Public Schooling, Indoctrination, and Totalitarianism

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Governments use public education and public ownership of the media to control the information that their citizens receive. More totalitarian governments as well as those with larger wealth transfers make greater investments in publicly controlled information. This finding is borne out from cross-sectional time-series evidence across countries and is confirmed when the recent fall of communism is specifically examined. My results reject the standard public-good view linking education and democracy, and I find evidence that public educational expenditures vary in similar ways to government ownership of television stations. Country-level data on the organization of families as well as data on South African public schools are also examined.

I. Introduction

The standard public-good argument for education assumes that a better-educated populace is more likely to support democracy. This presupposes either that more educated people are inclined to make decisions for themselves or that education inherently instills the belief that democracy is desirable (Cohn 1979, p. 206; Solmon 1982, p. 8). These arguments largely depend on the level of marketable human capital, such as literacy and reasoning ability, and ignore the question of methods: subsidies versus public provision. Yet politicians

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in more totalitarian countries should wish to avoid creating a more independent and critically reasoning constituency. Hence, the public-good explanation would imply a consistent negative relationship between totalitarianism and expenditures on public schooling.[1] I shall provide evidence that this is not the relationship that we observe.

While many others have argued that public schooling may serve to indoctrinate (e.g., see surveys in Lott [1987*c*] and Sowell [1995]),[2] this paper asks the following questions: What are the characteristics of governments that have the greatest returns to indoctrination, are more likely to own the media, and are in fact making larger investments in public education? Are these governments also more likely to exhibit the societal characteristics that make direct parental involvement in their children's lives more costly?

Governments have gone to great lengths to instill desired values in children. Yet it is not just Germany during the 1930s and 1940s or communist countries such as the former Soviet Union that have actively tried to influence children's views.[3] A good example is Sweden, which aggressively instituted a very costly system of nursery school care. When Ingvar Carlsson (who later became prime minister) was education minister, he said that ''school is the spearhead of Socialism'' and ''pre-school training is essential 'to eliminate the social heritage' '' of undesirable parental views (quoted in Huntford [1971, pp. 222, 233]). Swedish educational theorists even advocated tax and government employment policies ''to get both parents out of the home, so that children are forced out as well'' (p. 222; see also Rosen [1996]).

Section II briefly discusses why countries that are more totalitarian and create larger wealth transfers experience greater returns to in-

[1] This argument implicitly makes the assumption that more educated people see democracy as a good. It is not readily apparent why this is necessarily true. Maybe relatively educated people, who are thus supposedly relatively wealthier, feel that a more totalitarian government is better equipped to protect their property.

[2] For previous work on the formation of individual preferences/views, see Thompson and Ruther (1983), Lott (1990), Becker (1996), and Sunstein (1996). This literature debates whether changing the cost of different types of information alters people's preferences or whether these views are independent of these innate preferences. For the discussion here this distinction is not crucial, though I shall assume, as in my 1984 dissertation, that changing the relative costs of different types of information produces different views and not different underlying preferences. See also Becker and Murphy (1988) for related discussions.

[3] For example, during the 1920s and 1950s, the Soviet Union experimented with raising children in ''communal children's houses, dining halls, and other institutions that would decrease the importance of the individual household'' (Shipler 1983, pp. 88–89). While fighting in Afghanistan during the 1980s, the Soviet government forcibly took tens of thousands of 3- and 4-year-old Afghanis to the USSR to be raised away from the influences of their families (Amstutz 1986). The hope was that when later returned to Afghanistan they would form the core of a loyal government administration.

doctrination. Section III updates statistical evidence comparing primary and secondary school expenditures with public ownership of television as well as public medical expenditures. The following sections then test whether educational expenditures were influenced by the fall of communism (Sec. IV) and analyze how family structure as well as the amount of time in which children are removed from their family changes with the type of government (Sec. V). Finally, Section VI uses teacher salaries by race in South Africa to analyze whether the government was able to ''buy'' teachers' support.

II. Outlining the Theory

In past work, I have offered an explanation as to why education was publicly provided across all countries, starting with the assumption that political entrepreneurs maximize support by regulating the size and distribution of ''wealth transfers'' subject to the costs of creating the transfers (Becker 1976, 1983; Peltzman 1976). While larger transfers increase the opposition generated by net losers, politicians can make investments in mitigating this opposition. Force is one such option, for example, by outlawing the organization of opposition political parties or jailing opponents (''totalitarianism''). But controlling the information received by citizens (''indoctrination'') can also be effective. When the cost of protransfer information falls and that of antitransfer information rises, views more favorable to the government are generated. The greater the perceived ''legitimacy'' or ''fairness'' of existing transfers, the lower the opposition. Like public ownership of the news media, government-provided schooling decreases the cost of wealth transfers by changing the relative cost of acquiring different information and predisposing students to support certain transfers. Educational subsidies are not as effective as public schooling in instilling these views, because the increased competition for students creates incentives for educators to provide the information that customers, but not authorities, value (Lott 1987*a*).

Building on Peltzman's (1976) work, my model shows that public educational expenditures should increase with ''totalitarianism'' as well as with government transfers (Lott 1990, pp. 201–8). The model assumes that totalitarianism has two effects: (1) it increases the cost of organizing opposition groups, but (2) it restricts the opportunity set of individuals and hence lowers their real wealth, and this works to increase the level of opposition.[4] The effectiveness of totalitarian-

[4] These restrictions on people's opportunity sets can take many forms, such as limiting where individuals may go or with whom they may associate. Presumably such force is used only because it alters people's opportunity set.

ism in deterring effective opposition increases at a decreasing rate, whereas as a result of diminishing marginal utility of wealth, opposition created by these restrictions increases at an increasing rate. Higher levels of totalitarianism produce diminishing returns to controlling the citizenry through force and increase the marginal return to indoctrination. The model also predicts that as a country's income increases, the opposition arising from any given level of totalitarianism falls, and thus the return to indoctrination also falls. This paper uses Freedom House's Comparative Survey of Freedom index on political freedom and civil liberties to measure totalitarianism. The components of the index[5] measure many different costs of opposition ranging from the existence of multiple political parties to fairness of vote tabulation to military control.

The return to investments in indoctrination should also be related to the level of governmental wealth transfers. As wealth transfers increase and opposition rises, the marginal return to indoctrination also rises. Since all government actions create some wealth transfers, I assume that government size proxies for the level of transfers.

The tests attempt to examine how investments in indoctrination change with the type of government. Unfortunately, direct measures of educational expenditures on indoctrination are not available. As a substitute, total public educational expenditures (which consist of investments in both human capital and indoctrination) are regressed on totalitarianism, government size, and other variables explaining investments in human capital, such as income. The theory is then tested by studying other similar types of goods, for example, television broadcasting, which provides knowledge but also may be used for indoctrination. If government control of television increases with totalitarianism or wealth transfers, it is more plausible that such a relationship also holds for education.[6]

[5] These components include the following: (1) Are multiple political parties (or other means by which opposition to government policy may be organized) allowed? (2) Is candidacy reasonably open? (3) Is there fair polling or tabulation of votes? (4) Have the country's most important leaders been recently elected? (5) Does the opposition attain local or regional office? (6) Is the government free of military and foreign control? (7) Does the rule of law exist (including the independence of the judiciary and the legitimacy of policy behavior)? (8) Is there open public discussion of issues before the country? (9) Is there freedom from political censorship? (10) Are the media independent of the government? (Public ownership is definitely not one of the components of the index. For example, Sweden's broadcast medium is publicly owned but is defined as independent of direct government control since it is an independent public corporation and staffing appointments are *not* political appointments.)

