Institutions, Human Capital, and Diversification of Rentier Economies

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I. Introduction

Diversification is good for growth. Economic diversification encourages growth by directing economic activity away from excessive reliance on primary production in agriculture or a few natural-resource-based industries, thus helping lead labor away from low-paying jobs in low-skill-intensive farming or mining to more lucrative jobs in more high-skill-intensive occupations. Political diversification spurs growth in a similar fashion by distributing political power away from ruling elites to the people, thus in many cases replacing an extended monopoly of often ill-gotten power by democracy and pluralism. The basic argument is the same in both cases: diversity pays. Modern mixed economies need a broad base of manufacturing, trade, and services to be able to offer the people a steadily improving standard of life. Therefore, they need to find ways of diversifying their economic activity away from once-dominant agriculture that tends to perpetuate poverty and likewise from too much dependence on a few natural resources that tend to stifle or delay the development of modern industry and services. To function well, national economies also need broad political participation and a broad base of power in order to be able to offer the citizenry an efficient and fair way of exercising its political will and civic rights through free elections and such. Without political democracy, bad governments tend to last too long and do too much damage. The need for diversification is especially urgent in rentier economies because resource-rich countries often face a double jeopardy – that is, natural-resource wealth that is concentrated in the hands of relatively small groups that seek to preserve their own privileges by standing in the way of both economic and political diversification that would disperse their power and wealth. Rent-seekers typically resist reforms – economic diversification as well as democracy – that would redistribute the rents to their rightful owners (Auty, 2001; Ross, 2001).

This paper is intended to illustrate the relationship between political and economic diversification and economic growth. To set the stage, Section II offers a simple classification of the main determinants of growth, including economic and political diversification. Section III then presents some graphical cross-country evidence of the linkages between both kinds of diversification and growth. Section IV goes a step farther and presents some econometric evidence of the effects of democracy and several other relevant factors on growth based on multiple cross-country regression analysis. Section V concludes the story.

II. What it takes to grow

Let us begin by listing six main sources of economic growth around the world. The classification below reflects five different kinds of producible capital that is needed to sustain economic growth, in addition to natural capital. First, saving and investment are obviously necessary to build up physical capital. Second, education, health care, and family planning are needed to build up human capital. The fertility part of the story calls for a comment. Reduced population growth enables parents to take better care of each of their children and thus to increase their average "quality" by offering each one of them more and better education, health care, and other opportunities and amenities that the parents otherwise could not afford. Viewed this way, reduced fertility is a form of investment in human capital, intended to increase the quality and efficiency of the labor force. Third, macroeconomic stability encourages the accumulation of financial capital, i.e., financial depth, which helps lubricate the wheels of production and exchange and thus increases economic efficiency and growth. Fourth, increased trade with the rest of the world helps harness foreign saving for domestic uses, and thus adds to the stock of foreign capital that supplements domestic capital and strengthens the overall capital base of domestic economic activity. Fifth, increased democracy can be viewed as an investment in social capital by which is meant the infrastructural glue that holds society together and keeps it working harmoniously and well. Social capital includes several other ingredients, including trust, the absence of rampant corruption, and reasonable equality in the distribution of income and wealth (Paldam and Svendsen, 2000). The idea here is that political oppression, corruption, and excessive inequalities tend to diminish social cohesion and thus also the quantity or quality of social capital. Sixth, however, natural

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capital differs from the preceding five kinds of capital in that it is partly nonproduced and in that having too much of it may, at best, be a mixed blessing. Hence the need for diversification. Solid arrows in Figure 1 represent these linkages.

What does it take to diversify? Most of the things that are good for growth also encourage economic diversification. Saving and investment outside agriculture and other natural-resource-based industries – e.g., in infrastructure and tourism – are important vehicles for diversification in economies that still depend on agriculture or natural resources. Education and training are another essential input into successful diversification because they enable the sons and daughters of farmers, if not the farmers themselves, to find more lucrative work in manufacturing, trade, and services. Education at all levels has played an essential role in the successful transfer of labor from agriculture to the high-tech services sector that has put such an indelible mark on India and Ireland. Openness to trade and investment is another key to diversification because of the important contribution that foreign capital can make. China, to name but one fast-growing country where foreign investment has played an important part, is a case in point as witnessed by the many joint ventures there between domestic and foreign companies since China opened its gates in 1978. At last, political pluralism reinforces economic diversification because democracies evolve naturally towards modern diversified manufacturing and service-oriented societies. Educated people in democratic countries do not want to grow rice. Broken arrows in Figure 1 represent these linkages.

