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from 1900-2010

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Leader's Education and Reform Enactments from 1900-2010*

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Abstract

This paper examines whether the gap between the educational attainment of the country's leader and the population affects the implementation of land reforms. We combine a dataset on the leaders' education to one on the enactment of land reforms from 1900-2010 to test our hypothesis. The analysis confirms our intuition and shows a statistically significant negative coefficient of educational distance on the probability of the full implementation of reforms in a Multinomial Logistic regression. The sensitivity analysis confirms the robustness of our results even after the inclusion of other control variables and using alternative estimation techniques such as Ordinary Least Squares, Ordered Probit and Logit. To deal with potential endogeneity, we use instrumental variables that indicate the constitutional provisions on the right to education. The Two Stage Least Squares estimation confirm our previous findings.

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1 Introduction

This paper examines whether the gap between the educational background of the country's leader and the population affects the successful enactment of reforms. Though the question of the implementation of economic reforms is at the core of the field of economic development, the pertinent literature is nascent and focuses on a few factors that determine whether reforms are implemented successfully or not. This paper contributes to the literature by addressing the effect of the characteristics of the country's leadership on the implementation of land reforms.

The intuition in this context is straightforward. The leaders' background is essential in determining how they lead their country and how they make decisions at the state level. Some studies show that the educational attainment of the leader is critical for economic and political outcomes, and for the adoption of certain economic policies. Thus, it can be postulated that if the background of the leader matters for economic performance and for the endorsement of specific policies, it would naturally matter for the implementation of economic reforms. The leaders who implement reforms are the ones who are able to diagnose economic ailments, who are able to realize the imperativeness of implementing reforms to remedy these economic problems, who are able to formulate the intended reforms, who are able to persuade the public and other political actors of the utility and benefits of these reforms, who have the ability to create a consensus around these reforms, who are able to make compromises with the opponents of the reforms, and who are able to implement the reforms in a manner that ensures they accomplish their purpose. We argue in this paper that these abilities are correlated with a higher educational background of the leader. We

also posit that if the average level of education of the population is high, and thus the gap between the education of the leader and the population is small, then the reformers will find a better reception for their proposals amongst the populace. Thus, it is logical to conclude that if the population and the leader possess a high level of human capital, a consensus can easily be formed around the proposals of reforming the economy, and the implementation of these reforms become more likely to succeed. Accordingly, this paper tests the hypothesis that the smaller the distance between the education of the leader and the population the more likely it is that the country succeeds in implementing economic reforms.

This study focuses, in specific, on whether there is a relationship between the educational achievement of leaders, compared to the average educational attainment of the population, and the enactment of land reforms during the period 1900 to 2010. To achieve this objective, we use the data set in Bhattacharya et al. (2019) on the implementations of 372 land reforms, in addition to the data set compiled by Besley and Reynal-Querol (2011) on the educational distance between the country's leader and the average level of education of the population. Our Multinomial Logistic analysis provides evidence that confirms our basic intuition and shows a statistically significant negative coefficient of educational distance on the probability of the full implementation of reforms. The robustness tests confirm these findings even after adding other control variables and using alternative econometric techniques. To deal with potential endogeneity, we use an instrumental variable approach. The instrument that we use for educational distance is the constitutional provisions on the rights to education. The Two Stage Least Squares and the IV Probit confirm our findings of a negative relationship between educational distance and the probability of the full implementation of reforms.

This paper contributes to the pertinent literature in various ways. First, the analysis attempts to provide an additional explanation of why some countries are successful in implementing a reform while others are not. The second contribution of the paper is

examining the impact of the educational background of leaders on the implementation of reforms, which is an extension that was not addressed in previous studies. A third contribution is to depart from pro-market reforms, which is often the focus of other studies, to explore the determinants of land reforms. Issues of land tenure, tenancy, land distribution and agrarian reforms are discussed in details in several studies such as Besley and Burgess (2000), Banerjee et al. (2002), Banerjee and Iyer (2005), Keswell and Carter (2014), Bardhan et al. (2014), Bardhan and Mookherjee (2010), de Janvry et al. (2014), de Janvry et al. (2015), and Bhattacharya et al. (2019). Our paper examines another determinant of land reforms, that the literature largely ignored, which is the background of the decision makers who decide on whether and how to implement such reforms. A fourth contribution of the paper is proposing a new instrument to leader's education that was not used in the pertinent literature before. A final contribution of the paper is extending and updating the data base on the leaders' educational background to the year 2010.

The remainder of the paper is organized as follows: section 2 discusses the literature survey, section 3 includes the detailed description of the data, section 4 includes the empirical estimation and the robustness tests, section 5 concludes, and section 6 is an appendix. References, tables and figures are included thereafter.

2 Literature

This paper comes at the intersection of two strands of literature. The first explores the factors behind the successful enactment of economic reforms, and the second considers the outcomes of the educational level and the professional experience of leaders and decision makers.

