

## Democracy and Foreign Education

By ANTONIO SPILIMBERGO\*

*Despite the large amount of private and public resources spent on foreign education, there is no systematic evidence that foreign-educated individuals foster democracy in their home countries. Using a unique panel dataset on foreign students starting in the 1950s, I show that foreign-educated individuals promote democracy in their home country, but only if the foreign education is acquired in democratic countries. The results are robust to several estimation techniques, to different definitions of democracy, and to the inclusion of a variety of control variables, including democracy in trading partners, neighboring countries, level of income, and level and stock of education. (JEL D72, I21, O15)*

Do foreign-educated individuals play a role in fostering democracy in their home countries? Despite the large amount of resources spent on financing foreign education, there is no systematic study on the effects of foreign education on democracy. This paper fills this gap using a dataset on foreign students that includes almost all host and sending countries and spans over 50 years.

Numerous policy initiatives and large investment in the United States are based on the notion that foreign-educated students promote democracy in their countries of origin. Through the Fulbright Program, the US government has financed more than 158,000 foreigners studying in the United States.<sup>1</sup> The US government not only finances the education of foreign students, but also annually issues more than 250,000 nonimmigrant visas for foreign students; more than five million individuals have received visas to study in the United States since 1971.<sup>2</sup> US efforts to educate foreign students have produced impressive results; 46 current and 165 former heads of governments are products of US higher education. Foreign leaders educated in the United States include Benazir Bhutto, Vicente Fox, Ehud Barak, Corazon Aquino, Hamid Karzai, and Michelle Bachelet.<sup>3</sup> Finally, US President George W. Bush repeatedly stated that foreign education was a central pillar of his strategy in the “war on terror.”<sup>4</sup>

\* International Monetary Fund, 700 19th Street, NW, Washington, DC 20431 (e-mail: [aspilimbergo@imf.org](mailto:aspilimbergo@imf.org)). The views expressed in this paper are those of the author and do not necessarily represent those of the IMF or its Board of Directors. I thank my colleagues at the IMF for useful discussions and the participants to the 2006 NBER summer institute group on national security. I am particularly indebted to Daron Acemoglu, Olivier Blanchard, Charles Clotfelter, Steven Davis, Martin Feldstein, Simon Johnson, Kala Krishna, Larry Katz, James Rauch, Andy Rose, Mark Rosenzweig, Arvind Subramanian, and two anonymous referees for useful suggestions, and Pierre Yared and Ben Jones for sharing their data. José Romero and Tracey Lookadoo provided excellent research assistance.

<sup>1</sup> “The Fulbright Program ... *is an effective and prestigious form of public diplomacy.*” “Many Fulbrighters ... *often are involved in building institutions and government service when they return home*” (<http://exchanges.state.gov/education/fulbright/>) (italics added).

<sup>2</sup> The US Citizenship and Immigration Services (USCIS) estimates that on any given day in 2004 more than 600,000 foreign students (excluding Canadians) were present in the United States ([http://www.uscis.gov/graphics/shared/statistics/publications/NIM\\_2004.pdf](http://www.uscis.gov/graphics/shared/statistics/publications/NIM_2004.pdf)).

<sup>3</sup> American Immigration Law Foundation (<http://www.aifl.org/>).

<sup>4</sup> “\$474 million [is allocated] for Educational and Cultural Exchange programs, ... with an emphasis on the Muslim world. These programs seek to improve the world’s understanding of the United States and Americans’ understanding of the world,” from the speech “Winning the War on Terror and Spreading Freedom” (<http://www.whitehouse.gov/OMB/pdf/Diplomacy-07.pdf>).

Foreign education played a fundamental role in the collapse of the Soviet Union. Student exchange between the United States and the Soviet Union took off after the 1958 signing of the so-called Lacy-Zarubin Agreement on cultural exchange. The United States signed the agreement with the goal of “eroding the Soviet social system,” according to Soviet historian Alexei G. Arbatov. As a result, “historians dealing with the collapse of Communism will want to devote more than one chapter to the extraordinary impact of East-West scholarly exchanges ... seeds of change that would blossom into the democratic revolutions of 1989–90 were being sown by scholars from East and West” (Yale Richmond 2003). For instance, Alexander Yakovlev, the intellectual architect of *perestroika*, was one of the four Soviet graduate students at Columbia University in the fall 1958.

A number of other Western countries fund foreign students. For instance, the German Academic Exchange Service awards more than 65,000 fellowships a year and is the largest grantor of international academic support in the world. Its goals include “to enable young academic elites from around the world to become leaders in the fields of science, culture, economics, and politics—as well as friends and partners of Germany” and “to support the process of economic and democratic reform in developing countries and in the transition countries of Middle and Eastern Europe.”<sup>5</sup>

Many non-Western governments have also actively financed foreign education in the hope of molding future ruling classes and spreading specific doctrines. The Moscow-based People’s Friendship University (formerly Patrice Lumumba University) was founded in 1960 with the explicit mandate to prepare future socialist leaders in Africa, Asia, and Latin America. South African President Thabo Mbeki considers hosting foreign students from other African countries a primary way to spread his vision of “African Renaissance” (Stephanus Malan 2001). Finally, Arab scholars see Islamic education as a way to form future leaders in Islamic countries.

While there are many issues involved in foreign education, this paper focuses only on the question of whether foreign education is associated with the spreading of democracy in students’ home countries.<sup>6</sup> The relationship between *domestic* education and democracy has been studied for a long time. At least since Seymour M. Lipset (1959), political scientists have speculated that education leads to more democratic regimes. Starting with Robert J. Barro (1999), economists have found a strong empirical correlation between levels of education and democracy. While nobody disputes the strong positive correlation between democracy and education, there has been disagreement on the methodology to control for other factors that may influence both education and democracy and, consequently, on the interpretation of this correlation. Edward Glaeser, Giacomo A. M. Ponzetto, and Andrei Shleifer (2006) argue that schooling, by teaching people to interact with others and by lowering the cost of social interaction and political engagement, enlarges the constituency for democracy.<sup>7</sup> In contrast, Daron Acemoglu et al. (2005) claim that the cross-sectional correlation between democracy and education is due to omitted factors, including long-term institutional determinants, more than to a causal relationship. In addition to their respective conclusions, these papers make some important methodological points that are relevant for this paper. First, they show that the correlation between the level of democracy and the level of educational attainment is not enough to claim causation, if other underlying variables are not properly controlled. Second, they point out that a panel regression of democracy on

<sup>5</sup> From the German Academic Exchange Service (<http://www.daad.de/en/index.html>).

