perhaps, one of the fundamental contradictions, the resolution of which led to China's economic reforms and political changes today.

The subsequent economic reform in China has proven to be successful. In the 1980s, China's GDP increased faster than either India's or the Soviet Union's and expanded even more rapidly than those of South Korea, Singapore, and Taiwan.²⁷ As our model has indicated, the increase in the accumulation of reproducible capital would push the median citizen's position in a non-democratic society toward that in the benchmark democracy.

The 1989 pro-democracy movement in China indicated the people's desire for further democratization. It failed, perhaps, because the majority of the population, that is, peasants and workers, were not quite ready to join the students in a bloody battle though many of them were

26. The growth data are from Summers and Heston, 1991; other data are from Banks, 1996.

27. "They Couldn't Keep It Down," *Economists*, June 1, 1991, 15.

in moral support of the pro-democracy movement. China's pro-democracy movement of 1989 was initiated and propelled not by the median citizen of the country, but by the most active portion of the students and intellectuals. The lack of participation by the workers and peasants led to its tragic end. As so poignantly pointed out by Mark Selden,

In 1989, ... both the vision and the political activities of students and intellectuals remained unequivocally urban and modern. Like so many Third World intellectuals, their eyes were trained on New York, Paris, and Moscow, and certainly not on China's hinterland. Their democratizing vision and their reform commitment, urban and modern inspiration, were framed virtually without reference to the villages that comprise China's vast hinterland and the social, economic, welfare, and environmental problems that had been aggravated by the reforms. Indeed, the rhetoric and ideals projected by student activists suggest that many shared the view...that China's peasants constituted the great weight holding back the country's modernization and democracy... In this respect, *the movements of the 1980s differed fundamentally from those of the decades following 1919 in which student activists and revolutionaries carried their messages of national subjugation and renovation to the peasantry, the countryside emerged as the major arena of contestation, and the peasantry played an active role in the process.*²⁸

Since then, the economy of China has been moving forward, in the face of inflation, unemployment, and structural problems embedded in the state-run industries. As long as the country's economic reforms continue to add to the overall development of the nation, people's desire for a higher order of freedom - political freedom - will grow and their demand for political change in accordance with their economic status will maintain its increasing momentum. An increase in political freedom will lead to an increase in economic freedom (Feng, 1996), which will

28. Mark Selden, *The Political Economy of Chinese Development*, Armonk, NY: M.E. Sharpe, 1993, 226. *Italics were added.*

lead to a still higher level of economic growth. With the steady development of economy and education, democracy will take root, grow and blossom in China.

A recent article by Henry S. Rowen (1996) has made a bold prediction that China will become a democracy around the year 2015. His prediction is based on three factors: the emergence of the grass-roots democratic elections at the village level in China's countryside, the strengthening of the rule of law, and rapid economic growth. The last is the most crucial factor in his prediction. The prospects for Chinese liberalization... rest... on continued rapid economic progress. Since 1979, China has grown annually over 5 percent per capita (at international prices). If it continues on this trajectory - by no means a certainty - China's per capita GDP will be between \$7,000 and \$ 8,000 (in 1995 dollars) by the year 2015.²⁹ It is within this range that Spain, Portugal, Chile, Argentina, Taiwan, and South Korea made significant strides toward democracy.

Tremendous social change has taken place in the countryside, an epitome of which may be Zouping County of Shandong Province. It has started its first ever local television station and first country newspaper. It has about twenty lawyers involved in lawsuits against government practices as well as business transactions. It is now legitimate to discuss one's own interest which does not necessarily converge toward government fiat. The county leadership is oriented toward openness and international integration. It is proud of its joint venture with South Korea, which manufactures uniforms for the German army. The motto for the top county official is "act locally but think internationally."³⁰ As the economy develops, it can be expected that exchange of information will become increasingly efficient and people will become politically sophisticated. Their aspiration for political democracy and cultivation by democratic ideas will be strengthened.

