

industrialization, urbanization, education, communication, mobilization, political incorporation, and innumerable other "-ations": a progressive accumulation of social changes that make a society ready to proceed to the final one, democratization.

Modernization may be one reason that the incidence of democracy is related to economic development, and this is the reading imputed to Lipset by most commentators (Diamond 1992: 125; Huber, Rueschemeyer, and Stephens 1993: 711). His most influential critic, O'Donnell (1973: 3), paraphrases Lipset's thesis as saying that "if other countries become as rich as the economically advanced nations, it is highly probable that they will become political democracies." Democracy is endogenous, because it results from economic development under authoritarianism. The hypothesis is that if authoritarian countries develop, they become democratic. The sequence of events we would thus expect to observe is one of poor authoritarian countries developing and becoming democratic once they reach some level of development, a "threshold."

Yet suppose, just suppose, that dictatorships are equally likely to die, and democracies to emerge, at any level of development. They may die for so many different reasons that development, with all its modernizing consequences, plays no privileged role. After all, as Therborn (1977) emphasized, many European countries became democratized because of wars, not because of "modernization," a story repeated by the Argentine defeat in the Malvinas and elsewhere. Some dictatorships have fallen in the aftermath of the death of the founding dictator, such as a Franco, uniquely capable of maintaining the authoritarian order. Some have collapsed because of economic crises, some because of foreign pressures, and perhaps some for purely idiosyncratic reasons.

If dictatorships die and democracies emerge randomly with regard to economic development, is it still possible that there should be more democracies among wealthy countries than among poor countries? If one is to judge Lipset (1959: 56) by his own words - "The more well-to-do a nation, the greater the chances it will sustain democracy" - then even if the emergence of a democracy is independent of the level of development, the chance that this regime will survive will be greater if it is established in an affluent country. We would thus expect democracies to appear randomly with regard to levels of development, and then to die in the poorer countries and to survive in the wealthier countries. And because every time a dictatorship happened to die in an affluent country democracy would be there to stay, history should grad-

ually accumulate wealthy democracies. This is no longer a modernization theory, because the emergence of democracy is not brought about by development. Democracy appears exogenously, *deus ex machina*. It tends to survive if a country is "modern," but it is not a product of "modernization."

Some algebra may help elucidate what is entailed. Let the probability that a country, $i = 1, \dots, N$, will have an authoritarian regime during a particular year, $t = 1, \dots, T$, be $p_A(it)$, where the subscript "A" stands for "authoritarian," and let the probability that it will have a democratic regime be $p_D(it) = 1 - p_A(it)$. Let the probability that a dictatorship will die from one year to another be $p_{AD}(it)$, so that the probability that it will survive is $p_{AA}(it) = 1 - p_{AD}(it)$. Similarly, let the probability that a democracy will die be $p_{DA}(it) = 1 - p_{DD}(it)$. If we assume for the time being that these "transition probabilities," p_{jk} , $j = A, D$, $k = A, D$, are constant each year and are the same for all countries, then we can describe the evolution of regimes by

$$p_D(t) = p_{DD}p_D(t-1) + p_{AD}p_A(t-1)$$

$$p_A(t) = p_{DA}p_D(t-1) + p_{AA}p_A(t-1).$$

Therefore the proportion of regimes that will be democracies next year will depend on the proportion of democracies that survive from the current year, p_{DD} , and the proportion of dictatorships that will die, that is, become democracies, p_{AD} . Similarly for dictatorships. In matrix form,

$$\begin{bmatrix} p_D(t) \\ p_A(t) \end{bmatrix} = \begin{bmatrix} p_{DD} & p_{AD} \\ p_{DA} & p_{AA} \end{bmatrix} \begin{bmatrix} p_D(t-1) \\ p_A(t-1) \end{bmatrix}.$$

Given the transition rates, there exists a distribution of regimes that, if reached, will remain stable in the absence of exogenous disturbances. These equilibrium probabilities are

$$p_D^* = \frac{p_{AD}}{p_{DA} + p_{AD}} \quad \text{and} \quad p_A^* = \frac{p_{DA}}{p_{DA} + p_{AD}}.$$

This long-run distribution of regimes depends only on the relative rates at which they die each year, not on their initial distribution. If $p_{AD} > p_{DA}$, then in the long run there will be more democracies than dictatorships in the world. Moreover, whatever the initial distribution of regimes, their proportions will over time tend to these equilibrium values. And because the probabilities that regimes will die during any particular year are likely to be low - in fact they are low - this con-

Level = low	Level = high
$\begin{bmatrix} p_{DD} & p_{AD} \\ p_{DA} & p_{AA} \end{bmatrix}$	$\begin{bmatrix} 1.00 & p_{AD} \\ 0.00 & p_{AA} \end{bmatrix}$

and we already know that whereas the long-run proportion of democracies at the low level will be $p_D^*(L) < 1$, at the high level all countries will become democracies in the long run. Hence, we will observe an aggregate relationship between the level of development and the incidence of democracies even though democracies are equally likely to emerge at any level, that is, even if development under authoritarianism does not increase the probability that a country will become democratic. This is then the "exogenous" version.

Thus, to decide which mechanism generates the relationship between development and democracy, we need to determine how the respective transition probabilities change with the level of development. Appendix 2.1 describes how we do it.

Level of Economic Development and Regime Dynamics

Examine first some descriptive patterns, presented in column 5 of Table 2.3. If the theory according to which the emergence of democracy is a result of economic development is true, transitions to democracy should be more likely when authoritarian regimes reach higher levels of development. In fact, dictatorships survive almost invariably in the very poor countries, those whose per capita incomes are under \$1,000, or at least they succeed one another and the regime remains the same.⁸ They are less stable in countries with incomes between \$1,001 and \$4,000, and even less so between \$4,001 and \$7,000. But if income reaches the level of \$7,000, the trend reverses and they become more likely to survive. As the lower panel of Table 2.3 shows, transitions to democracy are less likely in poor countries and in rich ones, but they are more likely at the intermediate income levels. If we take all the dictatorships, their probability of dying during any year is 0.0198; for those with incomes over \$1,000, this probability is 0.0280, over \$5,000 it is 0.0526, over \$6,000 it is 0.0441, and over \$7,000 it is 0.0286; the two very wealthy dictatorships with incomes above \$8,000 still survived in 1990. Hence, it appears that Huntington was correct, albeit only with regard to authoritarian regimes, when he argued that one should expect to observe "a bell-shaped pattern of instability" (1968: 43). Economic development seems to destabilize dictatorships in countries at interme-

⁸ Remember that we treat dictatorships that succeed one another as a single spell.

Table 2.3. Transitions, by lagged per capita income (LEVLAG)

Low-high	PJK	TJK	TOT	PAD	TAD	TA	PDA	TDA	TD
0-1,000	0.0147	15	1,019	0.0063	6	945	0.1216	9	74
1,001-2,000	0.0321	32	997	0.0242	18	745	0.0556	14	252
2,001-3,000	0.0325	16	493	0.0261	8	306	0.0428	8	187
3,001-4,000	0.0201	7	349	0.0146	3	205	0.0278	4	144
4,001-5,000	0.0339	8	236	0.0469	6	128	0.0185	2	108
5,001-6,000	0.0308	6	195	0.0595	5	84	0.0090	1	111
6,001-7,000	0.0190	3	158	0.0606	2	33	0.0080	1	125
7,001-	0.0015	1	679	0.0286	1	35	0.0000	0	644
Total	0.0213	88	4,126	0.0198	49	2,481	0.0237	39	1,645

Above	PJK	TJK	TOT	PAD	TAD	TA	PDA	TDA	TD
0	0.0213	88	4,126	0.0198	49	2,481	0.0237	39	1,645
1,000	0.0235	73	3,105	0.0280	43	1,535	0.0191	30	1,570
2,000	0.0194	41	2,110	0.0316	25	791	0.0121	16	1,319
3,000	0.0155	25	1,616	0.0351	17	484	0.0071	8	1,132
4,000	0.0142	18	1,268	0.0500	14	280	0.0040	4	988
5,000	0.0097	10	1,032	0.0526	8	152	0.0023	2	880
6,000	0.0048	4	837	0.0441	3	68	0.0013	1	769
7,000	0.0015	1	679	0.0286	1	35	0.0000	0	644

Notes: PJK stands for the probability of any regime transition; TJK is their number; TOT is the total number of annual observations. PAD stands for the probability of transition from authoritarianism to democracy; TAD is their number. TA is the total number of annual observations of authoritarianism. PDA stands for the probability of transition from democracy to authoritarianism; TDA is their number. TD is the total number of annual observations of democracy.

diate levels of income, but not in those that are poor nor in those that are wealthy.