<sup>6</sup> Note that there is little research on the macro determinants of foreign education, with the exception of Plutarchos Sakellaris and Spilimbergo (2000) and Karnit Flug, Spilimbergo, and Erik Wachtenheim (1998).

<sup>7</sup> For the present paper, which focuses on foreign education, two aspects of this argument are important. First, for Glaeser et al. (2006), the content of education (e.g., democratic values, technical knowledge, or political indoctrination) matters less than the socializing experience of studying together and learning how to interact. Second, average education, and not elite-level education, is what matters.

education should always contain time variables to control for common trends that cause spurious correlations. Finally, and most important, results should be robust to the inclusion of domestic educational attainment.

The rest of the paper is organized as follows. Section I presents stylized facts on foreign education and democracy. Section II provides econometric evidence on the relationship between education and democracy. Section III presents robustness tests. Section IV concludes.

### I. Stylized Facts on Foreign Education and Democracy

Democracy is a difficult concept to define and several indices have been proposed to measure it. For the purpose of this study, I consider the Freedom House Political Rights Index, which covers many countries over a long period of time.

The data on foreign students come from the UNESCO Statistical Yearbook, which provides the most complete dataset for international education and reports bilateral student flows at the tertiary level from 1950 to 2003.<sup>8</sup> Some industrialized countries are covered from 1950 on, and almost all countries are represented as sending or hosting starting in 1960. The data are gathered from host country authorities, which, in turn, get the data from local universities and/or immigration databases. The total number of foreign students in the world has increased in the past 50 years from about 50,000 to more than 2 million in 2002. The growth rate of students abroad has been higher than the growth rate of the population, though it has declined as a share of enrollment in tertiary education (Figure 1).

The steady increase in the aggregate data masks some noticeable heterogeneity in the origin and host countries (Figure 2). The United States has traditionally been the main host country with a share of approximately 30 percent. Second-tier destination countries include France, Germany, and the United Kingdom, each with a share of about 10 percent. Over the past 20 years, there has been a marked increase in the number of students going to Germany and the United Kingdom, with a relative decline in France's share. The share of students going to predominantly Muslim countries, which was over 10 percent in 1970, has steadily declined in the past 30 years. Finally, countries belonging to the former Soviet bloc commanded a share of almost 10 percent between 1970 and 1990.

Not all foreign education is the same with respect to democracy. Students educated in Moscow absorbed a different concept of democracy than students educated in the United States. In order to capture this heterogeneity, I construct an index of average democracy in host countries, which is defined as the weighted average of democracy indices in host countries where a country's weight is the share of students going to that country over all foreign students from the origin country (see the Data Appendix for formula and details).<sup>9</sup> This index lies between 0 and 1; the index is 1 if all students abroad are in democratic countries and 0 if all students abroad are in countries with dictatorships. On average, the level of democracy in host countries is much higher than in home countries, a sign that democratic countries attract more students.

<sup>8</sup> The UNESCO database, which is available only in hard copy except for the past few years, requires a considerable amount of work to clear it from typographical errors and inconsistencies (see data appendix for description). Foreign students are defined as students enrolled in an education program in a country where they are not permanent residents. Tertiary education is the educational level following the completion of a school providing a secondary education, such as a high school or gymnasium; tertiary education includes levels 5 and 6 of the International Standard Classification of Education (ISCED).

<sup>9</sup> Even when acquired in democratic countries, foreign education may lead to the rejection of modern values of the host country. For instance, Sayyid Qutb, the spiritual leader of Islamic fundamentalism, and Charles McArthur Taylor, Africa's most prominent warlord in the early 1990s, studied in the United States. Pol Pot, the communist dictator of Cambodia, studied in France. Even if these single cases are tragically important for some countries, they are more exceptions than the rule.

