

Does Democracy Cause Migration?

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Abstract

We provide document of significantly positive and robust effect of democracy on migration using a linear dynamic panel model. Our analysis controls for persistence in migration and country fixed effects. Employing the dynamic within estimation, we find a significantly positive relationship between migration and democracy. Our baseline results show that migration increases by 29% in the long-run due to democracy. Using the waves of democratizations and reversals as instruments for democracy, our model finds comparable results. Our investigation suggests that democracy increases migration by allowing dual citizenship, permitting to send remittances, improving human capital and providing better health.¹

Keywords: Migration, democracy, democratization waves

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1 Introduction

The third democratization waves disseminated within regions across the world brought more than half of countries from the authoritarian regime to democratic political regime during 1974-1990. These waves are taken into account for the exogenous sources of variation in democratization (Acemoglu et al., 2019; Kurzman, 1998; Huntington, 1993). As a result, the number of democratic countries increases after 1990. The democratic institutions establish a better health, quality of education and higher standard of living which motivate migrants to drive to these countries (Solimano, 2009). Migrants in receiving countries contribute directly in economic growth and development while they indirectly contribute to their countries of origin by providing remittances. Thus, migration encouraged by democracy increases welfare of both sending and receiving countries (Mansoor et al., 2006).² Even if the existing literature acknowledges the effects of democracy on economic growth and development, democracy as a major determinant for migration has not been analyzed on a big longitudinal dataset (e.g., Acemoglu et al., 2019; Barro, 1996; Papaioannou and Siourounis, 2008; Docquier et al., 2016).

Our interest in this paper is to establish a conditional correlation between migration and democracy using a large panel dataset for 190 countries from 1960 to 2015. To do this we follow several strategies: First, we construct a dichotomous variable for democracy using various existing measures of democracy following Acemoglu et al. (2019) which presents a transition of

²Migration in this paper indicates in-migration, but not out-migration or return migration.

political regime precisely.

Second, our analysis controls for persistence in migration (or dynamics of migration) and country fixed effects. The lagged dependent variables in our dynamic model capture the persistence in migration stock which may be due to the effect of social networks from past migration. The inclusion of persistence in estimating the effect of democracy can provide different results in this literature. We use this in our dynamic panel model to find the consistent estimate of parameter and the model allows to find the long-run effects of democracy. Some papers consider one lag of migration in a fixed effects model to capture the network effects from past migrants. They do not control for the persistence in migration to find the consistent estimator. Thus, our results are different from those papers.³

Third, we use instrumental variable (IV) approach to address the endogeneity of our democracy. The existing analyzes in political science, including Huntington (1993), Kurzman (1998) and Doorenspleet (2000), acknowledged that democratization waves are the exogenous source of variation in democracy which happen in a region because these waves transform the autocratic countries to democratic countries and true for reversely. When instrumenting democracy with the waves of democratizations and reversals, our results also increase. Finally, we uncover channels through which democracy attract migrants to host countries.

Our instruments satisfy the exclusion restrictions conditioning on country

³The persistence in migration also implies the dynamics of migration. Migration stock captures more persistence than migration rate as the latter is less serially correlated than the former.

and year fixed effects, and lagged outcome values. The exclusion restrictions may be overturned due to omitted variables which are correlated together with instruments and outcome variable. Controlling for economic, political and cultural factors as well as alternative measures and instrument of democracy, our results remain similar to preferred estimates maintaining exclusion restrictions.

To estimate parameter of interest, we use dynamic within and Arellano-Bond estimators. The latter is used to estimate parameter consistently satisfying sequential moment conditions. Using dynamic within estimator, our baseline results indicate that there is a significantly positive relationship between democracy and migration stock. The preferred estimates in the baseline model demonstrate that migration increases by 29% due to democracy in the long-run. While using lags of democratizations waves as external instruments for democracy in dynamic IV model, the estimated effect of democracy further increases.

Our empirical analysis shows that democracy works on migration via potential channels: dual citizenship, outgoing remittances, human capital and health. Our investigation suggests that democracy can have a positive and significant impacts on these mechanisms although there are not tested.

The paper is organized as follows. Section 2 presents literature reviews. Section 3 denotes the data sources and description. Section 4 explains the econometric model and empirical results. Section 5 discusses mechanisms and concluding remarks are given in section 6.

2 Literature

Little literature is existing on empirical relationship between migration and democracy. For example, using a fixed effect model, Bertocchi and Strozzi (2008) consider a dataset for only 14 OECD countries for years between 1870 and 1910. With economic and demographic variables, they include a political institutional index, which consists of democracy and suffrage as an additional control for robustness. They find a significant positive effects of political institutional index with IV model. They use one lag of migration to find social network as a determinant of migration. However, this paper does not examine a direct relationship between migration and democracy.

We also notice a large number of papers that theoretically analyze this relationship (e.g., Solimano, 2009; Cavanagh and Mulley, 2013; Piper and Rother, 2015; Tonelli, 2003). For instance, migrants move from their home to host countries if they find higher standard of living, better health care services, social safety and security and human rights (Solimano, 2009; Cavanagh and Mulley, 2013). On the other hand, Piper and Rother (2015) underscore the dual citizenship which encourages migrants to recipient countries. Provision of this citizenship provides incentives for migrants in transnational activities such as investments between both countries. The absence of political stability and lack of rule of law in home countries can discourage people to move to host countries (Tonelli, 2003).

Papers that are closely related to our analysis include Mansoor et al. (2006), Parkins (2010), and Kline (2003). For example, Mansoor et al. (2006) emphasize

that higher GDP per capita of a country can attract migration from other countries and they uncover a significantly positive correlation between them in a panel data analysis. In addition, they find that there are a positive relationship between migration and political stability and rule of law. On the other hand, higher employment and standard health care services are the driving factors of migration (Parkins, 2010) while excess demand for high skilled labor motivate people to move to destination countries (Kline, 2003). However, these authors don't establish any empirical relationship between migration and democratic political regimes.

This is the first paper which establishes a direct causal relationship between migration and democracy. Our paper uses a panel of 190 countries covering the period 1960-2015 which is the largest data set in this literature. We construct a binary measure of democracy using different existing sources such as Freedom House (FH), Polity2, Cheibub, Gandhi and Vreeland (CGV) (Cheibub et al., 2010) and Boix, Miller, and Rosato (BMR) (Boix et al., 2012) following Acemoglu et al. (2019). Our paper uses a dynamic panel model to examine the relationship between migration and democracy accounting for the persistence of migration and country fixed effects; it provides a consistent estimate of beta and allows us to find the long-run effect of democracy on migration. To address endogeneity of democracy, we use the lags of average waves of democratizations and reversals as instruments for democracy which are widely used in empirical and theoretical works for economics and political science (e.g., Acemoglu et al., 2019; Kotera and Okada, 2017; Huntington, 1993).

In our investigation, we use the persistence in migration to find the long-run

effects of democracy; some authors argue that this is due to the effects of social network from past migrants (e.g., Pedersen et al., 2008; Mansoor et al., 2006; Bauer et al., 2002). Past migrants in host countries play a crucial role to attract the present migrants to those countries (Pedersen et al., 2008; Mansoor et al., 2006; Bauer et al., 2002). Because past migrants can collect information on factors regarding the host countries' migration policy, job market conditions, fairness of participation in economic, social and political activities, racial intolerance, social safety net, health, education and welfare. They provide these information to family members, relatives, friends and community members of country of origin. Following these information, the people of home countries can decide to enter the host countries. Thus, the lagged dependent variable indicating past migrants captures the social network effect: this is used for the analysis of dynamics in our model.

Finally, we explore mechanisms via which democracy may encourage migration as democracy may not affect migration directly. For example, democratic political regimes can have better health care services than non-democracy (Besley and Kudamatsu, 2006; Franco et al., 2004). Improved health along with social safety and security and human rights can give incentives to migrants to host countries (Solimano, 2009; Cavanagh and Mulley, 2013). Dual citizenship is a motivated factor for migrants to move to host countries because it allows them to do transnational activities (Blatter, 2011; Faist, 2001). Thus, we consider several factors such as dual citizenship, outgoing remittances, human capital and health through which democracy acts on migration. We uncover that democracy has a significantly positive correlation with these

factors although mechanisms are not tested.

3 Data Sources and Description

In our analysis, our outcome variable is international migration stock (total) and main variable of interest is democracy: both have data for 189 countries from 1960 to 2015. Additional regressors we use in our paper are employment (percentage of population), general government final consumption expenditure (percentage of GDP), GDP per capita (US constant dollar 2010), population (total), trade openness (percentage of GDP), carbon emissions (kt), outgoing remittances (US current dollar) and life expectancy at birth from World Bank's World Development Indicators (World Bank, 2017); human capital and economic globalisation are used from World Pen Table and KOF; political stability, rule of law, voice and accountability and control of corruption from the Worldwide Governance Indicators; language, religion, ethnic fragmentation from Alesina et al. (2003); cultural diversity from Fearon (2003), colonial origin from Hadenius and Teorell (2007); freedom of speech from Cingranelli and Richards (2010) and political participation rights from Welzel (2013).