Indeed, dictatorships survived for years in countries that were wealthy by comparative standards. Whatever the threshold at which development is supposed to dig the grave for an authoritarian regime, it is clear that many dictatorships must have passed it in good health. Note that we have already excluded six wealthy countries that derive large proportions of their revenues from oil. Yet dictatorships flourished also in Singapore, East Germany, Taiwan, the Soviet Union, Spain, and Mexico for many years after those countries rose to incomes well above \$5,000, an income that Austria, Belgium, France, West Germany, Iceland, Ireland, Italy, the Netherlands, and Norway did not have by 1951. Table 2.4 lists the dictatorships that survived even though the probability that they should be democracies, as predicted by the level of development alone, was above 0.50, which corresponds to per capita income of \$4,115.

Conversely, many dictatorships fell in countries with low income levels. Six fell in countries with incomes below \$1,000, and eighteen in countries between \$1,000 and \$2,000, and altogether thirty-six collapsed when the probability that the regime should be democratic, as predicted by per capita income alone, was less than 0.50. Hence, with twenty-five dictatorships surviving in wealthy countries and thirty-six falling in poor ones, the causal power of development in generating democracies cannot be very strong. The distribution of levels at which transitions to democracy occur is highly scattered.

Yet this may not be a fair test of modernization theory. After all, this theory supposes that countries develop over a longer period, so that all the modernizing consequences have time to accumulate. Let us therefore examine more closely those countries that did develop under authoritarian regimes and that at some time became "modern," which we will take somewhat arbitrarily to mean that they had a per capita income of \$4,115 (Table 2.5).

Twenty dictatorships (to remind, out of 123) did develop over longer periods of time and reached "modernity." Gabon, Mexico, Syria, and Yugoslavia developed continuously for at least a decade, reached the level at which democracy would be expected to be the more likely regime, and, having remained under dictatorships, experienced a series of economic crises. Singapore and Malaysia developed over a long period, became wealthy, and remained dictatorships. In East Germany, Taiwan, the Soviet Union, Spain, Bulgaria, and Hungary competitive elections eventually took place, but at very different levels of income.

Table 2.4. Highest levels of per capita income (LEVEL) under which dictatorships survived in different countries

Country	Year	Highest level	Pr(REG = Dem) ^a
Singapore	1990	11,698	0.992
East Germany	1988	10,433	0.977
Iraq	1979	8,598	0.923
Taiwan	1990	8,067	0.895
Soviet Union	1989	7,744	0.875
Spain	1976	7,390	0.851
Gabon	1976	6,969	0.818
Venezuela	1957	6,939	0.815
Bulgaria	1988	6,866	0.809
Argentina	1980	6,505	0.776
Mexico	1981	6,463	0.772
Iran	1976	6,434	0.769
Argentina	1972	5,815	0.705
Yugoslavia	1979	5,674	0.690
Hungary	1987	5,650	0.687
Greece	1973	5,218	0.637
Uruguay	1981	5,162	0.630
Malaysia	1990	5,117	0.625
Poland	1978	5,102	0.623
South Korea	1987	5,080	0.620
Syria	1981	4,668	0.569
Portugal	1974	4,657	0.568
Argentina	1962	4,541	0.553
Argentina	1957	4,355	0.530
Suriname	1981	4,220	0.513

^a Pr(REG = Dem) is the probability that a regime will be democratic given the level of income. It is calculated as $1 - F(\alpha + \beta * \text{LEVEL})$, where $F(\cdot)$ is the c.d.f. of the normal distribution.

Given its 1974 income level, Uruguay should have never been a dictatorship. The economic history of the Chilean dictatorship is convoluted: Its income in 1974 was \$3,561; it climbed with downs and ups to \$4,130 by 1981, collapsed to \$3,199 by 1983, recovered to surpass the 1974 level only by 1986, and passed the threshold of \$4,115 in 1989, exactly

Table 2.5. Countries that developed over long periods under dictatorships and reached incomes above \$4,115

Country	Entry		Passes Pr = 0.50	Peak			Transition year at Pr
	Year	LEVEL		Year	LEVEL	Pr	
Gabon	1961	1,969	1973	1976	6,969	0.82	Never
Mexico	1951	2,317	1971	1981	6,463	0.77	Never
Brazil	1965	1,864	1980	1978	3,881	0.47	1978 0.47
Chile	1974	3,561	1981	1981	4,130	0.50	No
			1989	1989	4,355	0.53	1989 0.53
Uruguay	1974	4,148	1974	1981	5,162	0.63	1985 0.48
South Korea	1961	911	1985	1988	5,606	0.68	1988 0.68
Malaysia	1957	1,282	1982	1990	5,117	0.63	Never
Singapore	1965	1,845	1972	1990	11,698	0.99	Never
Syria	1961	1,607	1978	1981	4,668	0.57	Never
Taiwan	1952	968	1979	1990	8,067	0.90	Post-1990
Bulgaria	1981	4,216	????	1989	6,739	0.80	1990 0.80
Czechoslovakia	1961	1,709	1989	1990	4,094	0.49	1990 0.49
East Germany	1971	4,995	????	1988	10,433	0.98	1990 ????
Greece	1967	3,308	1970	1974	4,966	0.61	1974 0.61
Hungary	1971	3,657	1974	1987	5,650	0.69	1989 0.68
Poland	1971	3,109	1974	1978	5,102	0.62	No
			1985	1988	4,529	0.55	1989 0.55
Portugal	1951	1,314	1973	1974	4,657	0.57	1975 0.52
Spain	1951	2,205	1964	1976	7,390	0.85	1976 0.85
Soviet Union	1961	2,536	1971	1989	7,744	0.88	Collapsed
Yugoslavia	1961	2,073	1974	1979	5,674	0.69	Collapsed

Note: This table lists countries that grew over a period of at least seven years and at some time reached a per capita income of \$4,115. "Entry" is the first year of the dictatorship or 1951 or the year after the country became independent or the year after economic data became available. "Passes Pr = 0.50" is the year when the country reached a per capita income of \$4,115. "Peak" gives the time when the country reached the highest income level under the particular dictatorship and the probability, as predicted by per capita income, that it would be a democracy. Finally, "Transition" gives the year the dictatorship fell, if ever, and the probability of democracy at that time.

the year of transition. The history of Poland is similar: By our criteria, it reached the threshold of democracy in 1974; it experienced an economic crisis in 1979 and a mass movement for democracy in 1980, passed the threshold again in 1985, and became a democracy in 1989. In turn, Brazil, Czechoslovakia, Portugal, and perhaps even South Korea and Greece are the dream cases for a modernization theorist. Those countries developed under dictatorships, became wealthy, and threw off

their dictatorships more or less when their levels of development would have predicted. But they are few.