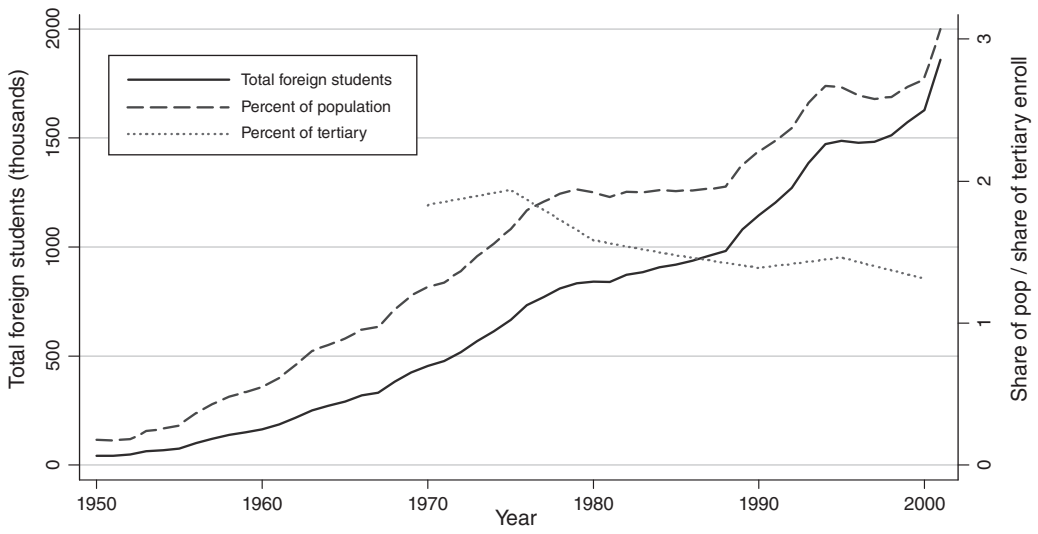


FIGURE 1. TOTAL FOREIGN STUDENTS

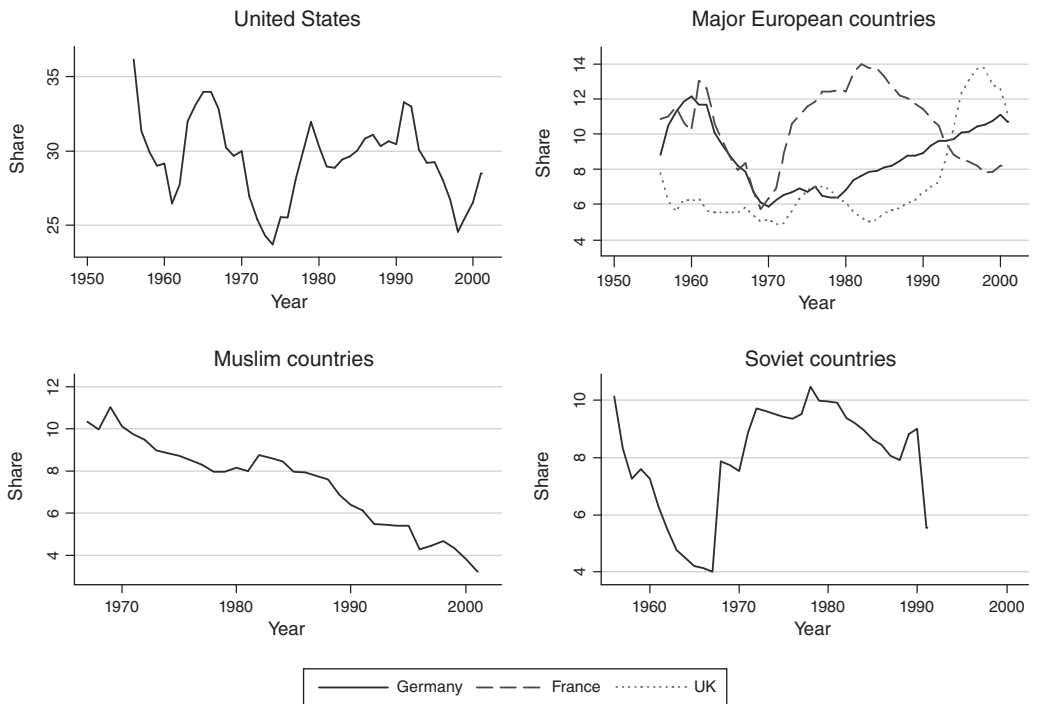


FIGURE 2. HOST COUNTRIES: SHARE OF TOTAL FOREIGN STUDENTS

Notes: the original data come from the UNESCO dataset, revised as described in the Data Appendix. The solid line represents the total number of students abroad. The dashed line represents students abroad normalized by (millions of) individuals in the origin countries; the dotted line represents students abroad normalized by (tens of millions of) people getting tertiary education in the origin countries.

The source countries show considerable heterogeneity. Take the case of Chile. The top panel of Figure 3 shows the total number of Chilean students abroad; the bottom panel shows democracy in Chile and in host countries. Chile had been a very democratic country until the coup d'état in 1973; after that, democracy was gradually restored in the late 1980s. It is interesting that the average democracy in host countries seems to anticipate domestic democracy. Chilean students tended to go to undemocratic countries in the late 1960s, a possible sign of a polarized society in Chile. Immediately after the coup d'état, there was a large surge in foreign students, especially to democratic countries, an indication that many students were unhappy with the new regime in Chile and preferred to study abroad, especially in democratic countries. In the early 1980s, before the change of regime at home, Chilean students started going to more democratic countries.

The experience of Chile and other countries (see online Appendix, available at <http://www.aeaweb.org/articles.php?doi=10.1257/aer.99.1.528>) suggests that the number of foreign students, and especially the level of democracy in host countries, predict future changes in the level of democracy at home. The following section presents econometric evidence from all countries.

## II. Empirical Analysis

In order to study the correlation between democracy and foreign education, I use dynamic panel regressions. As in previous studies on democracy and education, including Barro (1999), Acemoglu et al. (2005), and Glaeser et al. (2006), my main specification features the level of democracy as the dependent variable. The explanatory variables are as follows: past level of democracy, number of students abroad as a share of total population in the sending country, average level of democracy in the host countries, and the interaction between the two last terms.<sup>10</sup> All explanatory variables are lagged five years; the sample comprises 183 countries (list in Table 6 in the Data Appendix) and spans the period 1960 to 2005.<sup>11</sup> In addition, all regressions have time and country fixed effects, except when otherwise specified. The normalized number of students lagged five years is meant to capture the effect of foreign education. Following the discussion in the previous section, I use the average index of democracy in host countries to capture the type of democracy that foreign students are exposed to. Finally, the interaction term measures if the marginal effect of foreign students depends on the level of democracy in host countries. The basic specification is as follows:

$$(1) \quad \text{democ}_{i,t} = \alpha \text{democ}_{i,t-5} + \beta \text{students abroad}_{i,t-5} + \gamma \text{democ. in receiving countries}_{i,t-5} \\ + \delta (\text{students abroad}_{i,t-5} * \text{democ. in receiving countries}_{i,t-5}) \\ + \text{country fixed effects}_i + \text{time fixed effects}_t + \varepsilon_{i,t}$$

where  $i$  denotes the sending country and  $t$  denotes the year. I use three different estimation techniques: pooled OLS, fixed-effects OLS, and system GMM. The pooled OLS provide a first idea of how the data are correlated without controlling for country fixed effects, and therefore

<sup>10</sup> In principle, all regressions should control for educational attainment. The inclusion of this variable would, however, limit the sample considerably. As a robustness test, I replicate all the tables, including educational attainment, as control variables with similar results; the results are available in the Data Appendix.

<sup>11</sup> I choose the five-year interval to follow the previous literature on domestic education and democracy. I also try a ten-year interval. While the number of observations is halved, the results discussed below are all confirmed; interestingly, the coefficients on democracy in host countries are usually larger in magnitude. The data for students start in 1955 for the majority of countries, so 1960 is the first useful date.