[6] Given the long-run returns to instilling certain values in children, a question arises as to how democratically elected politicians can internalize the returns to these investments. One answer is provided by Alchian (1950), Becker (1976), and Brennan and Buchanan (1980), who argue that efficiency alone, without a consciously

Where data are available, measures of political stability are examined.

III. Schooling, Wealth Transfers, and Totalitarianism: Some Evidence

A. *Government Control of Television*

Few people would be surprised that totalitarian governments favor government ownership of television. Under private provision, license revocation or the threat of revocation could be used to influence programming, though it probably does not constitute a perfect substitute for direct ownership (e.g., Klein, Crawford, and Alchian 1978). I thus predict a positive relation between ownership and totalitarianism. To test my hypothesis, I ran the following probit regression pooling data for 1985 and 1987:

$$\begin{aligned}\text{government ownership of TV}_i &= c + b_1\,\text{totalitarianism rating}_i \\ &\quad + b_2\,\text{real per capita GDP}_i \\ &\quad + b_3\left(\frac{\text{government expenditures}}{\text{GDP}}\right)_i \\ &\quad + b_4(\text{totalitarianism rating} \times \text{real per capita GDP})_i \\ &\quad + b_4\,\text{year dummy 1987} + u_i.\end{aligned} \tag{1}$$

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planned process involved, can explain why ''rules of thumb'' and institutions are adopted. Institutions that have the lowest costs of transferring wealth produce the most political support and are the least likely to be challenged. If an efficiency explanation exists for public schooling (e.g., it lowers the cost of creating transfers), public provision can be explained with ''as if'' statements concerning human motivations. Long-lived, strong political parties that punish politicians who fail to support investments in indoctrination may also solve this problem. Yet two other mechanisms besides strong political parties can ensure that society internalizes the effects of indoctrination. First, the constituencies that receive these long-term benefits could support only politicians who vote to inculcate the desired values. Second, if politicians are ideologues, as assumed in Lott (1987*b*) and Lott and Bronars (1993), the politicians not only value producing current support but also value the transfers they create. The assumption that ideologues consume ''having done the right thing'' can be easily extended to their intrinsically valuing education's moral indoctrination or the resulting future transfers. The greater the extent to which politicians value these moral beliefs or future transfers, the more they will internalize the returns to these investments. Unlike investments in police, the investments in indoctrination may take a relatively long time to produce politically beneficial results and, as with any other capital, should continue to affect views even after the indoctrination stops. For instance, Stalin remained popular in Russia even though he no longer controlled the instruments of repression.

The term government ownership of TV denotes whether a country's television stations are publicly (government TV = 1) or privately owned (government TV = 0).[7] Which category, public or private television ownership, was judged on the basis of which type possessed the most transmitting power and, when that was not available, by the relative number of transmitters. Most countries have either complete government or complete private ownership.[8]

The totalitarianism index using the Freedom House's Comparative Survey of Freedom index on political freedom and civil liberties ranges from values of two to 14 (both the political freedom and civil liberty variables separately range from one to seven), with higher numbers representing more totalitarianism.[9] The ratio of government expenditures to the gross national product expressed as a percentage proxies for the level of transfers. The term ''real per capita gross domestic product'' is measured in 1985 dollars and was obtained from Robert Summers and Alan Heston's Penn World Tables.[10] Finally, the interactive term multiplies the level of totalitarianism by the per capita GDP. Table 1 shows the data's means and standard deviations.

As noted earlier, I expected the probability of government television ownership to increase with either increased totalitarianism or government transfers and decrease with higher values of totalitarianism rating × real per capita GDP. Higher levels of government transfers might measure left-out variables, which increase government spending generally and can be described as a ''taste'' for public ownership. Alternatively, the higher the level of net transfers in a country, the greater the opposition produced and the higher the marginal political product of an additional increment of indoctrination. Real per capita GDP is also included in the regression, though in

[7] The countries used in this sample were Algeria, Burkina Faso, Burundi, Ethiopia, Ghana, Guinea, Kenya, Mauritius, Morocco, Mozambique, Swaziland, Togo, Uganda, Tanzania, Zaire, Zambia, Canada, Costa Rica, Haiti, Honduras, Jamaica, Panama, Saint Kitts, United States, Colombia, Ecuador, Guyana, Venezuela, Bangladesh, India, Israel, Japan, Jordan, Republic of Korea, Malaysia, Oman, Saudi Arabia, Singapore, Sri Lanka, Syria, United Arab Emirates, Austria, Bulgaria, Czechoslovakia, Denmark, Federal Republic of Germany, Greece, Hungary, Ireland, Luxembourg, Malta, Norway, Poland, Sweden, Switzerland, Yugoslavia, and USSR. A couple of countries had two observations.

[8] Given the available information for television, the ownership of transmitters seems virtually identical to the ownership of programming. With the advent of cable television, many countries that previously had purely public ownership of transmitters now allow large portions of their populations to have access to many different sources of programming.

[9] For a discussion that parallels my use of these variables, see Milton Friedman's discussion in Block (1991).

[10] These tables are available from the National Bureau of Economic Research: www.nber.org.

TABLE 1

MEANS AND STANDARD DEVIATIONS FOR INTERNATIONAL COMPARISONS, 1985–92

	Observations	Mean	Standard Deviation
Current educational expenditures per capita	666	278.98	547.34
Total educational expenditures per capita	707	295.83	587.6
Current educational expenditures per student	187	1,146.04	2,917.35
Total educational expenditures per student	213	1,146.86	3,056.53
Totalitarianism index	1,166	7.976	4.1505
Average yearly change in totalitarian index for consecutive years:			
Africa	304	−.253	1.0523
Asia	253	−.103	1.164
Europe	250	−.312	1.108
North America	154	−.039	1.0899
South America	84	−.131	1.190
Government expenditures/GDP	513	42.179	25.879
Government expenditures net of public educational expenditures/GDP	499	35.615	23.353
GDP per capita	891	5,011.51	4,921.96
Government ownership of television	119	.857	.3359
Percentage of 1-year-old children fully immunized against:			
Tuberculosis	834	73.62	25.56
DPT	914	68.55	25.1
Polio	914	70.98	25.186
Measles	911	65.74	23.9
Percentage of pregnant women fully immunized against tetanus	568	38.46	25.57
Average yearly rate of coups d'état a country experienced between 1985 and 1987	406	.0222	.1633
Female labor force participation rate	382	.5374	.2420
Illegitimate births per 100 live births in 1985	29	26.45	24.568
Divorces as a percentage of marriages contracted	486	.2312	.1429
Divorces per 1,000 population	491	1.6216	1.3857
Starting age for education in years of age	841	3.667	.84429
Percentage of preschool age children in public schools	499	45.58	35.09

NOTE.—All dollar values are real 1985 U.S. dollars. Observations are taken from Summers and Heston's Penn World Tables available from the NBER on the Internet.

TABLE 2

GOVERNMENT OWNERSHIP OF TELEVISION AND TOTALITARIANISM: ESTABLISHING THE RELATIONSHIP

	GOVERNMENT OWNERSHIP OF TELEVISION		
DEPENDENT VARIABLE	$N = 58$ (1)	$N = 58$ (2)	$N = 59$ (3)
Totalitarianism rating	.2887*	.3037*	.2038*
	(2.502)	(2.332)	(2.844)
GDP/population	.0000866	.000152	...
	(1.099)	(.553)	
GDP^2/population	...	−3.24e-09	...
		(.733)	
Totalitarianism × (GDP/population)	−7.60e-06	−9.05e-06	...
	(1.498)	(1.573)	
Government expenditures/GDP	.0342*	.0331*	.0378*
	(2.790)	(2.673)	(2.998)
Intercept	−2.2312*	−2.4371**	−1.468**
	(2.059)	(1.778)	(1.778)
Pseudo R^2	.2944	.2956	.2720
χ^2	15.70	15.76	14.61

NOTE.—Probit regressions with χ^2 values are shown in parentheses; year dummies are not shown.
* Statistically significant at least at the 5 percent level.
** Statistically significant at least at the 10 percent level.

contrast to my later estimates for education, its effect on government ownership of television is ambiguous. It can be negative because with higher incomes people want to purchase more private provision. On the other hand, it may be positive since increased levels of income imply more wealth to potentially redistribute.