There are several other linkages among the many determinants of growth: e.g., between stability and trade and between education and trade. Stability is good for trade because high inflation tends to bias the real exchange rate of the currency upwards and this hurts the profitability of exports as well as of import-competing industries. Education is also good for trade because it removes various barriers to trade; besides, trade *is* education. But these relationships and others like them will not concern us here. Rather, the main aim here is to look at the linkages between the two kinds of diversification, education, and economic growth, represented by the bold arrows on the right-hand side in Figure 1. In doing so, we will sweep stability and trade under the carpet, but not investment. Doing full justice to all the linkages outlined in Figure 1 would be beyond the scope of a short paper; hence the selective emphases offered here. A discussion of a different selection of the linkages shown in Figure 1 is offered in Gylfason (2002).

Figure 1. Six determinants of growth
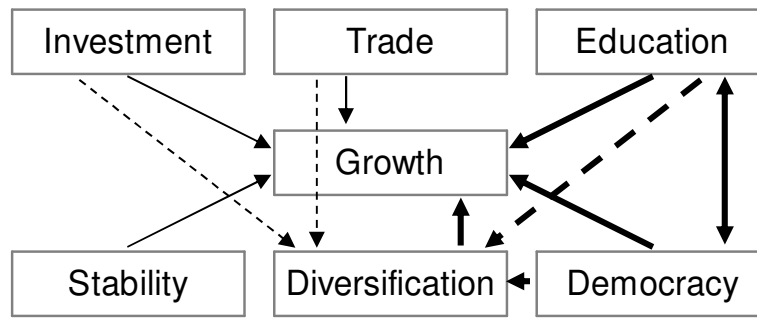
III. Economic and political diversification

Different kinds of produced capital tend to go together and to be complementary to one another. For this reason, the main determinants of growth listed in the preceding section and shown in Figure 1 tend to go hand in hand. For example, human capital and social capital typically go together because high standards of education call for democracy and vice versa. A poorly educated populace – think Haiti! – is easier to oppress over long periods than is a well educated population that knows full well what is lacking. Likewise, a democratic society is less likely than an autocracy to tolerate low standards of education. Unsurprisingly, therefore, Figure 2 shows a fairly close cross-country correlation (0.76) between democracy, as measured by the inverted index of political rights put together by Przeworski *et al.* (2000), and education, as measured by secondary-school enrolment rates (World Bank, 2002), even if enrolment rates measure education by input rather than by output which is difficult to gauge. The political rights index spans the range from one (full political liberties) to seven (negligible political liberties), but here we multiply the index by minus one and add eight, so that an increase in the inverted index from one to seven represents increased democracy. The slope of the regression line drawn through the scatter of dots suggests that an increase in secondary-school enrolment by 20 percent of each cohort goes along with an increase in democracy by one point, corresponding to the difference between Germany and India. Of the 85 countries in the sample, about two thirds are developing countries and the rest is industrial countries. Each country is represented by one observation for each variable, an average for the whole sample period, 1970-1992 for democracy and 1980-1997 for education.

Figure 3 shows the cross-sectional relationship between democracy as defined above and natural resource dependence, defined as the share of natural capital (i.e., oil

reserves, mineral deposits, forests, agricultural land, etc.) in national wealth, which equals the sum of natural capital as described above, real capital accumulated through investment in machinery and equipment, and human capital built up through education and other forms of training (but not social capital; see World Bank, 1997). The pattern shown suggests a direct relationship between economic and political diversification. The figure suggests that liberalization from excessive reliance on natural resources goes along with increased political freedoms and vice versa. Put differently, natural capital tends to crowd out social capital and vice versa. The significantly negative correlation (-0.48) in Figure 3 survives the removal of the cluster of eight African countries in the southeast corner of the figure from the sample, even if the correlation then becomes less discernible to the naked eye.
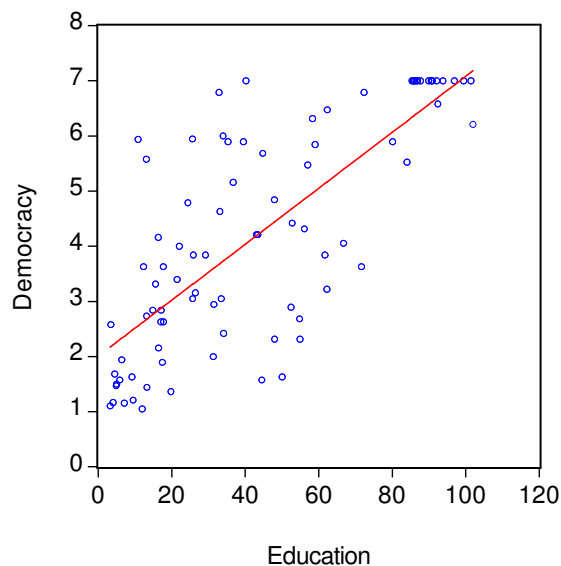
Figure 2. Education and democracy

