The Effect of Democracy on Migration: A Panel Data Approach

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Abstract

We study the effect of democracy on migration using different panel data estimators. Our analysis controls for persistence in migration and country fixed effects. Employing the dynamic fixed effects estimation, we find a significantly positive and robust effect of democracy on migration. Our baseline results show that migration increases by 29% in the long-run due to democracy. When addressing the endogeneity of democracy with instruments, our models provide comparable results.

Keywords: Migration, Immigration, democracy, Incentives, Human rights, democratization waves

JEL-Classification: O15, P16, F63

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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. 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). 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).[1]

Democracy in recipient countries encourages immigrants providing several incentives: First, a country with a better health care services can entice migrants to move to that country. It is empirically documented that democratic institutions spend significant part of their public resources in providing health care services (e.g., Besley and Kudamatsu, 2006; Franco et al., 2004; Navia and Zweifel, 2003; Kotera and Okada, 2017). These better health conditions in host countries compared to home countries can be an incentive to immigrants.

[1]Throughout this paper, we use migration and immigration interchangeably.

Second, social safety and security - social benefits (public benefits) - is a another incentive which attracts the migrants to select a country to immigrate. It includes affordable government housing, childcare benefits, unemployment benefits, direct in-kind benefits of specific goods and services, and tax breaks. Social benefits are targeted for the people of low income households, the elderly, disabled, sick, unemployed or young. The third incentive through which democracy of host countries motivates migrants to enter those countries is the dual citizenship. Dual citizenship allows immigrants to do transnational activities between home and host countries (Blatter, 2011; Faist, 2001). If immigrant-receiving democratic countries allow dual citizenship, then it can persuade people to immigrate to those countries (Piper and Rother, 2015). The fourth incentive we contemplate for inducing immigrants is to allow them to send remittances to their countries of origin. They send money to support their families, relatives, friends and communities. These remittances are altruistic in the sense that they do not receive any return from them. Immigrants choose a nation which permits them to send remittances to their home countries. Fifth, subsidized and quality education is another incentive that is provided by the destination countries for immigration. Finally, development gaps between the source and destination countries drive migrants to move: High development countries motivates the emigrants of low development countries to immigrate to those nations (Massey, 1990; Solimano, 2009).

Given these incentives, democracy is a pull factor for immigration and works through mechanism: Immigration in a country can be attracted if the country has an entitlement of human and civil rights for immigrants - a fundamental

pillar for enticing new immigrants. Each immigrant can have equal rights to have access to economic and social advantages, and do freedom of expression, voice and participation in political activities as well as maintain their religious practices. For example, after the fall of the Berlin Wall in 1989, political and social disorders and conflict intensified in the Caucasus and South-East Europe regions pushed huge number of refugees, asylum-seekers and displaced persons to be immigrated to democratic countries in Central and Eastern Europe. These immigrants can enjoy the full freedom of human rights and protection, economic and social benefits from newly democratic countries which joined the European union (Tonelli, 2003). On the other hand, although having a better health care services in the South Africa, racial intolerance of South African towards immigrants violates human rights which will discourage immigration there (Crush, 2001). Thus, this mechanism along with the above incentives shapes the direction of immigration of a democratic country.

In literature there has been a few studies concerning the relationship between migration and democracy for a longitudinal data over a long time period. Migration in literature means either emigration - people leaving their home countries to settle permanently or temporarily in another countries - or immigration - people living in countries permanently or temporarily where they were not born including refugees. A number of papers, including Docquier et al. (2016); Mercier (2016); Spilimbergo (2009), examine the link between emigration and democracy. They argue that the emigration can affect the democracy of home countries. While living in host democratic countries, they can have political rights to do democratic practices and thus acquire democratic

values. They can transform these values to their home countries by diaspora interest groups or return migrants: Diasporas once in host democratic countries may influence the quality of government of their home countries by hiring lobbyists and may influence host countries' policies toward home countries. Return migrants can take part in politics and can change the democratic attitudes in their home countries with the acquired democratic values from the host countries. Also, foreign students as immigrants, they acquire democratic values - when studying in host democratic countries - which they can apply in their home countries as political leaders. These papers investigate the effects of emigration on democracy and find positive and significant effects of emigration on democracy to home countries. This implies that diasporas living in host democratic countries help home countries to be democratic. These are reverse studies of ours: We study the effects of democracy on immigration where no diaspora interest groups for lobbying or return migrants for changing democratic values in the country of origin are considered.

There are papers related to ours such as Ariu et al. (2016) and Bertocchi and Strozzi (2008) which deal with the connection between institutions and immigration: Both show the effects of institutions on migration; the former examines the relationship between the quality of government and net flows of migration (emigration-immigration of high skilled and low skilled labor) - a part of immigration for the years 1990 and 2000 while the latter between institutional role and migration rate. Using OLS method, Ariu et al. (2016) find a positive and significant effects of institution on net flows of migration. In contrast with this paper, we look at data for immigration stock in general

over the period of 1960 to 2015 on a five-year interval and use dynamic panel data regressions. Their variable of interest is quality of government while ours is democracy. Democracy differs from the quality of government in sense that the rights (freedom of expressions and freedom of organizations, voice and accountability) of people are assigned in democracy through a legal framework while these are in the definitions of latter.

Bertocchi and Strozzi (2008) consider a dataset for 14 OECD countries - a part of the world - for the time period over more than 100 years ago (1870-1910). With economic and demographic variables, they include a political institutional index consisting of democracy (Freedom House) and suffrage, and find a significantly positive effects of political institutional index using IV model in the static fixed effects estimator. However, this paper does not examine a direct relationship between migration rate and institutional role as among other variables, institutional role is one of determinants of migration rate in their IV model. More importantly, this study does not cover dataset on time period (1975-2015) at which migration and democracy increased across the world (See Figures C.1 and C.2, Appendix C).

Rather than democracy and institutions, the existing literature also finds other determinants of migration such as employment, rule of law and social network. The employment level in destination countries affects the immigration and is positively correlated with it (Harris and Todaro, 1970; Massey, 1990; Mansoor et al., 2006). The fair and consistent outcomes of rule of law between new immigrants and citizens in host countries are conducive for the transition of immigration to citizenship - which is human rights for immigrants

(Motomura, 2007). On the other hand, past migration or social network has a positive impacts on current migration (Pedersen et al., 2008; Bauer et al., 2002; Bertocchi and Strozzi, 2008). Thus, the lagged dependent variable indicating past migrants captures the social network effect. The persistence in migration may result from this social network from which our conceptual framework of dynamic panel analysis follows.

