

Discussion Paper

No. 2016-23 | June 08, 2016 | <http://www.economics-ejournal.org/economics/discussionpapers/2016-23>

A Comparative Analysis of Forced Migration: Cold War Versus Post-Cold War Eras

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Abstract

This paper conducts a comparative analysis of forced international migration between two historical periods: 1969-1990 representing the Cold War era, and 1991-2012, the post-Cold War era. The determinants of refugee migration over the two periods are assessed and compared using a panel data analysis for a sample of 125 countries. In order to control for unobserved country-specific effects and the joint endogeneity of the explanatory variables, the Arellano-Bond Dynamic Panel GMM (Generalized Method of Moments) estimator is used. Overall, the results suggest that significant changes have taken place with both the set of explanatory variables and their individual impact on refugee migration over time. Also noteworthy is the significance of the two flight facilitators – the Internet and the telecommunication devices – included in the model to explain the refugee migration dynamics during the post-Cold War period.

JEL F22 D74 L86 L96 C23

Keywords Forced Migration; War and Conflicts; Flight Facilitators; GMM Dynamic Panel Data Analysis

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Citation Bilol Buzurukov and Byeong Wan Lee (2016). A Comparative Analysis of Forced Migration: Cold War Versus Post-Cold War Eras. Economics Discussion Papers, No 2016-23, Kiel Institute for the World Economy. <http://www.economics-ejournal.org/economics/discussionpapers/2016-23>

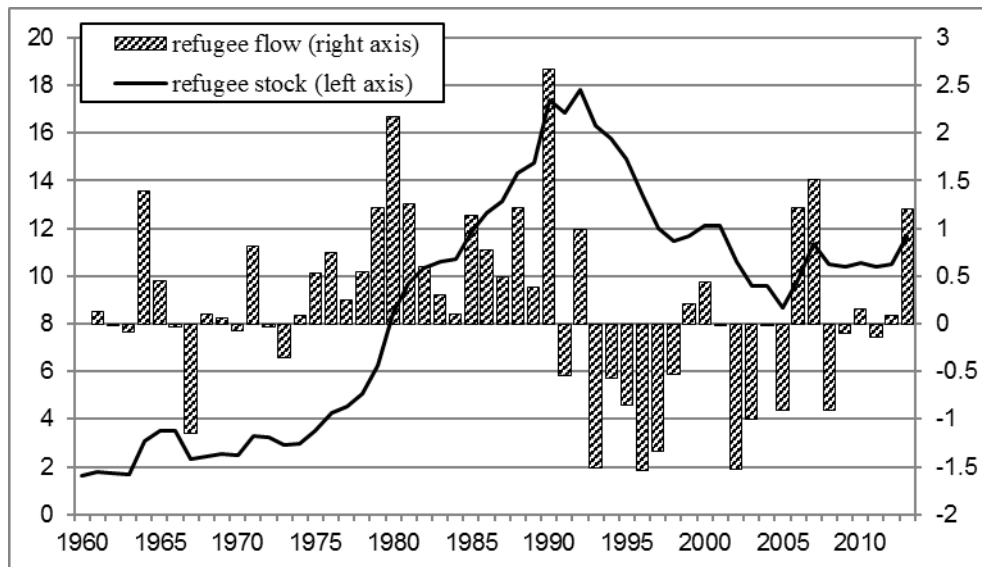
1. Introduction

I would argue that there is a difference between the refugee migration of the 1970s/1980s and the 1990 due to the end of the Cold War ... (Schmeidl, 1995)

The 1990's are excluded from the discussion because changes in the causes of refugee migration after the Cold War warrant separate attention. (Schmeidl, 1997)

This study is motivated by the statements cited above from Schmeidl (1995, 1997). With the end of the Cold War came major changes in conflict dynamics and international relations dynamics. Changes in socio-political and economic conditions also took place along with the advent of information age. All these changes point to the possibility of a change in migration dynamics.