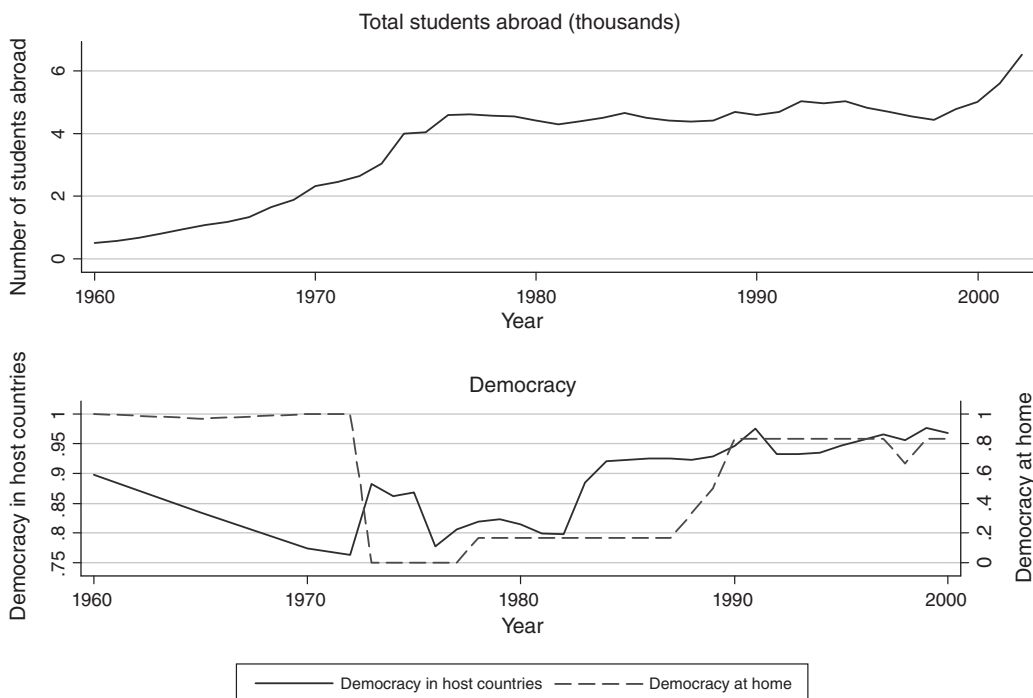


FIGURE 3. CHILE

*Notes:* The top panel shows total number of Chilean students abroad, expressed in thousands. The bottom panel shows the level of democracy in the home country and in students' host countries, i.e., the average level of democracy in countries where Chilean students are. Both indices are constructed using the Freedom House index of democracy normalized so it lies between zero and one. The construction of the data is described in the Data Appendix.

overestimate the coefficient on the lag dependent variable. The fixed effects estimator controls for country effects but biases the coefficients in presence of lagged dependent variable with finite T. The system GMM estimators provide consistent and unbiased estimates. Students abroad, democracy in host countries, and all other control variables excluding time fixed effects are treated as predetermined and are instrumented for using their own first to third lags in level and difference.<sup>12</sup>

The first three columns of Table 1A present the results using the techniques described above. As expected, democracy is very persistent; the coefficient on past democracy ranges between 0.847 in pooled OLS and 0.442 for the fixed effects with the unbiased GMM estimator (0.541) within this range. The coefficients on students abroad are insignificant in all specifications. Democracy in host countries is always positive and highly significant across different estimation techniques. Moreover, the interaction between democracy in host country and foreign students is positive and highly significant in the GMM specification, which is consistent and unbiased.

<sup>12</sup> I limit the lags to three to avoid having too many instruments with the attendant overfitting problem. With persistent dependent variables (democracy is persistent over time), system GMM should be used (Richard Blundell and Stephen R. Bond 1998). I also experimented with difference GMM with similar results. Matteo Bobba and Decio Coviello (2007) find that domestic education systematically predicts democracy when using system GMM.

TABLE 1A—DEPENDENT VARIABLE: FREEDOM HOUSE INDEX OF POLITICAL FREEDOM: LEVELS

	Pooled OLS (1)	Fixed effects (2)	System GMM (3)	System GMM (4)	System GMM (5)	System GMM (6)	System GMM (7)	System GMM (8)	System GMM (9)
Democracy <sub><i>t-5</i></sub>	0.847*** (0.021)	0.442*** (0.039)	0.542*** (0.044)	0.573*** (0.044)	0.331*** (0.052)	0.602*** (0.046)	0.403*** (0.069)	0.466*** (0.063)	0.241*** (0.075)
Students abroad <sub><i>t-5</i></sub>	6.821 (7.341)	15.827 (14.273)	-9.195 (9.790)	-1.658 (10.390)	-2.881 (9.767)	-6.217 (9.349)	-15.462 (15.272)	29.063 (30.541)	9.372 (17.369)
Democracy in host countries <sub><i>t-5</i></sub>	0.082** (0.033)	0.166*** (0.041)	0.196*** (0.059)	0.170*** (0.062)	0.325*** (0.076)	0.211*** (0.057)	0.257*** (0.099)	0.219*** (0.089)	0.282** (0.123)
Students abroad <sub><i>t-5</i></sub> × democracy in host countries <sub><i>t-5</i></sub>	-3.439 (8.422)	-25.357 (18.569)	28.908*** (11.876)	17.839 (12.270)	3.739 (15.483)	20.657* (12.877)	36.875* (21.133)	-22.509 (34.810)	-18.579 (22.806)
Democracy in neighboring countries <sub><i>t-5</i></sub>				0.133** (0.064)					0.264*** (0.100)
Educational attainment <sub><i>t-5</i></sub>					5.600*** (1.015)				5.868*** (1.068)
Democracy in trading partners <sub><i>t-5</i></sub>						0.012 (0.107)			0.076 (0.220)
Tertiary enrollment <sub><i>t-5</i></sub>							6.741*** (1.032)		-0.371 (1.203)
GDP per capita <sub><i>t-5</i></sub>								11.145*** (2.583)	2.455 (2.128)
Total effect of democracy in host countries	0.079** (0.032)	0.090** (0.039)	0.226*** (0.056)	0.189*** (0.060)	0.329*** (0.072)	0.232*** (0.056)	0.295*** (0.095)	0.196** (0.084)	0.263** (0.127)
Total effect of students abroad	3.940*** (1.388)	-5.421* (3.201)	15.029*** (3.011)	13.289*** (2.759)	0.252 (5.617)	11.092*** (3.275)	15.438*** (5.228)	10.202 (6.614)	-6.196 (7.909)
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country effects		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AR(1) Test			0.00	0.00	0.00	0.00	0.00	0.00	0.00
AR(2) Test			0.52	0.54	0.82	0.43	0.53	0.46	0.89
Hansen's J test			0.12	0.23	0.31	0.85	0.05	0.38	0.39
Number of instruments			153	177	120	187	127	166	108
Number of countries	183	183	183	181	120	160	163	169	108
Observations	1,379	1,379	1,379	1,358	899	1,232	877	1,093	614
R <sup>2</sup>	0.75	0.30							

