Journal of Economic Growth, 6, 317–335, 2001

The Middle Class Consensus and Economic Development

WILLIAM EASTERLY*

World Bank

A middle class consensus is defined as a high share of income for the middle class and a low degree of ethnic divisons. The paper links a middle class consensus to resource endowments, along the lines of the provocative thesis of Engerman and Sokoloff (1997 and 2000). This paper exploits this association using tropical resource endowments as instruments for inequality. A higher share of income for the middle class and lower ethnic divisions are associated with higher income and higher growth, as well as with more education, better health, better infrastructure, better economic policies, less political instability, less civil war and ethnic minorities at risk, more social ''modernization'' and more democracy.

Keywords: inequality, ethinic divisions, economic development, economic growth, human capital

JEL classification: O1, O4, D31, I0, Z13

> Thus it is manifest that the best political community is formed by citizens of the middle class, and that those states are likely to be well-administered, in which the middle class is large ... where the middle class is large, there are least likely to be factions and dissension.
>
> Aristotle 306 BC (quoted in Decornez, 1998)

> So strong is this propensity of mankind to fall into mutual animosities, that where no substantial occasion presents itself, the most frivolous and fanciful distinctions have been sufficient to kindle their unfriendly passions and excite their most violent conflicts. But the most common and durable source of factions has been the various and unequal distribution of property.
>
> James Madison 1787 (Federalist Papers No. 10)

> Many of the world's problems stem from the fact that it has 5,000 ethnic groups but only 190 countries.[1]
>
> Rodger Doyle (*Scientific American*, September 1998)

1. Literature Review and Discussion

Many explanations of the cross-country differences in economic growth and development only lead to further questions. If differences in saving rates explain cross-country income

*Views expressed here are not necessarily of the views of the World Bank or its member governments.

differences (Mankiw et al. 1992), then why do some societies save more than others? If national policies explain much of the differences in growth rates across countries (Barro and Sala-I-Martin, 1995; Easterly and Levine, 1997), then why do some nations have worse government policies than others? The dissatisfaction with explanations of cross-country development differences by endogenous variables has led to a recent search in the literature for more fundamental characteristics of nations that determine development outcomes.

This paper puts forward the existence of a middle class consensus as a critical determinant of development differences. A middle class consensus is defined as a national situation where there are neither strong class differences nor ethnic differences. The paper links the existence of a middle class consensus to exogenous country characteristics like resource endowments and ethnolinguistic diversity.

Political economy explanations of development outcomes usually focus on ''society's polarization and degree of social conflict'' (Alesina, 1994, p. 38). Societies that are polarized tend to focus on redistribution between polarized factions that alternate in power; societies that are not polarized are able to reach a consensus on public goods and overall economic development. Casual observation and previous literature suggests that among the most common polarizing forces are differences between classes and differences between ethnic groups. The ethnic or class elite in power at any given moment may not want to invest in the human capital of the majority because that would increase the political voice of the majority and weaken the elite's hold on power.

Two recent strands of the literature in particular motivate this paper. First, there is the literature on resource endowments, the size of the middle class (or conversely, the absence of high inequality), and economic development. Second, there is the literature on ethnic diversity and growth and development.

Economic historians have pointed out the importance of a large middle class for economic development. Landes (1998) says the ''ideal growth and development society'' would have ''a relatively large middle class'' (pp. 217–18). He cites ''the great English middle class'' as a reason for England's being first at industrialization (p. 221).

Adelman and Morris (1967) noted that ''in the economic development of Western Europe, the middle classes were a driving force''. Moreover, they presciently said that ''it is clear from many country studies that the growth of a robust middle class remains of crucial importance in contemporary low-income nations.''[2]

A large theoretical literature also links a small middle class—or other measures of inequality—to low growth and low human capital accumulation. Galor and Zeira (1993) postulate that the poor are liquidity-constrained from accumulating human capital; higher inequality implies a greater share of the population will be liquidity constrained and thus the society accumulates less human capital. Alesina and Rodrik (1994) and Persson and Tabellini (1994) link high inequality to low growth through the poor majority imposing a tax on the rich. Perotti (1996) did not find direct evidence that inequality increased taxes, but did find evidence for the effect of inequality on growth due to the effect through human capital and through political instability.

A number of empirical cross-country studies find high inequality linked to poor growth outcomes (see, in addition to others mentioned above, Clarke (1995) and Deininger and Squire (1998), the latter using land inequality).[3]

The papers that directly inspired the present paper are Engerman and Sokoloff (1997)

and Sokoloff and Engerman (2000). Engerman and Sokoloff link tropical commodity factor endowments (which had significant scale economies) in Latin American countries to the concentration of wealth in the hands of a small elite, which in turn led to their entrenchment in power. Once entrenched, the elite was reluctant to invest in mass human capital for fear that they would be displaced from power (Bourguignon and Verdier, 2000, also described a similar mechanism in a theoretical paper). So Latin America was condemned to low human capital and low development. In contrast, the non-tropical land in North America lent itself to family farms, which implied greater equality and greater investment in mass human capital.[4]

The second strand of the literature links ethnic divisions to poor growth and public good outcomes. While violence directed at or by ethnic groups is well-known, the more subtle economic effects of ethnic conflict have only recently attracted attention in the economics literature. The mechanism could be similar to that in the previous paragraph—an ethnically distinct group in power is reluctant to invest in public services for the other ethnic groups for fear that the other ethnic groups will be enabled to displace the first group from power.

Easterly and Levine (1997) find that Africa's high linguistic diversity helps explain the continent's poor policies, including low public goods, and poor economic growth. Alesina et al. (1999) find that more ethnically diverse US cities and counties devote less resources to public goods than more ethnically homogeneous cities and counties. Goldin and Katz (1999) find lower public support for higher education in states with more religious—ethnic heterogeneity. Goldin and Katz (1997) likewise find lower high school graduation rates in states that had higher religious–ethnic diversity. Miguel (1999) likewise finds lower primary school funding in more ethnically diverse districts in Kenya. Mauro (1995) and La Porta et al. (1999) find that ethnic diversity predicts poor quality of government services. Alesina et al. (2000) find a link from ethnic diversity to bloated government payrolls in US cities. Rodrik (1999) noted that ethnically divided nations react more adversely to external terms of trade shocks. Svensson (2000) finds that more foreign aid proceeds are diverted into corruption in more ethnically diverse places. Annett (1999) finds that linguistic or religious diversity leads to greater political instability, which Annett finds in turn leads to higher government consumption. Knack and Keefer (1997) find that ethnic homogeneity raises ''social capital'' or ''trust,'' which in turn is associated with faster growth and higher output per worker. Adelman and Morris (1967) also noted that ''cultural and ethnic heterogeneity tend to hamper the early stages of nation-building and growth.''[5]

This paper brings together these two strands of the literature. I call a situation of relative equality and ethnic homogeneity a ''middle class consensus.'' I argue that this middle class consensus facilitates higher levels of income and growth, as well as higher levels of public goods. Like Engerman and Sokoloff (1997) and Sokoloff and Engerman (2000), I link the existence of a middle class consensus to initial factor endowments, mainly a tropical endowment that lent itself to production of primary commodities, but I test their hypothesis with cross-country data.[6] I find that a middle class consensus provides a remarkably parsimonious explanation of development outcomes.

