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Democracy and Development: New Insights from Dynagraphs

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One of the most discussed topics in comparative politics is the relationship between democracy and economic development. One of the best established results in this field is the positive relationship between income per capita and democracy. As first established by Seymour Martin Lipset, higher levels of income per capita are strongly associated with a higher likelihood that a country will be a democracy; lower income levels with a higher likelihood that a country will be a dictatorship (Lipset 1960).

Despite more than forty years having elapsed since this finding, political scientists still have no established explanation for this relationship. Just recently, a sophisticated analysis of democracy and development by Przeworski, Alvarez, Cheibub, and Limongi (2000) has argued that higher income has no discernable causal effect on transitions from dictatorship to democracy. Rather, they claim that the relationship between income and regime types is the result of the impact of higher incomes on the *stability* of democracies – once democratic countries (regardless of how or why they became democratic) reach a certain level of income (roughly $10,000 in 1996 real PPP gdp/capita), they are extremely unlikely to revert to dictatorship. Thus the higher income level acts as a 'sink' for democratic countries – once they enter this state, they seem to enter a highly stable equilibrium.

Where Przeworski et al's results were based on large-n data analyses of changes in regime type, an alternative view was presented by Rueschemeyer, Stephens, and Stephens (1992), who based their argument on a number of case studies of democratic transitions in Latin America, the Caribbean, and Europe. They began by noting that while the Lipset finding of an income/democracy correlation seems to hold across cases at any point in time, it clearly does *not* hold for conditions in particular countries over time. Specifically, noting the reversion to military dictatorship in many Latin American countries in the 1960s and 1970s despite growing incomes, they argued that it was not higher income *per se*, but rather social features that are often, but not always, associated with higher incomes that begets democracy. Rather, democracy would only arise when an organized working class fought for democracy. While higher levels of income usually are associated with the growth of an industrial workforce, this need not imply mass mobilization for democracy. Instead, a strong coalition of bourgeoisie and military or agricultural interests, or a corporatist or socialist regime, could prevent mass mobilization for democracy while still producing increased economic output and higher levels of national gdp/capita. Following the line of argument advanced by Barrington Moore Jr. (1966), Rueschemeyer et al. argue that the dynamics of class development are the critical factor for democratization, and that this is something only imperfectly associated with growth in per capita incomes.

In addition to causal analyses, scholars also have advanced opposing normative ideas regarding how countries should best progress in economic and political development. Advocates of the "authoritarian" pathway to development point to such cases as Chile, South Korea, and Taiwan as countries that first grew their economies

under authoritarian regimes, and then transitioned to democracy. This path has sometimes been called the 'Asian way' in respect to senior politicians such as Prime Ministers Lee of Singapore and Matahir of Malaysia, who have argued that economic development under limited democratization is most compatible with Asian values. However, it has also been defended in Latin America as a necessary step in quelling ruinous populism (as under Argentina in the 1930s), and for creating the labor discipline necessary to economic development before letting democracy return.

Other scholars, however, have argued that a democratic path to economic and political development is better, as early democratization can produce faster economic growth than occurs under corrupt autocracies (Siegle, Weinstein, and Halperin 2004). Thus becoming democratic first, and growing incomes after, is to be preferred.

This paper adopts an approach part-way between Przeworski et al.'s analysis of large-N data and Rueschemeyer et al.'s historical case studies to shed new light on these claims. We examine the relationship between democracy and development by graphically portraying and analyzing the trajectory over time of all sovereign nations over 500,000 in population between 1955 and 2000 in a two-dimensional democracy/development space. By analyzing trajectories over time, we explicitly add a third dimension – *time* – that has been missing from large-n studies. However, by reducing case-studies to simple graphic trajectories, it is also possible to analyze and group cases much more readily than is possible through narrative case studies. We call this method analysis of 'dynagraphs' of democracy and development; we study graphs that reveal the joint dynamics of these characteristics over time.

To readily display the graphic conceptualization of these relationships, we offer Figure 1.

[Figure 1 about here]

In this figure, the horizontal axis measures real GDP per capita. For empirical analysis, we measure real GDP/capita using the Laspeyres Purchasing Power Parity measure from the Penn World Tables 6.1 (Heston, Summers, and Aten 2002).   This gives GDP/capita in local purchasing power in 1996 US dollars, and strikes us as the best comparative measure of real incomes. (All gdp/cap data in this paper is in these terms, but it is only sometimes fully spelled out to remind the reader).   The vertical axis measures levels of democracy or dictatorship on an ordinal scale, such as the 20-point POLITY IV scale (Marshall, Jaggers, and Gurr, 2003). The dashed mid-point on the horizontal line indicates the midway point; authoritarian regimes below the dashed line and democratic regimes above it).

The basic positive correlation between development and democracy is indicated by a slanting solid line that we have labeled the "Lipset line." We expect that at any point in time, graphing all countries would result in a scatter around this line. Przeworski's finding is represented as a region in the upper-right hand corner of the graph, which indicates a zone of stability. Once a country reaches this region (polity score of 8 or higher, real GDP/cap PPP in 1996 US dollars above $10,000), they have essentially 'made it' into the realm of stable and wealthy democracies, from countries (so far) are not known to exit.

Three possible pathways to the Przeworski zone are shown: (1) countries could move gradually along the Lipset line, increasing in both democracy and income by

FIGURE 1:

Dynagraph of Democracy & GDP/cap

Early Democracy Przeworski Zone

Dem

Lipset Line

Authoritarian transition

GDP/cap
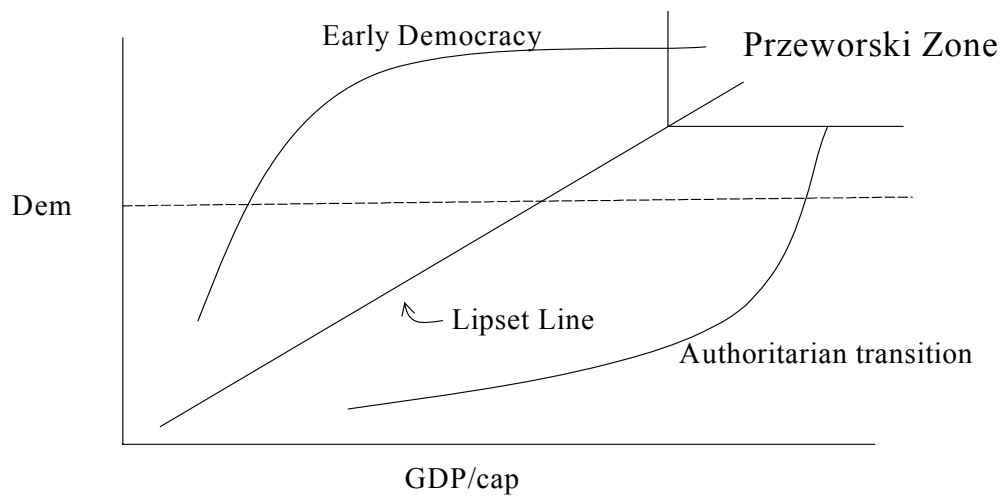
degrees; (2) they could pursue a "democracy first" pathway, moving to higher Polity scores while still at low to moderate income levels, and then growing their incomes; or (3) they could pursue an "authoritarian transition" model, moving to higher income levels under authoritarian regimes, and then transitioning to democracy once sufficiently high income levels for stability had been attained.

In this paper, we use dynagraphs to ask what paths have actually been most commonly followed by nations since the 1950s, and which paths have proven the most successful in moving countries from lower income and development levels to the Przeworski zone. At this point, our findings remain primarily descriptive. However, the results – in terms of the incredible variety and unexpected forms of the historically observed trajectories – are so striking that we believe they call into question existing assumptions about the democracy/development relationship, and suggest wholly new lines of investigation.

Some simple empirics of the development/democracy relationship

Figure 2 shows scatterplots of the levels of democracy and development for all nations over 500,000 population in 1960, 1980, and 2000.