Our interest in this paper is to establish a conditional correlation between immigration and democracy using a large panel dataset for 189 countries from 1960 to 2015 at five-year interval. We pursue several strategies to establish a relationship between immigration stock and democracy: First, following Acemoglu et al. (2019), we construct a binary measure of democracy from different prevailing democracy sources which indicates a precise transition of political regimes unlike the existing democracy measures.[2]

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 immigration 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 compared to a static fixed effects model. 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

[2]See section 2 for details.

find the consistent estimator. Thus, our results are different from theirs.

Finally, we use instrumental variable (IV) approach to address the endogeneity of democracy. We use lags as internal instruments for democracy in GMM estimator while democratization waves are used as external instruments for democracy in dynamic fixed effects (DFE) IV model.[3] The existing analyzes in political science, including Huntington (1993), Kurzman (1998) and Doorenspleet (2000), acknowledged that democratization waves are the exogenous sources of variation in democracy which happen in a region because these waves transform the autocratic countries to democratic ones and true for reversely.

Our instruments satisfy the exclusion restrictions implying that conditioning on lagged outcome values, country and year fixed effects, instruments are uncorrelated with error term. Our instruments, three lags of democratizations waves and reversals, happened over 1960-1970 have no direct impacts on current migration. However, they may be correlated with other factors in error term. The correlation of the error terms becomes less and less as time period rises and eventually disappears for a long time period. The exclusion restrictions may be overturned due to omitted variables which are correlated together with instruments and outcome variable. Controlling for economic, political and alternative measures and instrument for democracy, our results remain similar to preferred within estimates maintaining exclusion restrictions.

The contribution in this paper is twofold: First, this is the first paper that builds a direct causal relationship between immigration and democracy. Second, our panel data spanned from 1960 to 2015 on a 5-year interval consider

[3]In this paper, we use the dynamic fixed effects (DFE), dynamic within and within estimators interchangeably to refer to the same estimator.

current time period - when democracy and immigration rises (1975-2015) - which covers the entire world. Using dynamic within estimator, our results indicate that there is a significantly positive relationship between democracy and immigration stock. The preferred estimates in the baseline model demonstrate that immigration increases by 29% due to democracy in the long-run. The democratic effect further increases when using GMM and dynamic fixed effects IV (DFEIV) estimators.

2 Data Sources and Description

In our analysis, our outcome variable is total international migration stock (immigration stock) and main variable of interest is democracy: Both have data for 189 countries from 1960 to 2015. Immigration stock and additional regressors namely employment (percentage of population) and general government final consumption expenditure (percentage of GDP) are used from World Bank's World Development Indicators (World Bank, 2017). Other regressors such as rule of law, political stability or absence of violence, voice and accountability, and control of corruption are used from the Worldwide Governance Indicators: These indicators extend approximately from -2.5 to 2.5 where the lowest number indicates weak while the highest number strong performance of government (Kaufmann et al., 2011).

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 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] [8] This data set comprises of 30 permanent democratic countries, 90 countries which are transformed from non-democratic countries to democratic

[4]Political right comprises electoral process, political pluralism, participation and functioning of government. Civil right consists of freedom of expression and belief, association and organization rights, rule of law, personal autonomy and individual rights (Freedom House, 2017).

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

[6]The democracy in CGV depends on dejure and defacto existence of parties and not necessarily mean that they should have seats in the legislature. On the other hand, BMR defines 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.

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

[8]Freedom House defines a political regime by assigning three scores: Free, partial free and no free. Generally, empirical papers construct dichotomous variable by putting 1 for democracy if it satisfies either free or partial free and otherwise 0. For example, Freedom House assigns "no free" in 1991 for Kuwait indicating non-democratic. However, in 1992 score from Freedom House is "partial free" for Kuwait which presents that political regime is democratic, but it remains authoritarian. On the other hand, from 1991 to 1992, polity 2 score rises from -9 to -7 in Kuwait which does not imply any transition of political regime. So, existing indices do not provide the transition of political regime precisely. To avoid this, we follow Acemoglu et al. (2019).

ones, 35 permanent non-democratic and 34 countries from democratic to non-democratic countries. Table 1 provides the descriptive statistics of the dependent and explanatory variables in our model.

Table 1: Descriptive Statistics

	Obs (1)	Mean (2)	S.D (3)
Immigration (Thousand)	2,120	756	2,517
Democracy (Binary variable)	2,280	0.456	0.498
Employment (Percentage)	875	57.700	11.443
Rule of law	1,980	-0.0201	0.516
Freedom House (Binary variable)	2,280	0.495	0.500
Polity2 (Continuous variable)	1,663	0.114	0.735
Papaioannou and Siourounis (Binary variable)	2,280	0.318	0.466
Democratization wave (Average value)	2,280	0.437	0.274
Government Consumption (Percentage)	1,631	15.774	6.607
Foreign democratic capital	1,671	0.303	0.121
Absence of violence	1,980	-0.017	0.505
Voice and Accountability	738	-0.059	1.128
Control of corruption	748	0.063	1.086

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.

3 Model

3.1 Dynamic Within Model (Baseline)

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

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

where, $i = 1, 2, \ldots, 189$, are countries over the years $t = 1960, 1965, \ldots, 2015$

and lag $l = 1, 2, \ldots q$, m, D, and u represent log of immigration, democracy and the error term respectively. u contains all other factors excluded from the model which directly may affect the outcome variable under ceteris paribus. Our variable of interest is democracy: the coefficient β measures the effect of democracy on immigration when a non-democratic country transforms into democratic one and it is expected that $\beta>0$ implying a higher level of immigration 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 immigration. 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 immigration, country and year fixed effects:

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

This assumption implies that the error term is conditionally uncorrelated and democracy, past immigration, 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 immigration (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

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

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

which is a steady state immigration. This implies that when a country transforms from non-democratic into democratic, then immigration rises $\dfrac{\beta}{1 - \delta_1}$ in the long-run. For more than one lag, this formula becomes as $\dfrac{\beta}{1 - \sum_{l=1}^{q} \delta_l}$ 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, $\dfrac{\hat{\beta}}{1 - \sum_{l=1}^{q} \hat{\delta}_l}$ represents the long-run effects of democracy where $\sum_{l=1}^{q} \hat{\delta}_l$ converges to $m \in (0, 1)$ implying that migration is stationary.

Table 2 reports the estimated effects of democracy on immigration using equation (1). Column 1 presents the impacts of democracy without accounting for persistence in immigration. The estimated effect is positive and statistically significant indicating around 21% rises in immigration due to the transition of a non-democratic country into democratic. Figure C.5 of Appendix C shows a positive relationship (partial) between migration and democracy.