This is not to say that democracy did not emerge in some countries when they became modern. Indeed, perhaps in those countries that did develop over a long period, the very thought of democracy appeared on the political agenda because they were too modern – not only in those countries that became democratic just when our model predicts but also those that waited much longer: Taiwan, the Soviet Union, Spain, and Bulgaria. Modernization may create the "prerequisites" for political conflict over the form of regime. But the manner in which these conflicts will develop remains unpredictable. When conflicts over regimes are examined at a micro level, by looking at the political actors involved, their motives and their beliefs, it becomes apparent that these are situations laden with uncertainty (O'Donnell and Schmitter 1986; Przeworski 1991). Game-theoretic analyses of transitions to democracy make it apparent that the actors involved often do not know each other's preferences, the relationships of physical forces, or the outcomes of eventual conflicts (Wantchekon 1996; Zielinski 1997). And under such conditions, various equilibria can prevail: Whereas transition to democracy is one feasible outcome, so is the perpetuation of the dictatorial status quo, or even a solidification of dictatorship. Hence, even if modernization may generate conflicts over democracy, the outcomes of such conflicts are open-ended.

But if modernization theory is to have any predictive power, there must be some level of income at which one can be relatively sure that the country will throw off its dictatorship. And one is hard put to find this level: Even among the countries that satisfy the premise of the modernization theory, those listed in Table 2.5, the range of incomes at which dictatorships survived is very wide. Few authoritarian regimes have developed over a long period, and even if most of them should eventually become democracies, no level of income can predict when that should occur.

Moreover, even if to predict is not the same as to explain, "explaining" can easily entail an ex-post fallacy. Take Taiwan, which in 1952 had a per capita income of \$968. It developed rapidly, passing by 1979 our threshold of \$4,115; it had a probability of 0.10 of being a dictatorship in 1990, and in 1995, for the first time, elected its president in contested elections. Suppose that during all that time the Taiwanese dictatorship had faced each year a probability of 0.02 of dying, for reasons not related to development. It thus would have had a cumulative chance of about 50 percent of not being around by 1995 even if it

had not developed at all. Thus we might erroneously attribute to development what may have been just a cumulation of random hazards.⁹ And, indeed, the Taiwanese dictatorship most likely democratized to mobilize international support against the threat from China: for geopolitical reasons, not for economic reasons.

In sum, the causal power of economic development in bringing down dictatorships appears paltry. The level of development, at least as measured by per capita income, gives little information about the chances of transition to democracy.

On the other hand, per capita income has a strong impact on the survival of democracies. As column 8 of Table 2.3 shows, in countries with per capita incomes under \$1,000, the probability that a democracy would die during a particular year was 0.1216, which implies that their expected life was about eight years. Between \$1,001 and \$2,000, this probability was 0.0556, for an expected duration of about eighteen years, and the probability that a democracy would die in a country with an income above \$4,000 was almost zero. Indeed, no democracy has ever been subverted, not during the period we studied nor ever before nor after, regardless of everything else, in a country with a per capita income higher than that of Argentina in 1975: \$6,055. There is no doubt that democracy is stable in affluent countries: The probability of it collapsing is almost zero; the coefficient on LEVEL in statistical analyses of survival (see Appendix 2.2) is positive and significant, and the stark fact is that up until 1990 thirty-one democracies had lived 742 years with incomes above that of Argentina in 1975, and not one had ever fallen.

A question that has been extensively debated is whether or not the stability of democracy is monotonic with regard to the level of development. Although there are important theoretical differences and even sharper political differences between Huntington (1968; Huntington and Nelson 1976) and O'Donnell (1973), both have claimed that there is a level beyond which further development decreases the probability that democracy will survive. Huntington has argued that both regime types become unstable when a country undergoes modernization, which occurs at some intermediate level of development. O'Donnell, in turn, has claimed that democracies tend to die when a country exhausts "the easy stage of import substitution," again at some intermediate level of economic development.

⁹ An analogy may be useful. Suppose that a woman runs a risk of 0.01 of dying from accidental causes during each year of her life, and then at the age of 78 she gets hit by a falling brick. To attribute her death to development would be to conclude that she died of old age.

Huntington (1968: 1) was concerned with stability and did not care whether regimes were democratic or authoritarian. "The most important political distinction among countries," he thought, "concerns not their form of government but their degree of government." Hence, the United States, the United Kingdom, and the Soviet Union were all systems in which "the government governs." Whether it was the Politburo, the cabinet, or the president mattered little. "The problem," he insisted, "was not to hold elections but to create organizations." Indeed, we were told, "the primary problem is not liberty but the creation of a legitimate public order" (1968: 7). Though never explicitly referring to Lipset, Huntington (1968: 35–6) observed that "in actuality, only some of the tendencies encompassed in the concept of 'political modernization' characterized the 'modernizing' areas. Instead of a trend toward competitiveness and democracy, there was an 'erosion of democracy' and a tendency to autocratic military regimes and one-party regimes. Instead of stability, there were repeated coups and revolts." We should expect "a bell-shaped pattern of political instability" (p. 43) among democratic as well as authoritarian regimes.

O'Donnell dragged Lipset over the coals for various methodological transgressions. Reflecting on his criticisms in retrospect, he observed that "Chapter I is now an archeological remnant – testimony of a debate that in 1971 had recently begun and today is finished: it is no longer necessary to lead the reader through tedious series of data to demonstrate that 'socio-economic development' does not foster 'democracy and/or political stability'" (1979: 204). What the data show, O'Donnell asserted, is that "in contemporary South America, the higher and the lower levels of modernization are associated with non-democratic political systems, while political democracies are found at intermediate levels of modernization." Hence, at least within the range observed by O'Donnell, we should observe that democracies fall as economies develop.

Is there some level of development beyond which democracies are more likely to die than they were earlier? We have already seen in Table 2.3 that the probability of a democracy dying declines monotonically with per capita income. Although O'Donnell did cite a countercase against Lipset, his account of the rise of bureaucratic authoritarianism does not undermine Lipset's theory.¹⁰ O'Donnell studied a country that turns out to be a distant outlier: As Table 2.6 shows, three of the four

¹⁰ O'Donnell was careful not to make general claims: His purpose was to explain the downfall of democracies in the Southern Cone. But his theory of "bureaucratic authoritarianism" captured the imaginations of scholars all around the world, who treated it as applicable almost everywhere.

Table 2.6. Transitions to dictatorship, 1951–1990, by last full year of democracy, per capita income, and type of democracy

Country	Year	LEVEL	Type
Argentina	1975	6,055	Presidential
Argentina	1965	5,011	Presidential
Argentina	1965	4,790	Presidential
Uruguay	1972	4,034	Presidential
Argentina	1954	3,989	Presidential
Suriname	1979	3,923	Parliamentary
Chile	1972	3,857	Presidential
Greece	1966	3,176	Parliamentary
Turkey	1979	2,957	Parliamentary
Peru	1967	2,694	Presidential
Guatemala	1981	2,534	Presidential
Suriname	1989	2,491	Mixed
Peru	1989	2,247	Presidential
Panama	1967	2,227	Presidential
Peru	1961	2,148	Presidential
Bolivia	1979	2,037	Presidential
Brazil	1963	1,889	Presidential
Guatemala	1962	1,693	Presidential
Thailand	1975	1,686	Parliamentary
Guatemala	1953	1,509	Presidential
Ecuador	1962	1,451	Presidential
Nigeria	1982	1,419	Presidential
Sri Lanka	1976	1,336	Parliamentary
Honduras	1971	1,236	Presidential
Philippines	1964	1,217	Presidential
Congo	1962	1,120	Presidential
Sierra Leone	1966	1,097	Parliamentary
Ghana	1971	1,042	Parliamentary
Honduras	1962	1,042	Presidential
Somalia	1968	1,015	Mixed
Ghana	1980	978	Presidential
Pakistan	1976	943	Presidential
South Korea	1960	898	Parliamentary
Sudan	1988	765	Parliamentary
Nigeria	1965	621	Parliamentary
Pakistan	1955	577	Parliamentary
Uganda	1984	576	Presidential
Myanmar	1961	312	Parliamentary
Myanmar	1957	267	Parliamentary

transitions to authoritarianism at per capita incomes above \$4,000 occurred in Argentina, and the fourth in Uruguay. Thus, Lipset was right in thinking that the richer the country, the more likely it is to sustain democracy.

