Emigration and the quality of home country institutions*

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Abstract

We investigate the impact of emigration on the quality of institutions in the home country. We consider dynamic-panel regressions and we find a positive effect of both the total emigration rate and the share of tertiary educated workers on institutions (as measured by standard democracy and economic freedom indices) in the home country. This implies that unskilled migration has a positive impact while skilled migration has an ambiguous impact on institutional quality. However, counterfactual simulations show that in general, skilled migration has a positive impact on institutions in most countries.

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1 Introduction

This paper investigates the relationship between migration and source country institutions and governance (henceforth referred to by the term "institutions"). Many recent studies have emphasized the importance of institutions for economic development and growth (see Acemoglu, Johnson and Robinson 2005, for a detailed survey) and have explored the determinants of institutions, some focusing on geography, and some on policy. For example, Rodrik et al. (2002) show that once institutions are controlled for, i) geography measures have a weak direct effect on income though they have a strong indirect effect through their impact on the quality of institutions, and ii) the direct impact of trade openness is not statistically significant, though its indirect effect - through its impact on institutional quality – is strongly positive.

Another potentially important – and yet neglected – determinant of institutions is migration.[1] Indeed, emigration and the remittances migrants send back home tend to act as a safety net that can alleviate domestic social, political and economic pressures to reform (e.g., it is commonly argued that emigration to the U.-S. has contributed to delay political change in countries such as Mexico or Haiti). On the other hand, once abroad, migrants can engage in economic and political activities (e.g., lobbying to encourage or block development aid, channelling of development assistance, imposing sanctions) that affect the institutional evolution of their home country. For example, the very active anti-Castro lobby in the United States has probably contributed to a crispation in the relations between the U.-S. and Cuba, and it is unclear whether this has strengthened the radical or the moderate factions in Cuba. Second, migration is a selective process, with positive self-selection being the rule. Given that the more educated individuals – and the middle class in general – tend to have a higher degree of political participation and generally contribute a greater deal to public policy debates, emigration is likely to hurt the quality of domestic institutions and their development as well as the process through which sound policies are being formulated and implemented. In addition, migration prospects modify individuals' choices in terms of education (e.g., Beine, Docquier and Rapoport, 2001, 2008) and in terms of allocation of talent between productive and unproductive activities (Mariani, 2007),

[1] There is just one occurence of the term "migration" in Acemoglu et al.'s (2005) handbook chapter, and it relates to another question. The potential for diasporas to affect institutional development of developing countries, however, is well recognized in policy circles (see, e.g., a recent report commissioned by the CIA Strategic Assessment Group (Lahneman, 2005)).

which can in turn impact on the evolution of home country institutions. Finally, emigration increases the home country population's exposure to democratic values and norms, be it directly, through contacts with return migrants and relatives abroad, or indirectly, thanks to the diffusion of such norms and values through migration and diaspora networks. Such diaspora networks have already been shown to foster trade (e.g., Gould, 1994, Combes et al., 2005, Iranzo and Peri, 2009), FDI inflows (e.g., Kugler and Rapoport, 2007), and technology diffusion (Kerr, 2008, Agrawal, Kapur and McHale, 2009, Papagiorgiou and Spilimbergo, 2009, Lodigiani, 2009). Even more recent studies demonstrated the contribution of migration to the diffusion of fertility behavior (Fargues, 2006) or, in the case of foreign students, of democracy (Spilimbergo, 2009).

In particular, Spilimbergo (2009) shows that foreign-trained individuals promote democracy in their home countries, but only if foreign education is acquired in democratic countries. While he does not identify the exact mechanisms through which such an influence may materialize, he suggests a number of possibilities we paraphrase as follows. First, locally available substitutes to foreign-educated technocrats may be very imperfect, providing the latter substantial bargaining power when setting minimal democratic standards to accept the job. Second, foreign educated leaders may be keen to preserve the quality of their alumni networks, which again requires serving reasonably democratic regimes, and more generally education abroad may inculcate a sense of common identity with the international democratic community. Third, foreign-educated individuals make it more difficult for dictatorial regimes to maintain repression by spreading 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 changes at home. The last two of these mechanisms were among those we mentioned in our introductory presentation above of the channels through which migration may affect home-country institutions, while the first two mechanisms could be generalized to any individual experience of skilled emigration and return.

The only paper we are aware of attempting to assess the overall effect of emigration on instutions at home is Li and McHale (2009), who use the World Bank governance indicators (Kauffman, Kraay and Mastruzzi, 2005) (henceforth KKM) and the Docquier and Marfouk (2006) migration data set in their cross-sectional

analysis. Focusing on skilled migration, they examine the impact of the brain drain on sending country's institutional development and find that the brain drain has a positive effect on "political" institutions (i.e., on "political stability" and "voice and accountability") but a negative effect on "economic" institutions at home (i.e., on "government effectiveness", "regulatory quality", "rule of law", and "control of corruption"). However, their results suffer from the limits of a cross-sectional analysis[2] and, as they themselves acknowledge, from the weakness of their instrumentation strategy (they instrument skilled emigration rates using countries' geographical characteristics). In this paper we instead we look at migration in general and consider dynamic-panel regressions. We find a positive effect of both the total emigration rate and the share of tertiary educated workers on institutions (as measured by standard democracy and economic freedom indices) in the home country. This implies that unskilled migration has a positive impact while skilled migration has an ambiguous impact on institutional quality. However, counterfactual simulations show that in general, skilled migration has a positive impact on institutions in most countries.

2 Empirical analysis

2.1 General Considerations

The purpose of this section is to empirically investigate the impact of emigration rate on source's countries institutional quality. The first choice for our empirical analysis is the choice between a cross-section or a panel setting. In a cross-sectional dimension, it is possible to use better data both for migration and institutional quality. In particular, for migration, it is possible to use the Docquier Lowell and Marfouk 2007 (DLM) data set, which considers international migration by gender and educational attainment. This data set describes the loss of skilled workers to the OECD for 195 source countries in 1990 and 2000. For institutional quality, the World Bank Governance data by Kaufmann, Kray and Mastruzzi (2006) measures six dimensions of governance from 1996 to 2005: voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and control of corruption. It covers 213 countries and territories for 1996, 1998, 2000, and annually for

[2]The KKM (2005) data set starts in the late 1990s and is therefore not long enough to allow for panel data analysis. Similarly, the Docquier and Marfouk (2006) dataset offers estimates of emigration rates by skill levels for 1990 and 2000 only.

2002-2005. In unreported regressions, we consider OLS regressions using these data sets. We find a significant and positive correlation between the emigration rate and institutional quality indexes, but these regressions suffer from a lot of shortcomings. First, it is difficult to find an appropriate baseline specification, because different economic, political and cultural factors can be important in explaining the quality of institutions. As Alesina et al. (2003) noted, various explanatory variables have been used in the literature on the determinants of institutions, such as log of gdp per capita, legal origin dummies, religious variables, latitude, fractionalisation indices, etc. The main problem with these variables relates to the fact that the pattern of cross-correlations between explanatory variables cannot be ignored and that in many cases the results of cross-country regressions are sensitive to the econometric specification. For example, as they acknowledge, their index of ethnic fractionalization is highly correlated with latitude and with the log of gdp per capita (which, in addition, is very likely to be endogenous). Moreover, legal origin dummies are highly correlated with religious variables etc. In a panel dimension, instead, it is possible to control for unobservable heterogeneity, and therefore for all time-invariant variables affecting institutional quality. Another problem of cross-sectional analysis refers to endogeneity and reverse causality problems (i.e., bad institutions can cause migration). Attempting to confront the endogeneity issue directly requires finding a suitable instrument. This is not easy in this context. To properly instrument for migration we need a variable that is correlated with the emigration rate but not directly correlated with our endogenous variable, institutional quality. In the migration literature, country's geographical features are often used to instrument for emigration. However, in the institutions literature, the very same geographical characteristics, such as latitude or country size, are also used as determinants of institutions, which would seem to question their theoretical validity as candidate instruments. Therefore it is very difficult to find a proper external instrument for migration. Another problem of the cross-section analysis refers to the fact that institutional quality is a quite persistent variable, therefore a dynamic model would be more suited in order to study the correlation between institution and emigration. Moreover several papers discuss the influence of education on institutional quality, therefore it is worth to include in our specifications a variable related to education or to human capital. Of course, also this variable would suffer from endogeneity, therefore in a cross-section analysis it would be very difficult to take into account all of these problems. In the next section, we

will study the impact of emigration rate on institutional quality using dynamic-panel regressions. In particular, we will use the system-GMM estimator, and we will be able to control for unobservable heterogeneity, to allow for dynamics, and to account for endogeneity and persistency of some of the variables, using internal instruments.