Columns 2-4 of Table 2 show the dynamic within estimates by controlling for the persistence in immigration. Column 2 controls for the first lag of immigration in which the estimated coefficient of democracy indicates that there is a significantly positive relationship between immigration and democracy. The estimated democratic effect is 0.036 which implies immigration rises around 4%.

while in the long-run it increases about 20%. The persistence in immigration is positive and statistically significant: it is less than 1 which indicates that migration is stationary.[9]

When adding one more lag of immigration in column 3, we notice that the long-run effect of democratization is positive and significant, and 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 immigration, column 4 presents similar effects of democracy with the previous columns. We take the maximum 3 lags in our analysis; however, two lags of migration are our preferred lags which are selected using the t-statistics on the estimated coefficients $\hat{\gamma}_{il}$.[10] Table 2 (columns 1-4) establishes a significantly positive relationship between immigration and democracy. Our preferred specification indicates that the democratic effect on immigration in the long-run is around 29% comared to non-democratic one. 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

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

[10]The maximum lags we considered in our analysis is 3. 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 Baltigi 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).

migration.

Following assumption 1, democracy is exogenous and migration is stationary, our estimate of beta is consistent. On the other hand, in dynamic within transformation, the time-demeaning of the original equation 1 has removed the unobserved heterogeneity across countries. The correlation of error terms decreases as time period increases and eventually disappears for a long time period. Thus, dynamic within estimator is consistent if T tends to infinity. The time-invariant factors are captured by the dynamic within estimator. However, time-varying factors can be correlated with democracy. In such case, our dynamic within model may suffers from endogeneity and provides inconsistent estimates.

While using lagged values of migration in within estimator, the 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 $T \to \infty$. As we use a big longitudinal dataset, this bias is less in our case.[11]

3.2 GMM Estimator

Our dynamic within model suffers from endogeneity of democracy which occurs due to the correlation of lagged migration with error term and democracy may be contemporaneously endogenous. To address this issue, we employ the first-differenced generalized method of moments (GMM) developed by Arellano and

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

Bond (1991) which also removes time-invariant factors.[12]As $m_{i,t-1}$ is correlated with the first-differenced error term, it is no longer be an instrument for the first-differenced lagged regressors. However, $m_{i,t-2}$, $m_{i,t-3}$, ..., have no correlation with the first-differenced error term. These are considered as instruments for the first-differenced regressors of equation 1. On the other hand, democracy may be contemporaneously endogenous. In this case, D_{it-1} is not an instrument for the first-differenced regressors as it is correlated with the first-differenced error term. However, D_{it-2}, D_{it-3},.., are taken into account as instruments for the first-differenced regressors of equation 1 which are uncorrelated with the first-differenced error terms. These instruments in GMM are called internal instruments which follow the orthogonal moments' condition in model 1:

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

.

Columns 5-7 of Table 2 present results obtained from GMM estimation. All specifications show that estimated effects and long-run effects of democracy modestly larger than dynamic within estimates (columns 2-4). This may result from using internal instruments for regressors in GMM estimator. On the other hand, the degree of persistence in each specification slightly less than the overall persistence from corresponding lag in dynamic within estimates. Column 6 present our preferred specification in Arellano-Bond estimator which shows that democratic effect is 62% which is larger than preferred dynamic within

[12]We use the dynamic IV estimator or Arellano-Bond estimator or GMM estimator or difference-GMM estimator interchangeably in this paper to refer to the same estimator.

estimate (column 3). Also, column 6 demonstrates that p-value of AR2 test cannot rejects the null of no autocorrelation in residual. Thus, our estimates are consistent in this specification with lag 2. While estimates in GMM estimator are modestly larger than dynamic within estimates, they remain similar.

Table 2: The effect of democracy on immigration

		DFE estimates			GMM estimates		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Democracy	0.208***	0.036*	0.060***	0.060**	0.109***	0.100***	0.078***
	(0.061)	(0.022)	(0.023)	(0.026)	(0.042)	(0.040)	(0.047)
Log immigration		0.818***	0.971***	0.923***	0.810***	1.015***	0.991**
first lag		(0.022)	(0.050)	(0.058)	(0.028)	(0.083)	(0.081)
Log immigration			-0.177***	-0.201***		-0.177***	-0.199***
second lag			(0.041)	(0.076)		(0.057)	(0.083)
Log immigration				0.023			0.036***
third lag				(0.047)			(0.040)
Long run effect		0.200*	0.291***	0.236***	0.570***	0.616***	0.454**
of democracy		(0.119)	(0.103)	(0.094)	(0.205)	(0.230)	(0.254)
Persistence		0.818***	0.795***	0.745***	0.810***	0.838***	0.827***
in immigration		(0.022)	(0.030)	(0.042)	(0.028)	(0.037)	(0.044)
Unit root test (p-value)		[0.000]	[0.000]	[0.000]			
AR1 test (p-value)					0.002	0.000	0.000
AR2 test (p-value)					0.386	0.599	0.093
No. instruments					120	117	112
Hansen (p-value)					0.278	0.363	0.282
No. country	189	189	188	188	188	188	188
No.observation	2,120	1,931	1,742	1,554	1,366	1,554	1,366

Note: Dependent variable is log of immigration stock and independent variable is democracy. Column 1, columns 2-4 and columns 5-7 indicate the estimates from static fixed effects, dynamic fixed effects(DFE) and Arellano-Bond GMM estimates respectively. Robust standard errors clustered at the country level are reported in parentheses. All specifications capture country and year fixed effects.
*p <0.10, **p <0.05, ***p <0.01.

3.3 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 several strategies.

We use control variables such as employment and rule of law in Table 3 to check the robustness of baseline findings. In Table 3, column 1 of Panels A and B is reproduced from column 3 and column 6 of Table 2 to make comparison. Employment in host countries can directly affect immigration and may be endogenous to democracy: one lag of this factor is used as an instrument of it. Although long-run effect sightly decreases, we find no estimated effect of it on immigration (column 2, Table 3). In column 3 of Table 3, we control for rule of law which plays vital role for immigration of destination countries. Instrumenting it with one lag of it, our results remain similar to preferred estimates. Panel B presents Arellano-Bond estimates while controlling for these factors in our model. The democratic effects largely increases compared to preferred estimates due to controlling for employment in GMM estimator (Panel B, Table 3, column 2). Controlling for rule of law provides similar results to our preferred GMM estimates indicated in column 3 of Panel B.

