

Cincotta, Richard P. and John Doces. 2012. "The age-structural maturity thesis: the impact of the youth bulge on the advent and stability of liberal democracy." Pages 98-116, in: *Political Demography: How Population Changes Are Reshaping International Security and National Politics*, edited by Jack A. Goldstone, Eric P. Kaufmann and Monica Duffy Toft. Boulder: Paradigm.

7

The Age-Structural Maturity Thesis

The Impact of the Youth Bulge on the Advent and Stability of Liberal Democracy

Richard P. Cincotta and John Doces

THE UNITED STATES NATIONAL INTELLIGENCE COUNCIL recently speculated that the "easy transitions" from authoritarianism to liberal democracy may have run their course. They warned of a growing tendency for countries to stall along the path toward liberal democracy, to backslide after democratic reforms, or to settle into a regime that guaranteed periodic elections but granted few of the civil liberties and political rights defining liberal democracy (NIC 2006).

The report mirrors a darkening outlook that has been building among analysts for more than a decade (see Carothers 2002; Diamond 1996). This pessimism has spread to diplomats and foreign affairs policymakers, many of whom now conclude that the global trend of political liberalization that began in 1974—what Samuel Huntington (1991) dubbed the "third wave of

democratization”—has come to a close, and that the international community should brace itself for a return wave of authoritarian gains.

The results of the following chapter disagree with this assessment. We argue that one of the impediments to liberal regime transition is the political volatility and uncertainty associated with the presence of a large proportion of young adults in the adult population, a so-called *youth bulge* (see Urdal 2006; Mesquida and Weiner 1999; Goldstone 1991; Moller 1968). We argue that the rise in the number of liberal democracies over the past two decades reflects the dissipation of youth bulges in some countries in East Asia and the Americas, and that the leveling off of those numbers reflects a dearth of states currently experiencing this demographic process. Using this model, we predict that another set of demographically maturing states will experience significantly higher probabilities of being assessed as a liberal democracy during the coming decade (2010–2019). Some of these, we predict, will emerge in North Africa and along the northwest rim of South America (Cincotta 2008, 2009); others with potential to rise to high levels of democracy are scattered across western Asia. However, our model, because it is probabilistic, cannot tell us precisely which of these states will first attain a liberal democracy, nor which will fail to follow this path.

Is a mature age structure a fully necessary condition for progress to liberal democracy? The evidence from the following analysis suggests that it is not. Instead, liberal democracy is somewhat easier to achieve, and far easier to maintain, after a youth bulge has dissipated than before. Is there any suggestion that the effects of population age structure are more powerful than the activities of political actors? Not at all; a dissipating youth bulge appears to strengthen the hand of democrats only in states ruled by military “caretaker” regimes, weak personal dictatorships, or partial democracies. The most noncompetitive autocracies—single-party autocracies (for example, China, North Korea, and possibly the future Iran) and strong personal dictatorships (Russia, Singapore, Cuba)—seem, so far, to be virtually impervious to the effect. Because of the mediating power of political actors and the historical and contemporary institutional variation among states, we contend that trends and forecasts using the relationship between age structure and liberal democracy are most appropriately expressed as statistical likelihoods, alerting policymakers to demographic opportunities for political liberalization rather than communicating the certainty of change.

Terms and Definitions

Liberal Democracy

Throughout the following set of analyses, regime type is assessed using Polity IV polity scores. These scores are a composite variable, derived from the

subtraction of the autocracy variable from the democracy variable in Polity IV data, published by the Center for Systemic Peace and George Mason University (2008 update; see Marshall and Jaggers 2009). Polity scores range from -10, a value assigned to the most autocratic regimes, to +10, which is assigned to the most democratic. In our analyses, regimes with polity scores ranging from +1 to +10 are considered democracies; those scored from -10 to -1 are considered authoritarian regimes. A liberal democracy is defined by scores ranging from +8 to +10, the same range used by the State Failure Task Force (SAIC 1995) to define its highest democracy category, which it labeled “full democracy.”

Ranges of Polity IV scores are also used to define the other regime types mentioned in this chapter. Dictatorships inhabit the opposite extreme of the polity-score spectrum from liberal democracy, ranging from -10 to -8. A regime with any negative score, -10 to -1, is labeled an autocracy. A regime with a positive score, +1 to +10, is considered a democracy.

The range of polity scores that we have used to define liberal democracy (+8 to +10), corresponds roughly to the category “free” used by Freedom House in its annual assessment of regime type and progress (Freedom House 2008). Much of the analysis elaborated in this chapter was also performed and published using Freedom House scores (Cincotta 2008, 2009) with virtually identical results, although Freedom House’s assessment criteria and weighting differ somewhat from those used to generate Polity IV data.¹

The Youth-Bulge Proportion

In this research, the term *youth-bulge proportion* refers to the fraction of young adults aged 15 to 29 years within a country’s total working-age population (ages 15 to 64). Thus, for a country with 4 million young people aged 15 to 29 years, and a total working-age population aged 15 to 64 of 10 million, the youth-bulge proportion would be 0.4. In 2009, youth-bulge proportions ranged from 0.50 to above 0.60 in the countries with the most youthful populations, such as Zimbabwe (0.62) and Afghanistan (0.53), and below 0.30 in the most demographically mature countries, such as Japan (0.24) and Italy (0.25).²

This and similar proportions and ratios have been used as indicators of a youthful age distribution in the political science and international relations literature. Some define young adults as the population aged 15 to 24 years and the meaningful measure of adults as spanning the ages 15 and older (Urdal 2006). Others have utilized the ratio of young adults (in the numerator) to only the older adults (in the denominator), employing various definitions for those

groups (Mesquida and Weiner 1991). Still other studies have used the proportion of children and young people, 0 to 29, in the total population (Leahy et al. 2007).