2.2 Panel analysis

Following Acemoglu et al. (2005), Bobba and Coviello (2007), Amparo Castello-Climent (2008) for studies on democracy and education, and Spilimbergo (2009) for a study on democracy and foreign education, we will consider the impact of emigration on institutional quality using dynamic-panel regressions. Using the system-GMM estimator, we will control for unobservable heterogeneity, and we will take into account the endogeneity and persistency of some of the variables. In the following sub-section we will explain the used econometric tecnique.

2.2.1 The econometric model

As in previous studies on democracy and education, and democracy and foreign education, including Acemoglu et al. (2005), Bobba and Coviello (2007), Amparo Castello-Climent (2008), and Spilimbergo (2009), we consider the level of democracy as our dependent variable and we estimate the following dynamic model:

$$\begin{aligned} Democracy_{i,t} &= \beta_0 Democracy_{i,t-1} + \beta_1 h_{i,t-1} + \beta_2 emrate_{i,t-1} + \\ &\quad + \beta_3 X_{i,t-1} + \eta_i + \alpha_t + \varepsilon_{i,t} \end{aligned} \tag{1}$$

where i is the country, t is the period. All explanatory variables are lagged five years. The lagged dependent enters the set of explanatory variables to capture the characteristic of persistency in democracies. The coefficient of interest is β_2 which reflects whether the emigration rate has any positive effects on democracy. The coefficient β_1 captures the effect of human capital on democracy. The coefficient β_3 reflects the importance of other control variables such us the population size (in log), and gdp per capita (in log) as in Acemoglu et al. (2005). We also control for time fixed effects, α_t, and country fixed effects, η_i. The advantage of a panel estimation is that it is possible to control for unobservable variables that are country-specific and whose omission, as in the cross-section analysis, can bias the estimated coefficients.

Therefore, the results are robust to all country-specific time invariant explanatory variables used in the cross-section literature on institutional quality, including ethnic fractionalisation, religions, legal origins, colonial ties, geographical variables etc. (see for cross-section analysis, Alesina et al., 2003, and La Porta et al.,1999.)

A general approach to estimate such an equation is to use a transformation that removes unobserved effects and that uses for instrumental variables. Anderson and Hsiao (1992) propose to work with first differences and then to search for instruments. They proposed for the lagged dependent either the two period lagged difference or the two period lagged level of the dependent variable. A generalization of that method was proposed by Arellano-Bond (1991). They suggest using the entire set of instruments in a GMM procedure to reach significant efficiency gains. In the Arellano-Bond method, the first-difference of the explanatory variables are instrumented by the lagged values of the explanatory variables in levels. Under the assumptions that the error term is not serially correlated and that the explanatory variables are weakly exogenous or predetermined (i.e. the explanatory variables are not correlated with future realizations of the error term), the following moment conditions are applied for the first difference equations:

$$E[W_{it-s}.(\Delta\varepsilon_{it})] \quad = \quad 0 \quad for \quad s \geq 2;\ t = 3, ..., T \tag{2}$$

where W_{it-s} are the lagged dependent and all the pre-determined variables in the model. Acemoglu et al. (2005) used this method to study the effect of education on democracy without finding any significant effect. The problem with this method is that, as Bond, Hoeffler and Temple (2001) point out, when time series are persistent, the first-difference GMM estimator can behave poorly: estimates can be seriously biased. [3]To overcome these problems Bond et al. (2001) suggest to use a more informative set of instruments within the framework developed by Arellano and Bover (1995) and Blundell and Bond (1998). It is widely recognized that democracy varies significantly across countries, but it is quite time-persistent within a country, therefore system GMM should be used. New results on the relationship between democracy and education were found using Blundell and Bond system GMM estimator.[4] Following

[3]Simulation results show that the Difference GMM may be subject to a large downward finite-sample bias when time series are persistent, particularly when T is small. The higher the persistence of the series used as instruments, the weaker the correlation between levels and differences (see Blundell and Bond (1998)).

[4]Bobba and Coviello (2007), and Amparo Catello (2008). Also Splimbergo (2009) used system

this literature, we use the Blundell and Bond system GMM estimator that combines the regression in differences with the regression in levels in a single system. The instruments used in the first differentiated equation are the same as above, but the instruments for the equation in level are the lagged differences of the corresponding variables.

For the level equation the following moment conditions are to be satisfied:

$$E\left[\left(\Delta W_{i,t-1}\right)\left(\eta_i + \varepsilon_{i,t}\right)\right] \quad = \quad 0 \quad for \quad t = 4, ...T. \tag{3}$$

Condition (3) implies that changes in W are orthogonal to the country fixed effects.

We test the validity of moments conditions by using the test of overidentifying restrictions proposed by Sargan and Hansen and by testing the null hypothesis that the error term is not second order serially correlated. Furthermore, we test the validity of the additional moment conditions associated with the level equation using the Hansen difference test for all GMM instruments.

A particular concern related to this tecnique is the risk of instrument proliferation. In fact, if the use of the entire set of instruments in a GMM context gives significant efficiency gains, on the other hand, a large collection of instruments could overfit endogenous variables as well as weaken the Hansen test of the instruments' joint validity. The instrument proliferation problem is particular important in small samples, but unfortunately there is no formal test to detect it, even if a possible rule of thumb is to keep the number of instruments lower (or equal) the number of groups.[5] In our analysis, we consider the lagged dependent and all the control variables of interest as predetermined, instrumented with "'internal instruments"', using their own lagged one period and further lags, according to the specification, in order to not exceed the number of groups. In this setting, thanks to the system GMM estimator, we can handle important modeling concerns such as fixed effects and endogeneity/weakly exogeneity of regressors, being this tecnique particular suited when it is difficult to find good external instruments, as in our case.

GMM

[5]The xtabond2 command, implemented in Stata, gives a warning when instruments exceed the number of groups.

2.2.2 Data

Data are drawn from the following sources:

Democracy

Data on democracy are taken from the Freedom House data set, from the POLITY IV data set, and from the Economic Freedom of the World project (Simon Fraser Institute).

The Freedom House measures political rights (PR) and civil liberties (CL) using, respectively, an index which ranges from 1 to 7, with an higher score indicating more freedom. The ratings are determined by a list of questions. For the political rights index, for example, the questions are grouped into three sub-categories: electoral process, political plurism and participation, and the functioning of the government. The civil liberties questions are grouped into four subcategories: freedom of expression and belief, association and organization rights, rule of law and personal autonomy and individual rights. The sum of each country's sub-category scores translates to a rating from 1 to 7. Following Acemoglu et al. (2005) we transform the indexes so that they lie between 0 and 1, with 1 corresponding to the most-democratic set of institutions.