Table 3: The effect of democracy on immigration with controls

Covariates	Preferred estimates (1)	Employ ment (2)	Rule of law (3)
	Panel A: DFE estimates		
Democracy	0.060***	0.062*	0.076***
	(0.023)	(0.036)	(0.024)
Log immigration	0.971***	0.782***	0.959***
first lag	(0.050)	(0.054)	(0.052)
Log immigration	-0.177***	-0.100***	-0.169***
second lag	(0.041)	(0.038)	(0.042)
Long-run effect	0.291***	0.195*	0.360***
of democracy	(0.103)	(0.115)	(0.103)
Persistence in	0.795***	0.682***	0.790***
immigration	(0.030)	(0.051)	(0.032)
No. Observations	1,742	696	1,642
No. country	188	174	178
	Panel B: GMM estimates		
Democracy	0.100***	0.162**	0.145***
	(0.040)	(0.068)	(0.044)
Log immigration	1.015***	1.016***	0.984***
first lag	(0.083)	(0.085)	(0.076)
Log immigration	-0.17733***	-0.169**	-0.165***
second lag	(0.057)	(0.059)	(0.055)
Long-run effect	0.616***	1.060*	0.799***
of democracy	(0.230)	(0.635)	(0.246)
Persistence in	0.838***	0.847***	0.819***
immigration	(0.037)	(0.052)	(0.035)
AR1 test (p-value)	0.000	0.000	0.000
AR2 test (p-value)	0.420	0.482	0.626
Hansen (p-value)	0.261	0.280	0.279
No.instruments	57	57	117
No. country	188	174	178
No.observation	1,554	522	1,464

Note: Dependent variable is log of immigration while independent variable is democracy. Control variables are such as log of employment rate and rule of law. We consider one lag of employment and rule of law in columns 2 and 3 respectively. Robust standard errors for heteroskedasticity and serial correlation at the country level are reported in parentheses. All models include country and year fixed effects.
*p <0.10, **p <0.05, ***p <0.01.

Additionally, we use alternative binary and continuous measures of democracy to check robustness of baseline preferred estimates. We account for binary measures of Freedom House (FH), Papaioannou and Siourounis (PS) and continuous measure of Polity2 in Table 4. While estimates from FH are modestly higher in Panel A, our preferred estimates are very similar to estimates of

polity2 and PS. Panel B also provides similar results to preferred estimates and results are consistent.[13] When using Arellano-Bond estimator there may have finite sample biased due to instrument proliferations. This may not be happened in our case as Panel B of Tables 2, 3 and 4 show that the number of instruments cannot exceed the number of countries (the rule - of - thumb). Nonetheless, to address this issue we employ alternative GMM estimator in which we use truncated lags to 5. Results are reported in column 5 of Table A.1 (Appendix A). This specification provides similar estimates to our preferred findings from GMM estimator.

Moreover, our results may be driven due to outliers in our dataset and we account for these in our analysis which are reported in columns 2-3 of Table A.1 (Appendix A). To check it, we exclude observations which have more and less 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 it's alternative measures and considering outliers analysis, our results remain similar to baseline preferred estimates.

[13]To 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 4 stands for Papaioannou and Siourounis.

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

	Ours	FH	Polity2	PS
	(1)	(2)	(3)	(4)
	Panel A: DFE estimates			
Democracy	0.060***	0.086***	0.055***	0.055***
	(0.023)	(0.024)	(0.021)	(0.021)
Log immigration	0.971***	0.970***	0.936***	0.971***
first lag	(0.050)	(0.050)	(0.052)	(0.051)
Log immigration	-0.177***	-0.178***	-0.179***	-0.175***
second lag	(0.041)	(0.041)	(0.044)	(0.040)
Long-run effect	0.291***	0.416***	0.225***	0.271***
of democracy	(0.103)	(0.101)	(0.093)	(0.095)
Persistence in	0.795***	0.792***	0.756***	0.796***
immigration	(0.030)	(0.030)	(0.035)	(0.030)
Observations	1,742	1,742	1,415	1,742
No. of country	188	188	158	188
	Panel B: GMM estimates			
Democracy	0.100***	0.106***	0.054*	0.094***
	(0.040)	(0.031)	(0.032)	(0.038)
Log immigration	1.015***	1.027***	0.963***	1.033***
first lag	(0.083)	(0.083)	(0.071)	(0.084)
Log immigration	-0.177***	-0.182***	-0.175***	-0.181***
second lag	(0.057)	(0.057)	(0.053)	(0.057)
Long-run effect	0.616***	0.687***	0.253*	0.634***
of democracy	(0.230)	(0.188)	(0.153)	(0.227)
Persistence in	0.838***	0.845***	0.788***	0.852***
immigration	(0.037)	(0.037)	(0.033)	(0.037)
AR1 test (p-value)	0.000	0.000	0.001	0.000
AR2 test (p-value)	0.599	0.582	0.533	0.627
Hansen (p-value)	0.363	0.018	0.283	0.050
No. instruments	117	90	117	90
No. country	188	188	158	188
No. observation	1,554	1,554	1,254	1,554

Note: Dependent variable is log of immigration while independent variables are alternative measures of democracy such as FH stands for Freedom House, Polity2 (continuous) and PS stands for Papaioannou and Siourounis. Robust standard errors for heteroskedasticity and serial correlation at the country level are reported in parentheses. All specifications include country and year fixed effects.
*p <0.10, **p <0.05, ***p <0.01.

3.4 Dynamic Fixed effects IV Model

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 external instruments for democracy although internal instruments for democracy are used in GMM estimator earlier.

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}:

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

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 DFEIV estimator is:[14]

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

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

The equations 3 and 4 are the second-stage and first-stage respectively. Lags

[14]We use DFEIV and IV models interchangeably in this paper.

of zit, i.e., $z_{i(t-l)}$ are instruments in our model. In our two-stage DFEIV 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 $\ldots$ 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 term:

Assumption 2: $\mathbf{E}(u_{it} \mid z_{i(t-1)}, \ldots, z_{i(t-r)}, m_{i(t-1)}, \ldots, m_{i(t-q)}, \alpha_i, \gamma_t) = 0$, for all $z_{i(t-1)}, \ldots, z_{i(t-r)}, m_{i(t-1)}, \ldots, m_{i(t-q)}, \alpha_i$ *and* γ_t.

We can justify the validity of our instruments with this condition: The instruments, $z_(t-1), z_(t-2), \ldots, z_(t-r)$, 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 DFEIV model if migration is stationary alongside the satisfying overidentification restrictions.

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).[15] In the second-stage, Column 1 of the table shows that immigration rises largely due to democracy when we use IV in 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 estimator suffers

[15]We 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.

from the omitted variables bias. Columns 2-4 present the DFEIV estimates accounting for the persistence of migration.

Columns 2-4 of Table 5 rely on one, two and three lags of immigration respectively. Both the estimated and long-run effects of democracy presented in column 2 are significantly positive and higher than that of the corresponding estimates in Table 2. The impacts of democracy reported in column 3, which is our preferred specification, is significantly positive. The estimated and long-run effects from IV estimates in column 3 of the table are 0.443 and 1.490 compared to 0.060 and 0.291 in column 3 of Table 3: The preferred estimates in IV model are higher than dynamic within estimates. Column 4 relies on three lags of migration: The results are similar to column 3. In all specifications columns 2 through 4, 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 1-4 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 4, F-statistic in the first-stage is greater than 10 indicating the lags of 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.