The middle class consensus also may affect the likelihood that a country is democratic. One might think that a rich elite would in fact have an incentive to suppress democracy. Democratic voting would result in higher mass education than the oligarchic elite would choose on its own, because the elite fear that a more educated majority will displace them

from power. Similarly, in an ethnically diverse society, the most powerful ethnic group may want to suppress democratic rights of the other groups because they are threatened by the human capital accumulation those groups would vote for themselves. Of course, under both high inequality and high ethnic diversity, the elite fear that democracy will redistribute resources away from themselves to a new majority coalition. A large and homogeneous middle class would not have anything to lose in a democracy and so would be more likely to grant universal suffrage.[7] We will test this prediction in the empirical section.

So far, I have been referring to human capital as one of the main social choices, broadly construed to include education and health outcomes. The same predictions would go through if we were discussing publicly provided infrastructure capital, so I will also test various infrastructure measures in the empirical section.

We should also expect that consensual societies will favor growth of future production over redistribution of existing resources. Societies lacking a middle class consensus will see the economic/political/ethnic elite underinvest in human and infrastructure capital because they fear empowering the opposition. We also may see more political instability as the elite is sometimes successfully—but often temporarily—displaced from its access to the spoils of power.

2. Empirical Testing on Commodity Endowment, Middle Class Consensus, and Development

In this section, I test some of the propositions advanced by the previous literature and by the story in this paper. The previous literature and this model suggests that the middle class share and ethnic diversity are fundamental determinants of incentives to invest in the future, and so would determine many of the right-hand side variables in growth or income regressions. I will run parsimonious regressions of growth, income, human capital accumulation, and infrastructure on ethnic diversity and inequality. Given the auxiliary predictions for democracy and political instability, I will also relate those variables to the middle class consensus. Table 1 reports summary statistics on the variables in the paper. The data on inequality are the broadest possible sample from Deininger and Squire (1996). The ethnolinguistic fractionalization, which varies from 0 to 100, is from Easterly and Levine (1997).

2.1. Tropical Endowments, Commodity Exporting, and Inequality

I first test the hypothesis of Engerman and Sokoloff (1997) and Sokoloff and Engerman (2000) that a tropical endowment leads to commodity production, and that commodity production is associated with higher inequality. Their hypothesis has not been systematically tested with cross-country data as far as I am aware.[8] Establishing these facts will make these variables candidates to be instruments for inequality. I use the World Bank World Development Report classification of countries as non-oil commodity exporters. I should clarify that the commodities are not necessarily ''tropical'' like

Table 1. Statistics on variables used in this paper.

Variable	Mean	Median	Maximum	Minimum	Standard Deviation	Observations
Cabinet changes per year 60–88	0.39	0.36	1.07	0.00	0.22	168
Civil liberty, 1988	3.57	4.00	7.00	1.00	1.79	190
Constitutional changes per year 60–88	0.10	0.10	0.36	0.00	0.09	168
Dummy for non-oil commodity exporting	0.22	0.00	1.00	0.00	0.42	175
Dummy for oil exporting	0.09	0.00	1.00	0.00	0.28	175
Dummy for Tropical Location	0.50	0.00	1.00	0.00	0.50	229
Ethnic diversity, 1960	41.47	42.00	93.00	0.00	29.79	113
Faults per phone line	67.60	47.50	350.00	2.00	74.23	62
GDP Per capita 60	2247	1316	9895	257	2186	124
GDP Per capita 90	5825	3780	22660	400	5719	152
Growth Per Capita 1950–92 (Summers-Heston), average of available data	0.02	0.02	0.07	−0.08	0.02	146
Immunization DPT (%)	74.76	82.00	100.00	13.00	21.66	145
Immunization Polio (%)	75.68	83.00	100.00	13.00	21.85	145
Infant mortality 1990	86.45	89.00	194.00	3.00	56.36	141
Infants, low birth weight, 1990	11.95	10.00	50.00	4.00	6.53	111
Life expectancy 1997	66.37	69.80	79.99	37.51	10.23	194
Black market premium 1997	0.704	0.04	46.6	−0.89	4.517	142
Log inflation 1960–98	0.15	0.08	1.42	0.03	0.21	136
M2 to GDP 1997	43.90	35.12	206.25	6.09	32.63	140
Middle class share (share of quintiles 2–4), average 60–96	46.71	48.04	57.70	30.00	7.11	103
Percent of population with access to clean water 1990	68.32	72.00	100.00	12.00	24.34	104
Percent of population with access to sanitation 1990	56.75	56.00	100.00	1.00	33.35	120
Percent of roads paved 1990	45.55	42.00	100.00	0.00	31.61	191
Political rights, 1998	3.47	3.00	7.00	1.00	2.24	190
PPP Trade Share in GDP 1997	35.69	25.72	290.71	3.37	37.89	133
Primary enrollment, 1990	0.86	1.00	1.00	0.15	0.22	120
Real exchange rate overvaluation (100 = PPP) 1960–98	117.16	107.45	381.94	50.47	41.55	104
Revolutions and coups per year, 60–88	0.19	0.07	1.00	0.00	0.24	168
Secondary enrollment, 1990	0.49	0.44	1.00	0.03	0.31	118
Share of agriculture in GDP, 1990	20.4	17.5	65.5	0.3	15.8	162
Share of pop. in minorities at risk, 1990	0.28	0.17	1.00	0.01	0.27	111
Share of time at civil war 60–89	0.07	0.00	0.80	0.00	0.15	135
Telephones per capita, 1994	82.36	63.03	293.83	8.27	67.75	189
Tertiary enrollment, 1990	0.12	0.07	0.58	0.00	0.12	123
Urbanization ratio, 1990	51.0	49.7	100	5.2	24.0	197

Notes: For sources see Easterly and Sewadeh (2001).

bananas; they could just as well be coal or iron ore that are also produced in industrial countries. Hence, the hypothesis that tropical location is associated with commodity exporting is far from tautological. For tropical location, I construct a dummy that takes on the value one if the country's mean absolute latitude is less than 23.5 degrees and 0 otherwise. Table 2 shows a probit equation for commodity production on tropical location.

