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THE GLOBALIZATION OF REFUGEE FLOWS

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**ABSTRACT**

This paper analyzes the spatial distribution of refugees over 1987-2017 and establishes several stylized facts about refugees today compared with past decades. Refugees still predominantly reside in developing countries neighboring their country of origin. However, compared to past decades, refugees today (i) travel longer distances, (ii) are less likely to seek protection in a neighboring country, (iii) are less geographically concentrated, and (iv) are more likely to reside in a high-income OECD country. The findings bring new evidence to the debate on refugee responsibility-sharing.

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# 1 Introduction

By the end of 2017, the world had witnessed its highest recorded number of forcibly displaced people worldwide to date at 68.5 million persons, including 3.1 million asylum-seekers and 25.4 million refugees.<sup>1</sup> While that number includes 4.0 million refugees from older conflicts in Afghanistan and Somalia, 10.1 million of these are from the more recent crises in Syria, Myanmar, and South Sudan.

The 1951 Convention Relating to the Status of Refugees (complemented by the 1967 Protocol) determines that refugee status shall be granted to any person who finds her or himself displaced “owing to well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion” (Art. 1.A.2.). Signatory states commit to provide treatment “no less favorable than nationals of foreign countries in the same circumstances” with respect to employment (Art. 17), housing (Art. 21), education, and public relief (Art. 22 and 23).

Most importantly, the Convention underlines the need for solidarity among countries in sharing the responsibility for hosting refugees. Yet, the non-refoulement clause (Art. 33) implies that first countries of contact with asylum seekers are often those who have to provide protection. Other signatories, on the other hand, can voluntarily decide on their involvement in responsibility-sharing, potentially leading to free-riding (Suhrke 1998, Bubb, Kremer and Levine 2011). This creates a fundamental imbalance across UN Member States, with political and fiscal constraints of host countries having been associated with a lack of adequate assistance (Hathaway and Neve 1997, Crisp 2003) and an additional reason for setting up refugee camps (Smith 2004).

On December 17, 2018, the United Nations General Assembly affirmed the Global Compact on Refugees (UN General Assembly 2018), after two years of extensive consultations led by UNHCR with UN Member States, international organizations, refugees, civil society, the private sector, and experts. The Global Compact on Refugees opens by stressing that “there is an urgent need for more equitable sharing of the burden of and responsibility for hosting and supporting the world’s refugees, while taking ac-

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<sup>1</sup>Asylum seekers have crossed a national border and have applied for international protection. When asylum is granted, they become refugees. These figures only include refugees and asylum-seekers under the mandate of the United Nations High Commissioner for Refugees (UNHCR). Palestine refugees account for another 5.3 million persons and are under the mandate of the United Nations Relief and Works Agency for Palestine refugees in the Near East (UNRWA).

count of existing contributions and the differing capacities and resources among States.” It formally “intends to provide a basis for predictable and equitable burden- and responsibility-sharing among all United Nations Member States, together with other relevant stakeholders as appropriate.” Underpinning the global debate on responsibility-sharing is the assumption that “the grant of asylum may place unduly heavy burdens on certain countries” (UN General Assembly 2018), typically countries neighboring a conflict area. In this perspective, the number of refugees a country is to host is simply a function of its geography.

This paper examines empirically the proposition that the hosting of refugees falls disproportionately on neighboring countries, which in most cases are in the developing world. To do so, we use data on worldwide bilateral refugee stocks compiled by UNHCR to examine the spatial distribution of refugees and its evolution over time. Our period of analysis is 1987-2017.

Our main findings can be summarized as follows. While refugees still remain overwhelmingly in a country neighboring their country of origin, the past decades have seen a trend towards greater geographic diffusion. We begin by showing that the global population of refugees has been increasingly dispersed across host countries, as captured by a falling Herfindahl index of host-country shares.

We then document several features of the data underlying this greater diffusion, using four outcome measures of refugee spatial distribution. First, we compute the average distance refugees have traveled between their country of origin and their country of destination. The average distance traveled by refugees has increased substantially over time. Next, we look at the probability that source and host countries are contiguous, and show that the share of refugees going to an adjacent country has fallen. Third, we construct a measure of refugee spatial dispersion by computing the Herfindahl index of refugee shares by source country. The Herfindahl index of refugee shares fell substantially over time, indicating that refugees from a given conflict are now more dispersed across host countries.

These results paint a picture of a more globalized and far-reaching refugee network and imply a more equal distribution of the responsibility for hosting refugees, albeit with the backdrop of highly unequal distribution to start with. To get some indication

about where refugees go, we compute the share of refugees seeking protection in high-income OECD countries. We find that high-income OECD countries host an increasing share of the global refugee population. As of 1990, under 5 percent of refugees resided in a high-income OECD country. This share grew to nearly 25 percent by the mid-2000s, before falling somewhat to 15 percent, still triple the 1990 value.

To alleviate compositional issues, we project the matrix of distances traveled on source country fixed effects and time effects. Source fixed effects control for time-invariant country characteristics, and thus allows us to rule out that changes over time in average distance traveled by refugees are driven by differences over time in which countries experience conflict. Moreover, analyzing each refugee situation as an event-study, we observe that the increased spatial dispersion of refugees is a phenomenon that occurs at the onset of a situation rather than the outcome of geographical diffusion over time.

The theoretical literature on refugee hosting has advocated for an international system of quotas (Hathaway and Neve 1997), which could even be tradeable (Schuck 1997). However, there are few empirical analyses of refugee data that can inform policy. A notable exception is Dreher, Fuchs and Langlotz (2019), which looks at bilateral aid flows and argues that donor countries use aid as a way to reduce the flow of refugees entering their territory. As such, they establish the existence of some form of bargaining with transferable utility between potential host countries. To further the debate on refugee hosting, Bubb et al. (2011) discuss a system of financial transfers from richer countries to poorer ones for hosting refugees and at the same time distinguishing the international protection of asylum seekers from economic migration. One could see such mechanisms at work in recent cooperation agreements between the EU and third countries such as Jordan or Turkey (Temprano Arroyo 2019).

The rest of the paper is organized as follows. Section 2 describes the data used in the analysis. Section 3 presents the results. Section 4 concludes.

## 2 Data

Our analysis is primarily based on data on refugee stocks compiled by the UNHCR. UNHCR annually publishes the data on refugee stocks by source and destination country pair. The term “refugee” includes both refugees and asylum seekers. Under the 1951 Convention Relating to the Status of Refugees and the 1967 Protocol, a refugee is defined as “a person who has been forced to flee his or her country because of persecution for reasons of race, religion, nationality, political opinion or membership in a particular social group” (Art 1.A.2.).

The UNHCR Population Statistics Reference database contains data for the period 1951 – 2017 (released on June 19, 2019). The data set compiles annual stocks of refugees and asylum seekers at the source-destination level for 197 destination and 223 source countries. The ultimate source of the data is the authorities of each receiving country. While in principle there are observations going back to 1951, coverage prior to the late 1980s is too sparse to be usable. Thus, our analysis covers the period 1987-2017. Overall, we have 112,522 non-zero observations for bilateral stocks over the period 1987-2017.