We construct a binary democracy variable, following Acemoglu et al. (2019), by integrating data from Freedom House (FH), Polity IV, Cheibub, Gandhi and Vreeland (CGV), (Cheibub et al., 2010) and Boix, Miller, and Rosato (BMR), (Boix et al., 2012). FH classifies a country as free, partially free or not free by considering political rights and civil rights in that society.⁴ Polity2 variable

⁴Political right comprises electoral process, political pluralism, participation and functioning of government. Civil right consists of freedom of expression and belief, association and

in Polity IV data measures autocracy or democracy of a country assigning values between -10 and +10 where -10 and +10 indicate full autocracy and full democracy respectively.⁵ CGV and BMR each develops a dummy variable for indicating democracy in a country.⁶ With our primary sources such as the FH and Polity2, we construct the democracy variable assigning a 1 if the political regime is classified as either free or partially free and if Polity2 has strictly positive value, and otherwise 0. When one or both sources do not have democratic score, we search for democratic value from our secondary sources, CGV and BMR. In this way, we obtain a better measure of binary democracy variable with a larger data set reflecting a more precise transition of political regimes.⁷

This paper also constructs a binary measure of dual citizenship for 190 countries for years between 1960 and 2015. To build this variable, we use several sources: primary sources are Prabhu (2016) and Dual Citizenship (2015), and Faist and Gerdes (2008), Immigration and Refugee Board of Canada (2017) and Manby (2016) are our secondary sources.

Our unbalanced panel data cover the period from 1960 to 2015 for 190 countries. This data set comprises of 30 permanent democratic countries, 90 countries which are transformed from non-democratic countries to democratic organization rights, rule of law, personal autonomy and individual rights (Freedom House, 2017).

⁵Polity2 variable relies on some criteria such as executive power, executive selections and the freedom of elections.

⁶The democracy in CGV depends on de jure and de facto existence of parties and not necessarily mean that they should have seats in the legislature. On the other hand, BMR define a country as democratic if the executive is elected by voters in popular elections and a majority of adult men have the right to vote.

⁷Missing value means if any source has no democratic score for a particular year.

ones, 35 permanent non-democratic and 35 countries from democratic to non-democratic countries. Table 1 provides the descriptive statistics of the dependent and explanatory variables in our model.

4 Model

4.1 Baseline model

We use a linear dynamic panel model to construct a relationship between migration stock and democracy. To estimate the effect of democracy on migration stock (migration hereafter), we use the dynamic fixed effects (DFE) within (dynamic within hereafter) model. Our dynamic within model is:

$$m_{it} = \beta D_{it} + \sum_{l=1}^q \delta_l m_{i(t-l)} + \alpha_i + \gamma_t + u_{it} \quad (1)$$

where, $i = 1, 2, \dots, 185$, are countries over the years $t = 1960, 1965, \dots, 2015$ and lag $l = 1, 2, \dots, q$, m , D , and u represent log of migration, democracy and the error term respectively. u contains all other factors excluded from the model which directly affect the outcome variable under ceteris paribus.

Our variable of interest is democracy: the coefficient β measures the effect of democracy on migration when a non-democratic country transforms into democratic one and it is expected that $\beta > 0$ implying a higher level of migration associated with democracy compared to non-democracy. The coefficient δ_l captures the persistence in migration for the l^{th} lag. $\sum_{l=1}^q \delta_l$ presents the sum of

autoregressive coefficients which measures the overall amounts of persistence in migration. Some authors have argued that this is due to the effects of networks from past migration. Our model includes q lags on the right hand-side to control for the persistence of migration. In our model, α_i and γ_t capture the country and year fixed effects respectively. The identification of β in model (1) depends on zero conditional mean of error u_{it} conditional on the values of democracy, past migration, country and year fixed effects:

$$\mathbf{E}(u_{it} \mid D_{it}, m_{i(t-1)}, \dots, m_{i(t-q)}, \alpha_i, \gamma_t) = 0, \text{ for all } D_{it}, m_{i(t-1)}, m_{i(t-2)}, \dots, m_{i(t-q)}, \alpha_i, \text{ and } \gamma_t.$$

This implies error term have no relation with these factors: democracy, past migration, country and year fixed effects are exogenous.

To estimate the long-run effects of democracy, we can derive the following formula. If the lagged dependent variables are persistent, then in equilibrium $m_{it} = m_{ss}$, $D_{it} = D_{ss}$. For simplicity, we account for one lag of migration (i.e., $q=1$) and ignore country and time fixed effects and error term in equation (1).

In a steady-state, $m_{it} = m_{it-1} = m_{ss}$ then

$$m_{ss} = \beta D_{ss} + \delta_1 m_{ss}$$

$$\text{So, } m_{ss} = \frac{\beta D_{ss}}{1 - \delta_1},$$

which is a steady state migration. This implies that when a country transforms from non-democratic into democratic, then migration rises $\frac{\beta}{1 - \delta_1}$ in the long-run. For more than one lag, this formula becomes as $\frac{\beta}{1 - \sum_{l=1}^q \delta_l}$

where l are lags, $1 \leq l \leq q$, $\sum_{l=1}^q \delta_l$ represents the overall amounts of persistence in migration and $\sum_{l=1}^q \delta_l$ converges to $m \in (0, 1)$ where m is any number that

lies between 0 and 1. Since we find this effect after estimation, we use the estimated coefficients of β and δ . Thus, $\frac{\hat{\beta}}{1 - \sum_{l=1}^q \hat{\delta}_l}$ represents the long-run effects of democracy where $\sum_{l=1}^q \hat{\delta}_l$ converges to $m \in (0, 1)$.

Table 2 reports the estimated effects of democracy on migration using equation (1). Column 1 presents the impact of democracy without accounting for persistence in migration. The estimated effect is positive and statistically significant indicating around 37% rise in migration due to the transition of a non-democratic country into democratic.

Columns 2-5 of Table 2 show the dynamic within estimates by controlling for the persistence in migration. Column 2 controls for the first lag of migration in which the estimated coefficient of democracy indicates that there is a significantly positive relationship between migration and democracy. The estimated democratic effect is 0.048 which implies migration rises around 5% while in the long-run it increases about 28%. The persistence in migration is positive and statistically significant: it is less than 1 which indicates that migration is stationary.⁸

When adding one more lag of migration in column 3, we notice that the long-run effect of democratization is positive and significant, and slightly is higher than that of column 2. Though the estimate for second lag is negative, the overall amounts of persistence in migration are significantly positive with less than one.

With three lags of migration, column 4 presents similar effects of democracy

⁸In Fisher-type unit root test, H_0 : All panels contain unit root; H_1 : At least one panel is stationary.

with the previous columns. Including four lags of migration in column 5 also provides comparable results with the preceding columns. We take the maximum 4 lags in our analysis; however, two lags of migration are our preferred lags which are selected using the t-statistics on the estimated coefficients $\hat{\gamma}_{il}$.⁹ Table 2 establishes a significantly positive relationship between migration and democracy. In all cases, we also find that the overall degrees of persistence are significantly positive and less than one: This implies migration is stationary.

We test the stationarity of migration with a panel unit root test. The result of this test is reported in bottom row of Table 2. The p-value of Fisher-type unit root test for an unbalanced panel rejects the presence of unit root in migration. Since democracy is exogenous following assumption 1 and migration is stationary, our estimate of beta is consistent. Nevertheless, as explained earlier, time-varying factors can be correlated with democracy. In such case, our dynamic within model may suffers from endogeneity and provides inconsistent estimates. Therefore, Table 2 cannot present a causal effect of democracy. In order to check the endogeneity of democracy, we follow an IV strategy where we use the regional democratization waves as instruments.

While using lagged values of migration, problem of Nickell bias appears which leads our baseline estimates biased and inconsistent. This bias counts on with the order of $1/T$ which vanishes when $T \rightarrow \infty$.¹⁰ Nonetheless, to

⁹The maximum lags we considered in our analysis is 4. To select preferred lags, we set the null hypothesis $H_0 : \gamma_{il} = 0$ on the following augmented Dickey-Fuller regression, $\Delta m_{it} = \theta_i m_{it-1} + \sum_l^q \gamma_{il} \Delta m_{it-l} + \epsilon_{it}$ (See Baltagi 2005, ch.12; Wooldridge 2002, ch.18). However, there is no hard rule to select the lags. One or two lags can be selected for yearly data (See Wooldridge 2002, ch.18).

¹⁰For instance, investigation of Monte Carlo simulation suggests that bias decreases as time periods are larger than 20 (Papaioannou and Siourounis, 2008). Bias is around from 1% to 2% of the true parameter as suggested by Judson and Owen (1999) when T is 30 while it

address this bias, we employ the first-differenced generalized method of moments (GMM) developed by Arellano and Bond (1991). This method uses the lagged values of the outcome variable and predetermined regressors in levels as instruments for the first-differenced regressors. These instruments are called internal instruments which follow the orthogonal moments' condition in model 1:

$$\mathbb{E}(\Delta u_{it}(m_{is}, D_{is})') = 0, \forall s \leq t - 2$$

where D_{it-2} , $D_{it-3, \dots}$, and m_{it-2} , $m_{it-3, \dots}$, are instruments for the first-differenced of equation 1.

Columns 6-9 of Table 2 present results obtained using GMM estimation. All specifications show that estimated effects and long-run effects of democracy modestly larger than within estimates (columns 2-5). On the other hand, the degree of persistence in each specification slightly less than the overall persistence from corresponding lag in within estimates. Column 7 present our preferred specification in Arellano-Bond estimator which demonstrates that p-value of AR2 test cannot rejects the null no of autocorrelation in residual. Thus, our estimates are consistent in this specification with lag 2. The long-run cumulative democratic effect is 62% compared to 29% in within estimator (column 3): This may result from using internal instruments for regressors in GMM estimator. While estimates in GMM are modestly larger than within estimates, they remain similar.

is around 2% and 3% when T is 20. In our case, bias is less as T is very large.