Figure 1. Refugee stock and refugee flow (millions of persons)



The trend change in refugee stock and refugee flow from 1960-2013, shown in Figure 1, also suggests the possibility of a significant change in the underlying determinants of refugee migration following the end of the Cold War. In the Figure, refugee stock exhibits a steady upward trend spanning nearly four decades until it is abruptly reversed around 1991, the year the Soviet Union dissolved. Against this backdrop, this study conducts an in-depth analysis on the

determinants of refugee migration for the two dichotomized periods: the Cold War era (1969-1990) and the post-Cold War era (1991-2012).

Using refugee data from the UNHCR's statistics division, the study defines a refugee as someone who,

...owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group, or political opinion, is outside the country of his nationality, and is unable to or, owing to such fear, is unwilling to avail himself of the protection of that country. (UNHCR 2012)

The econometric model employs dynamic panel data methods to address problems of endogeneity and the regression results confirm that the key drivers of refugee migration differ notably between the two time periods. The rest of the paper is organized as follows: Section 2 provides a literature review. Section 3 describes the data and variables. Section 4 discusses estimation strategy and Section 5 presents the results followed by conclusion in Section 6.

2. A Literature Review

Based on the analytical framework used, most of the refugee studies can be sorted into three categories: case study analysis (Aga Khan, 1981; Clark 1983, 1989; Zolberg et al., 1989), bivariate analysis (Hakovirta, 1986; Gibney et al., 1994; Apodaca, 1998), and multiple regression analysis (Schmeidl, 1995, 1997; Davenport et al., 2003; Moore and Shellman, 2004, 2006).

Aga Khan (1981) is the first study that demonstrated a relationship between human rights violations and refugee migration. Based on case studies, he provided a general analysis of forced migration examining the major causes of mass exodus. In the same vein, Clark (1983, 1989) proposed a detailed model of refugee migration identifying root causes, proximate causes, and intervening factors. Zolberg et al. (1989), on the other hand, provided a conclusive framework of forced migration, conducting a comparative analysis of the largest cases of refugee flows based on a rich conceptual scheme. Despite their significant early contributions, they all fell short in that they did not go beyond the case study approach to test their theoretical assumptions.

Using bivariate correlations, Hakovirta (1986) pioneered the application of quantitative analysis in assessing the causes of refugee migration. He related refugee data (derived from UNHCR documents) to indicators of war, government repression, and violent conflicts. Similarly, Gibney et al. (1994) and Apodaca (1998) analyzed changes in refugee migration from a comparative perspective correlating various indicators of human rights violations with refugee flight. Despite some important empirical evidence produced, Hakovirta (1986) and Apodaca (1998), were subject to a selection bias because they only considered refugee producing countries, ignoring non-refugee-producing countries with similar structural conditions. Using global refugee population as the dependent variable, Gibney et al. (1994) did not take into account the cross-country variation in refugee population in their model. The empirical analysis strategy used in Gibney et al. (1994) and Apodaca (1998) was also bivariate correlations.

While Edmonston (1992) employed a multiple regression analysis to compare refugee migration across time and space, his analysis lacks theoretical underpinnings. It was Schmeidl (1995, 1997) that produced the most comprehensive work on forced migration. In her seminal studies, she based her hypotheses on solid theoretical grounds providing insightful interpretations of her findings. She conducted a pooled time series analysis to identify the causes of refugee migration and used refugee stock (obtained from UNHCR and USCR) as the dependent variable. She also distinguished the determinants of forced migration into three categories – root causes, proximate conditions, and intervening factors (see, Clark, 1989). While using Schmeidl (1997) as a benchmark study, Davenport et al. (2003) adopted a micro-foundation approach in studying people's decisions to abandon their homes. In contrast to Schmeidl (1997), they used net migration as the dependent variable taking into account both refugees and internally displaced people in their model. They also paid close attention to the political dynamics of different groups of people in the society that compete for political power emphasizing their threatening behavior as an important cause of forced migration. On the other hand, Moore and Shellman (2004, 2006) focused mainly on push factors that motivate people to flee their homes. Overall, the empirical findings of these studies (Schmeidl, 1995, 1997; Davenport et al., 2003; Moore and Shellman, 2004, 2006) support one another, but none of them adequately addresses the issue of endogeneity in their regression models, which could result in biased estimates despite the sample size being large enough. And none of them conducted a comparative analysis for changing migration dynamics over the Cold War versus post-Cold War periods.