Since the data are not recorded at the individual level, we cannot reliably calculate refugee flows. Thus, the main variable used in the analysis is the refugee stocks. By definition, the stock of refugees in any particular year mixes individuals that arrived at different times. Since our main object of interest is changes in refugee behavior over time, analyzing stocks will if anything attenuate temporal differences.

To better approximate flows, we restrict the sample to large refugee events. A refugee event begins in the year in which the global stock of refugees from a particular source country first exceeds 25,000. An event ends when the stock falls below 25,000, or 10 years after initiation if the destination is an OECD country, whichever comes first.<sup>2</sup> Capping the termination date of the event also puts earlier and later years in the sample on a more equal footing, as stocks in later years contain earlier vintages of refugees. An added benefit of restricting the sample to large refugee events is that this procedure also removes source countries with small numbers of refugees, who fled not

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<sup>2</sup>For OECD countries, UNHCR does not include most individuals who have been in the country for more than 10 years in their published refugee statistics.

due to armed conflict but for more idiosyncratic reasons. We check robustness of this approach in two ways: (i) using all of the refugee stock observations available in the data set, and (ii) computing refugee flows as the positive time differences in refugee stocks from year to year (setting negative time differences to zero). The results are robust to these two alternatives.

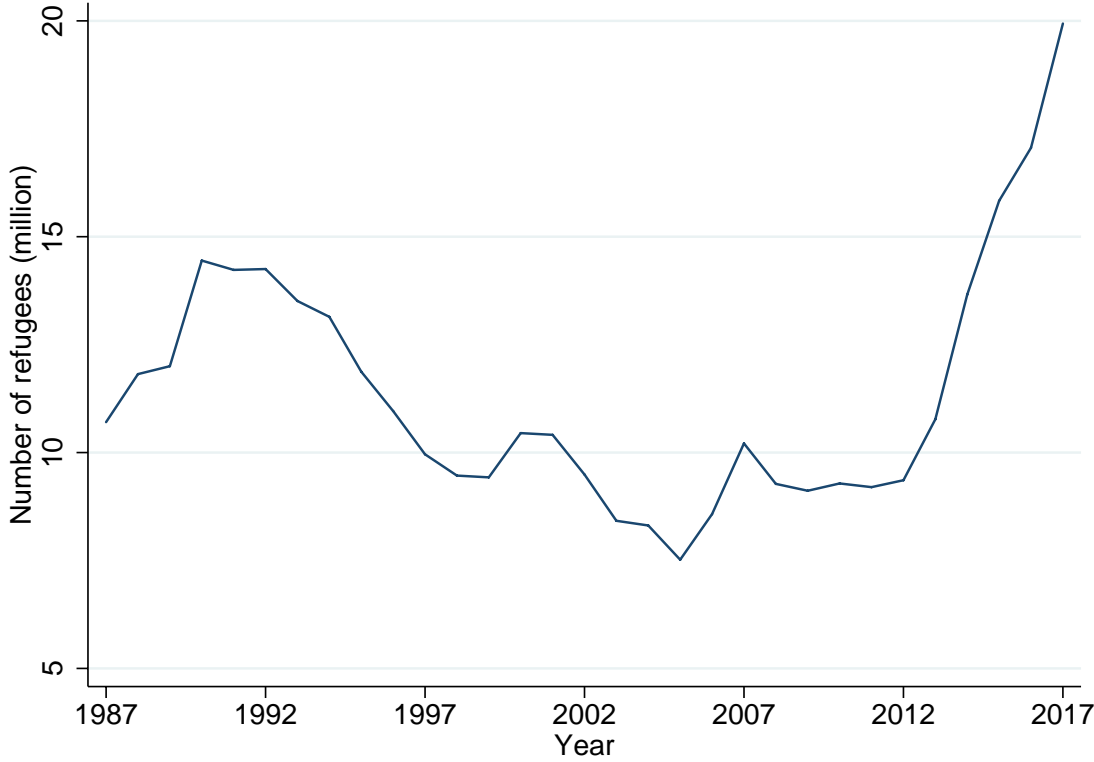


Figure 1: Global refugee population, 1987-2017

Note: This figure plots the global stock of refugees.

The data on bilateral distance and contiguity come from CEPII. The distance variable refers to the great circle distance between the most populated cities of each country in the pair. The contiguity indicator is equal to one if the two countries share a land border.

Figure 1 charts the global refugee population over time. The sharp increase in the number of refugees over the past decade is evident. Such refugee movements can have significant impacts on the destination countries. Table 1 reports the top 10 destination and top 10 source countries in the most recent available year and illustrates that the

overwhelming majority of refugees are hosted in the developing world, something to which we will return.

Table 1: Top 10 destination and top 10 source countries, 2017

Destination	No. persons	Source	No. persons
Turkey	3,789,119	Syrian Arab Rep.	6,455,328
Germany	1,399,554	Afghanistan	2,958,208
Pakistan	1,396,619	South Sudan	2,446,277
Uganda	1,395,115	Myanmar	1,197,794
Lebanon	1,014,165	Somalia	1,044,646
Iran (Islamic Rep. of)	979,519	Dem. Rep. of the Congo	756,899
Bangladesh	932,319	Sudan	746,663
United States of America	929,762	Iraq	635,101
Sudan	924,789	Eritrea	564,447
Ethiopia	891,990	Central African Rep.	558,487

**Notes:** This table reports the top 10 source and top 10 destination countries, measured by stocks of refugees recorded in 2017.

### 3 The Globalization of Refugee Movements

How is the responsibility for hosting refugees shared? To get a better sense of the spatial distribution of refugees across countries, we first construct a measure of refugee dispersion. Namely, we compute a host country Herfindahl index, which measures how concentrated or dispersed refugees are across all destination countries worldwide. Concretely, the (weighted) destination Herfindahl index is defined as

$$H_t^d = \sum_d \omega_{dt} \left( \frac{R_{dt}}{\sum_{d'} R_{d't}} \right)^2,$$

where  $R_{dt}$  is the total number of refugees at destination  $d$  at time  $t$ , so the denominator is simply the global stock of refugees. Refugee numbers  $R_{dt}$  are weighted by  $\omega_{dt}$ . When  $\omega_{dt} = 1$ , the result is the textbook Herfindahl index, which takes a value of 1 if one country ends up hosting all the refugees in the world and converges to 0 if every country hosts the same number of refugees. Alternatively, a GDP-weighted version of the destination Herfindahl index is calculated by setting  $\omega_{dt} = 1 - \frac{GDP_{dt}}{GDP_{worldt}}$  and accounts



for trends in countries' relative sizes.