Clearly, this fact cries for an explanation. One possible account for the durability of democracies in wealthy countries, proposed already by Lipset, is that, through various sociological mechanisms, wealth lowers the intensity of distributional conflicts. An alternative explanation is that income is just a proxy for education, and more highly educated people are more likely to embrace democratic values. Education, specifically accumulated years of education for an average member of the labor force, does increase the probability of survival of democracy at each level of income.¹¹ The probability that a democracy will die in a country where the average member of the labor force has fewer than three years of formal education is 0.1154; it is 0.0620 when the level of education is between three and six years, 0.0080 when it is six to nine years, and zero when the average worker has more than nine years of education. The highest level of education under which a country experienced a transition to dictatorship was 8.36 years in Sri Lanka in 1977, but that was an outlier. The next highest level of education when democracy fell was 6.85 years in Uruguay.

But income is not a proxy for education. Even though these two variables are highly correlated (0.78), their effects are to a large measure independent. As Table 2.7 shows, whereas at each income level the probability of democracy falling decreases with increasing education, the converse is also true: At each level of education, the probability of democracy dying decreases with income. Hence, for reasons that are not easy to identify, wealth does make democracies more stable, independently of education.

Finally, we find no evidence of “consolidation.” Democracies become “consolidated” if the conditional probability that a democratic regime will die during a particular year given that it has survived thus far (the “hazard rate”) declines with its age, so that, as Dahl (1990) has argued, democracies are more likely to survive if they have lasted for some time. Examining the ages at which democracies die indicates that this

¹¹ We have data only for 2,900 country-years of education. The mean is 4.85 years, and the standard deviation is 3.12, with a minimum of 0.03 (Guinea in 1966) and a maximum of 12.81 (United States in 1985); 27.6% of the sample had educational levels lower than three years, 64.4% lower than six years, and 90.8% lower than nine years. Only 13.0% of the sample had education levels higher than Sri Lanka in 1977, and 26.1% higher than Uruguay in 1973.

Table 2.7. Regime transitions, by lagged per capita income and average education

Income	Education (in years)						Total			
	0-3	3-6	6-9	9-						
0-4,000										
All	0.0208	20 961	0.0393	27 687	0.0198	5 252	0.0000	0 35	0.0269	52 1,936
Dic	0.0098	15 511	0.0294	15 511	0.0194	3 155	0.0000	0 28	0.0167	26 1,557
Dem	0.1212	12 99	0.0681	12 176	0.0206	2 97	0.0000	0 7	0.0686	26 379
4,001-8,000										
All	0.0000	0 36	0.0458	6 131	0.0172	4 233	0.0000	0 68	0.0214	10 468
Dic	0.0000	0 31	0.0434	3 69	0.0390	3 77	0.0000	0 7	0.0326	6 184
Dem	0.0000	0 5	0.0484	3 62	0.0064	1 156	0.0000	0 61	0.0141	4 284
8,001-										
All	0.0000	0 1	0.0000	0 3	0.0000	0 129	0.0000	0 251	0.0000	0 384
Dic	0.0000	0 1	0.0000	0 0	0.0000	0 4	0.0000	0 0	0.0000	0 5
Dem	0.0000	0 0	0.0000	0 3	0.0000	0 125	0.0000	0 251	0.0000	0 379
Total										
All	0.0200	20 998	0.0401	33 822	0.0147	9 614	0.0000	0 353	0.0222	62 2,788
Dic	0.0089	8 894	0.0310	18 580	0.0253	6 237	0.0000	0 34	0.0183	32 1,746
Dem	0.1154	12 104	0.0620	15 242	0.0080	3 377	0.0000	0 319	0.0288	30 1,042

Note: The first number under each level of education is the probability of transition away from a given regime; the second number is the number of such transitions, and the third is the total number of annual observations of this regime at that level of education.

is true, but once the level of development is taken into account, the hazard rates become independent of age, meaning that for a given level of development, democracies are about equally likely to die at any age (see Appendix 2.2 for details). These findings indicate that the hazard rates uncorrected for the level of development decline because countries develop, not because a democracy that has long been around is more likely to continue.

The conclusion reached thus far is that whereas economic development under dictatorship has at most a non-linear relationship to the emergence of democracies, once they are established, democracies are much more likely to endure in more highly developed countries. Yet because our systematic observations begin in 1950, the question arises whether or not these patterns also characterize the earlier period. Studies in the Lipset tradition have assumed that they do: They have inferred the historical process from cross-sectional observations. Yet the validity of such inferences is contested by followers of Moore (1966), who claimed that the Western European route to democracy was unique, not to be repeated. Note that when Rustow (1970) pointed out that the levels of development at which different countries permanently established democratic institutions varied widely, Lipset's rejoinder (1981) was that the thresholds at which democracy was established were lower for the early democracies. Is that true?

Although economic data for the pre-war period are not comparable to those at our disposal after 1950, Maddison (1995) reconstructed per capita income series for several countries going back to the nineteenth century. Table 2.8 portrays the pre-1950 experiences with democracy. The levels at which democracies were established before 1950 vary as widely as they do for the later period; indeed, they cover almost the entire range of incomes observed. The poorest countries in which democracy was experimented with before 1950 were Pakistan, which became independent in 1947 when it had per capita income of 631 (1990 G-K dollars), and India, which in 1947 had income of 641. Yugoslavia had income of 1,064 in 1921; Bulgaria had income of 1,169 in 1926; Portugal had income around 1,354 in 1910 (1913 figure); Brazil had income of 1,460 in 1946. The United States in 1830 (interpolated from 1820 to 1850) and Norway in 1884 must have had about the same income as Brazil in 1946. In turn, New Zealand had an income of 5,367 when it became independent in 1907, Venezuela had 5,102 when it first experimented with democracy in 1945, and the United Kingdom had 5,052 in 1911. Hence, the levels at which transitions to democracy occurred before 1950 were highly dispersed. Again, there was no clear threshold.

Reversals occurred in four out of ten countries. And, again, they were more likely to occur in countries where democracy was established when they were poor. Among the countries for which income data are available, eight democracies subsequently fell and four survived until 1950 (but in Pakistan democracy did fall soon after) where democracy was established with incomes under \$2,000. In turn, six fell and twelve survived until 1950 (indeed, until today) in countries that had incomes above \$2,000 when democracy was first established. The collapse of democracy in Chile, Colombia, Peru, Austria, Bulgaria, Germany, Greece, Finland, Italy, Poland, Portugal, Spain, and Yugoslavia occurred when these countries had incomes below 3,000 1990 G-K dollars, which means well below 3,000 1985 dollars, which we have been using. The highest level at which democracy collapsed was in Venezuela in 1948, but note that the 7,394 1990 G-K dollars corresponds to roughly 4,880 1985 PPP dollars, which we have been using throughout. Hence, the Argentine 1975 income of 6,055 still stands as the highest at which democracy was ever subverted.