4.2 Robustness

Although model 1 captures time-invariant factors by controlling for country fixed effects, time-varying error factors are not taken into account. These omitted variables may be correlated simultaneously with regressors and outcome variable: this may lead our baseline estimates biased and inconsistent. To address this issue, we consider two strategies such as adding additional controls and using alternative measures of democracy.

In Table 3, column 1 of Panels A and B is reproduced from Table 2 to make comparison. Employment in host countries may directly affect migration. To control it, we consider one lag of employment in column 2. Although long-run effect slightly decreases, we find no impact of it on migration. In column 2 our control is government consumption which affects migrants by spending on public health care services, education, and social safety nets and is endogenous to democratization (Kotera and Okada, 2017). Instrumenting it using with two of its lags, our results remain very similar to preferred estimates though long-run cumulative effect slightly rises. In column 4, we include control, trade openness which is endogenous to democracy and 2 lags are taken into account to be instruments for it. Controlling this variable maintains similar results though effects are not significant in Panel A.

Also, in columns 5 and 6 our controls are political factors such as absence of violence or political stability and rule of law which are correlated with democracy. 4 lags of these variables are used as instruments for them. Once controlling for these variables, our results remain very similar to preferred

estimates.

Panel B presents Arellano-Bond estimates where columns 2, 3 and 4 present slightly lower estimates for controlling for employment, government consumption and trade openness, estimates are similar to preferred estimates. In GMM estimates, political variables also contribute comparable effects. While combining effects of economic and political variables (Panel A, column 8 and column 9) provides positive effects, we explore significantly positive and similar effects in Panel B.

Additionally, we use alternative binary and continuous measures of democracy to check robustness of baseline preferred estimates. We account for binary measures of Papaioannou and Siourounis (PS), Freedom House (FH) and Polity2 (discrete and continuous) in Table 4. While estimates from FH are higher in Panel A, our estimates are very similar to estimates of PS and polity2. Panel B also provides similar results to preferred estimates and results are consistent. When using Arellano-Bond estimator there may have finite sample biased due to instrument proliferations. To remedy this issue, we employ alternative GMM estimator in which we use truncate lag to 6. Results are reported in column 2 of Table A.1 (Appendix A). This specification provides similar estimates to our preferred findings from GMM.

Moreover, our results may be driven due to outliers in our dataset and we account for these in our analysis which are reported in Table A.2 of Appendix A. To check it, we exclude observations which have more than three standard deviation from mean. We also take into account Cook's distance which ignore the observations that have larger distance measured by rule - of - thumb

threshold (four divided by total observations). In both cases, our results remain similar to baseline findings. Thus, incorporating economic and political controls, replacing our democracy with its alternative measures and considering outliers analysis, our results remain similar to baseline preferred estimates.

4.3 IV Model

4.4 Construction of Instruments: Exclusion Restrictions

Model 1 captures the time-invariant unobservable factors by country fixed effects when ignoring the time varying factors. As a result, our estimates from dynamic within estimator may be biased and inconsistent due to time-varying error factors correlated simultaneously with democracy and migration. To address this issue, we employ instrumental variable (IV) strategy. The democratizations waves are taken into account as instruments for democracy.

In 1828 in the USA, the first democratization wave began which transformed 45% of countries in the world from authoritarian rule to democratic institutions over the period 1828-1922. On the other hand, there was a 20% of democratic countries moved back into non-democratic ones by reverse waves between 1922 and 1942. After the second world war, although 32% of authoritarian regimes converted into democratic political regimes by the second democratization waves ended 1962, reversal waves brought back 25% of democratic countries into autocratic rule from 1962 to 1973 (Kurzman, 1998). Commenced in Portugal in 1974, the third democratization wave spread to Africa, Asia and Latin America. During 1986-1988 in the Asia Pacific region, this wave transformed Philippines,

South Korea and Taiwan into representative democratic countries. On the other hand, in the 1980s, it affects Latin America and continue to bring countries under democratization which ended in 1989 in the Eastern Europe after the collapse of the communism. More than half of countries of the world changed into institutions of representative governments by the third democratization wave (Doorenspleet, 2000; Huntington, 1993). During 2010-2012, Arab Spring, a fourth democratization wave, failed to transform any authoritarian regime into democratic one except Tunisia in 2016. However, it brought about some political and economic rights and freedom in the Middle East and North Africa (Abbasi, 2012). Thus, democratization and reversal waves occurred within a region are considered as exogenous sources of variation in democracy.

We use the lags of average democratization and reversal waves as instruments for democracy. To construct this variable, we follow Acemoglu et al. (2019) and denoting it as z_{it} :

$$z_{it} = \frac{1}{|I_i|} \sum_{i' \in I_i - \{i\}} D_{i't} \quad (2)$$

where, z_{it} conveys the average democratization and reversal waves in country i at time t : This presents demand for or discontent of democratic regimes. The World Bank classifies the whole world into seven geographical regions namely East Asia and the Pacific, Europe and Central Asia, Latin America and Caribbean, Middle East and North Africa, North America, South Asia and Sub-Saharan Africa. I_i denotes one of these regions to which country i belongs to. We use the lags of z_{it} as instruments for democracy.

Our two-stage IV estimator is:

$$m_{it} = \beta D_{it} + \sum_{l=1}^q \delta_l m_{i(t-l)} + \alpha_i + \gamma_t + u_{it} \quad (3)$$

$$D_{it} = \sum_{l=1}^r \lambda_l z_{i(t-l)} + \sum_{l=1}^p \theta_l m_{i(t-l)} + \tau_i + \psi_t + \varepsilon_{it} \quad (4)$$

The equations 3 and 4 are the second-stage and first-stage respectively. Lags of z_{it} , i.e., $z_{i(t-l)}$ are instruments in our model. In our two-stage IV model, β is identified if instruments satisfy two conditions: first, there is non-zero correlation between democracy and instruments implying either $\lambda_1 \neq 0$ or $\lambda_2 \neq 0$ or ... or $\lambda_r \neq 0$ (or all) which can be tested with t test for a single instrument and F test for more than one instruments. The second condition for identification of β relies on zero conditional mean of error:

$$\mathbf{E}(u_{it} \mid z_{i(t-1)}, \dots, z_{i(t-r)}, m_{i(t-1)}, \dots, m_{i(t-q)}, \alpha_i, \gamma_t) = 0, \text{ for all } z_{i(t-1)}, \dots, z_{i(t-r)}, m_{i(t-1)}, \dots, m_{i(t-q)}, \alpha_i \text{ and } \gamma_t.$$

We can justify the validity of our instruments with this condition: the instruments, $z(t-1), z(t-2), \dots, z(t-r)$, excluding from equation (3) satisfy exclusion restrictions when they are uncorrelated with error factors conditioning on the country and year effects, and lagged outcome values; they have no direct effects on migration stock today and they can have only effects on migration via the effects on democracy. This can be tested with overidentification test. A consistent estimate of β can be achieved in our IV model if migration is stationary and endogeneity of democracy is solved.

The IV estimates of equations (2) and (3) are presented in Table 5. We use three lags of democratization waves as instruments following Wooldridge (2002).¹¹ In the second-stage, Column 1 of the table shows that migration rises largely due to democracy when we use the static within model. The estimated effect of democracy is higher than that of the corresponding baseline estimates in column 1 of Table 2. This implies our OLS estimators suffer from the omitted variables bias. Columns 2-5 present the dynamic within estimates accounting for the persistence of migration.

The impacts of democracy presented in column 2 are significantly positive and higher than that of the corresponding estimates in Table 2. The long-run effect of democracy is significantly positive and much higher than that of the corresponding estimate in Table 2. The estimated long-run effect of democracy in column 3, which is our preferred specification, is significantly positive. Column 4 relies on three lags while column 5 includes four lags of migration: in both cases, the results are similar to that of column 3. In all specifications columns 2 through 5, the sum of coefficients of dependent lagged variables is less than one which implies that migration is stationary.

In first-stage, one lag of democratization waves is significantly positive in all columns 1-5 indicating that instrument is highly correlated with democracy and even though second and third lags of z_{it} are not significant, their joint effects are highly significant which can be observed from the p-value of F-test. Columns 1 through 5, F-statistic in the first-stage is greater than 10 indicating the lags of

¹¹We choose the number of instruments following Wooldridge (2002, ch.15). To find the validity of instruments, we continue to add instruments when the estimated values and the efficiency of estimator rises. We stop adding instruments after taking into account three instruments when we find that estimate and standard error on democracy decreases.

democratization and reversal waves as strong instruments for democracy. We have three IVs for one endogenous variable which implies that we have two overidentifying restrictions. The p-values of Hansen J statistic are greater than 0.05 implying that our instruments are valid, i.e., our IVs are exogenous which imply that they are uncorrelated with error term (also referred to as exclusion restrictions); hence they have no direct effects on migration stock today: They can only affect migration through democracy.^{12 13}

All results in columns 2-5 of Table 5 demonstrate that the overall magnitudes of persistence in migration are significantly positive with less than one: This means that migration is stationary. With instruments, the endogeneity of democracy is addressed. Thus, our estimates of beta are consistent. Now, Table 5 presents a causal effect of democracy on migration.

Our causal relationship between migration and democracy may be threatened by time-varying factors: they may be correlated with IVs and outcome variable. To examine this, we pursue two strategies: First, we add more covariates in the model. Second, we look at exclusion restrictions.

We add economic variables such as GDP per capita, population, employment, trade openness, climate change and economic globalisation in our model. The results are reported in Table 6. Column 1 repeats the estimates from IV model for comparison. In column 2, we include GDP per capita which may be correlated with our IVs and migration: This may invalidate exclusion restrictions.¹⁴ However, adding this control provides similar results to preferred

¹²See Wooldridge 2002, ch.15.