[Figure 2 about here]

One might expect that these graphs would show similar scatters over time, with countries moving up in income over time. In fact, they do not. In the 1960 graph, we see a fairly strong correlation, with many states clustered in the lower left and upper right portions of the graph. However, the 'off-line' countries are clustered mainly in the upper left, or

Figure 2: DEMOCRACY vs. DEVELOPMENT, 1960-2000
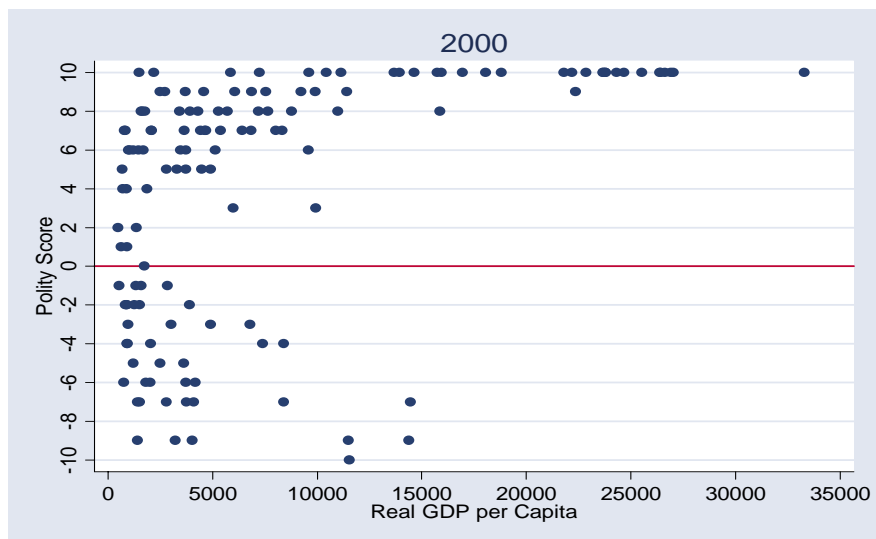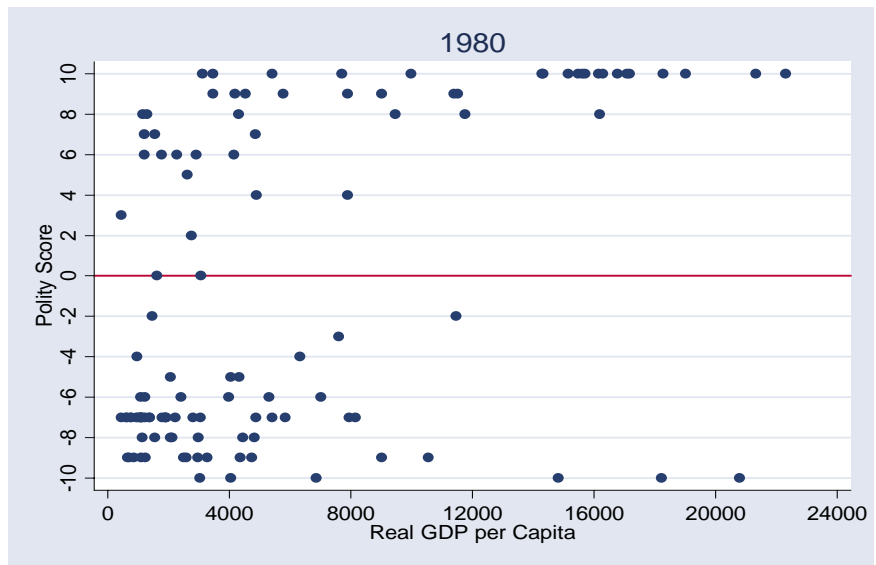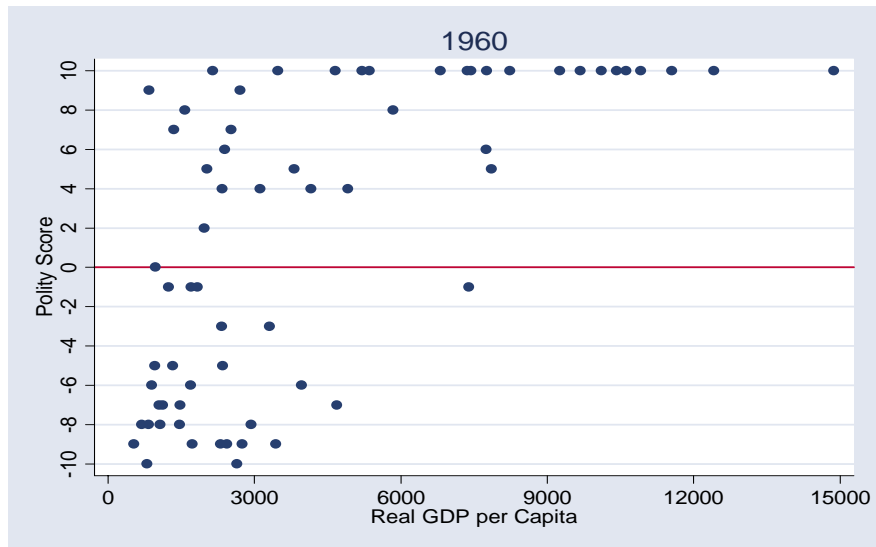
'more democratic' region. That is, there are a goodly number of relatively poor democracies, but hardly any truly wealthy autocracies.

In the 1980s, this changes. The 1980 graph still shows the major clusters of countries in the lower left and upper right areas, sustaining the correlation of income and democracy. But now there are many more countries in the lower right section of the graph – autocracies that are as wealthy as even the riches democracies. These are, as might be guessed, almost all oil-producing countries, grown suddenly rich in the late 1970s oil boom.

By 2000, it is striking that these have gone. The technology boom of the 1990s has led the rich democracies to new heights of income, but the authoritarian states have fallen back to the middle of the pack or below in PPP income per capita. But even more striking is the huge number of relatively poor and middle-income democracies (under $5,000 per capita PPP incomes). Indeed, the 'Lipset line' and the 'authoritarian pathway' are almost entirely depopulated. The post-Cold War wave of democratic transitions in Africa, Eastern Europe, Central and southeast Asia have left the world looking as though it has fully opted for the 'early democracy' path. And with this rise in low- and –middle income democracies, the correlation between income and regime type has grown substantially weaker than in prior decades.

This would seem to be a happy story with a noble moral – the world is opting for early democracy, and authoritarian states are clearly poorer than the most democratic. All we need is to help the early democratizers continue their economic development until they reach the Przeworski zone, and we will have a world of rich and stable democracies – and hopefully a more peaceful one as well if the democratic peace hypothesis holds.

But interpreting the graphs in Figure 2 in this way would be a major error – namely that of viewing a cross-section of different states as though it represented the average trajectory of the population of states. In fact, it most certainly does nothing of the kind. If we examine the historical trajectory of individual states, we find a dazzling complexity that bears little or no resemblance to the neatness of the Lipset line of gradual ascent, or the clean paths of early democracy or authoritarian transition. Instead, we find a world of bouncers and cyclers, states that are stuck and states that have zoomed up and down through development/democracy space. It is a true menagerie, which we have only begun to explore.

Getting into 'the Zone'

It may be useful to begin by identifying those states that have made the transition from relatively low income and authoritarian governance into the Przeworski zone, and noting by what pathway they accomplished this. We define success in this regard as movement from polity score ≤ 0 with gdp/cap < $5,000 to polity score ≥ 8 with gdp/cap > $10,000. After all, the most pressing policy question of the day is how to help poor and non-democratic states move toward stable democracy and economic development; thus we should investigate the precise trajectories by which this transition has been achieved in the past.

We should first note, however, that almost all of the well-off democratic states in the world in 2000 entered the data set as already at relatively high levels of income and democracy. Of the 31 states in the Przeworski zone in 2000, 23 at no time since 1955 had democracy scores below 8 (with the partial exception of France, which entered at

Polity 10 and fell to Polity 5 under Gaulism in 1958-68, but was Polity 8 or above since

1968). This is even though many of them entered the data at relatively low income levels

(Israel, $3,000; Japan, $3,000; Ireland, $3,000; Italy $3,000; several others around

$5,000). Indeed, from historical data (Maddison) it appears that the United States,

Canada, Sweden, Austria, Belgium, the Netherlands, and many other countries that

became democratic in the 18th or 19th centuries made their initial transition at income

levels of real gdp/cap in the range of $3,000 to $5,000 and simply stayed democratic

while their incomes grew.

From 1955 to 2000, there were only nine cases of successful movement

from relatively low income and authoritarianism to relatively high income and

democracy (see Table 1). These include five countries in the EU (Spain, Portugal,

Hungary, Cyprus, Greece); two of the Asian tigers (South Korea and Taiwan); and two

countries in the cone of Latin America (Chile and Argentina).