The first stream of literature examines the determinants of economic reforms. Some of these studies investigate the effect of the characteristics of the system of governance

within which policy makers enact their policies, while others examine the effect of the characteristics of the decision makers themselves. In this context, some studies examine the effect of democracy on economic reforms. The intuition is that policy makers and politicians in a democracy are more likely to embrace and implement growth-enhancing reforms so as to ensure their reelection. On the other hand, an autocratic system may not worry as much about public opinion and could undertake reforms that are painful in the short run but are beneficial in the long run. Given the inconclusive theoretical connection, several studies opted for an empirical analysis.

For instance, Grosjean and Senik (2011) show a significant positive effect of democracy on the support for a market economy, and conclude that democratization is a necessary condition to obtain public support for economic liberalization. Giuliano et al. (2013) find that democracy has a significant positive effect on the adoption of reforms in the financial, capital, banking, agriculture, and trade sectors. Olper and Raimondi (2013) examine the effect of electoral rules and forms of governance on public policy outcomes. The authors find that proportional and presidential democracies, compared to majoritarian and parliamentary ones, offer more public support to agriculture and less to food consumers. Amin and Djankov (2014) show that democracy is conducive to regulatory reforms, but that these reforms are more likely after parliamentary elections in poor and middle-income countries. Bhattacharya et al. (2019) find that democratic transitions are associated with land reforms of the pro-poor and inequality-reducing types. Besides the effect of the system of governance, other studies examine the effect of the characteristics of the leaders themselves on the likelihood of the implementation of reforms. For instance, Kodila-Tedika and Kalanda (2016) investigate the effect of the age of politicians on regulatory reforms. Their analysis suggests that older politicians implement more reforms than younger ones, and that those leaders in their sixties bring about more reforms than politicians of any other age category.

The second strand of literature focuses on the economic outcomes of the educational

and professional background of leaders. For instance, Besley et al. (2011) provide evidence that economic growth is higher in countries with leaders who are more highly educated. Constant and Tien (2010) examine whether foreign-educated African leaders attract more foreign direct investment to their country. Their analysis shows that leaders' foreign education promotes foreign direct investment indicating the role of networks and connections that these leaders built while studying abroad. Jochimsen and Thomasius (2014) explore the influence of some characteristics of finance ministers, including age, tenure, education and professional experience, on public deficits in German states. The authors find that the tenures of finance ministers, not their educational background, are associated with significantly lower fiscal deficits. Mikosch (2009) shows that political leaders who have been professional economists before becoming politicians generate significantly higher deficits than the average, and career politicians with law education generate significantly higher deficits than career politicians with other educational background. Ruske (2015) analyzes the differences between economists and non-economists in terms of observed corruption behavior. The author shows that members of Congress who hold a degree in economics are significantly more prone to corruption than non-economists. Kodila-Tedika (2014) investigate the effect of the cognitive ability of leading politicians on state capacity. The author provides evidence that show that the cognitive ability of leading politicians affects state capacity positively, except in Africa.

Hayo and Neumeier (2012) examine the effect of the leaders' socioeconomic background on public spending priorities in German states. The authors show that prime ministers tend to promote fiscal policies supporting the social class they belong to. Hayo and Neumeier (2014) investigate whether the socioeconomic status of the head of government explain fiscal performance. Their findings show that the tenures of prime ministers from a poorer socioeconomic background are associated with higher levels of public spending and debt financing. Hayo and Neumeier (2016) examine the effect of the leaders' socioeconomic

backgrounds on public budget deficits in OECD countries. The authors show that the tenures of leaders of low socioeconomic status are associated with a deficit-to-GDP ratio which is higher than that during tenures of upper-class leaders. Kozlov et al. (2018) examines the role of testosterone-driven aggressive behavior on the extent of repressiveness of non-democratic regimes. The authors find a positive association between a metric of testosterone exposure of a governor and the level of repression in his region.

The contribution that is closest to ours is Dreher et al. (2009) who examine the effect of the occupational choice and the educational degree obtained by the head of government on the implementation of market-liberalizing reforms. Their analysis shows that reforms are more likely during the tenure of former entrepreneurs and professional scientists, and that entrepreneurs belonging to a left-wing party are more successful in inducing reforms than those of a right-wing party. Our paper, however, deviates from this study in terms of the period of the analysis, the educational variable used in the analysis, and the types of reforms that are analyzed.

3 Data

The analysis includes 150 countries that are common in the two data sets of the leaders' educational attainment and the enactment of land reforms during the period 1900-2010. The summary statistics of the variables used in the analysis are included in table 1.