When plotted as a function of the secular trend of increasing median age, each of these indicators declines monotonically. However, some scholars (Collier and Hoeffler 2004; Fearon and Laitin 2003) have mistakenly employed nonmonotonic youth-bulge functions (young adults divided by the total population) in their analyses of political violence, conflating youthful and more mature age structures, and confounding their results (discussed by Urdal 2006, p. 608).

All of these indicators also differ from the common use of “youth bulge” in the demography literature, where researchers have generally defined a youth bulge as a disproportionately large group of adolescents and young adults in an age structure with smaller childhood and older-adult cohorts. In this case, graphs depicting the population age structure show a bulge in the middle. However, our measure of the youth-bulge proportion as the ratio of young adults to all working-age individuals excludes children aged 0 to 14. Thus a country can have a very large youth-bulge proportion, relative to its working age population, even if it also has an even larger number of children aged 0 to 14. Indeed, in fast-growing countries whose age pyramids typically have a very broad base (large numbers of children) but small tops (few older people), the youth-bulge proportion is quite large. Moreover, the youth-bulge proportion can remain high in such countries for up to two decades even once fertility begins to fall, as it takes that long for the new, smaller birth cohorts to have an impact on the relative size of the young adult population.

Thus, despite significant global declines in the total fertility rate (TFR; the lifetime average number of children a woman is expected to bear) over the past four decades, a large youth-bulge proportion persists in about half of all countries listed by the United Nations for 2010. (For purposes of discussion, a large youth-bulge proportion is >0.42 , that is at least 42 15-to-29-year-olds per 100 persons aged 15 to 64). These high youth-bulge proportion states are currently concentrated in sub-Saharan Africa, the Middle East and North Africa, the South American Andes, in the midrib of the Central American isthmus, on the island of Hispaniola, and in the Pacific Islands.

Ché Meets Hobbes: The Age-Structural Maturity Thesis

The thesis underlying our analysis builds on two existing models of political behavior. The first, known as the *authoritarian bargain* (Desai et al. 2009),

is a restatement of a basic element of Thomas Hobbes's theory of the social contract; it assumes that citizens prefer to exercise basic freedoms, but asserts that they are willing to relinquish political rights to an authoritarian when they perceive threats to their personal or economic security (Hobbes 1994, originally 1651/1658).

When civil order breaks down, markets are disrupted, property becomes insecure, and investments move elsewhere. Because of the fears of citizens and, more importantly, the sensitivities of the commercial and security-sector elites to disorder, political violence tends to bolster the power of authoritarians in office or, in democracies, signal elected leaders to roll back restraints on executive authority. Because of this relationship, revolutionary violence rarely spawns a sustained high level of democracy. Should violence climax in regime change, other types of less-than-liberal regimes tend ultimately to emerge (Schmitter 1980). However, if society turns politically quiescent and unthreatening, elites as well as common citizens should be expected to grow intolerant of the regime's cronyism and lack of accountability, and its restrictions on commerce, social mobility, and speech.

Thus, where the streets are unthreatening, authoritarians typically find support waning. As both Huntington (1991, pp. 115–116) and Schmitter (1980) noted, under quiescent political conditions and improving economic conditions, authoritarians tend to experiment with gradual liberal reforms, to negotiate their own safe transition from power, and ultimately relinquish the reins of power to more liberal regimes. Such exits have been most common among nonideological autocracies and partial democracies, particularly caretaker military regimes and decaying personal dictatorships.

The second model, the *youth-bulge model*, seeks to explain the relatively high frequency of political violence associated with national and subnational populations in the early phases of the *demographic transition* (the transformation from high to low birth and death rates). Proponents of the youth-bulge model argue that relatively high values of the youth-bulge proportion are indicative of a social environment in which political actors, whether state or nonstate, find it relatively easy to politically mobilize young adults, particularly young men (Urdal 2006). Put another way, youth-bulge conditions—fostering unemployment, depressed wages, high entry-level job competition (Easterlin 1968), a youth-dense street culture, and gang formation—lower the costs of overcoming collective action constraints among young men who, as a group, tend to be highly idealistic, sensitive to peer approval, prone to risk taking, and naively accepting of ideological explanations. Researchers have shown that a large proportion of young people in the working-age population are

associated with elevated levels of violent crime (Cohen and Land 1987) and political violence.

Hypotheses

The age-structural maturity hypothesis, the most general hypothesis of our analysis (H_{GEN}), is stated as:

H_{GEN} : A state whose population age structure is very youthful (characterized, in this research, by a relatively large proportion of young adults in the working-age population) is less likely to be assessed as a liberal democracy than states with a more mature age structure.

Other researchers have noted a strong and consistent relationship between age structure and liberal democracy for the period from 1970 to 2005 (Cincotta 2008, 2009; Leahy et al. 2007), but have not controlled for contributions of other structural factors. In this chapter we stipulate that the age-structural contribution is separable from the contributions of other underlying variables for which there is prior evidence of an association with democracy.