This prediction about the democratic prospects in China should be

29. Henry S. Rowen, "The Short March: China's Road to Democracy," *The national Interest*, Fall 1996, 61-70.

30. The information is based on a talk given by Michael Oksenberg, "Dilemmas of Democratization in China as Seen from the Grassroots Level," The Democratization Seminar, Stanford University, October 24, 1996.

cautioned on the basis of two concerns. First, Feng (1997) analyzes China's reform using an expected utility model and finds that the current phase of economic reform involves the restructuring of the state-owned enterprises, with a great deal of implications for social and political stability.³¹ In other words, China's reform will be faced with a much greater challenge than the early phase of reform in the countryside. The interest groups characterized by a coalition between large state owned enterprises and provincial governments may have a strong incentive for moderate rather than rapid economic reform. Economic growth may have to slow down for the sake of political control, which implies that the march to democracy may be longer than predicted by Rowen (1996).

Second, the political cost of installing a democratic system at the national level may be greatly reduced as the result of grass-roots "democratic" elections which are happening in the countryside. These elections still have many drawback and the people often cannot effectively select those who can best represent them. Despite these limitations, the people who are directly involved in the elections and the people who are watching these experiments somewhere else will learn a great deal from these experiences. The positive elements of free elections will be learned and told and imitated. This process of learning democracy by practicing democracy will undoubtedly increase people's understanding and appreciation of a democratic society, thus lowering the cost of democracy, which implies that the march to democracy in China could be shorter than predicted by Rowen (1996).

V. Summary and Conclusions

Obstacles to democracy may be political, cultural, and economic. The dynamic theoretic model presented in this paper is based on the abstraction of reality to a political and economic issue: wealth redistribution. We use this issue to estimate people's preferences for a political system. The concept of a median voter is extended to that of a median citizen. The government's position may tally with the median

31. Yi Feng, "China's Economic Reform: Logic and Dynamism," *International Interactions*, 1997, forthcoming.

citizen's position on wealth redistribution (a democracy) or deviate from the median citizen's position (a dictatorship).

Because of the costs in changing the regime, the median citizen may prefer dictatorship to democracy. However, as the level of economic development becomes higher or the cost of overthrowing the dictatorship becomes lower, the prospect of democracy becomes brighter. The moderate in the ruling elite may take this opportunity to challenge the status quo and move toward the median citizen's preferences, or the people would choose to start a revolution which will replace the dictatorship with a democratic government.

The statistical testing indicates that accumulated wealth has a positive impact on democratic transition, whereas the political capacity of the autocracy tends to have a negative effect on the transition from an authoritarian regime to a democratic political system. These two findings are consistent with the theoretical model. In addition, the empirical testing also indicates that the past experience in democracy has a very positive impact on the current transition to democracy. This variable may be also indicative of the political cost of overthrowing a dictatorship. The past experience in democracy may reflect the existence of a relatively strong political constituency for democracy, which lowers the cost of overthrowing the dictatorship.

The case study conducted on China shows the empirical relevancy of the theoretical model as well as confirming the statistical results. As the country with the largest population in the world, the democratic transition and economic development in China will be important to international security and the world economy. The positive evidence of its economic reform and the gradual openness of its political processes have led us to believe, on the strength of our model and statistical testing, that China eventually will become a full democracy if it continues its current trajectory of political and economic development.

Table 1 Survival Analysis (Democratic and Semi-Democratic Transition)

Total events = 56; censored events = 27; uncensored events = 29

Variables	Parameter Estimate	Standard Error	Wald χ^2	Pr > χ^2
OIL	-2.438*	1.169	4.351	0.0370
LASTDEM	1.763*	0.437	16.283	0.0001
GDPLAG	0.897**	0.251	12.708	0.0004
RPCLAG	-0.681	0.489	1.931	0.1646
ISLAM	-0.359	0.508	0.499	0.4801

Table 2 Survival Analysis (Democratic Transition Only)