3.1 Reforms Enactment

To measure the status of the implementation of reforms, we use the data set in Bhattacharya et al. (2019) which codifies 372 major agrarian reforms in 165 countries during the period 1900-2010. This newly constructed database indicates the status of the implementation of land reforms in five modalities: total implementation, partial implementation, no im-

plementation, no information on the state of the implementation and, finally, no major reform. We exclude from our data the countries in the last two categories. Figures 1 and 2 present overall trends in the distribution of the implementation of reforms worldwide and in different areas around the world. Figure 1 shows that 45% of the implementation of land reforms were fully successful, 36.66% were partial implementations, and 18.34% were cases with no implementation of reforms. Figure 2 shows that most of the successful reform implementations were in Europe and Central Asia, most of the partial reform implementations were in Latin America and sub-Saharan Africa, while the areas with the least amount of reform implementations were in the Middle East and North Africa, and South Asia.

3.2 Educational Distance

To measure educational distance, we follow Besley and Querol (2011) who apply the eight-way classification of a leader's highest educational attainment. Category 1 includes a leader who is illiterate, with no formal education. Category 2 classifies a leader as literate but with no formal education. Category 3 is for leaders who have grade/elementary/primary school education or were taught by personal tutors. Category 4 is for leaders with secondary education or trade school. Category 5 is for leaders with special training (beyond high school), such as mechanical, nursing, art, music, or military school. Category 6 is for college-educated leaders. Category 7 is for leaders who have qualifications from a graduate or professional school (e.g., master's degree). Finally, category 8 is for leaders with doctorate degrees (e.g., Ph.D.). On this basis, we compute the years of education of leaders as follows: illiterate (no formal education)-0 years; literate (no formal education)-2 years; grade/elementary/primary school or tutors-6 years; secondary education or trade school-12 years; special training (beyond high school), such as mechanical, nursing, art,music, or military school-16 years; college-16 years; graduate or professional school (e.g., master's degree)-18 years; doctorate (e.g., Ph.D.)-20 years. Educational distance is the difference

between the years of the leaders's education and the average years of educational attainment in the population.

3.3 Controls

Several control variables are used in the analysis. We include three other variables that indicate the educational level of the leader which are entitled "Graduate Degree," "College Degree," and "Studied Abroad." These are dummies that are equal to one if the leader has a "Graduate Degree" or a "College Degree" or "Studied Abroad," respectively, and zero otherwise. These are derived from Lentz (1994, 1999), Encyclopedia Britannica Online¹, The Statesman's Yearbook Online², Barcelona Center for International Affairs' Political Leaders Biographies (CIDOB)³, and other online sources, as well as individual biographies from *Lexis-Nexis*.

We also include three occupational dummy variables, which are entitled "Military Professional," "Lawyer," and "Professor/Scientist." These variables are dummies that are equal to 1 if the leader was in the military, or was a lawyer, or was a professor/scientist immediately before holding office, zero otherwise. These are derived from Lentz (1994, 1999), Encyclopedia Britannica Online⁴, The Statesman's Yearbook Online⁵, Barcelona Center for International Affairs' Political Leaders Biographies (CIDOB)⁶, and other online sources, as well as individual biographies from *Lexis-Nexis*.

We also include other control variables for the purpose of robustness, such as the logarithm of income per capita in the year when the leader is selected which is derived from Maddison (2003). The intuition is that a higher level of economic development may encourage the adoption of economic reforms that can sustain the existing high living standards.

¹Academic Edition (<http://www.britannica.com/>)

²(<http://www.statesmansyearbook.com/about.html>)

³(http://www.cidob.org/en/documentation/biografias_lideres_politicos)

⁴Academic Edition (<http://www.britannica.com/>)

⁵(<http://www.statesmansyearbook.com/about.html>)

⁶(http://www.cidob.org/en/documentation/biografias_lideres_politicos)

Alternatively, a lower level of economic development may induce the implementation of reforms that can enhance the existing low living standards. We also include regional dummies for Africa, Europe, Americas, Oceania and Asia. Finally, we use colonial dummies to indicate the identity of the colonizer. The data distinguishes between British, French, Portuguese, and other European colonial powers. This data is derived from La Porta et al. (1999). Some studies show that colonization determined institutional quality and accordingly the willingness and ability to implement reforms.

4 Estimation

4.1 Baseline Results

This section conducts an empirical estimation of the effect of educational distance on the probabilities of the implementation of land reforms. In this context, we use the Multinomial Logistic regression. This estimation technique generalizes the Logistic regression to problems with more than two possible discrete outcomes. Thus, this model is used to predict the probabilities of the different possible outcomes of a categorically distributed dependent variable. This selection seems appropriate given the categorical nature of our dependent variable, which is the status of the implementation of reforms (full implementation, partial implementation, no implementation). In this context, the regression equation is as follows

$$P_{ij} = \frac{\exp(x_i\beta_j)}{\sum_{j=1}^m \exp(x_i\beta_j)}, j = 1, \dots, m \quad (1)$$

where x_i refers to the regressors. The model assumes $0 < P_{ij} < 1$ and $\sum_{j=1}^m P_{ij} = 1$. The basic category considered in this paper is the status of the partial implementation. The control variables are similar to those in the model specification of Dreher et al. (2009).