3. Data and Variables

The panel data constructed for this study covers a total of 125 countries for the years 1969-2012 after excluding countries with a population size below 100,000 and territories. Table A1 in the Appendix provides a list of these countries. Except for Singapore, Qatar and South Korea, countries chosen are from the developing world, all currently on the OECD DAC (Development Assistance Committee) List of ODA (Official Development Assistance) Recipients. The ending year of the sample was chosen based on availability of data across all variables. The sample period is divided into the Cold War (1969-1990) and the post-Cold War (1991-2012) periods in order to compare and contrast how the explanatory variables' influence changed between the two periods. Great care was taken to ensure validity of the data for each variable in terms of consistency and relevance.¹ Table A2 in the Appendix provides descriptive statistics for all the variables.

3.1 The Dependent Variable

Data for the dependent variable, refugee stock, were obtained from the UNHCR's statistics division and Schmeidl and Jenkins (1999). The variable measures the raw number of the refugee population for each country and for each year. Comparing the data from the two datasets for the 1969-2012 period, a third dataset was created replacing zeros or missing observations in UNHCR refugee data with corresponding non-zero values in the dataset from Schmeidl and Jenkins (1999).

Of the three datasets, our regression models performed the best on the original UNHCR dataset, and, therefore, regression results are reported in the next Section for the UNHCR refugee population data which includes individuals recognized under the 1951 Convention related to the status of refugees, its 1967 protocol, the 1969 OAU Convention Governing the Specific Aspects of Refugee Problems in Africa, and individuals who were granted temporary protection (UNHCR, 2013). A value of one is added to each observation to log-transform the dependent variable as a way to reduce the skewness of the distribution while mitigating the potential

¹ Piecewise constant interpolation and linear interpolation methods were used to estimate missing values. In applying the interpolation techniques, efforts were made to enhance accuracy by considering the socioeconomic and political conditions of each country. However, regression results with and without interpolated data points displayed no significant differences.

problem of autocorrelation and heteroskedasticity. The regression model also includes a lagged value of the dependent variable as a proxy for a flow measure of the refugee stock.

3.2 Explanatory Variables

Right-hand side variables, that influence and determine our dependent variable, are derived based on theoretically hypothesized and empirically tested candidate variables proposed in previous studies (see, Schmeidl, 1995, 1997; Davenport et al., 2003; Moore and Shellman, 2004, 2006).

To capture the impact of modern means of communication on refugee migration, two additional factors, the Internet and telecommunication, are also considered in our model and constructed as flight facilitators.

Socioeconomic Hardship and Population Pressure: As a proxy for socioeconomic hardship presumably caused by economic underdevelopment, GDP per capita (in USD) is considered, and data are from the United Nations Statistics Division (UNSD, 2014) which is considered the most complete data source with fewest missing values for this variable. Population pressure is proxied by population density (people per km² of land area) and data are obtained from the World Bank Data Tables (2014).

Civil Liberties: Also considered, as an important driver of refugee migration, are restrictions and violations of civil liberties that lead to human rights violations. As a proxy for human rights violations, Civil Liberties and Political Rights indicators from Freedom House Indices (2014) are considered. The two indices, both scaled from 1 to 7 with 1 representing the fewest violations and 7 representing the most, are highly correlated with each other with the correlation coefficient exceeding 0.9. Between the two indices, the Civil Liberties index is used in the regression analysis because it outperformed the other index.

Nonviolent and Violent Ethnic Conflicts: To determine the impact of nonviolent and violent ethnic conflicts on cross-border refugee migration, ethnic protest (nonviolent conflicts) and ethnic rebellion (violent conflicts) variables from the Minorities at Risk Project (2009) and Gurr's (1993) Minorities at Risk data are used. Ethnic protest variable is scaled from 0 to 5 with 0 indicating no reported protest and 5 indicating the most serious protest with the number of

participants exceeding 100,000. The ethnic rebellion variable is scaled from 0 to 7 with 0 indicating no reported rebellion and 7 indicating the most serious rebellion amounting to a protracted civil war.