Not too surprisingly, commodity exporting is strongly associated with the tropics. Table 3 classifies countries by whether they are commodity exporters and by whether they are tropical. The vast majority (85%) of commodity exporting nations are in the tropics. Tropical nations are five times more likely to be commodity exporters than temperate nations.

The next step is to see whether being commodity exporting is associated with higher inequality, as hypothesized by Engerman and Sokoloff. Here is a simple regression of the share of the middle three income quintiles on the commodity exporting dummy (in light of the foregoing regression, TROPICS is an instrument for COMMOD) and a dummy for oil exporting nations. Confirming the Engerman–Sokoloff hypothesis, commodity production (including oil production) is associated with a lower share of income of the middle quintiles. The effect of commodity exporting is enormous, equal to nearly three standard deviations of the middle income share. Going from being a commodity exporter to being a non-commodity exporter explains two-thirds of the entire range of the middle class share

Table 2. Commodity exporting and tropical location.

Variable	Coefficient	Standard Error	*z*-Statistic	Prob.
C	−1.471424	0.205586	−7.157227	0.0000
Tropics	1.130729	0.245913	4.598093	0.0000
Mean dependent var	0.222857	S.D. dependent var		0.417357
S.E. of regression	0.391207			
Obs. with Dep. = 0	136			
Obs. with Dep. = 1	39			

Notes: Dependent variable: Commodity exporting dummy; Method: ML—Binary Probit; Included observations: 175; Covariance matrix computed using second derivatives.

Table 3. Commodity exporting and tropical location.

	No. of Countries		
	Tropical	Non-tropical	Total
Commodity exporter	33	6	39
Non-commodity exporter	58	78	136
Total	91	84	175
Percent of row totals			
Commodity exporter	36%	7%	
Non-commodity exporter	64%	93%	
Percent of column totals			
Commodity exporter	85%	15%	
Non-commodity exporter	43%	57%	

Table 4. Middle class share and commodity exporting.

Variable	Coefficient	Standard Error	*t*-Statistic	Prob.
C	51.63167	1.058569	48.77496	0.0000
Commodity dummy	− 19.62242	4.996424	− 3.92793	0.0002
Oil dummy	− 10.88073	3.315207	− 3.282066	0.0014
S.E. of regression	9.308190	Mean dependent variable		46.75934
F-statistic	9.590131	S.D. dependent variable		7.121557
Prob(*F*-statistic)	0.000156			

Notes: Dependent variable: Middle class income share; Method: Two-Stage least squares; Included observations: 102; White Heteroskedasticity-Consistent Standard Errors & Covariance; Instrument list: C Tropics dummy, Oil dummy.

variable, which only varies between 30 and 58 percent. Oil production also moves the middle income share by a sizeable amount, more than one standard deviation (Table 4).

2.2. The Middle Class Consensus and Per Capita Income and Growth

I now have potential instruments for the middle income share to use in a regression of income or growth on the middle income share and the ethnic fractionalization index. Of course, these instruments must not only be correlated with the instrumented variables, they also must be uncorrelated with the error term. TROPICS, for example, must enter the income equation only through its effect on the middle income share. This is a strong assumption, which I will test below.

I first use 1990 per capita income as the most general measure of economic development. I adopt a very parsimonious specification that features only the middle class share (suitably instrumented) and ethnic heterogeneity. We can think of this as a reduced form, where all the variables that usually appear in income or growth regressions are endogenous outcomes of the middle class consensus (many of them will indeed be dependent variables below).

I estimate the system of the inequality equation and the income equation jointly using three stage least squares (Table 5). As always, there are benefits and costs from using a system estimator. The benefit is that a system estimator is more efficient than a single equation estimator. It also gives a more accurate estimate of the standard errors when we control for a possible association of the error term in the middle class share equation and that in the per capita GDP equation. The disadvantage of the system estimator is that any specification error in one equation will be propagated to the other equation. I will attempt to deal with this problem in the robustness checks.

Per capita income is strongly influenced by the middle class share and by ethnic fractionalization. A one standard deviation increase in the middle class share (7 percentage points) is associated with an enormous movement of 1.2 standard deviations in log per capita income (equivalent to an income increase by a factor of 3.4). The effect of ethnic diversity is not as strong but still important: a one standard deviation increase in ethnic diversity lowers log income by one quarter of a standard deviation.[9] Figure 1 shows the fall

Table 5. Income per capita and middle class consensus.

	Coefficient	Standard Error	*t*-Statistic	Prob.
C(1)	50.8239	1.7441	29.14	0.000
C(2)	− 18.7833	5.3571	− 3.51	0.001
C(3)	− 8.0868	3.6927	− 2.19	0.030
C(4)	2.3079	1.4033	1.64	0.102
C(5)	0.1402	0.0292	4.80	0.000
C(6)	− 0.0098	0.0035	− 2.81	0.006

Notes: Estimation method: Three-stage least squares; Instruments: Ethnic fractionalization, oil dummy, tropics dummy, constant; Equation: Middle Class Share = C(1) + C(2)*Commodity dummy + C(3)*Oil dummy; Observations: 83; Equation: LOG(GDP Per Capita 90) = C(4) + C(5)*Middle Class Share + C(6)*Ethnic Fractionalization; Observations: 81.

in log income as one moves from high to low terciles of the middle class share, as well as the fall in income from low to high terciles of ethnic diversity.

It is also of interest to do a minimalist growth regression, using only the middle class income share and ethnic fractionalization. The exercise is once again how much can be explained by the middle class consensus hypothesis. Once again I use a system estimator, as shown in Table 6.

A one standard deviation increase in the middle class income share is associated with a growth increase of 0.42 standard deviations, equivalent to one additional percentage point of per capita growth. A movement from the minimum middle class income share to the maximum in the sample is associated with an enormous increase in growth—3.8 percentage points.