Using data from 58 countries, equation (1) was estimated as shown in column 1 of table 2. The results all confirm the hypothesis. In all cases the coefficients have the expected sign, and they are significant for the totalitarianism rating or government transfers. Taking the derivative of this regression with respect to the level of totalitarianism, I find that when real per capita GDP is less than $37,987, increases in totalitarianism raise the probability of government ownership. Since the highest real per capita GDP was $19,648 for the United Arab Emirates, an increase in the totalitarianism rating increases the probability of government ownership.[11] Columns 2 and 3 show that these results are not sensitive to the inclusion of either per capita GDP or the interactive term.

[11] In fact, the mean value of real per capita income for all 121 countries for which it could be obtained in 1987 was only $5,012.

B. *Totalitarianism and Expenditures on Schooling*

As discussed earlier, the same relationship should hold for schooling if totalitarian governments derive important benefits such as indoctrination from public schooling. To test the relationship between totalitarianism and educational expenditures, I again use the model shown in equation (1), with minor alterations. The first modification is that the variable real current (i.e., noncapital) public educational expenditures per capita (in dollars) replaces government ownership of television. The government transfers variable is replaced with a ''net government transfers'' variable, government spending net of total school expenditures. This change removes some artificial collinearity that would otherwise exist between government transfers and educational expenditures. The new specification is thus

$$\begin{aligned}\text{current educational expenditures per capita}_i &= c + b_5\text{totalitarianism rating}_i + b_6\text{real per capita GDP}_i \\ &\quad + b_7\left(\frac{\text{government net of school expenditures}}{\text{GDP}}\right)_i \\ &\quad + b_8(\text{totalitarianism rating} \times \text{real per capita GDP})_i + u_{2i}.\end{aligned} \tag{2}$$

A higher totalitarianism rating as well as higher government transfers should increase educational expenditures, whereas higher totalitarianism rating × real per capita GDP should reduce educational expenditures. However, in contrast to the regressions for television ownership, higher per capita GDP should increase expenditures on schooling. I also included squared per capita GDP in some of the specifications to account for any possible nonlinearity. Cross-sectional time-series data for 407 observations from 99 countries are available for the period 1985–92.[12] Country effects as well as separate fixed year effects for each continent to allow for any variation in time trends were also included. The Freedom House index shows that Africa, Asia, Europe, North America, and South America were all becoming freer over this eight-year period, with the largest changes occurring in Europe (mainly because of the changes in the communist countries) and Africa, where the average country in these two continents became freer by 3.1 and 2.5 points, respectively, over this period.

The estimates for equation (2) are shown in columns 1 and 2 of

[12] Unfortunately, information for every country is not available for all years.

TABLE 3

PUBLIC SCHOOLING EXPENDITURES AND TOTALITARIANISM: ORDINARY LEAST SQUARES REGRESSIONS

	CURRENT REAL PUBLIC SCHOOLING EXPENDITURES PER CAPITA		CURRENT REAL PUBLIC SCHOOLING EXPENDITURES PER STUDENT		WITH SAMPLE MEANS BY COUNTRY	
DEPENDENT VARIABLE	$N = 407$ (1)	$N = 407$ (2)	$N = 110$ (3)	$N = 110$ (4)	Current Real Public Schooling Expenditures per Capita: $N = 105$ (5)	Current Real Public Schooling Expenditures per Student: $N = 90$ (6)
Totalitarianism rating	58.301	56.06	220.9	185.7	29.99	200.12
	(3.616)	(3.562)	(2.585)	(1.941)	(2.983)	(2.330)
GDP/population	.1141	−.097	.633	.452	.1227	.683
	(3.596)	(1.478)	(8.205)	(1.943)	(12.63)	(8.507)
GDP^2/population	...	.0000096	...	.000009	...	...
		(3.837)		(1.824)		
Totalitarianism rating × (GDP/population)	−.0047	−.005	−.0506	−.0483	−.001	−.022
	(1.479)	(1.394)	(3.996)	(3.735)	(7.218)	(5.625)
Government expenditures/GDP	6.228	7.06	2.374	4.115	.907	7.07
	(3.596)	(4.146)	(1.241)	(5.591)	(.818)	(.796)
Intercept	−973.92	−644.6	−3,982.9	−3,234	−353.1	−2,379.9
	(5.044)	(2.121)	(2.640)	(1.834)	(3.401)	(2.671)
Adjusted R^2	.9072	.8800	.6363	.6351	.7563	.6214
F-statistic	9.55	30.96	15.8	14.67	81.70	37.51

NOTE.—t-statistics are in parentheses. Country dummies and fixed year effects for each continent are controlled for in specifications 1 and 2. Because over half the sample for specifications 3 and 4 involves countries with only one observation, these specifications control for only fixed year effects for each continent. For specifications 5 and 6, sample means by country are used. Because there is only one observation per country for these regressions, they account for only continent fixed effects.

table 3.[13] The results support neither the standard public-good argument (discussed earlier) nor the hypothesis that democracies and totalitarian regimes are equally inclined to instill support. All coefficients have the expected sign and are significant at least at the 0.01 percent level. According to the first specification, increases in totalitarianism raise current public expenditures on schooling but only as long as real per capita GDP is less than $12,767. Of the 891 observations for which real per capita GDP was available, 785 (87 percent) have lower values.[14] The results provide only weak evidence that the marginal return to indoctrination is lower in wealthier countries.[15]

[13] The countries used in this regression are Algeria, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Congo, Ethiopia, Gabon, Gambia, Ghana, Guinea, Kenya, Lesotho, Malawi, Mali, Mauritius, Morocco, Mozambique, Niger, Nigeria, Rwanda, Seychelles, Sierra Leone, Somalia, Swaziland, Togo, Tunisia, Uganda, Tanzania, Zaire, Zambia, Zimbabwe, Belize, Canada, Costa Rica, Dominican Republic, El Salvador, Haiti, Honduras, Jamaica, Panama, Saint Kitts, Trinidad and Tobago, United States, Chile, Colombia, Ecuador, Guyana, Paraguay, Suriname, Venezuela, Bangladesh, China, India, Indonesia, Iran, Israel, Japan, Jordan, Republic of Korea, Kuwait, Malaysia, Oman, Philippines, Saudi Arabia, Singapore, Sri Lanka, Syria, United Arab Emirates, Yemen, Austria, Belgium, Bulgaria, Czechoslovakia, Denmark, Finland, Federal Republic of Germany, Greece, Hungary, Ireland, Italy, Luxembourg, Malta, Norway, Poland, Romania, Spain, Sweden, Switzerland, Yugoslavia, Australia, Fiji, New Zealand, Solomon Islands, Tonga, Vanuatu, and USSR.

[14] This percentage is higher than in my previous study (Lott 1990), where the corresponding percentage was 63 percent. See also Thompson and Ruther (1983).