Notes: Robust standard errors clustered by country in parentheses. AR(1) and AR(2) are Arellano-Bond test for serial correlations. The sample is an unbalanced panel, comprising data at five-year intervals between 1960 and 2005. Students abroad, democracy in host countries, and all other control variables are treated as predetermined and are instrumented for using their own first to third lags in level and differences. The total effect of democracy in host countries is calculated summing the coefficients on "democracy in host countries" and on the interaction between "students abroad" and "democracy in host countries," evaluated at average level of students abroad. The total effect of students is calculated summing the coefficient on "students abroad" and on the interaction term, evaluated at average democracy in host countries.

\*\*\* Significant at the 1 percent level.

\*\* Significant at the 5 percent level.

\* Significant at the 10 percent level.

In the baseline regression with GMM, the total effect of democracy in host countries is 0.26, meaning that a country that sends all its foreign students to democratic countries rather than to countries with dictatorships increases its democracy at home about one-quarter on a scale of zero to one. On the other hand, a country that increases its number of students abroad to democratic countries from 0 to 0.5 percent of the population, which is equivalent to two standard deviations

of the share of students to population, increases its democratic index by 0.08 ( $\approx 15 * 0.005$ ), a small but not negligible effect. Two points strengthen the results.

First, these results do not depend on the specific index of democracy. The results discussed above are based on the Freedom House Index of Democracy, which has the wider coverage. Regressions that use indices of democracy from the Polity Composite Democracy Index (Polity IV) and Adam Przeworski et al. (2000) give the same results (see online Appendix). Second, all specifications, except the pooled OLS, include fixed country and time effects; therefore, the results are robust to country-specific time-invariant characteristics, including ethnic composition, religion, language, colonial ties, geographical variables, and many other unobservable characteristics, and to all worldwide trends.

In conclusion, the (lagged) total number of students abroad has no impact on democracy at home. In contrast, quality of democracy in host countries has a strong and significant impact on domestic democracy, which increases with the number of students abroad.

### III. Robustness Tests

In principle, the correlation between democracy at home and (past) democracy in host countries could be spurious because third factors (e.g., the fall of Communism) could have an impact both on democracy at home and on (past) democracy in host countries. By including time dummies, I already control for global trends, but country-specific time-varying trends could explain this correlation.

In order to examine further the issue of possible spurious correlation, I replicate the basic regression (column 3 of Table 1A) introducing possible third factors, including *democracy in neighboring countries*, *educational attainment*, *democracy in trading partners*, and *GDP per capita*.<sup>13</sup> Columns 4 to 8 present regressions introducing each control at the time. These regressions show that the effect of foreign education is significant even when controlling for a series of possible omitted variables. Finally, column 9 includes all of the control variables mentioned above. The coefficient on level of democracy in host countries remains positive and significant, even though the number of observations is halved and many explanatory variables are highly correlated.

#### A. First Differences

In order to further investigate the issue of omitted variables, I estimate the baseline specification in first differences. The rationale for this specification is to take out all possible country specific effects.<sup>14</sup> I test the following specifications:

$$(2) \Delta d_{i,t} = \gamma \Delta \text{students abroad}_{i,t-10} + \delta \Delta \text{quality of institutions in receiving countries}_{i,t-10} + \varepsilon_{i,t}$$

and

$$(3) \Delta d_{i,t} = \gamma \Delta \text{students abroad}_{i,t-10} + \delta \Delta \text{quality of institutions in receiving countries}_{i,t-10} \\ + \text{country fixed effects}_i + \varepsilon_{i,t}.$$

<sup>13</sup> Acemoglu and Robinson (2006) review the regional trends on democracy; Acemoglu et al. (2005) and Glaeser et al. (2006), consider the role of domestic education on democracy. Roberto Rigobón and Dani Rodrik (2005) and J. Ernesto López-Córdova and Christopher Meissner (2005) study democracy and trade.

<sup>14</sup> The fixed-effects estimator assumes that the error terms are serially uncorrelated; in this case, the fixed-effect estimator is more efficient than the first difference estimator. However, if only the first differences in the errors are uncorrelated, the first difference estimator should be used (Jeffrey M. Wooldridge 2002).

The first specification controls for country fixed effects by taking first differences; the second specification also controls for country specific trends (the fixed effects in differences). In addition, I try differences of five and ten years. To avoid simultaneity bias, this specification has explanatory variables lagged five years in the five-year specifications as well. The results are displayed in the first four columns of Table 1B. Despite the fact that specifications 2 and 4 are extremely demanding given that all variables are in first difference *and* with country fixed effects, the results that (change in) democracy in host countries matters for future (changes in) democracy at home holds.

### B. Long-Run Differences

Acemoglu et al. (2005) discuss the possibility that the link between education and democracy operates only with very long lags, and suggests looking at long-run differences to find evidence of these effects. With long-run differences, it is not possible to control for country fixed effects. However, idiosyncratic country shocks should be less relevant in the long run. I try the longest difference available with the present data using the following specification:

$$(4) \quad \Delta d_{i,2000-1965} = \alpha + \gamma \Delta \text{students abroad}_{i,2005-1965} \\ + \delta \Delta \text{democ in receiving countries}_{i,2005-1965} + \varepsilon_{i,t}$$

The results for this specification are reported in column 5 of Table 1B; column 6 reports the same regression with the inclusion of (changes in) educational attainment. The coefficient on (changes in) democracy in host countries is always positive; when educational attainment is introduced, the sample is reduced but the coefficient on democracy remains significant.<sup>15</sup>

### C. Alternative Specification for Foreign Students

So far, I have used three variables measuring the effects of students abroad on democracy at home—the number of students abroad, the average level of democracy in host countries, and an interaction term. While this is a way to summarize the plethora of data on bilateral student flows, other aggregations are possible. Students abroad could be classified into two categories: students going to fully democratic countries and students going to less than democratic countries. To check if my results depend on the specification proposed, I try this two-group specification.<sup>16</sup> Using this binary classification, I replicate the baseline regression. Table 2 reports the results. All regressions confirm my basic results: democracy is positively associated with the number of students going to democratic countries but is clearly unrelated to the number of students going to nondemocratic countries.