Another measure of democracy from the POLITY IV data set is considered. Indicators of democracy measure the general openness of political institution and combines several aspects such as: the presence of institutions and procedures through which citizens can express effective preferences about alternative policies and leaders; the existence of institutionalized constraints on the exercise of power by the executive; the guarantee of civil liberties to all citizens in their daily lives and in acts of political participation. In our data set we consider a composite polity index, that ranges from -10 to + 10. Also this index is normalized from 0 to 1, with 1 corresponding to the most-democratic set of institutions.

We also consider an index of Economic Freedom of the World, which measures the degree to which the policies and institutions of countries support economic freedom, and it considers the degree of economic freedom in five broad areas: (1) size of government; (2) legal structure and security of property rights; (3) access to sound money; (4) freedom to trade internationally; and (5) regulation of credit, labor and business. Also this index is normalized between 0-1.

Migration and Human Capital

For emigration data, we use the estimates provided in Defoort (2008). Focusing

on the six major destination countries (USA, Canada, Australia, Germany, UK and France), she computed skilled emigration stocks and rates by educational attainment from 1975 to 2000 (one observation every 5 years). On the whole, the six destination countries represent about 75 percent of the OECD total immigration stock. However, for some originating countries, the coverage is quite low. For example, Surinamese emigrants mainly live in the Netherlands. About 3 percent of Surinamese emigrants live in the six major receiving countries. With this dataset, however, we consider migration towards countries with high institutional quality. In our research question this is important, because migrants are likely to ameliorate home country institutions if they emigrate towards countries with higher institutional quality.

Data on human capital are based on Barro and Lee (2001) data set.[6]

Other data

Data on GDP per capita and population data are taken from the PWT and from the World Development Indicators. Data on legal origin are taken from La porta et al. (1999).

Our data set is a five year unbalanced panel spanning the period between 1980 and 2005, where the start of the date refers to the dependent variable (i.e. $t = 1980$, so $t - 1 = 1975$). In our sample, we are considering only developing countries, and they enter the panel if they are independent at time $t - 1$.[7]

2.2.3 Regression results

Tables 2, 1, 3 4 present our main general results from estimating equation 1 and using the Freedom House PR and CL indicators, the Polity2 measure from the Polity data set, and the Economic Freedom Indicator. We start considering as variables of interest the lagged dependent, the total emigration rate, the share of tertiary educated workers over the total residence labor force and the log of population size.

Focusing on the total emigration rate, column 1 of each table shows the pooled OLS relationship between the total emigration rate and democracy by estimating equation 1. The results show a positive correlation between total emigration and

[6]Defoort, 2008, uses Cohen and Soto's available indicators (2001) for countries where Barro and Lee measures are missing. When both indicators are missing, the skill sharing of the neighboring country with the closest rate of enrollment in education is transposed. We prefer to consider only observations based on Barro and Lee (2001) data set for reliability reasons.

[7]The data set used in this paper is an updated version of the data set used by Acemoglu et al. (2005). So many control variables are directly taken from it.

democracy, and statistically significant at usual level considering Polity2 and EFW indexes (all the standard errors are robust and clustered by country group). Column 1 does not control for fixed effect. In column 2, when we control for fixed effect, the coefficient related to the total emigration rate becomes negative (except for EFW), and statistically not significant. We know that in a dynamic panel data model, the standard fixed effect estimator is biased and inconsistent in panels with a short time dimension (the so called Nickell bias. Nickell (1981) showed that the Within estimator is biased of $O(1/T)$). Moreover, both in our fixed effect and pooled OLS estimations, explanatory variables are considered as exogenous. To deal with these problems we use the system GMM estimator that is consistent in dynamic panel estimator, and with "'internal instruments"' we can control for a weak form of exogeneity of all explanatory variables. We consider the explanatory variables of interest as predetermined, i.e. instrumented using their own lagged one period and further lags, in order to use a relevant number of instrument for efficiency reason, but trying to keep the number of instruments lower or at least equal to the number of country groups in all the specification [8]. In column (3) of tables 2, 1, 3, 4 the estimate for the total emigration rate is now positive and highly significant at 1 % level for all the four indicators. Column (4) shows the same specification, but now reducing the number of instruments for robustness check. Our previous results are confirmed.[9]

The share of tertiary educated workers over the total residence labor force is another variable of interest in our model. As for the emigration rate, the results show a statistically significant and positive correlation between the share of total educated workers and democracy in pooled OLS regressions. The coefficients turn out to be negative (except for EFW) and not statistically significant in fixed effect regressions. Column (3) of tables 2, 1, 3 4 shows the SYS GMM estimates. The estimated coefficients of the share of tertiary educated workers are now positive and statistically significant at usual level, except for the Polity2 indicators.

In our basic specification, we add also as a regressor the logarithm of population size (lagged), which is positive and statistically significant for two indicators over

[8] A problem of the GMM estimator is that too many instruments can over fit the endogenous variable. As rule of thumb, the number of instruments needs to be less or at least equal to the number of groups

[9] In column 3, all the explanatory variables are considered as predetermined and instrumented for using their own first to third lags. In column 4, all the variables are instrumented for using their own first to second lags

four, using the SYS GMM estimator. Including population size in our model is important to avoid omitted variable bias. Population size can affect institutional quality and it is often considered as an explanatory variable in the relevant literature (see for example Acemoglu et al. , 2005, and Alesina et al., 2003, Bobba and Coviello, 2007). At the same time, population size is negatively correlated with the emigration rate (big countries have small emigration rate and vice-versa); therefore, including population size is important to control that the emigration rate is not just capturing a country-size effect.

Column (5) controls for GDP per capita (log). The estimated coefficient of the emigration rate is again positive and statistically significant at 10 and 1 percent when considering the civil liberties and polity2 indicators. It looses, instead, its significance when using the political rights indicator and economic freedom. The share of tertiary educated workers over the total residence labor force is no more significant, probably because the two variables are highly correlated (0.7145). GDP per capita itself is in general significant with a positive coefficient. [10]

The estimations show that democracy is very persistent. Moreover, considering the first 3 columns in each table, the coefficient on past democracy ranges between the estimated coefficient in pooled OLS, which usually is upward biased, and the estimated coefficient for the fixed effect, which usually displays downward bias. As expected, the unbiased GMM estimator is within this range.

The AR(2) test, the Hansen J test indicate that the moment conditions are satisfied and the instruments are valid.

In general, we can say, our results are quite robust across different specifications

[10] In unreported regressions, we also introduce as control variables, the mediam age of the population, and urbanization rate. While human capital loose its significance, probably because of multicollinearity, the total emigration rate remains significant when considering control variables as exogenous. If control variables are considered as pre-determined, emigration rate looses its significance too. This may be due either to collineairty or instruments proliferation.

and indexes. [11]

Our results show that caeteris paribus total emigration rate improves institutional quality. What about the educational structure of migration? In columns 6, we introduce the share of tertiary educated migrants over total migrants. The coefficient of the share of tertiary educated migrants is negative but not statistically significant. [12] This result shows that for the moment we cannot say anything about the impact of the educational structure of migration for institutional quality in the origin countries.

One concern is whether the presence of socialist countries may affect our results. Some socialist countries, in fact, had high levels of education in the 1980s and did not experience any particularly increase in education during or immediately prior to transition[13]. On the contrary, prior the transition, legal emigration was strongly restricted, while after the transition most of these countries experienced a strong increase in emigration. To control for the specific characteristics of these economies, in column (7) of each tables, we interact human capital and emigration rate with legal origin socialist dummies, finding in general a statistically significant effect for interacted terms. [14] In column (8) of each tables, we consider the same interaction, but introducing also a dummy variable which takes value equal to 1 in years before or equal 1990. The results are confirmed, and now interacted terms are still more statistically significant.