Genocide and/or Politicide: To obtain a suitable measure of genocide and politicide, several sources of data are examined including Fein (1993), Krain (1997), Harff (2003), Uzonyi (2014), and Countries at Risk Reports 2008-2014 (Genocide Watch, 2014). Some of these sources provide death toll statistics from episodes of genocide and politicide but the numerical data generally have low accuracy. Therefore, a dummy variable is used with 1 representing countries that experienced genocide and/or politicide and 0 otherwise.

Civil War and Inter-State War: Data on civil war and inter-state war incidents are obtained from the intra-state and the inter-state war data of the Correlates of War Project (Sarkees and Wayman, 2010), respectively. To verify the impact of civil war on refugee migration, the data collected are operationalized with a dummy variable that assigns 1 if a civil war is in progress and 0 if a war episode is absent. In the case of inter-state wars, the dummy variable gets 1 for countries with hot battle fields and 0 for others. The inter-state data from Sarkees and Wayman's (2010) cover the period 1816 to 2007 and data for the remaining years of the sample period, 2008-2012, are constructed based on multiple cross-checks of diverse online sources.

Internet and Telecommunication: With the advent and rapid spread of the Internet and telecommunication devices, potential refugee migrants are now allowed easier, faster and cheaper access to important and sensitive information (as needed, for example, when seeking protection in the outside world) and services in both wireless and wired communication. In order to identify the impact of these modern-day flight facilitators on cross-border refugee migration, data on the Internet users, mobile phone and land-line subscriptions (each per million people) are obtained from the World Bank Data Tables (2014). The measures of mobile and land-line subscriptions are arithmetically combined into a new variable named Telecommunication in the regression analysis. Because some of the observations for this variable are zero for some countries, a value of one is added to each observation to log-transform the variable to reduce the skewness in the distribution of the sample observations.

4. Estimation Strategy

The dynamic theory of international migration argues that acts of migration at one point in time systematically alter the context within which future migration decisions are made, greatly increasing the likelihood that later decision makers will choose to migrate (Massey et al. 1993). The study addresses such dynamics in refugee migration by employing a dynamic panel data framework that applies the generalized method of moments (GMM) estimator. Specifically, the estimator used is the Arellano-Bond Dynamic Panel GMM estimator (see, Arellano and Bond 1991; Arellano and Bover 1995) that is designed to handle unobserved country-specific effects and the joint endogeneity of some of the explanatory variables. The standard form of this estimation method constructs the regression model as follows:

$$Y_{it} = \rho Y_{i(t-1)} + X_{it}\beta' + \eta_i + \varepsilon_{it}, \quad (1)$$

where Y_{it} is the refugee stock, $Y_{i(t-1)}$ is the one-period lagged dependent variable (or a proxy for a flow measure), X_{it} represents the set of explanatory variables, η_i is a country-specific unobserved factor, and ε_{it} is the error term.

Following the GMM estimation technique, first differencing of specification (1) eliminates the unobserved country-specific effect and produces an equation of the form:

$$\Delta Y_{it} = \rho \Delta Y_{i(t-1)} + \Delta X_{it}\beta' + \Delta \varepsilon_{it}, \quad (2)$$

which can be properly estimated using the Arellano-Bond Dynamic Panel GMM estimator. This estimator employs a different set of instruments for each period, with the period-specific instruments corresponding to the different numbers of lagged dependent and predetermined variables available for a given period. Therefore, along with any strictly exogenous variables, this estimator gives an opportunity to use period-specific sets of instruments corresponding to lagged values of the dependent and other predetermined variables. In order to identify the validity of instruments in the regression model, a Sargan test for over-identifying restrictions is employed. Failure to reject the null hypothesis of this test suggests proper specification of the model. The issue of autocorrelation is addressed through the first-order and the second-order serial correlation tests. To check whether the regression is affected by multicollinearity, the

Variance Inflation Factors (VIF) are calculated (the factors for all individual variables are below one). Moreover, the regression models are re-estimated with and without outliers but they do not produce any significant differences.²

5. Empirical Results

Table 1 presents the Arellano-Bond Dynamic Panel GMM estimation results for only the best-fitting models, Model [1-1] for the Cold War (1969-1990) period and Model [1-2] for the post-Cold War (1991-2012) period. The final model includes only 11 explanatory variables as primary independent variables. All other variables found to be insignificant for both periods are dropped from the final model.³