[Table 1 about here]

Did these successful developers follow a similar trajectory to success? Not at all.

Instead, they follow three quite distinct paths, shown by the examples of Taiwan (for

Taiwan and South Korea), Portugal (for Portual, Spain, Hungary, and Greece), and Chile

and Argentina (for themselves and Cyprus), in Figures 3-4.

[Figures 3 and 4 about here]

Taiwan (and South Korea) followed what seems like the most predictable path, a

stepwise segue up the Lipset line. In both of these countries, a period of authoritarian

economic growth was followed by a step up toward reduced authoritarian government,

more economic growth, and then a leap to democracy (polity 7 for Taiwan, 6 for South

Table 1

States in the Przeworski zone in 2000

Never Polity < 8 (23)	Successful Development (9)
Slovakia	Portugal
Trinidad	Spain
Israel	Hungary
Australia	Taiwan
New Zealand	South Korea
Japan	Cyprus
Austria	Greece
Belgium	Argentina
Czech Republic	Chile
Denmark	
Finland	
Germany	
Ireland	
Italy	
Norway	
Netherlands	
Slovenia	
Sweden	
Switzerland	
United Kingdom	
Canada	
United States	
France (since 1968; was Polity = 5 from 1958-1968)	

FIGURE 3: Development vs. Democracy in Taiwan and Portugal
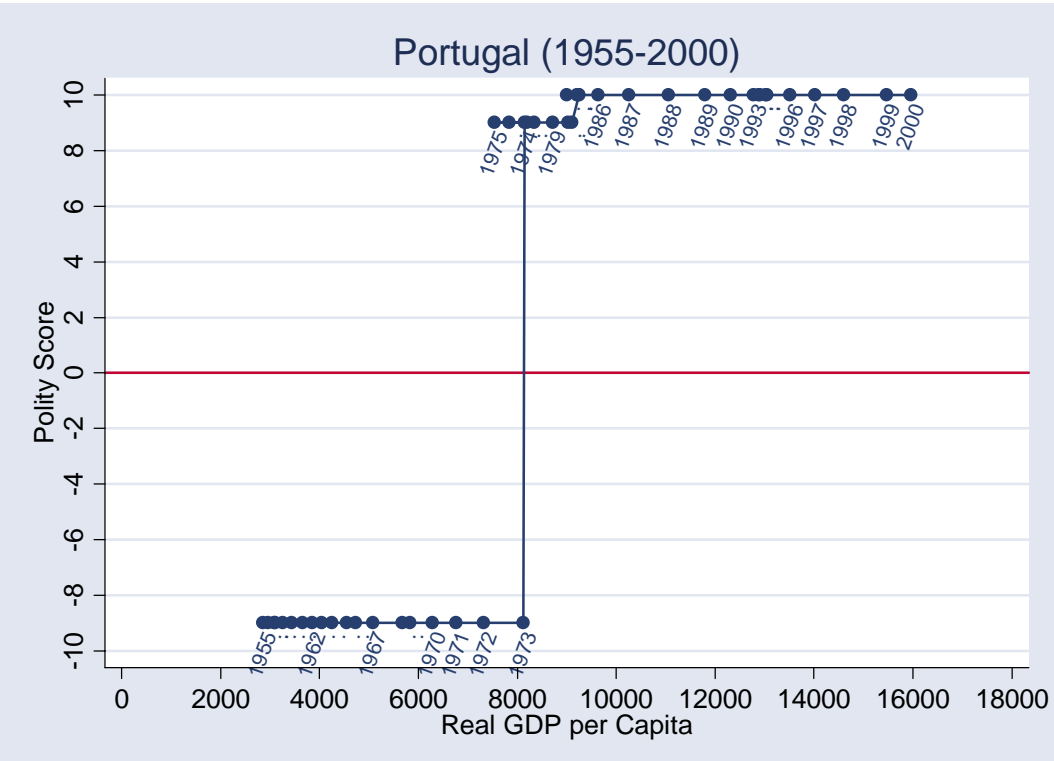

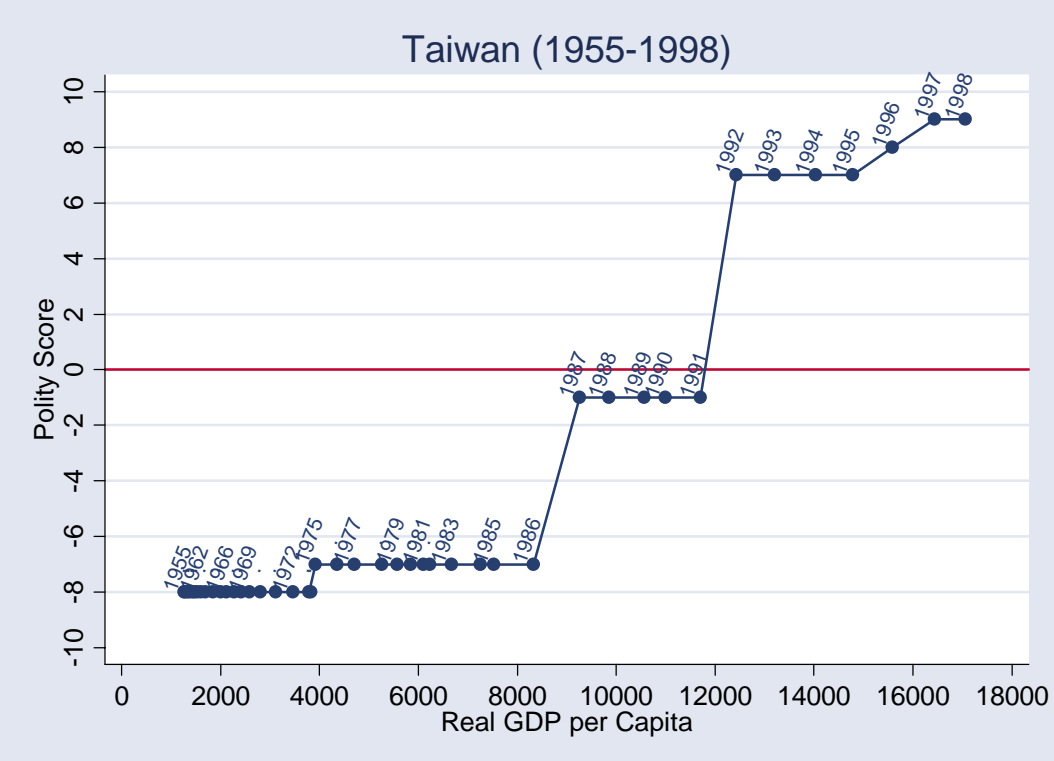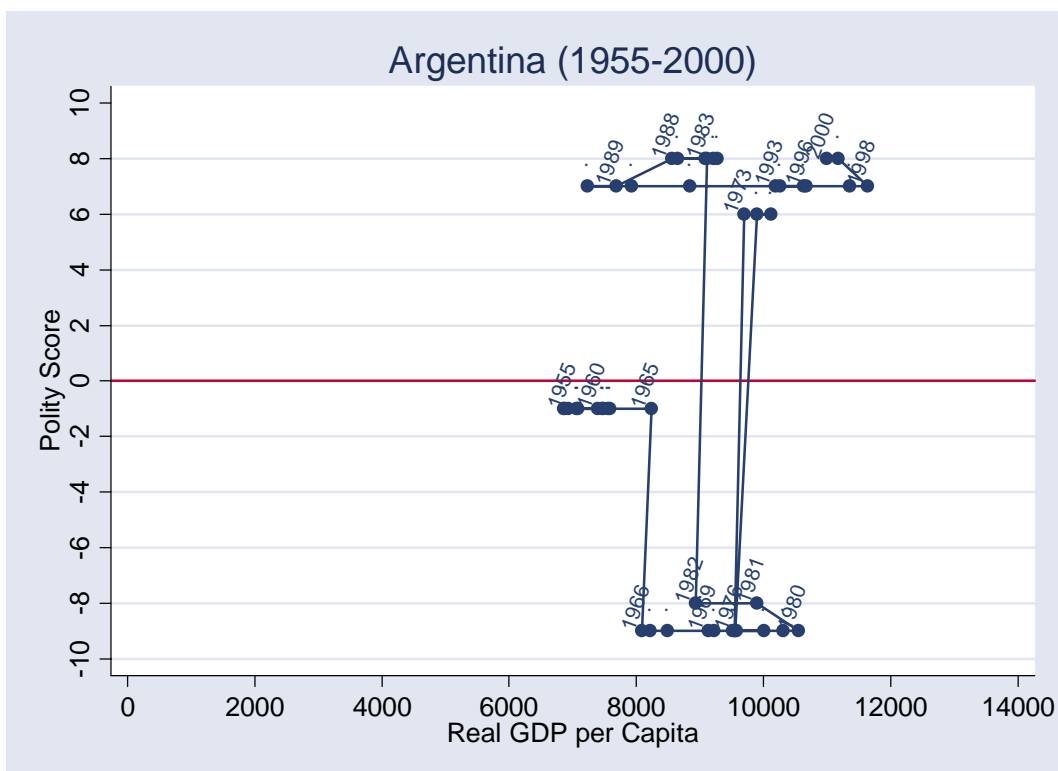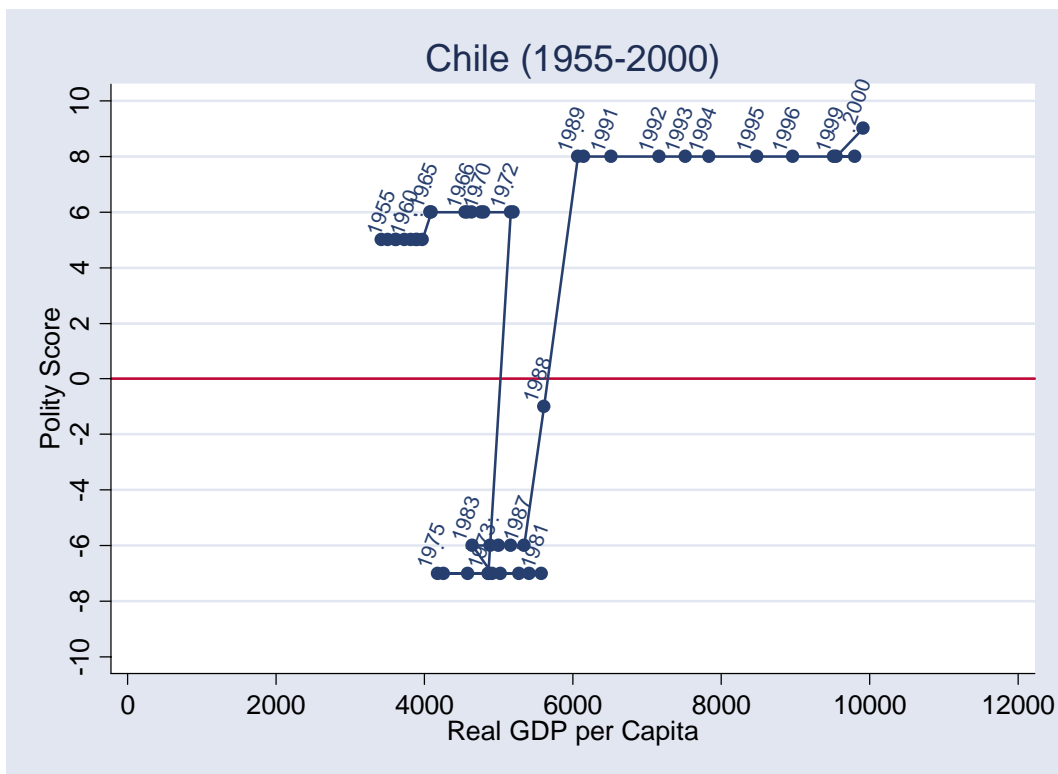Taiwan (1955-1998)