### D. Heterogeneity in Sample

The fall of the Soviet Union may have introduced a structural break in the relationship between foreign education and democracy. In order to check for the presence of a structural break, I run

<sup>15</sup> The results are not due to outliers. The online Appendix presents the scatter plot of changes in domestic democracy and changes in host countries' average democracy.

<sup>16</sup> Note that this classification does not distinguish between different degrees of democracy as provided by the Freedom House Index of Democracy. For this reason, I prefer to use a weighted average of democracy in host countries rather than a category based on an arbitrary cutoff.

TABLE 1B—DEPENDENT VARIABLE: FREEDOM HOUSE POLITICAL RIGHTS INDEX: DIFFERENCES

	Change in democracy <sub>t</sub>					
	(5 years)		(10 years)		(40 years)	(40 years)
	OLS (1)	Fixed effects (2)	OLS (3)	Fixed effects (4)	OLS (5)	OLS (6)
Five-year change in students abroad <sub>t-5</sub>	6.699 (7.609)	6.947 (8.420)				
Five-year change democracy in host countries <sub>t-5</sub>	0.077** (0.039)	0.071*** (0.040)				
Five-year change in (students abroad <sub>t-5</sub> × democ. in host countries <sub>t-5</sub> )	-10.357 (13.635)	-12.056 (17.494)				
Ten-year change in students abroad <sub>t</sub>			38.209 (23.777)	37.265 (23.269)		
Ten-year change in democ. in host countries <sub>t</sub>			0.209* (0.077)	0.188** (0.082)		
Ten-year change in (students abroad <sub>t-10</sub> × democ. in host countries <sub>t-10</sub> )			-46.076* (26.131)	-48.623*** (29.337)		
Forty-year change in students abroad <sub>t</sub>					26.308 (75.369)	67.556 (115.848)
Forty-year change democracy in host countries <sub>t</sub>					0.652* (0.139)	0.522* (0.162)
Forty-year change in (students abroad <sub>t</sub> × democ. in host countries <sub>t</sub> )					-19.934 (79.571)	-64.065 (127.287)
Forty-year change in educational attainment <sub>t</sub>						-1.181 (2.969)
Country effects		Yes		Yes		
Number of countries	160	160	159	159	85	68
Observations	1,073	1,073	513	513	85	68
R <sup>2</sup>	0.00	0.00	0.02	0.02	0.21	0.11

Notes: Robust standard errors clustered by country in parentheses. The sample is an unbalanced panel, comprising data between 1955 and 2005.

\*\*\* Significant at the 1 percent level.

\*\* Significant at the 5 percent level.

\* Significant at the 10 percent level.

the benchmark regression for the subperiods before and after 1985. For the years before 1985, the coefficients on democracy in host countries and the interaction terms are positive and highly significant. These results suggest that the role of foreign education on democracy was more important before 1985. This is not surprising, given that the political component of foreign education was more important during the Cold War period. I also rerun the analysis in subsamples selected using different criteria, including population size (2 million cutoff), OECD versus non-OECD countries, and countries with a Muslim majority. In all these cases, there is no evidence that heterogeneity plays a role in explaining the results. The tables are available in the online Appendix.

TABLE 2—ALTERNATIVE SPECIFICATION OF THE STUDENT VARIABLES  
(Dependent variable: Freedom House Index of Democracy)

	GMM
Democracy <sub>t-5</sub>	0.469* (0.051)
Students to democratic countries <sub>t-5</sub>	30.438* (6.039)
Students to nondemocratic countries <sub>t-5</sub>	-4.701 (7.355)
Time effects	Yes
Country effects	Yes
AR(1) test	0.00
AR(2) test	0.41
Hansen's J test	0.12
Number of instruments	117
Number of countries	184
Observations	1,385

Notes: Robust standard errors clustered by country in parentheses. The sample is an unbalanced panel, comprising data between 1955 and 2005 for specifications 1 and 2, and between 1955 and 2000 for the other specifications. Students abroad are treated as predetermined and are instrumented for using their own first to third lags. Instrumental variables are described in the text. As before, the number of students is normalized by population in the sending country.

\*\*\* Significant at the 1 percent level.

\*\* Significant at the 5 percent level.

\* Significant at the 10 percent level.

#### IV. Interpretation and Conclusions

Significant resources are spent on foreign education with the explicit goal of educating individuals and fostering a particular system of values: Western countries have hoped to foster democracy, Socialist countries have educated future socialist leaders, and Muslim countries have financed schools with Islamic values. Are these resources spent fruitfully?

This paper answers the question by looking at the most comprehensive existing dataset on foreign students, which spans 50 years and covers the entire world. Using this dataset, I have found a very strong correlation between the lagged average indices of democracy in host countries and the current level of democracy in the origin country, while there is only mixed evidence on the lagged total number of students abroad and the level of democracy at home. These correlations are robust to the inclusion of several control variables, including educational attainment at home, average level of democracy in trading partners, GDP per capita, country fixed effects, time fixed effects, different definitions of democracy, country-specific trends, and exclusion of Socialist countries or particular regions. These findings beg two questions. How can a small minority be so influential? And through which mechanisms can foreign-educated individuals bring about democratic change at home?

The answer to the first question is part of the more general historical debate on the role of single leaders or restricted elites. The idea that elites are responsible for important changes has a long tradition in sociology. For instance, Talcott Parsons (1960) writes that “within the existing elites, such people are most likely to be found among intellectuals, especially those who have direct contacts with the West, particularly through *education abroad* or under western auspices

at home” (italics added).<sup>17</sup> More recently, Benjamin F. Jones and Benjamin A. Olken (2005) have found that leaders do matter for countries’ income growth. This paper adds another piece of evidence to this research by showing how foreign education of the elites may explain the course of history. Out of 115 world leaders in 1990, 66 studied abroad, and more than two-thirds if only developing countries are considered.