Table 1 also reports p-values of the Sargan test for over-identifying restrictions and Arellano-Bond first- and second-order serial correlation test results. First-order serial correlation of the differenced error term is expected even if the original error term is uncorrelated. The original error term is considered to be serially uncorrelated if the second-order serial correlation test fails to reject the null hypothesis, which indicates proper specification of the moment conditions. As demonstrated, the p-values of both specification tests fail to reject the null hypothesis indicating the validity of instruments and no serial correlation in the error terms. In what follows, regression results are discussed following the order of the 11 explanatory variables as listed in Table 1.

Logged Refugee Stock (-1): One of the most significant explanatory variables is the refugee stock lagged by one year, which lends a strong support for the argument that the information environment reduces the transaction cost of relocation (Massey et al., 1993; Schmeidl, 1995; Massey and Espinosa, 1997; Davenport et al., 2003). The coefficient estimates from the two models indicate that, with all other variables held constant, a country that produces 1% more refugees this year produces an average of 0.5% (the Cold War era) and 0.8% (the post-Cold War era) more refugees in subsequent years if there was no improvement in the country's conditions.

² A country is considered an outlier if its standardized residuals deviate more than two standard deviations away from zero for multiple years.

³ In addition, time invariant variables are not considered in the analysis because of the estimation procedure of the Arellano-Bond Dynamic Panel GMM estimator. Therefore, important time invariant variables such as distance, land border access, and geographic obstacles are not included in the model (see, Schmeidl 1995, 1997).

The main difference between the two periods is that the inertia of refugee flow is stronger in the post-Cold War period.

**Table 1. Arellano-Bond Dynamic Panel GMM Estimation Results
For a 125-country Sample**

Dependent Variable: Log (Refugee Stock)	Cold War Era	Post-Cold War Era
	[1-1]	[1-2]
Log (Refugee Stock(-1))	0.544*** (0.0000)	0.785*** (0.0000)
Log (GDPPC)	0.184 (0.1607)	-0.205*** (0.0000)
Log (Population Density)	-1.282** (0.0211)	-0.218 (0.3876)
Civil Liberties	0.063* (0.0748)	0.167*** (0.0000)
Non Violent Conflict	0.038 (0.3728)	0.028*** (0.0008)
Violent Conflict	-0.055** (0.0239)	0.056*** (0.0000)
Genocide/Politicide	1.134*** (0.0001)	0.366 (0.465)
Civil War	0.541*** (0.0000)	0.251*** (0.0000)
Inter State War	0.503*** (0.0003)	-0.042 (0.7851)
Log (Internet)	-	-0.025*** (0.0053)
Log (Telecommunication)	-	-0.105*** (0.0086)
<i>Specification Tests (p-values)</i>		
<i>a) Sargan Test</i>	0.25005	0.15259
<i>b) AB Serial Correlation Test</i>		
<i>First-Order</i>	0.0058	0.0003
<i>Second-Order</i>	0.1546	0.5947
<i># of observations</i>	2500	2500
<i># of countries</i>	125	125
<i>Sample Period</i>	1969-1990	1991-2012

Notes: *, **, and *** indicate significance at 10%, 5%, and 1%, respectively. Numbers in parentheses are p values.

Logged GDP Per Capita: The second explanatory variable is the logged GDP per capita, a proxy chosen for socio-economic hardship caused by economic underdevelopment. Prior studies have argued that economic factors significantly contribute to the likelihood of refugee migration (Edmoston, 1992; Wood, 1994; Schmeidl, 1995, 1997; Davenport et al, 2003; Moore and Shellman, 2004). According to Model [1-1] estimated for the Cold War period, economic underdevelopment plays no role, which is consistent with the findings for the same period from previous studies such as Schmeidl (1995, 1997) and Davenport et al. (2003).

Model [1-2], estimated for the Post-Cold War period, reveals a highly significant outcome with the expected sign suggesting that for every 1% increase in a country's per person income, refugee stock will be 0.2% less. This result for the Post-Cold War period provides support for the hypothesis that poverty is an important factor influencing forced migration.

