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Asylum migration in OECD countries: In search of lost well-being *

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Abstract

Alongside the economic determinants and unobserved structural forces that drive migration flows, asylum migration faces additional natural and man-made hazards, which fall in the broad category of well-being. This paper estimates the effect of a composite well-being indicator on asylum migration flows with a structural gravity equation. The paper starts by augmenting the gravity model to explain asylum flow with country-pair relative well-being, relocation costs and multilateral resistance. Taking the OECD Better Life Index as a starting point, we then combine Data Envelopment Analysis and Multi-Criteria-Decision-Making to construct a multidimensional well-being indicator that groups 23 raw indicators into a single composite indicator with 10 consistently comparable dimensions across countries. Then, using a panel of bilateral asylum flows in OECD countries, we are able to obtain theoretically-grounded and consistent estimates. Results reveal that the composite indicator of well-being has a significant effect, although only certain dimensions of well-being act as push and pull factors.

JEL classification: F22, I31

Keywords: asylum-seekers; well-being; composite indicator; gravity equation, multilateral resistance

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"Happiness is salutary for the body but sorrow develops the powers of the spirit." —
Marcel Proust, In Search of Lost Time

1 Introduction

Why do individuals abandon their home and cross international borders to seek asylum in a foreign country? Standard migration models have been successful in explaining economic migration flows with gravity models (Anderson, 2011; Beine et al., 2011; Grogger and Hanson, 2011). Economists realised that similarly to trade, aggregate migration flows between any pair of countries could be explained empirically by economic size and the distance between the country pairs (as measure of frictions). This framework uses a cost (travel, relocation) - benefit (wage, income) analysis to model the flow of people across borders, predicting that migration occurs if the expected income outweighs the income at home plus relocation costs. Studies using a multi-country panel setting usually study the determinants of international migration and generally confirm this view, reporting significant effects of origin- and destination-country income per capita on migration (Mayda, 2010; Ortega and Peri, 2013).

While income and distance have long been recognised as factors fostering and impeding migration respectively, there is abundant evidence that numerous other factors affect migration flows. Some are natural, such as being an island, other are cultural or historical, such as sharing a common language, other are man-made, such as migration policies. Other factors are unobserved, but play an important role in explaining migration flows, like remoteness or third country effects (Bertoli and Fernández-Huertas Moraga, 2013). In some cases, non-economic factors become so pressing that force individuals to migrate. The literature has identified some of the drivers of forced migration including natural, such as geographical or environmental factors like climate change, floods or earthquakes; and man-made factors such as politics, oppression and violence in source countries or particular policies in host countries (Hatton, 2020).

Embracing the multifaceted nature of the determinants of migration, a recent strand of the literature has attempted to reduce the number of variables under consideration by obtaining a set of principal indicators of well-being like life satisfaction, happiness or quality of life (see, for instance, Marques et al., 2018; Faggian and Royuela, 2010). This approach of dimension reduction has the advantage of summarising the effect of numerous factors with a reduced number of measures. On the one hand, it alleviates omitted variable bias. On the other hand, it simplifies the task of analysing the channels that drive migration, enhancing policy recommendations.

However, quantifying well-being is not trivial and straightforward and scholars are devoting a great deal of effort in recent years to the measurement issue. As suggested by Maggino and Zumbo (2012), well-being is a complex concept whose measurement requires a multifaceted approach. The academic debate is extensive and there is agreement that well-being should be at the core of the policy agendas (Rojas, 2020). Accordingly, contributions such as Mizobuchi (2014, 2017), Guardiola and Picazo-Tadeo (2014) or Lorenz et al. (2017) have elaborated composite well-being indicators for the OECD framework departing from the information provided by the Better Life Index (BLI), one of the few comprehensive frameworks to measure well-being from a multidimensional perspective. These indicators are based on Data Envelopment Analysis (DEA), recommended by the OECD for the construction of well-being composite indicators (OECD, 2008). However, DEA approaches are not free from limitations such as reduced discrimination capacity in some contexts and cross-country comparability issues. In this context, Peiró-Palomino and Picazo-Tadeo (2018) proposed a composite well-being indicator that addresses these shortcomings, allowing to elaborate a well-being ranking for the OECD.