Figure 4 shows the cross-country relationship between democracy and economic growth from 1965 to 1998. The growth rate has been adjusted for initial income: the variable on the vertical axis is that part of economic growth that is not explained by the country's initial stage of development, obtained from a regression of growth during 1965-1998 on initial GNP per capita (i.e., in 1965) as well as natural capital. The regression line through the scatterplot in Figure 4 suggests that an increase of about two points in the democracy index goes along with an increase in per capita growth from one country to another by one percentage point per year on average. The relationship is significant (the correlation is 0.56), and conforms to the partial

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correlations that have been reported in multiple regression analyses where other relevant determinants of growth (investment, education, etc., as well as initial income) are taken into account, as we will proceed to do in Section IV. Figure 4 thus accords with the view that democracy is good for growth and vice versa: there is no visible sign here that democracy stands in the way of economic growth. Political liberty is good for growth because oppression stifles creativity and innovation and thus breeds inefficiency. For similar pictures of the remaining correlations marked in the right-hand part of Figure 1, see Gylfason (2002).

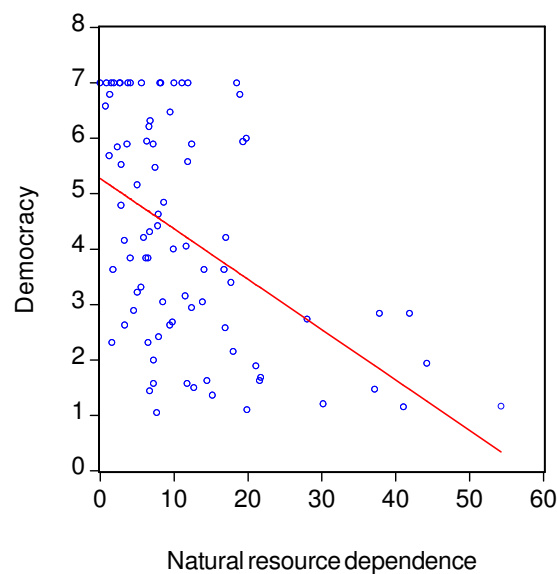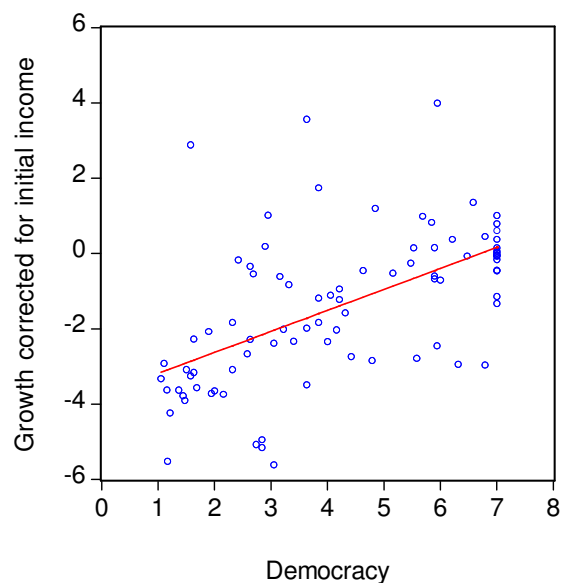Figure 3. Diversification and democracy

Figure 4. Growth and democracy

IV. Growth regressions: Does democracy matter?

The bivariate correlations presented in the preceding section convey a picture of a direct cross-country relationship between democracy and growth as well as of a complementarity between investments in different kinds of capital and different kinds of diversification. The correlations allow the data to talk, but they could be misleading were they not backed up by multivariate regression analysis where other relevant determinants of growth are also taken into consideration. Therefore, the next step is to present estimates of a series of economic growth regressions for the same 85 countries as before, also during 1965-1998, based on a simple growth model that describes economic growth as a function of investments in physical, human, and social capital. For simplicity, we leave out financial and foreign capital – that is, inflation and trade. The data are the same as in Figures 2-4 and are taken from the World Bank's *World Development Indicators* (2002, 2005), except the data on natural capital that are taken from World Bank (1997) and the data on political rights from Przeworski *et al.* (2000). The statistical strategy here is to regress the rate of growth of national economic output per capita on the democracy index, defined as in Figures 2-4, and then to add other potential determinants of growth to the regression in order to assess the robustness of the initial result – that is, to see whether the democracy variable survives the introduction of additional explanatory variables that are more commonly used in empirical growth research.

