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Democracy and Economic Growth: How Regional Context Influences Regime Effects

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There is ongoing controversy as to whether political democracy inhibits or facilitates national economic growth. It is argued here that the answer to this question depends greatly on the regional political context within which democracy functions. In regions where social groups clamour for redistribution, as in Latin America, democracy may lead to populism and poor economic performance. Similarly, in regions where state elites are generally committed to promoting rapid industrialization, as in parts of Asia, democratic pressures may impede effective economic policy. However, in regions where patrimonialism is chronic, as in Sub-Saharan Africa, democracy may provide a useful mechanism for evicting grossly corrupt politicians and may therefore facilitate *higher* rates of economic growth. These regional arguments are tested statistically here and show that democratic governance constrains growth in Latin America and Asia yet facilitates growth in Africa. Sensitivity analyses indicate that these findings are fairly robust.

Does political democracy influence national economic growth rates? Few questions in comparative politics have attracted so much attention. After all, democracy is perhaps the most significant political advance of the twentieth century and there can be little question but that economic growth is a central policy goal of modern states. Any causal link between democracy and growth would have enormous implications. In the 1960s and 1970s, for instance, it was common to condone authoritarian rule by arguing that there is an inherent trade-off between democracy and economic growth.

There is now an enormous literature on the 'regime debate'.[1] While the first generation of scholars found a trade-off between democracy and growth, by the 1980s many studies were concluding exactly the opposite, namely that democracy facilitates growth. The most recent wave of statistical studies has generally yielded null findings. Given such varied findings, and the recent prevalence of null findings, most scholars have concluded that democracy has no clear effect on growth one way or another.[2]

My point of departure in this article is that although the statistical literature provides little evidence of regime effects, the case-study literature continues to suggest that democracy heavily influences economic growth. Specifically, many scholars of both Latin America and Asia have continued to argue that democracy inhibits growth, while scholars

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[1] Fully forty-eight studies are reviewed in Charles Kurzman, Regina Werum and Ross E. Burkhart, 'Democracy's Effect on Economic Growth: A Pooled Time-Series Analysis, 1951–1980', *Studies in Comparative International Development*, 37 (2002), 3–33. For good literature reviews, see Larry Sirowy and Alex Inkeles, 'The Effects of Democracy on Economic Growth and Inequality: A Review', *Studies in Comparative International Development*, 25 (1990), 126–57; Adam Przeworski and Fernando Limongi, 'Political Regimes and Economic Growth', *Journal of Economic Perspectives*, 7 (1993), 51–69.

[2] Prominent examples include John F. Helliwell, 'Empirical Linkages between Democracy and Economic Growth', *British Journal of Political Science*, 24 (1994), 225–48; Adam Przeworski, Michael E. Alvarez and José Antonio Cheibub, *Democracy and Development: Political Institutions and Well-Being in the World, 1950–1990* (Cambridge: Cambridge University Press, 2000).

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of Sub-Saharan Africa frequently suggest the opposite, namely that authoritarianism inhibits growth.

I argue that these seemingly contradictory arguments are in fact consistent with mainstream theory in the statistical literature. This literature has always been divided by two equally plausible sets of arguments. On the one hand, democracy might encourage a variety of inefficient policies, such as high wages, excessive government spending, weak property rights, etc. On the other hand, democracy allows citizens to evict politicians who adopt damaging policies. Although this point is rarely noted, one obvious implication of these theories is that democracy might have different effects in different contexts. When state officials are committed to promoting economic growth, but societal groups demand redistribution, then democracy hurts growth. By contrast, when state officials pursue self-enrichment at the national expense, societal groups can evict them and hence democracy will facilitate growth.

With this general point in mind, the seeming contradiction between different area-studies literatures becomes intelligible. In Latin America, where economic inequality is severe, many argue that democratic regimes often encourage redistributive policies that inhibit economic growth while authoritarian regimes are better at fending off such pressures. In Asia, analogously, 'developmental states' have focused heavily on promoting rapid economic growth, and scholars frequently note that democracy impedes officials' exclusive commitment to economic growth.

In the African context, by contrast, political analysis has focused less on class conflict or 'developmental states' and emphasizes instead the concept of patrimonialism, where political elites see the state as their personal patrimony. In this particular context, many scholars note that authoritarianism is probably *bad* for growth because it prevents the public from evicting corrupt politicians even when the national economy is crumbling.

Interestingly, these region-specific arguments have never been tested formally in cross-national data analysis. Instead, the literally dozens of studies on regime type have examined the entire universe of countries in the world for which there is data. To test whether the regional literature is correct, I examine the impact of democracy on economic growth in two sub-samples, differentiating between regions where democracy is expected to hurt growth (Latin America and Asia), versus regions where it is expected to help growth (Sub-Saharan Africa). I find strong evidence that regime effects are in fact region-specific. In the Latin American and Asian countries, democracy has a significant *negative* effect on economic growth. In the African countries, by stark contrast, democracy has a significant *positive* effect on economic growth.

Moreover, these intriguingly opposite effects are robust to various statistical specifications. Most strikingly, this finding is strongly evident in a wide variety of time periods between 1960 and 2000, and is confirmed by both cross-sectional and time-series cross-sectional analyses. Moreover, the findings are relatively robust to many sensitivity analyses, such as dropping influential observations and alternative control variables. The findings, in sum, suggest that democracy does have an effect on economic growth, but that this effect is highly contingent upon the broader political context.

THEORY

There is no shortage of theory in the regime debate. Indeed, the main limitation is not a lack of plausible reasons to believe that democracy will influence growth, but rather

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insufficient attention to exploring why these influences will be more or less applicable in specific historical circumstances. I begin by discussing the most common arguments for and against democracy, and then explain how the area-studies literatures shed light on why these arguments may be differentially applicable in different regional contexts.

Democracy's Negative Effects

The pessimistic view of democracy became prominent in the 1960s, with Huntington's argument that in newly democratic developing countries citizen demands will rapidly escalate and generate high levels of government spending.[3] This reduces the surplus available for investment, with a consequent negative effect on economic growth.

A second, more recent, critique of democracy stems from the neoclassical political economy literature. Olson, for instance, argues that special-interest groups unduly influence state policy, reaping particularistic privileges that damage the overall economy.[4] Olson hints that democracy might exacerbate this problem, given that it provides interest groups with a wide scope for organization and lobbying.[5]

Finally, Przeworski and Limongi resurrect the nineteenth-century argument that democracy undermines the security of property rights by providing the dispossessed with a powerful political tool for expropriating the wealth of property-holders, a process that could lead to considerable economic uncertainty and thus lower economic growth.[6]

While these three arguments differ in important ways, they share in common a vision of democracy as opening the floodgates for demands upon the state. Democracy allows class demands to be better represented, whether through bad fiscal policy or more radical policies that threaten property rights. More generally, democracy opens up many avenues of representation, allowing for rent-seeking and other demands upon the state. An obvious corollary of these theories is that where demands upon the state are more pervasive, democracy's negative effects will be higher.

Democracy's Positive Effects

The argument that democracy has positive effects is more recent, but it is also compelling. Most fundamentally, democracy allows us to 'throw the rascals out'. If politicians fail to manage the economy as citizens wish, the electoral mechanism gives citizens the ability to evict these politicians. This provides a powerful check against executives who utilize their power to enrich themselves and their cronies.

North, for instance, argues that elites will generally prey upon societies unless constrained by democratic institutions.[7] Bueno de Mesquita *et al.* similarly argue that authoritarian leaders have few checks on arbitrary power and thus engage in cronyism and

[3] Samuel H. Huntington, *Political Order in Changing Societies* (New Haven, Conn.: Yale University Press, 1968).

[4] Mancur Olson, *The Rise and Decline of Nations: Economic Growth, Stagflation, and Social Rigidities* (New Haven, Conn.: Yale University Press, 1982).

[5] Olson, *The Rise and Decline of Nations*, p. 77.

[6] Przeworski and Limongi, 'Political Regimes and Economic Growth'.

[7] Douglas North, *Institutions, Institutional Change, and Economic Performance* (Cambridge: Cambridge University Press, 1990).

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corruption.[8] Olson, along with Przeworski and Limongi, provide analogous, albeit somewhat more complicated, arguments.[9]

Just as the pessimistic vision of democracy yields the corollary that democracy will hurt growth more in regions with high demands upon the state, so does the optimistic vision of democracy yield the corollary that democracy will facilitate growth primarily in regions in which state elites are particularly inclined to plunder the national economy for their own personal benefit. As I now demonstrate, regional specialists have long known that the relative salience of these contextual factors varies substantially across regions.

Latin America

A central theme in the Latin American literature is the region's high economic inequality and the distinctive political pressures that this generates. Substantial research agendas have evolved around the concept of 'macroeconomic populism', which refers to the phenomenon of politically-driven economic disequilibrium. The standard argument is that severe economic inequality in this region motivates politicians to promise higher wages and increased government spending, which in turn generates economic crises.[10] Such populist episodes have been common in recent decades.