Total events: 56; censored events: 37; uncensored events: 19

Variables	Parameter Estimate	Standard Error	Wald χ^2	Pr > χ^2
OIL	-1.087	1.268	0.734	0.3916
LASTDEM	1.603**	0.531	9.106	0.0025
GDPLAG	0.768**	0.307	6.263	0.0123
RPCLAG	-0.791	0.649	1.482	0.2234
ISLAM	-1.428	0.867	2.769	0.0997

Appendix

Proof of Propositions

Proposition (i)

Proof: Let $f(\theta_t) = [F(\theta_t)w_{t-1} + G(\theta_t)e_{t-1}^m]u(1, D(r_t, \theta_t))$ and $g(\theta_t) = F(\theta_t)u(1, D(r_t, \theta_t))$. Thus, θ_t^* is chosen by equation $f'(\theta_t) = 0$, and θ_t^{**} according to (14) and (15) is by equation

$$f'(\theta_t) - \frac{\phi_t g'(\theta_t)}{k_{t-1}} = 0.$$

$$\text{Thus } |f'(\theta^{**}) - f'(\theta^*)| = \left| \frac{\phi_t g'(\theta_t^{**})}{k_{t-1}} \right|.$$

If the first order derivative functions F_θ, G_θ , and u_θ are continuous, then $g'(\theta_t)$ and $f'(\theta_t)$ are continuous and $g'(\theta_t^{**})$ exists. Thus

$$\lim_{k_{t-1} \rightarrow \infty} |f'(\theta^{**}) - f'(\theta^*)| = 0.$$

Since $f'(\theta_t)$ is continuous and θ_t^* is a unique maximum, then

$$\lim_{k_{t-1} \rightarrow \infty} \theta_t^{**} = \theta_t^*. \quad \text{Similarly } \lim_{\phi_{t-1} \rightarrow 0} \theta_t^{**} = \theta_t^*.$$

Q.E.D.

Proposition (ii)

Proof: Since $f(\theta_t)$ and $g(\theta_t)$ are continuous, Proposition (i) implies that as k_{t-1} increases, $f(\theta_t^{**})$ and $g(\theta_t^{**})$ approach $f(\theta_t^*)$ and $g(\theta_t^*)$. Thus there exists a \bar{k}_1 , such that $\forall k_{t-1} > \bar{k}_1$,

$$f(\theta_t^{**}) > f(\theta_t^*) - \frac{1}{2} (f(\theta_t^*) - f(\theta_t^* + \Delta \theta)),$$

$$g(\theta_t^{**}) < g(\theta_t^*) + \varepsilon,$$

where ε is any small positive number. Thus, from equation (16)

$$V_M(\theta_t^{**}) - V_T(\Delta \theta_t) > \frac{1}{2} (f(\theta_t^*) - f(\theta_t^* + \Delta \theta))k_{t-1} - \Phi_t(g(\theta_t^*) + \varepsilon).$$

Let

$$\bar{k}_2 = \frac{\Phi_t(g(\theta_t^*) + \varepsilon)}{\frac{1}{2} (f(\theta_t^*) - f(\theta_t^* + \Delta \theta))}.$$

Therefore, if we choose $\bar{k} = \max(\bar{k}_1, \bar{k}_2)$, then $\forall k_{t-1} > \bar{k}$,

$$V_M(\theta_t^{**}) > V_T(\Delta \theta_t).$$

Q.E.D.