[11] To further assess the robustness of our results, in unreported regressions we considered the total emigration rate divided by a coverage measure. To better explain, data on migration are taken from Defoort data set (2008). Defoort computed emigration stocks and rates, focusing on the six major destination countries (USA, Canada, Australia, Germany, UK and France). If for some countries, the six destination countries represent a high percent of the OECD total immigration stock; for other countries, the coverage is quite low. Comparing the emigration stock in 2000 in Defoort data set to the one in Docquier and Marfouk data set, which considers 30 OECD destination countries, a variable indicating the percentage of coverage of Defoort data set has been created. We divide the total emigration rate by this coverage measure. Regressions not reported show the robustness of our results. Results from the previous section are in fact mainly confirmed.

[12] In unreported regressions we consider also the share of primary and secondary educated migrants. The coefficients of the share of secondary and primary educated migrants are positive, but also not statistically significant, except when considering the Polity2 measure. In this case the share of tertiary educated residents looses its significance too, casting doubts on the fact that the share of secondary educated migrants is likely to capture an education effect on institutional quality.

[13] This is also a concern by Acemoglu et al., 2005

[14] In the regressions, the legal origin dummy is not introduced by itself, because in SYS-GMM fixed effects are already taken into accounts.

2.2.4 Robustness of the results

The evidence found in the previous section reveals that human capital and emigration may improve institutional quality, and this effect is non-linear when considering socialist countries. To control for the robustness of our results, for each indicator, in tables A and A, we consider respectively the specifications which include interacted terms with socialist countries now in a balanced sample. For PR, CL, POL2 our results are confirmed, with now significant estimated coefficients for interacted terms with human capital. For the Economic Freedom Indicator estimates are not reliable, because too many observations are lost. In addition, following Defoort (2008) we consider constructed data for human capital based on Barro and Lee data (2001).[15] Introducing more observations with constructed data, our results are confirmed for emigration, while results on human capiatal are less robust. Finally in tables 7 ,8, 9, 10 regressions are considered excluding socialist countries. Column 1 and 2 show the results for our baseline specification when control variables of interest are instrumented using for their own to their third and second lags respectevely. Column (3) introduce gdp per capita (in logs) as a control variable, while columns (4) and (5) consider both a balanced sample and a sample using constructed data for human capital. Our results are robust across different indexes and specification.

[15] See Defoort (2008) for further details.

Table 1: Dependent Variable: Freedom House Political Rights Index

	Pooled OLS (1)	F.E. OLS (2)	SYS GMM (3)	SYS GMM (4)	SYS GMM (5)	SYS GMM (6)	SYS GMM (7)	SYS GMM (8)
L.PR	0.721***	0.355***	0.640***	0.609***	0.626***	0.647***	0.680***	0.695***
	(0.0381)	(0.0520)	(0.0623)	(0.0658)	(0.0605)	(0.0576)	(0.0556)	(0.0628)
L.h	0.678***	-0.650	0.642*	0.796**	-0.125	0.670**	0.662**	0.659**
	(0.243)	(0.700)	(0.335)	(0.361)	(0.426)	(0.321)	(0.290)	(0.294)
L.emrtot	0.183	-0.647	0.885***	0.914***	0.304	0.673***	0.513**	0.513*
	(0.112)	(0.661)	(0.338)	(0.349)	(0.413)	(0.256)	(0.237)	(0.277)
L.lpop	-0.00865	-0.443***	0.0478*	0.0485*	-0.00304	0.0329	0.00390	0.00753
	(0.00663)	(0.158)	(0.0273)	(0.0284)	(0.0201)	(0.0204)	(0.0166)	(0.0209)
L.lrgdpch					0.0773**			
					(0.0319)			
L.SHM						-0.108		
						(0.126)		
L.hsoc							0.744	
							(0.611)	
L.emrtotsoc							-1.872*	
							(1.021)	
L.hsocd90								1.393**
								(0.655)
L.emrtotsocd90								-2.351***
								(0.591)
Time dummies	yes	yes	yes	yes	yes	yes	yes	yes
R-squared	0.611	0.247						
ar1p			0.000	0.000	0.000	0.000	0.000	0.000
ar2p			0.542	0.553	0.427	0.571	0.555	0.646
hansenp			0.351	0.302	0.471	0.620	0.836	0.788
N	476	476	476	476	423	476	476	476
N. countries		91	91	91	85	91	91	91
N. instr.			74	62	76	91	90	86

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered by country and based on t-statistics in parentheses. One step system GMM estimator. The sample is an unbalanced sample comprising data at five interval between 1980 and 2005. All the variables are treated as pre-determined.

Table 2: Dependent Variable: Freedom House Civil Liberties Index

	Pooled OLS (1)	F.E. OLS (2)	SYS GMM (3)	SYS GMM (4)	SYS GMM (5)	SYS GMM (6)	SYS GMM (7)	SYS GMM (8)
L.CL	0.770***	0.352***	0.621***	0.577***	0.593***	0.648***	0.678***	0.721***
	(0.0375)	(0.0550)	(0.0637)	(0.0695)	(0.0698)	(0.0571)	(0.0540)	(0.0628)
L.h	0.536***	-0.326	0.596**	0.676**	0.0112	0.582**	0.497**	0.432**
	(0.183)	(0.492)	(0.263)	(0.276)	(0.310)	(0.238)	(0.197)	(0.204)
L.emrtot	0.144	-0.268	0.682***	0.754***	0.498*	0.508**	0.473**	0.434**
	(0.0938)	(0.454)	(0.260)	(0.280)	(0.274)	(0.215)	(0.215)	(0.216)
L.lpop	-0.00656	-0.224*	0.0271	0.0291	0.00452	0.0197	-0.00002	0.00443
	(0.00506)	(0.119)	(0.0168)	(0.0185)	(0.0134)	(0.0140)	(0.0125)	(0.0135)
L.lrgdpch					0.0467**			
					(0.0227)			
L.SHM						-0.126		
						(0.0911)		
L.hsoc							0.858*	
							(0.489)	
L.emrtotsoc							-1.702*	
							(0.999)	
L.hsocd90								1.783***
								(0.374)
L.emrtotsocd90								-2.144***
								(0.482)
Time dummies	yes	yes	yes	yes	yes	yes	yes	yes
R-squared	0.692	0.327						
ar1p			2.14e-08	9.42e-09	5.25e-08	8.22e-09	9.71e-09	1.62e-08
ar2p			0.571	0.604	0.836	0.521	0.544	0.374
hansenp			0.241	0.0662	0.247	0.291	0.588	0.467
N	476	476	476	476	423	476	476	476
N. countries		91	91	91	85	91	91	91
N. instr.			74	62	76	91	90	86

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered by country and based on t-statistics in parentheses. One step system GMM estimator. The sample is an unbalanced sample comprising data at five interval between 1980 and 2005. All the variables are treated as pre-determined.