Of course, pressures for redistribution exist in all regional contexts, but Latin America is unique in its extreme inequalities. Data on income inequality shows that of sixteen Latin American countries, all but two were more unequal than the average in all other regions in the world.[11] Most analysts argue that this severe inequality is the reason macroeconomic populism is much more prevalent in Latin America than elsewhere.[12]

Populism is not restricted to democratic regimes, but elections obviously exacerbate the pressure for redistribution and higher government spending, and it is no surprise that the worst episodes of populism have occurred under democratic governance. The literature on Bureaucratic-Authoritarianism, for instance, shows how Latin American democracies succumbed to populist pressure and economic crises in the 1960s and early 1970s.[13] More recently, the structural adjustment literature has noted that the transition to democracy in

[8] Bruce Bueno de Mesquita, James D. Morrow, Randolph Siverson and Alastair Smith, 'Political Competition and Economic Growth', *Journal of Democracy*, 12 (2001), 58–72.

[9] Mancur Olson, 'Dictatorship, Democracy, and Development', *American Political Science Review*, 87 (1993), 567–76; Przeworski and Limongi, 'Political Regimes and Economic Growth'. While electoral control over politicians is probably the most fundamental economic defence of democracy, some emphasize as well democracy's positive microeconomic effects – facilitating information transfer and generating a stable investment climate. For a review, see Sirowy and Inkeles, 'The Effects of Democracy on Economic Growth and Inequality'.

[10] Jeffrey D. Sachs, 'Social Conflict and Populist Policies in Latin America', NBER Working Paper No. 2897, Cambridge, Mass., 1989; Rudiger Dornbusch and Sebastian Edwards, eds, *The Macroeconomics of Populism in Latin America* (Chicago: University of Chicago Press, 1991).

[11] Kelley Hoffman and Miguel Angel Centeno, 'The Lopsided Continent: Inequality in Latin America', *Annual Review of Sociology*, 29 (2003), 363–90, p. 365.

[12] Robert Kaufman and Barbara Stallings, 'The Political Economy of Latin American Populism', in Rudiger Dornbusch and Sebastian Edwards, eds, *The Macroeconomics of Latin American Populism* (Chicago: University of Chicago Press, 1991); Sachs, 'Social Conflict and Populist Policies in Latin America'.

[13] Guillermo A. O'Donnell, *Modernization and Bureaucratic-Authoritarianism: Studies in South American Politics* (Berkeley, Calif.: Institute of International Studies, 1973); David Collier, ed., *The New Authoritarianism in Latin America* (Princeton, N.J.: Princeton University Press, 1979).

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Latin America in the 1980s generated heavy demands on the state and led to hyperinflation in Argentina, Brazil and Uruguay.[14]

None of this is to say that in Latin America democracy always hurts growth, or even that the regime hypothesis has been uncontested. Remmer provides tabular data suggesting that Latin American democracies responded as well as authoritarian regimes to the debt crisis of the 1980s.[15] Remmer also shows that democracies in Latin America have been admirably able to avoid political business cycles.[16] Nonetheless, a persistent theme in the area-studies literature is that democracy, in a context of severe economic inequality, has frequently led to bad economic policy.

Asia

Scholars of Asia also argue that authoritarianism has been growth enhancing, but the causal logic is substantially different. Simply put, parts of Asia are unique in the high degree to which state elites have been committed to promoting economic growth, and this single-minded commitment has generally been facilitated by authoritarian rule, which prevented societal groups from redirecting state energies.

This line of reasoning is especially prevalent in the large literature on Asian 'developmental states'. The developmental state literature emphasizes that activist states were the main cause of spectacular economic success in Taiwan, Korea and Japan – and played a significant role in other Asian nations as well. Developmental states controlled national financial systems and allocated funds to industrial exporters at subsidized rates. More generally, these states utilized a wide range of promotional schemes to encourage national industrialization, including infrastructure construction, temporary trade protection, tax breaks, loan guarantees, recruitment of foreign engineers, etc.[17]

Industrial policies often lead to inefficiency, but in the Asian context they succeeded spectacularly. Two key facilitating conditions were a highly educated and trained bureaucracy,[18] and a strong commitment among state elites to rapid economic growth over all other goals, which itself was largely due to the severe security threats many countries faced.[19] Within this context, state activism facilitated rapid growth and therefore anything that distracted state elites from this project threatened growth. For this reason, conventional wisdom holds that authoritarianism was an important component of the Asian miracle.

[14] Barbara Stallings and Robert Kaufman, eds, *Debt and Democracy in Latin America* (Boulder, Colo.: Westview Press, 1989).

[15] Karen L. Remmer, 'Democracy and Economic Crisis: The Latin American Experience', *World Politics*, 42 (1990), 315–35.

[16] Karen L. Remmer, 'The Political Economy of Elections in Latin America, 1980–1991', *American Political Science Review*, 87 (1993), 393–407.

[17] The developmental state literature is enormous. Prominent examples include Alice H. Amsden, *Asia's Next Giant: South Korea and Late Industrialization* (New York: Oxford University Press, 1989); Robert Wade, *Governing the Market: Economic Theory and the Role of Government in East Asian Industrialization* (Princeton, N.J.: Princeton University Press, 1990); Peter Evans, *Embedded Autonomy: States and Industrial Transformation* (Princeton, N.J.: Princeton University Press, 1995).

[18] World Bank, *The East Asian Miracle: Economic Growth and Public Policy* (Oxford: Oxford University Press, 1993); Evans, 'Embedded Autonomy'.

[19] Bruce Cumings, 'The Origins and Development of the Northeast Asian Political Economy: Industrial Sectors, Product Cycles, and Political Consequences', *International Organization*, 38 (1984), 1–40; David C. Kang, *Crony Capitalism: Corruption and Development in South Korea and the Philippines* (Cambridge: Cambridge University Press, 2002).

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Korea's success, for instance, is generally seen to have got under way after a military coup in 1961, after which the government ignored societal protests and liberalized international trade and promoted exporters.[20] Likewise, Taiwan grew rapidly under an authoritarian and corporatist state that could ignore societal demands and single-mindedly concentrated resources on the national economy.[21] Even Japan, which was nominally democratic, benefited from 'soft authoritarianism', where state bureaucrats were shielded from societal pressures by decades of single-party rule.[22]

More generally, throughout East Asia authoritarian governments quashed labour groups and thereby maintained 'flexible' labour markets.[23] Authoritarianism also provided state elites with autonomy from capitalist groups, allowing states to promote industrialists without becoming beholden to rent-seeking pressures.[24]

While most of the literature has focused on the positive economic role played by authoritarianism, Bardhan forcibly puts forth a complementary argument, namely that democracy was a leading cause of India's chronic stagnation.[25] Farming groups, labour groups and industrial groups were powerful societal actors and to maintain political support the state elites appeased these groups through massive subsidies, which in turn led to substantial falls in public investment. All in all, as in Latin America, the area-studies literature in Asia frequently suggests that authoritarianism is better able to generate economic growth than democracy.

Africa

While the economic effects of regime type have been a heavily studied topic in East Asia and Latin America, it has received substantially less attention in Africa.[26] To the extent that scholars do address the issue, the argument is often that authoritarianism is *bad* for growth. Why this stark difference?

One important reason that authoritarianism is not economically efficacious in Africa is that clientelism, patrimonialism and corruption are all much more pervasive in Africa than other regions. These three concepts are interrelated, and each is the subject of large literatures, but the core idea is that in Africa the public and private spheres are not clearly

[20] Anne O. Krueger, *The Development of the Foreign Sector and Aid, Studies in the Modernization of the Republic of Korea: 1945–1975* (Cambridge, Mass.: Harvard University Press, 1979); Stephan Haggard, *Pathways from the Periphery: The Politics of Growth in the Newly Industrializing Countries* (Ithaca, N.Y.: Cornell University Press, 1990).

[21] Wade, *Governing the Economy*.

[22] Chalmers Johnson, *MITI and the Japanese Miracle: The Growth of Industrial Policy, 1925–1975* (Stanford, Calif.: Stanford University Press, 1982); Chalmers Johnson, 'Political Institutions and Economic Performance: The Government-Business Relationship in Japan, South Korea, and Taiwan', in Frederic C. Deyo, ed., *The Political Economy of the New East Asian Industrialism* (Ithaca, N.Y.: Cornell University Press, 1987).

[23] Frederic C. Deyo, *Beneath the Miracle: Labor Subordination in the New Asian Industrialism* (Berkeley: University of California Press, 1989); Stephan Haggard, 'Politics and Institutions in the World Bank's East Asia', in Robert Wade *et al*., *Miracle or Design: Lessons from the East Asian Experience* (Washington, D.C.: Overseas Development Council, Policy Essay No. 11, 1994), pp. 98–105.