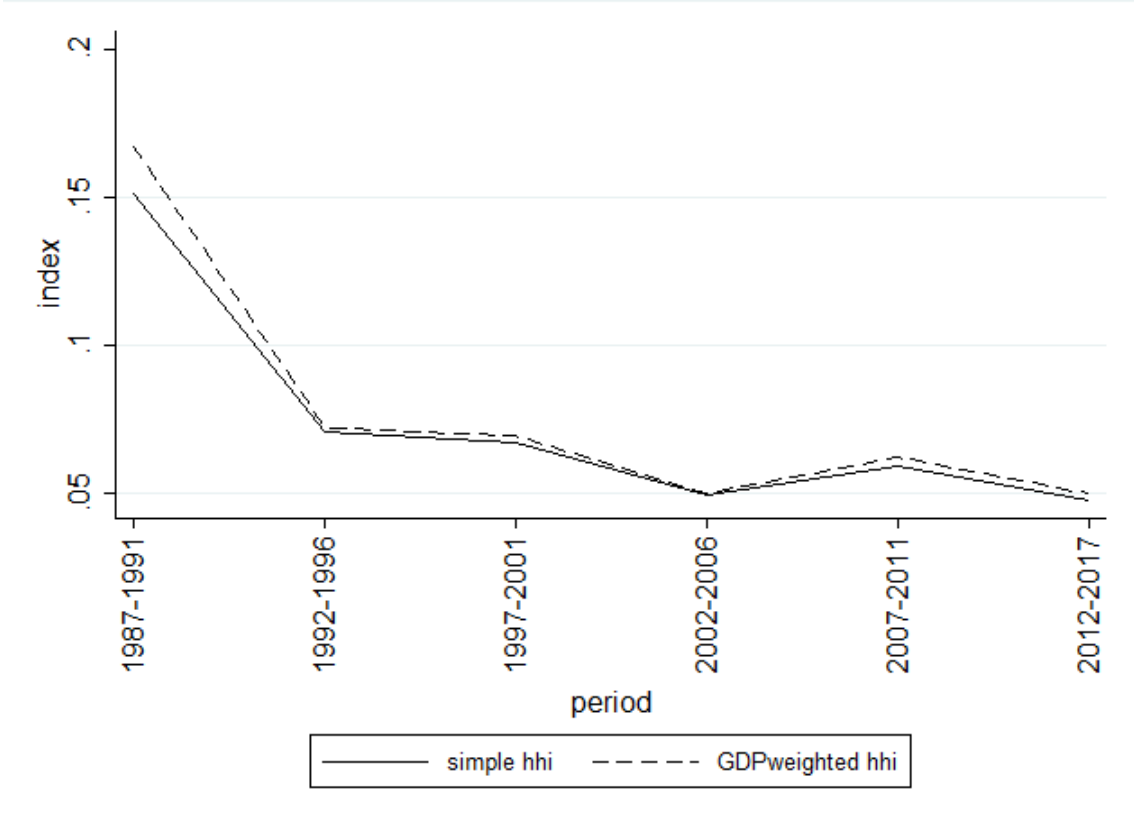


Figure 2: Destination Herfindahl Index, 1987-2017

Note: This figure plots the destination Herfindahl indices (unweighted and GDP-weighted) of refugee dispersion.

Figure 2 displays the trends in the global destination Herfindahl. It shows a drop in the geographic concentration of refugees worldwide over the past 20 years. Arguably, such dispersion could be driven by a greater diffusion of refugees for any given conflict, or an increased geographical spread of episodes of forced displacement due to conflict. To gain a more complete understanding of this trend, we turn to an analysis from the source country perspective.

### The geographic distribution of refugees: unconditional trends

Figure 3 presents the main results of the paper. It displays four indicators that highlight the spatial dimensions of the globalization of refugees. Panel (a) plots the average distance traveled by a refugee for each 5-year period between 1987 and 2017. There is

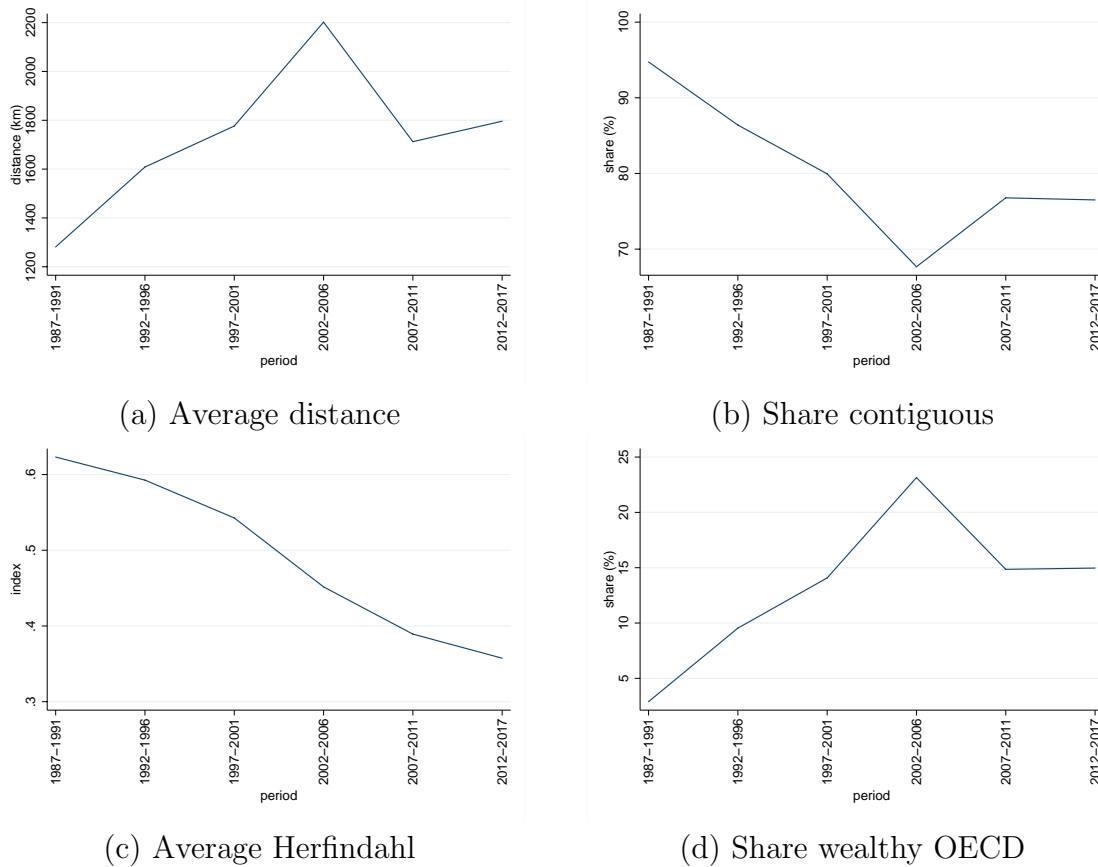


Figure 3: Trends in refugee reach, 1987-2017

Note: This figure plots the average distance traveled by a refugee, the share of refugees finding themselves in a contiguous country, the average Herfindahl index of refugee shares by source country, and the share of refugees finding themselves in a wealthy OECD country.

a pronounced upward trend: the average distance traveled rises from around 1300km at the beginning of the sample to 2200km in the mid-2000s, before settling at around 1800km in the last decade. Panel (b) plots the share of refugees that find themselves in a country that shares a land border with their country of origin. At the beginning of the sample 95 percent of refugees were in a country contiguous with their home country. That share fell to 77 percent in the the period 2012-2017.

Another manifestation of the increasing geographical reach of refugees is the greater number of destination countries to which they go. Similar to the global destination Herfindahl index above, we construct a source-specific Herfindahl index that captures whether refugees from a given source country diversify their destinations over time. That is, for a specific source country  $s$  and year  $t$ , the source Herfindahl index is

defined as

$$H_{st} = \sum_d \left( \frac{R_{sdt}}{\sum_{d'} R_{sd't}} \right)^2,$$

where  $R_{sdt}$  is the number of refugees from  $s$  in  $d$  at time  $t$ . The source Herfindahl index takes a maximum value of 1 when all the refugees from  $s$  go to a single  $d$ , so that  $d$ 's share is 1. The lower is the Herfindahl index, the more spread out is the pattern of refugee flows across destinations.