Having attained statistical support for the age-structural maturity hypothesis from a large-N analysis (for which methods and results are summarized later in this chapter), we test two explanatory effects—an advent effect and a stability effect—expressed in the following two specific hypotheses (H_{ADV} , H_{STAB}), that could contribute to the strength of this general relationship.

H_{ADV} : A youthful age structure tends to impede the advent of liberal democracy. States with populations having a large proportion of young adults in the working-age population are less likely than states with smaller proportions to attain liberal democracy.

H_{STAB} : A youthful age structure tends to destabilize liberal democracy. When liberal democracy is attained by states with a large youth-bulge proportion, that regime type is unlikely to be continuously sustained.

Analytical support for both of these hypotheses would suggest that opportunities to establish and maintain liberal democracy should improve in states as the youth-bulge proportion declines.

In addition, we pose a group hypothesis (H_{GROUP}), to generate expectations of the number of liberal democracies within regional groupings of states.

H_{GROUP} : *A regional group composed of states with mature age structures is likely to exhibit a greater proportion of states that are assessed as liberal democracies than a group composed of states experiencing more youthful age structures.* Therefore, as the mean youth-bulge proportion of a regional grouping of states (each state equally weighted) experiences decline, one can expect a larger proportion of that group to be assessed as liberal democracies.

If valid, a group model derived from this hypothesis could be employed, using demographic projections, as a straightforward means of predicting the proportion of states within a regional group that are likely to be assessed as liberal democracies at a future date (later in this chapter we test the validity of such a model to predict the rise of liberal democracies among states from the former Soviet sphere of influence).

Methods and Data Sources

The following analysis musters evidence from a range of sources: (1) anecdotally, from relevant literature and country trends; (2) statistically, from a multivariate logistic regression analysis of state-level time series data; (3) statistically, from evidence from a single-variable analysis of regional time series data; and (4) graphically, from evidence of verification from a novel test of the regional model (using the countries that have emerged from the former Soviet Union and Eastern European states).

Large-N Global Analysis: Multivariate Logistic Regression

In this element of the analysis, our objective is to test our general hypothesis: to assess the degree to which the probability of a specific regime type is determined by the youth-bulge proportion, while controlling for other independent variables that have been theoretically or empirically associated with regime type. Four regime types were selected: dictatorship (polity score ranging from -10 to -8); autocracy (-10 to -1); democracy ($+1$ to $+10$); and liberal democracy ($+8$ to $+10$). Each regime type (Y_i) was, in turn, assigned the role of the dichotomous dependent variable³ in a fixed effects logistic regression model.

The logit model, which follows, includes terms for four continuous independent variables (X_j) and two dummy variables (dichotomous independent variables). The independent variable of primary interest, the youth-bulge proportion, is expressed as a percentage (from U.N. estimates, U.N. Population Division 2007). The Penn World Tables, version 6.2 (Heston et al. 2006), is the

common source for values of the following three continuous control variables: real GDP (\$PPP) per capita; annual growth rate of real GDP (\$PPP) per capita; and trade openness. The model also includes two dummy variables (D_k , where $D = 0$ or 1): OECD-membership states and OPEC-membership states. The full model can be written as follows:

$$\text{logit}(Y_i) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \gamma_1 D_1 + \gamma_2 D_2$$

The panel of data that were applied to this model was drawn from a 154-state annual dataset spanning all world regions from 1970 to 2004, from which the algorithm generated frequencies from 54 multidimensional groups for regression (see Hosmer and Lemeshow 1989). The control variables (X_2 , X_3 , X_4 , D_1 , D_2) are discussed below (youth-bulge proportion, X_1 , was discussed previously in this chapter).

Real GDP per capita. This control variable indicates the level of domestic product per capita at current prices, adjusted for differences in the price of a standard market basket of goods (purchasing power parity, \$PPP), and is introduced to capture the empirically demonstrated contribution of income to regime type (Przeworski et al. 2000). States with a high level of income are likely to exhibit a relatively large middle class, a group typically associated with the consolidation and stability of democracy (Acemoglu and Robinson 2006). We expect real GDP per capita to be positively associated with democracy.

Real GDP per capita growth. Empirical associations between the rate of economic growth and regime type are typically weak (Przeworski et al. 2000). The most commonly held theoretical view—frequently used to explain the stability of regimes in China and Singapore—maintains that states with economies experiencing higher per capita rates of economic growth are more likely than others to sustain their current political regime, regardless of type (Ulfelder and Lustik 2007). Thus, we expect the advent of democracy to be less likely in autocracies and dictatorships that have shown strong economic growth, and we expect democracies that would otherwise be unstable to last longer where they exhibit increasing per capita incomes.

Trade openness. To account for the effect of trade openness, a measure of exports plus imports as a percentage of GDP is included as a control variable. Analysis of similar indicators suggests to several researchers that trade openness has impeded political liberalization in low- and middle-income

states (Reuveny and Li 2003), while others reach the opposite conclusion (Balaev 2009). Thus, we hold no expectations for a clear association between this variable and democracy.

OECD Membership. A dummy variable indicating whether or not a state is an OECD member is included to account for unspecified effects on regime type of long-term institutional and economic development, beyond the effects of real GDP per capita. We expect associations between OECD membership and democracy to be positive.

OPEC Membership. A dummy variable indicating whether or not a state is an OPEC member is included to account for effects of oil export profits on regime type. We expect associations between OPEC membership and democracy to be negative (Ross 2001).