Table 1 presents the results of this exercise. Model 1 confirms the statistically significant bivariate relationship between democracy and growth depicted in Figure 4. In Model 2, the logarithm of initial income (i.e., in 1965) is added to capture conditional convergence – that is, the idea that rich countries grow less rapidly than poor ones because the rich have already exploited more of the growth opportunities open to them, by sending more young people to school, for instance. Initial income is defined as purchasing-power-parity adjusted GNP per capita in 1998 divided by an appropriate growth factor to ensure consistency between our income measures in 1965 and 1998 and our measures of economic growth between those years. Here we see that the coefficient on initial income is significantly negative as expected without incapacitating the coefficient on political liberties. When natural resource dependence, defined as in Figure 3, is added to the regression in Model 3 in accordance with the resource curse hypothesis (Sachs and Warner, 1995), we see that natural resource

dependence hurts growth as hypothesized; the other two coefficients survive. Next, in Model 4, we add the share of gross domestic investment in GDP and find that it makes a contribution to growth as expected, even if no attempt has been made to adjust the figures for the quality of investment, a desirable adjustment to make in principle, but difficult in practice. In Model 5, we then proceed to add education, represented by the secondary-school enrolment rate, the measure of education most commonly used in empirical growth research. Again, education stimulates growth without displacing any of the variables inherited from the preceding models. Like the estimated coefficient on investment, the estimate of the coefficient on education may be biased because school enrolment rates measure education by input rather than by output. Again, it would be good to be able to make a distinction between quantity and quality in education, but this would require data that do not exist for a large number of the countries in the sample and, even when available, may not be reliable because of the difficulties involved in producing culture-free tests of educational attainment across countries.

At last, in Model 6, we enter fertility, i.e., the number of life births per woman, into the regression to see if it matters for growth as suggested by the Solow model as well as by our interpretation here of reduced population growth as an investment in human capital. It turns out that fertility matters: reduced fertility stimulates economic growth as expected, without reducing the statistical significance of the explanatory variables already included except education. But this is now understandable. Reduced fertility, like increased education, constitutes an investment in human capital as we have said in the sense that fewer children per family make it possible for each child to receive better care, including more and better schooling and health care, than otherwise would be on offer. It is, therefore, not surprising that the correlation between education and fertility in our sample is quite high, or -0.90, so that multicollinearity reduces the significance of the education variable when fertility is included in the regression. Anyhow, an increase in one life birth per woman from one country to another reduces per capita growth in our sample by almost one percentage point. This is a remarkably strong link that accords well with a fundamental aspect of the Solow model of growth but is also consistent with theories of endogenous growth if family planning is viewed, as suggested here, as a kind of investment in human capital. Unsurprisingly, fertility and population growth are highly correlated in the data (0.85). When population growth is entered into Model 6 in lieu of fertility, the coefficient on

population growth is -0.46 (t = -2.34) and the education coefficient retains much of its size (0.03) and significance (t = 3.03).

The bottom line of Table 1 shows how the adjusted R^2 rises gradually as more independent variables are added to the growth regression and ultimately reaches 0.81, indicating that Model 6 explains more than four fifths of the cross-country variations in the growth of output per capita. When population growth is used as a replacement for fertility, the adjusted R^2 in Model 6 is lower than that shown in Table 1, or 0.72.