Portugal (1955-2000)

FIGURE 4: Development and Democracy in Chile and Argentina

Korea), followed by more economic growth and then further improvement of democracy.

Both Taiwan and Korea made their main leaps from moderate authoritarianism to

substantial democracy at roughly $8,000 real gdp/cap PPP, and then continued to grow

and democratize, both experiencing even more rapid economic growth as democracies

(wider horizontal spacing of the dots), and reaching Polity 8 or above and income of

roughly $16,000 real gdp/cap PPP.

By contrast, Portugal (and Spain, Hungary, and Greece) followed something like

a classic authoritarian transition path. After many years of extreme dictatorship and

economic growth, they made a single, one-shot transition to full democracy, with no

intermediate steps, and at a relatively high level of income. For Greece, Spain, and

Hungary this transition occurred at real gdp/cap PPP of about $10,000; for Portugal at

just over $8,000.

The greatest contrast – and perhaps the greatest puzzle – lies with the cases of

Chile, Argentina, and Cyprus (the last, not shown, looks much like Chile). These cases

represent what might be called the "authoritarian stagnation" path. Unlike the previous

cases, Chile and Argentina experienced little or no growth in real gdp/capita during their

periods of authoritarian rule. From 1972, when the Allende regime fell, until after 1988,

when the Pinochet regime was pushed aside, Chile experienced economic stagnation,

with real gdp/cap in PPP terms stuck between $4,000 and $6,000. After over fifteen

years of this authoritarian stagnation, Chile finally threw off its dictatorship and moved to

democracy, after which fairly rapid real gdp/cap growth occurred, taking income per

capita to $10,000 PPP by 2000.

Argentina also experienced extended periods of authoritarian stagnation to 1981,

which led to leaps to democracy. But it then also experienced periods of democratic stagnation, and returns to autocracy. Indeed, Argentina is the richest country ever to fall from democracy to dictatorship, with an income of just under $10,000 in 1996 real PPP dollars in 1975. Argentina is thus an example (of which there are others, none of which reached the Przeworski zone) of a 'multiple bouncer,' a country that has made several large 'zooms' up and down the democracy scale. What is remarkable about Argentina is that it has done so at relatively high levels of income, remaining at levels of $8,000 to $11,000 from 1965 to 1995, during which it moved twice from dictatorship to democracy.

Also unlike the other cases, Argentina's second (and lasting) move to democracy in 1983 was followed by a *decline* in real GDP/cap, which fell below $8,000 in 1990. The path of Argentina in democracy/development space since 1983 traces something like a 'cap' over its prior path, with a slight decline in democracy accompanying falling income to 1990, then very rapid income growth to 1998, carrying gdp/cap to over $11,000 but while remaining at Polity score 7, and then finally greater democratization from 1998 to 2000 (moving to Polity 8) occurring with a slight decline in gdp/cap. Still, the most recent currency crises in Argentina, which most likely shifted real gdp/capita sharply downward, has not resulted in a decline in democracy. Thus Argentina seems to be retracing its economic movement since 1990 in the opposite direction (declining income), but its persistence in democracy remains strong. As we shall see below, this pattern of economic stagnation following a democratic transition is not uncommon.

In sum, despite the fact that the 1980 and especially the 2000 scatter plots seem to

indicate a world that is adopting a "democracy first" approach to economic and political development, the true dynamics of individual countries show that since 1955 *not a single country* has so far moved from underdevelopment into the Przeworski zone by pursuing a 'democracy first' path, which we would define as making a transition to democracy at a real gdp/cap in PPP terms at $4,000 or below, and maintaining democracy with economic growth to reach $10,000 in PPP terms. This is all the more remarkable in that the great majority of Przeworski zone countries in 2000 appear to have made precisely such a transition, but in prior centuries.

To be sure, there are a large number of countries that were 'born' as democracies (polity score 6 or higher) despite low incomes, and have persisted as democracies while experiencing economic growth. These include Costa Rica, Papua New Guinea, Botswana, Mauritius, Namibia, Moldova, Jamaica, and India. There are also a significant number of countries that have made a leap from poor or middling income dictatorship to poor or middling income democracy; but these have failed to show the kind of sustained economic growth that seems likely to carry them to relatively high income levels in the foreseeable future. These include Benin, the Philippines, Indonesia, Brazil, Ecuador, Guatemala, Nicaragua, Panama, Peru, El Salvador, Malawi, Mali, Mozambique, Central African Republic, Cote d'Ivoire, Madagascar, Senegal, Bulgaria, Romania, Bolivia, Paraguay, Honduras, Venezuela, and Mongolia.