We then compute the simple mean of  $H_{st}$  for each year, and plot the 5-year averages of this mean. Figure 3, panel (c) reports the results. There is a substantial decrease in the Herfindahl of destination shares over time, from an average of 0.62 at the beginning to 0.36 at the end. The fall in the Herfindahl indicates greater diversification of refugee flows across locations over time.<sup>3</sup>

Finally, to isolate the increasing impact of refugee inflows on high-income countries, panel (d) plots the share of the global refugee stock in high-income OECD country destinations.<sup>4</sup> The increasing importance of wealthy countries as hosts of refugees is evident.

**Frictionless benchmark** While we are not making any normative statements on the optimal spatial distribution of refugees, we compare the actual spatial distribution with the one obtained in alternative benchmark scenarios. In particular, we recompute these four measures in the counterfactual world where the number of refugees leaving each source country is the same as in the data, but is distributed uniformly across all the countries in the world in proportion to the destinations' total GDP. The counterfactual stock of refugees in  $d$  from source  $s$  is  $R_{sdt}^c$  thus computed as

$$R_{sdt}^c = R_{st} \times \frac{GDP_{dt}}{\sum_{d' \in \text{world}} GDP_{d't}}$$

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<sup>3</sup>Because the Herfindahl is a simple average across source countries at a point in time, it may be dominated by smaller source countries, which do not account for much of refugee flows. To check whether this is driving the results, we also examined the evolution of the average Herfindahls for only the top 10 and top 5 source countries in each year (which countries are in the top 10 or 5 changes from year to year, as different countries undergo conflicts). The pattern of increased source diversification is quite similar for the top source country samples. The results are available upon request.

<sup>4</sup>High-income OECD countries in our sample are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, and United States. We thus exclude the newer members of the OECD, such as South Korea, Mexico, or Turkey.

Perhaps it is unrealistic to expect refugees to diffuse frictionlessly literally across the entire globe. We thus compute a variant in which refugees diffuse uniformly to only countries within 5000km of the source:

$$\begin{aligned}
 R_{sdt}^{c,5k} &= R_{st} \times \frac{GDP_{dt}}{\sum_{d' \in \text{dist}(s,d) < 5000} GDP_{d't}} && d \text{ is less than 5000km from } s \\
 &= 0 && \text{otherwise.}
 \end{aligned}$$

Table 2 summarizes the 4 main diffusion measures in this counterfactual world, and compares them to the data for each 5-year period. Two clear patterns emerge. First, a uniform distribution of refugees either worldwide or within a 5000km radius would imply much larger distances traveled, much lower contiguous share, much lower Herfindahl, and a much higher share going to the wealthy OECD group. The differences provide a stark illustration of the starting point of the paper: the current sharing of the responsibility for hosting refugees is far from proportional. In the data, refugees are much more concentrated in nearby and poorer countries than would be the case if there were no geographic or policy frictions. Second, there is little or no trend in these counterfactual patterns over time. The observed distribution of refugees today is closer to this counterfactual distribution than it was at the beginning of our sample. This suggests that the patterns of greater diffusion documented above are not driven by underlying trends in the “frictionless” counterfactual benchmark.

## Understanding the trends

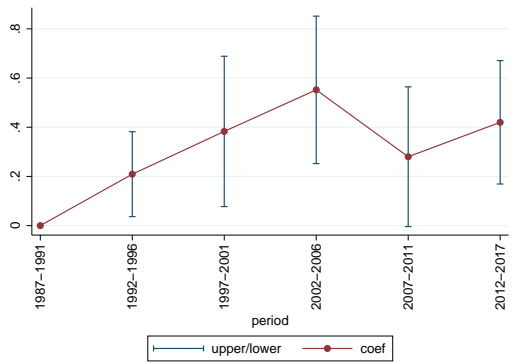
**Changes in composition** We first assess whether the time trends documented above are driven by the changing composition of refugee source countries over time. For instance, if conflicts that give rise to refugee flows occurred in more remote countries in the more recent periods, then the distance traveled would increase. This would not be because it is now easier for refugees to travel farther, but rather because of the changing geography of conflict. To rule out pure compositional changes, we estimate the following regression at the source-time period level:

$$Outcome_{st} = \delta_t + \delta_s + \varepsilon_{st}, \tag{1}$$

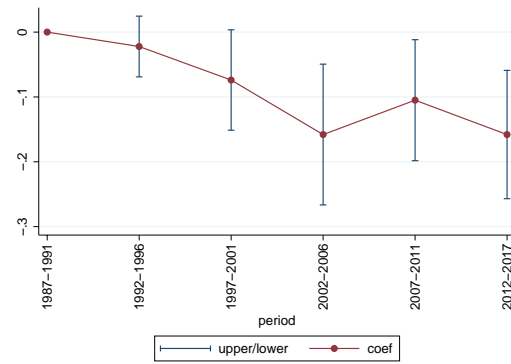
Table 2: Distribution of Refugees across Destinations: Frictionless Benchmark

		<b>Actual</b>	<b>Uniform global</b>	<b>Uniform &lt; 5000km</b>
1987 - 1991	Distance (km)	1281	7612	3659
	Share contiguous (%)	94.74	11.17	14.05
	Herfindahl	0.62	0.14	0.23
	Share OECD (%)	2.89	67.39	38.56
1992 - 1996	Distance (km)	1609	7631	3400
	Share contiguous (%)	86.4	6.49	10.65
	Herfindahl	0.59	0.12	0.17
	Share OECD (%)	9.54	67.88	43.90
1997 - 2001	Distance (km)	1777	7542	3422
	Share contiguous (%)	79.95	6.35	11.83
	Herfindahl	0.54	0.12	0.16
	Share OECD (%)	14.08	67.38	44.85
2002 - 2006	Distance (km)	2202	7643	3410
	Share contiguous (%)	67.67	5.45	13.01
	Herfindahl	0.45	0.11	0.18
	Share OECD (%)	23.15	65.75	42.48
2007 - 2011	Distance (km)	1712	7709	3458
	Share contiguous (%)	76.77	5.88	18.02
	Herfindahl	0.39	0.10	0.15
	Share OECD (%)	14.85	61.23	38.13
2012 - 2017	Distance (km)	1796	7669	3423
	Share contiguous (%)	76.5	5.33	16.36
	Herfindahl	0.36	0.10	0.18
	Share OECD (%)	14.97	57.18	39.00

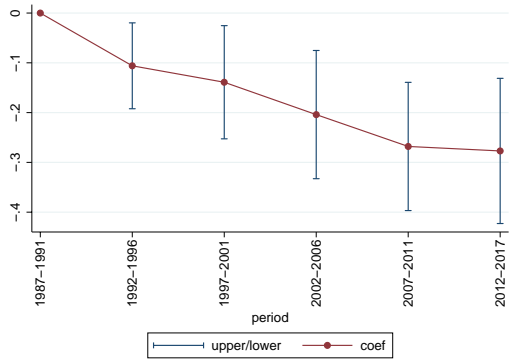
*Notes:* This table reports the average distance traveled by a refugee, share of refugees going to contiguous countries, the average Herfindahl of refugee shares across destinations by source country, and the share going to wealthy OECD countries, in the data (“Actual”), and in the counterfactual scenarios in which refugees are distributed across destination countries according to destination total GDP, globally (“Uniform global”), and within a 5000km radius of the source country (“Uniform <5000km”).