¹³In overidentification test, H_0 : All instrument are exogenous; H_1 : At least one instrument is endogenous.

¹⁴New classical or Harris-Todaro model explains how economic development affects migra-

estimates, specially in long-run where effect is 1.064 with standard error of 0.293. In column 3-4, we find similar effects when controlling for population and employment though there are lower effects of population and larger effects of employment. In columns 5 and 7, our findings are similar to preferred estimates although effects are slightly larger when included trade openness and economic globalisation. The climate change due to carbon emissions can have the largest adverse effects on human migration leaving a large number of environmental or climate migrants. Accounting for this control may affect our results as it may be correlated with democracy and may directly affect migration. Column 6 of the table shows that our results remain similar to our preferred IV estimates though effects are modestly lower. When controlling economic variables in Table 6, our estimates remain similar to our preferred estimates albeit our exclusion restrictions can not be overturned.

In addition, we use alternative measures of democracy in our model (Table 7). Substituting our democracy variable with a number of dichotomous and continuous measures of democracy, we obtain similar results to preferred estimates though Freedom House binary variable shows modestly larger effects.¹⁵

Also, we use alternative instrument of democracy such as foreign democratic capital to check robustness of results. The influences of democracy, also called democratic waves, affect the people of neighboring countries. We construct this variable following Persson and Tabellini (2009). The result is very similar

tion. They build a two sector model where they show that people move from rural to urban region to have higher or expected higher incomes. See Harris and Todaro (1970), for detail.

¹⁵To check robustness our result, we use the democratic measure of Papaioannou and Siourounis (2008). Their dichotomous democracy covers from 1960 to 2005 while we extend it to 2015. PS in Table 5 stands for Papaioannou and Siourounis.

to our preferred IV estimates (Column 3, Table 5) even if Freedom House produces modestly larger long-run effects.¹⁶

Furthermore, we include controls of political factors such as absence of violence or political stability, rule of law, voice and accountability, control of corruption, political participation rights and freedom of speech in our model. These factors may cause adverse effect on democracy. While maintaining exclusion restrictions, we achieve very similar findings to preferred IV estimates although controls for voice and accountability and control of corruptions produce modestly larger effects (Table 9).

Moreover, we consider controls for cultural factors namely language, religion, ethnic fragmentation and cultural diversity. The results are reported in Appendix A, Table A.3. These factors do not affect our preferred IV estimates at all. We also take into account of colonial origin which cannot contribute on migration in our model (Appendix A, Columns 6, Table A.3). When accounting for economic, political, cultural, and colonial factors in our IV model, we attain results largely similar to preferred IV estimates when holding exclusion restrictions.

Finally, we take into account outliers in our analysis as they may lead to IV estimates biased and inconsistent. To deal with these, we ignore the observations beyond three standard deviations. We also omit observations beyond Cook distance computed by rule - of - thumb threshold (four divided by total observations). In both cases, results remain very similar to our preferred IV estimates (Appendix A, Table A.4)

¹⁶See Appendix B.

Overall, we use dynamic within, Arellano-Bond and IV estimators where Arellano-Bond estimation uses internal instruments while external instruments are used in our two-stage IV model. Even though IV model produces larger democratic effects, all models establish broadly comparable results.

5 Mechanisms

Democracy may not directly encourage migrants: it attracts migrants through different channels. Hence, we are motivated to include channels through which democracy works on migration. Before entering a host country, migrants consider advantages they will avail from that country.

There are several studies that explain mechanisms in democracy which encourage migration to host countries (e.g., Solimano, 2009; Cavanagh and Mulley, 2013; Piper and Rother, 2015; Tonelli, 2003). For instance, democratic countries attract migrants by providing better health care services, social safety and security, and human rights (Solimano, 2009; Cavanagh and Mulley, 2013). Democracy promotes better health than non-democracy for all citizens (e.g., Besley and Kudamatsu, 2006; Franco et al., 2004; Ruger, 2005; Navia and Zweifel, 2003). These better health conditions in host countries compared to home countries can be an incentive to migrate. On the other hand, if migrant-receiving democratic countries allow dual citizenship, then it can persuade people to migrate to those countries (Piper and Rother, 2015). Dual citizenship allows migrants to do transnational activities between home and host countries and thus provide an incentive for migration (Blatter, 2011; Faist, 2001).

Migrants choose a nation which allows them to send remittances to their countries of origin (Escriba-Folch et al., 2015). On the other hand, excess demand for skilled labor in host countries is a driving force for human capital to move to those countries (Kline, 2003).

Based on the above, we consider mechanisms in our paper. We take into account several channels: dual citizenship, outgoing remittances, human capital and health. We include these intermediate factors into the model to investigate whether they are influenced by democracy. Since dual citizenship is a binary dependent variable and democracy is also a binary independent variable, we find a relationship between them following Arellano and Carrasco (2003). To examine the effects of these factors, we employ the following dynamic within model:

$$c_{it} = \beta D_{it} + \sum_{l=1}^q \delta_l c_{i(t-l)} + \alpha_i + \gamma_t + u_{it} \quad (5)$$

where, c_{it} is one of possible channels through which democracy encourages migration. All terms in right hand side of equation (5) are the same as equation (1). However, in this respect, β measures the effects of democracy on channels. δ_l represents persistence for l^{th} lag of channel.

The estimates of equation (5) are reported in Table 10 which demonstrates that democracy has positive and statistically significant effects on all the intermediate variables. Therefore, our analysis suggests that migration can be attracted by allowing dual citizenship, permitting to send remittances to home

countries, improving human capital and increasing life expectancy.

6 Concluding Remarks

Using dynamic panel data model, we attempt to find the causal effect of democracy on migration. Our analysis relies on an unbalanced data of 190 countries over the period 1960-2015. This paper applies the dynamic within estimator with controlling for country fixed effects and persistence in migration. We also use GMM estimator to find consistent estimates accounting for large (or finite) sample size.

Our baseline findings indicate a significantly positive relationship between migration and democracy. The preferred specification in our paper implies that migration rises by 29% in the long-run due to democracy. Using regional waves of democratizations and reversals as instruments for democracy, we achieve larger estimates than baseline estimates. Furthermore, both baseline and IV estimates indicate that the overall amounts of persistence in migration are significantly positive and less than one which indicates that migration is stationary.

We uncover different channels through which democracy acts on migration. These channels have a positive and significant relationship with democracy. Although the mechanisms are not tested, our analysis suggests that democracy encourages migration by these channels.

Our paper does not account for all factors that can explain the relationship between migration and democracy. For example, return migrants may encourage

democratic practice in their countries of origin. So, future research should conduct the relationship between return migration and democracy.

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Table 1: Descriptive Statistics

	Obs	Mean	S.D
	(1)	(2)	(3)
Migration (Thousand)	2,120	756	2,517
Democracy (Binary variable)	2,280	0.456	0.498
Democratization wave (Average value)	2,280	0.437	0.274
Freedom House (Binary variable)	2,280	0.495	0.500
Polity2 (Binary variable)	1,663	0.524	0.500
Polity2 (Continuous variable)	1,663	0.114	0.735
Papaioannou and Siourounis (Binary variable)	2,280	0.318	0.466
Foreign democratic capital	1,671	0.303	0.121
Government Consumption (Percentage)	1,631	15.774	6.607
Employment (Percentage)	875	57.700	11.443
Trade openness (Percentage)	1,689	76.204	48.646
GDP per capita (US constant dollar)	1,730	9,984	15,744
Carbon emission (kt)	1,799	103,040.5	486,120.8
Economic globalisation	1,313	48.954	19.655
Dual citizenship (Binary variable)	2,280	0.297	0.457
Population (Million)	2,273	27	105
Human capital index	1,159	2.145	0.631
Infant Mortality (Per 1,000 births)	1,159	2.145	0.631
Life expectancy at birth (Average year)	2,159	63.105	11.594
Absence of violence	1,980	-0.017	0.505
Rule of law	1,980	-0.0201	0.516
Voice and Accountability	738	-0.059	1.128
Control of corruption	748	0.063	1.086
Language	1,584	0.386	0.290
Religion	1,666	0.421	0.240
Ethnic fragmentation	1,654	0.443	0.262
Cultural diversity	1,393	0.302	0.210
Colonial origin	1,677	3.166	2.648
Political participation rights	1,054	-14.907	36.117
Freedom of Speech	923	0.967	0.725

Note: The detailed description and source of each variable is found in the text. Democracy is a dichotomous variable which takes 1 for democracy and 0 otherwise.