References

- Alesina, A., S. Özler, N. Roubini, and P. Swagel, "Political Instability and Economic Growth," *Journal of Economic Growth*, 1, 1996, 189-211.
- Allison, P.D., *Survival Analysis Using the SAS® System: A Practical Guide*, Cary, NC, SAS Institute, 1995.
- Arat, Z.F., "Democracy and Economic Development: Modernization Theory Revisited," *Comparative Politics*, 21, 1988, 21-36.
- Arbetman M. and J. Kugler, (eds.), *Political Capacity and Economic Behavior*, Boulder, CO, Westview, 1996.
- Arrow, K.J., "The Economic Implications of Learning by Doing," *Review of Economic Studies*, 29, 1962, 155-173.
- Banks, A.S., *Cross-National Time-Series Data Archive*, Binghamton, NY, Center for Social Analysis, State University of New York, 1996.
- Barro, R.J., "Economic Growth in a Cross-Section of Countries," *Quarterly Journal of Economics*, 106, 1991, 408-443.
- _____, "Democracy and Growth," *Journal of Economic Growth*, 1, 1996, 1-27.
- Bilson, J.F.O., "Civil Liberty: An Econometric Investigation," *Kyklos*, 35, 1982, 94-114.
- Bollen, K.A., "Political Democracy and the Timing of Development," *American Sociological Review*, 44, 1979, 572-587.
- _____, "Issues in the Comparative Measurement of Political Democracy," *American Sociological Review*, 45, 1980, 567-591.
- _____, "World System Position, Dependency, and Democracy: The Cross-National Evidence," *American Sociological Review*, 48, 1983, 468-479.
- _____, "Political Democracy: Conceptual and Measurement Traps," *Studies in Comparative International Development*, 25, 1990, 7-24.
- _____, "Liberal Democracy: Validity and Method Factors in Cross-National Measures," *American Journal of Political Science*, 37, 1993, 1207-1230.

- Bollen, K.A. and R.W. Jackman, "Political Democracy and the Size Distribution of Income," *American Sociological Review*, 50, 1985, 438-459.
- Brunck, G.G., G.A. Caldeira, and M.S. Lewis-Beck, "Capitalism, Socialism, and Democracy: An Empirical Inquiry," *European Journal of Political Research*, 15, 1987, 459-470.
- Burkhart, R.E. and M.S. Lewis-Beck, "Comparative Democracy: The Economic Development Thesis," *American Political Science Review*, 88, 1994, 903-910.
- Chen, B. and Y. Feng, "Economic Development and the Transition to Democracy: A Formal Model," Working Paper, the Claremont Graduate School, 1995.
- _____, "Some Political Determinants of Economic Growth: Theory and Empirical Evidence," *European Journal of Political Economy*, 12, 1996, forthcoming.
- Cukierman, A., S. Edwards, and G. Tabellini, "Seigniorage and Political Instability," *American Economic Review* 82, 1992, 537-555.
- Dahl, R., *Democracy and Its Critics*, New Haven, CT, Yale University Press, 1989.
- Diamond, L., J.J. Linz, and S.M. Lipset (eds.), *Democracy in Developing Countries, Four Volumes*, Boulder, CO, Lynne Rienner, 1989.
- Feng, Y., "Political Stability, Democracy and Economic Growth," *British Journal of Political Science*, 26, 1996, forthcoming.
- _____, "China's Economic Reform: Logic and Dynamism," *International Interactions*, 1997, forthcoming.
- _____, "Does Political Freedom Cause Economic Freedom or the Other Way Around," a paper presented at the American Political Science Association Meeting, San Francisco, September, 1996.
- Fukuyama, F., "The End of History?," *The National Interest*, 1989, 16: 3-18.
- Gasiorowski, M.J., "An Overview of the Political Regime Change Data set," *Comparative Political Studies*, 29, 1996, 469-483.
- Gerschenkron, A., *Economic Backwardness in Historical Perspective*, Cambridge, MA, Harvard University Press, 1973.