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

	(1)	(2)	(3)	(4)
Second-stage				
Democracy	1.294***	0.390***	0.443***	0.445***
	(0.210)	(0.093)	(0.098)	(0.103)
Log immigration		0.732***	0.907***	0.903***
first lag		(0.034)	(0.051)	(0.058)
Log immigration			-0.204***	-0.202***
second lag			(0.045)	(0.074)
Log immigration				0.0003***
third lag				(0.048)
Long run effect		1.453***	1.490***	1.492***
of democracy		(0.309)	(0.267)	(0.268)
Persistence in		0.732***	0.702***	0.702***
immigration		(0.034)	(0.042)	(0.047)
First-stage				
First-lag of zit	0.743***	0.686***	0.709***	0.708***
	(0.097)	(0.099)	(0.103)	(0.106)
Second-lag of zit	-0.040	-0.033	-0.023	-0.026
	(0.094)	(0.094)	(0.094)	(0.099)
Third-lag of zit	0.102	0.114	0.109	0.107
	(0.073)	(0.072)	(0.072)	(0.072)
F-test (P-value)	[0.000]	[0.000]	[0.000]	[0.000]
Exc. instruments	42.42	32.98	32.65	32.16
Hansen p-value	0.095	0.742	0.604	0.489
Observations	1,625	1,600	1,577	1,554
No. of country	189	188	188	188

Note: In the first-stage, dependent variable is democracy whereas log of immigration 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 and year fixed effects.
*p <0.10, **p <0.05, ***p <0.01.

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; hence they have no direct effects on immigration stock today: They can only affect immigration through democracy.[16][17]

All results in columns 2-4 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.

[16]See Wooldridge 2002, ch.15.

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

Our relationship between immigration 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: We add more covariates as controls in the model and we look at exclusion restrictions.

We add economic variables such as employment and government consumption as controls in our model. The results are reported in Table 6. Column 1 of Table 6 repeats the IV estimates reported in column 3 of Table 5 for comparison. In column 2, we include employment rate which may be correlated with our IVs and immigration: This may invalidate exclusion restrictions. However, adding this control provides larger estimates both for the estimated and long-run effects compared to preferred estimates. In column 3, we find similar effects to preferred estimates when controlling for rule of law in the IV model. In column 4 our control is government consumption which affects immigrants by spending on public health care services, education, and social safety nets (Kotera and Okada, 2017). Our results remain similar to preferred estimates though long-run cumulative effect slightly rises. When controlling economic and political variables in Table 6, our estimates remain largely similar to our preferred findings albeit our exclusion restrictions can not be overturned.

Table 6: The IV estimates of effect of democracy on immigration with controls

Covariates	Preferred estimates (1)	Employ ment (2)	Rule of law (3)	Government consumption (4)
Second-stage				
Democracy	0.443***	1.989**	0.459***	0.529***
	(0.098)	(1.025)	(0.110)	(0.106)
Log immigration	0.907***	0.891**	0.849***	0.934***
first lag	(0.051)	(0.111)	(0.059)	(0.048)
Log immigration	-0.204***	-0.311***	-0.192***	-0.200***
second lag	(0.045)	(0.116)	(0.049)	(0.049)
Long run effect	1.490***	4.739**	1.336***	1.982***
of democracy	(0.267)	(2.204)	(0.246)	(0.424)
Persistence	0.702***	0.580***	0.656***	0.733***
in immigration	(0.042)	(0.098)	(0.051)	(0.033)
First-stage				
First-lag of zit	0.709***	0.108	0.724***	0.535***
	(0.103)	(0.091)	(0.114)	(0.102)
Second-lag of zit	-0.026	0.038	-0.048	0.029
	(0.094)	(0.104)	(0.093)	(0.100)
Third-lag of zit	0.109***	0.096	0.104**	0.081
	(0.072)	(0.067)	(0.074)	(0.071)
F-test (p-vale)	0.000	0.0000	0.000	0.000
Exc. instruments	32.65	2.22	26.72	18.40
Hansen p-value	0.604	0.984	0.804	0.647
No. Observations	1,577	847	1,309	1,299
No. country	188	174	178	174

Note: In the first-stage, dependent variable is democracy whereas log of immigration is a dependent variable in the second-stage. All controls are in log form except rule of law. Robust standard errors for heteroskedasticity and serial correlation at the country level are reported in parentheses. All specifications capture country and year fixed effects. *p <0.10, **p <0.05, ***p <0.01.

In addition, we use alternative measures of democracy in our model. The estimates in column 1 of Table 7 are reproduced from the column 3 of Table 5 to compare the results. Substituting our democracy variable with a number of dichotomous and continuous measures of democracy, we obtain similar results to preferred estimates though FH binary variable shows modestly larger effects.

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

	Ours	FH	Polity2 (continuous)	PS
	(1)	(2)	(3)	(4)
Second-stage				
Democracy	0.443***	0.715***	0.311***	0.565***
	(0.098)	(0.173)	(0.074)	(0.139)
Log immigration	0.907***	0.916***	0.871***	0.906***
first lag	(0.051)	(0.053)	(0.048)	(0.054)
Log immigration	-0.204***)	-0.193***	-0.198***	-0.191***
second lag	(0.045)	(0.046)	(0.047)	(0.048)
Long run effect	1.490***	2.584***	0.953***	1.982***
of democracy	(0.267)	(0.558)	(0.204)	(0.430)
Persistence in	0.702***	0.723***	0.674***	0.715***
immigration	(0.042)	(0.043)	(0.045)	(0.042)
First-stage				
First-lag of zit	0.709***	0.530***	1.064***	0.594***
	(0.103)	(0.096)	(0.132)	(0.113)
Second-lag of zit	-0.026	-0.092	-0.036	-0.041
	(0.094)	(0.083)	(0.103)	(0.098)
Third-lag of zit	0.109	0.011	0.134	0.052
	(0.072)	(0.062)	(0.084)	(0.074)
Exc. instruments	32.65	15.99	28.24	16.81
Hansen p-value	0.604	0.145	0.435	0.456
No.observations	1,577	1,577	1,294	1,577
No.country	188	188	158	188

Note: In the first-stage, dependent variable is democracy whereas log of immigration 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 and year fixed effects.
*p <0.10, **p <0.05, ***p <0.01.

Also, we use alternative instrument of democracy such as foreign democratic capital to check robustness of results (Table 8). 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 to our preferred IV estimates (Column 3, Table 5) even if FH produces modestly larger long-run effects.[18]

[18]See Appendix B.