Table 3: Dependent Variable: Polity2 Index

	Pooled OLS	F.E. OLS	SYS GMM	SYS GMM	SYS GMM	SYS GMM	SYS GMM	SYS GMM
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
L.polity2	0.723***	0.365***	0.577***	0.560***	0.554***	0.595***	0.639***	0.638***
	(0.0415)	(0.0558)	(0.0675)	(0.0661)	(0.0664)	(0.0610)	(0.0615)	(0.0682)
L.h	0.662***	-0.700	0.520	0.565	0.173	0.602**	0.516*	0.547*
	(0.213)	(0.693)	(0.349)	(0.360)	(0.557)	(0.304)	(0.268)	(0.293)
L.emrtot	0.219*	-0.470	1.389***	1.486***	1.141***	0.920***	0.980***	1.120***
	(0.127)	(0.745)	(0.420)	(0.450)	(0.400)	(0.299)	(0.334)	(0.370)
L.lpop	-0.00306	-0.312**	0.0894***	0.0928***	0.0568**	0.0474**	0.0337	0.0531*
	(0.00745)	(0.150)	(0.0307)	(0.0337)	(0.0265)	(0.0219)	(0.0215)	(0.0274)
L.lrgdpch					0.0420			
					(0.0418)			
L.SHM						-0.127		
						(0.135)		
L.hsoc							0.997**	
							(0.448)	
L.emrtotsoc							-2.527**	
							(1.023)	
L.hsocd90								0.833
								(0.544)
L.emrtotsocd90								-3.032***
								(0.541)
Time dummies	yes	yes	yes	yes	yes	yes	yes	yes
R-squared	0.660	0.432						
ar1p			1.57e-07	1.36e-07	7.19e-07	1.20e-07	7.83e-08	1.86e-07
ar2p			0.664	0.661	0.663	0.700	0.742	0.754
hansenp			0.279	0.200	0.243	0.412	0.605	0.627
N	459	459	459	459	412	459	459	459
N. countries		85	85	85	79	85	85	85
N. instr.			74	62	76	91	90	86

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered by country and based on t-statistics in parentheses. One step system GMM estimator. The sample is an unbalanced sample comprising data at five interval between 1980 and 2005. All the variables are treated as pre-determined.

Table 4: Dependent Variable: EFW Index

	Pooled OLS (1)	F.E. OLS (2)	SYS GMM (3)	SYS GMM (4)	SYS GMM (5)	SYS GMM (6)	SYS GMM (7)	SYS GMM (8)
L.EFW	0.760***	0.456***	0.759***	0.760***	0.788***	0.741***	0.744***	0.713***
	(0.0323)	(0.0559)	(0.0615)	(0.0610)	(0.0415)	(0.0585)	(0.0542)	(0.0561)
L.hnew	0.201***	0.0997	0.167**	0.173**	-0.00642	0.158**	0.175*	0.214**
	(0.0604)	(0.203)	(0.0767)	(0.0805)	(0.134)	(0.0762)	(0.0901)	(0.0900)
L.emrtot	0.158***	0.382	0.203***	0.201**	0.0996	0.238***	0.169**	0.215***
	(0.0432)	(0.325)	(0.0779)	(0.0825)	(0.0989)	(0.0878)	(0.0754)	(0.0770)
L.lpop	0.00215	-0.0238	0.00221	0.000484	-0.00381	0.000695	-0.000487	0.00234
	(0.00175)	(0.0590)	(0.00494)	(0.00527)	(0.00541)	(0.00507)	(0.00476)	(0.00413)
L.lrgdpch					0.0182*			
					(0.0103)			
L.SHM						0.0666*		
						(0.0365)		
L.hsoc							-0.178	
							(0.176)	
L.emrtotsoc							1.491*	
							(0.851)	
L.hsocd90								-0.861***
								(0.190)
L.emrtotsocd90								1.982***
								(0.566)
Time dummies	yes	yes	yes	yes	yes	yes	yes	yes
R-squared	0.708	0.579						
ar1p			0.000	0.000	0.000	0.000	0.000	0.000
ar2p			0.0711	0.0754	0.0472	0.0841	0.0765	0.0997
hansenp			0.391	0.308	0.716	0.543	0.896	0.846
N	372	372	372	372	357	372	372	372
N. countries		74	74	74	73	74	74	74
N. instr.			74	62	76	76	87	83

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors clustered by country and based on t-statistics in parentheses. One step system GMM estimator. The sample is an unbalanced sample comprising data at five interval between 1980 and 2005. All the variables are treated as pre-determined.

3 Country specific results

The empirical results above show that the total emigration rate has a positive impact on institutional quality in the source country, as is human capital. What happens then when a skilled individual emigrates? As we see from the regression results, the share of skilled among emigrants is never significant in our results, and interacting this variable with either human capital or emigration creates multicollinearity problems that further prevent us from testing empirically whether the institutional gain from migration is higher or lower when the composition of emigration becomes more skilled. In addition, we would also like to know not just the average effect but would also like to know which countries would gain or lose from more skilled migration. For these reasons, in the remainder of this paper we will rely on numerical simulations to address the following three questions: i) Which countries would lose/gain from a marginal increase in skilled emigration?; ii) Which countries would lose/gain from having a non-selective emigration, that is, from having their skilled emigration rates counterfactually reduced so as to equal their unskilled emigration rate?; and iii)Which countries would lose/gain from more selective immigration policies, that is, from policies that substitute skilled migrants to unskilled migrants, holding total emigration constant? For this purpose, we first derive the implications of a simple theoretical framework matching our empirical model and then proceed with the simulations.

4 Numerical implications

We will use the following notations:

N_s : Number of high-skill natives

N_u : Number of low-skill natives

M_s : Number of high-skill emigrants

M_u = Number of low-skill emigrants

$m_s \equiv \frac{M_s}{N_s}$: High-skill emigration rate

$m_u \equiv \frac{M_u}{N_u}$: Low-skill emigration rate

$H \equiv \frac{N_s}{N_s+N_u}$: Ex-ante proportion of highly skilled

With these notations, it is clear we can write the average emigration rate as:

$$m = \frac{M_s + M_u}{N_s + N_u} = m_s H + m_u(1 - H)$$

and the ex-post proportion of highly skilled as:

$$h = \frac{H(1-m_s)}{H(1-m_s)+(1-H)(1-m_u)}$$

If we assume that human capital is independent of migration (i.e., we neglect any incentives to acquire additional human capital in a context of migration or, in other words, we take H as given), then we can write the partial derivatives of m and h with respect to m_s and m_u as:

$$\begin{aligned} \frac{\partial m}{\partial m_s} &= H > 0 \\ \frac{\partial m}{\partial m_u} &= 1-H > 0 \end{aligned}$$

$$\begin{aligned} \frac{\partial h}{\partial m_s} &= \frac{-H(1-H)(1-m_u)}{(1-m)^2} = \frac{-H(1-h)}{(1-m)} < 0 \\ \frac{\partial h}{\partial m_u} &= \frac{H(1-H)(1-m_s)}{(1-m)^2} = \frac{(1-H)h}{(1-m)} > 0 \end{aligned}$$

Following the empirical model above we consider that institutional quality I depends on the total emigration rate, m, and on the share of highly skilled human capital in the resident labor force, h:

$$\begin{aligned} I &= \phi(m,h,X) \\ \phi_m^{'}, \phi_h^{'} &> 0 \end{aligned}$$

The effect of emigration on institutions is then given by:

$$\begin{aligned} \frac{dI}{dm_s} &= \phi_m^{'} H - \phi_h^{'} \frac{H(1-h)}{(1-m)} \lesseqgtr 0 \\ \frac{dI}{dm_u} &= \phi_m^{'}(1-H) + \phi_h^{'} \frac{(1-H)h}{(1-m)} > 0 \\ \frac{dI}{dm_s} - \frac{dI}{dm_u} &= -\phi_m^{'}(1-2H) - \phi_h^{'} \frac{H(1-H)(2-m_s-m_u)}{(1-m)^2} < 0 \end{aligned}$$

showing that the effect of unskilled emigration is always positive, the effect of skilled emigration is ambiguous, and substituting a skilled migrant for an unskilled

migrant can only result in an institutional loss. Focussing on skilled emigration, we can see that:

- High-skill emigration improves institutions iff:

$$\frac{\phi_m^{'}}{\phi_h^{'}} > \frac{1-h}{1-m} \equiv z_s$$

- The condition for a positive optimal brain drain ($\frac{dI}{dm_s} > 0$ for $m_s = 0$) is:

$$\frac{\phi_m^{'}}{\phi_h^{'}} > \frac{1-H}{1-m_u(1-H)} \equiv z_0$$

- The condition for an interior optimal brain drain ($\frac{dI}{dm_s} < 0$ for $m_s = 1$) is:

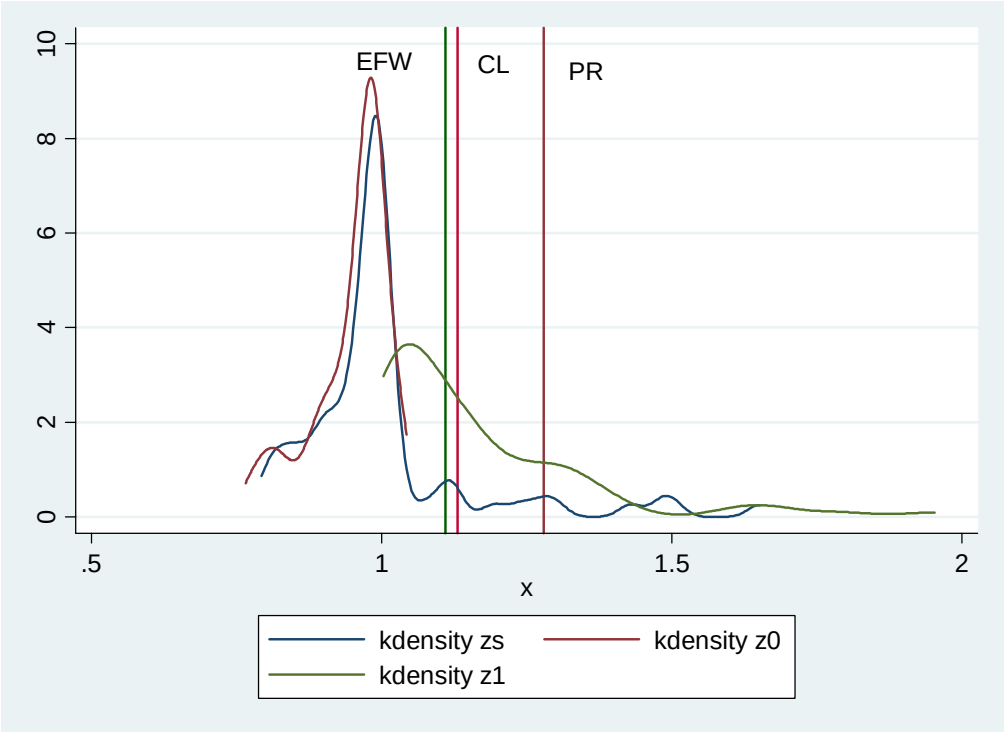
$$\frac{\phi_m^{'}}{\phi_h^{'}} < \frac{1}{(1-m_u)(1-H)} \equiv z_1$$

Using the point estimates from our regressions for the sub-sample excluding socialist countries and country-specific observations, we can simulate these three conditions;[16] we are mostly interested in the first of these conditions, which simulates the marginal impact of an increase in skilled emigration.

Figure 1 shows the kernel distribution of $\frac{1-h}{1-m}$ and vertical lines at values of $\frac{\phi_m^{'}}{\phi_h^{'}}$ for 3 indicators: CL, PR and EFW (we did not consider the Polity II indicator as human capital was not significant for for that subsample). As can be seen from the figure, all the countries appear to have a positive optimal level of brain drain (see the red distribution, which is completely to the left of the three thresholds), and nearly all countries would be negatively affectly by a brain drain rate of 100% (see the green kernel distribution). Most interestingly, we can see that the marginal effect of the skilled emigration rate (see the blue distribution) is positive for almost all of the countries, the only "losers" in this scenario being the countries which already have a very high brain drain rate (notably the Caribbean countries).

[16] Results for the full sample with interactions for socialist countries are similar and available upon request.

Figure 1: Simulation of a marginal increase in skilled emigration



In order to evaluate which countries would lose/gain from having a non-selective emigration, we can simulate the counterfactual quality of institutions obtained if the skilled emigration rate is assumed to be equal to the unskilled emigration rate. This assumption implies a decrease in the skilled emigration rate. By computing the change in institutional quality due to the new simulated value of the skilled emigration rate, it is possible to evaluate if a decrease in the skilled emigration rate improves or decrease institutional quality. In particular, considering that:

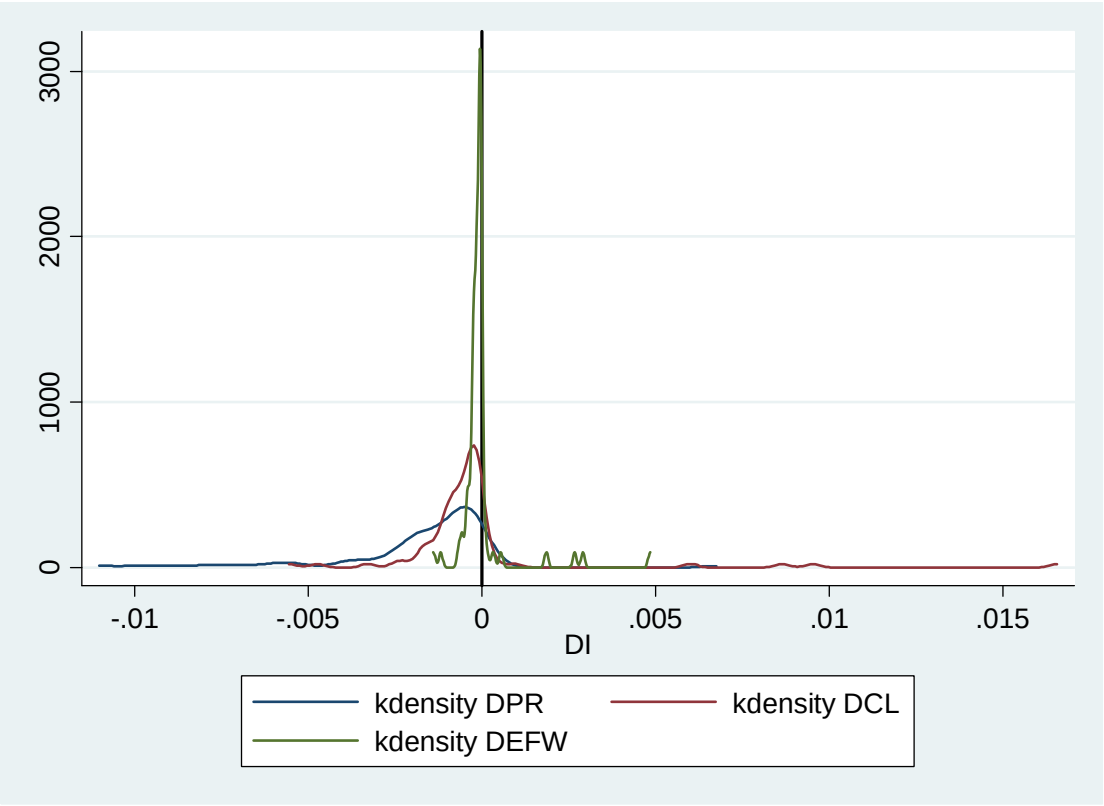
$$I = \alpha m + \beta h + \gamma X$$

and assuming $m_s = m_u$, we have:

$$\widetilde{I} = \alpha \widetilde{m} + \beta \widetilde{h} + \gamma X$$

where $\widetilde{m} = m_u$ and $\widetilde{h}$ is the new share of skilled human capital in the residence labor force, due to the decrease in the skilled emigration rate.