Regional Analysis: Setting Up Regression Models to Test the General Hypothesis

The objective of our single-variable regression analysis is to determine if, and how well, the youth-bulge proportion can statistically predict the tendency of states, within a region, to be assessed as liberal democracies. To fulfill this objective, state-level youth-bulge proportions were used to generate nine sets of regional youth-bulge means (Y_t) in five-year intervals, from 1970 to 2005, for five regions: North and South America, Europe, the Middle East and North Africa, and Other Asia and Oceania.⁴ The proportion of liberal democracy in those regions, the dependent variable, was calculated from Polity IV data. The regional means (X_t), weighted by the number of countries in each region, were used to generate ordinary least squares linear regressions, for each interval year (t), such that

$$Y_{rt} = \beta_{0t} + \beta_{1t} X_{rt}.$$

We tested the hypothesis that all slopes and elevations of these regression lines were equal, and found the differences to be not significant (0.95-confidence level, 35 degrees of freedom). The 45 regional means, spanning from 1970 to 2005, were then used to generate a regression line predicting the probability of being a liberal democracy, given the youth-bulge proportion.

After generating the regional group model, we undertook an effort to validate it by examining regime patterns that emerged among the former communist states of Eastern Europe, the states that emerged from the dissolution of the Soviet

Union in 1991, and Mongolia. While the 29 states⁵ assessed in this regional analysis are, geographically, socioeconomically, and demographically a surprisingly variable array, their shared regime characteristics during the post–World War II period and their abrupt transition at the end of the cold war provide common political and temporal starting points that make them an interesting test case.

We graphically assessed the distribution of the former Soviet-sphere states according to their youth-bulge proportion and compared this distribution to the distributions produced by two alternative indicators: per capita income, using World Bank income classes based on gross national income per capita (World Bank 2009); and educational attainment, using the IIASA/VDI educational attainment data by age and sex (Lutz et al. 2007). In the latter analysis, our indicator is the proportion of secondary and tertiary educated individuals within the population aged 25 to 44 years, the peak productive working years (Skirbekk 2007).

Advent and Stability Analysis: Small-N Comparisons

We also set up small-N preliminary analyses that were designed to test the advent (H_{ADV}) and stability (H_{STAB}) hypotheses. To test the stability hypothesis, we identified instances from 1965 to 1989 in which states attained liberal democracy ($n = 24$), and then determined the proportion of these states that either retained or lost this assessment over the next 20 years. We then graphically analyzed these cases at three levels of the youth-bulge proportion, <0.39 , 0.40 to 0.49 , >0.50 young adults per individual in the working ages, and three levels of stability, 1 to 10 years, 11 to 20, and >20 years. We then tested the resultant distribution of 9 cells for nonrandomness (X^2 , 6 d.f.). We assumed that the lack of a relationship between age-structural maturity and the stability of new liberal democracies would suggest an “advent effect.”

Results and Findings

Evidence from the Literature: Przeworski’s Puzzle

In research exploring relationships between regime type and development, Przeworski and coauthors (2000, p. 98) concluded that democracies at a moderate level of economic development—with an annual gross domestic product (GDP) of at least \$4,000 per capita, adjusted for purchasing power parity (PPP)⁶—were much more likely to sustain that regime type than less

developed democracies, but found little evidence to suggest that economic development led to the onset of democracy. The authors also found that, even within income categories, states with rapidly growing populations and elevated death rates tended to be dictatorships. Low-fertility states were most often democracies. And while they admit to being “bewildered by this fact” (p. 218), the authors ignored the possibility that age-structural change, the delayed product of fertility decline, could facilitate or sustain democracy—although they noted a large difference between the age structures of democracies and dictatorships (p. 266).⁷ After a detailed analysis and discussion, Przeworski and coauthors concluded that democracies, more than authoritarian regimes, create the perception of stability and support that encourages small families.

Their conclusion is at odds with history. From the 1960s through the 1980s, authoritarian regimes in Asia and Latin America—including those in charge in South Korea, Taiwan, Indonesia, Thailand, Mexico, and Brazil (states that would later join democratization’s third-wave)—were the most enthusiastic initiators and supporters of family-planning programs, achieving the lion’s share of fertility decline and improvements in maternal and infant health status long before being replaced by democrats (see Tsui 2001). In contrast, programs in democratic regimes—for example, in the Philippines, Pakistan, and India—have often been hampered by a lack of administrative continuity and political commitment (Rosen and Conly 1996). As for authoritarianism’s year-to-year association with elevated population growth and death rates, both are characteristics of a youthful age structure, which should—according to the age-structural maturity model—impede high levels of political liberalization.

Evidence from Trends Among Recently Democratized States

Evidence of a maturing age structure effect emerges in observations of trends in selected third-wave countries (see Figure 7.1). As youth-bulge proportions steeply declined into the vicinity of 0.39, liberal democracies evolved in these states with only one example, Thailand, of military preemption and backsliding. And even Thailand’s political strife has remained relatively nonviolent, both sides avoiding direct confrontation. The virtual disappearance of violent political confrontation and military coups from the more demographically mature states of Asia and Latin America is a striking reversal.