Table 2: The effect of democracy on migration

	Within estimates				GMM estimates				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Democracy	0.366*** (0.065)	0.048** (0.022)	0.060*** (0.023)	0.060** (0.026)	0.054** (0.030)	0.311*** (0.052)	0.301*** (0.053)	0.279*** (0.053)	0.245*** (0.048)
Log migration first lag		0.826*** (0.023)	0.972*** (0.050)	0.923*** (0.058)	0.870*** (0.062)	0.544** (0.061)	0.483*** (0.061)	0.484*** (0.071)	0.440*** (0.078)
Log migration second lag			-0.177*** (0.041)	-0.201*** (0.080)	-0.158** (0.072)		0.032 (0.058)	-0.127** (0.062)	-0.068*** (0.050)
Log migration third lag				0.023 (0.047)	-0.109 (0.095)			0.105 (0.066)	-0.140* (0.081)
Log migration fourth lag					0.118 (0.046)				0.190*** (0.038)
Long run effect of democracy		0.275** (0.123)	0.291*** (0.103)	0.236*** (0.094)	0.193* (0.103)	0.683*** (0.103)	0.621*** (0.097)	0.519*** (0.091)	0.424*** (0.086)
Persistence in migration		0.826*** (0.023)	0.795*** (0.030)	0.745*** (0.042)	0.722*** (0.045)	0.544*** (0.061)	0.515** (0.067)	0.461*** (0.080)	0.422*** (0.085)
Unit root test (p-value)		[0.000]	[0.000]	[0.000]	[0.000]				
AR2 test (p-value)						(0.572)	(0.298)	(0.007)	(0.446)
Observations	2,120	1,931	1,742	1,554	1,366	1,742	1,554	1,366	1,178
No. of country	189	189	188	188	188	188	188	188	188

Note: Dependent variable is migration and independent variable is democracy. Column 1, columns 2-5 and columns 6-9 indicate the estimates from static within, dynamic within and Arellano-Bond estimators respectively. Robust standard errors clustered at the country level are reported in parentheses. All specifications capture country fixed effects.

*p < 0.10, **p < 0.05, ***p < 0.01.

Table 3: The effect of democracy on migration with additional controls

Within estimates									
Covariates	Pre-ferred estimates	Lag of employ-ment	Lag of govern.consum-ption	Lag of trade	Lag of poli-tical stability	Lag of rule of law	Com-bined effect columns (2,3)	Com-bined effect columns (2,3,4)	com-bined effect columns (5,6)
Panel A	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Democracy	0.060*** (0.023)	0.062* (0.036)	0.064** (0.033)	0.034 (0.035)	0.076** (0.031)	0.084*** (0.031)	0.073** (0.036)	0.043 (0.035)	0.042 (0.044)
Long-run effect of democracy	0.291*** (0.103)	0.195*** (0.115)	0.334*** (0.173)	0.141 (0.144)	0.245*** (0.094)	0.268*** (0.092)	0.230** (0.120)	0.127 (0.107)	0.101 (0.108)
Persistence in migration	0.795*** (0.030)	0.682*** (0.051)	0.807*** (0.026)	0.757*** (0.045)	0.691*** (0.050)	0.686*** (0.050)	0.682*** (0.053)	0.663*** (0.051)	0.588*** (0.055)
Observations	1,742	696	1,267	1,321	1,332	1,332	622	619	1,002
No. of country	188	174	173	179	178	178	165	165	176
Arellano-Bond estimates									
Panel B	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Democracy	0.301*** (0.053)	0.111*** (0.029)	0.182*** (0.051)	0.153*** (0.059)	0.303*** (0.055)	0.311*** (0.055)	0.109*** (0.031)	0.077** (0.032)	0.151*** (0.046)
Long-run effect of democracy	0.621*** (0.097)	0.248*** (0.069)	0.367*** (0.107)	0.263*** (0.098)	0.557*** (0.094)	0.563*** (.092)	0.256*** (0.078)	0.175** (0.077)	0.243*** (0.081)
Persistence in migration	0.515*** (0.067)	0.553*** (0.054)	0.505*** (0.067)	0.417*** (0.097)	0.457*** (0.079)	0.449*** (0.080)	0.575*** (0.056)	0.560*** (0.055)	0.377*** (0.0634)
AR2 test (p-value)	[0.298]	[0.583]	[0.018]	[0.828]	[0.851]	[0.876]	[0.354]	[0.774]	[0.639]
Observations	1,554	522	1,085	1,135	1,309	1,309	457	453	826
No. of country	188	174	169	178	178	178	161	160	175

Note: Dependent variable is migration while independent variable is democracy. Control variables such as employment and government consumption are in log form. We consider one lag of log of employment, 2 lags of log of government consumption, 4 lags of political stability and rule of law. Columns 7, 8 and 9 identify combined effects of columns 2-3, columns 2-4 and columns 5-6 respectively. Robust standard errors for heteroskedasticity and serial correlation at the country level are reported in parentheses. All models include country fixed effects.

*p < 0.10, **p < 0.05, ***p < 0.01.

Table 4: The effect of democracy on migration with alternative measures

Within estimates					
	Ours	PS	Freedom House	Polity2 (discr.)	Polity2 (conti.)
Panel A	(1)	(2)	(3)	(4)	(5)
Democracy	0.060*** (0.023)	0.055*** (0.021)	0.086*** (0.024)	0.063*** (0.031)	0.055*** (0.021)
Long-run effect of democracy	0.291*** (0.103)	0.271*** (0.095)	0.416*** (0.101)	0.262*** (0.120)	0.225** (0.093)
Persistence in migration	0.795*** (0.030)	0.796*** (0.030)	0.792*** (0.030)	0.760*** (0.036)	0.756*** (0.035)
Observations	1,742	1,742	1,742	1,415	1,415
No. of country	188	188	188	158	158
Arellano-Bond estimates					
Panel B	(1)	(2)	(3)	(4)	(5)
Democracy	0.301*** (0.053)	0.259*** (0.046)	0.245*** (0.042)	0.294*** (0.061)	0.244*** (0.047)
Long-run effect of democracy	0.621*** (0.097)	0.545*** (0.080)	0.517*** (0.071)	0.539*** (0.115)	0.432*** (0.095)
Persistence in migration	0.515*** (0.067)	0.525*** (0.067)	0.526*** (0.067)	0.454*** (0.075)	0.435*** (0.075)
AR2 test					
P-value	[0.298]	[0.189]	[0.298]	[0.681]	[0.786]
Observations	1,554	1,554	1,554	1,254	1,254
No. of country	188	188	188	158	158

Note: Dependent variable is migration while independent variables are alternative measures of democracy such as PS stands for Papaioannou and Siourounis, Freedom House, Polity2 (discrete and continuous). Robust standard errors for heteroskedasticity and serial correlation at the country level are reported in parentheses. All specifications include country fixed effects.

*p < 0.10, **p < 0.05, ***p < 0.01.

Table 5: The IV estimates of effect of democracy on migration

	(1)	(2)	(3)	(4)	(5)
Second-stage					
The effect of democracy	1.294*** (0.210)	0.390*** (0.093)	0.443*** (0.098)	0.445*** (0.103)	0.439*** (0.103)
Long run effect of democracy		1.453*** (0.309)	1.490*** (0.267)	1.492*** (0.268)	1.352*** (0.300)
Persistence in migration		0.732*** (0.034)	0.702*** (0.042)	0.702*** (0.047)	0.675*** (0.048)
First-stage					
First-lag of zit	0.743*** (0.097)	0.686*** (0.099)	0.709*** (0.103)	0.708*** (0.106)	0.616*** (0.105)
Second-lag of zit	-0.040 (0.094)	-0.033 (0.094)	-0.023 (0.094)	-0.026 (0.099)	-0.043 (0.101)
Third-lag of zit	0.102 (0.073)	0.114 (0.072)	0.109 (0.072)	0.107 (0.072)	0.148 (0.080)
F-test (P-value)	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Exc. instruments	42.42	32.98	32.65	32.16	22.92
Hansen p-value	0.095	0.742	0.604	0.489	0.159
Observations	1,625	1,600	1,577	1,554	1,366
No. of country	189	188	188	188	188

Note: In the first-stage, dependent variable is democracy whereas migration is a dependent variable in the second-stage. zit denotes average democratizations and reversals waves. Robust standard errors for heteroskedasticity and serial correlation at the country level are reported in parentheses. All specifications capture country fixed effects.

*p < 0.10, **p < 0.05, ***p < 0.01.

Table 6: The IV estimates of effect of democracy on migration with economic variables

Explanatory variables	Preferred estimates	GDP per capita	pop ulation	employ ment	Trade openness	Climate change	Econ-omic globa. (7)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Second-stage							
Democracy	0.443*** (0.098)	0.297*** (0.081)	0.306** (0.115)	1.990** (1.025)	0.580*** (0.123)	0.242** (0.110)	0.579*** (0.213)
Long run effect of democracy	1.490*** (0.267)	1.064*** (0.293)	0.962** (0.381)	4.739** (2.204)	1.995*** (0.448)	0.675*** (0.320)	1.767*** (0.610)
Persistence in migration	0.702*** (0.042)	0.721*** (0.031)	0.682*** (0.045)	0.580*** (0.098)	0.709*** (0.037)	0.642*** (0.044)	0.672*** (0.050)
Exc. instruments	32.65	18.71	16.73	2.22	16.81	18.42	7.79
Hansen p-value	0.968	0.717	0.760	0.984	0.733	0.854	0.442
Observations	1,577	1,385	1,576	847	1,355	1,329	1,143
No. of country	188	182	188	174	179	183	158

Note: In the first-stage, dependent variable is democracy whereas migration is a dependent variable in the second-stage. All controls are in log form except economic globalisation. Robust standard errors for heteroskedasticity and serial correlation at the country level are reported in parentheses. All specifications capture country fixed effects.

*p < 0.10, **p < 0.05, ***p < 0.01.