[24] Amsden, *Asia's Next Miracle*; Evans, *Embedded Autonomy*.

[25] Pranab Bardhan, *The Political Economy of Development in India* (Oxford: Basil Blackwell, 1984).

[26] The norm in African studies is to view Sub-Saharan Africa as a distinct political context, and to relegate Mediterranean Africa to another category of analysis. I follow this tradition and use the term 'Africa' to refer solely to Sub-Saharan Africa.

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delineated, such that politicians treat public resources and public office as their own personal patrimony. This tendency pervades African political systems:

> One individual (the strongman, 'big man,' or 'supremo'), often a president for life, dominates the state apparatus and stands above its laws. Relationships of loyalty and dependence pervade a formal and administrative system, and officials occupy bureaucratic positions less to perform public service, their ostensible purpose, than to acquire personal wealth and status. Although state functionaries receive an official salary, they also enjoy access to various forms of illicit rents, prebends, and petty corruption, which constitute a sometimes important entitlement of office. The chief executive and his inner circle undermine the effectiveness of the nominally modern state administration by using it for systemic patronage and clientelist practices …[27]

Of course, clientelism is present in almost all countries, but the *degree* to which it exists varies dramatically. As Bratton and van de Walle note, 'although neopatrimonial practices can be found in all polities, it is the *core* feature of politics in Africa'.[28] As such, whereas political elites in Latin America and Asia often serve the public good by promoting economic development, the modal pattern in Sub-Saharan Africa is to use public office to pursue one's own enrichment. To give merely one example, in Zaire President Mobuto took control in 1965 and over the ensuing twenty-five years he managed to greatly enrich himself while letting the national economy crumble.[29]

In any democracy, citizens would have evicted Mobuto, but authoritarian rule prevented electoral challenges to his rule. More generally in Africa, authoritarianism has been a way for clientelistic presidents to maintain power despite gross mismanagement of the economy. Accordingly, a common theme in the literature on African patrimonialism is that authoritarianism insulates clientelistic executives from exploited populations.[30]

To sum up, I have argued that both sides of the regime debate are correct, but that the degree to which they are correct depends upon the prevailing political context. When redistributive pressures loom large, or when state elites are otherwise inclined to pursue economic growth, then authoritarianism is efficacious. Conversely, when patrimonialism is rampant, democracy is more efficacious. Presumably both effects operate in all nations, but the area-studies literature suggests that democracy's negative effects are most salient in Latin America and Asia, while democracy's positive effects are most salient in Africa. My central hypotheses, therefore, are that democracy inhibits growth in Latin America and Asia but facilitates growth in Africa.

METHOD

The primary innovation of this article is to note that regime effects might vary depending upon the regional political context. Given the widely varied findings reported in previous studies, I test the argument under a variety of specifications to assess whether any results are robust and hence relatively believable. First, I test the above arguments in a variety of different periods. Secondly, I use both cross-sectional and time-series cross-sectional

[27] Michael Bratton and Nicolas van de Walle, *Democratic Experiments in Africa: Regime Transitions in Comparative Perspective* (Cambridge: Cambridge University Press, 1997), p. 63.

[28] Bratton and van de Walle, *Democratic Experiments in Africa*, p. 62, emphasis in original.

[29] Evans, *Embedded Autonomy*.

[30] See, for instance, Richard Sandbrook, *The Politics of Africa's Economic Stagnation* (Cambridge: Cambridge University Press, 1985); Bratton and van de Walle, *Democratic Experiments*; Nicolas van de Walle, *African Economies and the Politics of Permanent Crisis, 1979–1999* (Cambridge: Cambridge University Press, 2001).

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data. Thirdly, I drop 'influential observations' to ensure outliers do not drive findings. Fourthly, I utilize alternative sets of control variables.

Statistical Techniques

The literature has traditionally used simple cross-sectional (CS) regression to test the effect of democracy on economic growth, and I begin with such tests. These analyses are in some ways preferable to time-series cross-sectional (TSCS) models, given that they avoid the pitfalls of time-series analysis and they directly address the *long-run* impact of democracy on economic growth across many decades.

However, TSCS models have become increasing prevalent in political science because they contain distinct advantages over CS models, namely that they allow for larger samples and provide a more fine-grained analysis by examining short periods. Given that both approaches have advantages and disadvantages, I employ both.

Concerning time periods, I examine data from 1960 to 2000, a substantially longer period than in all previous studies.[31] To provide better comparability with most existing studies, which generally examine periods of about two decades, I additionally divide the data into two parts (1960–80 and 1980–2000). This implicitly provides a good test of the robustness of findings over time, and the dividing year of 1980 is a particularly meaningful one given that rising international interest rates and rising petroleum prices around 1980 threw the Third World into prolonged crisis.[32]

The TSCS models examine shorter periods, including both five-year and ten-year averages from 1960 to 2000. I do not examine one-year averages, following Kurzman *et al.*'s observation that business cycles and other random 'noise' seriously cloud one-year analyses, resulting in extremely low correlation coefficients and a lack of significance for most variables.[33]

All TSCS analyses utilize panel-corrected standard errors.[34] Pooled data of this sort can contain various sources of bias, namely non-stationarity, correlated error terms across time, correlated error terms across countries, and differing variances in different panels (heteroscedasticity). Tests indicate that the dependent variable (five-year growth averages and ten-year growth averages) is stationary, which removes one source of bias.[35] The data exhibit some auto-correlation, so an AR(1) process is utilized in all analyses.[36] To adjust

[31] See, for instance, the studies reviewed in Kurzman, Werum and Burkhart, 'Democracy's Economic Effects'.

[32] William Easterly, 'The Lost Decades: Developing Countries' Stagnation in Spite of Policy Reform, 1980–1998', *Journal of Economic Growth*, 6 (2001), 135–57, emphasizes this stark rupture around 1980, noting that the median rate of economic growth in developing countries fell to 0.0 per cent in the two decades after 1980.

[33] Kurzman, Werum and Burkhart, 'Democracy's Economic Effects'.

[34] Nathaniel Beck and Jonathan N. Katz, 'What do Do (and Not do Do) with Time-Series-Cross-Section Data in Comparative Politics', *American Political Science Review*, 89 (1995), 634–47.

[35] The Im-Pesaran-Shin test and the Levin-Lin-Chu both reject the hypothesis of non-stationarity. Kyung So Im and M. Hashem Pesaran, 'Testing for the Unit Roots in Heterogenous Panels', *Journal of Econometrics*, 115 (2003), 53–74; Andrew Levin, Chien-Fu Lin and Chia-Shang James Chu, 'Unit Root Tests in Panel Data: Asymtotic and Finite Sample Properties', *Journal of Econometrics*, 108 (2002), 1–24.

[36] Wooldridge tests confirm the presence of auto-correlation (see J. M. Wooldridge, *Econometric Analysis of Cross-Section and Panel Data* (Cambridge, Mass.: MIT Press, 2002)). All AR(1) corrections were panel-specific. The AR(1) process is a better way to correct autocorrelation than a lagged dependent variable, both because there is no theoretical reason to believe that lagged growth in one period should influence lagged growth in another period, and because leaving out lagged growth provides a better test of what we want to know, namely the effect of democracy on average growth, rather than the effect of democracy on the *change* in growth across periods.

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for any heteroscedasticity or correlated errors across countries, I utilize panel corrected standard errors. To correct for changing global economic conditions, such as the advent of the debt crisis, dummy variables are included for each time period.[37]

Variables

Democracy is measured by the 'polity' score from Polity IV, which provides a 21-point scale that combines various components of democracy: competitiveness of political participation, regulation of political participation, competitiveness of executive recruitment, openness of recruitment and constraints on the chief executive. This Polity measure has been increasingly used in regime studies.[38] Moreover, it is the only index currently available through the entire period of this study (1960–2000).[39] The Polity measure is averaged over any given growth period.

To control for other determinants of economic growth, all analyses employ a set of variables that have been repeatedly shown to influence growth in prior studies. Sources for all variables are discussed in the Appendix. Taking each in turn:

(1) Neoclassical growth theory suggests that, given diminishing returns to capital, rich countries should grow less rapidly than poor countries. Barro proxies wealth using the log of 'initial' (i.e., at the start of any given growth period) per capita gross domestic product (GDP) and this variable has become a mandatory control in statistical analyses of growth.[40]
(2) Endogenous growth theories and human capital theories suggest that higher levels of initial secondary-school attainment facilitate growth. The underlying intuition is that human capital increases the productivity of labour, elevates technological progress and facilitates technological transfers from richer countries.[41]
(3) The inclusion of initial life expectancy is also suggested by human capital theories. The intuition is that healthier workers have greater productivity, since workers are more able to work diligently, for longer hours, without succumbing to debilitation. It is likely that these factors are particularly important in developing countries, since much labour is physically strenuous and citizens' overall health is more likely to be

(F'note continued)
Practically, however, it does not matter which technique is used to correct for autocorrelation given that all regime effects reported in Tables 2 and 3 were also statistically significant after including a lag of the dependent variable (results available from author upon request).