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

	Ours	FH	Polity2 (continuous)	PS
	(1)	(2)	(3)	(5)
Second-stage				
Democracy	0.525***	0.747***	0.314***	0.478***
	(0.114)	(0.180)	(0.064)	(0.107)
Log immigration	0.922***	0.914***	0.915***	0.906***
first lag	(0.055)	(0.053)	(0.049)	(0.055)
Log immigration	-0.202***	-0.198***	-0.196***	-0.194***
second lag	(0.046)	(0.045)	(0.043)	(0.048)
Long-run effects	1.873***	2.622***	1.119***	1.659***
of democracy	(0.358)	(0.542)	(0.205)	(0.301)
Persistence	0.720***	0.715***	0.719***	0.712***
in immigration	(0.040)	(0.042)	(0.037)	(0.041)
First-stage				
Foreign democratic	1.302***	0.915***	0.314***	1.430***
capital	(0.160)	(0.137)	(0.064)	(0.165)
Exc. instruments	67.04	44.54	94.90	75.11
No. observation	1,423	1,423	1,415	1,423
No. country	159	159	158	159

Note: In the first-stage, dependent variable is democracy whereas log of immigration 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 and year fixed effects.
*p <0.10, **p <0.05, ***p <0.01.

Furthermore, we include controls of quality of government such as absence of violence or political stability, voice and accountability, and control of corruption in our model. These factors may cause adverse effect on democracy. Column 3 of Table 5 is reproduced in column 1 of Table 9 to compare the estimates. 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: The IV estimates of effect of democracy on immigration with the controls of quality of government

Covariates	Preferred estimates (1)	Absence of violence (2)	Voice and accountability (3)	Control of corruption (4)
	Second-stage IV estimates			
Democracy	0.443***	0.444***	1.216***	1.223**
	(0.098)	(0.110)	(0.539)	(0.525)
Log immigration	0.907***	0.859***	0.968***	0.947***
first lag	(0.051)	(0.057)	(0.120)	(0.118)
Log immigration	-0.204***	-0.199**	-0.266***	-0.258**
second lag	(0.045)	(0.048)	(0.114)	(0.114)
Long run effect	1.490***	1.3042***	4.074**	3.935**
of democracy	(0.267)	(0.253)	(1.862)	(1.710)
Persistence	0.702***	0.660***	0.701***	0.689***
in immigration	(0.042)	(0.051)	(0.069)	(0.068)
Exc.instruments	32.65	26.55	2.86	3.13
Hansen p-value	0.968	0.891	0.169	0.540
No.observations	1,577	1,309	728	740
No.country	188	178	186	187

Note: In the first-stage, dependent variable is democracy whereas log of immigration 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 and year fixed effects.
*p <0.10, **p <0.05, ***p <0.01.

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

4 Concluding Remarks

We use different panel data estimators to investigate the relationship between migration and democracy. Our analysis relies on an unbalanced panel data of 189 countries at a 5-year interval 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 Araellano-Bond 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 implies that immigration rises by 29% in the long-run due to democracy. The democratic effect on immigration increases when lags as internal instruments are used in the GMM estimation. Employing regional waves of democratizations and reversals as external instruments for democracy in the dynamic fixed effects IV, the long-run effect further rises.

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Appendix A: Tables

Table A.1: The effect of democracy on migration accounting for outliers and alternative GMM estimates

	(1)	(2)	(3)	(4)	(5)
Democracy	0.060***	0.061***	0.058***	0.100***	0.085
	(0.023)	(0.023)	(0.024)	(0.040)	(0.053)
Long-run effect of democracy	0.291***	0.294***	0.274***	0.616***	0.556*
	(0.103)	(0.102)	(0.104)	(0.230)	(0.340)
Persistence in migration	0.795***	0.794***	0.788***	0.838***	0.848***
	(0.030)	(0.031)	(0.032)	(0.037)	(0.036)
AR1 test (p-value)				0.000	0.000
AR2 test (p-value)				0.599	0.558
No. instruments				117	96
Hansen P-value				0.363	0.123
No. country	188	188	185	188	165
Observations	1,742	1,738	1,675	1,554	990

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. Column 4 is our preferred specification in GMM estimator which includes 2 lags while column 5 uses 5 lags. The estimated effect of democracy is significant at a 11% level of significant. 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.

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:

$$f_1(\rho)_{i,t} = \sum_{j \neq i} p_{j,t} \bar{\omega}(\rho)_t^{i,j} \tag{5}$$

where, P stand for a binary democracy variable which is 1 if the polity2 value is positive and 0 otherwise. $\omega(\rho)$ 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 $\omega(\rho)_t^{i,t} = \left(1 - \frac{\frac{D^{i,t}}{D}}{N_t}\right)$ if $\frac{D^{i,t}}{D} \leq \rho$ and $\omega(\rho)_t^{i,t} = 0$ if $\frac{D^{i,t}}{D} > \rho \cdot \omega(\rho)_t^{i,t}$ 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

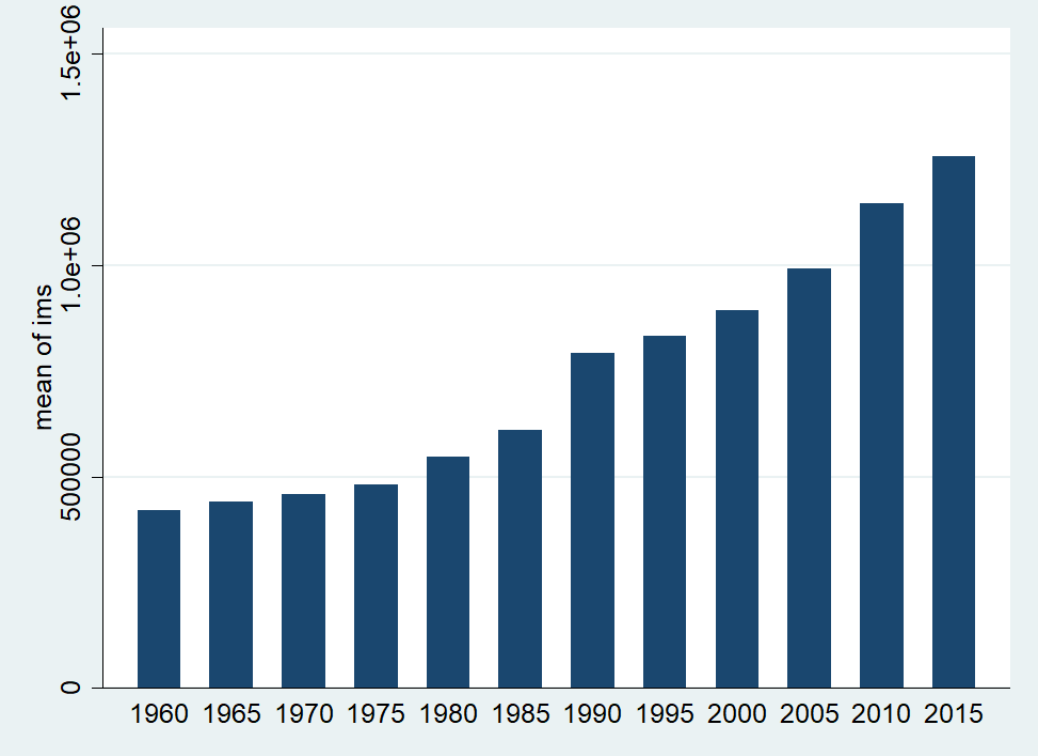

Figure C.1: Bar diagram between years and immigration.