[15] The unavoidable use of proxy variables along with their inherent measurement error raises an econometric concern: the model is underidentified since the set of maximum likelihood solutions contains more than one point. Measurement error causes no problem if the K reverse regressions all yield estimates of the same sign on every variable with the direct regression. The maximum and minimum values for a coefficient from this set of $K + 1$ estimates are consistent estimates of the endpoints of an interval that contains the true coefficients. Besides the possibility of measurement error, these proxies are assumed to differ from the true values by some unknown scaling factor, d. As long as the sign of d is known, the sign of the true coefficient can still be inferred, which is our real concern (Leamer 1978, pp. 238–45). Unfortunately, the data do not produce direct and reverse regressions agreeing in sign. For totalitarianism rating, the bounds are −116.5 and 1,302.59; real per capita GDP, −.04597 and 1.9176; net socialism, −7.77 and 218.8; and totalitarianism rating × real per capita GDP, −.00208 and −.2577. Specifications without the country dummy variables provide direct and reverse regressions agreeing in sign. The extreme estimates from these bounded sets indicate that in 1985 increases in totalitarianism increased current public expenditures on schooling *at least* for levels of real per capita GDP up to $860 and *possibly* to $85,642. Of the 892 countries, 17 percent (or 152) have real per capita GDPs less than $860, and even the midpoint for these bounds—$42,391—is more than two times greater than the highest level of real per capita GDP in the sample. However, any estimates falling within those bounds are all equally likely. Thus the data are unambiguous only for values of per capita real GDP below $860: in that range, increases in totalitarianism are associated with increased expenditures on schooling. No countries fall in the range in which the reverse is true.

Klepper and Leamer (1984) suggest one solution to this estimation problem: to introduce additional information on the size of the R^2 that one would observe if all the measurement error were removed. The lower one's estimate of the model's

Not only are the coefficients in the first specification of table 3 statistically significant, but they also demonstrate the economically large impact of totalitarianism over school expenditures. With the mean income for the entire sample assumed to be $5,012, a one-standard-deviation change in the totalitarianism ranking increases real per capita current education expenditures by $144.21, a 0.25-standard-deviation change in educational expenditures and almost 50 percent of its mean. By comparison, a one-standard-deviation change in the government transfers variable implies a $161 increase in educational expenditures. However, the dominant influence on educational expenditures is clearly per capita GDP, where, when the mean totalitarianism ranking (7.976) is assumed, a one-standard-deviation change in personal GDP increases per capita current education expenditures by $377, an amount 2.6 times greater than a similar change produced by the totalitarianism ranking.[16]

Columns 3 and 4 in table 3 report estimates with real current education expenditures per student. Despite missing data on the number of students in many countries, the results remain similar to those already described. Further, the results imply that educational expenditures are a superior good since the squared term is positive. The conclusions drawn from the other coefficients are basically unaffected. To test the public-good hypothesis, I also tried including country population. However, educational expenditures declined with population, and the coefficients that we are focusing on were slightly more statistically significant than what I already report.[17]

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explanatory power in the absence of measurement error, the more likely that the coefficient estimates can be bounded. For specification 1 in table 3, as long as the reader believes that in the absence of measurement error the model would not explain more than 94 percent of the variation in current educational expenditures, the results are not affected by either measurement errors or problems with proxy variables. As in Klepper and Leamer's paper, as long as R^{*2} (the R^2 obtained with this model when there is no measurement error) is less than R_m^{*2} (the maximum value of R^{*2} consistent with all the normalized regressions in the same orthant), the parameter estimates will be bounded. The term R_m^{*2} is defined by

$$R_m^{*2} = R^2 + (1 - R^2) \min_{ij} \left\{ \left[1 - \left(\frac{B_{ij}}{b_j} \right) \right]^{-1} \right\},$$

where B_{ij} is the jth coefficient from the ith normalized reverse regression and b_j is the jth coefficient from the direct regression (Leamer 1992). For specification 1 in table 3, $R_m^{*2} = .9433$.

[16] The regressions in table 3 were rerun replacing the totalitarianism index with the Freedom House indexes for political freedom and then for civil liberties. Not surprisingly, given the high correlation between the political freedom and civil liberty indexes (the correlation coefficient was .93), all the coefficients had the same signs as before with similar t-statistics.

[17] Some may be concerned that ''communist'' nations are distinct from other ''totalitarian'' countries and that their inclusion ''biases'' these various results in my favor. The concern is that communist countries will obviously have high levels of

I also ran separate cross-section regressions without the fixed effects for the sample means for each country and for each of the eight years, in order to examine whether the results were driven solely by time-series changes in the data and whether these results are consistent across the years being studied. The results on individual country means are reported in columns 5 and 6 and demonstrate a remarkable consistency with the earlier pooled estimates. While not shown, separate regressions for individual years produced results that were consistent across years. With the exception of the net government transfers variable and the regression using just the 1992 data (which have the fewest number of observations), all the coefficients were statistically significant.[18]

Since the expected return to indoctrination should depend on how long the government believes it will remain in power, I reran the regressions using a crude measure of political stability based on the average yearly rate of coups d'état a country experienced between 1985 and 1987 (Bienen and Van de Walle 1991, pp. 109–91).[19] When I used only the educational expenditure data over that same period of time and controlled only for the continent dummies (because of the smaller sample), the variable measuring the average number of coups was quite insignificant (with *t*-statistics less than 0.4), and the other results remained similar to those already reported (though the government transfers variable was no longer statistically significant).

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both totalitarianism and socialism and that it is equally obvious that they will own the media and, as the anecdotal evidence suggests, have large expenditures on schooling. This relationship may not hold for other totalitarian countries. Two responses can be made to this objection. The first is that this relationship, which is assumed to be obvious for communist countries, is exactly what our model predicts. The second involves testing to see whether the observations for the communist countries came from the same model as the noncommunist ones. For this test, I reestimated the regressions, excluding the communist countries as defined by Freedom House in that sample. I cannot reject the hypothesis that the observations from these communist countries came from the same model as the other countries. Similarly, I performed the operation for the estimates regarding television ownership. (See Maddala [1977, p. 200] for the appropriate test in which there are not enough observations in the second set to estimate all the regression parameters.)

[18] For example, the coefficients for the totalitarianism variable were 14.99 (*t*-statistic 3.456) for 1985; 26.2 (2.305) for 1986; 31.14 (2.342) for 1987; 37.3 (2.453) for 1988; 34.3 (2.621) for 1989; 42.4 (1.739) for 1990; 68.0 (2.517) for 1991; and 68.28 (0.982) for 1992. The results do exhibit a definite pattern where more totalitarian regimes spend more on indoctrination during the later years, and they are consistent with the current set of results implying a larger investment in indoctrination than was implied by my earlier results for the 1970s (Lott 1990).

[19] Posner (1996, pp. 24–25) provides correlations showing that this measure of coups is positively correlated with other measures of stability, but that the correlation coefficients are never greater than .5. Ideally, one would prefer using a turnover rate that encompassed the periods both during and after the investments being made in the indoctrination.

What about the other theories of education? If education is publicly valuable because it instills democratic values, then for any given level of income, democratic countries should spend relatively more on public schooling. Likewise, the hypothesis that capitalist countries try to create a more docile workforce through education (e.g., Bowles and Gintis 1976) also predicts that relatively free-market countries should spend more, not less. Yet according to the data, it is very clear that the vast majority of democracies with free-market economies spend less. This finding is remarkably consistent across different sets of countries and different measures of educational expenditures.