[37] See David Leblang, 'Political Democracy and Economic Growth: Pooled Cross-Sectional and Time-Series Evidence', *British Journal of Political Science*, 27 (1997), 453–72, for previous use of period-dummies in pooled analyses of regime effects. To conserve space, the coefficients for time dummies are not reported in the tables but are available from the author upon request.

[38] See, for instance, Leblang, 'Political Democracy and Economic Growth'; Kurzman, Werum and Burkhart, 'Democracy's Economic Effects'.

[39] For a discussion of the strengths and weaknesses of various indices of democracy, see Gerardo C. Munck and Jay Verkuilen, 'Conceptualizing and Measuring Democracy: Evaluating Alternative Indices', *Comparative Political Studies*, 35 (2002), 5–34.

[40] Robert Barro, *Determinants of Economic Growth: A Cross-Country Empirical Study* (Cambridge, Mass.: MIT Press, 1997).

[41] Barro, *Determinants of Economic Growth*. The education attainment data is not available for the year 1995, so for TSCS this data is extrapolated from previous periods. The same is done for the years 1990 and 1995 for the education enrolment data used in Tables 8 and 9.

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salient than with respect to white-collar jobs. The typical measure of health is the log of average life expectancy.[42]

(4) The inclusion of average population growth over the period is suggested by some fertility theories, which suggest that as family size increases parents diminish their average investment in each child.[43]

(5) The inclusion of tropical climate is suggested by Sachs and Warner, who argue that agricultural productivity and health is lower in tropical climates.[44] Subsequent studies have found that this variable significantly influences growth. Tropical climates are defined as those that lie between the tropic of Cancer and the tropic of Capricorn.

(6) The inclusion of a measure of institutional quality has been popularized by Knack and Keefer, who argue that state institutions that protect property rights facilitate economic growth.[45] I utilize the standard measure, namely the average of five scales provided by the International Country Risk Guide (ICRG), namely: Corruption, Rule of Law, Bureaucratic Quality, Repudiation of Government Contracts, and Expropriation Risk.

While earlier growth studies frequently included investment as a control variable, it is increasingly recognized that this is inappropriate.[46] First, investment is endogenous, with rapid rates of growth leading to higher levels of investment. Secondly, and even more pertinent, investment is an *intervening* variable rather than an independent variable and it is therefore inappropriate to control for its effects.[47] Democracy might influence growth either through increasing the efficiency of a *given* level of investment, or by increasing the level of investment itself. If we want to examine the overall effect of democracy, it is important to exclude investment from the analysis.

Yet if democracy does have an effect, then controlling for investment can help clarify the nature of this effect. If the effect remains equally strong after controlling for investment, then democracy is influencing economic efficiency only, and has no indirect effect through investment.[48] If the effect changes after controlling for investment, by contrast, then part of democracy's effect is indirect, via investment levels. When seeking to determine which of these mechanisms is mediating the regime effect, I include investment as an additional control variable.

While the six variables above are probably the most prominent variables in the literature, based on both theoretical and empirical grounds, others have been utilized as well. To check the robustness of the results, in some analyses I include four additional variables. As noted below, there are good reasons to exclude these in baseline analyses, but given

[42] Barro, *Determinants of Economic Growth*.

[43] Gary Becker, Kevin Murphy and Tamura Robert, 'Human Capital, Fertility, and Economic Growth', *Journal of Political Economy*, 98 (1990) Special Issue, S12–37.

[44] Jeffrey Sachs and Andrew M. Warner, 'Sources of Slow Growth in African Economies', *Journal of African Economies*, 6 (1997), 335–76.

[45] Stephen Knack and Philip Keefer, 'Institutions and Economic Performance: Cross-Country Tests Using Alternative Institutional Measures', *Economics and Politics*, 7 (1995), 207–28.

[46] Michael Bleaney and Akira Nishiyama, 'Explaining Growth: A Contest between Models', *Journal of Economic Growth*, 7 (2002), 43–56, p. 44.

[47] Gary King, Robert O. Keohane and Sidney Verba, *Designing Social Inquiry: Scientific Inference in Qualitative Research* (Princeton, N.J.: Princeton University Press, 1994), p. 78.

[48] Przeworski and Limongi, 'Political Regimes and Economic Growth', note this frequently overlooked point, namely that if we control for investment then the coefficient on democracy reflects only the economic efficiency with which a given amount of investment is utilized.

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that they have been used in some previous studies it is appropriate to examine whether their inclusion alters the findings.

(1) Government spending is a common control variable, and it is hypothesized to reduce growth by shifting resources from the private sector to the public sector (which is often considered relatively less efficient). Government spending is one of the variables that is arguably influenced by democracy, however, and is thus largely an intervening variable and probably best left out of most models.
(2) Trade openness is expected to influence growth positively. According to Ricardo's theory of comparative advantage, state-induced deviation from free trade will merely employ the world's resources inefficiently and reduce world output. Again, this is not included in the baseline models since regime type may influence public policies.
(3) Initial per capita GDP squared has been used in some studies, and has been interpreted as capturing any possible non-linearity from the effect of initial GDP.[49] I do not include this in the baseline model, however, because economic theory does not suggest that GDP should have curvilinear effects and this variable is rarely used.
(4) Growth of the labour force compared to the overall population has been argued to influence economic growth, given that this provides more workers for a given level of per capita GDP.[50] This variable is rarely used in empirical analyses, but represents a plausible additional control variable to include in the sensitivity analyses.

RESULTS

Almost all previous studies of regime type have ignored the importance of regional context and have simply tested the relationship in all countries in the world for which data can be gathered. Table 1 provides a similar analysis. Unlike most studies, the table examines the relationship not just in one period but a variety of periods. Regardless of which period is chosen, the result is the same, namely that democracy has no influence on economic growth. This null result holds for the entire period 1960–2000, as well as for the two sub-periods, 1960–80 and 1980–2000. Null results also obtain in pooled analyses, using either five-year or ten-year averages. All in all, Table 1 confirms today's conventional wisdom, which is that democracy has no effect on growth.

Latin America and Asia

I have argued that while democracy may have no effect in a full sample of countries, it may well have a negative effect in Latin America and Asia – two regions where scholars have long argued that authoritarianism prevents societal actors from distracting state elites from pursuing growth-enhancing policies. Table 2 tests this argument.

Column 1 indicates that over the long run, 1960–2000, democracy does have a negative effect on economic growth, and the relationship is strongly significant ($p < 0.01$). Moreover, given how fragile previous findings have been to different time periods, it is noteworthy that this relationship is also significant in both of the shorter periods, 1960–80

[49] William Easterly and Ross Levine, 'Africa's Growth Tragedy: Policies and Ethnic Divisions', *Quarterly Journal of Economics*, 112 (1997), 1203–50; Bleaney and Nishiyama, 'Explaining Growth'.

[50] Sachs and Warner, 'Sources of Slow Growth in African Economies'; Bleaney and Nishiyama, 'Explaining Growth'.

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TABLE 1 *All Countries*

	(1) 1960–2000	(2) 1960–80	(3) 1980–2000	(4) Pooled 5-year	(5) Pooled 10-year
ln Life Expectancy	5.533**	8.643**	6.688**	7.546**	6.546**
	(5.43)	(6.12)	(3.50)	(3.79)	(7.58)
ln Initial GDP	− 1.725**	− 1.784**	− 2.212**	− 2.012**	− 1.615**
	(6.90)	(4.86)	(6.09)	(4.50)	(3.25)
Education	0.004	− 0.005	0.016	0.006	0.002
	(0.37)	(0.33)	(1.02)	(0.74)	(0.30)
Population Growth	− 0.197	0.322	− 0.568*	− 0.303	0.036
	(0.96)	(1.19)	(2.20)	(1.70)	(0.17)
Climate	− 1.046**	− 0.387	− 1.571**	− 1.502**	− 1.266**
	(2.87)	(0.72)	(3.20)	(5.74)	(5.35)
Institutions	0.117	0.367**	0.163	0.213	0.312*
	(1.39)	(2.98)	(1.46)	(1.08)	(2.24)
Democracy	0.023	− 0.030	0.024	0.009	− 0.011
	(0.69)	(0.87)	(0.58)	(0.32)	(0.47)
Constant	− 6.476	− 20.39**	− 7.422	− 12.74*	− 13.42**
	(1.74)	(4.08)	(1.10)	(2.44)	(3.72)
Observations	70	76	75	630	311
Countries	70	76	75	85	85
R^2	0.59	0.44	0.48	0.33	0.52

Notes: Absolute value of *t* statistics or *z* statistics in parentheses. Dependent variable is average growth in per capita GDP during the period specified.
Columns 1–3 present OLS regression results from cross-sectional data and report adjusted R^2.
Columns 4–5 present results from pooled time-series cross-sectional data and report R^2.
*Significant at 5 per cent; **significant at 1 per cent.

and 1980–2000.[51] This is particularly notable given that the two periods are essentially two independent samples.[52]

While cross-sectional analyses have long dominated the study of regime effects, more recently a few studies have employed time-series cross-sectional models, pooling data across countries and time into a single analysis.[53] To test the robustness of results, columns 4 and 5 conduct pooled analyses, using five-year and ten-year growth periods. The results again confirm that democracy negatively influences growth, with $p < 0.001$

[51] An alternative demarcation point could be the year 1982, when Mexico defaulted on its international debt and triggered the Third World debt crisis. I therefore re-ran the models in columns 2 and 3 for Tables 2–9 using slightly different periods, namely 1960–82 and 1982–2000. All of the findings that are significant in those tables remain significant at $p < 0.05$ with a one-tailed test using this alternative demarcation point (results available from author upon request).