Logged Population Density: The third explanatory variable is population density, a proxy for population pressure. Over the Cold war period, as shown in Model [1-1], every 1% increase in population density, ceteris paribus, is associated with a 1.2% decrease in refugees. Schmeidl (1997) offers an economic while Crenshaw (1995) offers a socio-political interpretation for such negative relationship between population pressure and refugee migration. According to Schmeidl (1997), "people residing in areas with high population density might value land so much that they may be reluctant to leave it even in the face of overt violence". On the other hand, Crenshaw (1995) argues that population density would involve social complexity, which could be associated with democracy thus lowering levels of political violence.

Over the post-Cold War period, however, as shown in Model [1-2], the coefficient estimate of population density is insignificant at any acceptable level. Population density is a significant determinant of refugee migration over the Cold War era but it loses its significance over the post-Cold War era.

Civil Liberties: The fourth explanatory variable is an index for restrictions and violations of civil liberties, a proxy for the home country's human rights situation. Some studies (Aga Khan, 1981; Hakovirta, 1986; Gibney et al., 1994; Schmeidl, 1995, 1997) have suggested that human rights violations increase the number of refugees. Regression results for Models [1-1] and [1-2] show that while the influence of human rights violations are positive and significant for both periods, it grew stronger during the post-Cold War period. With all other variables held constant, every one-point increase in the incidence of human rights violations is associated with a 0.2% increase in refugee population over the post-Cold War period, up markedly from 0.06% over the Cold War period. Increased explanatory power of human rights situation variable over refugee outflow suggests that, with the demise of the Cold War era, people around the world have become more aware and sensitive to the issues of human rights seeing human rights violations as serious problems that threaten their integrity and safety.

Nonviolent Conflicts: The fifth explanatory variable represents ethnic protests (peaceful demonstrations over ethnic issues) as a measure of nonviolent conflicts. According to Hakovirta (1986), Zolberg et al. (1989), and Schmeidl (1995, 1997), civil conflicts increase the likelihood of refugee migration. In contrast, present study finds that ethnic protests have no significant effect on refugee exodus over the Cold War period. With the end of the Cold War era, however, nonviolent ethnic demonstrations have become a significant determinant of refugee migration with each one-point increase in peaceful demonstrations raising the likelihood of refugee migration by about 0.03%.

Violent Conflicts: The sixth explanatory variable, a proxy to address the effect of violent conflicts, represents ethnic rebellions. In Schmeidl (1995, 1997) and Davenport et al. (2003), escalation of ethnic conflicts into rebellions is shown to have a direct positive impact on refugee migration. The results for Models [1-1] and [1-2] exhibit significant yet contradicting findings with this variable between the Cold War and the post-Cold War periods. During the Cold War period, violent conflicts have a negative relationship with refugee migration in contrast to the findings in Schmeidl (1995, 1997) and Davenport et al. (2003). An increase in ethnic rebellions lowers the odds of refugee migration during the Cold War period presumably due to the prevailing overall socio-political situations where borders were strictly controlled by oppressive governments and exit permits (or visas) were not accessible to people involved in anti-government activities. In addition, due to lack of access to reliable information sources, people were allowed limited exposure to the possibilities of seeking protection elsewhere during the Cold War period.

During the post-Cold War period, the relationship between violent conflicts and refugee migration becomes positive most likely due to the rapid socio-political transformations that curtailed transaction and information costs, a finding that is in accord with the estimation results reported in Schmeidl (1995, 1997) and Davenport et al. (2003).

Genocide and/or Politicide: The seventh explanatory variable is a binary variable indicating presence or absence of genocide and/or politicide. Genocide (politicide) is considered one of the worst types of human rights violations that cause people to abandon their homes in large numbers (Fein, 1993; Schmeidl, 1995, 1997; Davenport et al., 2003). This dichotomous measure of genocide (politicide) is one of the most significant explanatory variables in Model [1-1]. The

coefficient estimate of the Genocide dummy suggests that refugee migrants are likely to be 1.1% greater in number for countries that have experienced genocide (politicide) during the Cold War period.