The baseline results are included in table 2. The table reports the variable coefficients, in

addition to the relative risk ratios RRR which indicate how the risk of the outcome falling in the comparison group compared to the risk of the outcome falling in the basis group changes with the variable of interest, which is the educational distance. The table shows the results of the "Full implementation" and the "No implementation" modalities in two specifications. The first specification with the control variables that include professor/scientist, military professional, lawyer, studied abroad, and graduate degree in columns 1,2,3 and 4. The second specification with the control variables that include professor/scientist, military professional, lawyer, studied abroad, and college degree in columns 5,6,7 and 8.

The results are consistent with our basic intuition. Columns 1 and 2 of table 2 show the results of the "Full implementation" modality. The results show a statistically significant negative coefficient of -0.097 for educational distance. Educational distance has a relative risk ratio of 0.906 which implies that given a one unit decrease in educational distance, the relative risk of being in the "Full implementation" group would be 0.906 times more likely when the other variables in the model are held constant. The only other variable that has a statistically significant positive coefficient is professor/scientist. Columns 3 and 4 of table 2 show the results of the "No implementation" modality. The results show that the coefficient of educational distance is not statistically significant.

Columns 5 and 6 of table 2 show the results of the "Full implementation" modality, after replacing the graduate degree variable with the college degree one. The results also show a statistically significant negative coefficient of -0.132 for educational distance. Educational distance has a relative risk ratio of 0.875 which implies that given a one unit decrease in educational distance, the relative risk of being in the "Full implementation" group would be 0.875 times more likely when the other variables in the model are held constant. The only other variable that has a statistically significant positive coefficient is professor/scientist. Columns 7 and 8 of table 2 show the results of the "No implementation" modality, after replacing the graduate degree variable with the college degree one. The results show that

the coefficient of educational distance is not statistically significant.

4.2 Robustness

4.2.1 Additional Control Variables

We also conduct some tests to check the robustness of our results. As the baseline results may suffer from an omission bias, we add other control variables to deal with this issue. To our baseline estimates in table 2, we add the identity of the colonizer and the logarithm of Gross Domestic Product per capita. We also add regional fixed effects as in Amin and Djankov (2014), Kodila-Tedika and Kalanda (2016), Kodila-Tedika and Lambert (2019).

Table 3 shows the results after adding these control variables. Columns 1 and 2 of table 3 show the "Full implementation" modality. The results are similar to the baseline ones, and show a statistically significant negative coefficient of -0.127 for educational distance. Educational distance has a relative risk ratio of 0.999 which implies that given a one unit decrease in educational distance, the relative risk of being in the reform implementation group would be 0.999 times more likely when the other variables in the model are held constant. The only other variable that has a statistically significant positive coefficient is professor/scientist. Columns 3 and 4 of table 2 show the results of the "No implementation" modality. The results show that the coefficient of educational distance is not statistically significant.

However, it is worth noting that the statistical significance of the educational distance variable changes completely when we replace the college degree variable with the graduate degree one. The effect of educational distance becomes insignificant for the modality "Full implementation" as shown in columns 5 and 6 of table 3, and significantly positive for the modality "No implementation" as shown in columns 7 and 8 of table 3. The only other variable that has a statistically significant positive coefficient is professor/scientist.

4.2.2 Other Econometric Techniques

To further assess the sensitivity of our results, we also use other econometric techniques. For this purpose, we modify the variable of interest in order to adapt it to the estimation technique used. More precisely, we assign values to the implementation status of reforms in the context of an OLS estimation. Given that there are only three modalities, we assign the status "Full implementation" the value of 1, "Partial implementation" the value of 0.5 and "No implementation" the value 0 as in Bhattacharya et al. (2019). Table 4 shows the OLS estimation results in columns 1 and 2. The estimation shows a statistically significant negative coefficient of -0.026 when we add college degree, and -0.020 when we add graduate degree. These findings are similar to the baseline ones, which indicate that the greater the educational distance the less successful the implementation of the reforms. This conclusion holds even when we include different indicators of the level of education of the leader.

Columns 3 and 4 of table 4 contain the estimates of an Ordered Probit. The use of this technique is also justified since Ordered Probit is a generalization of the Probit analysis to the case of more than two outcomes of a dependent variable for which the potential values have a natural ordering, such as the categorization of the status of the implementation of reforms. The results show that educational distance has a statistically significant negative coefficient. This also implies that our baseline results are robust.