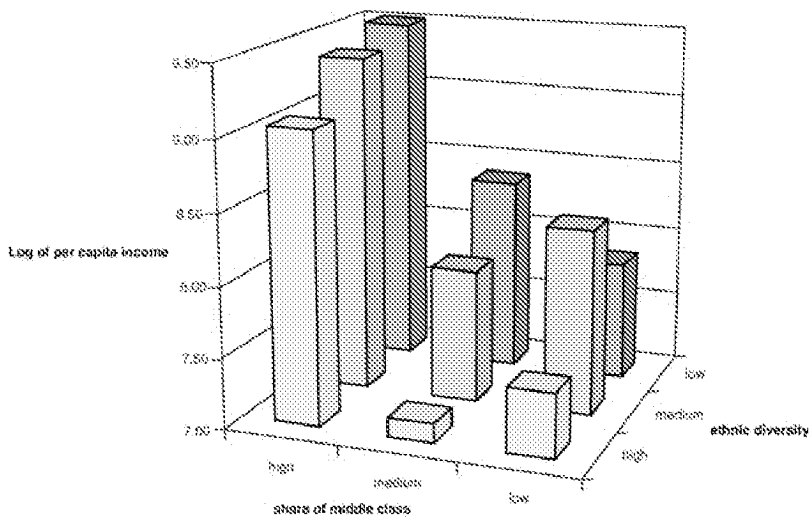

Figure 1. Per capita income as function of middle income share and ethnic diversity.

Table 6. System estimation for Per Capita Growth as Dependent Variable.

	Coefficient	Standard Error	*t*-Statistic	Prob.
C(1)	51.0619	1.7443	29.27	0.000
C(2)	− 19.1717	5.2902	− 3.62	0.000
C(3)	− 9.1976	3.7984	− 2.42	0.017
C(4)	− 0.0314	0.0238	− 1.32	0.189
C(5)	0.0012	0.0005	2.51	0.013
C(6)	− 0.0001	0.0001	− 2.48	0.014

Notes: Estimation method: Three-stage least squares; Instruments: Ethnic fractionalization, oil dummy, Tropics Dummy, Constant; Equation: Middle Class Share = C(1) + C(2)*Commodity dummy + C(3)* Oil dummy; Observation: 80; Equation: Per Capita Growth (1950–1992) = C(4) + C(5)* Middle Class Share + C(6)*Ethnic Fractionalization; Observation: 80.

A one standard deviation increase in ethnic fractionalization is associated with a growth decrease of 0.21 standard deviations, equivalent to half of a percentage point of growth. A movement from the minimum ethnic fractionalization to the maximum is associated with a fall in growth of 1.5 percentage points.

Figure 2 shows the fall in the per capita growth rate as one goes from high to low middle class share, and from low to high ethnic diversity. The highest growth rate is with a high middle income share and low ethnic diversity; growth miracles Japan and Korea are in this group. The lowest growth is with a low middle income share and high ethnic diversity. Guatemala, Sierra Leone, and Zambia are examples of countries that fall in the low middle class share, high ethnic diversity part of the sample.

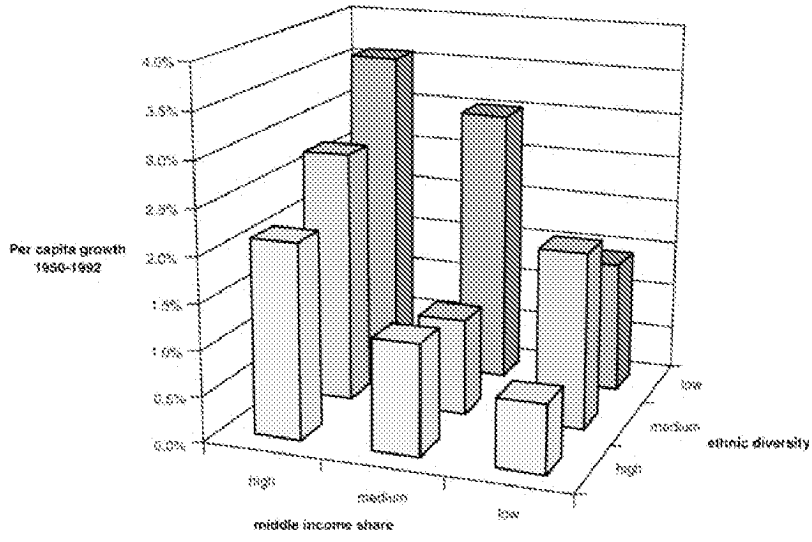

Figure 2. Growth as function of middle income share and ethnic diversity.

How robust are these results to other exogenous factors that have been mentioned in the literature? Bloom and Sachs (1998) and Sachs and Warner (1997) argue that being landlocked is a geographic disadvantage for development. When I introduce a landlocked dummy as an exogenous variable into either the income or growth regressions (and add it as an instrument in this and the following system regressions), it is insignificant and the middle class share and ethnic fractionalization remain significant.

These authors also argue that tropical location is a development disadvantage. I agree with this thesis, but provide a structural explanation for why it matters—through the effect on inequality. I introduce the tropics dummy directly into the income or growth equation controlling for middle class share and ethnic fractionalization. Although the tropics dummy weakens the significance of the ethnic fractionalization variable in the income equation and of the middle class share in the growth equation, the tropics dummy itself is not significant in either equation. Still, insignificance does not prove the coefficient is zero, and the dependence of my results on the exclusion restriction on the tropics dummy should be kept in mind. I may be overstating the role of the middle class share if the ''true'' equation does not contain a direct effect for the tropics dummy.

Another possibility is that commodity-exporting is directly detrimental to growth because it sets off a frenzy of rent-seeking, overindebtedness, and under-investment in human capital (Manzano and Rigobón, 2000; Gylfason, 2000; Lane and Tornell, 1996; Tornell and Lane, 1999; Sachs and Warner, 1995). I also try introducing the commodity exporting dummy directly into the income and growth equations. In the income equation, it leaves the significance of middle class share and ethnic fractionalization unchanged, while commodity-exporting is itself insignificant in these equations. In the growth equation, the significance of the middle class share is weakened, but commodity exporting itself remains insignificant.

Although the original Engermann–Sokoloff hypothesis was about inequality driven by economies of scale in cash crops for export, I test whether inequality is robust to the choice of structure of production rather than the structure of exports as the determining variable. I construct data on the share of agriculture and mining value added in GDP by country, averaged over 1960–1998. I estimate the system of equations substituting this variable for the commodity-exporting and oil-exporting dummies, and find that a high share of agriculture and mining indeed predicts a low share for the middle class. Although ethnic fractionalization becomes insignificant in the second equation for income, the share of the middle class is still a significant causal determinant of both income and growth in this system.

Some of my illustrative examples were about land inequality. Does land inequality also have a negative effect on income and growth like income inequality? It turns out that land inequality is not as well explained by the commodity and oil exporting dummies, but it does seem to be directly related to the tropics dummy. Instrumenting with tropics (and the other exogenous characteristics), higher land inequality significantly reduces both income and growth in three-stage least squares regressions identical to those above except substituting the land Gini coefficient for the middle class share. The source of the land Gini data is Deininger and Olinto (2000), where I average over all available years for each country.