C. Totalitarianism and Health Care

One possible objection to the preceding results is that totalitarianism generally increases the size of other similar government services that do not have this indoctrination component. Thus a similar positive relationship between totalitarianism and such other expenditures would suggest that there is nothing unique about public schooling or government ownership of television. I have chosen to also study health care. Like schooling, health care could be a means to invest specifically in the opportunities of children from poor families. But in contrast to schooling, there is no obvious return to indoctrination. Any factors that alter the returns to investing in human capital might similarly affect both education and those health care expenditures directed toward the young. My hypothesis is that no significant positive relationship should exist between totalitarianism and public health expenditures. To test this, I replaced the endogenous variable for school expenditures with real per capita public health expenditures for 1990 (Murray, Govindaraj, and Musgrove [1994, pp. 635–37]; only cross-sectional data are available). The government transfers variable was also replaced with a variable for government spending net of public health expenditures.

The coefficients in table 4 analyzing expenditures on public health care show that increased totalitarianism actually *decreases* these expenditures for virtually the entire sample. But they are not distinguishable from zero since the direct effect of totalitarianism on spending fails to be statistically significant. There is no indication that the effect might be large either: it is only one-twentieth the size of the corresponding coefficient for public schooling expenditures.

Another potential objection is that the coefficients for nonhealth government expenditures may simply be serving as a proxy for the ''taste'' for government involvement (see the previous discussion in Sec. III*A*). However, I cannot identify such an effect: the coefficients

TABLE 4

GOVERNMENT HEALTH CARE EXPENDITURES AND TOTALITARIANISM IN 1990

	Real Government Expenditures on Health Care per Capita ($N = 157$)	
Dependent Variable	(1)	(2)
Totalitarianism rating	2.8968	2.8142
	(.705)	(.655)
GDP/population	.1228	.06338
	(17.726)	(2.782)
GDP^2/population	...	3.49e-06
		(2.733)
Totalitarianism rating × (GDP/population)	−.0135	−.0098
	(6.835)	(4.126)
Government expenditures/GDP net of health expenditures	.0349	.0987
	(.045)	(.129)
Intercept	−21.962	19.80
	(.520)	(.449)
Adjusted R^2	.7455	.7559
F-statistic	115.26	97.63

NOTE.—t-statistics are in parentheses. Continent dummies are also controlled for.

are both small and insignificant. When tables 3 and 4 are compared, the results are consistent with the hypothesis that schooling produces an additional return to mitigating the opposition from these transfers over and above what may be accounted for by ''taste.'' Table 4 also has some bearing on interpreting the government transfers variable. One possibility is that socialist governments are spending more on public education because they are simply more concerned with expanding economic opportunities for poor people. If this explanation were correct, similar results might be expected for health care. But according to my findings, this is not the case. Increased government transfers are associated with a higher probability that the government owns the television and spends more on education. In contrast, increased government transfers are not associated with more health care. This supports the hypothesis that totalitarian governments are motivated by a greater desire to instill certain values rather than by a desire to expand services to previously deprived people.

Caution is required in comparing educational and health care expenditures, however. For example, in contrast to educational expenditures, a very large portion of health care is spent on adults and the elderly. Since a direct measure of children's health expenditures across countries was not available, I used information from the United Nations International Children's Emergency Fund on the

TABLE 5

CHILDREN'S IMMUNIZATION RATES AND TOTALITARIANISM, 1985–92

A. POOLED CROSS-SECTIONAL TIME-SERIES DATA WITH YEAR AND COUNTRY FIXED EFFECTS

Dependent Variable	Children Fully Immunized against Tuberculosis (%) ($N = 349$) (1)	Children Fully Immunized against DPT (%) ($N = 387$) (2)	Children Fully Immunized against Polio (%) ($N = 386$) (3)	Children Fully Immunized against Measles (%) ($N = 386$) (4)	Pregnant Women Fully Immunized against Tetanus (%) ($N = 216$) (5)
Totalitarianism rating	−1.1565	−.4430	−.4179	1.60914	−1.5083
	(1.211)	(.511)	(.521)	(1.6091)	(.786)
GDP/population	−.0041	−.0028	−.0045	.00279	.0109
	(1.899)	(1.523)	(2.523)	(1.494)	(1.772)
Totalitarianism rating × (GDP/population)	.0000376	.0004343	.000425	.0000132	.00049
	(1.682)	(2.159)	(2.231)	(.064)	(.713)
Government expenditures/GDP net of health expenditures	.04858	.01189	.0349	−.00682	−.7286
	(.464)	(.129)	(.045)	(.072)	(2.581)
Intercept	−21.962	65.633	95.975	8.5515	−21.962
	(.520)	(2.199)	(3.380)	(.278)	(.520)
Adjusted R^2	.7934	.8022	.8195	.7737	.6200
F-statistic	15.22	16.66	18.47	14.30	5.94

B. With Sample Means by Country

Dependent Variable	Children Fully Immunized against Tuberculosis (%) ($N = 77$) (6)	Children Fully Immunized against DPT (%) ($N = 80$) (7)	Children Fully Immunized against Polio (%) ($N = 80$) (8)	Children Fully Immunized against Measles (%) ($N = 80$) (9)	Pregnant Women Fully Immunized against Tetanus (%) ($N = 56$) (10)
Totalitarianism rating	−1.5487	−3.338	−3.9803	−2.1877	−.9136
	(1.682)	(3.946)	(4.924)	(2.529)	(.706)
GDP/population	−.0018	−.00135	−.00161	−.00122	.0032
	(1.652)	(1.615)	(2.016)	(1.432)	(1.053)
Totalitarianism rating × (GDP/population)	.00034	.000411	.000439	.000374	.000067
	(2.461)	(3.763)	(4.200)	(3.345)	(.214)
Government expenditures/GDP net of health expenditures	.1793	.3523	.3671	.2984	−.0561
	(1.930)	(4.536)	(4.946)	(3.757)	(.355)
Intercept	83.94	82.90	89.85	71.93	44.71
	(7.841)	(9.584)	(10.871)	(8.132)	(3.235)
Adjusted R^2	.0911	.4628	.5287	.3269	.1889
F-statistic	2.91	18.01	23.16	23.16	4.20

Note.—t-statistics are in parentheses.

percentage of 1-year-old children fully immunized against tuberculosis, DPT (diphtheria, pertussis, and tetanus), polio, and measles. The share of pregnant women who were fully immunized against tetanus yielded another suitable measure. These data were available yearly from 1985 to 1992.

I used these two alternative measures for regression analysis, trying various specifications: time-series cross-sectional pooled data with individual country and year fixed effects, pooled data with individual country- and continent-specific year fixed effects, and the cross-sectional regressions on the sample means for each country.[20] All but one of the specifications in table 5 show the opposite relationship between totalitarianism and children's health care compared to what earlier regressions found between totalitarianism and educational expenditures. Half of these regressions imply that when incomes are below the sample mean income of $5,849, totalitarian countries will have lower immunization rates than freer countries. The average income for countries with a totalitarianism ranking above the mean (7.98) is only $2,778. In fact, 81 percent of the observations in which the totalitarianism ranking is above the mean have incomes less than $5,849.

IV. The Fall of Communism and Its Effect on Educational Expenditures

The recent fall of communism in Eastern Europe and the former Soviet Union provides a natural experiment. If my theory is correct, educational spending should fall as a result of the decline in totalitarianism. The long-run returns to educational investments in human capital are also likely to have changed with communism's fall. To help control for the changing returns to investments in human capital, we can compare the changing public expenditures in education with public expenditures for health care.[21] A simple human capital hypothesis might predict that total expenditures on public education would temporarily rise relative to expenditures on public health care simply because many individuals may want to make investments that allow them to switch careers. But if the indoctrination hypothesis is correct, educational expenditures should have decreased relative to health care spending.