Figure 5 shows the dynagraphs for Romania and the Philippines; these are the most common forms or countries in this last group.   They show a single leap to democracy at a moderate income level (below $6,000 gdp/cap), followed by economic reversals or stagnation in real income.   The trajectories of those countries with reversals

typically show a backward bend, a kind of reverse 'C' shape. Those countries with post-democracy stagnation show a kind of 'T' shape, with a leap to democracy followed by sideways movement at the top of the line of democratic movement (in the case of the Philippines, that democratic movement followed a period of 'autocratic stagnation'' in 1972-85).

[Figure 5 about here]

It is not pleasant to report, but the pattern of economic reversal or stagnation is the most common pattern following leaps to democracy. Of the 46 countries that made such a leap (from polity ≤ -4 to polity ≥ 4) at income levels at or below $7,000 GDP/cap, 35 suffered weak or negative growth in real gdp/cap thereafter. Only 11 countries – Lesotho, Turkey, Cyprus, Thailand, the Dominican Republic, Chile, Guyana, Uruguay, Bangladesh, Colombia, and Poland – experienced significant and sustained growth in per capita incomes following their democratic transitions. Even fewer of these did so following a transition at relatively low levels of income, occurring with real gdp/cap PPP under $4,000 (Lesotho, Dominican Republic, Guyana, Bangladesh, and Columbia).

This is *not* to say that poor democracies do not grow – many low-income democracies have remained stable and yet experienced much more growth than stable autocracies. The dynagraphs show a large number of countries that remain 'stuck' in dictatorship (polity always < 0), and the majority of these show little or only modest growth in real incomes. This observation is specifically about low-income countries that have made a marked transition to democracy since 1955; less than one-quarter of them were rewarded with sustained income growth.

Figure 5: Democracy vs. Development in Romania and the Philippines

Romania (1960-2000)

Philippines (1955-2000)
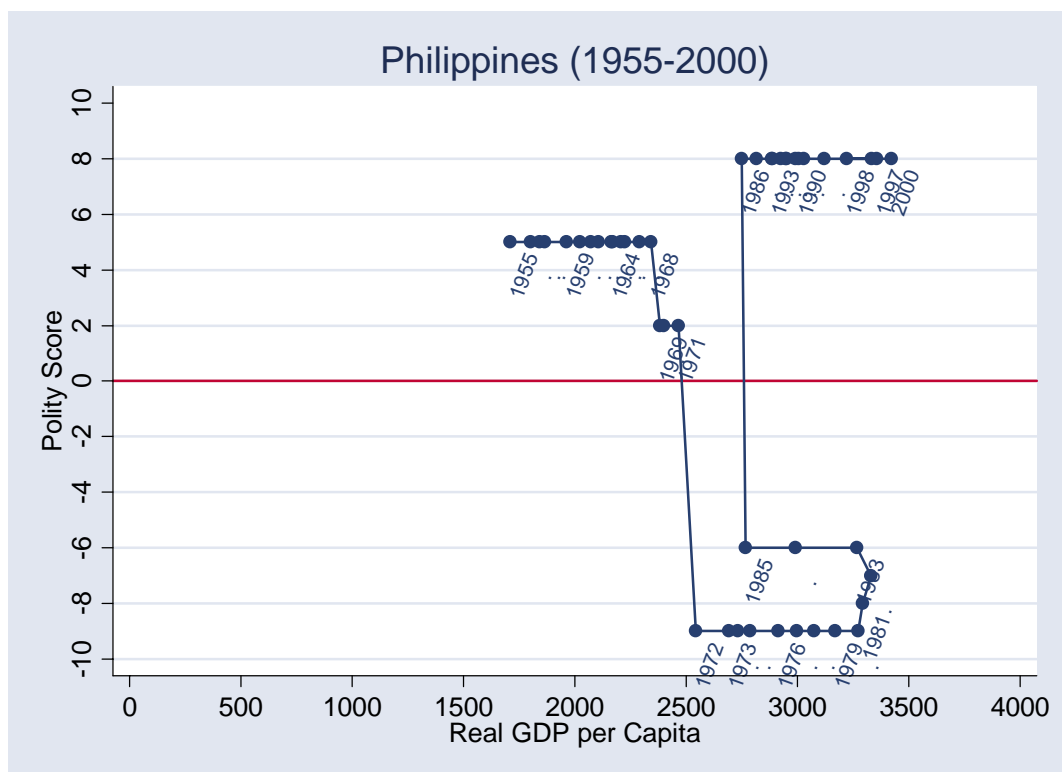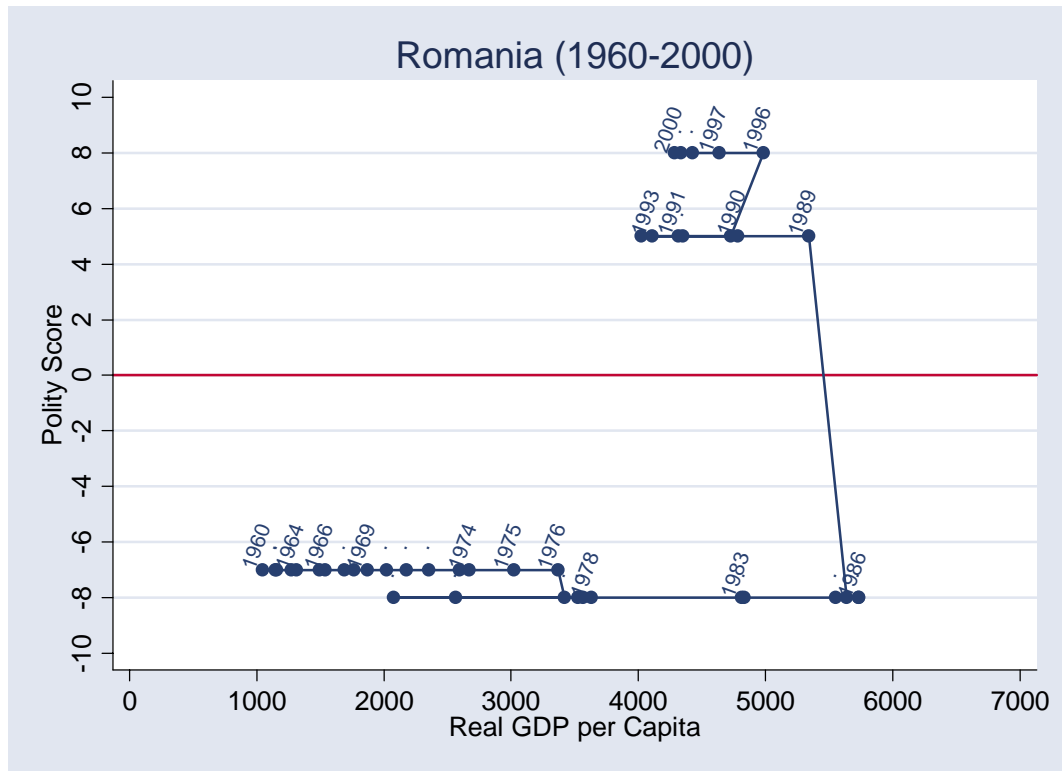
Getting 'Stuck' and Failing

If success is rare and takes varied forms, getting 'stuck' or 'failing' is common, and takes on even a greater variety of shapes. Figures 6 and 7 show four examples of 'complex' trajectories. Such complex or oddball trajectories are not rare – they are in fact quite common. Figure 6 shows dynagraphs for two 'bouncers' – Nigeria and Guatemala. 'Bouncers' show multiple transitions in and out of democracy, often with little or no major shifts in income per capita. Nigeria made several transitions from dictatorship to democracy, but each was followed by no little or no growth in real income and further regime changes; the last (as of 2000) left Nigeria moderately democratic, but at the lowest real income level since 1955.