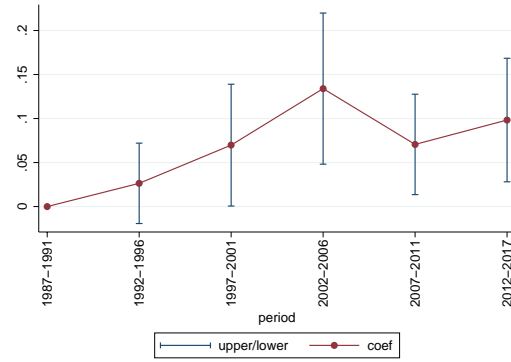
(a) Average distance



(b) Share contiguous



(c) Average Herfindahl



(d) Share wealthy OECD

Figure 4: Trends in refugee reach, time effects controlling for source effects, 1987-2017

Note: This figure plots the time effects on the average distance traveled by a refugee, the share of refugees finding themselves in a contiguous country, the average Herfindahl index of refugee shares by source country, and the share of refugees finding themselves in a wealthy OECD country. Throughout, source country effects are netted out.

where  $Outcome_{st}$  is one of the four outcomes reported above – log average distance traveled by a refugee, share of refugees going to a contiguous country, the Herfindahl index of destinations, or share in a high-income OECD country – from country  $s$  in time period  $t$ , and  $\delta_t$  and  $\delta_s$  are time and source country effects.

Source country effects imply that we are exploiting time variation within a source country over time in how far refugees travel. The coefficients of interest are the time effects  $\delta_t$ . The regression is weighted by total refugee stock, to obtain estimates of how outcome variables changed at a refugee, rather than country level. Standard errors are clustered at the source country level.

Panel (a) of Figure 4 plots the time effects for the average distance traveled along with 95 percent confidence intervals. Since the distance traveled is in logs, the coeffi-

cients are interpretable as the percentage increase in the average distance traveled by a refugee in period  $t$  relative to the omitted period, which in our case is the first 5 years of data. The upward trend is evident, and the differences with respect to the initial period are statistically significant. In the final 5-year period, the average distance traveled is about 40 percent larger than in the first period. This proportional difference is quite similar in magnitude to the unconditional increase reported in Figure 3. Panel (b) reports the time effects on the share of refugees found in a contiguous country. Since the left-hand side is a share, the time effect point estimates correspond to the difference in that share relative to the initial period. The share of refugees in a contiguous country falls by 16 percentage points after controlling for source effects. Once again, this difference is not far from the unconditional difference. Panels (c) and (d) plot the time effects on the Herfindahl and the share going to high-income OECD countries, respectively. The trends evident in unconditional data are equally strong when controlling for source country effects and total refugee outflow. For all four outcome variables, the differences between the initial and later periods are highly statistically significant.

**Impact vs. diffusion over time** We next address the question of whether the trends documented in Figures 3-4 are due to the initial decision of refugees of where to flee from their homeland, or subsequent movements to third countries. Note that we cannot answer this question definitively without individual-level panel data. In our data, we do not observe the country from which a refugee entered their current host country, and thus cannot tell whether a given refugee in a given host country came from their homeland, or from yet another host country.

Nonetheless, we perform the following exercise. We are working with a set of refugee events defined in Section 2. An event is combination of a source country, a year of onset, and an end year. Thus, we can compute the evolution of all of our outcome variables – distance, contiguous share, Herfindahl, and share in high-income OECD – for each specific event and each year following its onset. We then plot these outcome variables in event time, with year 0 indicating the initial year of the event, up to year 10 of the event.

Figure 5 plots the four outcome variables in event time, for events starting in 4 different sub-periods. The main conclusion from this figure is that the differences across

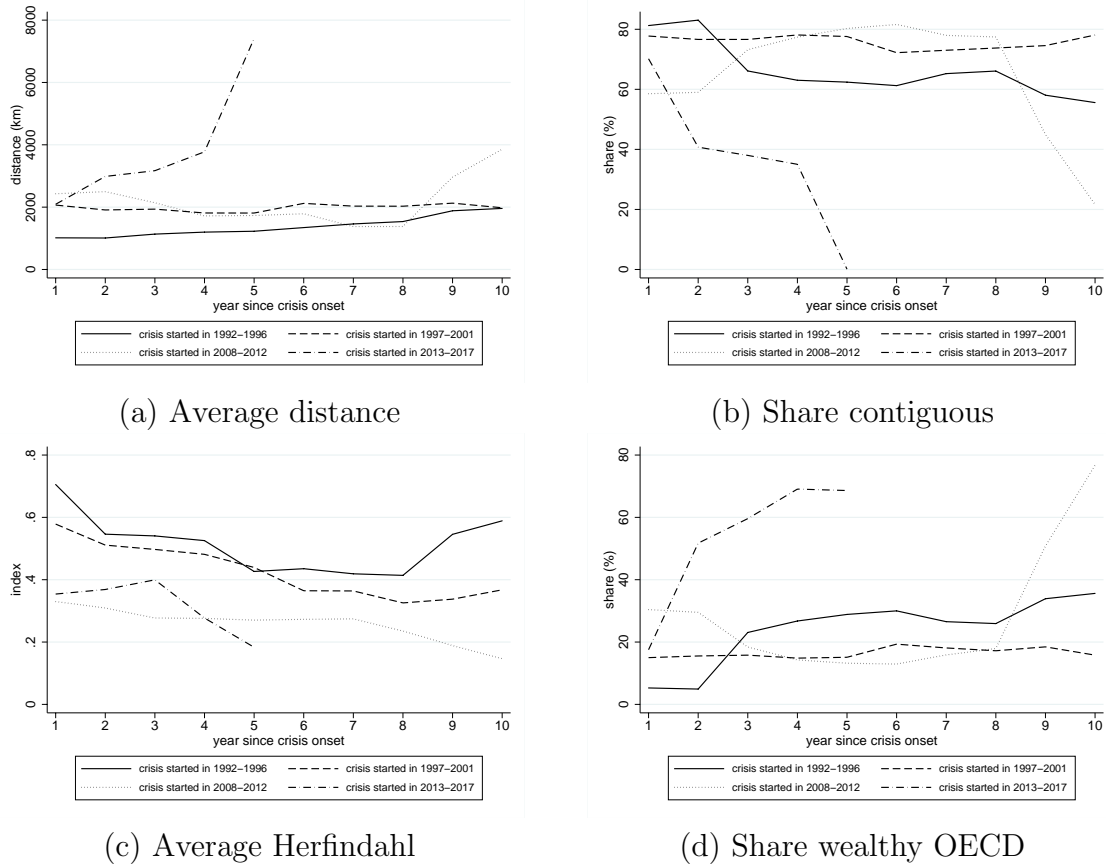


Figure 5: Trends in refugee reach in event time

Note: This figure plots the four outcome variables in event time, for 4 sub-periods separately.

time in refugee reach are already apparent at the initiation of a refugee crisis. That is, distance traveled by a refugee rises monotonically from earlier to later refugee crises already in years 1 to 3 of a refugee crisis. While the pictures are somewhat noisy, it is not the case that the globalization of refugees trends documented above are due purely, or even primarily, to stronger diffusion of refugees over time.