Finally, in columns 5 and 6 we assume a Logistic distribution considering only two modalities: the modality "Full implementation" takes the binary value of 1 and the modalities "Partial implementation" and "No implementation" take the value zero. Such a distribution allows for a Logit estimation. We report the coefficients and the marginal effects in columns 5 and 6. The results show that the probability of implementing land reforms is statistically associated with educational distance. The reported marginal effects imply that a unit increase in educational distance decreases the probability of reform implementation by more than 10%.

To conclude, the change in econometric technique does not affect the sign or significance of the relationship of interest. Table 5 combines the techniques used in table 4 with the additional explanatory variables considered in table 3. This combination of the two tests of robustness does not change the conclusions as educational distance is shown to negatively affect the implementation of reforms under any estimation technique used and with the inclusion of other control variables. The only difference is that the magnitude of the coefficients decline slightly compared to the baseline results.

4.3 Endogeneity

The specification of interest, however, suffers from a potential endogeneity problem due to an omission of a variable rather than due to reverse causality from land reform to educational distance. To deal with potential endogeneity, we adopt an identification strategy based on the use of instrumental variables for our educational distance variable. To do this, we use the Constitutions Database from The World Policy Analysis Center which collects information on the content of the constitutions of each country. We specifically focus on the constitutional provisions on the rights to education. This is because the educational gap between the leader and the average population would tend to be small if the educational system is free and compulsory in a country. In this case, if there is no discrimination in the cost of education there is no friction in accessing education. In different terms, we argue that there is an association between the guaranteed education opportunities/rights to education and the quantity of education. This can serve as a valid instrument since there is no connection between the rights to education/guaranteed opportunity for education and land reforms. In this context, the effect of the rights to education can only affect the accumulation of human capital and not the quality of education. Edwards and Marin (2015) show that there is no evidence that including the right to education in the constitution is associated with higher test scores.

We constructed our instrument to consider the three levels of education, namely: primary education, secondary education and higher education. This allows us to have three instruments. In the Constitution database, there are three questions on the three levels of education as follows: (1) Does the constitution guarantee citizens the right to education or a specific constitutional right to primary education? (2) Does the constitution guarantee citizens the right to secondary education? (3) Does the constitution guarantee citizens the right to higher education? For the first question, the possible answers are: 1: Not granted; 2: Aspirational; 3: Guaranteed; 4: Compulsory or free; 5: Compulsory and free. For the second question, the possible answers are: 1: Not granted; 2: Aspirational; 3: Guaranteed; 4: Compulsory or free; 5: Compulsory and free. Finally, for the last question, the possible answers are: 1: Not granted; 2: Aspirational; 3: Guaranteed; 5: Guaranteed free. We consider the number of each response as the value associated with each answer. We do so in an ordinal manner such that Compulsory and free $>$ Compulsory or free, and so on. Further details about the possible responses are included in the appendix.

Table 6 uses two econometric techniques. On the one hand, we use Two Stage Least Squares and consider the variables in table 4 used for the OLS estimation. Hansen J's test validates our instrument. The results are shown in columns 1 and 2 of table 6 and seem to confirm our previous findings of a statistically significant negative relationship between educational distance and reform enactments. We also use the IV Probit estimation which fits Probit models where one or more of the regressors are endogenously determined. We use the same specification in table 4 used for the Logit estimation. The results are included in columns 3 and 4 of table 6. The results also confirm our previous findings.

5 Conclusion

This paper examines the effect of the gap between the educational background of the country's leader and the population on the implementation of land reforms. In specific, we argue that a highly educated leader is more likely to be able to realize the need for economic reforms, to be able to persuade the public and other political actors of the imperativeness of the reforms, to be able to formulate the intended reforms, and to be able to successfully implement these reforms. We combine the data on the leader's education by Besley and Reynal-Querol (2011) to the data on the enactment of land reforms in Bhattacharya (2019) to test our hypothesis. The baseline results confirm our argument and show a statistically significant negative coefficient of educational distance in a Multinomial Logistic regression where the probability of the full implementation of reforms is our dependent variable. We also conduct some robustness tests by including other control variables to deal with a potential omitted variable bias, and by using alternative econometric techniques such as Ordinary Least Squares, Ordered Probit and Logit. These tests confirm the robustness of our results. To deal with potential endogeneity, we propose new instruments that indicate the constitutional provisions on the rights to education. The Two Stage Least Squares and the IV Probit confirm our findings of a negative relationship between educational distance and reform enactments. This paper has policy implications as it provides evidence that educational reforms are essential for the enactment of other types of economic reforms. Future research can extend this study to consider the effect of the socioeconomic status of the leader on the probability of implementing reforms.

6 Appendix

6.1 Primary

- General right to education means the constitution explicitly mentions a right to education or a right to education at all levels.

- Specific right to primary education means the constitution explicitly mentions a right to primary education, a right to education at all levels, or a right to education for at least 6 years or until at least age 11.