Table 7: The IV estimates of effect of democracy on migration with alternative measures of democracy

	Ours	Freedom House	Polity2 (dis.var)	Polity2 (cont.var)	PS
	(1)	(2)	(3)	(4)	(5)
Second-stage					
Democracy	0.443*** (0.098)	0.715*** (0.173)	0.473*** (0.111)	0.311*** (0.074)	0.565*** (0.139)
Long run effect of democracy	1.490*** (0.267)	2.584*** (0.558)	1.479*** (0.329)	0.953*** (0.204)	1.982*** (0.430)
Persistence in migration	0.702*** (0.042)	0.723*** (0.043)	0.681*** (0.044)	0.674*** (0.045)	0.715*** (0.042)
First-stage					
First-lag of zit	0.709*** (0.103)	0.530*** (0.096)	0.657*** (0.109)	1.064*** (0.132)	0.594*** (0.113)
Second-lag of zit	-0.026 (0.094)	-0.092 (0.083)	0.051 (0.108)	-0.036 (0.103)	-0.041 (0.098)
Third-lag of zit	0.109 (0.072)	0.011 (0.062)	0.057 (0.072)	0.134 (0.084)	0.052 (0.074)
Exc. instruments	32.65	15.99	24.19	28.24	16.81
Hansen p-value	0.604	0.145	0.526	0.435	0.456
Observations	1,577	1,577	1,294	1,294	1,577
No. of country	188	188	158	158	188

Note: In the first-stage, dependent variable is democracy whereas migration is a dependent variable in the second-stage. Robust standard errors for heteroskedasticity and serial correlation at the country level are reported in parentheses. All specifications capture country fixed effects.

*p <0.10, **p <0.05, ***p <0.01.

Table 8: The IV estimates of effect of democracy with alternative instruments of democracy

	Ours	Freedom House	Polity2 (dis.var)	Polity2 (cont.var)	PS
	(1)	(2)	(3)	(4)	(5)
Second-stage					
Democracy	0.525*** (0.114)	0.747*** (0.180)	0.507*** (0.105)	0.314*** (0.064)	0.478*** (0.107)
Long-run effects of democracy	1.873*** (0.358)	2.622*** (0.542)	1.850*** (0.365)	1.119*** (0.205)	1.659*** (0.301)
Persistence in migration	0.720*** (0.040)	0.715*** (0.042)	0.726*** (0.037)	0.719*** (0.037)	0.712*** (0.041)
First-stage					
Foreign democratic capital	1.302*** (0.160)	0.915*** (0.137)	1.360*** (0.163)	0.314*** (0.064)	1.430*** (0.165)
Exc. instruments	67.04	44.54	69.26	94.90	75.11
No. of observation	1,423	1,423	1,415	1,415	1,423
No. of country	159	159	158	158	159

Note: In the first-stage, dependent variable is democracy whereas migration is a dependent variable in the second-stage. Robust standard errors for heteroskedasticity and serial correlation at the country level are reported in parentheses. All specifications capture country fixed effects.

*p < 0.10, **p < 0.05, ***p < 0.01.

Table 9: The IV estimates of effect of democracy on migration with political controls

Covariates	Preferred estimates (1)	Absence of violence (2)	Rule of law (3)	Voice and accounta. (4)	Control of corrup. (5)	Politi. rights (6)	Freedom of speech (7)
Second-stage IV estimates							
Democracy	0.443*** (0.098)	0.444*** (0.110)	0.459** (0.110)	1.216*** (0.539)	1.223** (0.525)	0.681*** (0.190)	0.674*** (0.196)
Long run effect of democracy	1.490*** (0.267)	1.3042*** (0.253)	1.336*** (0.246)	4.074** (1.862)	3.935** (1.710)	1.692*** (0.499)	1.662*** (0.520)
Persistence in migration	0.702*** (0.042)	0.660*** (0.051)	0.656** (0.051)	0.701*** (0.069)	0.689*** (0.068)	0.597*** (0.043)	0.595*** (0.048)
Exc. instruments	32.65	26.55	26.72	2.86	3.13	3.13	10.42
Hansen p-value	0.968	0.891	0.804	0.169	0.540	0.540	0.666
Observations	1,577	1,309	1,309	728	740	740	900
No. of country	188	178	178	186	187	187	186

Note: In the first-stage, dependent variable is democracy whereas migration is a dependent variable in the second-stage. Robust standard errors for heteroskedasticity and serial correlation at the country level are reported in parentheses. All specifications capture country fixed effects.

*p < 0.10, **p < 0.05, ***p < 0.01.

Table 10: The IV estimates of effect of democracy on intermediate outcomes

Dependent variables	Dual citizenship (1)	Outgoing remittances (2)	human capital (4)	Life expectancy (6)
Panel A: static within estimates				
Democracy	0.432*** (0.036)	0.745*** (0.226)	0.363*** (0.034)	0.125*** (0.009)
No.Obs.	2,280	1,095	1,159	2,159
No.country	190	179	124	185
Panel B: static IV estimates				
Democracy	1.268*** (0.123)	7.238*** (1.396)	1.444*** (0.221)	0.296*** (0.031)
Exc. instruments	48.88	13.09	42.00	
Observations	1,710	1,078	917	1,626
No. of country	190	173	123	184
Panel C: dynamic within estimates				
Democracy	0.184*** (0.021)	0.294 (0.200)	0.025*** (0.008)	0.014*** (0.003)
Long-run effects of democracy	0.660*** (0.058)	0.705 (0.478)	0.385*** (0.111)	0.098*** (0.015)
Persistence in channel	0.721*** (0.018)	0.584*** (0.041)	0.935*** (0.010)	0.854*** (0.026)
No.Obs.	1,900	707	912	1,790
No.country	190	162	123	184
Panel D: dynamic IV estimates				
Democracy	0.667*** (0.085)	4.890*** (1.604)	0.075*** (0.641)	0.089*** (0.021)
Long-run effects of democracy	1.407*** (0.139)	10.127*** (3.088)	0.804*** (0.237)	0.322*** (0.032)
Persistence in channel	0.526*** (0.039)	0.517*** (0.075)	0.906*** (0.014)	0.722*** (0.049)
Exc. instruments	31.96	4.25	6.38	22.83
No.observations	1,710	692	853	1,611
No.country	190	147	123	182

Note: Dependent variables are channels and independent variable is democracy. Outgoing remittances and life expectancy are in log form. Panels A, B, C, and D indicate static within, static IV within, dynamic within and dynamic IV within estimates. Robust standard errors clustered at the country level are reported in parentheses. In the first-stage, dependent variable is democracy whereas channels are dependent variables in the second-stage. All specifications capture country fixed effects.

*p < 0.10, **p < 0.05, ***p < 0.01.

Appendix A: Tables

Table A.1: The effect of democracy on migration with alternative GMM estimator

	(1)	(2)
Democratic effect	0.301*** (0.053)	0.128*** (0.045)
Migration first lag	0.483*** (0.061)	0.312*** (0.057)
Migration second lag	0.032 (0.058)	0.055 (0.083)
Migration third lag		-0.111 (0.084)
Migration fourth lag		0.042 (0.037)
Migration fifth lag		-0.026 (0.027)
Migration six lag		0.180*** (0.059)
Long-run effect of democracy	0.621*** (0.097)	0.233*** (0.088)
Persistence in migration	0.515*** (0.067)	0.452*** (0.068)
AR2 test (p-value)	[0.298]	[0.673]
Observations	1,554	825
No. of country	188	165

Note: Robust standard errors clustered at the country level are reported in parentheses. Dependent variable is migration while independent variable is democracy. Column 1 is our preferred specification in GMM estimator which includes 2 lags while column 2 uses 6 lags. All models include country fixed effects.

*p < 0.10, **p < 0.05, ***p < 0.01.

Table A.2: The effect of democracy on migration accounting for outliers

	(1)	(2)	(3)
Democracy	0.060*** (0.023)	0.061*** (0.023)	0.058*** (0.024)
Migration first lag	0.971*** (0.050)	0.971*** (0.050)	0.965*** (0.050)
Migration second lag	-0.177*** (0.041)	-0.177*** (0.041)	-0.177*** (0.041)
Long-run effect of democracy	0.291*** (0.103)	0.294*** (0.102)	0.274*** (0.104)
Persistence in migration	0.795*** (0.030)	0.794*** (0.031)	0.788*** (0.032)
Observations	1,742	1,738	1,675
No. of country	188	188	185

Note: Dependent variable is migration while democracy is independent variable. Column 1 presents our preferred specification. Columns 2-3 indicate estimates using our preferred specification when excluding observations more than three standard deviation from mean and omitting observations above Cook's distance respectively. Robust standard errors clustered at the country level are reported in parentheses. Dependent variable is GDP per capita while independent variable is total life expectancy. All models include country fixed effects.

*p < 0.10, **p < 0.05, ***p < 0.01.

Table A.3: The IV estimates of effect of democracy on migration with Cultural and colonial controls

Covariates	Preferred estimates (1)	Language (2)	Religion (3)	Ethnic (4)	cultural diversity (5)	Colonial origin (6)
	Second-stage IV estimates					
Democracy	0.443*** (0.098)	0.556*** (0.147)	0.518*** (0.132)	0.533*** (0.132)	0.497*** (0.142)	0.517*** (0.132)
Long run effect of democracy	1.490*** (0.267)	1.529*** (0.354)	1.482*** (0.330)	1.518*** (0.335)	1.359*** (0.347)	1.521*** (0.337)
Persistence in migration	0.702*** (0.042)	0.637*** (0.052)	0.650*** (0.051)	0.649*** (0.051)	0.634*** (0.054)	0.660*** (0.051)
Exc. instruments	32.65	17.59	20.02	19.44	17.46	19.61
Hansen p-value	0.968	0.545	0.580	0.583	0.754	0.535
Observations	1,577	1,321	1,321	1,309	1,074	1,329
No. of country	188	185	185	183	149	186

Note: Robust standard errors clustered at the country level are reported in parentheses. In the first-stage, dependent variable is democracy whereas migration is a dependent variable in the second-stage. All specifications capture country fixed effects.