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 immigration stock.

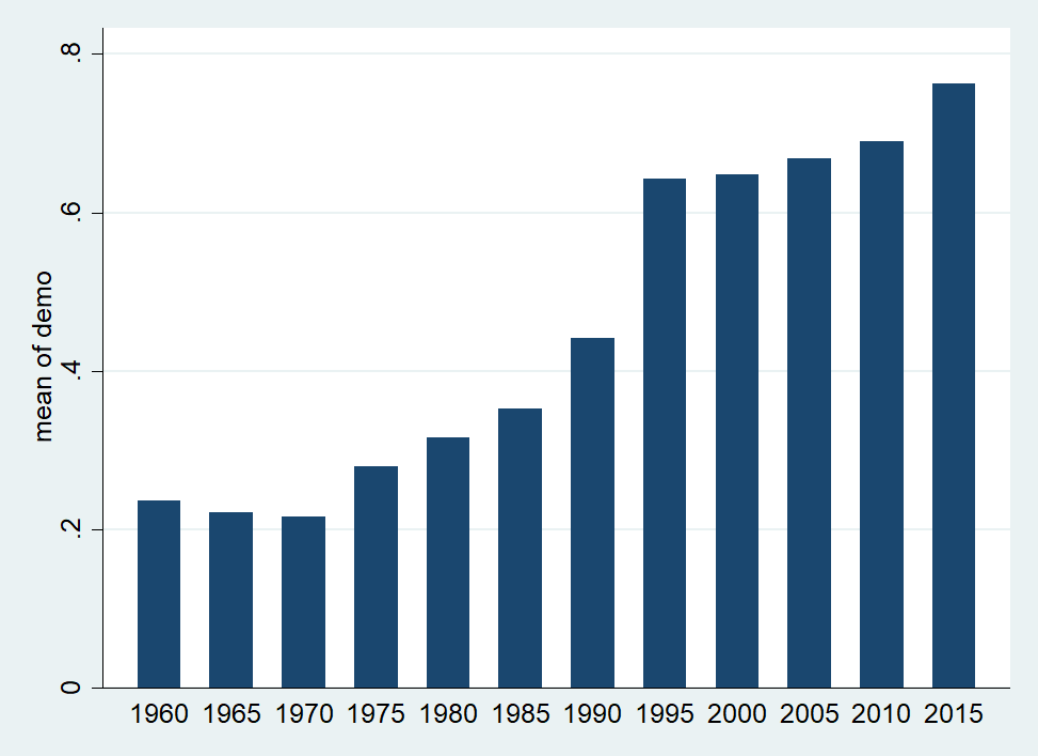

Figure C.2: Bar diagram between years and democracy.

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.

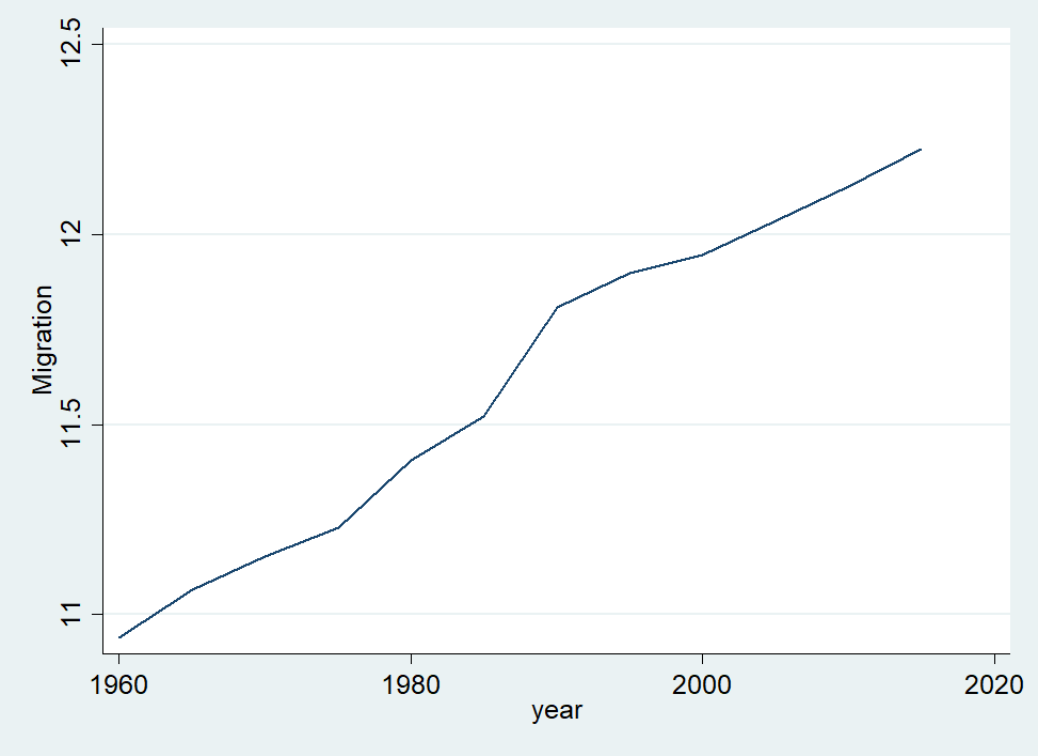

Figure C.3: Relationship between years and log of immigration.