Many states still bear the political scars of attaining liberal democracy “demographically too soon.” Where high levels of democracy emerged long before the youth bulge declined—as in Venezuela, Colombia, Ecuador, India, Pakistan, Malaysia, Fiji, and others—states retreated to less democratic

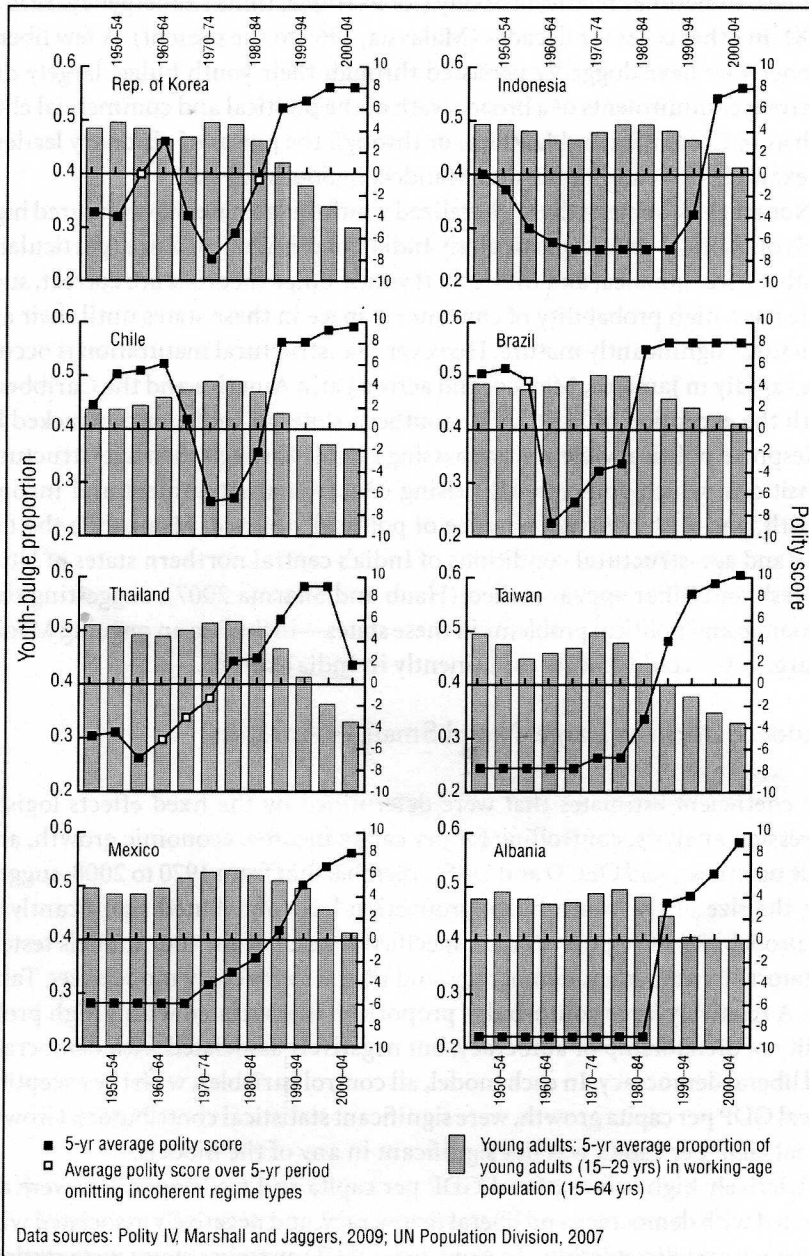


Figure 7.1 Trends in the Polity Scores and Youth Bulge Proportions of Eight States During the 1990s

regimes, sometimes relatively briefly (for example, India's Emergency, 1976 to 1978), in other cases for decades (Malaysia, 1969 to the present). A few liberal democracies have doggedly persisted through their youth bulge, largely due to strong commitments of a broad swath of the political and commercial elite, such as in Costa Rica and Jamaica, or through the power of visionary leaders, for example Nehru in India, and Mandela in South Africa.

Nonetheless, some of these liberalized youth-bulge states have endured high levels of political unrest (particularly India), or criminal violence (particularly South Africa, Jamaica, and Mexico). If youth-bulge theorists are correct, such strife has a high probability of continuing apace in these states until their age structures significantly mature. However, age-structural maturation is occurring rapidly in Jamaica, Mexico, and across Latin America and the Caribbean (with the exception of Haiti). The southern states of India, once wracked by widespread political violence, are passing rapidly through their age-structural transitions, which coincide with rising educational attainment and income growth, and with a virtual absence of political violence. Meanwhile the fertility and age-structural conditions of India's central northern states of Uttar Pradesh and Bihar appear stalled (Haub and Sharma 2007), suggesting that economic and political problems in these states—including an ongoing Maoist insurgency—could feature prominently in India's future.

Evidence from the Large-N and Small-N Analyses

The coefficient estimates that were determined by the fixed effects logistic regression analysis, controlling for per capita income, economic growth, and trade openness, and OECD and OPEC membership from 1970 to 2008, suggest that the size of the youth-bulge proportion has contributed significantly to the probability of regime type, as specified in each of the four models tested: dictatorship, autocracy, democracy, and liberal democracy models (see Table 7.1). A relatively large youth-bulge proportion is associated with a high probability of dictatorship or autocracy, but negatively associated with democracy and liberal democracy. In each model, all control variables, with the exception of real GDP per capita growth, were significant statistical contributors. Growth of real GDP per capita was not significant in any of the models.