*p < 0.10, **p < 0.05, ***p < 0.01.

Table A.4: The IV estimates of effect of democracy on migration accounting for outliers

	(1)	(2)	(3)
Democracy	0.443*** (0.098)	0.450*** (0.099)	0.457*** (0.101)
Migration first lag	0.907*** (0.051)	0.902*** (0.051)	0.900*** (0.052)
Migration second lag	-0.204*** (0.045)	-0.202*** (0.046)	-0.204*** (0.047)
Long-run effect of democracy	1.490*** (0.267)	1.500*** (0.267)	1.498*** (0.277)
Persistence in migration	0.702*** (0.042)	0.700*** (0.043)	0.695*** (0.045)
Exc. instruments	32.65	32.30	30.80
Hansen p-value	0.604	0.441	0.386
Observations	1,577	1,550	1,487
No. of country	188	188	182

Note: Dependent variable is migration stock while independent variable is democracy. Column 1 indicates IV preferred estimates repeated from Table 5. Columns 2 and 3 denote IV estimates when excluding all observations more than three standard deviations and above Cook distance respectively. Robust standard errors clustered at the country level are reported in parentheses. All models include country fixed effects.

*p < 0.10, **p < 0.05, ***p < 0.01.

Appendix B: Foreign Democratic Capital

B1: Democratic capital

We cannot observe foreign democratic capital directly, as this variable occurs in the neighboring countries when they are in democracy. The influences of democracy, also called democratic waves, affect the people of neighboring countries. Hence, we make a proxy for this factor. This variable is denoted by f_t and is defined as:

$$f_1(\rho)_{i,t} = \sum_{j \neq i} p_{j,t} \bar{\omega}(\rho)_t^{i,j} \quad (6)$$

where, P assumes the same values as it is in equation (1). $\omega(\rho)$ presents the weight parameter. Let D be the great circle (the shortest distance between any two points on a sphere) between capitals i and j , which is time-invariant and N denotes the number of countries with a Polity2 value. We put a restriction as $\omega(\rho)_t^{i,t} = (1 - \frac{D^{i,t}}{N_t})$ if $\frac{D^{i,t}}{D} \leq \rho$ and $\omega(\rho)_t^{i,t} = 0$ if $\frac{D^{i,t}}{D} > \rho$. $\omega(\rho)_t^{i,t}$ is a declining function of distance between i and j . If the relative distance is outside the radius ρ , then the weight drops to zero. Dividing f_t by 10, we get foreign democratic which is scaled to $[0, 1]$.

Appendix C: Figures

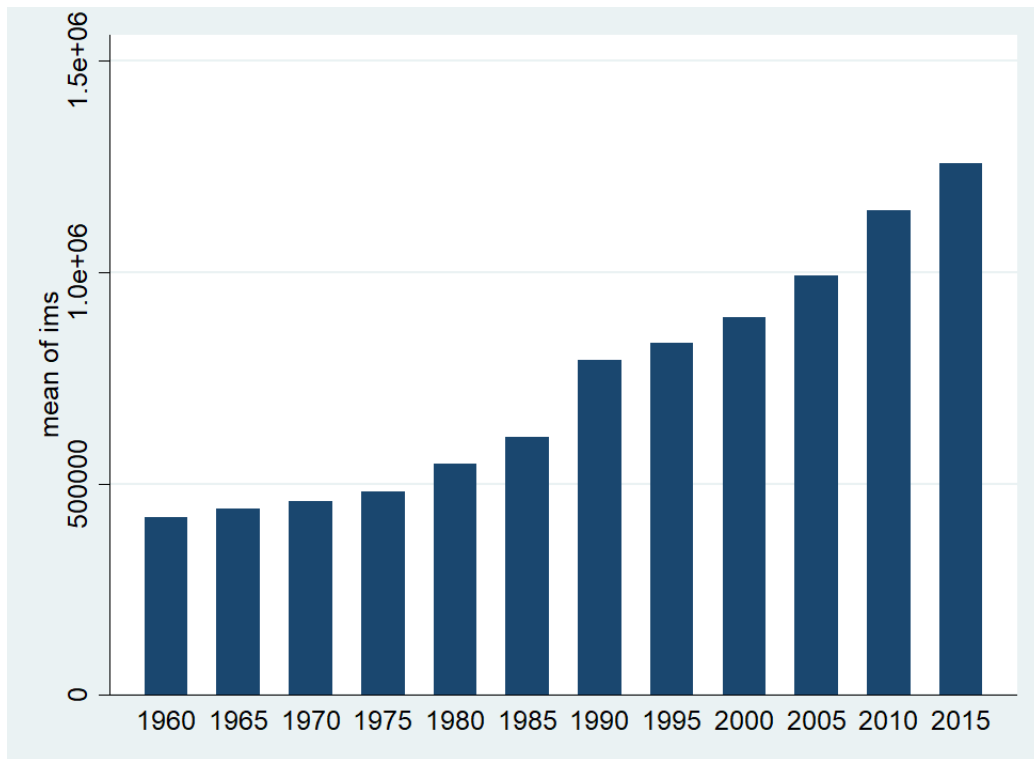


Figure C.1: Bar diagram between years and migration.

Note: This figure shows mean of migration over year. The horizontal axis measures years and vertical axis shows mean of migration. Here, ims stand for international migration stock.

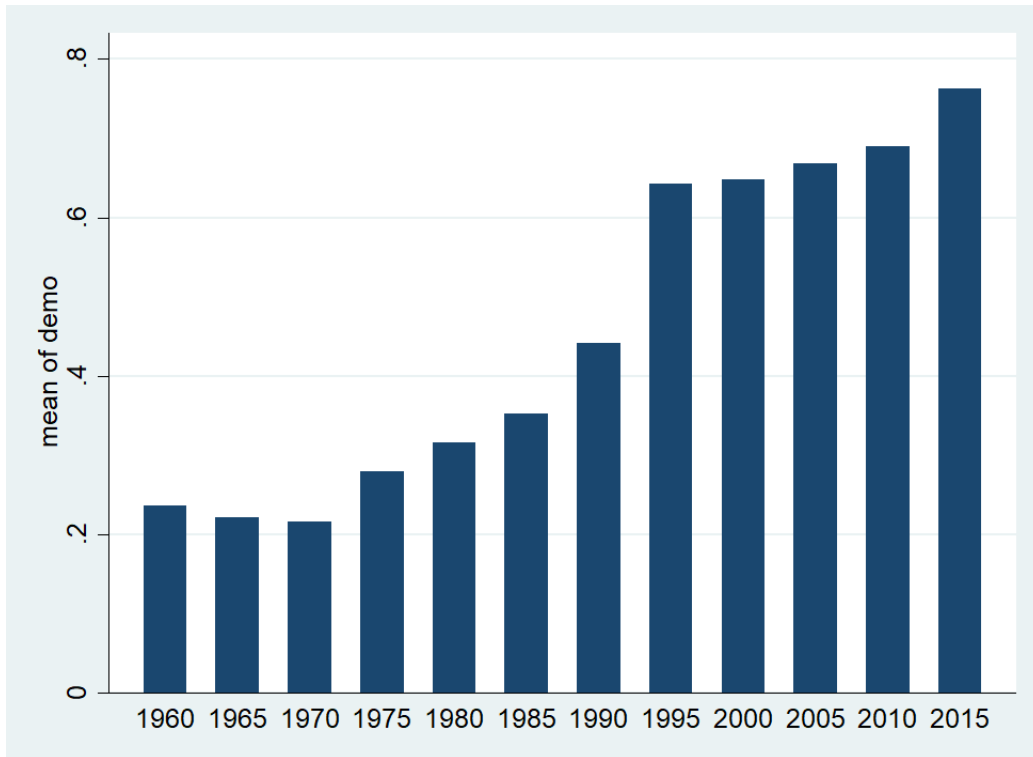


Figure C.2: Bar diagram between years and democracy.

Note: This figure shows Bar diagram of democracy over year. The horizontal axis measures years and vertical axis measures mean of democracy. Here, demo denotes democracy.

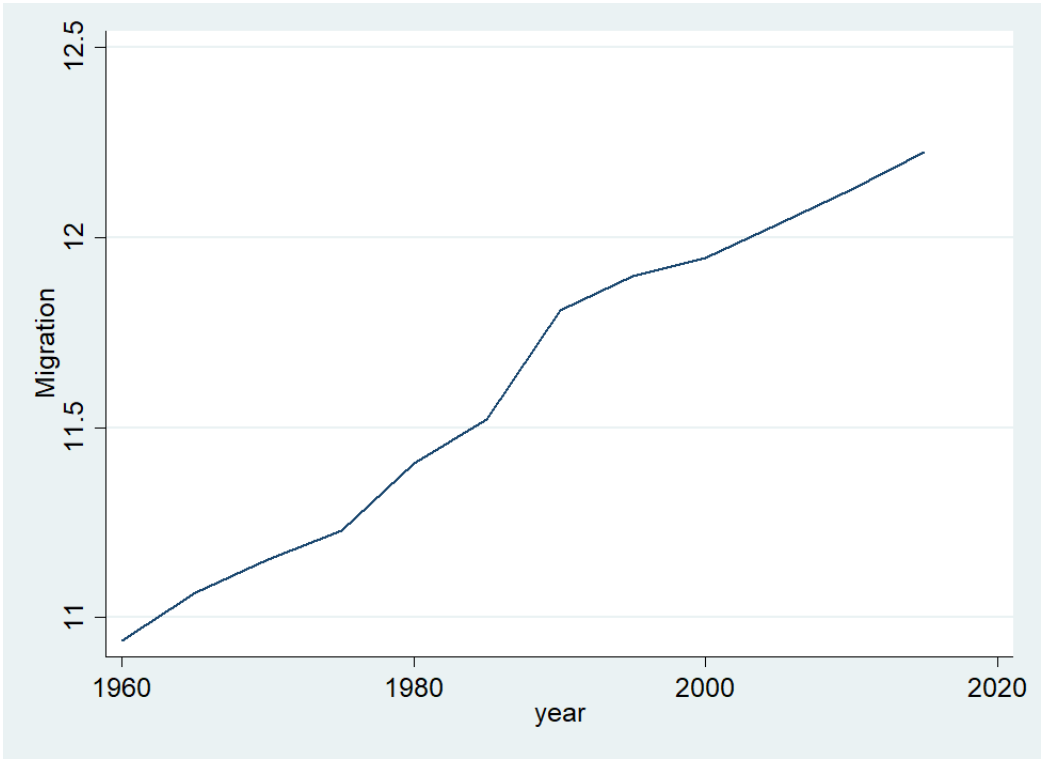


Figure C.3: Relationship between years and migration

Note: This figure exhibits year on the horizontal axis and mean of $\log(\text{migration})$ on vertical axis.