## Robustness

Finally, we assess robustness of the results in a number of dimensions. First, since the beginning of our data, a number of country boundaries have changed. Prominent examples are the unification of Germany, the breakup of the Soviet Union and Yugoslavia, and the independence of South Sudan. To check whether the results are driven by changing country boundaries, Appendix Figure A1 reports the time effects conditional on source effects in a sample of entities where country definitions and boundaries are



fixed throughout the sample period. There is virtually no difference in the results.

Second, we control for the total (log) stock of refugees from country  $s$  in time period  $t$  when estimating equation (1). Controlling for the overall stock of refugees allows for non-linear effects of total outflows on spatial diffusion. For example, refugees might end up more geographically dispersed during relatively larger refugee events if greater refugee numbers create stronger political opposition in receiving countries, limiting the number of individuals in any single country. On the other hand, large flows of refugees might differ from smaller ones in their composition: if the marginal refugee is less mobile, then larger total stocks will coincide with less geographical dispersion. Appendix Table A1 shows the results of estimating (1) controlling for total stocks from  $s$ . The coefficients on refugee stocks are consistently negative and significant for three of the four outcomes of interest. However, the magnitude of these coefficients is small, suggesting that the scale of a forced displacement crisis has little bearing on the subsequent geographic dispersion of refugees. Appendix Figure A2 reports the time effects controlling for total stock. There is virtually no detectable difference relative to the baseline.

The third set of robustness checks probes our definition of refugee stocks. Appendix Figure A3 replicates the analysis using all refugee stocks available in the data, without constraining the sample to refugee events. The results are very similar to the baseline. Taking another approach, Appendix Figure A4 instead uses refugee flows. As argued above, without individual-level data, flows cannot be computed precisely. We build flows by taking annual time differences in stocks by source-destination pair. In some instances, stocks fall over time. Since we do not have confidence that a reduction in stocks represents a return to the home country – as opposed to transition to another host country – we set flows to zero whenever the difference in stocks is negative. As evidenced in the figure, the point estimates of the time effects and their statistical significance are quite similar for flows to the baseline.

Fourth, it may be that the destination-specific conditions (such as the global financial crisis) also affect the distance traveled by refugees, or the probability of not going to a contiguous country. To account for this possibility, we net out the time variation in the destination country conditions as follows. In step 1, we project the refugee stocks at the

source-destination-year level on source-time, destination-time, and source-destination fixed effects in a gravity-like specification:

$$Refugees_{sdt} = \delta_{st} + \delta_{dt} + \delta_{sd} + \varepsilon_{sdt}.$$

We estimate this equation by Poisson Pseudo-Maximum Likelihood (Eaton, Kortum and Sotelo 2012), pooling countries and years (and thus including observations with zero bilateral stocks). We then construct a destination-adjusted refugee stock by subtracting the destination-time effect from the actual stock:

$$AdjustedRefugees_{sdt} = Refugees_{sdt} - \delta_{dt}.$$

Then, we compute the average distance traveled, share of refugees going to a contiguous country, the Herfindahl index of destinations, and share in wealthy OECD countries using this adjusted refugee data set instead of the actual data. Appendix Figure A5 reports the results. Netting out destination-time effects prior to carrying out the analysis leaves the main results virtually unchanged.

## 4 Conclusion

Our analysis suggests that the assumption underpinning the debate on responsibility-sharing may need to be partly revisited. Countries neighboring a conflict do host a majority of refugees and are hence bearing a disproportionate portion of the responsibility for providing asylum to those who are fleeing from violence and oppression. Yet, the share of refugees who move to further-away destinations, including OECD countries, has been growing over time. In other words, responsibilities are increasingly shared across countries.

As it explores the notion of responsibility-sharing, the challenge for the international community is hence to determine how such trends can be sustained, at a pace which is optimal from a protection perspective, but also taking into account economic and political considerations across all potential refugee-hosting countries.

In parallel, it is important to recognize that the current distribution remains deeply

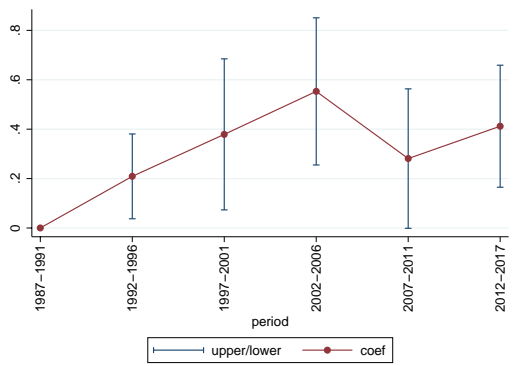
uneven. This is especially problematic as most refugee-producing crises are protracted, implying that the composition of the “main host countries” remains somewhat stable over large periods of time. Sharing the responsibility for hosting refugees also implies, therefore, that increased support is warranted to maintain the current system and the international protection that it provides for those who are subject to persecution and violence.

## References

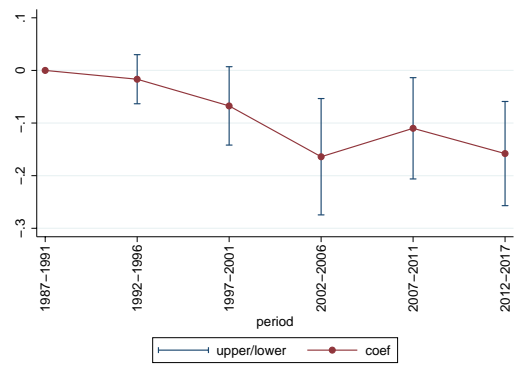
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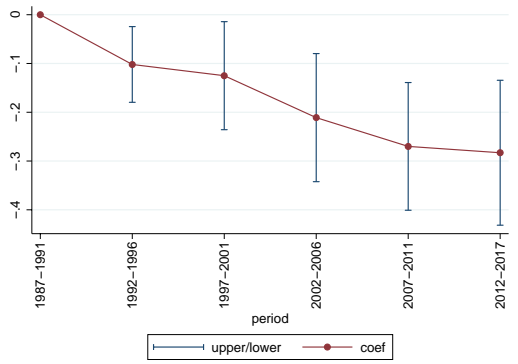
# Appendix