[52] The simple r^2 between growth in 1960–1980 and growth in 1980–2000 is 0.12 for the full sample, 0.00 for Africa, and 0.15 for Latin America and Asia. Growth in the second period is not merely a 'replication' of growth in the first period.

[53] See, for example, Leblang, 'Political Democracy and Economic Growth'; Przeworski *et al.*, *Democracy and Development*; Kurzman, Werum and Burkhart, 'Democracy's Economic Effects'.

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TABLE 2 *Latin America and Asia*

	(1) 1960–2000	(2) 1960–80	(3) 1980–2000	(4) Pooled 5-year	(5) Pooled 10-year
ln Life Expectancy	1.422	3.306	− 1.488	3.381*	2.736
	(0.88)	(1.54)	(0.45)	(2.17)	(1.93)
ln Initial GDP	− 1.582**	− 1.250**	− 1.834**	− 1.848**	− 1.915**
	(4.73)	(2.84)	(4.39)	(4.14)	(4.58)
Education	0.011	0.033	0.031	0.053**	0.043**
	(0.64)	(1.50)	(1.22)	(5.09)	(10.03)
Population Growth	− 0.560	− 0.159	− 0.975*	0.097	0.031
	(1.77)	(0.43)	(2.49)	(0.35)	(0.27)
Climate	0.184	1.071	− 0.014	0.026	0.010
	(0.40)	(1.87)	(0.02)	(0.06)	(0.07)
Institutions	0.677**	0.859**	0.785**	0.799**	0.887**
	(5.32)	(5.61)	(4.40)	(4.29)	(3.95)
Democracy	− 0.120**	− 0.161**	− 0.158*	− 0.100**	− 0.133**
	(2.87)	(4.04)	(2.78)	(3.23)	(8.57)
Constant	6.615	− 5.635	20.765	− 2.021	1.834
	(1.29)	(0.82)	(1.82)	(0.31)	(0.22)
Observations	30	32	31	261	129
Countries	30	32	31	34	34
R^2	0.74	0.69	0.74	0.41	0.67

Notes: Absolute value of *t* statistics or *z* statistics in parentheses. Dependent variable is average growth in per capita GDP during the period specified.
Columns 1–3 present OLS regression results from cross-sectional data and report adjusted R^2.
Columns 4–5 present results from pooled time-series cross-sectional data and report R^2.
*Significant at 5 per cent; **significant at 1 per cent.

in both pooled analyses. Taken in conjunction, the five analyses in Table 2 strongly confirm that democracy had a negative effect on growth in a variety of time periods. While it is true that democracy has no effect on growth globally, it does have a robust negative effect within Latin America and Asia, just as area-studies scholars have long argued.

Africa

Following the logic that democracy will have different effects in different contexts, I argued earlier that in Africa democracy should have *positive* effects, given that patrimonialism generally leads to bad economic policy and elections provide a means for evicting corrupt politicians. Table 3 provides tests of this argument.

Consistent with expectations, column 1 shows that democracy had a *positive* influence on long-run economic growth during the entire period 1960–2000. This is a striking result, given that it is directly opposite to that reported in Table 2. Moreover, the regime effect is relatively robust over time. Democracy also had a positive effect during 1960–80, and

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TABLE 3 *Sub-Saharan Africa*

	(1) 1960–2000	(2) 1960–80	(3) 1980–2000	(4) Pooled 5-year	(5) Pooled 10-year
ln Life Expectancy	6.413*	12.257**	5.922	5.815**	2.886
	(2.66)	(3.96)	(0.91)	(2.74)	(1.59)
ln Initial GDP	− 1.615**	− 2.227**	− 1.650	− 3.318**	− 2.549*
	(3.64)	(3.51)	(1.40)	(3.26)	(2.53)
Education	0.077	− 0.018	− 0.034	− 0.001	− 0.011
	(1.03)	(0.19)	(0.49)	(0.02)	(0.28)
Population Growth	− 1.381	− 2.526*	− 1.117	− 0.803	0.270
	(1.69)	(2.89)	(0.69)	(1.88)	(0.43)
Climate	3.310	3.125	0.768	− 3.699*	− 2.612
	(1.39)	(1.09)	(0.16)	(2.41)	(1.60)
Institutions	0.329	1.241**	− 0.170	0.366	0.525
	(1.08)	(3.80)	(0.26)	(0.95)	(1.71)
Democracy	0.195*	0.209**	0.297	0.170**	0.189**
	(2.33)	(3.53)	(1.04)	(3.71)	(2.70)
Constant	− 12.528	− 29.751*	− 6.942	5.752	6.602
	(1.38)	(2.36)	(0.30)	(0.64)	(0.63)
Observations	16	18	16	141	70
Countries	16	18	16	20	20
R^2	0.51	0.76	0.02	0.32	0.52

Notes: Absolute value of *t* statistics or *z* statistics in parentheses. Dependent variable is average growth in per capita GDP during the period specified.
Columns 1–3 present OLS regression results from cross-sectional data and report adjusted R^2.
Columns 4–5 present results from pooled time-series cross-sectional data and report R^2.
*Significant at 5 per cent; **significant at 1 per cent.

in both pooled analyses. Only during 1980–2000 does democracy not have a statistically significant effect on growth rates.

These analyses suggest that democracy does influence economic growth, and that it does so differently in different regional contexts. Indeed, it is striking that democracy simultaneously has a significant positive effect in Table 3 and yet a significant negative effect in Table 2. The findings suggest that previous studies have conflated two quite different causal relationships when subsuming all countries into a single sample.

SENSITIVITY ANALYSES

One of the disturbing characteristics of the existing literature on regime type is that though many interesting findings have been reported, subsequent studies have shown that the results disappear with alternative specifications, such as new time periods, control variables, etc. Tables 1–3 improve upon the literature by showing that regime effects are relatively robust across time, and across cross-sectional and pooled analyses, but some further robustness testing is warranted.

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TABLE 4 *Latin America and Asia, Dropping Influential Cases*

	(1) 1960–2000	(2) 1960–80	(3) 1980–2000	(4) Pooled 5-year	(5) Pooled 10-year
ln Life Expectancy	1.422	4.607*	0.105	2.043	1.953
	(0.88)	(2.10)	(0.03)	(0.91)	(1.48)
ln Initial GDP	− 1.582**	− 1.436*	− 1.921**	− 1.555**	− 1.778**
	(4.73)	(2.79)	(4.94)	(4.60)	(4.54)
Education	0.011	0.049*	0.007	0.054**	0.034**
	(0.64)	(2.21)	(0.28)	(3.17)	(3.40)
Population Growth	− 0.560	− 0.207	− 1.022*	− 0.011	− 0.270
	(1.77)	(0.56)	(2.81)	(0.04)	(1.68)
Climate	0.184	1.543*	0.171	0.177	0.205
	(0.40)	(2.38)	(0.29)	(0.38)	(0.61)
Institutions	0.677**	0.780**	0.760**	0.817**	0.893**
	(5.32)	(4.85)	(4.59)	(6.52)	(7.44)
Democracy	− 0.120**	− 0.151**	− 0.147*	− 0.118**	− 0.144**
	(2.87)	(3.76)	(2.79)	(4.24)	(6.14)
Constant	6.615	− 9.441	15.370	1.045	4.785
	(1.29)	(1.44)	(1.42)	(0.13)	(0.72)
Observations	30	30	30	246	125
Countries	30	30	30	34	34
Dropped obs.	0	2	1	15	4
R^2	0.74	0.75	0.74	0.49	0.66

Notes: Absolute value of *t* statistics or *z* statistics in parentheses. Dependent variable is average growth in per capita GDP during the period specified.
Columns 1–3 present OLS regression results from cross-sectional data and report adjusted R^2.
Columns 4–5 present results from pooled time-series cross-sectional data and report R^2.
*Significant at 5 per cent; **significant at 1 per cent.