To conclude, there is no doubt that democracies are more likely to be found in the more highly developed countries. Yet the reason is not that democracies are more likely to emerge when countries develop under authoritarianism, but that, however they do emerge, they are more likely to survive in countries that are already developed.

Economic Growth and Regime Dynamics

The conditions that countries inherit are not sufficient to explain why regimes survive or die. Dictatorships lasted in many countries that not only were wealthy but also enjoyed other conditions that should have predisposed them toward democracy. And, conversely, some democracies were established in countries that were poor and yet endured the passage of time.

Table 2.9 presents a list of democracies that lasted at least twenty years, organized by ascending levels of per capita income at the time when they were established or, when we could not determine their initial income, when data were first available. The income figures for the pre-1950 period are based on extrapolations and are at best approximative.¹² But the range of incomes at which lasting democracies were established is so large that all the inaccuracies do not change

¹² To compare the pre- and post-1950 incomes, in Table 2.9 we are extrapolating incomes expressed in 1985 PPP USD, rather than the 1990 G-K dollars used in Table 2.8.

Table 2.9. Democracies that lasted at least 20 years, by per capita income and by income distribution

Country	Established (year)	First observed		Lasted until	Income distribution					
		Year	LEVEL		Year	INEQ	GINI	Year	INEQ	GINI
India	1947	1947	556	Now	1951	6.14	35.56	1990	4.30	29.69
Philippines	1946	1946	697	1965	1957	7.42	46.14	1965	16.00	51.32
Brazil	1946	1946	917	1964	1960	18.72	53.00	1970	19.28	57.61
Netherlands	1868	1868	1,050	Now	1975	4.43	28.60	1989	5.11	29.60
Austria	1945	1945	1,093	Now						
Sri Lanka	1948	1951	1,107	1977	1953	10.35	47.80	1979	8.70	43.50
United States	1830	1830	1,119	Now	1947	8.20	34.28	1990	9.60	37.80
Norway	1884	1884	1,228	Now	1962	8.08	37.52	1991	7.69	33.31
Malta	1964	1964	1,377	Now						
Dominican R.	1966	1966	1,413	Now	1976		45.00	1989	13.26	50.46
Costa Rica	1948	1951	1,449	Now	1961	8.87	50.00	1989	12.67	46.07
Colombia	1958	1958	1,613	Now	1970	8.63	52.02	1988	15.11	51.20
Chile	1932	1932	1,650	1973	1968	11.42	45.64	1971	12.16	46.00
Italy	1946	1946	1,708	Now	1974		41.00	1989	4.56	32.74
France	1875	1875	1,748	Now	1956		49.00	1984	6.38	34.91
Japan	1952	1952	1,768	Now	1962	7.71	37.20	1990		35.00
Jamaica	1962	1962	1,802	Now	1958		47.71	1990	8.09	41.79
Papua NG	1975	1975	1,870	Now						
Sweden	1918	1918	1,919	Now	1967	8.92	33.41	1990	5.16	32.52
Denmark	1901	1901	2,213	Now	1976	5.44	31.00	1992	6.90	33.20

(continued)

the picture. The fact is that some democracies survived for long periods even in very poor countries, including notably the United States, which in 1830 must have had the same per capita income as many contemporary African nations, about the same as today's Nigeria.

Hence, though we already know that in affluent countries democracy is impregnable, wealth is not necessary for democracies to survive. Some democracies, like some dictatorships, appear to survive even when they face adverse conditions. The hypothesis to investigate is that the survival of regimes is due to their economic performance, that is, that they are subject to endogenous attrition.

Let us again examine some descriptive patterns. In Table 2.10, the hazard rates (the probability that a regime will die in a particular year) are calculated separately for different bands of the rates of growth of per capita income, lagged one year, at each income level. When we look at the entire sample, it is apparent that growth matters for regime survival: When per capita income has declined during the preceding year, the probability that either type of regime will die is 0.0324, but when income has grown, that probability is 0.0164, one-half. And if this difference appears small, think in terms of frequencies: One in thirty-one regimes will die when the economies are shrinking, and one in sixty-one when they are expanding.

Democracies appear to be more sensitive to growth performance. When they face a decline in income, they die at the rate of 0.0512, so that about one in twenty of them dies, but when incomes are growing, they die at the rate of 0.0152, one in sixty-six. Moreover, democracies that grow slowly, at rates of less than 5 percent per annum, die at the rate of 0.0173, whereas those that grow at rates faster than 5 percent die at the rate of 0.0132. Thus, Olson (1963) and Huntington (1968) could not have been more wrong when they thought that rapid growth destabilizes democracies.

Dictatorships are less sensitive to economic crises: Their respective probabilities of dying are 0.0240, one in forty-two, when the economy decays, and 0.0174, one in fifty-seven, when it grows.

The difference between the two regimes becomes even more pronounced when we examine the longer-term dynamics of growth. With some exceptions, the longer the economic crisis, the more likely it is that democracy will fall: The chance that a democracy will die is 1 in 135 when incomes grow during any three or more consecutive years, and 1 in 13 when incomes fall during any two consecutive years. Conversely, most deaths of democracy are accompanied by some economic crisis:

~~In twenty-eight out of thirty-nine instances, deaths of democracies were~~

Table 2.9 (continued)

Country	Established (year)	First observed		Lasted until	Income distribution					
		Year	LEVEL		Year	INEQ	GINI	Year	INEQ	GINI
Switzerland	1870	1870	2,226	Now	1963	3.58	28.13	1984	5.90	32.19
West Germany	1949	1949	2,567	Now						
Israel	1947	1954	2,585	Now						
Finland	1944	1944	2,636	Now	1966	5.08	31.80	1991	4.34	26.11
Ireland	1922	1951	2,816	Now	1973	8.79	38.69	1987	9.05	34.60
Belgium	1919	1919	2,960	Now	1979	4.57	28.25	1992	4.31	26.92
United Kingdom	1911	1911	3,016	Now	1961	3.95	25.30	1990	5.27	32.30
Mauritius	1968	1968	3,074	Now	1980		39.10	1991	6.48	36.69
Barbados	1966	1966	3,353	Now	1951	12.45	45.49	1979	22.67	48.86
Uruguay	1937	1937	3,492	1973						
Iceland	1922	1951	3,675	Now						
Canada	1920	1920	3,838	Now	1951	5.72	32.56	1990	4.49	27.56
Portugal	1976	1976	4,471	Now	1973	4.61	30.63	1990	7.44	36.76
Greece	1974	1974	4,966	Now	1974	6.52	35.11	1988	6.65	35.19
Luxembourg	1868	1951	5,964	Now				1985	4.11	27.13
Trinidad & Tobago	1962	1962	6,006	Now	1958	14.29	46.02	1981	13.08	41.72
New Zealand	1907	1951	6,264	Now	1973	5.43	30.05	1990	9.77	40.21
Venezuela	1959	1959	6,718	Now	1971	14.44	47.65	1990	16.18	53.84
Spain	1977	1977	7,446	Now	1973		30.51	1989	4.20	25.91
Bahamas	1972	1978	8,740	Now						

Note: All the pre-1951-level figures are based on extrapolations and are expressed in 1985 PPP USD. INEQ is the ratio of incomes of the top quintile to the bottom quintile, GINI is the Gini index.

studied (but see Figueiredo and Limongi 2000), and we do not know how it works.