[Figures 6 and 7 about here]

Guatemala made what seemed like a promising start to development in the mid-sixties, increasing income and democracy both; but the democratic move was then undone. In a 'reverse Lipset' move, democracy steadily declined while real incomes nearly doubled from 1966 to 1980; but there then followed a period of 'autocratic stagnation' followed by a two-step move to high levels of democracy (from –5 to 3 in early 1990s, then to 8 in the late 1990s). Nonetheless, this move from dictatorship to democracy in the 1990s was accompanied by virtually no real income growth; all the up-and-down movement in regime type from 1973 to 2000 was accomplished while real per-capita incomes remained within a narrow band from $3,300 to $4,000 for nearly three decades. No fewer than nineteen countries show a 'bouncing' pattern of multiple moves between democracy and dictatorship (defined here as moves to or crossing the polity zero line from above or below) while remaining in a relatively narrow income band at some

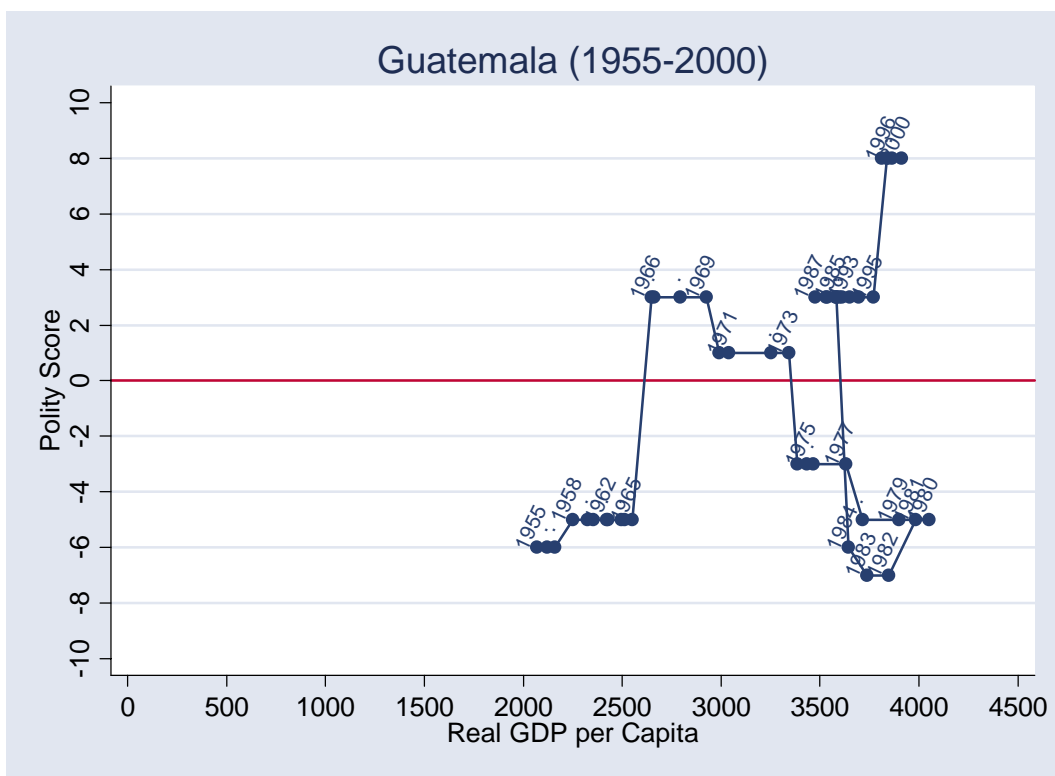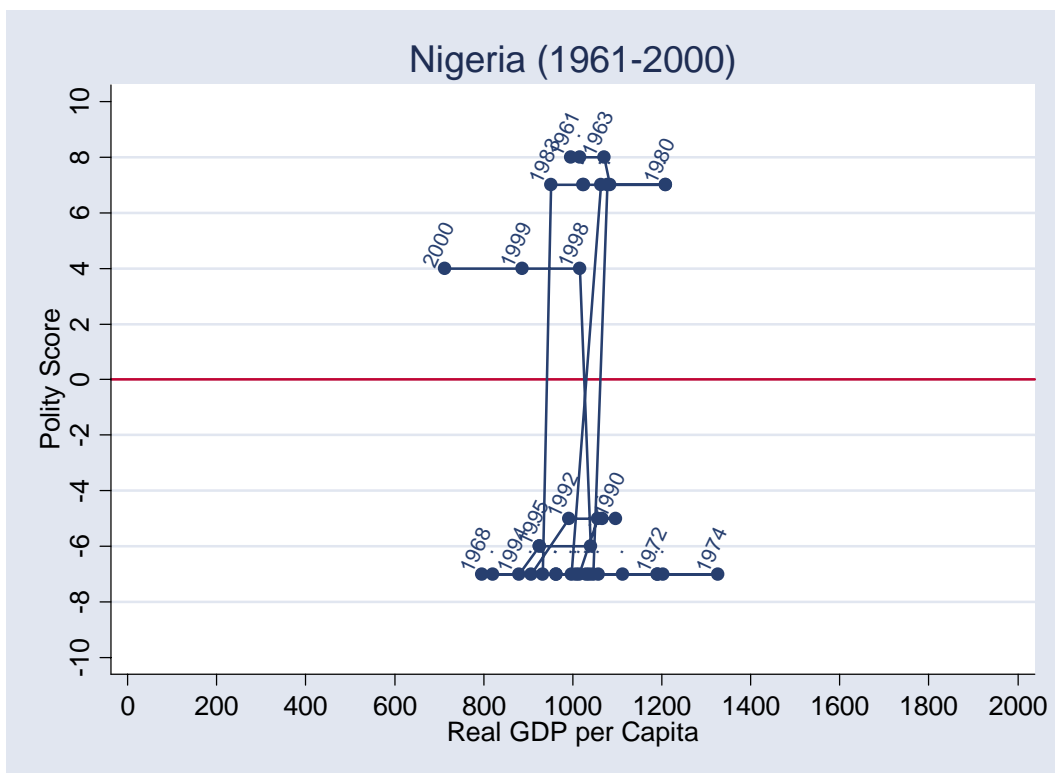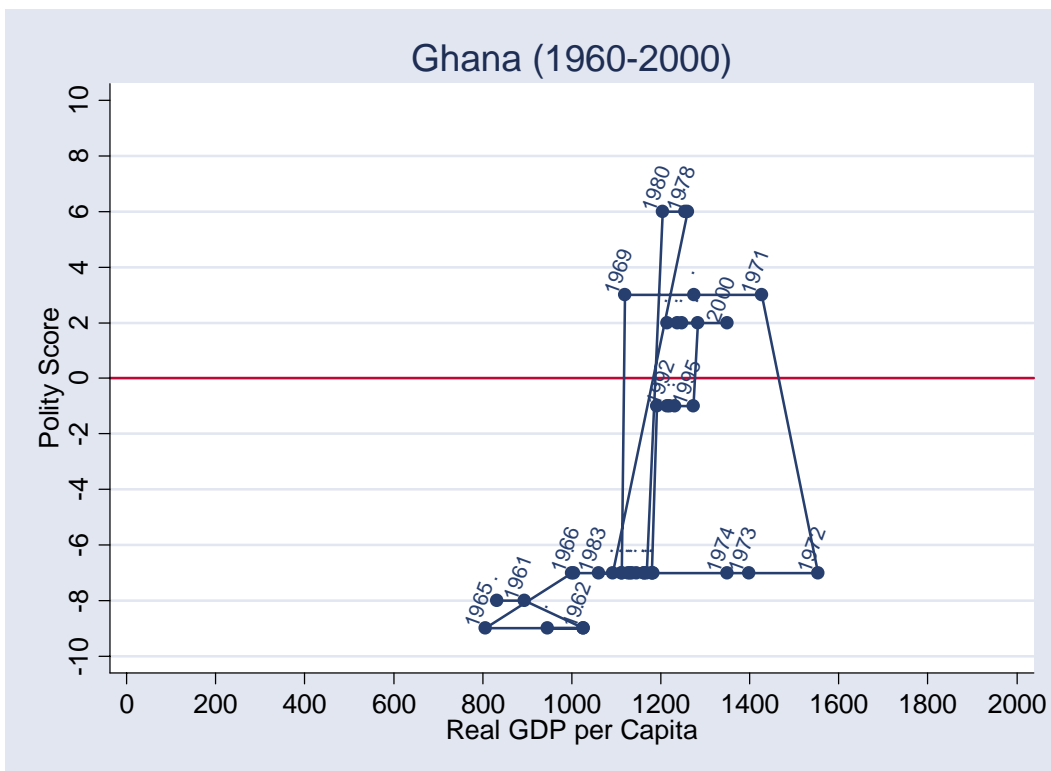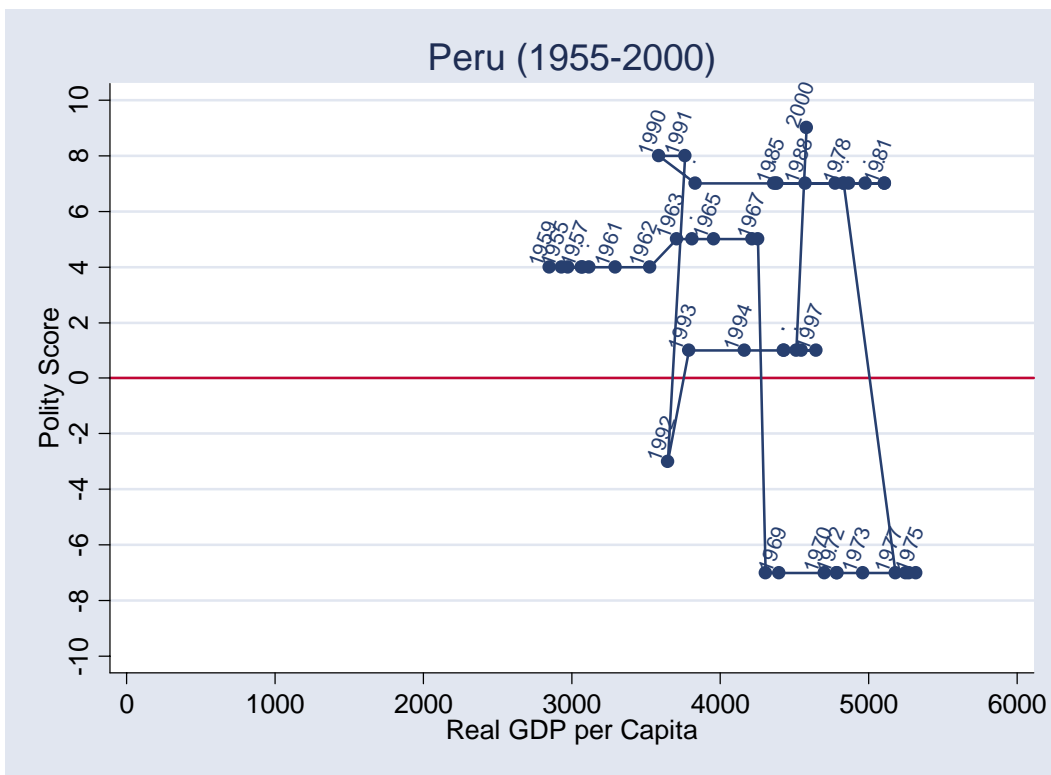Figure 6: Two "Bouncers:" Nigeria and Guatemala