Relatively high values of real GDP per capita and trade openness were associated with democracy and liberal democracy, and negatively associated with autocracy and dictatorship. As expected, OECD-member states were statistically associated with democracy and liberal democracy, and OPEC-member states with autocracy and dictatorship.

Our test of the stability hypothesis, though limited to 24 instances between 1965 and 1989, found that maintaining liberal democracy for more than 20 years was significantly less likely ($p < 0.10$) among states that were first assessed as a liberal democracy with a youth-bulge proportion above 0.39 young adults per working-age person, than those that became a liberal democracy at proportions below that value.

Evidence and Predictions from the Regional Analysis

Evidence for our hypotheses can also be drawn from regional data. Country-level youth-bulge proportions, averaged regionally, and the proportion of liberal democracy in a region have been consistently negatively correlated, with a statistically similar slope, from 1970 to 2005. This regional age-structural maturity model (see Figure 7.2) predicts that when the average country-level young-bulge proportion reaches 0.39 in a multistate region, then 50 ± 3 percent (the mean and two-tailed 0.95-confidence interval) of all states are likely

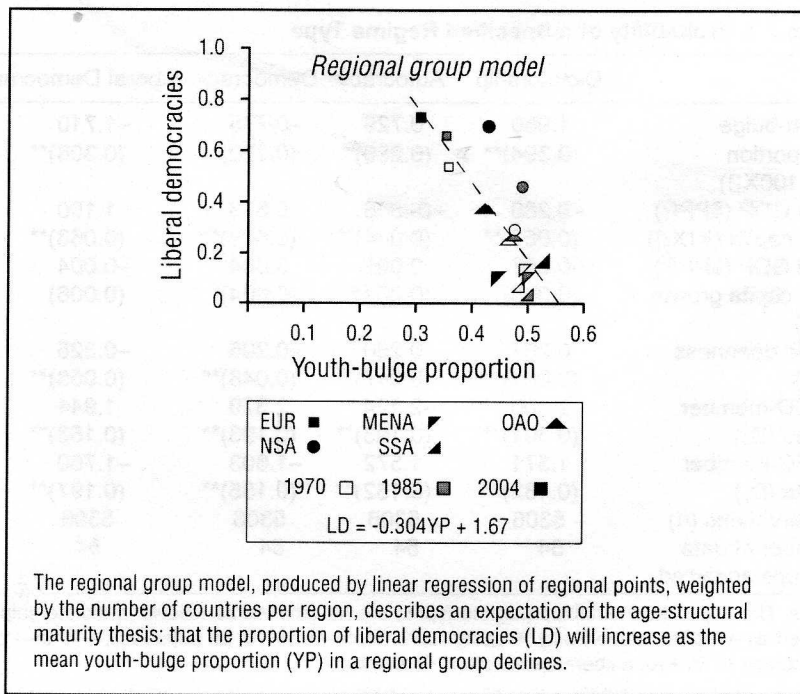


Figure 7.2 The Regional Group Model

to be assessed as liberal democracies. This regional relationship was virtually stable, from 1970 to 2004, despite the unprecedented degree of age-structural and political changes that occurred throughout the world.⁸

Demographic projections could be used to help differentiate subregional clusters of states and isolated states as either demographically favorable, or unfavorable, for transition to liberal democracy. Among subregional clusters that, on average, were scored below liberal democracy in 2008, two clusters stand out; both experienced continuous fertility decline through the 1990s, and thus are set to experience a dissipating youth bulge. One cluster comprises states along the northern coast of Africa: Morocco, Algeria, Tunisia, Libya, and Egypt. Each has yet to experience liberal democracy. The other cluster stretches along the northwestern rim of South America: Ecuador, Colombia, Venezuela, and Guyana. Each achieved liberal democracy in the past; none was able to sustain it.

According to the U.N. Population Division's medium-fertility variant (2007), by 2015 both clusters will reach an average youth-bulge proportion of 0.39—the 50-percent likelihood level for liberal democracy (see Table 7.1). The South

Table 7.1 Probability of a Specified Regime Type

	Dictatorship	Autocracy	Democracy	Liberal Democracy
Youth-bulge proportion ($\ln(100X_1)$)	1.960 (0.394)**	0.729 (0.289)*	-0.775 (0.290)**	-1.710 (0.308)**
Real GDP (\$PPP) per capita ($\ln(X_2)$)	-0.280 (0.052)**	-0.546 (0.044)**	0.673 (0.046)**	1.100 (0.063)**
Real GDP (\$PPP) per capita growth (X_3)	-0.007 (0.005)	0.002 (0.004)	0.004 (0.004)	-0.004 (0.006)
Trade openness (X_4)	0.297 (0.061)**	0.250 (0.047)**	-0.205 (0.048)**	-0.325 (0.058)**
OECD-member state (D_1)	-2.300 (0.301)**	-2.424 (0.193)**	2.379 (0.193)**	1.944 (0.153)**
OPEC-member state (D_2)	1.371 (0.132)**	1.572 (0.152)**	-1.603 (0.155)**	-1.760 (0.197)**
Observations (n)	5306	5306	5306	5306
Number of data groups analyzed	54	54	54	54

Notes: The dependent variables (regime types) are determined as follows: a dictatorship is defined as a regime with a Polity IV polity score from -10 to -8; an autocracy, -10 to -1; a democracy +1 to +10; a liberal democracy, +8 to +10.