Comparing public schooling and health expenditures is also moti-

[20] The estimates using continent-specific year fixed effects are not reported, but they produce less significant results.

[21] Another possibility would have been to compare educational expenditures as a share of total government expenditures, but good data on this were extremely limited during this transitional period.

TABLE 6

MEANS AND STANDARD DEVIATIONS FOR EXAMINING THE CHANGES IN EASTERN EUROPE AND THE FORMER SOVIET REPUBLICS

	Observations	Mean	Standard Deviation
Public educational expenditures as a percentage of GDP	89	4.8697	1.246
Public health care expenditures as a percentage of GDP	90	3.61	1.3472
Ratio of public educational to public health care expenditures	88	1.4674	.5187
Totalitarianism index	68	8.691	3.347
Dummy variable for whether a country was still communist	88	.4337	.4986

vated because real income estimates were available for relatively few postcommunist observations for Eastern Europe or the former Soviet republics.[22] The 1995 edition of UNICEF's *The State of the World's Children* provides consistent yearly data on school and health expenditures for Albania, Bulgaria, the areas that are now the Czech Republic and Slovakia, Hungary, Poland, Romania, and the areas of the former USSR that are now Armenia, Azerbaijan, Belarus, Georgia, Latvia, Lithuania, Russia, and Ukraine for the period 1989–93.[23]

To test whether the returns to expenditures for educational indoctrination dropped with the fall of communism, I regressed the ratio of total public educational expenditures to total public health care expenditures alternatively on the totalitarianism ranking or on a dummy variable that equals one when the country is communist. Country and year fixed effects were included. Table 6 shows these variables' means and standard deviations. The results are striking. While government educational expenditures as a percentage of GDP fell by 4 percent from the last year under communism to the last

[22] The data used to measure real income were taken from the Penn World Tables. Even if these estimates were available for countries making the transition from communism, income is likely to be measured with a great deal of noise during this period (e.g., there is the problem that while prices have risen, people will no longer have to wait long times in queues).

[23] The Estonian data were available for only one year, 1993, and thus could not be used to determine the changes over time. For seven countries (Belarus, Bulgaria, Czech Republic, Latvia, Lithuania, Slovakia, and Ukraine) later observations were available for 1994, and for four countries (Georgia, Hungary, Latvia, and Romania) earlier observations for 1980 and 1985. While my reliance on 1989 as a starting date for most of the sample may mean some changes are missed because of the anticipated collapse of communism, at least for Hungary, Latvia, and Romania, their ratio of public educational and health care expenditures exhibited relatively little change from 1985 to 1989.

TABLE 7

WHAT HAPPENED TO EDUCATIONAL EXPENDITURES IN EASTERN EUROPEAN COUNTRIES WHEN COMMUNISM COLLAPSED? CONTROLLING FOR COUNTRY FIXED EFFECTS

	Ratio of a Country's Public Education to Public Health Care Expenditures in a Particular Year	
Dependent Variable	$N = 62$ (1)	$N = 88$ (2)
Totalitarianism rating	.042	...
	(3.670)	
Dummy variable for whether country was still communist	...	.2667
		(5.081)
Intercept	1.1514	1.3305
	(7.606)	(13.913)
Adjusted R^2	.8253	.8114
F-statistic	20.21	25.96

year in the sample, government health care expenditures as a percentage of GDP rose by over 70 percent.[24]

The regression results in table 7 indicate that when communism fell, public educational expenditures declined relative to public health care expenditures. For the first specification, a one-standard-deviation change in the totalitarianism index explains about 27 percent of a one-standard-deviation change in the ratio of public education to public health care expenditures. According to the second specification, moving from being a communist to a noncommunist country implies that the ratio will decline by 27 percentage points. Both specifications include country dummy variables. The results suggest that our measure of totalitarianism was as accurate as whether a country was labeled ''communist'' in determining government expenditures.

V. Totalitarianism and Replacing the Family as the Source of Values

As suggested earlier for Sweden, governments might attempt to weaken parental influence by encouraging women to enter the workforce, thus encouraging parents to be away from their children.

[24] Discussions with UNICEF indicate that this represents a real increase in health expenditures and not a mistake in their failing to account for switches in accounting practices. The agency spent a great deal of time putting these numbers together for these two categories, and comparisons with other government expenditures during this period of time are very limited.

While these policies may take many forms (e.g., taxes or opportunities for government employment), I shall use the indirect approach of measuring whether female labor force participation rates vary by type of government. Other suggestive evidence that would be consistent with governments' raising the cost of parental involvement is the extent of illegitimate births or divorces. Given the scarcity of time, parental influence is more difficult when there is only a single parent heading a household, and single parents are more likely to rely on outside substitutes such as the government. Families obviously also break up in nontotalitarian countries, and this will also affect family-transmitted values. But the question here is whether the rate of family breakup is higher in more totalitarian countries.

Obviously other factors, independent of the influences of government—such as income, culture, and religion—affect female labor force participation, illegitimate births, and divorces. Increased labor force participation and higher education are associated with fewer children (Laumann et al. 1994, p. 458). It is hoped that employing the specifications used earlier in this paper, including fixed effects and income, accounts for at least some of these factors. Any relationships are also fraught with questions of reverse causation.[25] The link between government transfers and family breakdown is extremely

[25] An alternative hypothesis is that more totalitarian and socialist countries invest in public nursery schools and promote female labor force participation rates as a means of promoting sexual equality. Thus the breakdown of the family is not the desired end result, but a by-product that is generated when governments attempt to promote equality. Yet, with respect to the case of divorce, women are making larger family-specific investments, and thus making divorces easier facilitates enabling already-married men to hold up married women for the investments that they have made in the family (e.g., Parkman 1992).

Communists have long viewed themselves as advocating changes that liberate women. Marx viewed it as one of the benefits of the withering away of the family (McLellan 1973). Yet in the Soviet Union, these changes have not produced the ''panacea'' claimed in Marxist ideology. Smith (1976, p. 127) writes that many Russian women feel that these ''advances'' have ''made life more trying.'' In addition, it is very easy to find explicit references to using many of these very same policies to separate children from their families so that the correct views can be instilled in children (Glenn 1995).

The most direct measure of these predictions would have been the total costs imposed by governments on families that remain together, though this is not available. Another problem with divorce rates and other measures is that governments are changing not merely the costs but also the returns to families remaining intact. In more totalitarian countries, families may have a greater incentive to remain together because it is more difficult for them to trust others. It is possible that totalitarian governments are successful even if the regressions find that families are more stable under totalitarian governments, simply because these governments may have prevented families from being as stable as they would otherwise have been. My measure of totalitarianism is thus likely to underestimate the returns to totalitarian governments' weakening families and thus makes it difficult to find a positive relationship between totalitarianism and these variables.

unreliable because more family breakdowns can induce more transfers; thus no emphasis will be placed on it here. It is also conceivable that countries with unstable family relationships may facilitate totalitarian regimes' coming to power in the first place. Some evidence from East and West Germany suggests that totalitarianism has an independent effect. Both regions had fairly similar divorce rates until the imposition of communism after World War II split Germany apart; it was only after the imposition of communism that the rate in East Germany gradually became higher (Haskey 1992).

Finally, more totalitarian governments may start public pre–primary schooling at an earlier age and have a larger percentage of pre–primary school age children attending government-run schools.[26] To test the relationship between totalitarianism and these two measures of separating children from the influence of their parents, the type of specification used in table 3 explaining educational expenditures is again used here, along with government expenditures net of educational expenditures.