Before concluding, however, that instability of democracy is an inherent effect of presidentialism, we need to examine one more rival hypothesis. If presidentialism is a military legacy, then perhaps presidential democracies last for shorter periods simply because they emerge in countries where the military is politically relevant. We thus need to compare separately the hazard rates for parliamentary and presidential democracies distinguished by their origins. It is apparent that a military legacy shortens the life of democracy regardless of its institutional framework. Democracies that emerged from civilian dictatorships died at the rate of 0.0158, with an expected life of 63.4 years; those that succeeded military dictatorships died at the rate of 0.0573, with an expected life of 17.5 years. Parliamentary democracies, however, are still more stable regardless of their origins. Given civilian origins, parliamentary democracies died at the rate of 0.0119 and had an expected life of 83.7 years, and presidential democracies died at the rate of 0.0329, with an expected life of 30.4 years. Given military origins, parliamentary systems died at the rate of 0.0400, with an expected life of 25 years, and presidential systems died at the rate 0.0628 and had an expected life of 16 years. Thus, again, the stability of democracies seems to be an effect of their institutional frameworks, not only of their origins.

Thus, although we remain uncertain about the reasons, it is clear that presidential democracies are less durable than parliamentary ones. This difference is not due to the wealth of the countries in which these institutions were observed, nor to their economic performance. Neither is it due to any of the political conditions under which they functioned. Presidential democracies are simply more brittle under all economic and political conditions.

Conclusion

We began this chapter with the observation that democracies are much more frequent in developed countries, and dictatorships in poor ones. Yet this observation is not very illuminating, and neither are the innumerable cross-sectional analyses of this pattern. The regimes we observe in particular countries at any moment depend on the conditions under which these regimes were born and on the conditions they encountered and produced as time passed. And because our systematic observations begin only in 1950 or when countries first became

independent (in some cases when data became available), we took the regimes under which the countries entered the sample as given and studied their subsequent dynamics.

The most important lesson we have learned is that wealthy countries tend to be democratic not because democracies emerge as a consequence of economic development under dictatorships but because, however they emerge, democracies are much more likely to survive in affluent societies. We find it difficult to explain why dictatorships die and democracies emerge. Although we are willing to believe that economic development may open the possibility for transition to democracy, even when the conditions for democracy are ripe, the outcomes of political conflicts are indeterminate. Hence, we failed to detect any thresholds of development that would make the emergence of democracy predictable. In sum, modernization theory appears to have little, if any, explanatory power.

In turn, we found that the survival of democracies is quite easily predictable. Although some other factors play roles, per capita income is by far the best predictor of the survival of democracies. Democracies survive in affluent societies whatever may be happening to them. They are brittle in poor countries. But they are not always sentenced to die: Education helps them to survive independently of income, and a balance among the political forces makes them more stable. Institutions also matter: Presidential democracies are less likely to survive under all circumstances we could observe than are parliamentary ones.

Yet one should not forget that we are dealing only with chances, probabilities, not certainties. And if all we can predict are chances, there must be other factors that matter, some we did not identify. These may be idiosyncratic, impossible to catch in a statistical analysis; but on the other hand, they might be systematic, and we may simply have failed to find them. Whichever they are – this is not a book on the philosophy of history – they remain hidden from our scrutiny. And this is a fact with consequences for what follows.

Appendix 2.1: Dynamic Probit Model

To decide which mechanism generates the relationship between development and democracy, we need to determine how the respective transition probabilities change with the level of development or other exogenous variables. To estimate the impacts of these variables on transition probabilities, we rely on Amemiya (1985, chap. 11).

population that age, the birth rate (per hundred) implied by the estimated age distribution is 1.69 for democracies, as compared with 1.92 observed, and 3.05 for dictatorships, as compared with 3.69 observed. Hence, we are underestimating birth rates because we have underestimated the populations in the childbearing cohorts. But we see that the differences in birth rates between regimes are due to different fertility rates, not to the age structure of the population. If the proportion of women of childbearing age in the entire population had been the same under democracy as under dictatorship, 21.5 percent, the estimated birth rate under democracy would have been 1.91, as compared with 3.05 under dictatorships with the same age structure. If the age distribution under dictatorship had been that estimated for democracy, the birth rate under dictatorship would have been 2.70, as compared with 1.69 under democracy. Hence, what differentiates regimes is fertility, not age structure, "inertia" rather than "momentum."

Conclusion

To make sense of the forest of numbers that populate these pages, we first need a summary of the central findings. And although our question concerns the impact of political regimes, one would be blind not to note first the grip on people's lives of sheer poverty. Although regimes do make a difference for material welfare, their effect pales in comparison with that of scarcity.

In every aspect we have examined, the differences between poor and rich countries have been enormous. For one, even if democracies do occasionally spring up in poor countries, they are extremely fragile when facing poverty, whereas in wealthy countries they are impregnable. Hence, poor people are much more likely to be ruled by dictators. Obviously, poverty means that people consume less. They also live shorter lives, have more children, see more of them die and fewer of them become educated, and are more likely to suffer from collective violence. However one thinks of well-being, people with low incomes lead poor lives.

Moreover, while with regard to mortality rates and life expectancies the gap between poor and rich countries has been closing, the disparities of incomes and of fertility rates have increased. The coefficient of variation (the ratio of the standard deviation to the mean) of death rates fell from 0.44 when the countries were first observed ("entry" year) to 0.40 during the last year each country was observed ("exit" year). The coefficient of variation of life expectancy declined from 0.23 to 0.17. But the coefficient of variation of fertility increased from 0.33 to 0.46, and the coefficient of variation of per capita income rose from an already enormous 0.89 to 1.05. Whereas the multiple of per capita income of the richest to the poorest country when they were first observed was 40.4, at the end of the period it was 57.9.

These disparities of income and fertility increased because countries

that were richer to begin with developed further, while many countries that were poor remained poor. Of the eighty-three countries with per capita incomes under \$2,000 when first observed, fifty-seven had remained equally poor or had become even poorer some thirty or forty years later. Of the fifty-two countries that began with higher incomes, all but seven at least doubled their income, and none declined over the long run.

Hence, poverty can trap societies in its grip. One way poverty binds is that when a society is poor, so is the state, and when the state is poor it cannot extract resources and provide public services required for development. Another trap occurs when the initial stock of human capital is low relative to the physical capital stock; people tend to have more children, and high fertility sharply reduces the growth of per capita income.

Yet the bonds of poverty are not inexorable. Some countries, notably Taiwan, South Korea, Thailand, Japan, Singapore, Portugal, Greece, and Malta, grew spectacularly, at least quadrupling their per capita incomes, with all the benefits that development brings. Of this list, two (Taiwan and Singapore) were ruled by dictators during the entire period and one (South Korea) during most of it, two were democracies throughout (Japan and Malta), and the remaining three (Thailand, Portugal, and Greece) experienced both regimes. Thus, although such spectacular successes are rare to begin with, there is nothing to indicate that it takes one regime or the other to generate them. But, in any case, to evaluate the impact of regimes, one must look at their entire record, not just their best record.

Political regimes have no impact on the growth of total income when countries are observed across the entire spectrum of conditions. Contrary to widespread concerns, democracies do not reduce the rate of investment even in poor countries. Indeed, it appears that when countries are poor there is little that governments can do, so that it makes little difference for economic growth whether rulers are elected or hold power by force. In wealthier countries, the patterns of growth are not the same. Dictatorships rely on growth of the labor force and on keeping wages low, whereas democracies pay higher wages, use labor more effectively, and benefit more from technical progress. But though growth under wealthier dictatorships is more labor-extensive and labor-exploitative than growth under wealthier democracies, so that the functional distributions of income are different, the average rates of growth of total income are about the same.

The economic effects of political instability differ across regimes.

Indeed, the concept of political stability is not transportable across regime types. The same phenomena that constitute instability in dictatorships – changes of rulers, strikes, demonstrations – are just part of everyday life in democracies. In dictatorships, any change or expectation of change of leaders, any manifestation of political opposition, is economically costly. But though such phenomena are much more frequent in democracies, they are so routine that they do not affect the economy.