Another robustness check I pursue is to apply the hypothesis to a completely different

dataset—the dataset of US counties in 1990 studied by Alesina et al. (1999). I am unable to instrument with a tropical dummy for inequality in US counties, so I just describe the results of an OLS regression as a stylized fact. More unequal (measured by a higher ratio of mean to median income, as in Alesina et al. 1999) and more ethnically diverse US counties have lower average per capita incomes compared to more homogeneous and equal counties, controlling for whether the county is urban or rural. Although not causal, these results are consistent with the middle class consensus hypothesis as applied to intraregional variation in the US.

As a final robustness check, I investigate whether ethnic fractionalization enters in a quadratic fashion, as some authors have suggested (Collier, 1999; Collier and Hoeffler, 1998). This possibility might also be suggested by some non-monotonicity in Figures 1 and 2. I find some evidence for a quadratic effect for the income regression, with a positive sign on the linear term and a negative sign on the quadratic term for ethnic fractionalization. The turning point is at ethnic fractionalization = 28 on a scale of 0 to 100, so for most of the range of the variable, the relationship is still negative. I find no evidence for a quadratic effect in the growth regression.

To summarize, the result that per capita income and growth depends positively on middle class share and negatively on ethnic fractionalization is robust to instrumenting for endogeneity, alternative control variables, and choice of datasets. I regard this result as the key result of the paper, subject to the usual caveats about adequacy of the instruments, suggesting that the middle class consensus is a deep fundamental determining development outcomes.

3. The Middle Class Consensus and Other Development Outcomes

3.1. The Middle Class Consensus and Human and Infrastructure Capital Accumulation

I now look directly at whether the middle class share and ethnic fractionalization are related to human capital accumulation and other public goods. Table 7 shows the results from system estimations—of the exact same form as for income and growth—for different dependent variables, showing only the coefficients for each dependent variable on the middle class share and ethnic fractionalization. These can be thought of as joint reduced form equations with the income and growth equations. I will test later how controlling for per capita income (which is difficult to do because of its endogeneity) affects these results.

Starting first with the education variables, we see that the middle class share has a weak association with primary enrollment, and a strong association with secondary and tertiary enrollment. Ethnic diversity does not have much of an association with tertiary enrollment, but is related to primary and secondary enrollment. To get an idea of the magnitude of these effects, a one standard deviation increase in ethnic diversity lowers secondary enrollment by 0.26 standard deviations, while a one standard deviation decrease in the middle income share lowers secondary enrollment by 0.93 standard deviations.

Table 7. Results of 3SLS regressions of human capital and infrastructure related variables on share of the middle class and ethnic diversity.

Dependent Variable	RHS Variable	Coefficient	*T*-Statistic	# Observations
Education:				
Primary enrollment	Middle class share	0.0075	1.42	76
	Ethnic diversity	− 0.0021	− 3.05	
Secondary enrollment	Middle class share	0.0402	5.15	76
	Ethnic diversity	− 0.0027	− 2.91	
Tertiary enrollment	Middle class share	0.0170	4.51	79
	Ethnic diversity	− 0.0005	− 0.95	
Health:				
Life expectancy	Middle class share	1.0794	4.18	83
	Ethnic diversity	− 0.1353	− 4.56	
Infant mortality	Middle class share	− 5.1633	− 4.08	77
	Ethnic diversity	0.4551	2.69	
Infants, low birth weight	Middle class share	− 0.3825	− 2.55	72
	Ethnic diversity	0.0755	3.81	
Immunization DPT (%)	Middle class share	1.7796	3.04	80
	Ethnic diversity	− 0.1048	− 1.55	
Immunization polio (%)	Middle class share	1.5629	2.78	80
	Ethnic diversity	− 0.1518	− 2.32	
Infrastructure:				
Percent of roads paved	Middle class share	4.2969	5.52	81
	Ethnic diversity	− 0.1099	− 1.16	
Access to clean water (%)	Middle class share	− 0.4882	− 0.25	51
	Ethnic diversity	− 0.3446	− 3.62	
Access to sanitation (%)	Middle class share	2.5587	2.54	77
	Ethnic diversity	− 0.2989	− 2.50	
Log(telephones per capita)	Middle class share	0.1206	4.81	82
	Ethnic diversity	− 0.0078	− 2.60	
Faults per phone line	Middle class share	0.6374	0.26	35
	Ethnic diversity	1.3833	3.65	

Notes: Each equation contains a constant (not shown) and is part of a system with the one other equation, which gives the middle class share as a function of a commodity-exporting dummy and oil-exporting dummy (both of which are generally significant and similar to the results in Table 5 and 6). Instruments for the whole system are the oil dummy, tropical location, and ethnic diversity.

On health, the middle income share affects all the indicators: life expectancy, infant mortality, low birth weight of infants, percent of children immunized against DPT, and percent of children immunized against polio. Ethnic diversity also significantly affects virtually all the indicators, with the expected sign: higher ethnic diversity leads to worse health outcomes and lower levels of publicly provided health services.[10] A one standard deviation increase in middle class share lowers infant mortality by 0.73 standard deviations, while a one standard deviation fall in ethnic diversity lowers infant mortality by 0.25 standard deviations.

On infrastructure, the results are less uniform. The middle class income share does not affect access to clean water or faults per telephone line, but increases percent of roads

paved, access to sanitation, and telephones. Ethnic diversity does not affect percent of roads paved, but it lowers access to clean water, access to sanitation, telephones, and increases telephone faults per line. A one standard deviation increase in the middle class share raises access to sanitation by 0.53 standard deviations, while a one standard deviation fall in ethnic diversity raises access to sanitation by 0.27 standard deviations.

There is some variation as to which kind of polarization—by class or by ethnic group—matters for the different indicators. Overall, however, these results are supportive of the hypothesis that a middle class consensus—measured by share of the middle class and ethnic homogeneity—is associated with higher levels of human and infrastructure capital accumulation.

3.2. *Economic Policies and the Middle Class Consensus*

The existence of a middle class consensus also affects the choice of economic policies. Societies with a middle class consensus will choose policies to promote growth, while societies polarized by class and ethnic group will opt for redistributive policies. The following table shows the effect of the middle class share and ethnic diversity on four key policy indicators—the black market premium, real overvaluation, financial depth, and trade openness.