In sum, these contributions have made a remarkable progress in the field of well-being measurement, especially because they have taken into account the multidimensionality of the concept. Nevertheless, few attentions have been devoted to whether well-being disparities might explain complex social phenomena, such as asylum decisions. Hatton (2009, p. 211) uses "crude indicators" of welfare (e.g., policy index) to explore the determinants of asylum migration flows. However, a comprehensive analysis of the effect of well-being on forced migration in a multi-country setup remains under-explored in the literature.

This paper attempts to fill this gap by analysing the link between well-being and forced migration. Therefore, it expands the literature focused on well-being measurement and provide evidence on the importance of considering well-being to understand complex social phenomena. Its contribution is twofold. First, in order to measure well-being, we use the BLI framework and construct a composite well-being indicator for 34 OECD countries for the period 2013–2015. Our global well-being index is made of ten composite indicators representing the well-being dimensions considered in the BLI framework, including economic and non-economic aspects. In doing so, we applied DEA in combination with Multi-Criteria-Decision-Making (MCDM) techniques, closely following Peiró-Palomino and Picazo-Tadeo (2018), but also incorporating some refinements to their approach that makes our indicator more coherent with the OECD recommendations for the construction of composite well-being indicators.

Second, we estimate the effect of well-being differentials on asylum flows using a structural gravity equation. Also, we identify particular dimensions that act as push and pull factors in the asylum decision. In doing so, we twist the off-the-shelf gravity model for migration to incorporate well-being into the decision to seek asylum. Our panel data and estimation strategy is grounded in theory and addresses most of the known caveats that bias gravity estimates. In particular, we follow the recommendations by Yotov et al. (2016) to address unobserved bilateral heterogeneity, zero flows, heteroscedastic residuals and, more importantly, multilateral resistance terms.

The rest of the paper is organised as follows. Section 2 briefly reviews the literature. Section 3 develops the model, explains the construction of the composite well-being indicator and introduces the econometric strategy. Section 4 describes the data and Section 5 discusses the main results. Finally, Section 6 concludes.

2 Background and stylised facts

The focus of this paper is forced migration, particularly asylum-seekers. Forced migrants can be asylum-seekers or refugees. According to the OECD, an asylum-seeker is a person who files an application for asylum in a country other than their own. They remain in the status of asylum-seeker until their application is considered and adjudicated. A refugee is a foreign person that has already been granted this status.

Despite of the relatively negative attitudes towards migrants in general and asylum-seekers in particular (Bansak et al., 2016; Mayda, 2006), there is evidence of their positive impact on the economy, e.g., by fostering trade and FDI (Bahar et al., 2019; Cuadros et al., 2019; Mayda et al., 2019; Peri and Requena-Silvente, 2010). Further, Cortes (2004) suggests that the labour outcomes of refugees are higher than those of economic migrants. Consequently, asylum migration has spurred social, political and academic interest, especially since the outbreak of the Syrian civil war in 2011. The violent suppression of the Arab Spring's wave of protests that reached Syria, triggered the fight between several factions, which rapidly escalated, with thousands of individuals fleeing the conflict. Figure 1 shows the exponential growth in asylum-seekers in this century.

[Figure 1 about here.]

Asylum-seekers are pushing their way through the Balkans to Hungary or by ship to Italy and Greece. From there, many continue their hazardous journey to Germany and other countries in Northern Europe. When asked, asylum-seekers consider Hungary as relatively poor and still developing; they want to live in a country which offers more economic and social opportunities (Hartocollis, 2015). Therefore, individuals tend to seek asylum in countries with higher well-being, as shown in Figures 2a and 2b.

[Figure 2 about here.]

Figure 2a ranks OECD countries according to a well-being indicator[1] and 2b displays the asylum-seekers by country, with countries in the same order. With the exception of the pass-through countries of Turkey and Hungary, nearly 80% of the asylum-seekers move to countries with well-being above the OECD average. Therefore, is it not surprising to find a positive correlation between well-being and asylum-seekers, as shown in Figure 3a.

[Figure 3 about here.]

[1]The technical details of the well-being indicator are described in Section 3.2.