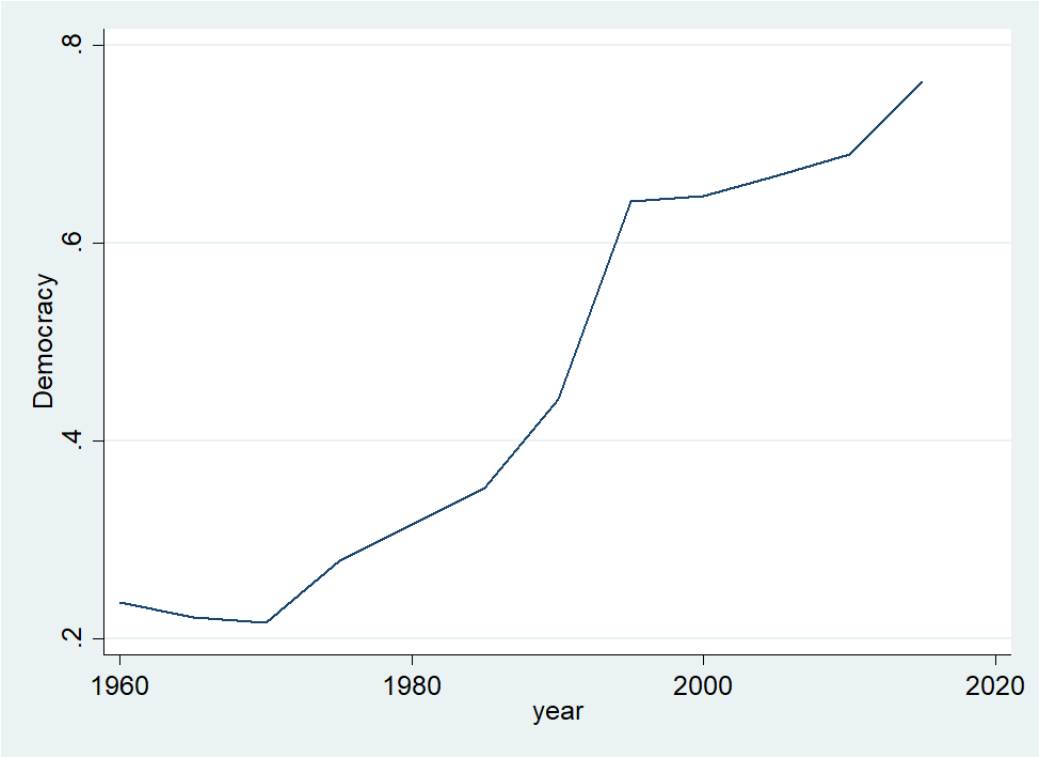


Figure C.4: Relationship between years and democracy

Note: This figure demonstrates mean of democracy on the vertical axis and year on the horizontal axis.

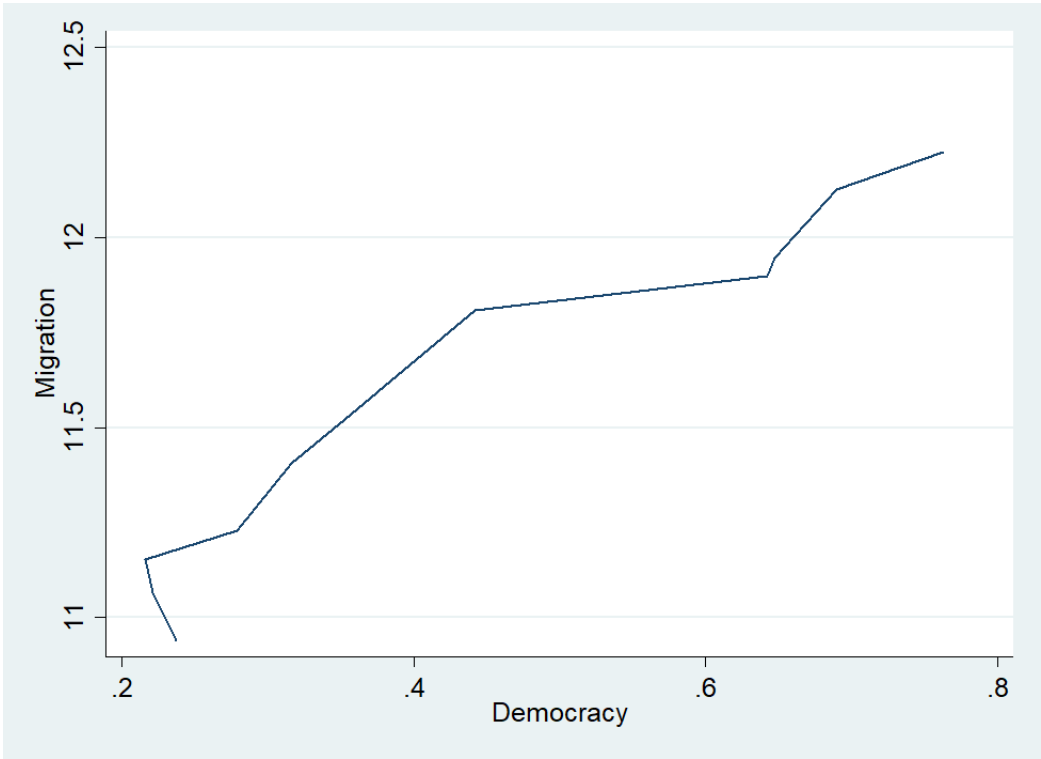


Figure A.5: Relationship between democracy and migration

Note: This figure shows mean of democracy on the horizontal axis while the vertical axis depicts mean of log (migration).

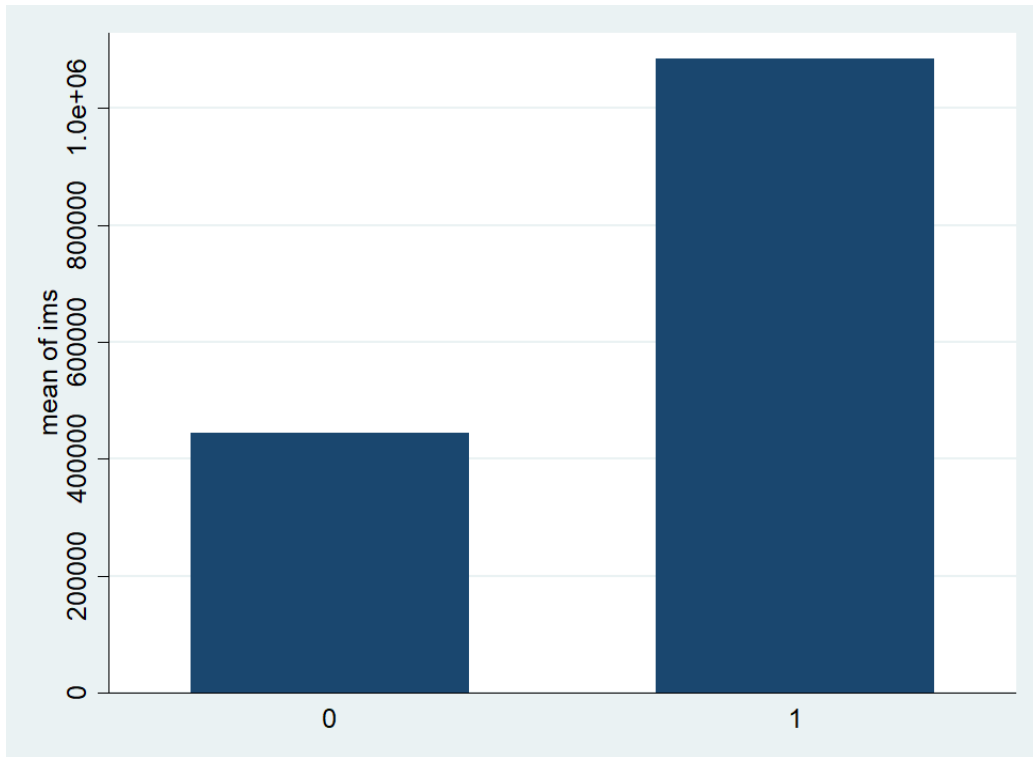


Figure C.6: Relationship between binary democracy variable and migration

Note: The vertical axis measures mean of migration (ims=international migration stock) while binary democracy variable is measured on horizontal axis.