The policy indicators respond to different measures of group polarization, as shown in Table 8. Financial depth (reflecting the absence of a redistributive policy like interest rate controls that yield negative real interest rates) is positively related to the middle class share. The overvaluation index (the deviation from Purchasing Power Parity estimated by Dollar, 1992, extended for the whole sample 60–98) and consumer price inflation are negatively related to middle class share. We can interpret this finding as inflation and an overvalued exchange rate being used as a redistributive device in an unequal society. The black market premium is positively related to the degree of ethnic diversity.[11] The trade share in GDP is negatively related to ethnic diversity. Again, we can see trade distortions

Table 8. Results of 3SLS regressions of policy-related variables on share of the middle class and ethnic diversity.

Dependent Variable	RHS Variable	Coefficient	*T*-Statistic	# Observation
Log black market premium	Middle class share	−0.0466	−1.23	71
	Ethnic diversity	0.0126	2.49	
Log overvaluation index	Middle class share	−3.40	−2.53	79
	Ethnic diversity	−0.21	−1.26	
Log CPI inflation	Middle class share	−0.016	−2.42	79
	Ethnic diversity	−0.001	−1.33	
Financial depth	Middle class share	3.7164	3.27	74
	Ethnic diversity	−0.0942	−0.73	
PPP Trade share of GDP	Middle class share	−0.7032	−0.44	75
	Ethnic diversity	−0.4821	−2.32	

and the black market premium being used as redistributive devices in an ethnically-divided society.

3.3. *Democracy, Political Instability, and Middle Class Consensus*

As mentioned in the discussion section, we might expect polarized societies to be less democratic—the most powerful group may attempt to suppress democracy so as not to vote for ''excessive'' (i.e., outside the group) human capital accumulation. We will use the well-known Freedom House measures of political rights and civil liberties to test this prediction.

We might expect that societies that opt for redistributive policies would also have more unstable governments, as different factions fight for the spoils of power. This could show up most overtly as civil war, or less violently as revolutions, coups, constitutional changes, and cabinet changes.

Struggles over redistribution may also put minority groups at risk of economic or political discrimination, or even violent oppression. This type of political instability is captured well by the ''Minorities at Risk'' measure of Gurr (1993), which measures the percent of the population belonging to minorities at risk.

Table 9 shows the results of system estimation with democracy and political instability variables as the dependent variable in the second equation (the first equation as always determines the middle class share endogenously as a function of commodity-exporting and oil-exporting, instrumenting for commodity exporting with tropical location). Suppression of civil liberties decreases with middle class share, but is not related to ethnic diversity. The measure of suppression of political rights increases with ethnic diversity and decreases with the share of the middle class. A middle class consensus is good for

Table 9. Results of 3SLS regressions of democracy and political instability variables on share of the middle class and ethnic diversity.

Dependent Variable	RHS Variable	Coefficient	*T*-Statistic	# Observations
Political rights (1–7 where 1 is most free)	Middle class share	−0.1577	−2.77	82
	Ethnic diversity	0.0146	2.02	
Civil liberties (1–7 where 1 is most free)	Middle class share	−0.1359	−3.14	82
	Ethnic diversity	0.0069	1.22	
Percent of period in civil war	Middle class share	−0.0072	−1.40	76
	Ethnic diversity	0.0014	2.02	
Revolutions and coups per year	Middle class share	−0.0153	−2.01	82
	Ethnic diversity	0.0009	0.96	
Constitutional changes per year	Middle class share	−0.0065	−3.00	82
	Ethnic diversity	0.0007	2.51	
Cabinet changes per year	Middle class share	0.0115	1.57	82
	Ethnic diversity	0.0001	0.08	
Minorities at risk (% of population)	Middle class share	−0.009	−1.02	60
	Ethnic diversity	0.003	2.50	

democracy. A one standard deviation increase in the middle class share raises political rights by 0.57 standard deviations, while a one standard decrease in ethnic diversity raises political rights by 0.21 standard deviations.

As far as political instability is concerned, one or the other polarization measure is statistically significant for civil war, revolutions and coups, constitutional changes, and minorities at risk, while cabinet changes do not appear to be related to these polarization measures. More ethnic diversity is associated with more time in civil war, greater share of the population belonging to minorities at risk, and more constitutional changes, while a greater share for the middle class is associated with fewer revolutions and coups and fewer constitutional changes.[12]

3.4. *"Modernization" Indicators and the Middle Class Consensus*

We can also examine the effect of the middle class consensus on other indicators of a society's development or "modernization." More developed societies move away from agriculture towards industry and services (see Kongsamut, Rebelo, and Xie, 2001 for a recent treatment). In Table 10, I use the share of agriculture in GDP as the dependent variable in the second equation of the 3SLS system. I find that societies with a larger middle class and more ethnolinguistic homogeneity have smaller agriculture shares.

Another indicator of "modernization" is the share of the population that lives in cities. In Table 10, I show the coefficients of the urbanization ratio regressed in the 3SLS system on the middle class share and ethnolinguistic heterogeneity. A larger and more homogenous middle class is associated with more urbanization. A one standard deviation increase in the middle class share raises urbanization by 0.54 standard deviations, while a one standard deviation fall in ethnic diversity increases urbanization by 0.34 standard deviations. The middle class consensus is associated with these two well-known indicators of greater societal modernization.

3.5. *Robustness for Controlling for Income*

The above regressions do not control for per capita income. As I mentioned, we can think of all of them as reduced forms for different measures of development outcomes. However, the question arises whether the relationship of per capita income to the middle

Table 10. Results of 3SLS regressions of "modernization" variables on share of the middle class and ethnic diversity.

Dependent Variable	RHS Variable	Coefficient	*T*-Statistic	# Observations
Share of agriculture in GDP	Middle class share	−1.0740	−2.75	78
	Ethnic diversity	0.1680	3.46	
Urbanization ratio	Middle class share	1.8197	2.71	83
	Ethnic diversity	−0.2807	−3.28	

class consensus is accounting for all of the other results in the paper, since many of these other variables plausibly depend on per capita income.

Unfortunately, it is not easy to identify separately the effect of income, since per capita income is endogenous. I add log per capita income as another right-hand-side variable and instrument for it with the same instrument set. We are now asking the exogenous instruments to simultaneously identify the middle class share and per capita income. The system is identified, but we can expect a high degree of correlation between the instrumented values of per capita income and the middle class share. Despite these problems, we still find an effect after controlling for income of the middle class share and/or ethnic divisions on a few important variables: civil liberty, political rights, tertiary enrollment, DPT immunization, polio immunization, life expectancy, infant mortality, and financial depth.