*indicates that the coefficient is significant at $p=0.05$

**significant at $p=0.01$.

American cluster is projected to reach 0.40 by 2010. In each cluster, we forecast (conservatively) that there will be at least one liberal democracy by 2015.

A Test: Emergent Regimes in the Former Soviet and Eastern European States

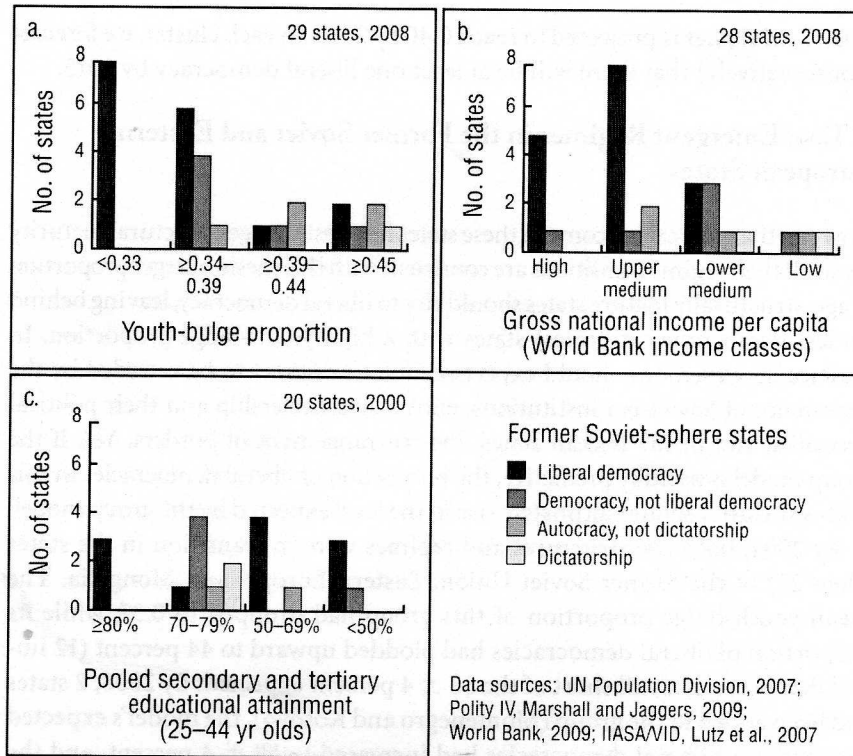
How can the political outcome in these states help test the age-structural maturity thesis? If their regime transitions are consistent with this thesis, a larger proportion of age-structurally mature states should rise to liberal democracy, leaving behind (in less democratic categories) states with a high youth-bulge proportion. In practice, however, one should expect regime transitions to be retarded by the persistence of Soviet-era institutions, entrenched leadership and their political networks, and in the Balkan states, the rearrangement of borders. Yet, if the group model is usefully predictive, the proportion of liberal democracies in this cold-war cluster should ultimately rise to the level expected by the group model.

By 2004, both age structures and regimes were in transition in the states (then 27) of the former Soviet Union, Eastern Europe, and Mongolia. The mean youth-bulge proportion of this group had dropped to 0.37, while its proportion of liberal democracies had plodded upward to 44 percent (12 liberal democracies), still short of the 56 ± 4 percent expected. By 2008, 2 states had been added to the group (Montenegro and Kosovo), the model's expected proportion of liberal democracies had increased to 58 ± 4 percent, and the observed proportion of liberal democracies was 59 percent (17 of 29 states).

As expected by the age-structural maturity model, liberal democracies were distributed nonrandomly (X^2 test for nonrandomness, $p = 0.05$), dominating the more mature categories (<0.39 young adults per working-age adult), while autocracies dominated categories with a larger youth-bulge proportion (Figure 7.3). Similarly, World Bank income-per-capita classes produce a nonrandom distribution (X^2 , $p = 0.03$) that was ordered as expected; liberal democracies dominate in the high- and upper-middle-income categories. However, educational attainment data for these states (2000 data) produced a distribution, among the four attainment categories used, that is not statistically different than a random distribution ($p = 0.17$).⁹

Discussion and Conclusions

In this chapter, we employed diverse methodologies, at various levels of analysis, to gauge the strength and extent of recent interactions between a state's population age structure and its chances of attaining and maintaining liberal



These histograms demonstrate the ability of the youth-bulge proportion (a) to predict the frequency of liberal democracy in the former Soviet-sphere states, and compares it to two alternative indicators: World Bank gross national income per capita (Atlas Method) classes (b), and the pooled proportion of secondary and tertiary educational attainment in the peak years of productivity, from 25 to 44 years of age (c). The youth-bulge proportion and income classes produced distributions of these regimes that were ordered in a manner consistent with expectations, while educational attainment did not.

Figure 7.3 Youth Bulge and Liberal Democracy

democracy. Even when other known correlates of democracy were controlled, our analysis supports the hypothesis that states with a relatively large youth-bulge proportion experience substantially lower probabilities of being assessed as liberal democracies than those that have experienced a greater degree of age-structural maturation.