Figure 7: Two "Cyclers": Peru and Ghana

Peru (1955-2000)

Ghana (1960-2000)

point in their histories (Nigeria, Guatemala, Comoros, Benin, Lesotho, Turkey, Thailand, the Dominican Republic, Uruguay, Burkino Faso, Cambodia, Albania, Ethiopia, Guinea-Bissau, Niger, Sudan, Uganda, Haiti, and Armenia).

Figure 7 shows two 'cyclers' – Peru and Ghana. 'Cyclers' are countries whose trajectory in democracy-development space traces a closed (or nearly closed) loop or loops. Such countries have made significant movements to change their regimes, and made significant economic progress at some periods, but these movements were then reversed in subsequent periods, leading to a cycle. Thus after several periods of economic growth and regime reform, Peru in 2000 is at democracy level 9, but its income level is no greater than in 1972. Cycling countries under a great deal of change but make little net progress over extended periods of time. The nineteen countries that show such cycles at some point in their history include, in addition to Ghana and Peru, Zimbabwe, Albania, Burundi, Chad, Congo-Kinshasa, Congo-Brazzaville, El Salvador, Nicaragua, Guyana, Panama, Sierra Leone, Fiji, Togo, Algeria, Bolivia, Venezuela, and Russia.

The great majority of countries fall into the types we have listed above. These are (1) stable democracies, most of which show sustained growth; (2) stable autocracies, (mostly Middle Eastern or Central Asian and remaining communist countries), some with growth but many stagnant; (3) those making a democratic transition with economic growth (of various types—those moving along the Lipset line, making a classic authoritarian transition, or following authoritarian stagnation); (4) those making a democratic transition followed by economic decline or stagnation; (5) bouncers; and (6) cyclers. In addition, there are a handful of countries that exhibit different patterns – countries that make a single move out of democracy to dictatorship (e.g. Gambia);

countries that exhibit a marked 'reverse Lipset' move from higher income autocracy to lower income democracy (e.g. Nicaragua), and others that just wander in their own routes in democracy/development space, without any clear pattern developing (e.g. Iran, Cameroon, Gabon). The latter countries make some weak movements toward democracy or growth, but are unable to sustain any clear trajectory.

Debating Democratization Dynamics

In addition to the details of specific trajectories, we can make some summary statements about movements into or out of democracy by aggregating movement across all countries and transition.

Figure 8 shows, for each transition to democracy (movement from polity < 0 to polity ≥0), what was the countries' real gdp/cap PPP, and polity level, in the year prior to their movement to or above the polity=0 line. We must note that these are *not* probability distributions, but mere raw frequency distributions. Still, they tell us rather clearly that by far the majority of transitions to democracy occur at relatively low income levels -- $5,000 real gdp/cap PPP or less.

[Figure 8 about here]

Even more striking is that most transitions to democracy come in large leaps from rather low levels (or high levels of dictatorship), with polity scores of −6 or below. However, the peak is at levels of polity −6 and −7, with jumps from extreme polity levels of −8 and −9 occurring no more or less frequently than smaller jumps from polity levels of −1 or −3. In other words, the typical country making a transition from dictatorship to democracy is a poor autocracy – this is what accounts for the large number of cases in the

Figure 8: Aggregate Conditions for Democracy Transitions
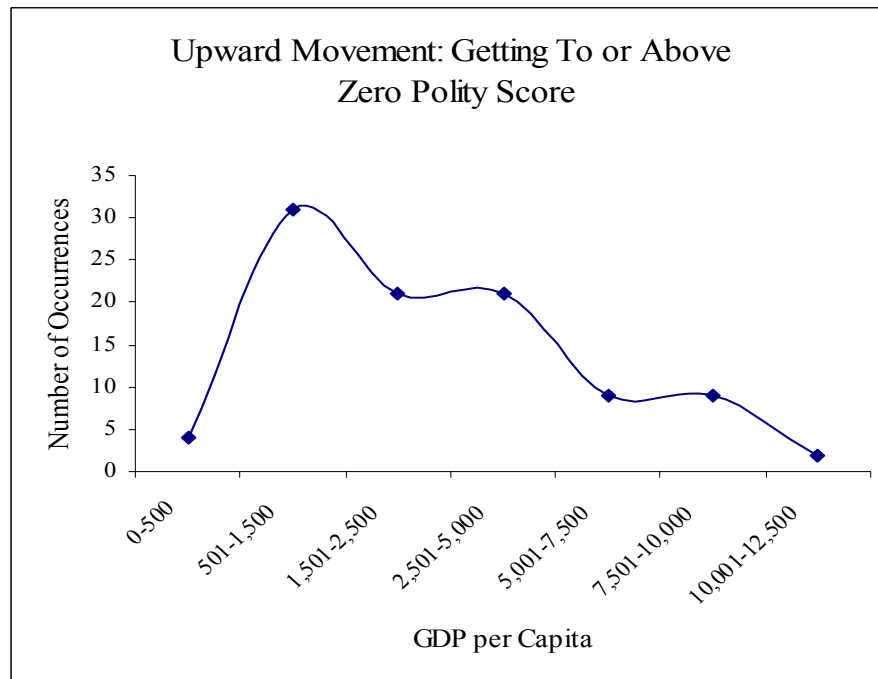
upper left corner of the scatter plots of democracy and dictatorship in Figure 2. One

cannot fault such countries for lack of ambition. But in fact most of these transitions are

followed by economic stagnation or reversal, and a bounce or cycle back to conditions of

poor autocracy. Thus the large number of countries still in the lower left corner of the

2000 democracy/dictatorship scatter plots. Sadly the countries in the upper left corner of

the scatter plots in Figure 2 are *not* on their way to the upper right corner and the

Przeworski zone; they are generally on their way back down to the lower right corner

instead.

Figure 9 shows similar plots of antecedent income and polity conditions in the

year prior to downward movements out of democracy (from polity ≥ 0 to polity < 0).