The results in Model 6 accord reasonably well with a number of recent empirical growth studies, except relatively few researchers have yet managed to nail down the cross-country relationship between democracy and growth that this paper started out with. In Model 6, the coefficient on initial income suggests a convergence speed of 2 percent per year, which is within the two to three percent range typically reported in econometric growth research. The coefficient on the natural resource variable suggests that an increase in the share of natural capital in national wealth by 25 percentage points reduces per capita growth by one percentage point. Beginning with Sachs and Warner (1995), several recent studies have reported a similar conclusion, based on various measures of natural resource dependence. The coefficient on the investment rate suggests that an increase in investment by sixteen percent of GDP increases annual per capita growth by one percentage point. This effect is a bit smaller than that typically found in those growth studies that report a statistically significant effect of investment on growth, but this is perhaps not surprising because most other studies do not take fertility into account and may thus assign to investment a part of the contribution of reduced fertility to growth. The coefficient on the education variable in Model 6 is small and insignificant, perhaps for the reasons described before. Last but not least, the coefficient on political liberties in the northeast corner of Table 1 means that an increase in democracy from two (like in Congo) to seven (like in Costa Rica) increases per capita growth by one percentage point per year, other things being the same. Is this a little or a lot? The average rate of growth of output per capita was 1.3 percent on average in the sample as a whole. This suggests that the effects of democracy on growth shown in Table 1 are economically as well as statistically significant. But notice also that the estimates of the effects of democracy on growth shown in the top line of Table 1 are not particularly stable from one regression to the next. Once initial income has been accounted for as in Figure 4, the coefficient on democracy in the growth equation drops in size from 0.77 to 0.19 as

well as in significance as more additional explanatory variables are added to the regression. The inclusion of fertility alone reduces the democracy coefficient by half, suggesting that without fertility in the equation, too much of the cross-country variation in growth was being ascribed to social capital via democracy and too little to human capital because fertility was not included.

Table 1. Regression results on growth and democracy

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Political liberties	0.34	0.77	0.59	0.49	0.36	0.19
	(3.44)	(6.01)	(5.32)	(4.76)	(3.90)	(2.40)
Initial income		-1.14	-1.31	-1.15	-1.85	-2.03
		(4.64)	(6.33)	(6.10)	(8.65)	(11.61)
Natural capital			-0.10	-0.07	-0.06	-0.04
			(6.17)	(4.93)	(4.45)	(3.35)
Investment				0.12	0.07	0.06
				(4.62)	(3.05)	(2.87)
Secondary education					0.04	0.01
					(5.12)	(1.21)
Fertility						-0.94
						(6.58)
Adjusted R^2	0.11	0.29	0.51	0.61	0.70	0.81

Note: t-values are shown within parentheses. Estimation method: Ordinary least squares. Number of countries: 85. No outliers were excluded.

In sum, the empirical evidence presented in Table 1 seems to support the view that political oppression is harmful to growth as suggested by Figure 4, even when several other relevant determinants of growth are taken into consideration. This finding seems to support the recent emphasis on sound institutional arrangements as an important source of growth among many others. This, however, is not solely a matter of political institutions – democracy vs. dictatorship. It takes sound financial institutions to channel domestic and foreign saving into high-quality investment that helps growth. And it takes good educational institutions and good health care facilities to build the human capital stock that is essential for economic progress. Good institutions and infrastructure encourage and support economic as well as political diversification, which helps keep the resource curse at bay. At the end of the day, all that matters for

economic growth depends on pretty much everything else. But this should not discourage any government from pursuing, or any opposition from advocating, growth-friendly reforms. The fact that growth is good for democracy, as argued by Lipset (1959) but contested by Acemoglu *et al.* (2005), does not diminish the importance of democratization in authoritarian societies as a way of promoting growth as well as justice.

V. Concluding remarks

Rapid growth requires the accumulation of high-quality capital of several different kinds, and these different kinds of capital tend to complement one another in the growth process, with one notable exception. That exception is natural capital that competes with or crowds out other kinds of capital. Part of the reason may be that natural capital, certainly in the case of nonrenewable resources such as oil and minerals, is generally to a large extent inherited from the past rather than currently produced, and thus resembles "other people's money" or "manna from heaven." This kinship blunts the owners' incentives to manage their natural resources judiciously, or even encourages squander: this, in essence, is the tragedy of the commons writ large. Abundant natural resources, if not well managed and supported by sound institutions, including freedom and democracy, tend to fill rulers and citizens alike with a false sense of security and to induce them to neglect many of the things that are necessary for rapid economic growth and rising prosperity and to trigger damaging conflicts among rent-seekers. Abundant natural resources are especially risky when the rents can be extracted from a narrow geographic or economic base (e.g., oil and minerals) and are easy to grab (Isham *et al.*, forthcoming). Investments in physical, human, and social capital – and also financial and foreign capital – are different in that nonnatural capital cannot be grabbed (except by drastic means such as the wholesale nationalization of industry or the overthrow of democratically elected governments).

This paper has described economic diversification away from natural-resource-based activity into manufacturing, trade, and services and political diversification away from power concentration in the hands of authoritarian elites as an investment in social capital. From this vantage point, it is perhaps not surprising to read from the cross-country evidence presented here a fairly clear and consistent tendency for both kinds of diversification to be good for growth.

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