The second issue is to understand through which specific mechanisms foreign-educated individuals bring about democratic change at home. Many hypotheses are compatible with the available evidence. First, foreign-educated “technocrats” are such a scarce resource in many countries that they can impose their own preferences in favor of democratic regimes.<sup>18</sup> Second, foreign-educated leaders seem to be extremely motivated to keep up with the more developed countries where they studied; in general, the leaders’ educational level seems to be associated with the probability of introducing structural reforms (Axel Dreher et al. 2006).<sup>19</sup> Third, foreign-educated individuals make it more difficult for dictatorial regimes to maintain repression, because they foster the dissemination of new ideas at home. Fourth, foreign-educated individuals can make repressive activities more costly for a dictatorial regime, since they have easier access to external media. In addition, foreign-educated individuals may lobby foreign governments to press for change. Fifth, education abroad may inculcate a sense of common identity with the international democratic community, which has proven to be a very powerful motivating factor (see George A. Akerlof and Rachel E. Kranton 2005).<sup>20</sup> Future work should study which specific channels are at work.

The conclusions of this paper also have implications for the debate on nation building. The education of foreigners has always been a cornerstone of US foreign policy, from its missionary thrust into Latin America, to its Cold War policies, to its present efforts in the Middle East (Liping Bu 2003). Recent attempts to introduce democracy, including in Iraq and Afghanistan, have relied heavily on foreign-educated leaders. This paper provides evidence that these are not isolated cases, and that foreign education does, indeed, play an important role.

This paper also contributes to the debate on the nature of political power in the twenty-first century. Influential scholars have argued that “soft power,” defined as the ability of a political body to influence indirectly the behavior of other political bodies through ideological means, will play an important role (Joseph S. Nye, Jr. 2004). Foreign education is one of the main instruments to exert soft power, yet despite its popularity and appeal, it has proven remarkably difficult to test empirically. This paper provides a first quantification of an important component of soft power.

Finally, this paper has argued that foreign education, which is only one aspect of education of elites, matters for the type of country where they choose to live. This begs the question of whether other characteristics of elites matter in the development of their countries. Future research should focus on elites’ general educational levels and, more generally, on other characteristics, including attitudes toward markets, religion, and values.

<sup>17</sup> For an interesting discussion and convincing case on how a small group of foreign-educated economists had a huge impact on Chile, see Juan Gabriel Valdés (1995).

<sup>18</sup> This happened when Mikhail Gorbachev decided to reform the soviet system. The old soviet bureaucrats simply were unable to handle the new economic challenges, while the new “technocrats” were available to work only under a less repressive regime. Gorbachev also introduced glasnost and perestroika because of this new generation of technocrats. In addition, a foreign-educated minister could provide confidence to foreign investors.

<sup>19</sup> Based on a survey on the reasons for pursuing a PhD in the United States, Hahid Aslambeigui and Verónica Montecinos (1998) find that “the significance attributed to a PhD in careers in politics seemed especially strong among students from Latin America, where economists are currently playing very important political roles.”

<sup>20</sup> Several studies have found that foreign students develop a strong sense of identification with the country where they study. For instance, Weili Ye (2001) describes how “Chinese, by studying at American universities, played pivotal roles in Chinese intellectual, economic, and diplomatic life upon their return to China.”

## DATA APPENDIX

I use the Freedom House Political Rights Index as an index of democracy.<sup>21</sup> Following Barro (1999) and Acemoglu et al. (2005), I supplement this index with data from Kenneth A. Bollen (2001) for 1960 and 1965. My main explanatory variables—*share of foreign students over population* and *average quality of institutions in host countries*—are constructed from the *cross country student migration* database as reported in the UNESCO *Statistical Yearbook*. The database covers students' migration at the university level and higher for the years 1950 to 2003. Starting with 1960, the data are available for almost all host countries and the majority of sending countries. Data are purged of evident outliers and few missing data for bilateral flows for which there were enough nonmissing years were interpolated.

The variable *democracy in host countries* is constructed as the weighted average of the institutions in the host countries where the weights are given by the share of students from country  $j$  to country  $i$  over all students from country  $j$ :

$$(1) \quad \text{Democracy in host countries}_{ot} \equiv \sum_d \frac{S_{odt}}{\sum_o S_{odt}} D_{dt},$$

where  $D_{dt}$  is one of the three democracy indices, and  $S_{odt}$  is the number of students from country  $o$  to country  $d$  in year  $t$ . By construction, these indices lie between zero and one; the index is one if all students abroad are in democratic countries and zero if they are in dictatorial regimes. In order to avoid problems of a small sample, this variable is used only if there are at least ten students abroad.

The variable *democracy in trading partners* is constructed as the weighted average of the institution in the trading partners where the weights are given by the share of exports from country  $d$  to country  $o$  over all exports from country  $d$ :

$$(2) \quad \text{Democracy in trading partners}_{ot} \equiv \sum_d \frac{EXP_{odt}}{\sum_o EXP_{odt}} D_{dt},$$

where  $D_{dt}$  is one of the three democracy indices, and  $EXP_{odt}$  is the value of exports from country  $o$  to country  $d$  in year  $t$ . The data on trade come from the United Nations COMTRADE database. The variable *democracy in neighboring countries* is constructed as the weighted average of the democracy index in the neighboring countries where the weights are given by the population of country  $i$  divided by the distance from country  $j$  to country  $i$ :

$$(3) \quad \text{Democracy in neighboring countries}_{ot} \equiv \sum_d \frac{Pop_{dt}}{Distance_{od}} D_{dt},$$

where  $D_{dt}$  is one of the three democracy indices described above, and  $Distance_{od}$  is the distance between country  $o$  and country  $d$ .

The other control variables include *educational attainment* from the Barro and Jong-Wha Lee (2000) dataset, *tertiary enrollment* from the World Bank's *World Development Index* (WDI), *democracy in trading partners*, and *democracy in neighboring partners*. The *population* and the *real income per capita* data come from the WDI, augmented with national sources whenever there are missing values.

<sup>21</sup> The data are available at <http://www.freedomhouse.org/>.

Table 3 presents summary statistics; Table 4 and 5 present the sample coverage; Table 6 presents correlation between variables.