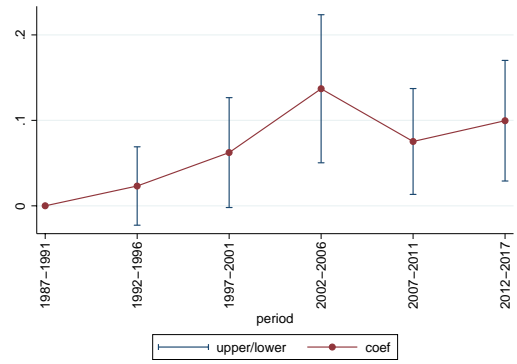
(a) Average distance



(b) Share contiguous



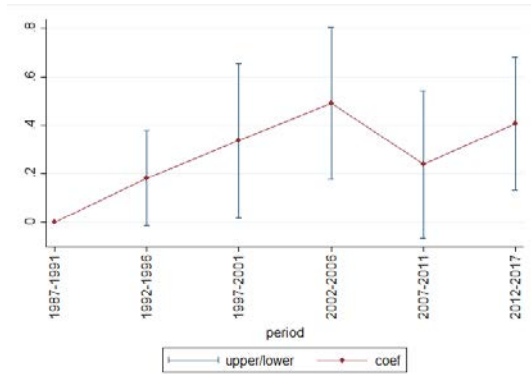
(c) Average Herfindahl



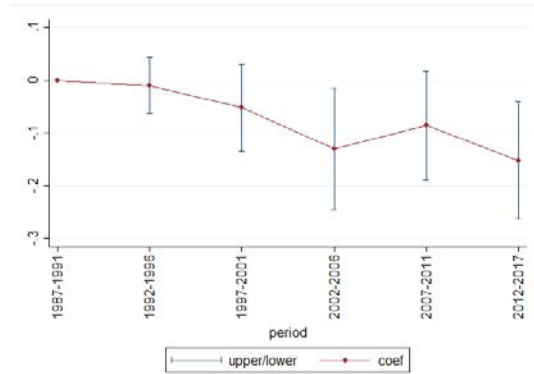
(d) Share wealthy OECD

Figure A1: Trends in refugee reach, time effects controlling for source effects, harmonized country boundaries, 1987-2017

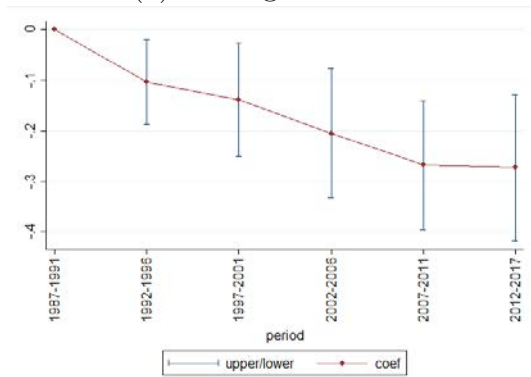
Note: This figure plots the time effects on the average distance traveled by a refugee, the share of refugees finding themselves in a contiguous country, the average Herfindahl index of refugee shares by source country, and the share of refugees finding themselves in a wealthy OECD country. Throughout, source country effects are netted out. The sample harmonizes all country boundaries across time.



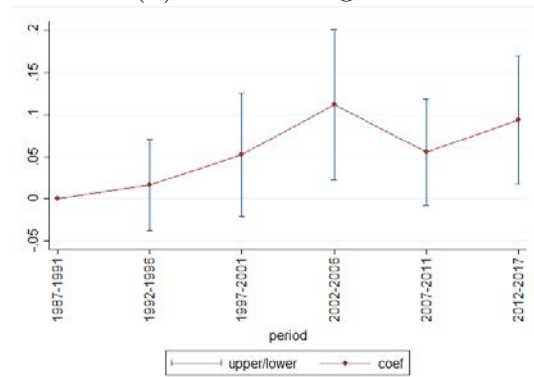
(a) Average distance



(b) Share contiguous



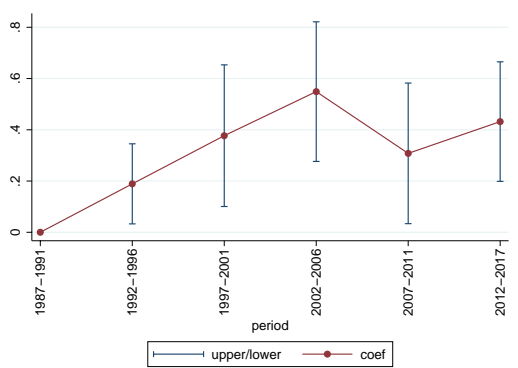
(c) Average Herfindahl



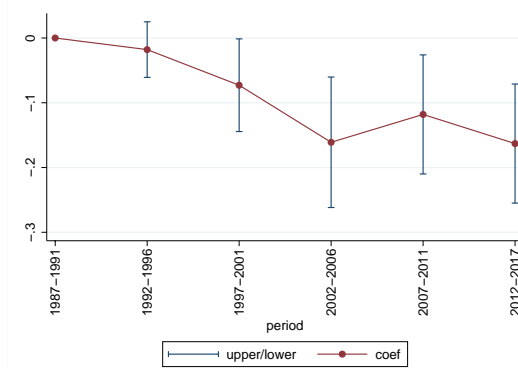
(d) Share wealthy OECD

Figure A2: Trends in refugee reach, time effects controlling for source effects and total source-country refugee stock, 1987-2017

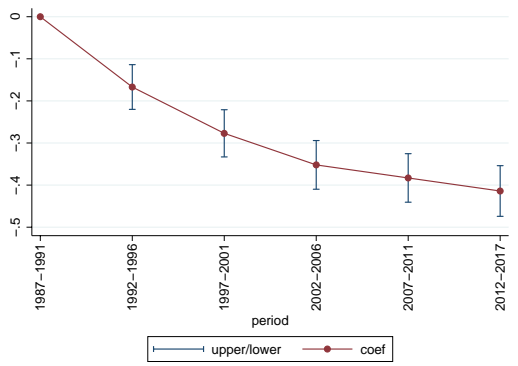
Note: This figure plots the time effects on the average distance traveled by a refugee, the share of refugees finding themselves in a contiguous country, the average Herfindahl index of refugee shares by source country, and the share of refugees finding themselves in a wealthy OECD country. Throughout, source country effects are netted out. Controls include the total stock of refugees from source country  $s$  at time  $t$ .



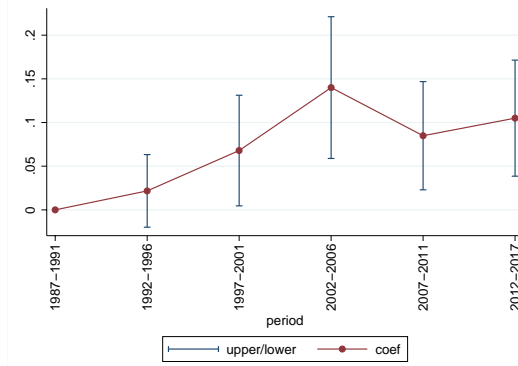
(a) Average distance



(b) Share contiguous



(c) Average Herfindahl

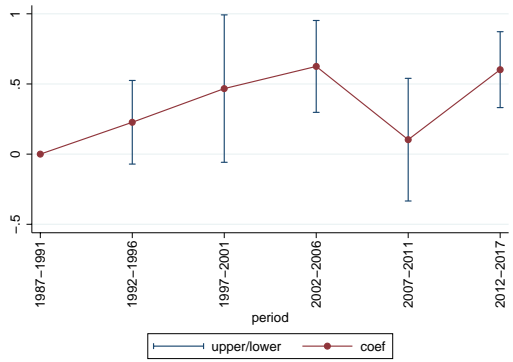


(d) Share wealthy OECD

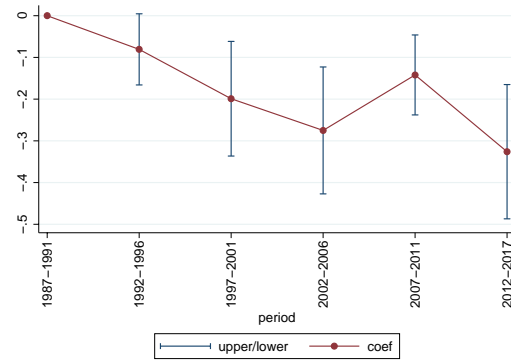
Figure A3: Trends in refugee reach, time effects controlling for source effects, all stocks, 1987-2017

Note: This figure plots the time effects on the average distance traveled by a refugee, the share of refugees finding themselves in a contiguous country, the average Herfindahl index of refugee shares by source country, and the share of refugees finding themselves in a wealthy OECD country. Throughout, source country effects are netted out. The outcome variable is total stocks of refugees.