The literature that studied the drivers of forced migration has identified factors linked to environmental hazards such as temperature, floods or earthquakes (Feng et al., 2010; Gray and Mueller, 2012; Yang, 2008; Missirian and Schlenker, 2017b), aspects such as politics, oppression and violence in source countries (Davenport et al., 2003; Hatton, 2009; Moore and Shellman, 2004; Missirian and Schlenker, 2017b; Neumayer, 2005b,a; Schmeidl, 1997), or particular policies in host countries (Bertoli et al., 2020; Holzer et al., 2000; Neumayer, 2004; Thielemann, 2004, 2006; Vink and Meijerink, 2003). Recently, Missirian and Schlenker (2017a) showed that increased acceptance rates in the recent refugee crisis in the Mediterranean can be accounted for by distress-driven migration.

Migration networks or the stock of migrants from the same origin is "the most powerful single variable influencing asylum-seeker flows to a country" (Hatton, 2020, p. 85). However, Moore and Shellman (2007) show that the current migrant stock is more relevant for second round migrants, that is asylum-seekers that decided to migrate to a second country after filing a petition in a different country. This *asylum orbiting* is minimised in EU with the application of the 'Dublin rule', where asylum petitions are filed in the first entry point.

Most of the drivers analysed by the literature would fall within one of the ten dimensions of the OECD's Better Life Index: Housing, Income, Jobs, Community, Education, Environment, Civic engagement, Health, Safety, and Work-life balance. For example, Davenport et al. (2003) explained that genocide, civil war, dissident conflicts, and political regime transitions are significant push factors. Hatton (2016; 2009) and Hatton and Monoley (2015) suggest that both civil liberties and income are important factors driving asylum flows. More recently, Kang (2020) confirms that political stability and the quality of institutions in origin are highly influential push factors.

Scholars have also studied the effect of education on forced migration. For example, Aksoy and Poutvaara (2019) report that asylum-seekers who claimed to be fleeing persecution were more educated than economic migrants. Using Danish data, Damm (2009) reports that the lack of institutions for qualifying education is a relevant push factor along with other factors like housing. Similar findings regarding education were found by Ivļevs and King (2012) for Kosovo. However, Hartog and Zorlu (2009) reported that higher educational skills of refugees do not yield any additional monetary returns for the host country. A possible explanation is the widely reported educational-occupational mismatch, where educated migrants occupy non-qualified working positions (Widmaier and Dumont, 2011).

Work-life balance can be interpreted as a proxy for societal structure in line with Vogler and Rotte (2000), who reported that changes in the degree of development and societal structure of the sending countries are key factors for emigration from less developed countries to Germany.

Studies that have recently incorporated well-being to summarise factors that drive regular migration have used life satisfaction (Ivlevs, 2015), happiness (Hendriks, 2015; Marques et al., 2018), subjective well-being (Cai et al., 2014; Gelatt, 2013) and quality of life (Faggian and Royuela, 2010). Only two papers have followed this path for forced migration. Fozdar and Torezani (2018) explore the apparent paradox of high levels of well-being among refugees. Damm (2009) provides indirect evidence of refugees' welfare seeking. Danish data suggest that refugees tend to leave locations with relatively high regional unemployment and seek better housing conditions and educational opportunities.

Most of the literature on forced migration focuses on a single event, a single country or a reduced group of countries. Furthermore, only very few notable exceptions control for multilateral resistance or time-varying source and host country effects (see Bertoli et al., 2020; Hatton, 2005, 2009, 2016; Hatton and Moloney, 2015). Multilateral resistance or third country effects are an important control for the remoteness of country pairs and its omission biased gravity estimates for more than forty years until Anderson and Van Wincoop (2003) resolved the seminal puzzle of trade economics. Bertoli and Fernández-Huertas Moraga (2013) show that multilateral migration is relevant for regular migration's determinants.

We show in the next section how these terms arise naturally in a gravity model of forced migration. The modelling effort of this paper complements studies that looked into asylum migration from a theoretical angle such as Stark et al. (2020), who determine the optimal number of asylum-seekers to admit in a host economy.

3 Theoretical and empirical framework

3.1 Modelling asylum flows

The prospective asylum-seeker faces a number of discrete host locations with different well-being; each with a bilateral benefit and cost that is common to all asylum-seekers in the country pair. Behavioural theories of decision making suggest that the decision to choose a host country lies in relative terms rather than in absolute levels (see Ariely, 2009). People often evaluate their environment in relative terms, considering easily comparable things. Therefore, a closer measure of the individual's decision to seek asylum is to evaluate the difference in well-being between countries.