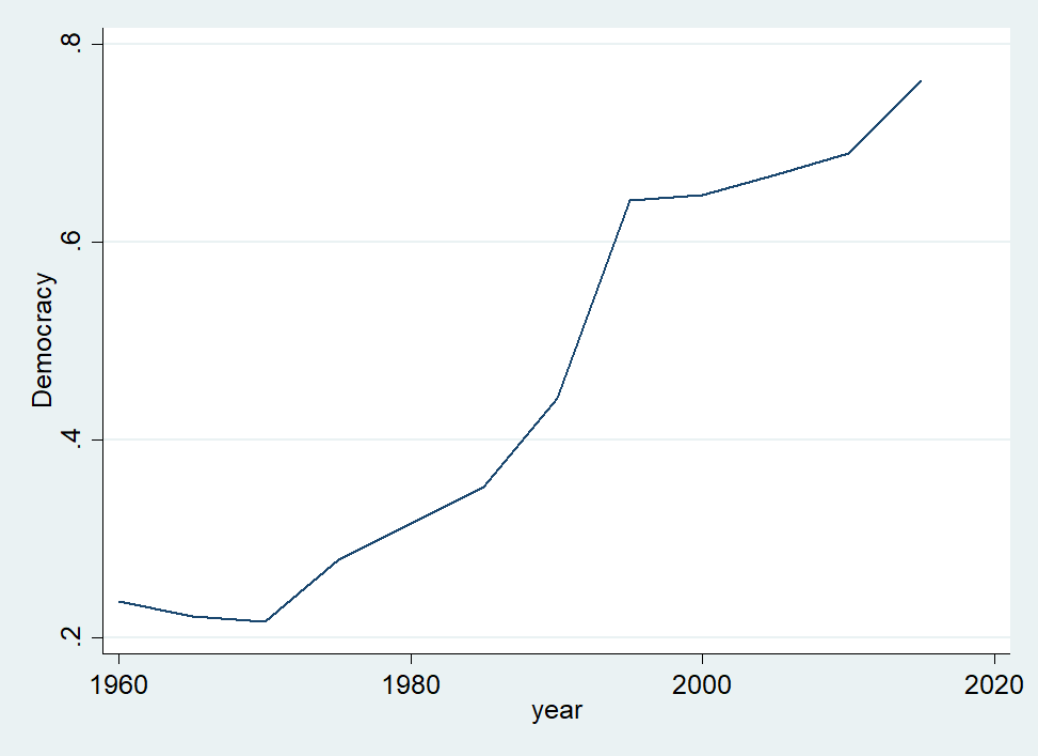

Figure C.4: Relationship between years and democracy

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

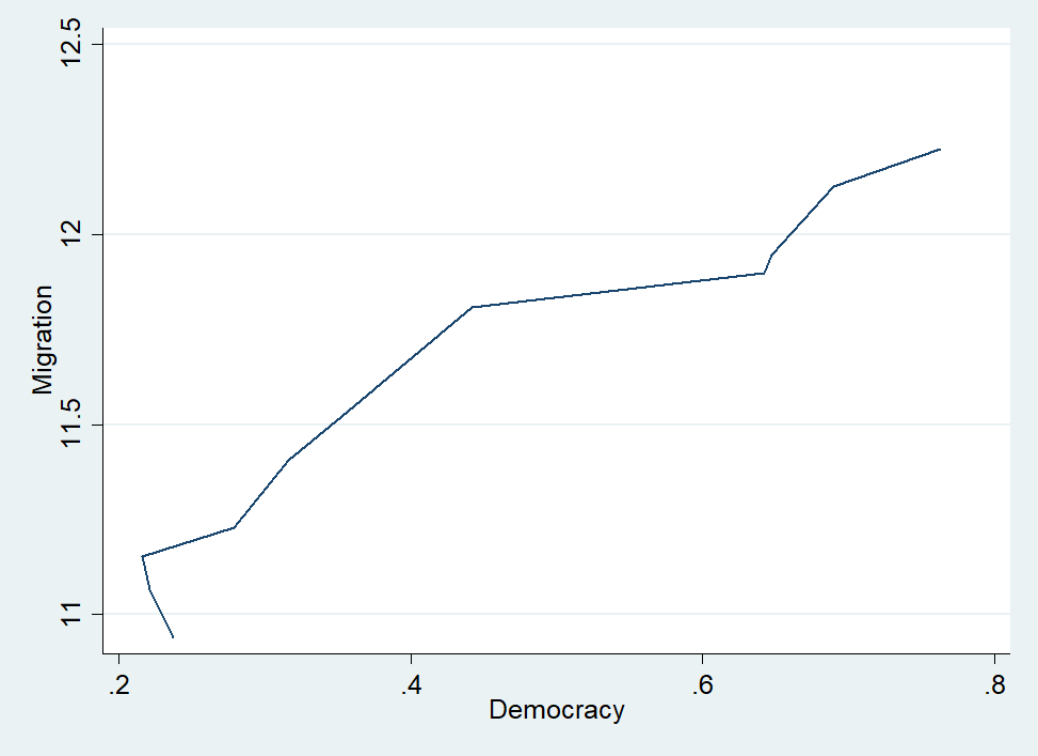

Figure C.5: Relationship between democracy and immigration

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

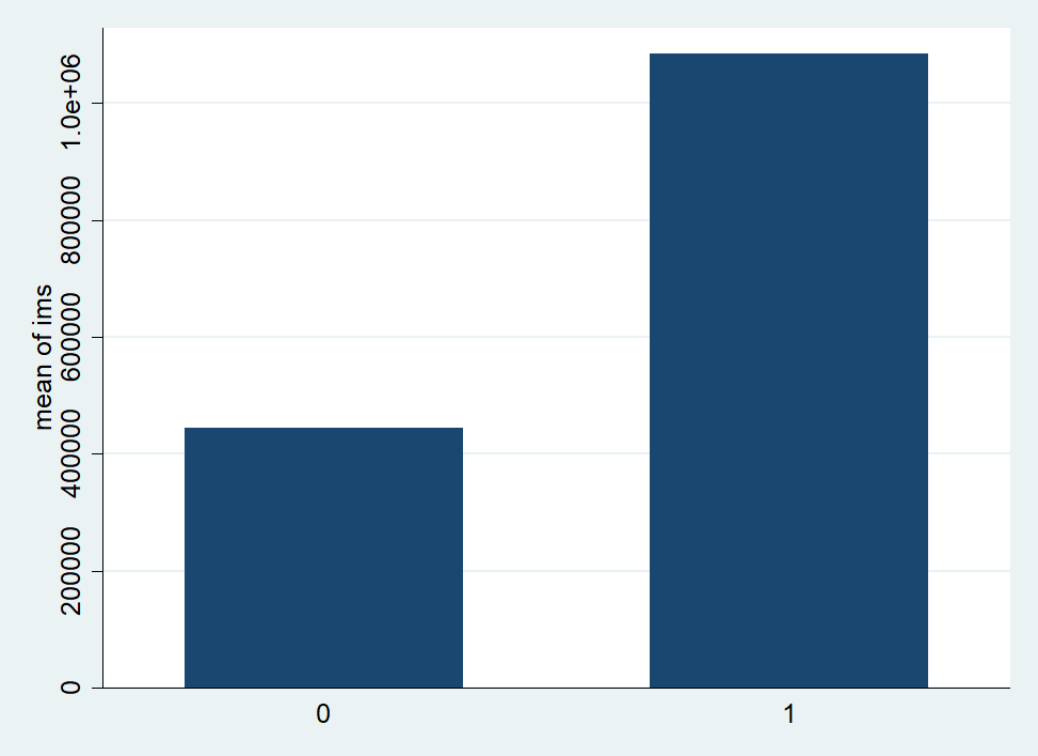

Figure C.6: Relationship between binary democracy variable and immigration

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