Thus, we did not find a shred of evidence that democracy need be sacrificed on the altar of development. The few countries that developed spectacularly during the past fifty years were as likely to achieve that feat under democracy as under dictatorship. On the average, total incomes grew at almost identical rates under the two regimes. The only difference is that wealthier dictatorships have a more unequal functional distribution of income: They pay lower wages. But these findings also imply that the recently heralded economic virtues of democracy are yet another figment of the ideological imagination. Democracy has other virtues, but, at least with regard to the growth of total economies, political regimes are not what matters.

Yet per capita incomes grow faster in democracies. The reason is that democracies have lower rates of population growth. In spite of rapid diffusion of medical advances, death rates remain somewhat higher under dictatorship, and life expectancies are much shorter. But the main reason population grows faster under dictatorships is that they have higher birth rates, and the difference in birth rates is due to higher fertility, not to the age structure of the population. We are not certain why fertility is higher in dictatorships, but there are indications that it is the policy instability inherent in dictatorships that induces families to procreate.

Women are particularly affected by dictatorships. They participate in gainful activities at the same rates as they do in democracies, and, as workers, they get lower wages. But they also have more children, see more of them die, and are themselves more likely to die in childbirth.

These findings add up to a bleak picture of dictatorships. Although democracies are far from perfect, lives under dictatorships are grim and short. Dictatorships are regimes in which political rulers accede to power and maintain themselves in power by force. They use force to prevent people from expressing their opposition and to repress workers. Because they rule by force, they are highly vulnerable to any visible signs of dissent. They are successful economically only if they are “stable,” that is, if no one expects that the dictator will be changed

or the dictatorship will be abolished. Because in dictatorships the policies depend on the will, and sometimes whim, of a dictator, they exhibit high variance of economic performance: Some generate miracles, some disasters, and many generate both. Because their policies and their performances are so unpredictable, they do not allow people to plan their lives over a longer horizon, and thus they induce households to hoard the least risky asset, namely, children. In the end, per capita incomes grow slower and people live shorter lives in dictatorships. Thus, whereas scarcity makes lives destitute, regimes do make some difference, not only for political liberty but also for material well-being.

Many of our aggregate numbers reveal political repression, material destitution, and mass violence. Yet, in spite of the persistence of occasional massacres, in spite of poverty increasing in large parts of the globe, in spite of widespread dissatisfaction with the functioning of democracy even in wealthy countries, there is no doubt that the past five decades have witnessed historically unprecedented political and material progress. When we first observed these countries, 41 percent of the world's population lived under democracy; when we last observed them, 48 percent did, and even more since then. Per capita income of an average inhabitant of the globe was \$1,878 when first observed, and \$4,292 around 1990: 2.3 times higher. Of each one thousand people, 15.3 died during the entry year, but only 9.7 died during the exit year. An average person could expect to live 52.3 years when first observed, and 64.7 when last observed, 12 years longer. True, as countries developed they did not necessarily become similar: Wages in authoritarian Singapore were still much lower than in democratic Austria when they became equally wealthy. But both political progress and material progress are evident.

Because China and India add up to one-half of all of us, they deserve special attention. China still remains under authoritarian rule, and India has maintained a democratic regime against all odds. Per capita income in China rose from \$470 in 1961 to \$1,324 in 1990, and in India per capita income increased from \$559 in 1951 to \$1,262 in 1990. Death rates fell in China from 14.2 per thousand in 1961 to 6.6 in 1987; in India they declined from 22.2 in 1962 to 11.4 in 1987. Life expectancy in China was 40.5 years in 1961, and 68.7 in 1987, whereas in India it was 45.5 in 1962 and 57.8 in 1987. Finally, fertility tumbled in China from 4.7 in 1961 to 2.1 in 1990, and in India it went down from 6.5 in 1962 to 4.2 in 1987. Hence, progress was not limited to countries that were already wealthy.

Africa is a source of mitigation in any account such as ours. A recent study shows that a dummy variable for this continent is negative and significant in all growth regressions. Africa has experienced slower growth of incomes, slower social development, more corruption and bureaucracy, and more frequent civil wars than the rest of the less-developed countries (Collier and Gunning 1999). Yet even this continent shows some progress, albeit slow and spotty. The average African country had a per capita income of \$747 when first observed, and \$966 when last observed. Death rates have fallen from 22.1 to 15.8 per thousand, and life expectancy has increased from 41.8 to 50.6 years. In turn, fertility has remained almost unchanged, 6.4 for the first and 6.2 for the last observations. And only 2 percent of Africans lived under democracy as of our last observation, in or before 1990.

Ours has been a strange century, one in which mass murder has repeatedly punctuated the progress of democracy and of material welfare. About 160 million people, roughly 10 percent of the world's population in 1900, were killed in wars in the same hundred years during which democracy became an almost universal value of mankind and technical innovations multiplied incomes and extended lives. Thus, what the future may bring is far from clear. The tools of social science give us little with which to look ahead. Certainly, extrapolating trends is a risky, if not dubious, undertaking. Yet, writing at the eve of a millennium, one cannot but wonder what the future may bring.

Let us first put together all that we learned and then peek ahead. Here are the pieces we have:

1. The probability that a dictatorship will die and a democracy will be established is pretty much random with regard to per capita incomes, about 2 percent each year. But the probability that, once established, a democracy will survive increases steeply and monotonically as per capita incomes get larger. Indeed, democracy is almost certain to survive in countries with per capita incomes above \$4,000.
2. Total national incomes grew at an average rate of 4.23 percent per annum. Incomes grew slowly in poor countries; growth rates were highest at income levels between \$2,000 and \$3,000, declining again at higher incomes. The observed rates of growth were 4.42 under dictatorships and 3.95 under democracies, but when countries were matched for exogenous conditions, the growth rates under the two regimes were almost the same.
3. Rates of population growth were much lower in wealthier countries. But at every income level, population grew faster under dictator-

ships. As a result, the observed rates of population growth were 2.42 percent per annum for dictatorships and 1.46 percent for democracies. When the regimes were matched for exogenous conditions, a large part of that difference remained: Our best guess is that population would have increased at a rate of 2.18 under dictatorships and at 1.59 under democracies had they faced the same conditions.

4. Finally, the incidence of war on the territory of a country was much lower in wealthier countries. We also know independently that democracies do not war with each other. Although wars not only kill but also impede growth, the recovery from wars is rapid, so that they do not have long-term economic effects.

Given what we know about the past forty years or so, we can do two things. First, we can see if this schematic description is sufficient to reconstruct the patterns we observed. And then we can venture into speculations, by using these patterns to look ahead. What we want to know is how many countries will be ruled by democracies in the year 2030, what will be their incomes and their populations, and how many will suffer from wars.

Let us first see how well can we reproduce the patterns we observed. Starting with per capita incomes, population, and regimes observed during the entry years, we can use the dynamic patterns summarized earlier to predict values for the same variables for the exit years (see Appendix C.1). Because the dynamic of regime transitions is probabilistic, we will not get unique answers. Thus, the expected values are based on repeated runs (Table C.1).

Note that the fit between simulated and observed values is very close, except for the incidence of war. The average per capita income observed at the exit year was \$4,292, and the average predicted value is \$4,300. The proportion of world population living under democracy is slightly underpredicted by simulation, and the predicted number of dictatorships is just one more than observed. The predicted rate of growth of population is a slight overestimate, so that the total world population at the exit year is predicted as 5,101 million, just slightly above the observed value. In turn, the number of countries experiencing wars on their territories is grossly underpredicted by the simulation. The reason is that the 1980s were exceptionally war-ridden, so that the probabilities of war were much higher at the end of the period. But, except for war, this simple simulation seems sufficient to reconstruct the observed patterns (Table C.2).