- Not granted means that the constitution does not explicitly mention the right to education or primary education for all citizens. This does not mean that the constitution denies the right to education or primary education, but that it does not explicitly include either of these rights. If the right to education is only guaranteed to specific groups of people, the country will appear as not granting the right to education to all citizens on this map.

- Aspirational means that the constitution protects the general right to education or the specific right to primary education, but does not use language strong enough to be considered a guarantee. For example, constitutions in this category might state that the country aims to protect the right to education or intends to provide free primary education.

- Guaranteed means that the constitution protects the right to education or primary education in authoritative language. For example, constitutions in this category might guarantee citizens' right to education or make it the State's responsibility to provide primary education. However, constitutions in this category do not guarantee that education is free and/or compulsory.

- Compulsory or free means that the constitution guarantees the right to free or compulsory education, but not both, in authoritative language, either generally or specifically at the primary level.

- Compulsory and free means that the constitution guarantees both the right to free and the right to compulsory education in authoritative language,

6.2 Secondary

Specific right to secondary education means the constitution explicitly mentions a right to secondary education, a right to education at all levels, or a right to education for at least 11 years or until at least age 16.

- Not granted means that the constitution does not explicitly mention the right to secondary education for all citizens. This does not mean that the constitution denies the right to secondary education, but that it does not explicitly include this right. If the right to secondary education is only guaranteed to specific groups of people, the country will appear as not granting the right to secondary education to all citizens on this map.

- Aspirational means that the constitution protects the right to secondary education, but does not use language strong enough to be considered a guarantee. For example, constitutions in this category might state that the country aims to protect the right to secondary education or intends to provide free secondary education.

- Guaranteed means that the constitution protects the right to secondary education in authoritative language. For example, constitutions in this category might guarantee citizens' right to secondary education or make it the State's responsibility to provide this level of education. However, the constitutions in this category do not guarantee that secondary education is free and/or compulsory.

- Compulsory or free means that the constitution guarantees either the right to free or compulsory secondary education, but not to both, in authoritative language.

- Compulsory and free means that the constitution guarantees both the right to free and the right to compulsory secondary education in authoritative language.

6.3 Higher

Specific right to higher education means the constitution explicitly mentions a right to higher education or a right to education at all levels.

- Not granted means that the constitution does not explicitly mention the right to higher education for all citizens. This does not mean that the constitution

denies the right to higher education, but that it does not explicitly include this right. If the right to education is only guaranteed to specific groups of people, the country will appear as not granting the right to higher education to all citizens on this map.

- Aspirational means that the constitution protects the right to higher education, but does not use language strong enough to be considered a guarantee. For example, constitutions in this category might state that the country aims to protect the right to higher education or intends to provide free higher education.

- Guaranteed means that the constitution protects the right to higher education in authoritative language. For example, constitutions in this category might guarantee citizens' right to higher education or make it the State's responsibility to provide this level of education. However, the constitutions in this category do not guarantee that higher education is free.

- Guaranteed free means that the constitution guarantees the right to free higher education in authoritative language.

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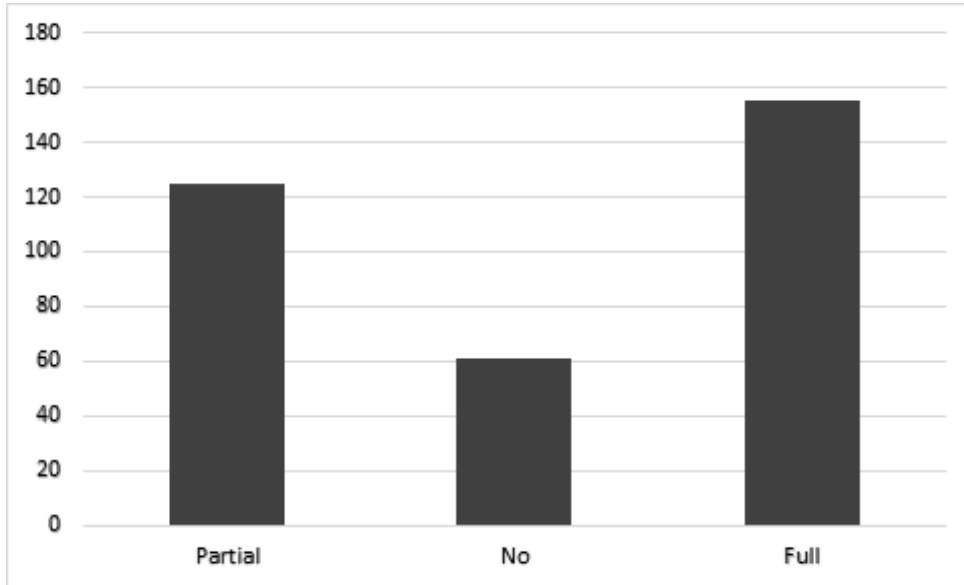


Figure 1: Distribution of the status of the implementation of reforms.