What we see here appears to confirm the Przeworski et al. finding that falling out of

democracy is relatively rare for countries with real GDP/cap PPP above $5,000, and exceedingly rare for countries above $7,500. We also see, however, that high levels of democracy are *not* a preventive of democratic failure. Indeed, the greatest number of democratic reversals among countries with polity scores above zero is observed for countries at polity level 8, what many call full democracy, and there are even reversals from level 9. In the aggregate, countries with polity scores in the range of zero to 6, often called partial democracies, account for the greatest portion of democratic failures. We know from other studies that countries in this range of polity scores are at unusually high risk of conflict or democratic collapse (Goldstone and Ulfelder 2004). Still, it is striking that even countries that have achieved high levels of democracy still face non-zero risks of democratic failure.

[Figure 9 about here]

Figure 9: Aggregate Conditions for Democracy Failures
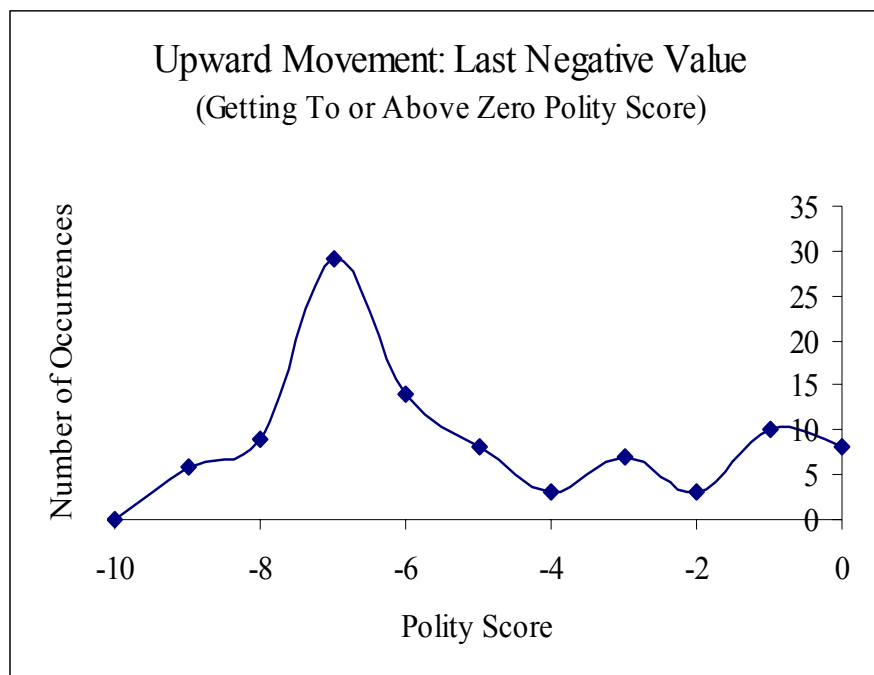
Conclusions – or not?

The basic conclusions that flow from our examination of the dynagraphs relating democracy and development over time would appear to strongly support the major gloomy findings of Przeworski et al; most democratic transitions are not preceded by sustained economic growth, nor do most such transitions lead to subsequent economic growth.

However, the results also provide only slim support for the notion that the 'Authoritarian transition' model is an effective path to democracy; most autocratic regimes neither experience sustained economic growth nor experience transitions to democracy, even those that reached incomes in excess of the most common transition level ($6,000 gdp/cap). Moreover, even among the few countries had made a successful transit from poor dictatorship to relative wealthy democracy by 2000, we find three distinct patterns: gradual, multi-step improvements in both democracy and income (Taiwan and Korea), sudden transitions following authoritarian economic growth (Spain, Portugal, Hungary, Cyprus), and sudden transitions following authoritarian stagnation (Chile, Argentina).

Of course, we have only examined the relationship between two variables, democracy and development, and that relationship may be wholly mediated by other factors. As Hyden et al. (2004, p. 291) point out, "governance and democracy do not measure the same thing." It may be that good governance – respect for individual rights and property, adherence to the rule of law, provision of security and the fair administration of justice – lead to both democratization and economic growth, as many authors have argued (Hyden et al. 2004, Knack and Keefer 1995, North 1990, Olson

2003).   Lack of good governance in many lower-income democracies may contribute to both their political instability and their poor economic performance.

It may also be the case that stable democracies exhibit higher growth rates because of their stability of governance, rather than from democracy itself. Feng (2003, p. 296) has argued that while "the direct effect of democracy on growth is ambiguous, its indirect effects on growth – through its impact on the probabilities of regular and irregular government changes – are positive."   The argument that instability, or transition to democracy through a crisis, itself is harmful to economic growth has also been voiced by Alesina et al. (1996) and Haggard and Kaufmann (1995).   This would explain our common finding that many democratic transitions are followed by economic stagnation, while many poor countries that are born as democracies and remain stable exhibit strong growth. It is the uncertainty following the transition, rather than democracy itself, that is constraining further income growth.

However, the most important finding from the study of dynagraphs of democracy and development may lie in appreciating the characteristics of the trajectories of states *as a whole*, and their significance for how we study democratic transitions. Currently, most statistical analyses of democratic transitions (like that of Przeworski et al.) operate in a regression framework – individual transition events are abstracted from their extended historical context, and pooled to determine which factors on average raise or lower the probability of transition.   The assumption behind this procedure is that individual factors, or combinations of factors, have a consistent and continuous impact on the likelihood of democratic transition across cases and contexts, such that an incremental increase in one factors leads to an incremental response in the other.

Yet the variety and irregularity of the trajectories of democracy and development

seen above argue very strongly against that assumption. Consistent effects of democracy on development or of development on democracy across cases would lead to trajectories of continuous and regular curves, like the conic sections that dominate traditional economics. The curves in the dynagraphs we have examined show nothing of the sort. Rather, they show marked discontinuities and highly irregular cycles, nested in a finite set of recognizable but quite distinct patterns (transitions, bouncers, cycles).

The graphs of democratic transition for Hungary, Greece, Spain, and Portugal resemble nothing so much as an abrupt phase change, like the transition from solid to liquid when a certain combination of temperature and pressure are reached. We do not know the characteristic temperature and pressure to induce a phase change from dictatorship to democracy. However, it strikes us as worthy of note that every one of these countries experienced a transition to democracy in part because of the pressures or inducements of membership in the European Union. It may be that the pressures of such an external incentive, plus the 'temperature' increase generated by rising incomes, creates conditions for a sudden phase change of the type observed. By contrast, when states progress to democracy in the absence of such pressures or inducements, their pathways may be more gradual, with multiple shifts in levels of income and democracy (as not only in South Korea and Taiwan, but the 19th and 20th century history of progress toward democracy in the United Kingdom and United States, with gradual extension of the franchise accompanying long-term economic growth).

The paths traced by 'bouncers' and 'cyclers' resemble some of the 'strange attractor' cycles characteristic of chaotic phenomena (Gleick 1987). These dynamics seem best explained by a phenomenological approach that has little to do with linear and

continuous effects, but instead aims at explaining repetitive but seemingly unpredictable behavior.

Traditional pooled regressions in effect 'throw away' a great deal of readily available information by treating each transition as distinct, instead of as part of a longer trajectory that may have its own characteristic properties. Of course, one way to examine those trajectories is by narrative analysis (Linz and Stepan 1996, O'Donnell et al. 1986). Yet such analysis, however rich, also makes it difficult to deal with many dozens of cases at once, or to undertake precise quantitative analysis of the phenomena under study.

The study of dynagraphs overcomes both of these problems. We have created dynagraphs for over 150 countries; once constructed, they are relatively easy to study even in large numbers, and one can readily search for patterns that would be very difficult to discern in one hundred and fifty narrative case studies. In addition, the dynagraphs incorporate precise quantitative information on the level and movement of democracy and development over time and across cases, thus making it easy to test hypothesis that arise. But most important, we believe that familiarity with the variety of shapes and patterns in these trajectories will suggest entirely new approaches, and perhaps new mathematical or statistical tools, for analyzing families of similar trajectories.

Clearly, the dynamics of democracy and development are varied and complex, and political scientists should not rest content with identifying the average tendencies of given variables across all cases. Instead, we need to uncover the dynamics that lie behind these various families of trajectories of change. We will never do that until we become familiar with those trajectories in greater detail. This paper barely begins to scratch the surface of what is possible, but we hope it will suggest new ways forward in analyzing the democracy/development relationship.

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