For the other variables, neither income nor the middle class consensus variables were significant, suggesting a problem with correlation of the instrumented values for income and the middle class share. For these variables, we need to qualify the conclusion that the middle class consensus is directly determining these outcomes, as it may be working through per capita income. The regressions remain valid expressions of the reduced form relation between the middle class consensus and the development outcomes.

4. Conclusions

Countries with a middle class consensus have a higher level of income and growth. We can see why relatively homogenous middle-class societies have more income and growth, they have more human capital and infrastructure accumulation, they have better national economic policies, more democracy, less political instability, more ''modern'' sectoral structure, and more urbanization. These effects are causal, assuming the identifying restrictions hold, as I am able to instrument for middle class share with tropical commodity exporting. In future research, I plan to investigate the effects of endowments of particular commodities on inequality and increase yet further the instrument set.

Readers of previous papers on difficulties created by ethnic heterogeneity often ask what policy implications follow. Surely we do not want to give intellectual comfort to those who engage in ''ethnic cleansing.'' However, the result on the poor development outcomes associated with ethnic heterogeneity only says that, on average, politicians exploit ethnic divisions to the detriment of growth. It remains a choice for individual politicians whether they seek to divide and conquer, or to promote interethnic consensus. Easterly (2001) also suggests that good institutions eliminate the adverse effects of ethnic conflict, although again good institutions are less likely a priori with high ethnic diversity.

The results in this paper are consistent with stories in which societies dominated by an elite class or ethnic group will accumulate less human and infrastructure capital for the majority because of the fear of empowering groups outside the elite's own class or ethnic group. I relate the degree of middle class consensus to tropical endowments which led to commodity-exporting (as in the Engermann–Sokoloff hypothesis) and to ethnolinguistic fragmentation. This paper's argument suggests that rich societies are rich, not because of

superior culture as Landes (1998) would argue, but more because of accidental geographic and demographic make-up as argued by Diamond (1997).

Acknowledgments

I am grateful for comments by two anonymous referees, the editor and associate editor, Thorsten Beck, Stan Engermann, Karla Hoff, Aart Kraay, Ross Levine, Branko Milanovic, Guy Pfeffermann, Maurice Schiff, and Ken Sokoloff and from participants in seminars at Georgetown University, the Inequality Workshop at the World Bank, the University of Copenhagen, and for comments on related work by participants in the Munich CESifo/ University of Washington conference on inequality.

Notes

1. I am indebted for this quote to Miguel (1999).
2. p. 30, Adelman and Morris 1967.
3. Forbes (2000) challenges these findings by using a GMM estimator that removes country effects and focuses on short-term intertemporal variation (across 5-year periods). A recent paper by Barro (2000) also uses panel methods to dispute the effect of inequality on growth, and argues that it only holds for the poorest countries. However, since the argument of this paper and many of those listed are on inequality as a long-run source of polarization and underdevelopment, Forbes' and Barro's findings are not at the relevant frequency. Moreover, Deininger and Olinto (2000) find that even in Forbes' econometric methodology land inequality has a causal negative effect on growth.
4. Another author who emphasizes the importance of factor endowments is Lal (1998).
5. p. 41, Adelman and Morris (1967).
6. Berge and Wood (1997) relate primary commodity exporting to an abundance of natural resources relative to skill, which may be another mechanism by which they are related to inequality. Bourguignon and Morrison (1990) directly relate inequality to mineral exporting and land concentration in agricultural exports. Bourguignon (1993) uses mineral exporting as an instrument in a regression of growth on inequality.
7. This may be related to the famous thesis of Barrington Moore (1966) that (to simplify a little) when the commercial bourgeoisie (read middle class for our purposes) is strong, democracy emerges, whereas when landowners are dominant, dictatorship emerges. An alternative hypothesis for the motivation of extending the franchise is that the rich elite fears revolution (Acemoglu and Robinson, 1998). Gradstein and Justman (1995) have voting determined by a minimum level of income, hence the franchise expands as income grows.
8. After completing a previous draft, I become aware of the 1998–1999 report of the InterAmerican Development Bank (1999), which graphically shows correlations between commodity exports and income inequality and between latitude and income inequality. The advantage of my approach compared to theirs is that I make the endogenous variable (commodity exporting) respond to the exogenous variable (tropical location).
9. Easterly and Levine (1997) also found an effect of ethnic diversity, measured the same way, on income.
10. Filmer and Pritchett (1977) also found that higher ethnic diversity increases infant mortality.
11. Easterly and Levine (1997) also found an effect of ethnic diversity on the black market premium.
12. Annett (1999) also finds higher political instability with more ethnic diversity. Collier and Hoeffler (1998) also find a relationship between ethnic diversity and civil war but find it to be of an inverted U-shape—I use here a different measure of civil war (Sivard, 1993) than theirs.

References

Acemoglu, D., and J. A. Robinson. (2000). ''Why Did the West Extend the Franchise? Democracy, Inequality and Growth in Historical Perspective,'' *Quarterly Journal of Economics* 115(4), 1167–1099.

Adelman, I., and C. T. Morris. (1967). *Society, Politics, and Economic Development: A Quantitative Approach.* Baltimore: Johns Hopkins Press.

Alesina, A. (1994). ''Political Models of Macroeconomic Policy and Fiscal Reforms.'' In Stephan Haggard and Steven Webb (eds), *Voting for Reform: Democracy, Political Liberalization, and Economic Adjustment.* New York, NY: Oxford University Press.

Alesina, A., R. Baqir, and W. Easterly. (1999). ''Public Goods and Ethnic Divisions,'' *Quarterly Journal of Economics* 114(4), 1243–1284.

Alesina, A., R. Baqir, and W. Easterly. (2000). ''Redistributive Government Employment,'' *Journal of Urban Eonomics* 48(2), 219–241.

Alesina, A., and D. Rodrik. (1994). ''Distributive Politics and Economic Growth,'' *Quarterly Journal of Economics* 108, 465–490.

Annett, A. (1999). ''Ethnic and Religious Division, Political Instability, and Government Consumption,'' *IMF mimeo*, March.

Barro R. J. (2000). ''Inequality and Growth in a Panel of Countries,'' *Journal of Economic Growth* 5, 5–32.

Barro, R., and X. Sala-I-Martin. (1995). *Economic Growth.* McGraw-Hill.

Berge, K., and A. Wood. (1997). ''Exporting Manufactures: Human Resources, Natural Resources, and Trade Policy,'' *Journal of Development Studies* 34(1), 35–59.

Bloom, D. E., and J. D. Sachs. (1998). ''Geography, Demography, and Economic Growth in Africa,'' *Brookings Papers on Economic Activity* 2.