Let $\varphi_{ij} > 0$ be the relative well-being gain from moving from home country i to host country j. Any asylum-seeker has travel costs and information frictions,[2] which are modelled with iceberg cost $\tau_{ij} > 1$. Additionally, every individual z has an idiosyncratic cost of relocating of $\epsilon_{ijz} > 1$, which is private and captures any other cost considerations which are not related to well-being or travel costs.

The rational asylum-seeker chooses the destination with the largest combination of well-being, weighted against travel and relocation costs. In line with the relative decision-making theory, a rational individual z from country i is forced to seek asylum in country j if the benefits outweigh the costs:

$$\varphi_{ij} > \epsilon_{ijz}\tau_{ij}. \tag{1}$$

From this decision rule, we can obtain an expression for $\epsilon_{ijz} = \varphi_{ij}/\tau_{ij}$ and embed it in a gravity equation for asylum-seekers:[3]

$$A_{ij} = \underbrace{\frac{S_j N_i}{N}}_{\text{Frictionless asylum}} \times \underbrace{\frac{\varphi_{ij}/\tau_{ij}}{\Omega_j L_i}}_{\text{Asylum frictions}} . \tag{2}$$

[2]In contrast to trade models, the distinction between fixed and variable costs is not so relevant in this case because migration entails no volume decision. In trade models, whether to export and how much to export are different decisions (Helpman et al., 2008).

[3]See Appendix A for details.

The first term in equation (2) represents frictionless asylum patterns, where flows are simply the share of total asylum-seekers in all destinations. N is total asylum-seekers worldwide, S_j is the total asylum-seekers arriving in j from all origin countries and N_i the population of country i. The second term represents frictions that impede or enhance asylum flows. Bilateral asylum-seekers flows are determined by well-being differentials and travel costs. Additionally, the remoteness of the country pair ij to third countries influences the asylum flow. This fact is captured by Ω_j and L_i, whose interpretation is analogous to the multilateral resistance terms in the gravity model of trade (Anderson and Van Wincoop, 2003). The outward multilateral resistance L_i gives the origin's incidence of asylum costs, while the inward multilateral resistance Ω_j is the host's incidence of global asylum costs.[4]

Analogously to trade, multilateral resistance terms can be interpreted as a measure of asylum remoteness and could be relevant to explain asylum flows. Imagine two countries with high asylum frictions that would generally advise against a high volume of asylum flows. Now, imagine these countries to be jointly remote to the rest of prospective countries of asylum, for example in the Pacific. Asylum-seekers would probably file more petitions in Pacific countries because of their joint remoteness to the rest of countries. Remoteness might explain partly why asylum-seekers remain in low well-being countries, such as Turkey in the case of the Syrian conflict. In terms of asylum costs, Turkey is rather remote with respect to other OECD countries with higher well-being.

3.2 Measuring well-being with a composite indicator

We build a composite indicator for 10 well-being dimensions provided in the BLI framework.[5] Each dimension is represented by several raw indicators, described in Table 1. As in Peiró-Palomino and Picazo-Tadeo (2018), we combine Data Envelopment Analysis (DEA) and Multi-Criteria-Decision-Making (MCDM) techniques.[6] However, these authors first

[4]The expressions Ω_j and L_i are derived in Appendix A.

[5]The BLI dataset also offers information on an eleventh dimension, namely life satisfaction. This indicator was not considered as an objective well-being dimension because it is a personal perception corresponding to the subjective measures branch of the literature (Rojas et al., 2007).

[6]DEA was originally proposed by Charnes et al. (1978) to pursue the Farrell's approach to production efficiency (details on these techniques are in Cooper et al., 2007). Later on, Lovell et al. (1995) pioneered

compute the well-being dimensions as a simple average of the raw indicators and only after that they apply DEA to compute the composite well-being indicator. We propose using DEA departing from the bottom, that is, from the raw indicators, and obtain the final well-being indicator using a two-step process. In the first one, a composite indicator for each well-being dimension is computed using the raw indicators. In the second, the global indicator is calculated using the dimensions computed in the first stage. This two-step strategy is more coherent with the OECD recommendations of avoiding subjective weights. In our approach, weights are given by the mathematical programme in all the steps.