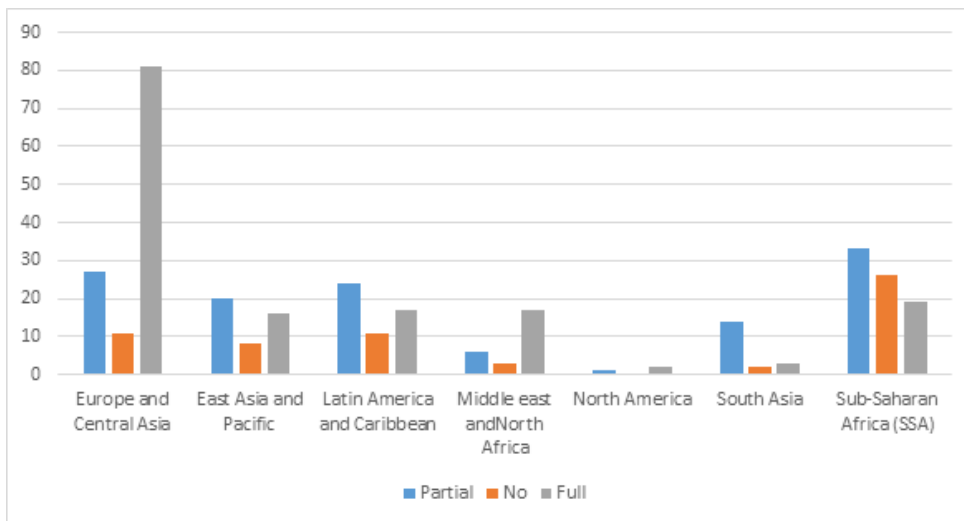


Figure 2: Distribution of the status of the implementation of reforms around the world.

	Obs	Mean	Std. Dev.	Min	Max
Sub-Saharan Africa (SSA)	344	.235	.424	0	1
South asia	344	.055	.228	0	1
North america	344	.009	.093	0	1
Latin America and Caribbean	344	.151	.358	0	1
Middle east and North Africa	344	.075	.264	0	1
Europe and Central Asia	344	.345	.476	0	1
East Asia and Pacific	344	.127	.334	0	1
Colonies	354	.855	.351	0	1
Lawyer	280	.182	.386	0	1
Military Professional	280	.246	.431	0	1
Professor/Scientist	280	.196	.398	0	1
Implementation score	354	.642	.372	0	1
Implementation full	354	.460	.499	0	1
Implementation partial	354	.364	.481	0	1
Implementation no	354	.175	.380	0	1
Studied Abroad	279	.328	.469	0	1
College degree	277	.653	.477	0	1
Graduate degree	277	.281	.561	0	6.078
Log GDP per capita	254	7.623	1.024	0	9.735
Educational distance	154	10.489	5.163	-6.756	19.720

Table 1: Summary Statistics.

	Multinomial Logit							
	Full	RRR	No	RRR	Full	RRR	No	RRR
Educational distance	-.097** (.045)	.906	.102 (.073)	1.107	-.132** (.057)	.875	.063 (.064)	1.065
Professor/Scientist	1.636** (.713)	5.137	2.062*** (.790)	7.869	1.506** (.730)	4.509	1.975** (.830)	7.211
Military Professional	.309 (.511)	1.362	.446 (.679)	1.563	.379 (.520)	1.461	.815 (.639)	2.260
Lawyer	.698 (.517)	1.077	-.704 (.816)	.494	-.233 (.524)	.716	-.819 (.817)	.440
Studied Abroad	-.160 (.477)	.851	.235 (.698)	1.26	-.340 (.468)	.711	-.264 (.630)	.767
Graduate degree	-.389 (.237)	.677	-1.611* (.834)	.199				
College degree					.692 (.537)	1.998	-.123 (.589)	.883
Constant	1.190 ** (.514)	3.287	-1.737** (.812)	.175	1.082 (.521)	2.951	-1.580** (.715)	.205
Observations		150				150		
Pseudo R2		0.109				0.0971		
Prob > chi2		0.0028				0.0055		

Table 2. Educational Distance and succes/failure (Multinomial Logit). *Significant at 10%; **significant at 5%; ***significant at 1%. Robust p-values in parentheses