While the results reported in table 8 are not as consistently significant as earlier ones, the general pattern remains similar to those shown in tables 2 and 3. In all the specifications, higher totalitarianism is related to changes that are consistent with raising the cost of direct parental involvement in forming children's views. Column 1 examines the relationship between the type of government and female labor force participation. The cross-country female labor force participation rates for 1989, 1990, and 1991 were produced by dividing the ratio of females to males in the labor force by the ratio of females to males in the general population and expressing this as a percentage (1993 and 1994 editions of the United Nations' *Human Development Report*).[27] Illegitimacy, in column 2, is measured by the number of illegitimate births per 100 live births in 1985 (United Nations 1988). Two measures of divorce are also available over multiple years, though both are somewhat problematic.[28] One measure,

[26] For this last test, it is not really necessary to distinguish whether children went to private schools or remained home with their parents, but simply whether the children were being educated at this young age by the government.

[27] Using only the variable for females as a percentage of males in the labor force produced even more statistically and economically significant results than those reported in table 5. The value for females as a percentage of males in the labor force for 1989 was obtained from the average for 1988–90, and the value for 1991 was obtained from the average for 1990–92. I also tried running the averages for females as a percentage of males in the labor force on the averages for those years for the measures of totalitarianism, socialism, and per capita income, with similar results.

[28] For our purposes, what matters is whether people are married while they are raising their children, so the assumption is that these measures of divorce are positively correlated with divorces among couples with minor children. Both measures of divorce also fail to account (though in different ways) for the age distribution of the population.

TABLE 8

How the Return to Weakening the Family Varies with Type of Government

Dependent Variable	Female Labor Force Participation Rate Adjusted ($N = 172$) (1)	Illegitimate Births per 100 Live Births ($N = 24$) (2)	Divorces as a Percentage of Marriages Contracted ($N = 271$) (3)	Divorces per 1,000 Population ($N = 272$) (4)
Totalitarianism rating	.0426	5.8594*	.0233*	.1074*
	(1.431)	(1.945)	(4.490)	(4.753)
GDP/population	.0000578*	.0028	.000044*	.00021*
	(2.069)	(1.055)	(5.055)	(5.502)
Totalitarianism rating × (GDP/population)	−.00000951*	−.00075**	−3.42e-06*	−.000016*
	(2.096)	(1.874)	(3.439)	(3.692)
Government expenditures/GDP	.00002	−.0008	−.000051*	−.00017*
	(1.470)	(.750)	(5.552)	(4.236)
Intercept	.2566	−2.4209	.1176	.6202*
	(.755)	(.093)	(.318)	(3.224)
Adjusted R^2	.1060	.1639	.9332	.9706
F-statistic	3.23	2.72	1.79	1.59

Note.—t-statistics are in parentheses. The fixed-effect dummies are not shown. Both country and year fixed effects are used for cols. 3 and 4. Because only a couple of years' data are available for col. 1, only continent and year fixed effects are used. Col. 2 uses only one year's worth of data and thus uses only continent fixed effects.

* Statistically significant at the 5 percent level.

** Statistically significant at the 10 percent level.

which uses divorces as a percentage of marriages during a particular year, fails to deal with the stock of preexisting marriages. A second measure uses divorces per 1,000 population.

Totalitarianism's impact on family structure in table 8 is similar to the effects shown for schooling and government ownership of television, though the coefficient is not statistically significant for female labor force participation rates. For two-thirds of the sample, increased totalitarianism increases female labor force participation, and the effect can be large. At the median income, a one-standard-deviation change in totalitarianism can explain 24 percent of a one-standard-deviation change in female labor force participation. The regression results indicate that increases in totalitarianism increase illegitimacy for 77 percent of the sample and raise divorce rates for at least 73 percent of the sample (when either measure of divorce is used). Again, the effects are quite large. At the median income, a one-standard-deviation change in totalitarianism can explain 61 percent of a one-standard-deviation change in illegitimate births.

The results for starting age for school and the percentage of preschool children attending public schools provide only mixed support for the hypothesis.[29] While the coefficients' signs are consistent with the indoctrination hypothesis, only the results for preschool attendance of public schools are statistically significant.

VI. Totalitarianism and the Rents Educators Receive

A corollary of the view that totalitarian governments value public schooling to instill desired values is that they will also pay rents to teachers. When it is difficult to monitor teacher behavior, the threatened loss of these premiums can help ensure that teachers work to instill the desired views. The issue is to identify which teachers must be paid the highest rents in order to elicit their cooperation.

South Africa during 1981 provides an interesting test. There were four different school systems coexisting side by side in apartheid-era South Africa divided along racial lines: whites, Asians, coloreds, and blacks.[30] Teachers were segregated along the same racial lines as the

[29] The data on starting ages for school and the percentage of preschool children attending public schools are obtained from the *UNESCO Statistical Yearbook* (1991, 1993, and 1994). The results are available from the author.

[30] See South African Bureau of Statistics (1974, pp. 7.23–7.55). The wage data and the data on the percentage of each racial group in each occupation are taken from Gordon et al. (1978). The data on the percentage of whites with a standard 10 level of education for all professions other than education were obtained from Josh Gersen, Department of Economics, University of Cape Town, South Africa. The industry classifications available were primary and secondary school education, basic metals, metal products, machinery, electrical, clothing, textiles, chemicals, food, beverages, tobacco, leather, footwear, wood and cork, furniture, paper and paper products, rubber, plastic products, nonmetallic minerals, mining, construction, wholesale

students. My hypothesis would predict that nonwhite educators receive rents relative to those of white educators. It was less costly for a white teacher to support the racist government, in terms of the amount of opposition he or she faced. Also, white educators were receiving the general benefits from having a white government. In contrast, the traditional explanation, which treats teachers as an interest group whose support is being purchased at the ballot box, would predict that it is the white—not black—educators who received the greatest transfers. After all, it is whites and not blacks who could vote.

To test this, I compiled the natural log of the average white, Asian, colored, and black monthly wages (ln wage) across 35 different industries (D_j, where j = industry), including elementary and secondary schools as one industry. I also have a dummy variable for race (Asian, African, and colored) and an interactive term for whether someone both is an educator and belongs to a particular race. Normally, a wage regression would also include information on education levels for each of the four racial groups in each industry. Unfortunately, such data are available only for whites and measure only the percentage of whites in each industry who have obtained at least a standard 10 level of education (approximately twelfth grade in American high schools). I use this variable to rank the amount of education by industry, and if this specification is to be accurate, one must assume that the amount of education required for the different races is strongly correlated across industries. However, I have no information to indicate whether this is true. Finally, the percentage of workers in an occupation held by each racial group provides a rough measure to control for industries that restrict entry:

$$\begin{aligned}\ln \text{wage}_i &= C + \sum_{J=1}^{34} b_j D_{ij} + b_{35}\text{Asian}_i + b_{36}\text{African}_i \\ &\quad + b_{37}\text{colored}_i + b_{38}\text{Asian} \times \text{educator}_i \\ &\quad + b_{39}\text{African} \times \text{educator}_i + b_{40}\text{colored} \times \text{educator}_i \\ &\quad + b_{41}\text{percentage of whites with standard 10 education by industry}_i \\ &\quad + \sum_{R=1}^{4} b_R(\text{percentage of an occupation held by each racial group})_{R_i} \\ &\quad + u_i. \end{aligned} \tag{3}$$

trade, retail trade, motor trade, hotels, banking, building societies, manufacturing, motor vehicle production, post office, South African Transport System, central government, provincial government, local government, and insurance companies.