[Table 1 about here.]

Departing from the dimensions instead of the raw indicators, Peiró-Palomino and Picazo-Tadeo's (2018) proposal uses the Slacks-Based-Measure (SBM) suggested by Tone (2001) (DEA-SBM approach), which has the advantage of integrating into a single scalar measure both proportional potential improvements in all indicators involved in a given dimension of well-being, and potential improvements for specific indicators (for technical details see Cooper et al. 2007, p. 96-98). In our case, the DEA-SBM composite indicator for dimension d and country c' is obtained as follows:

$$\begin{aligned} \textit{Composite indicator dimension } d^{*}_{c'} = & \text{Minimise}_{\lambda_c, S^{+}_{ic'}} \frac{1}{1+\frac{1}{I}\sum_{i=1}^{I}\frac{S^{+}_{ic'}}{\textit{indicator } i_{c'}}} \\ & \text{Subject to:} \\ & x_{c'} \geq \sum_{c=1}^{c} \lambda_c x_c \\ \textit{Indicator } i_{c'} = & \sum_{c=1}^{c} \lambda_c \textit{indicator } i_c - S^{+}_{ic'} \quad i = 1, ...I \\ & S^{+}_{ic'} \geq 0 \quad i = 1, ...I \\ & \lambda_c \geq 0 \quad c = 1, ...c \end{aligned} \tag{3}$$

the adaptation of DEA to computing composite indicators, and several papers have employed this technique to build composite indicators of well-being; e.g., Bernini et al. (2013) and Peiró-Palomino and Picazo-Tadeo (2018).

where x stands for a *helmsman* input vector (for details, see Lovell et al. 1995, p. 509), $S^+_{ic'}$ is the *slack* in the indicator i of dimension d in country c; and, lastly, the parameter λ_c measures the intensity with which country c enters in the composition of the reference set to which country c' is being compared (technical details are in Cooper et al., 2007, p. 97). The composite indicators computed from programme (3) are bounded in the interval [0–1], where higher scores represent higher well-being. The DEA-SBM weights assigned to the indicators involved in a given well-being dimension are endogenously determined at the country level. According to the benefit-of-the-doubt principle (Cherchye et al., 2007), these weights –which can be obtained from the dual formulation of programme (3) (see Tone, 2001, p. 503)– are selected so that they maximise each country's well-being relative to the well-being of all other countries in the sample assessed with the same set of weights.

The DEA-SBM approach faces some limitations when it comes to compare countries. These are the potential lack of discriminating power and different weighting schemes for each country (see, for details, Peiró-Palomino and Picazo-Tadeo, 2018). As the latter authors, we circumvent both limitations by combining DEA with MCDM techniques, as proposed by Despotis (2002). This DEA-SBM-MCDM approach increases discrimination capacity and use a common set of weightings across countries in the computation of well-being dimensions. The mathematical programme (see Despotis, 2005) for dimension d is:

$$
\begin{aligned}
\text{Minimise}_{m_c,\omega_i,z} \quad & t\frac{1}{c}\sum_{c=1}^{c} m_c + (1-t)z \\
\text{Subject to :} & \\
\sum_{i=1}^{I}\omega_i \; indicator \; i_c + m_c = composite \; indicator \; dimension \; d_c^* \quad & c = 1,...c \\
(m_c - z) \leq 0 \quad & c = 1,...c \\
m_c \geq 0 \quad & c = 1,...c \\
\omega_i \geq \varepsilon \quad & i = 1,...I \\
z \geq 0 &
\end{aligned}
\tag{4}
$$

where, ω_i represents the common weight assigned to indicator i; ε is a non-Archimedean small number that ensures that all indicators of dimension d enter the construction of the composite indicator with positive weightings –in our case study, this parameter has been set at to 0.001 –; z is a non-negative parameter to be estimated; m_c stands for the deviation between the DEA-SBM composite indicator for dimension d in country c, i.e., the solution to programme (3), and its DEA-SBM-MCDM counterpart. Finally, t is a parameter ranging from 0 to 1 that needs to be settled by the researcher and allows different theoretical assessments (see details in Bernini et al., 2013, p. 413). We have settled the value of t as equal to 1, so that the objective function to be minimised in equation 4 is the average deviation across countries between the DEA-SBM and DEA-SBM-MCMD composite indicators. Finally, we have employed the composite indicators computed at the dimension and country levels as described above to build an aggregate composite indicator of well-being. Doing so only requires reformulating programmes (3) and (4) with the dimension's composite indicators playing the role of indicators.