	Multinomial Logit							
	Full	RRR	No	RRR	Full	RRR	No	RRR
Educational distance	-.127*	.900	.152	1.165	-.056	.944	.191*	1.210
	(.067)		(.093)		(.052)		(.113)	
Professor/Scientist	1.582*	4.869	2.11**	8.314	1.644*	5.180	2.184**	8.888
	(.879)		(.879)		(.860)		(.909)	
Military Professional	.724	2.062	1.164	3.203	.657	1.929	.660	1.935
	(.626)		(.776)		(.631)		(.809)	
Lawyer	-.273	.760	-.725	.484	-.048	.952	-.740	.477
	(.653)		(1.028)		(.643)		(1.046)	
Studied Abroad	.134	1.143	-.134	.874	.342	1.408	.369	1.446
	(.571)		(.704)		(.598)		(.761)	
College degree	.912	2.490	-.248	.780				
	(.695)		(.795)					
Graduate degree					-.328	.720	-1.696*	.183
					(.469)		(.761)	
Log GDP per capita	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Colonies (Dummy)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regional effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-2.025	.132	-1.998	.135	-1.072	.342	1.039	2.827
	(2.266)		(2.406)		(2.736)		(5.232)	
Observations		140				140		
Pseudo R2		0.258				0.264		
Prob > chi2		0.000				0.000		

Table 3. Educational Distance and succes/faillure (Robustness to Controls). Significant at 10%; **significant at 5%; ***significant at 1%. Robust p-values in parentheses. Regional effects: Africa, Europe, Americas, Oceania, and Asia.

	OLS		Ordered Probit		Logit (Marginal effects after logit)	
Educational distance	-.026*** (.007)	-.020*** (.006)	-.085*** (.024)	-.066*** (.022)	-.037*** (.013)	-.029*** (.010)
Professor/Scientist	-.033 (.109)	-.021 (.111)	-.084 (.345)	-.050 (.344)	.145 (.133)	.145 (.133)
Military Professional	-.028 (.080)	-.036 (.081)	-.104 (.253)	-.134 (.253)	.027 (.115)	.015 (.113)
Lawyer	.030 (.081)	.067 (.075)	.082 (.250)	.200 (.232)	-.010 (.124)	.056 (.122)
Studied Abroad	-.024 (.074)	-.034 (.077)	-.081 (.224)	-.091 (.232)	-.062 (.103)	-.045 (.101)
College degree	.127* (.087)		.415 (.274)		.177 (.111)	.044 (.065)
Graduate degree		.015 (.053)		.221 (.150)		
Constant	.840*** (.063)	.853*** (.061)			.930** (.470)	1.001** (.460)
Obs	150	150	150	150	150	150
R-2	0.100	0.083				
Pseudo R2			0.051	0.0430	0.0841	0.0704

Table 4. Educational Distance and succes/faillure (Other techniques). *Significant at 10%; **significant at 5%; ***significant at 1%. Robust p-values in parentheses.

	OLS		Ordered Probit		Logit	
Educational distance	-.021***	-.014**	-.090***	-.057**	-.138**	-.082*
	(.007)	(.006)	(.027)	(.023)	(.062)	(.047)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Log GDP per capita	Yes	Yes	Yes	Yes	Yes	Yes
Colonies (Dummy)	Yes	Yes	Yes	Yes	Yes	Yes
Regional effects	Yes	Yes	Yes	Yes	Yes	Yes
Constant	Yes	Yes	Yes	Yes	Yes	Yes
Obs	140	140	140	140	140	140
R-2	0.291	0.280				
Pseudo R2			0.171	0.168	0.237	0.223

Table 5. Educational Distance and succes/failure (Additional Robustness Checks).

Significant at 10%; **significant at 5%; ***significant at 1%. Robust p-values in parentheses. Control variables: Professor/Scientist, Military Professional, Lawyer, Studied Abroad, Graduate degree (College degree) ; Regional effects: Africa, Europe, Americas, Oceania, and Asia.

	2SLS		IV Probit	
Educational distance	-0.075*** (0.025)	-0.056** (0.022)	-0.313*** (0.061)	-0.282** (0.111)
Lawyers	0.442*** (0.150)	0.238* (0.140)	1.444*** (0.506)	0.550 (0.586)
Military Professional	0.083 (0.160)	0.084 (0.131)	0.614 (0.686)	0.694 (0.708)
Professor-Scientist	0.188 (0.238)	-0.001 (0.237)	1.341** (0.647)	0.512 (0.729)
Studied Abroad	0.117 (0.164)	-0.083 (0.140)	0.763 (0.542)	-0.473 (0.584)
Graduate Degree	-0.094* (0.054)		-0.539** (0.238)	
College degree		0.290** (0.122)		2.256** (0.917)
Constant	1.206*** (0.197)	0.932*** (0.112)	2.215*** (0.569)	0.738 (0.741) (0.103)
Number of observations	47	47	47	47
R2	0.036	0.262		
Hansen J statistic (p-value)	0.5674	0.1133		
Wald chi2			29.74	13.73
Wald test of exogeneity			0.0613	0.8251

note: .01 - ***; .05 - **; .1 - *;

Table 6. Two Stage Least Squares and IV Probit. Significant at 10%; **significant at 5%; ***significant at 1%. Robust p-values in parentheses.