Figure 2: Counterfactual simulation of the effect of skilled emigration on institutions ($m_s \rightarrow m_u$)



The change in institutional quality is given by:

$$\Delta I \equiv \widetilde{I} - I = \alpha(m_u - m) + \beta(\widetilde{h} - h)$$

$\Delta I < 0$ implies that skilled emigration rate has a positive impact on institutional quality and *viceversa*. Figure 2 shows the kernel distribution of ΔI. When considering PR, CL or EFW indicators, ΔI is always negative, again with the exception of some small Caribbean countries. Results from this second simulation mainly confirm results from the first exercise. We have to notice that in both the simulations, no incentive effects on human capital have been accounted for. Of course, with incentive effects our results will be reinforced, because skilled emigration has an additional positive impact on institutional quality: migration prospects provide incentives for human capital formation (ex-ante).

The last question we want to ask is: Which countries would lose/gain from more selective immigration policies, that is, from policies that substitute skilled migrants for unskilled migrants, holding total emigration constant? By construction, our framework can only yield the answer "none" (recall that as indicate above $\frac{dI}{dm_s} - \frac{dI}{dm_u} < 0$). This is due, however, to our assumption until now that the pre-migration stock of human capital is unaffected by the prospect of migration. However, if we assume there are additional incentives to invest in human capital when emigration probabilities are higher for the highly educated, then we should write:

$$H = H(m_s - m_u),$$

with $H^{'} = \frac{dH}{d(m_s - m_u)}$.

The partial derivatives of m and h with respect to m_s and m_u now become:

$$\begin{aligned} \frac{\partial m}{\partial m_s} &= H + H^{'}(m_s - m_u) > 0 \\ \frac{\partial m}{\partial m_u} &= 1 - H - H^{'}(m_s - m_u) \lesseqgtr 0 \end{aligned}$$

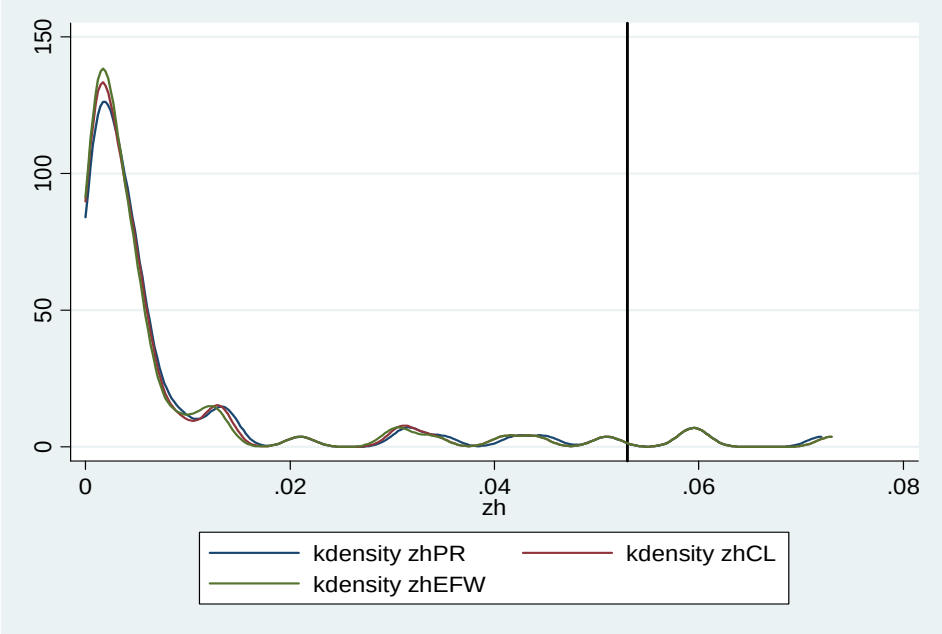
$$\begin{aligned} \frac{\partial h}{\partial m_s} &= \frac{-H(1-h)}{(1-m)} + \frac{H^{'}(1-m_s)(1-m_u)}{(1-m)^2} \lesseqgtr 0 \\ \frac{\partial h}{\partial m_u} &= \frac{h(1-H)}{(1-m)} - \frac{H^{'}(1-m_s)(1-m_u)}{(1-m)^2} \lesseqgtr 0 \end{aligned}$$

To be able to simulate the effects of more selective immigration policies in a context of endogenous human capital, we need a point estimate for the effect of emigration on human capital formation. We will use the point estimate in Beine, Docquier and Rapoport (2009): $\frac{dH}{d(m_s - m_u)} \cdot \frac{(m_s - m_u)}{H} = 0.053$. Note that this is a very conservative estimate as this is a short-run elasticity while our econometric and numerical results are long-run ones.

Selective immigration policies can be effective at improving institutions iff:

$$\begin{aligned} \frac{dI}{dm_s} &> \frac{dI}{dm_u} \\ 0.053 &> \frac{(m_s - m_u)}{2H} \cdot \frac{\phi_m^{'}(1-2H) + \phi_h^{'}\frac{H+h-2Hh}{1-m}}{\phi_m^{'}(m_s - m_u) + \frac{\phi_h^{'}(1-m_s)(1-m_u)}{(1-m)^2}} \equiv z_h \end{aligned}$$

Figure 3: Which countries would have an institutional gain from more selection?



As can be seen from Figure 3 which simulates this condition for our three indicators, the answer to our third question is "virtually all".

5 Conclusion

Our results suggest that the total emigration rate can improve institutional quality. Unskilled migration has always a positive effect on institutional quality, skilled migration has an ambiguous impact on institutional quality. The results are robust to the use of a balanced/unbalanced sample, contructed/uncontructed human capital data, interactions with socialist country dummies, and sub-samples excluding socialist countries. Using simulations, we show that skilled emigration rate has a general positive impact on institutional quality (except for some small Caribbean countries); most countries would have an institutional gain from a marginal increase in skilled emigration and from more selection.

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A Appendix: robustness analysis

Table 5: Robustness for socialist countries

	(1) Balanced	(2) Hconstructed	(3) Balanced	(4) Hconstructed	(5) Balanced	(6) Hconstructed	(7) Balanced	(8) Hconstructed
L.PR	0.673***	0.708***						
	(0.0542)	(0.0554)						
L.CL			0.662***	0.661***				
			(0.0519)	(0.0548)				
L.Polity2					0.618***	0.666***		
					(0.0667)	(0.0602)		
L.EFW							0.715***	0.759***
							(0.0640)	(0.0573)
L.h	0.734**		0.544**		0.619**		0.0458	
	(0.305)		(0.212)		(0.290)		(0.0944)	
L.emrtot	0.713***	0.565**	0.503**	0.491**	0.881***	0.991***	0.0691	0.153**
	(0.268)	(0.235)	(0.239)	(0.208)	(0.316)	(0.323)	(0.117)	(0.0712)
L.hsoc	1.172***		1.109**		0.833*			
	(0.413)		(0.455)		(0.430)			
L.emrtotsoc	-2.808***	-1.573	-2.267***	-1.344	-2.962***	-2.463**		1.102*
	(0.596)	(1.092)	(0.818)	(1.163)	(0.694)	(0.995)		(0.650)
L.hconstr		0.380		0.311		0.362		0.163*
		(0.271)		(0.208)		(0.261)		(0.0880)
L.hcsoc		0.618		0.636*		0.678*		0.0601
L.lpop	0.0197	0.00459	0.00170	-0.00403	0.0273	0.0395*	-0.00450	-0.00205
	(0.0189)	(0.0169)	(0.0151)	(0.0123)	(0.0233)	(0.0206)	(0.00694)	(0.00444)
		(0.430)		(0.353)		(0.360)		(0.165)
time dummies	yes	yes	yes	yes	yes	yes	yes	yes
ar1p	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000
ar2p	0.439	0.513	0.457	0.757	0.280	0.768	0.172	0.0603
hansenp	0.915	0.859	0.880	0.717	0.899	0.632	0.999	0.793
N	432	537	432	537	408	497	204	388
N. countries	72	99	72	99	68	92	34	77
N. instr.	90	90	90	90	90	90	62	87