Specifically, the sensitivity analyses in Tables 4–11 replicate Tables 2–3 under four different conditions. Tables 4 and 5 examine whether dropping outliers changes the findings; Tables 6 and 7 examine whether additional control variables change the results; Tables 8 and 9 examine how an alternative measure of education influences the findings, and Tables 10 and 11 examine how the inclusion of investment influences results. For the most part, the results remain robust across these specifications, but some analyses yield additional insights into both the robustness and nature of democracy's effects.

Influential Observations

One issue is whether the strong results in Tables 2 and 3 might be driven by outliers rather than a more general relationship between democracy and growth. Jackman shows that the removal of even one outlier can render a reported relationship insignificant if the outlier is influential enough.[54] Cook's distance (*D*) measure provides a common test of

[54] Robert Jackman, 'The Politics of Economic Growth in Industrialized Countries, 1974–1980', *Journal of Politics*, 49 (1987), 242–56.

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TABLE 5 *Sub-Saharan Africa, Dropping Influential Cases*

	(1) 1960–2000	(2) 1960–80	(3) 1980–2000	(4) Pooled 5-year	(5) Pooled 10-year
ln Life Expectancy	5.763	12.357**	9.729	7.772**	5.191
	(2.46)	(4.02)	(1.39)	(4.56)	(1.82)
ln Initial GDP	− 1.814**	− 2.386**	− 2.204	− 3.096**	− 2.331**
	(4.12)	(4.09)	(1.79)	(5.86)	(3.34)
Education	− 0.103	− 0.019	− 0.037	0.013	− 0.031
	(1.01)	(0.15)	(0.54)	(0.65)	(0.73)
Population Growth	− 1.677	− 1.819	− 3.588	− 1.581**	− 0.157
	(1.98)	(1.81)	(1.41)	(4.02)	(0.30)
Climate	16.480	4.917	36.556	− 2.683	− 2.609
	(1.93)	(0.88)	(1.24)	(1.21)	(1.48)
Institutions	0.567	0.994	0.579	0.615**	0.236
	(1.82)	(2.21)	(0.66)	(3.25)	(0.73)
Democracy	0.451*	0.224**	0.539	0.184**	0.162**
	(2.83)	(3.86)	(1.58)	(7.07)	(2.73)
Constant	− 20.642	− 31.438	− 49.044	− 3.891	− 1.402
	(1.48)	(2.12)	(1.20)	(0.50)	(0.13)
Observations	13	16	15	135	67
Countries	13	16	15	20	20
Dropped obs.	3	2	1	6	3
R^2	0.79	0.81	0.14	0.36	0.33

Notes: Absolute value of *t* statistics or *z* statistics in parentheses. Dependent variable is average growth in per capita GDP during the period specified.
Columns 1–3 present OLS regression results from cross-sectional data and report adjusted R^2.
Columns 4–5 present results from pooled time-series cross-sectional data and report R^2.
*Significant at 5 per cent; **significant at 1 per cent.

'influence', in which an observation is considered influential if Cook's distance $(D_i) > 4/(n - k - 1)$.

Tables 4 and 5 replicate Tables 2 and 3 after dropping all influential observations.[55] As shown in the row labelled 'dropped obs.', in most of the analyses a few observations were in fact relatively influential. Although one should not necessarily eliminate such influential observations when evaluating an effect, it is important to assess whether results are solely dependent upon their inclusion.

Table 4 shows that democracy has a significant negative effect on economic growth in Asia and Latin America in all five columns even after dropping the influential cases. Table 5 similarly shows that influential cases are not responsible for the results in Africa. Democracy is significant in all analyses, again with the exception of column 3.

[55] In column 4 of Table 4 and column 5 of Table 5, dropping outliers implied that there were no time periods common to all panels, and hence panel-corrected standard errors could not be run. These two columns therefore utilize generalized least squares with correction for autocorrelation, using STATA's 'xtregar' command.

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Alternative Control Variables

Findings may be driven not only by outliers but also control variables. Levine and Renelt show that most commonly accepted growth 'determinants' are not robustly correlated with growth, in the specific sense that alternative control variables render most relationships insignificant in at least some analyses.[56] Sala-i-Martin goes even further, testing

TABLE 6 *Latin America and Asia, Additional Control Variables*

	(1) 1960–2000	(2) 1960–80	(3) 1980–2000	(4) Pooled 5-year	(5) Pooled 10-year
ln Life Expectancy	− 0.396	2.552	− 1.714	1.096	1.152
	(0.22)	(0.99)	(0.58)	(0.85)	(1.04)
ln Initial GDP	− 1.409**	− 0.541	− 1.379**	− 1.422**	− 1.632**
	(2.98)	(0.70)	(3.06)	(3.26)	(2.97)
Education	0.014	0.026	0.006	0.048**	0.041**
	(0.93)	(1.06)	(0.29)	(5.10)	(7.46)
Population Growth	− 0.857*	− 0.074	− 1.374**	− 0.044	− 0.153
	(2.69)	(0.17)	(4.28)	(0.18)	(1.35)
Democracy	− 0.090*	− 0.145**	− 0.137*	− 0.093**	− 0.121**
	(2.35)	(3.37)	(2.84)	(3.14)	(6.91)
Climate	− 0.673	0.399	− 0.132	− 0.461	− 0.386
	(1.09)	(0.52)	(0.19)	(1.11)	(1.80)
Institutions	0.515**	0.834**	0.953**	0.954**	1.027**
	(3.91)	(4.59)	(6.36)	(6.86)	(5.37)
Trade Openness	0.006	0.003	0.008	0.004	0.002
	(0.92)	(0.76)	(1.12)	(1.89)	(1.09)
Initial GDP (sqr.)	− 0.000	− 0.000	− 0.000**	− 0.000**	− 0.000**
	(0.19)	(1.13)	(3.00)	(3.82)	(8.50)
Government Spending	− 0.052	− 0.029	− 0.106**	− 0.112**	− 0.097**
	(1.99)	(0.79)	(3.84)	(3.92)	(11.57)
Labour Force	0.839*	0.136	− 0.809	0.452	0.155
	(2.15)	(0.22)	(1.40)	(1.39)	(0.81)
Constant	14.350*	− 7.035	21.343*	6.195	8.175
	(2.37)	(0.81)	(2.15)	(0.96)	(0.95)
Observations	30	32	31	261	129
Countries	30	32	31	34	34
R^2	0.81	0.67	0.85	0.57	0.80

Notes: Absolute value of *t* statistics or *z* statistics in parentheses. Dependent variable is average growth in per capita GDP during the period specified.
Columns 1–3 present OLS regression results from cross-sectional data and report adjusted R^2.
Columns 4–5 present results from pooled time-series cross-sectional data and report R^2.
*Significant at 5 per cent; **significant at 1 per cent.

[56] Ross Levine and David Renelt, 'A Sensitivity Analysis of Cross-Country Growth Regressions', *American Economic Review*, 82 (1992), 942–63.

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TABLE 7 *Sub-Saharan Africa, Additional Control Variables*

	(1) 1960–2000	(2) 1960–80	(3) 1980–2000	(4) Pooled 5-year	(5) Pooled 10-year
ln Life Expectancy	8.608	8.880	3.643	6.272*	1.251
	(2.77)	(1.56)	(0.82)	(2.10)	(0.68)
ln Initial GDP	− 2.435*	− 1.922	− 6.160**	− 2.826**	− 2.330**
	(3.10)	(1.64)	(6.29)	(3.23)	(3.31)
Education	− 0.011	− 0.021	0.162*	− 0.031	− 0.019
	(0.14)	(0.13)	(3.50)	(0.69)	(0.72)
Population Growth	− 1.732	− 1.272	− 7.217**	− 0.583	0.491
	(1.76)	(0.73)	(5.62)	(1.16)	(0.90)
Democracy	0.279	0.162	1.202**	0.156**	0.179**
	(2.50)	(1.35)	(5.97)	(3.16)	(3.09)
Climate	10.899	0.422	79.529**	− 6.869**	− 8.155**
	(1.10)	(0.04)	(5.13)	(3.42)	(5.05)
Institutions	0.430	0.866	2.397*	0.064	− 0.010
	(1.27)	(1.36)	(4.25)	(0.16)	(0.05)
Trade Openness	0.002	0.006	− 0.070*	0.021**	0.017**
	(0.24)	(0.63)	(3.94)	(3.87)	(3.83)
Initial GDP (sqr.)	0.000	− 0.000	0.000**	− 0.000	− 0.000**
	(1.10)	(0.04)	(5.00)	(1.12)	(5.01)
Government Spending	− 0.044	− 0.058	0.037	− 0.060*	− 0.078**
	(1.49)	(1.13)	(0.85)	(2.54)	(3.26)
Labour Force	− 0.704	0.511	0.124	0.039	1.373
	(0.82)	(0.20)	(0.13)	(0.04)	(1.73)
Constant	− 21.306	− 17.808	− 36.646	4.936	19.106*
	(1.62)	(0.77)	(2.35)	(0.44)	(1.97)
Observations	16	18	16	141	70
Countries	16	18	16	20	20
R^2	0.72	0.70	0.81	0.39	0.65

Notes: Absolute value of *t* statistics or *z* statistics in parentheses. Dependent variable is average growth in per capita GDP during the period specified.
Columns 1–3 present OLS regression results from cross-sectional data and report adjusted R^2.
Columns 4–5 present results from pooled time-series cross-sectional data and report R^2.
*Significant at 5 per cent; **significant at 1 per cent.

sixty-seven plausible growth determinants and showing that all but one is rendered insignificant in at least one set of control variables.[57]

While Sala-i-Martin shows that no relationship will be significant in all possible combinations of control variables, Tables 6 and 7 suggest that democracy's effects are at least fairly robust to the addition of four of the more commonly utilized variables in

[57] Xavier Sala-i-Martin, 'I Just Ran Two Million Regressions', *American Economic Review*, 87 (1997), 178–83.