3.3 Econometric strategy

Given that travel costs are not directly observable we use a standard parametrisation for the transfer cost after adding a time dimension (t):

$$\ln \tau_{ijt} = \lambda_{ij} - \varepsilon_{ijt}, \tag{5}$$

where λ_{ij} is a time-invariant country-pair fixed effect than captures all variables like distance, common language or colonial links that do not vary in time, and ε_{ijt} is an unobserved i.i.d. friction.[7] By substituting equation (5) in equation (2), we obtain a tractable empirical dynamic log-linear structural gravity equation:

$$\ln A_{ijt} = \ln \varphi_{ijt} + \lambda_{ij} + \lambda_{it} + \lambda_{jt} + \varepsilon_{ijt}, \tag{6}$$

[7] If the country-pair fixed effect was time-variant, the equation would be perfectly identified and we could not estimate the coefficients.

where we use time-varying home and host fixed effects $\lambda_{it} + \lambda_{jt}$ to control for multilateral resistance.[8]

However, capturing multilateral resistance with country time-varying fixed effects comes at a double cost. Firstly, the fixed effects bundle all time-varying origin and destination variables and therefore any country measure is absorbed by them. This means that we can only estimate the effect of time-varying dyadic variables. Practically for us, we cannot take differences or ratios in logs of the well-being in country i and j.[9] Therefore, we identify well-being as the ratio between well-being of the home country and well-being of the host country. Secondly, structural gravity imposes data restrictions. To estimate correctly the effect of well-being, data need to be available both at the source and destination countries. This means that the structural estimates are restricted to asylum-seekers within OECD countries, where our well-being indicator is available. In the data section, however, we show that there is enough variance to estimate aggregate well-being measures.

The log-linear specification in equation (6) has some shortcomings. A key insight of our theoretical framework is the relevance of multilateral resistance terms. It is not evident that the time-varying country fixed effects capture adequately multilateral resistance terms. However, the theoretical properties of the Pseudo-Poisson Maximum Likelihood (PPML) estimator developed by Santos-Silva and Tenreyro (2006) allow to perfectly control for multilateral resistance terms (Fally, 2015). Additionally, PPML is compatible with zero flows in the dependent variable[10] and reduces the bias due to heteroscedastic residuals. Furthermore, the use of country-pair fixed effects reduces the incidence of endogeneity bias at the country-pair level as noted by Baier and Bergstrand (2007).

In sum, it takes the exponent on both sides of the equation to obtain an empirically tractable non-linear gravity equation:

[8] A structural gravity equation means that we include country-pair and home and host fixed effects in line with Fally (2015). Since there are no domestic asylum-seekers, the equation is not structural in the spirit of Yotov et al. (2016).

[9] The fixed effects absorb variables like the log of the wage ratio since $\ln w_{it}/w_{jt} = \ln w_{it} - \ln w_{jt}$.

[10] Since the gravity equation has been defined for bilateral flows, estimating the equation in levels with zeros is particularly interesting in our case. This is because the well-being measures are calculated only for OECD countries, where many observations of intra-OECD asylum-seekers are zero.

$$A_{ijt} = \exp\left(BLI_{ijt} + \lambda_{ij} + \lambda_{it} + \lambda_{jt}\right) \times \varepsilon_{ijt}, \tag{7}$$

where BLI is the ratio of home and host Better Life Index composite indicator. We therefore obtained an empirical gravity equation to which we can apply the recommendations made by Yotov et al. (2016) to estimate consistently the gravity equation. In particular, we use the high-dimensional fixed effects PPML procedure developed by Correia et al. (2019) to estimate equation (7), which deals successfully with the existence of zeros in the dependent variable.