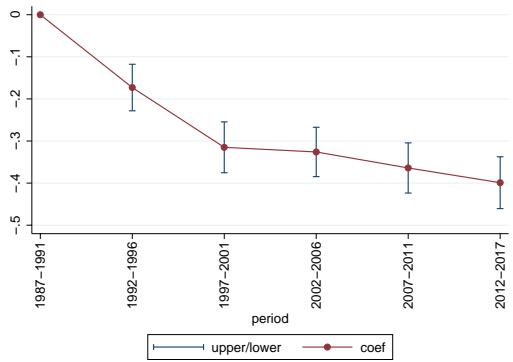




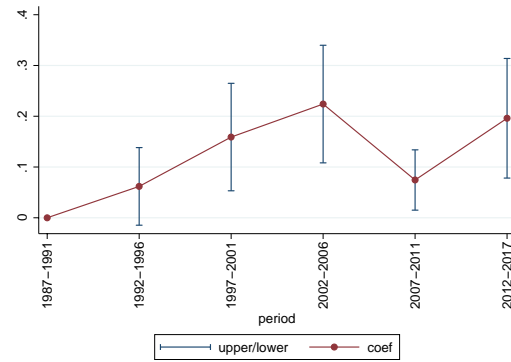
(a) Average distance



(b) Share contiguous



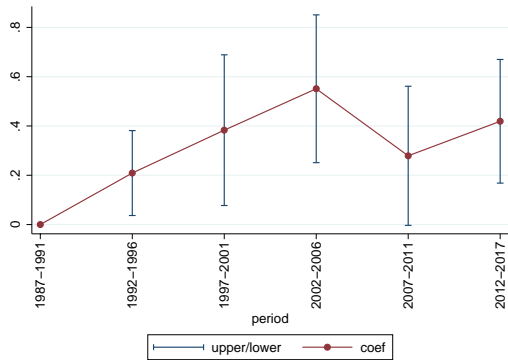
(c) Average Herfindahl



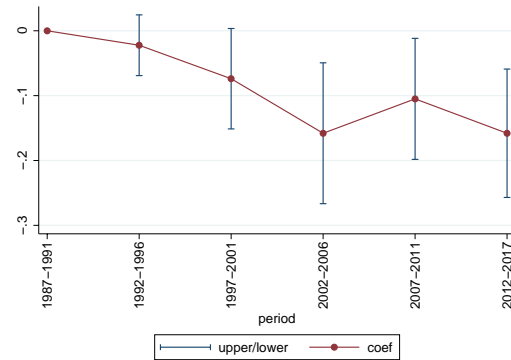
(d) Share wealthy OECD

Figure A4: Trends in refugee reach, time effects controlling for source effects, flows, 1987-2017

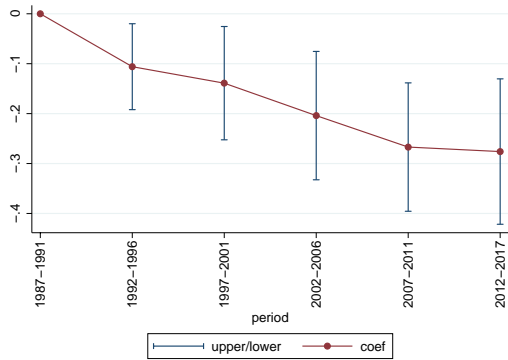
Note: This figure plots the time effects on the average distance traveled by a refugee, the share of refugees finding themselves in a contiguous country, the average Herfindahl index of refugee shares by source country, and the share of refugees finding themselves in a wealthy OECD country. Throughout, source country effects are netted out. The outcome variable is total stocks of refugees.



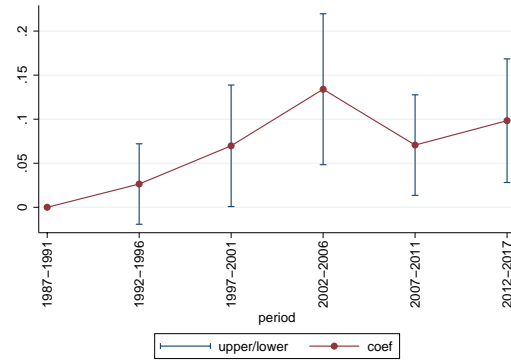
(a) Average distance



(b) Share contiguous



(c) Average Herfindahl



(d) Share wealthy OECD

Figure A5: Trends in refugee reach, time effects controlling for source effects, netting out destination-time effects, 1987-2017

Note: This figure plots the time effects on the average distance traveled by a refugee, the share of refugees finding themselves in a contiguous country, the average Herfindahl index of refugee shares by source country, and the share of refugees finding themselves in a wealthy OECD country. Throughout, source country effects are netted out. The analysis is carried out on an adjusted data set that nets out destination-time effects from every refugee stock observation.

Table A1: Decomposing the Spatial Dispersion of Refugees

VARIABLES	(1) Distance	(2) Contiguity Share	(3) Herfindahl	(4) OECD Share
Years 1992-1996	0.149 (0.102)	0.000390 (0.0301)	-0.184 (0.0299)	0.00557 (0.0306)
Years 1997-2001	0.306 (0.157)	-0.0402 (0.0428)	-0.301 (0.0340)	0.0390 (0.0387)
Years 2002-2006	0.457 (0.157)	-0.119 (0.0596)	-0.381 (0.0378)	0.102 (0.0487)
Years 2007-2011	0.241 (0.160)	-0.0867 (0.0551)	-0.411 (0.0386)	0.0576 (0.0384)
Years 2012-2017	0.414 (0.140)	-0.155 (0.0578)	-0.449 (0.0420)	0.0977 (0.0420)
Refugee stock (log)	-0.167 (0.0433)	0.0770 (0.0205)	0.0100 (0.00648)	-0.0680 (0.0170)
Observations	1,096	1,096	1,096	1,096
R-squared	0.841	0.873	0.621	0.868

*Notes:* All specifications include country fixed effects. Standard errors in parentheses clustered at source-country level. Dependent variables are (log) Average distance traveled (column 1), Share of refugees living in contiguous country (column 2), Herfindahl Index of refugee spatial concentration (column 3), and Share of refugees living in a high-income OECD country (column 4).