In striking contrast, as shown in Model [1-2], the Genocide dummy is insignificant during the post-Cold War period suggesting no meaningful effect of genocide (politicide) on refugee migration. A possible reason for this may lie in the fact that the number of countries that experienced genocide (politicide) is far fewer during the post-Cold War period (8 countries) compared to the Cold War period (25 countries).

Civil War: The eighth explanatory variable is also a binary variable that represents presence/absence of civil wars. Refugee scholars have argued that civil wars increase the likelihood of refugee migration (Schmeidl, 1995, 1997; Davenport et al., 2003; Moore and Shellman, 2004, 2006). The results for Models [1-1] and [1-2] show that the civil war dummy is positive and highly significant for both Cold War and post-Cold War periods. All other variables being equal, an ongoing civil war increases the odds of refugee migration by an average of 0.54% and 0.25% over the Cold War and the post-Cold War periods, respectively. The results also indicate that the effect of civil war on refugee migration decreased to about half between the two periods.

Inter-State War: The ninth variable is also a dummy variable that addresses the effect of international territorial wars. According to Schmeidl (1995, 1997) and Moore and Shellman (2004), the presence of an international territorial war increases the likelihood of refugee migration. In Model [1-1], the inter-state war dummy is highly significant with a positive sign. The coefficient estimate of the dummy suggests that, during the Cold War period, the number of refugees is likely to be about 0.5% higher for countries that are involved in an international war. Over the post-Cold War period, however, the dummy becomes insignificant indicating no meaningful effect of international wars on refugee migration.

Logged Internet: The tenth explanatory variable is the number of users of the Internet per million people. This Internet user ratio variable is not included in Model [1-1] because the Internet was first introduced toward the end of the Cold War era. This flight facilitator variable is highly significant but with a negative sign in Model [1-2] suggesting that, with all other variables

held constant, for every 1% increase in the number of Internet users per million people, the number of refugees leaving the country will be 0.03% fewer.

Logged Telecommunication: The eleventh and final explanatory variable is arithmetic sum of mobile phone and landline phone subscriptions per million people. Similar to the Internet user ratio variable, this variable is highly significant but also has a negative sign. Model [1-2] in Table 1 suggests that, with all other variables held constant, every 1% increase in mobile and fixed line subscriptions per million people is associated with a 0.1% decrease in the number of refugees.⁴

The findings for the two flight facilitator variables, Log (Internet) and Log (Telecommunication), are essentially the same and they suggest that the widespread use of the Internet and telecommunication devices leads to a decrease, rather than an increase, in the odds of refugee migration by giving people easy and prompt access to information on the real obstacles and challenges they would face in seeking protection in other countries. That is, the modern-day information tools, while they reduce information search and transaction costs, have more discouraging than encouraging effect on refugee migration decision making.

6. Conclusions

With the analysis period spanning 44 years from 1969-2012, this study conducts an in-depth analysis on the determinants of refugee migration. Motivated by mentions in the literature of a possible regime change in the determinants of forced international migration before and after the end of the Cold War, the analysis is conducted for the two dichotomized periods: the Cold War era (1969-1990) and the post-Cold War era (1991-2012). Two modern-day facilitators to refugee flight, the Internet and mobile communication devices, are considered into the model to address the impact of technological changes on refugee migration. The econometric model employs dynamic panel data methods to address problems of endogeneity and the dataset covers a total of 125 countries.

⁴ The data for landline phone subscriptions, though not complete, are available for the Cold War period but the measure using these data performs poorly on Model [1-1] warranting exclusion of this variable from Model [1-1].

Regression results confirm that the key drivers of refugee migration differ notably between the two time periods. Over the Cold War period, refugee migration is driven primarily by genocide, civil and international wars. In contrast, over the post-Cold War period, refugee migration is driven primarily by poverty, human rights violations, and violent/non-violent conflicts. With the end of the Cold War, the impact of civil wars, while still significant, weakens, and the impact of international wars and population density loses significance. The two flight facilitators, the Internet and the telecommunication devices, reveal significant but negative influence on refugee migration over the post-Cold War period suggesting their migration-inhibiting effect. Also evident from the results is that both periods are marked by substantial inertia in refugee migration.