Policy Relevance and Pertinent Caveats

Can the age-structural maturity model be used by diplomats and policymakers to better understand global trends in political liberalization? It can. The model

could have alerted policymakers to the otherwise unexpected ascent to liberal democracy of Taiwan, Indonesia, Thailand, and South Korea (see Figure 7.1), and Malaysia's early decline from high polity scores. Moreover, the model makes sense of the prior tendency of numerous Latin American states, which embraced liberal democracy "demographically early," to retreat to less democratic regimes thereafter—Venezuela being the most recent example. It also sheds light on the tenuousness of Indian and the Philippine democracies, which have suffered sporadically through insurgencies and entrenched forms of political violence (note that Freedom House's assessments of both the Philippines and India have been less favorable than Polity IV's over the past two decades).

Despite the age-structural maturity model's capacity to resolve many of democratization's mysteries, users should beware: Strong political actors and institutions are quite capable of thwarting the model's predictions. Age-structural effects do not seem strong enough to undermine steadfast, charismatic leaders, like Russia's Vladimir Putin, Cuba's Fidel Castro, or Singapore's Lee Kuan Yew. Similarly, a declining youth bulge has hardly perturbed the most intensely ideological one-party regimes, China and North Korea—states that have dismantled the commercial, intellectual, and media elites, and reconstructed their own version. Iran's regime could similarly purge these actors as its age structure matures.

A second caution: Migration and ethnoreligious compositional shifts challenge aspects of the age-structural maturity model. For example, where a decline in the youth-bulge proportion reflects a large influx of temporary labor migrants relative to the size of the indigenous population, as in the oil-producing Arab Gulf States, labor relations and ethnic tensions may force policy changes, but wholesale political liberalization seems unlikely.¹⁰ Neither does it seem that state-level age-structural trends provide much insight into the political future of states in which a youthful ethnoreligious group is gradually displacing an older group that is holding the political reins of state power.

The forecasts that emerge from age-structural maturity theory are not deterministic; they are statistical. To use them, researchers and policymakers must learn to accept their probabilistic nature, and combine them with (or juxtapose them to) the country-specific qualitative analyses that are commonly used. If they do, age-structural maturity theory offers much more than ever they had before—a simple and reasonable means to gauge the likelihood that states will function as liberal democracies.

Notes

1. Freedom House scores, which are the average of political rights and civil liberty scores, range from 7, the most autocratic regimes, to 1, the most democratic. The category "free" (as

opposed to “partly free,” and “not free”) is assigned to regimes with scores ranging from 2.5 to 1. Analysts typically identify a liberal democracy as a regime assessed as “free.”

2. In this chapter, youth-bulge proportions were calculated from U.N. Population Division (2007) estimates and medium-fertility variant projections elaborating population (both sexes) by age.

3. A dichotomous variable has two possible values, 1 (true, it fits within this class) or 0 (false, it does not fit).

4. Countries with fewer than 1.0 million residents in 2004 were excluded by the Polity IV database and are therefore excluded from regional calculations in this paper. The five regions used in calculations and shown in Figures 1 and 2 are: *North and South America* (NSA), which aggregates the U.N. regions of North America, South America, and the Caribbean; *Europe* (EUR) which comprises all states in the U.N. designation (including Russia); *Middle East and North Africa* (MENA) which includes Algeria, Cyprus, Egypt, Iran, Iraq, Israel, Lebanon, Libya, Jordan, Morocco, Tunisia, Turkey, Syria, and Yemen, omitting the Gulf States (Saudi Arabia, Oman, United Arab Emirates, Bahrain, Qatar, Kuwait) where age structure is heavily influenced by the presence of temporary labor migrants; and *Other Asia and Oceania* (OAO) which includes all Asian states east of Iran, plus Australia, New Zealand, Papua New Guinea, and Fiji.

5. The 29 states in the region are Albania, Armenia, Azerbaijan, Belarus, Bulgaria, Croatia, Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kosovo, Kyrgyzstan, Latvia, Lithuania, Macedonia, Moldova, Mongolia, Montenegro, Poland, Serbia, Slovak Republic, Slovenia, Romania, Russia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan. It omits Bosnia and Herzegovina, which Polity IV database classifies as incoherent (interrupted, without a clear central authority) and Germany, which includes the territory governed by the former East German state.

6. This value is in 1985 U.S. dollars adjusted for purchasing power parity.

7. The authors discuss the effects of age-structure (characterized using proportions in three age groups: <15, 15 to 65, >65 years of age) on democracy in their discussion of differences in birth rates between democracies and dictatorships (p. 266). Although schemes for characterizing age structures are very basic, they nonetheless find statistical differences between democracies and dictatorships, largely based on the proportion of children (<15), but attribute no significance to it. They attribute age-structural differences to differences in fertility.

8. Eight OLS linear regressions were generated from regional data, weighted by the number of countries in each region, for data at five-year intervals from 1970 to 2005. Statistical differences between regression coefficients and intercepts were not significant (0.95-confidence level).

9. In the educational attainment data set generated by IIASA and the Vienna Demographic Institute, data are missing for Albania, Azerbaijan, Belarus, Georgia, Moldova, Tajikistan, and Serbia-Montenegro. At the time of our analysis, the final year of these data was 2000.

10. Since the early-1960s, petroleum producing states in the Arab Gulf Region (Saudi Arabia, Oman, United Arab Emirates, Kuwait, Qatar, and Bahrain) have encouraged temporary migration to provide labor and technical expertise to support their petroleum and construction industries. These workers typically leave before retirement age. Because of the large proportion of experienced labor migrants between 30 and 40 years of age in the Arab Gulf States, state-level age structures tend to be considerably more mature than that of the indigenous subpopulation.