- Gonick, L.S. and R.M. Rosh, "The Structural Constraints of the World Economy on National Political Development," *Comparative Political Studies*, 21, 1988, 171-199.
- Grandmont, J.M., "Intermediate Preferences and the Majority Rule," *Econometrica*, 46, 1978, 317-30.
- Grier, K.B. and G. Tullock, "An Empirical Analysis of Cross-National Economic Growth: 1951-1980," *Journal of Monetary Economics*, 24, 1989, 259-276.
- Gurr, T.R., *Polity II: Political Structures and Regime Change, 1800-1986*, Ann Arbor, MI, ICPSR, 1990.
- Haggard, S. and R. Kaufman, *The Political Economy of Democratic Transitions*, Princeton, NJ, Princeton University Press, 1995.
- Helliwell, J.F., "Empirical Linkages between Democracy and Economic Growth," *British Journal of Political Science*, 24, 1994, 225-248.
- Huntington, S.P., *Political Order in Changing Societies*, New Haven, CT, Yale University Press, 1968.
- , "Democracy's Third Wave," *Journal of Democracy*, 2, 1991, 12-34.
- Jackman, R.W., "On the Relationship of Economic Development to Political Performance," *American Journal of Political Science*, 17, 1973, 611-621.
- Karl, T., "Getting to Democracy," in *The Transition to Democracy: Proceedings of a Workshop*, Washington, DC, National Academy Press, 1991, 29-40.
- Knack, S. and P. Keefer, "Institutions and Economic Performance: Cross-country Tests Using Alternative Institutional Measures," *Economics and Politics*, 7, 1995, 207-227.
- Kormendi, R.C. and P.G. Meguire, "Macroeconomic Determinants of Growth: Cross-country Evidence," *Journal of Monetary Economics*, 16, 1985, 141-163.
- Lipset, S.M., "Some Social Requisites of Democracy: Economic Development and Political Development," *American Political Science Review*, 53, 1959, 69-105.
- Longdregan, J.B. and K.T. Poole, "Poverty, the Coup Trap, and the Seizure of Executive Power," *World Politics*, 32, 1990, 151-183.

- Londregan, J.B. and K.T. Poole, "Does Income Promote Democracy?" *World Politics*, 49, 1996, 1-30.
- Lucas, R.E., "On the Mechanics of Economic Development," *Journal of Monetary Economics*, 22, 1988, 3-42.
- Moore, Barrington Jr., *Social Origins of Dictatorship and Democracy*, Boston, Little, Brown, 1966.
- Mao, Z., "An Analysis of Classes in China," in *Selected Works by Mao Zedong*, Vol. 1, Beijing, People's Press, 1996, 1-11.
- North, D.C., *Institutions, Institutional Change and Economic Performance*, New York, Cambridge University Press, 1990.
- Oksenberg, M., "Dilemmas of Democratization in China as Seen from the Grassroots Level," a paper presented at the Democratization Seminar, Stanford University, October, 1996.
- Organski, A.F.K. and J. Kugler, *The War Ledger*, Chicago, IL, The University of Chicago Press, 1980.
- Persson, T. and G. Tabellini, "Growth, Distribution, and Politics," in A. Cukierman, Z. Hercowitz and L. Leiderman (eds.), *Political Economy, Growth and Business Cycles*, Cambridge, MA, M.I.T. Press, 1992.
- _____, "Is Inequality Harmful for Growth? Theory and Evidence," *American Economic Review*, 84, 1994, 600-621.
- Pourgerami, A., "Authoritarian versus Nonauthoritarian Approaches to Economic Development: Update and Additional Evidence," *Public Choice*, 74, 1992, 365-377.
- Rebelo, S., "Long Run Policy Analysis and Long Run Growth," *Journal of Political Economy*, 99, 1991, 500-521.
- Romer, P., "Increasing Returns and Long-run Growth," *Journal of Political Economy*, 94, 1986, 1002-1037.
- Rowen, H.S., "The Short March: China's Road to Democracy," *The National Interest*, Fall, 1996, 61-70.
- Schumpeter, J.A., *Capitalism, Socialism and Democracy*, London, Allen and Unwin, 1942.
- Scully, G., "The Institutional Framework and Economic Development," *Journal of Political Economy*, 98, 1988, 652-662.
- Selden, M., *The Political Economy of Chinese Development*, Armonk, NY, M.E. Sharpe, 1993.

- Summers R. and A. Heston, *The Penn World Tables*, Version 5.6, available on diskette from the National Bureau of Economic Research, Cambridge, MA, 1994.
- Weede, E., "The Impact of Democracy on Economic Growth," *Kyklos*, 36, 1983, 21-39.
- Yong, H., "An Economic Approach to Communist Regimes," *Kyklos*, 45, 1992, 393-406.