Acknowledgments: We thank Susanne Schmeidl for providing her refugee data. We are also grateful to all those organizations and institutions that make their data easily accessible online.

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Appendix

Table A1: List of countries considered in the regression analysis

No.	Country	No.	Country	No.	Country
1.	Afghanistan	43.	Ghana	85.	Pakistan
2.	Albania	44.	Grenada	86.	Panama
3.	Algeria	45.	Guatemala	87.	Papua New Guinea
4.	Angola	46.	Guinea	88.	Paraguay
5.	Argentina	47.	Guinea-Bissau	89.	Peru
6.	Bahamas	48.	Guyana	90.	Philippines
7.	Bahrain	49.	Haiti	91.	Qatar
8.	Bangladesh	50.	Honduras	92.	Rwanda
9.	Barbados	51.	India	93.	Samoa
10.	Belize	52.	Indonesia	94.	Sao Tome and Principe
11.	Benin	53.	Iran	95.	Saudi Arabia
12.	Bhutan	54.	Iraq	96.	Senegal
13.	Bolivia	55.	Israel	97.	Sierra Leone
14.	Botswana	56.	Ivory Coast	98.	Singapore
15.	Brazil	57.	Jamaica	99.	Solomon Islands
16.	Brunei	58.	Jordan	100.	Somalia
17.	Burkina Faso	59.	Kenya	101.	South Africa
18.	Burundi	60.	Kuwait	102.	South Korea
19.	Cambodia	61.	Laos	103.	Sri Lanka
20.	Cameroon	62.	Lebanon	104.	St. Lucia
21.	Cape Verde	63.	Lesotho	105.	St. Vincent and the Grenadines
22.	Central African Republic	64.	Liberia	106.	Sudan
23.	Chad	65.	Libya	107.	Suriname
24.	Chile	66.	Madagascar	108.	Swaziland
25.	China	67.	Malawi	109.	Syria
26.	Colombia	68.	Malaysia	110.	Tanzania
27.	Comoros	69.	Maldives	111.	Thailand
28.	Congo DR	70.	Mali	112.	Timor-Leste
29.	Congo R	71.	Mauritania	113.	Togo
30.	Costa Rica	72.	Mauritius	114.	Trinidad and Tobago
31.	Cuba	73.	Mexico	115.	Tunisia
32.	Cyprus	74.	Mongolia	116.	Turkey
33.	Djibouti	75.	Morocco	117.	Uganda
34.	Dominican Republic	76.	Mozambique	118.	United Arab Emirates
35.	Ecuador	77.	Myanmar	119.	Uruguay
36.	Egypt	78.	Namibia	120.	Vanuatu
37.	El Salvador	79.	Nepal	121.	Venezuela
38.	Equatorial Guinea	80.	Nicaragua	122.	Vietnam
39.	Eritrea	81.	Niger	123.	Yemen
40.	Ethiopia	82.	Nigeria	124.	Zambia
41.	Gabon	83.	North Korea	125.	Zimbabwe
42.	Gambia	84.	Oman		

Table A2: Descriptive Statistics of the Variables

<i>Variables</i>	<i>Mean</i>	<i>SD</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Obs.</i>	<i>Period</i>
Refugee Stock	61431	328002.35	0	6339095	5500	1969-2012
GDPPC	2948.93	6266.79	33.55	92632.63	5500	1969-2012
Population Density	138.12	470.92	0.79	7589.14	5500	1969-2012
Civil Liberties	4.39	1.68	1	7	5500	1969-2012
Non Violent Conflict	1.11	1.44	0	6	5500	1969-2012
Violent Conflict	1.02	2.04	0	7	5500	1969-2012
Genocide/Politicide	0.06	0.24	0	1	5500	1969-2012
Civil War	0.104	0.31	0	1	5500	1969-2012
Inter-State War	0.018	0.13	0	1	5500	1969-2012
Internet	38651.63	108349.92	0	880000	5500	1969-2012
Mobile Phone	129858.4	300945.08	0	1934526.84	5500	1969-2012
Line Phone	5776893	9076535.77	0	61423524.5	5500	1969-2012

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