TABLE 3—SUMMARY STATISTICS

	Observations	Mean	Std. dev.	Min.	Max.
Foreign students as a share of population ( $\times 000$ )	1,379	1.031	2.151	0.001	20.130
Freedom House Index	1,379	0.521	0.376	0	1
Freedom House Index in host countries	1,379	0.838	0.201	0.001	1
Freedom House Index in trading partners	1,166	0.922	0.089	0.324	1
Freedom House Index in neighboring countries	1,358	0.759	0.160	0.001	1
Educational attainment ( $\times 100$ )	899	5.055	2.837	0.120	12.050
Enrollment ( $\times 100$ )	877	1.502	1.651	0.002	9.312
GDP per capita ( $\times 1,000$ )	1,093	5,056	7,541	0.045	46,473

TABLE 4—YEARS COVERED IN THE SAMPLE

Years	Observations	Frequency
1960	69	5.00
1965	88	6.38
1970	115	8.34
1975	135	9.79
1980	147	10.66
1985	153	11.09
1990	157	11.39
1995	157	11.39
2000	179	12.98
2005	179	12.98

Note: The regressions include lagged variables that are available only starting in 1955.

TABLE 5—CORRELATION IN 2000

	Dem. <sub><i>t-5</i></sub>	Dem. <sub><i>t-5</i></sub>	Students abroad <sub><i>t-5</i></sub>	Dem. in host countries <sub><i>t-5</i></sub>	Dem. in neighboring countries <sub><i>t-5</i></sub>	Educat. attain. <sub><i>t-5</i></sub>	Dem. in trading partner <sub><i>t-5</i></sub>	Tertiary enroll. <sub><i>t-5</i></sub>
Democracy <sub><i>t-5</i></sub>	0.92***							
Students abroad <sub><i>t-5</i></sub>	0.26***	0.29***						
Dem. in host countries <sub><i>t-5</i></sub>	0.45***	0.42***	0.13*					
Dem. in neighboring countries <sub><i>t-5</i></sub>	0.51***	0.48***	0.19**	0.38***				
Educational attainment <sub><i>t-5</i></sub>	0.56***	0.59***	0.28***	0.38***	0.16*			
Democracy in trading partners <sub><i>t-5</i></sub>	0.38***	0.36***	0.07	0.62***	0.48***	0.13		
Tertiary enrollment <sub><i>t-5</i></sub>	0.53***	0.53***	0.12	0.20**	0.21***	0.83***	0.05	
GDP per capita <sub><i>t-5</i></sub>	0.45***	0.48***	0.37***	0.31***	0.11	0.70***	0.12	0.68***

Notes: \*\*\* Significant at the 1 percent level.

\*\* Significant at the 5 percent level.

\* Significant at the 10 percent level.

TABLE 6—COUNTRIES IN THE SAMPLE

Afghanistan	10	Comoros	6	Iceland	10	Moldova	2	Spain	10
Albania	9	Congo	8	India	10	Mongolia	9	Sri Lanka	9
Algeria	8	Costa Rica	10	Indonesia	10	Morocco	9	St. Kitts Nevis	4
Andorra	7	Cote D'Ivoire	8	Iran	10	Mozambique	6	St. Lucia	5
Angola	6	Croatia	2	Iraq	10	Namibia	3	St. Vincent Gr.	5
Antigua Barbuda	4	Cuba	10	Ireland	10	Nepal	9	Sudan	9
Argentina	10	Cyprus	9	Israel	10	Netherlands	10	Suriname	6
Armenia	2	Czech Rep.	10	Italy	10	New Zealand	10	Swaziland	7
Australia	10	Denmark	10	Jamaica	8	Nicaragua	10	Sweden	10
Austria	10	Djibouti	2	Japan	10	Niger	8	Switzerland	10
Azerbaijan	2	Dominica	5	Jordan	10	Nigeria	9	Syria	10
Bahamas	6	Dominican Rep.	10	Kazakhstan	2	Norway	10	Taiwan	2
Bahrain	6	Ecuador	10	Kenya	8	Oman	7	Tajikistan	2
Bangladesh	6	Egypt	10	Kiribati	1	Pakistan	9	Tanzania	8
Barbados	7	El Salvador	10	Korea	10	Panama	10	Thailand	10
Belarus	2	Equat. Guinea	7	Korea, North	8	Papua New G.	6	Togo	8
Belgium	10	Eritrea	2	Kuwait	7	Paraguay	10	Tonga	7
Belize	4	Estonia	2	Kyrgyz Rep.	2	Peru	10	Trinidad Tobago	7
Benin	8	Ethiopia	10	Lao	9	Philippines	10	Tunisia	9
Bhutan	7	Fiji	7	Latvia	2	Poland	10	Turkey	10
Bolivia	10	Finland	10	Lebanon	10	Portugal	10	Turkmenistan	2
Bosnia Herzeg.	2	France	10	Lesotho	7	Qatar	6	UAE	6
Botswana	7	Gabon	8	Liberia	10	Romania	10	UK	10
Brazil	10	Gambia	7	Libya	9	Russia	10	US	10
Brunei	4	Georgia	2	Liechtenstein	7	Rwanda	8	Uganda	8
Bulgaria	10	Germany	10	Lithuania	2	San Marino	9	Ukraine	2
Burkina Faso	8	Germany East	6	Luxembourg	10	Sao Tome Pr.	5	Uruguay	10
Burundi	8	Ghana	9	Macedonia	2	Saudi Arabia	10	Uzbekistan	2
CAR	8	Greece	10	Madagascar	8	Senegal	7	Venezuela	10
Cambodia	10	Grenada	6	Malawi	8	Seychelles	5	Viet Nam	6
Cameroon	8	Guatemala	10	Malaysia	9	Sierra Leone	8	Yemen	3
Canada	10	Guinea	8	Maldives	7	Singapore	8	Yugoslavia	7
Cape Verde	6	Guinea-Bissau	5	Mali	8	Slovak Rep.	2	Zaire	8
Chad	8	Guyana	7	Malta	7	Slovenia	2	Zambia	8
Chile	10	Haiti	10	Mauritania	8	Solomon Is.	1	Zimbabwe	7
China	10	Honduras	10	Mauritius	7	Somalia	9		
Colombia	10	Hungary	10	Mexico	10	South Africa	10		

Note: The numbers indicate the observations for each country sending students abroad.

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