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the literature, namely trade openness, government spending, GDP squared and labour force growth.

The results for Latin America and Asia are once again always significant, confirming the robustness of democracy's negative effect in these regions. An effect is also still apparent in Africa, with democracy significant in three of the five analyses. The pattern of results, however, is oddly the reverse of those in Tables 3 and 5. Democracy's effect is now significant during 1980–2000, but not during 1960–2000 and 1960–80, which is exactly the opposite of the findings in Table 3. The cross-sectional analyses, in short, are not robust to alternative specifications. The pooled analyses, however, are robust.

Alternative Measures of Education

Next, it is important to address a subtlety related to the measure of education. A decade ago most studies utilized educational *enrolment* to measure human capital, given that this was the only data widely available. More recently, Barro and Lee compiled data on

TABLE 8 *Latin America and Asia, Alternative Education Measure*

	(1) 1960–2000	(2) 1960–80	(3) 1980–2000	(4) Pooled 5-year	(5) Pooled 10-year
ln Life Expectancy	1.363	2.072	0.120	1.922	1.900
	(0.80)	(0.92)	(0.03)	(1.23)	(1.17)
ln Initial GDP	− 1.541**	− 1.108*	− 1.892**	− 1.592**	− 1.689**
	(4.65)	(2.58)	(4.33)	(2.90)	(2.81)
Education	0.059	3.866	0.026	1.843	1.211
	(0.03)	(1.57)	(0.01)	(1.94)	(1.35)
Population Growth	− 0.631	− 0.084	− 1.124*	− 0.077	− 0.084
	(1.87)	(0.22)	(2.67)	(0.24)	(0.51)
Democracy	− 0.120*	− 0.197**	− 0.157*	− 0.092*	− 0.139**
	(2.54)	(4.53)	(2.66)	(2.57)	(6.64)
Climate	0.174	1.303*	− 0.141	0.158	0.112
	(0.36)	(2.26)	(0.22)	(0.26)	(0.23)
Institutions	0.683**	0.907**	0.789**	0.770**	0.917**
	(5.33)	(6.22)	(4.28)	(4.20)	(5.49)
Constant	6.783	− 2.717	15.629	2.659	3.959
	(1.28)	(0.39)	(1.27)	(0.40)	(0.64)
Observations	30	32	31	262	130
Countries	30	32	31	34	34
R^2	0.73	0.69	0.72	0.30	0.59

Notes: Absolute value of *t* statistics or *z* statistics in parentheses. Dependent variable is average growth in per capita GDP during the period specified.
Columns 1–3 present OLS regression results from cross-sectional data and report adjusted R^2.
Columns 4–5 present results from pooled time-series cross-sectional data and report R^2.
*Significant at 5 per cent; **significant at 1 per cent.

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TABLE 9 *Sub-Saharan Africa, Alternative Education Measure*

	(1) 1960–2000	(2) 1960–80	(3) 1980–2000	(4) Pooled 5-year	(5) Pooled 10-year
ln Life Expectancy	1.036	14.559**	2.721	5.858**	4.530*
	(0.27)	(3.35)	(0.60)	(5.80)	(2.47)
ln Initial GDP	− 1.512**	− 2.144*	− 0.284	− 2.046**	− 1.430*
	(3.22)	(2.83)	(0.41)	(5.16)	(1.97)
Education	65.557**	30.989	− 5.892	2.272	− 0.691
	(3.35)	(1.27)	(1.35)	(1.47)	(0.25)
Population Growth	− 0.915	− 2.992**	− 0.943	− 1.386**	− 0.491
	(0.94)	(3.00)	(0.65)	(3.91)	(0.74)
Democracy	− 0.073	0.177	0.097	0.150**	0.187**
	(0.57)	(1.98)	(0.45)	(4.02)	(3.28)
Climate	6.953*	8.930*	0.652	0.217	1.140
	(2.89)	(2.70)	(0.15)	(0.19)	(0.97)
Institutions	0.661	1.527**	− 0.250	0.549	0.662
	(2.10)	(3.38)	(0.47)	(1.24)	(1.69)
Constant	− 2.331	− 45.261*	− 4.302	− 7.318	− 9.767
	(0.18)	(2.73)	(0.24)	(1.61)	(0.95)
Observations	21	24	20	185	93
Countries	21	24	20	27	27
R^2	0.48	0.55	− 0.06	0.28	0.40

Notes: Absolute value of *t* statistics or *z* statistics in parentheses. Dependent variable is average growth in per capita GDP during the period specified.
Columns 1–3 present OLS regression results from cross-sectional data and report adjusted R^2.
Columns 4–5 present results from pooled time-series cross-sectional data and report R^2.
*Significant at 5 per cent; **significant at 1 per cent.

educational *attainment*, which provides a more accurate measure of actual education in a society.[58] Attainment has therefore become the preferred measure, and was hence utilized in the above tables.

Although this point has not yet been made in the literature, it is important to note that the attainment data has more missing values than the enrolment data, and that this is most evident in the data on Africa. As shown in Table 3, the cross-sections for Africa have relatively few data points and it is thus worth expanding the dataset even if this implies using a less exact measure of education.

Tables 8 and 9 therefore replicate Tables 2 and 3 yet one more time, this time substituting secondary education enrolment for secondary education attainment. This change has little impact on the findings in Asia and Latin America – one extra data point is added in the pooled analyses, and there is once again a clear negative impact from democracy across all time periods and using both CS and TSCS analyses.

Table 9, however, shows a somewhat larger sample in Africa when using the enrolment figures for education. Moreover, all three of the cross-sectional analyses are now

[58] See the Appendix for details and citations.

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insignificant, suggesting that democracy's effect is not robust to a larger sample. By contrast, columns 4 and 5 show that democracy has a significant effect within both pooled analyses. As discussed in more detail below, the most plausible conclusion from these findings is that Tables 2 and 3 overstate the strength of the African findings in the cross-sections, but that if one takes into account all of the data (i.e., columns 4 and 5), democracy nonetheless has a significant effect on African growth rates.

Total Factor Productivity or Factor Accumulation?

A final set of sensitivity analyses are designed not to check the robustness of the findings but rather to identify the causal mechanism through which democracy influences economic growth. As discussed above, democracy can influence economic growth either directly, by influencing economic efficiency, or indirectly, by increasing the investment rate. All models in previous tables excluded investment, and hence allowed democracy to influence growth both directly and indirectly. To distinguish between these different

TABLE 10 *Latin America and Asia, with Investment*

	(1) 1960–2000	(2) 1960–80	(3) 1980–2000	(4) Pooled 5-year	(5) Pooled 10-year
ln Life Expectancy	1.293 (0.80)	2.835 (1.32)	− 1.122 (0.35)	3.835** (3.09)	2.949** (3.58)
ln Initial GDP	− 1.546** (4.63)	− 1.186* (2.73)	− 1.885** (4.65)	− 2.154** (5.08)	− 2.150** (4.94)
Education	0.007 (0.43)	0.028 (1.28)	0.021 (0.85)	0.037** (4.26)	0.034** (6.80)
Investment	0.037 (1.11)	0.042 (1.33)	0.069 (1.60)	0.120** (4.80)	0.100** (4.08)
Population Growth	− 0.568 (1.80)	− 0.132 (0.36)	− 0.938* (2.47)	0.023 (0.08)	− 0.104 (1.28)
Climate	0.140 (0.30)	0.917 (1.60)	− 0.179 (0.29)	− 0.331 (1.01)	− 0.143** (4.04)
Institutions	0.568** (3.55)	0.756** (4.46)	0.580* (2.70)	0.530** (3.77)	0.616** (3.65)
Democracy	− 0.104* (2.37)	− 0.144** (3.49)	− 0.122 (2.07)	− 0.081* (2.40)	− 0.124** (12.56)
Constant	6.835 (1.33)	− 4.321 (0.63)	19.664 (1.78)	− 1.382 (0.25)	3.030 (0.48)
Observations	30	32	31	261	129
Countries	30	32	31	34	34
R^2	0.74	0.70	0.76	0.52	0.75

Notes: Absolute value of *t* statistics or *z* statistics in parentheses. Dependent variable is average growth in per capita GDP during the period specified.
Columns 1–3 present OLS regression results from cross-sectional data and report adjusted R^2.
Columns 4–5 present results from pooled time-series cross-sectional data and report R^2.
*Significant at 5 per cent; **significant at 1 per cent.