Table 6: Robustness for socialist countries

	(1) Balanced	(2) Hconstructed	(3) Balanced	(4) Hconstructed	(5) Balanced	(6) Hconstructed	(7) Balanced	(8) Hconstructed
L.PR	0.702***	0.712***						
	(0.0610)	(0.0620)						
L.CL			0.706***	0.691***				
			(0.0597)	(0.0641)				
L.Polity2					0.615***	0.666***		
					(0.0721)	(0.0681)		
L.EFW							0.715***	0.710***
							(0.0640)	(0.0572)
L.h	0.719**		0.478**		0.617**		0.0458	
	(0.304)		(0.217)		(0.303)		(0.0944)	
L.emrtot	0.547**	0.456*	0.352	0.414**	0.897***	0.900***	0.0691	0.191***
	(0.259)	(0.259)	(0.221)	(0.204)	(0.311)	(0.346)	(0.117)	(0.0731)
L.hsocd90	1.468**		1.815***		0.943*			
	(0.646)		(0.412)		(0.528)			
L.emrtotsocd90	-2.306***	-2.323***	-2.072***	-2.242***	-2.852***	-2.870***		2.008***
	(0.617)	(0.539)	(0.561)	(0.486)	(0.525)	(0.462)		(0.537)
L.hconstr		0.521*		0.361*		0.525**		0.254***
		(0.281)		(0.212)		(0.261)		(0.0912)
L.hcsocd90		1.555**		1.864***		0.939*		-0.883***
		(0.634)		(0.432)		(0.502)		(0.185)
L.lpop	0.00875	-0.00220	-0.00584	-0.00615	0.0349	0.0339	-0.00450	0.000997
	(0.0175)	(0.0190)	(0.0128)	(0.0119)	(0.0241)	(0.0268)	(0.00694)	(0.00428)
time dummies	yes	yes	yes	yes	yes	yes	yes	yes
ar1p	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000
ar2p	0.524	0.627	0.301	0.549	0.250	0.844	0.172	0.0886
hansenp	0.759	0.858	0.755	0.741	0.884	0.561	0.999	0.770
N	432	537	432	537	408	497	204	388
N. countries	72	99	72	99	68	92	34	77
N. instr.	86	86	86	86	86	86	62	83

Table 7: Dependent Variable: Political Rights

	(1)	(2)	(3)	(4)	(5)
L.prnorm	0.606***	0.585***	0.561***	0.604***	0.655***
	(0.0667)	(0.0684)	(0.0620)	(0.0667)	(0.0605)
L.h	0.657**	0.805**	0.231	0.799**	
	(0.318)	(0.342)	(0.389)	(0.352)	
L.emrtot	0.840***	0.851***	0.596*	0.918***	0.724***
	(0.289)	(0.282)	(0.332)	(0.293)	(0.280)
L.lpop	0.0280	0.0277	0.00832	0.0330*	0.0105
	(0.0194)	(0.0185)	(0.0175)	(0.0191)	(0.0180)
L.lrgdpch			0.0568**		
			(0.0287)		
L.hconstr					0.367
					(0.292)
Time dummies	yes	yes	yes	yes	yes
Specification	3lags	2lags	control-2l.	balanced	hconstr.
ar1p	0.000	0.000	0.000	0.000	0.000
ar2p	0.687	0.697	0.543	0.589	0.643
hansenp	0.330	0.449	0.468	0.365	0.699
N	425	425	386	390	470
N. countries	79	79	74	65	81
N. instr.	74	62	76	62	74

Table 8: Dependent Variable: Civil Liberties

	(1)	(2)	(3)	(4)	(5)
L.CL	0.603***	0.585***	0.535***	0.597***	0.570***
	(0.0657)	(0.0709)	(0.0577)	(0.0672)	(0.0691)
L.hnew	0.579**	0.618**	0.193	0.611**	
	(0.236)	(0.242)	(0.258)	(0.252)	
L.emrtot	0.655***	0.712***	0.568**	0.615**	0.642**
	(0.240)	(0.252)	(0.252)	(0.266)	(0.252)
L.lpop	0.0134	0.0142	0.000336	0.00371	-0.00339
	(0.0143)	(0.0150)	(0.0145)	(0.0156)	(0.0136)
L.lrgdpch			0.0433**		
			(0.0206)		
L.hconstr					0.412
					(0.259)
Time dummies	yes	yes	yes	yes	yes
Specification	3lags	2lags	control-2l.	balanced	hconstr.
ar1p	0.000	0.000	0.000	0.000	0.000
ar2p	0.300	0.314	0.593	0.235	0.506
hansenp	0.239	0.108	0.326	0.301	0.171
N	425	425	386	390	470
N. countries	79	79	74	65	81
N. instr.	74	62	76	62	74

Table 9: Dependent Variable: Polity2

	(1)	(2)	(3)	(4)	(5)
L.Polity2	0.608***	0.596***	0.568***	0.588***	0.631***
	(0.0700)	(0.0724)	(0.0673)	(0.0762)	(0.0704)
L.h	0.381	0.391	0.0384	0.492	
	(0.289)	(0.306)	(0.354)	(0.310)	
L.emrtot	1.232***	1.372***	0.911**	1.101***	1.291***
	(0.345)	(0.382)	(0.367)	(0.337)	(0.395)
L.lpop	0.0642***	0.0758***	0.0329	0.0524**	0.0777***
	(0.0233)	(0.0247)	(0.0238)	(0.0248)	(0.0276)
L.lrgdpch			0.0580**		
			(0.0293)		
L.hconstr					0.153
					(0.300)
Time dummies	yes	yes	yes	yes	yes
Specification	3lags	2lags	control-2l.	balanced	hconstr.
ar1p	0.000	0.000	0.000	0.000	0.000
ar2p	0.495	0.492	0.527	0.464	0.499
hansenp	0.497	0.307	0.533	0.337	0.628
N	408	408	375	366	430
N. countries	73	73	68	61	74
N. instr.	74	62	76	62	74

Table 10: Dependent Variable: Economic Freedom of the World

	(1)	(2)	(3)	(4)
L.EFW	0.760***	0.833***	0.715***	0.772***
	(0.0562)	(0.0488)	(0.0640)	(0.0579)
L.h	0.155*	0.0472	0.0458	
	(0.0887)	(0.120)	(0.0944)	
L.emrtot	0.172**	0.158*	0.0691	0.165**
	(0.0752)	(0.0850)	(0.117)	(0.0713)
L.lpop	0.00160	-0.00115	-0.00450	0.000562
	(0.00538)	(0.00474)	(0.00694)	(0.00497)
L.lrgdpch		0.00520		
		(0.0107)		
L.hconstr				0.141*
				(0.0856)
Time dummies	yes	yes	yes	yes
Specification	2lags	control-2l.	balanced	hconstr.
ar1p	0.000	0.000	0.001	0.000
ar2p	0.0537	0.0508	0.172	0.0442
hansenp	0.515	0.860	0.999	0.442
N	337	329	204	347
N. countries	64	64	34	64
N. instr.	62	76	62	62