Given that our predictions for the year 2030 are based on a

Table C.1. Average values of selected indicators observed or predicted during various years

Year Source	Per capita income	Proportion democratic	Number of dictatorships	Population growth	Total population	Countries in war
Entry Observed	1,878	0.41	84	1.63	2,764	6
Exit Predicted	4,300	0.44	75	1.75	5,101	8.4
Observed	4,292	0.48	74	1.70	5,068	16
2030 Predicted	11,199	0.67	45	1.23	9,376	5.3

Notes: All the numbers refer only to the 135 countries in our data set. Predicted numbers are based on simulation. "Proportion democratic" is the proportion of the world population living under democracy. "Population growth" is the rate of growth of the world population. "Total population" is the population of the world, in millions. "Countries in war" is the number of countries experiencing wars on their territories.

Table C.2. Distribution of countries in entry year, exit year, and 2030

LEVEL	Entry year			Exit year			2030		
	Number	Wars	Dic	Number	Wars	Dic	Number	Wars	Dic
0-1,000	48	5	41	34	7	34	12	3	11
1,001-2,000	45	1	30	23	4	13	15	2	13
2,001-3,000	13	0	8	20	3	13	8	1	6
3,001-4,000	9	0	2	12	2	6	10	1	6
4,001-5,000	8	0	2	7	0	2	4	0	3
5,001-6,000	5	0	1	4	0	2	3	0	1
6,001-7,000	4	0	0	5	0	0	4	0	1
7,001-10,000	3	0	0	8	0	2	17	0	0
10,001-20,000				22	0	2	26	0	1
20,001-30,000							11	0	1
30,001-40,000							5	0	1
40,001-50,000							4	0	0
50,001-							16	0	0
Total	135	6	84	135	16	74	135	7	44
Minimum level		226			312			523	
Maximum level		9,121			18,073			71,211	
Multiple		40.4			57.9			136.2	

Notes: Numbers for year 2030 are based on one simulation, closest to the average predicted values. LEVEL is income per capita. "Number" is the number of countries in each range of per capita income. "Wars" is the number of countries experiencing wars on their territories. "Dic" is the number of dictatorships.

mechanical extrapolation, caveats would be redundant. But one caveat could invalidate all our optimistic forecasts: depletion of non-renewable resources or severe degradation of the environment. Unfortunately, systematic data concerning environmental degradation are not available. But there are good grounds to fear that if these past trends were also mechanically extrapolated, our future would appear much less rosy. So, with this one caveat, foolishly but valiantly, we present the results:

1. Average world per capita income will be much higher – our guess is about 2.5 times higher – than the 1990 level. Incomes will grow faster than in the past, because there will be fewer poor countries that will grow exceptionally slowly. Some per capita incomes we predict to be extremely high. Obviously, if rates of growth decline as high incomes get even larger, our prediction is grossly overopti-

mistic. But income convergence among the developed countries is just a description of the past. Whether or not increasing returns will set in at the level of entire economies, as distinct from particular firms or sectors, is still an open question.

2. Given that dictatorships will be disappearing, for various reasons, and that per capita incomes will be higher, more democracies will survive, so that most of humanity will live under democracy. But quite a few dictatorships will be left, mostly in poor countries and mostly in Africa. Because India has remained a democracy against all odds, we repeatedly predict it as a dictatorship.
3. Given that population growth declines as incomes become larger and that it is lower in democracies, population growth will slow down. The population of the 135 countries in our sample will be about 9.4 billion in 2030, which is not far from more sophisticated predictions: The United Nations forecast for the entire world in 2025 is 8.5 billion (Livi-Bacci 1997: 222).
4. Even though more countries will be rich and more will be democracies, we still predict quite a few wars, all in poor countries – in fact, all in Africa. Given that we did not anticipate that violent conflicts would surge in the 1980s, this is not even an extrapolation: just a *memento mori*.
5. Finally, consistently with other projections (Quah 1996), we believe that if the past patterns continue, income disparities among countries will continue to increase. Because total income grows slowly in very poor countries and population grows rapidly, per capita income increases very slowly. Countries that already have medium income levels grow rapidly, and their population growth slows down sharply as they become richer. In turn, already wealthy countries grow somewhat slower, but they begin at high levels and have low population growth. Hence, distribution of per capita incomes flattens with time, and disparities increase.

Hence, if the patterns we have observed persist, the world will be better, much better. More people will be living in democracies; they will be wealthier; and they will be enjoying all the benefits that wealth brings, probably including great improvements in public health and medical technology. But not all of us will enjoy this progress: Poverty will still be widespread, dictators will still repress, and wars will still ruin lives.

Hence, optimism does not entail quiescence. We have learned that the bonds of poverty are difficult to break, that poverty breeds dictatorships, and that dictatorships make lives miserable. We also know

that if we allow the patterns of the past to persist, most people will be much better off, but many will remain within the double grip of poverty and dictatorship – if we allow the patterns of the past to persist.

Appendix C.1: Simulation

This simulation is based on the rates of growth of total income presented in Table 3.6, the probabilities of regime transition by regime from Table 2.3, the rates of population growth by regime from Table 5.1A (modified, see later), and the probabilities of war by per capita income and regime, not shown in the text.

Two simulations were conducted. The purpose of the first was to validate the model. Entry-year values were taken as observed, and the variables were iterated until the exit year. Thus the exit-year values are based on the number of years each country was observed.

The second simulation was used to generate extrapolated values. Observed exit values were used to start, and each country was iterated 40 times, to generate predictions for the year 2030 or close to it (the earliest exit year was 1987).

The two random elements in the simulation are regime transitions and wars. Because the predicted values have very low variance, the averages reported in the text are based in both cases on ten runs.

Observed rates of population growth persistently overpredicted the total population observed by the exit year and underpredicted the average per capita income. To calibrate these rates, we uniformly subtracted 0.004 from all the growth rates presented in Table 5.1A. This was sufficient to generate results very close to observed values.

The program for the simulation, in BASIC, is available on request.

Appendix I

Selection Model

Selection as a Problem of Identification

The problem raised by non-random selection is how to make inferences from what we observe to what we do not.¹

What we want to know is the probability that some outcome variable Y will assume the specific value y_i for observations $i = 1, \dots, N$, each characterized by a vector of exogenous factors x_i . Hence, the probability of interest is $\Pr\{Y = y_i | X = x_i\}$, which, to simplify the notation, we will write most of the time as $P(y|x)$.

Now, think of the entire sample as consisting of cases observed in states $d = 0, 1$. Let the probability that $d_i = 1$ depend on some factors $z_i = \{x_i, v_i\}$, where v are those features of i that affect only its states but not the outcomes under each state, and x are the variables that affect the outcome and, perhaps, selection into states. In our context, $d_i = 1$ if country i is observed under a dictatorship, and $d_i = 0$ if it is observed as a democracy.² The dependent variable Y is any among those examined earlier. We will use economic growth as the example.

Because the problem is symmetric, let us work with Y_1 , which we observe only if $d = 1$, so that

$$y_i = \begin{cases} y_{i1} & \text{if } d_i = 1 \\ \text{unobserved} & \text{if } d_i = 0. \end{cases} \quad (1)$$

¹ This entire section follows Manski (1995). A note on our terminology is needed: Statisticians tend to speak of *endogenous sampling* rather than of non-random selection as the source of selection bias. We depart from this terminology for two reasons: (1) We want to emphasize that selection is not a matter of the sample frame chosen by the researcher but of the mechanisms by which the entire set of observations is produced by "nature." (2) We reserve the terms "endogenous" and "exogenous" *selection* for the mechanisms by which these observations are produced.

² Note that in order to lighten the notation, we ignore time.