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TABLE 11 *Sub-Saharan Africa, with Investment*

	(1) 1960–2000	(2) 1960–80	(3) 1980–2000	(4) Pooled 5-year	(5) Pooled 10-year
ln Life Expectancy	6.409*	10.886**	5.406	4.064*	1.901
	(2.37)	(3.25)	(0.79)	(2.00)	(1.03)
ln Initial GDP	− 1.614*	− 1.998*	− 1.601	− 2.844**	− 2.133**
	(3.12)	(2.99)	(1.29)	(2.94)	(3.05)
Education	0.077	− 0.026	− 0.045	0.019	− 0.003
	(0.96)	(0.28)	(0.59)	(0.50)	(0.10)
Investment	0.000	0.029	− 0.051	0.111**	0.079**
	(0.00)	(1.05)	(0.55)	(3.53)	(2.84)
Population Growth	− 1.381	− 2.314*	− 0.817	− 0.834*	0.153
	(1.56)	(2.59)	(0.46)	(2.33)	(0.27)
Climate	3.309	2.668	− 0.371	− 1.954	− 1.768
	(1.30)	(0.93)	(0.07)	(1.62)	(1.39)
Institutions	0.329	1.194**	− 0.278	0.378	0.451
	(0.99)	(3.64)	(0.39)	(1.18)	(1.61)
Democracy	0.195	0.197**	0.234	0.183**	0.187**
	(2.16)	(3.28)	(0.73)	(4.51)	(2.87)
Constant	− 12.522	− 26.615	− 4.175	6.664	6.762
	(1.28)	(2.07)	(0.17)	(1.20)	(1.09)
Observations	16	18	16	141	70
Countries	16	18	16	20	20
R^2	0.44	0.76	− 0.07	0.36	0.54

Notes: Absolute value of t statistics or z statistics in parentheses. Dependent variable is average growth in per capita GDP during the period specified.
Columns 1–3 present OLS regression results from cross-sectional data and report adjusted R^2.
Columns 4–5 present results from pooled time-series cross-sectional data and report R^2.
*Significant at 5 per cent; **significant at 1 per cent.

effects, Tables 10 and 11 replicate Tables 2 and 3 but include overall investment levels. By controlling for investment, these tables do not allow democracy to have an indirect effect on growth via investment, but instead solely evaluate democracy's effect on economic efficiency.

The tables show that democracy remains significant, with both the statistical significance and the substantive significance of these findings remaining about equally strong as compared to Tables 2 and 3. This suggests that democracy directly influences overall economic efficiency in both regions rather than influencing growth indirectly by changing investment levels. Supplementary analyses further confirm this conclusion, in that democracy has no effect on either investment or human capital in any of the regions during any of the time periods.[59] This constitutes yet another interesting contrast with analyses

[59] Specifically, following Helliwell, 'Empirical Linkages between Democracy and Economic Growth', models using initial per capita GDP and democracy to predict both investment and secondary school attainment show no significant effect from democracy in 1960–2000, 1960–80, or 1980–2000 in either of the regions. Results available from author upon request.

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of global samples, which have in fact reported indirect effects via both investment and human capital.[60]

CONCLUSIONS

Scholars have long suspected that regime type plays an important role in influencing economic growth, but there is little consensus in the statistical literature as to whether the effects are positive or negative. This article sheds new light on this debate by incorporating the insights of area-studies scholars into the statistical debate. The analysis begins with the observation that existing theory suggests that democracy has positive and negative effects, which implies that democracy should differentially influence growth in different political contexts. Where societal groups pressure the state with redistributive demands, democracy will be bad for growth. Where chief executives are highly patrimonial, democracy will be good for growth.

The empirical findings confirmed this line of reasoning. Indeed, it is striking the degree to which democracy has diametrically opposed effects in Latin America and Asia versus in Africa. Moreover, whereas previous findings in the regime literature have been quite fragile, these regional effects are relatively robust. Especially in Latin America and Asia, democracy had a significant negative effects across a wide range of periods and in a wide variety of sensitivity analyses. None of the twenty-five analyses yielded a null result.

The findings for Africa were somewhat more fragile, but there is nonetheless evidence that democracy had a positive effect on economic growth in this region. The strongest findings were in the base-line analyses, which showed a significant effect in all periods except for 1980–2000. None of the three cross-sectional analyses, however, were entirely robust to additional control variables and/or an alternative measure of education. The cross-sectional results are therefore thought-provoking but fragile.

Pooled analyses, however, provided substantially stronger evidence. In all sensitivity analyses, democracy exhibited a positive effect on growth in both ten-year and five-year pooled analyses. Putting these various results together, it seems most sensible to conclude that democracy does have an influence in Africa, but that the effect is weaker than in Latin America and Asia.

These findings have obvious implications for theory and empirical analysis. Concerning theory, the results suggest that earlier literatures were in fact correct to see regime type as having important economic effects. Indeed, the findings actually confirm *both* sides of the regime debate. Democracy clearly can constrain growth, particularly in contexts where societal groups demand extensive redistribution, or distract state officials from their pursuit of economic growth. Democracy can also facilitate growth, especially in contexts where there is strong need to evict corrupt public officials. Theory was right all along, but was difficult to confirm when pooling all countries into a single dataset – conflating cases where we should expect democracy to have positive effects with cases where we should expect negative effects.

[60] Helliwell, 'Empirical Linkages between Democracy and Economic Growth'; Matthew A. Baum and David A. Lake, 'The *Political* Economy of Growth: Democracy and Human Capital', *American Journal of Political Science*, 47 (2003), 333–47. It is worth noting that the supplementary analyses described in the preceding footnote did in fact show significant effects from democracy on both investment and education in some periods when tested in the full sample rather than in the regional samples.

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These findings suggest that scholars should pay more attention to regional differences. Consider, for instance, the other important political variable widely used in contemporary growth analysis, namely the index of 'institutional quality' provided by the International Country Risk Guide. Table 2 indicates that institutional quality has a highly significant positive effect on economic growth in Latin America and Asia, as is expected. Table 3, however, indicates that institutional quality does not have a significant effect on growth in Africa. It is possible that these null results are due to the small sample size in Africa, but it is equally possible that we should reconsider our implicit assumption that property rights have the same effect on growth in all regional contexts.

More generally, it is worth noting that while area-studies have been heavily maligned for excessive attention to regional specificities, the statistical literature is guilty of the opposite sin, namely excessive homogenization. Regional experts appreciate and understand the profound differences between Latin America, Asia and Africa. I have argued that these insights are necessary to understand democracy's economic effects. It is likely that the rich insights of the area-studies tradition have equally important implications for a broader range of statistical literatures.

APPENDIX: DATA SOURCES

Data on democracy is from Polity 4.[61] Data on economic growth, government consumption, population growth, trade openness, initial GDP and investment are from Penn World Tables 6.1.[62] Data on secondary education enrolment are from the 1994 Barro and Lee dataset.[63] Data on secondary education attainment is from the 2000 Barro and Lee panel dataset.[64] Life expectancy and labour force growth are from World Bank data.[65] Tropical climate and institutional quality are from Bleaney and Nishiyama.[66]

[61] Polity 4, downloaded on 26 February 2003, from http://www.cidcm.umd.edu/inscr/polity/.

[62] Penn World Tables 6.1, downloaded on 6 May 2003, from http://pwt.econ.upenn.edu/. The specific variables are RGDPL, KG, POP, KOPEN and KI.

[63] The variable *S* from the Barro and Lee Panel Data Set, 1994, downloaded on 28 August 2002, from http://www.nuff.ox.ac.uk/Economics/Growth/barlee.htm.

[64] The variable *SEC15* from the Barro and Lee Panel Data Set on Educational Attainment, 2000, downloaded on 6 May 2003, from http://www.worldbank.org/research/growth/ddbarle2.htm.

[65] The variable life expectancy at birth (total years) is from the World Bank, *World Development Indicators* (Washington, D.C.: World Bank 2002), CD-ROM. The measure of labour force growth is derived from two additional World Bank variables, namely total population and total economically active population.

[66] The variables CLIMATE and ICRGE80, both from Bleaney and Nishiyama, 'Explaining Growth'. The authors kindly shared their data via email correspondence.

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