TABLE 9

MEANS AND STANDARD DEVIATIONS FOR EXAMINING THE MONTHY WAGES IN SOUTH AFRICA IN 1980

	Observations	Mean	Standard Deviation
ln (wage)	139	6.1317	.61318
Percentage of whites with standard 10 education by industry	139	.8112	.1081
Percentage of occupation occupied by Africans	139	.4712	.1937
Percentage of occupation occupied by Asians	139	.0603	.0623
Percentage of occupation occupied by coloreds	139	.1634	.1021
Percentage of occupation occupied by whites	139	.3068	.1973

The dummy variable for whites and the dummy variable for banking are excluded so that the intercept term represents white earnings in banking. I expect the following results: the race dummies should be negative, the interactions between the race and educator dummies should be positive, and the percentage of whites with a standard 10 education by industry should be positive. The means and standard deviations of the variables are shown in table 9.

The results from running equation (3) are shown in table 10. All the coefficients have the predicted sign. They indicate that even after the normal return to being an educator is controlled for, being a nonwhite and an educator increases earnings even more. Furthermore, each one of the race variables is significant, and the interactive terms for Africans, Asians, and coloreds are significant at least at the 0.10 percent level for a two-tailed *t*-test. While white educators have higher absolute earnings, the minority educators received the greatest rents. Accounting for the percentage of an occupation occupied by each race raised the *t*-statistics for the race and education industry dummies but did not qualitatively alter the results. To allow more differences in educational attainment across racial groups, the last two specifications also show the effect of interacting the percentage of whites with a standard 10 education by industry by each of the racial dummies. Again, the results were very similar.

These results could arise because of greater similarity in skill across race in education than in other industries.[31] Greater homoge-

[31] The qualifications for nonwhite educators are significantly lower than for whites. The percentages of teachers by race that do not have a teacher's certificate or diploma and a standard 10 level of education are 3.36 percent for whites, 85 percent for Africans, 19.7 percent for Asians, and 66.14 percent for coloreds (Gordon et al. 1978). Unfortunately, this type of breakdown was not available across occupational

TABLE 10

RENTS TO EDUCATORS IN SOUTH AFRICA ($N = 139$)

	SPECIFICATION			
	(1)	(2)	(3)	(4)
Intercept	5.269	5.4811	5.0380	5.2156
	(22.052)	(28.121)	(12.777)	(16.479)
Education industry dummy	.0684	.0963	.03813	.0042
	(.331)	(.561)	(.207)	(.029)
African	−1.4074	−1.678	−1.1619	−1.5709
	(30.973)	(16.297)	(3.371)	(5.577)
Asian	−.7676	−.8934	−.4155	−.3361
	(16.725)	(12.627)	(1.185)	(1.084)
Colored	−1.1295	−1.288	−1.1619	−1.2871
	(24.857)	(15.429)	(3.371)	(4.206)
African educator*	.5025	.4927	.5302	.5033
	(1.869)	(2.296)	(1.936)	(2.339)
Asian educator*	.6882	.6576	.7296	.7180
	(2.559)	(3.063)	(2.661)	(3.335)
Colored educator*	.4602	.4493	.4659	.4488
	(1.712)	(2.094)	(1.701)	(.2087)
Percentage of whites with standard 10 level of education	1.873	1.90	...	...
	(6.070)	(7.726)		
Percentage of whites with standard 10 education by industry interacted with dummy variables for:				
Whites	...	...	2.205	2.29
			(3.688)	(4.866)
Coloreds	...	...	.0214	.0230
			(3.385)	(4.588)
Asians	...	...	.0177	.0164
			(2.775)	(3.220)
Blacks	...	...	.0190	.0218
			(3.005)	(4.350)
Adjusted R^2	.9066	.9405	.9051	.9415
F-statistic	34.51	50.59	31.59	48.30

NOTE.—The endogenous variable is the log of monthly wage. Specifications 2 and 4 also control for the percentage of occupation occupied by each racial group.

neity in education would presumably have the greatest impact on Africans who earn the lowest wages in other occupations. While I cannot completely rule this out, the ranking of the interactive coefficients for race and whether one is an educator provides some evidence against this objection. The coefficients for Asian educators are consistently larger than for African educators.

groups. Another objection is that the supply of nonwhite educators (those with enough education) is small relative to the number demanded compared to whites. While this may be true over the short run, in the long run it seems that the reverse would be true since nonwhites are relatively restricted in terms of opportunities. In other words, we expect that the long-run supply of nonwhite educators is more elastic that the long-run supply of white educators.

VII. Conclusion

A consistent relationship exists between the form of government and the level of investments made in public education. Totalitarian governments and governments with high transfers spend a lot on public education and are likely to own television stations. This cannot be explained simply by greater involvement in all sectors, as data on health care show. The finding is borne out from cross-sectional time-series evidence across countries. A similar relationship was also found for public educational expenditures during Eastern Europe's and the former Soviet Union's recent transition from communism.

In addition, this paper examined a broad array of phenomena that are consistent with more totalitarian and socialist governments' raising the costs of parental involvement in shaping their children's values. Examples include raising the female labor participation rate, raising the illegitimate birth rate and divorce rate, and lowering the school age for the public school system. The results correspond closely with those found for government ownership of television and public educational expenditures.

However, just as governments benefit from controlling the information people receive through education and television, my results suggest that politicians generally should also be expected to care about the information that voters receive. Information is costly, and political ''spin'' may matter.[32]

Appendix

Data Sources

The totalitarianism ranking from 1985 to 1993 was obtained from *Freedom at Issue,* the January–February issues for 1986–90, and from *Freedom Review,* the January–February issues for 1991–94. The source for the type of ownership of television stations was the *UNESCO Statistical Yearbook* (1989). Primary and secondary public educational expenditures as a percentage of gross national product and as a percentage of government expenditures were available from the 1989–93 editions of the *UNESCO Statistical Yearbook,* table 4.5; this was used to calculate government expenditures net of educational expenditures as a percentage of GNP. Observations that included more than primary and secondary schooling, did not include both, or listed only expenditures by the central government were excluded. The age at which children are required to start school is obtained from the 1993 and

[32] For a discussion of how changing the relative costs of information in a democracy can matter, see Lott and Fremling (1989). For an example of other decision-making costs in political markets, see Coate and Morris (1995) and Fremling and Lott (1996).

1994 editions of the *UNESCO Statistical Yearbook,* table 3.2. The percentage of preschool children attending public schools is also taken from that same source from the 1991, 1993, and 1994 editions, table 3.3. Data on current and total educational expenditures were also obtained from table 4.5. The data on population, a real price index based on terms of trade to convert educational expenditures into real 1985 dollars, and real GDP per capita in constant 1985 dollars using a chain index were obtained from the Penn World Tables. The national public health expenditure data for 1990 were obtained from Murray et al. (1994). The data for the ratio of public educational to public health care expenditures are obtained from UNICEF's (August 1994) table on government revenue and expenditure. The average coups d'état rate during 1985–87 was available from Bienen and Van de Walle (1991, pp. 109–91).

Immunization rates for tuberculosis, DPT, polio, measles, and tetanus were obtained from UNICEF's *The State of the World's Children* (various years). Data on the percentage of illegitimate births were obtained from the *Demographic Yearbook, 1986* (United Nations 1988). The divorce rate per 1,000 population is taken from various issues of the *Demographic Yearbook.* The marriage rate per 1,000 population was obtained from the same source, and the measure of divorces as a percentage of marriages is simply the divorce rate divided by the marriage rate. Female labor force participation rates (females as a percentage of males) and the ratio of females to males in the population were both drawn from the United Nation's *Human Development Report* for 1992, 1993, and 1994.

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