Bourguignon, F., and T. Verdier (2000). ''Oligarchy, Democracy, Inequality and Growth,'' *Journal Of Development Economics* 62(2), 285–313.

Bourguignon, F. (1993). ''Croissance, Distribution et Ressources Humaines: Comparison Internationale et Specificites Regionales,'' *Revue d'Economie du Development* 0(4) 3–35.

Bourguignon, F., and C. Morrison. (1990), ''Income Distribution, Development and Foreign Trade: A Cross-sectional Analysis,'' *European Economic Review* 34(6), 1113–1132

Clarke, G. (1995). ''More Evidence on Income Distribution and Growth,'' *Journal of Development Economics* 47, 403–427.

Collier, P. (1999). ''The Political Economy of Ethnicity.'' In Boris Pleskovic and Joseph E. Stiglitz (eds.), *Annual World Bank Conference on Development Economics 1998*, 387–399.

Collier, P., and A. Hoeffler. (1998). ''On Economic Causes of Civil War,'' *Oxford Economic Papers* 50, 563–573.

Decornez, S. S. (1998). ''An Empirical Analysis of the American Middle Class (1968–1992),'' Ph.D. Dissertation, Vanderbilt University.

Deininger, K. W., and P. Olinto. (2000). ''Asset Distribution, Inequality, and Growth,'' Washington, DC: World Bank, Development Research Group, Rural Development, Policy Research Working Paper 2375.

Deininger, K., and L. Squire. (1998). ''New Ways of Looking at Old Issues: Inequality and Growth,'' *Journal of Development Economics* 57(2), 259–287

Deininger, K., and L. Squire. (1996). ''A New Data Set Measuring Income Inequality,'' *World Bank Economic Review* 10(3), 565–591.

Diamond, J. (1997). *Guns, Germs, and Steel: The Fates of Human Societies.* New York: W. W. Norton.

Easterly, W., and R. Levine. (1997). ''Africa's Growth Tragedy: Policies and Ethnic Divisions,'' *Quarterly Journal of Economics* 112(4), 1203–1250.

Easterly, W., and M. Sewadeh. (2001). ''Global Development Network Growth Database,'' http://www.worldbank.org/research/growth/GDNdata.htm.

Easterly, W. (2001). ''Can Institutions Resolve Ethnic Conflict?'' *Economic Development and Cultural Change* (forthcoming).

Engermann, S., and Kenneth S. (1997). ''Factor Endowments, Institutions, and Differential Paths of Growth Among New World Economies: A View from Economic Historians of the United States.'' In Stephen Haber (ed.), *How Latin America Fell Behind.* Stanford CA: Stanford University Press.

Filmer, D., and L. Prichett. (1977). ''Child Mortality and Public Spending on Health: How Much Does Money Matter?'' World Bank Policy Research Working Paper 1864.
Forbes, K. (2000). ''A Reassessment of the Relationship Between Inequality and Growth,'' *American Economic Review* 90(4), 869–87.
Galor, O., and J. Zeira (1993). ''Income Distribution and Macroeconomics,'' *Review of Economic Studies* 60, 35–52.
Goldin, C., and L. Katz (1999), ''The Shaping of Higher Education: The Formative Years in the United States, 1890 to 1940,'' *Journal of Economic Perspectives* 13(1), 37–62.
Goldin, C., and L. Katz. (1997). ''Why the United States Led in Education: Lessons from Secondary School Expansion, 1910 to 1940,'' NBER Working Paper 6144.
Gradstein, M., and M. Justman. (1995). A Political Interpretation of the Kuznets Curve. Mimeo.
Gurr, T. R. (1993). Minorities at Risk: a Global View of Ethnopolitical Conflicts with Contributions by Barbara Harff, Monty G. Marshall, James R. Scarritt. Washington, D.C.: United States Institute of Peace Press.
Glyfason, T. (2000). ''Natural Resources, Education, and Economic Development,'' Center for Economic Policy Research Working Paper No. 2594, October.
Inter-American Development Bank. (1999). Economic and Social Progress in Latin America: Facing Up to Inequality in Latin America, 1998–1999 report.
Knack, S., and P. Keefer. (1997). ''Does Social Capital Have an Economic Payoff? A Cross-country Investigation,'' *Quarterly Journal of Economics* 112(4), 1251–1288.
Kongsamut, P., S. Rebelo, and D. Xie. (2001). ''Beyond Balanced Growth,'' *Review of Economic Studies* (forthcoming).
Lal, D. (1998). *Unintended Consequences: The Impact of Factor Endowments, Culture, and Politics on Long Run Economic Performace*. Cambridge, Mass: MIT Press.
Landes, D. (1998). *The Wealth and Poverty of Nations*. New York NY: Norton.
Lane, P. R., and A. Tornell. (1996). ''Power, Growth, and the Voracity Effect,'' *Journal of Economic Growth* 1(2), 213–241
La Porta, R. F. Lopez-de-Silanes, A. Shleifer, and Robert Vishny. (1999). ''The Quality of Government,'' *Journal of Law, Economics and Organization.*
Mankiw, N. G., D. Romer, and D. Weil. (1992). ''A Contribution to the Empirics of Economic Growth,'' *Quarterly Journal of Economics* 101, 407–437.
Manzano, O., and R. Rigobón. (2000). ''Resource Curse or Debt Overhang?,'' Paper presented at MIT Energy Lab conference.
Miguel, T. (1999). ''Ehtnic diversity and school funding in Kenya.'' Mimeo, Harvard University.
Moore, B. Jr. (1996). *The Social Origins of Dictatorship and Democracy.* Boston: Beacon Press.
Perotti, R. (1996). ''Growth, Income Distribution, and Democracy: What the Data Say,'' *Journal of Economic Growth* 1, 149–188.
Persson, T., and G. Tabellini. (1994). ''Is Inequality Harmful for Growth?,'' *American Economic Review* 84, 600–621.
Sachs, J., and A. Warner. (1997). ''Fundamental Sources of Long-Run Growth,'' *American Economic Review Papers and Proceedings* 87(2), 184–188.
Sachs, J., and A. Warner. (1995). ''Natural Resource Abundance and Economic Growth,'' NBER Working Paper 5398.
Sokoloff, K. L., and S. L. Engerman. (2000). ''Institutions, Factor Endowments, and Path of Development in the New World,'' *Journal of Economic Perspectives* 14(3), 217–232.
Svensson, J. (2000). ''Foreign Aid and Rent-Seeking,'' *Journal of International Economics* 51(2), 437–464.
Tornell, A., and P. Lane. (1999). ''The Voracity Effect,'' *American Economic Review* 89(1), 22–46.