4 Data description

As commented along the paper, we use the information provided by the OECD BLI framework, whose popularity is on the rise (see Durand, 2015). It was designed following the guidelines by the Commission on the Measurement of Economic Performance and Social Progress (see Stiglitz et al., 2009) and takes into account the multidimensional nature of well-being. At the time of carrying out this research, the data in the BLI were available for the period 2013-16;[11] however, in order to match the data on well-being with those of migratory flows, we only use information for years 2013, 2014 and 2015 and for 34 OECD economies.[12] The raw indicators that make up the well-being dimensions have different measurement units and were normalised using the min-max criterion on a 0–1 scale, with higher values indicating better performance. In doing so, we followed the OECD recommendations (see Nardo and Saisana, 2008) and the BLI normalisation guidelines, fully available online at the BLI site.[13]

A major drawback of all objective measures that include several dimensions is the need to compute a composite indicator capable of summarising well-being in a single and comparable figure. In that regard, authors such as Hsieh (2004) as well as the OECD

[11] Data in the BLI labelled as a given year actually correspond to data collected in the previous year, or even earlier in some variables. This is an interesting feature that can help to alleviate reverse causality in the estimations.

[12] We excluded Latvia, South Africa, Russia and Brazil, as information for these countries was incomplete for our three-year panel.

[13] http://www.oecdbetterlifeindex.org/about/better-life-initiative/

(see OECD, 2008) recognised the usefulness of DEA methods to avoid subjectivity in the construction of synthetic well-being indicators. As explained in Section 3.2 , we construct a composite well-being indicator for the years 2013, 2014 and 2015 building on Peiró-Palomino and Picazo-Tadeo (2018). Table 2 reports average results (2013–2015) by country for the 10 well-being dimensions considered and for the global indicator (last column). A score of 1 represents the highest well-being. In order to avoid undetermined ratios in the econometric specification, the DEA-SBM-MCDM program forced the indicator to be strictly greater than 0.[14]

[Table 2 about here.]

Asylum data are taken from the OECD Immigration Outlook database. The dataset tracks asylum petitions in OECD countries from over 200 territories from OECD and non-OECD countries. Since we use several fixed effects, we use only a few control variables like population from the World Bank and physical distance from the CEPII gravity dataset. We have constructed an imbalanced panel adding zeros when there was an observation in a previous year for a particular country pair as suggested by Paniagua (2016).

However, the data might raise two concerns. First, the toll of a theory-consistent estimation that includes time-varying multilateral resistance terms is lost in the actual asylum flows we can estimate. The model imposes the use of differences in BLI country data and limits the asylum flows within OECD countries in the baseline empirical specification. On average, OECD countries receive over 27,000 asylum petitions, while they generate 660 asylum petitions. Further, asylum-seekers in our data might be second round migrants. That means that an asylum petition from Spain to France is not necessarily done by a Spanish national, but from a third country resident that arrived in Spain and filed for asylum in France. However, this eventual possibility should be rather low in our sample, since the Dublin Convention minimizes *asylum shopping* with the 'first country' principle. The European Commission Regulation 343/2003 establishes that the member state responsible of the asylum application is the first country of entry in the EU.

[14]Keep in mind that our dependent variable is defined as the ratio of well-being for each country pair.

Second, on whether the data presents enough variation to perform a significant empirical analysis. To contest this concern, we inspect the cross-country and time variation of the data. The total asylum-seekers sent and received in the three-year period are reported in the first two columns of Table 2. We observe that, despite moderate, there is cross-sectional variation in both asylum flows and well-being. Figure 4 depicts the time variation of our indices. The composite indicator of global well-being (dashed line), follows a slightly positive trend, which is the result of different fluctuations of its dimensions.

[Figure 4 about here.]

The third motivation is related to the differences between home and host countries of the asylum-seekers. When we repeat the exercise and correlate well-being in the source country with the number of fleeing forced migrants, we find an inverse correlation. As shown in Figure 3b, there is a negative correlation between well-being in the source country and the number of asylum-seekers fleeing the country.

Keeping the data limitations in mind, our data allow us to construct a short panel with time-varying dyadic variables. We have calculated the well-being distance as the ratio of well-being indices. Therefore, the dyadic variables ($i \to j$) have no upper bound. An important difference between a country-specific measure and distance is that the former is bounded (in our case between 0 and 1), whereas the latter can theoretically be infinite. We prevent our variables from containing non-defined values with our ratio definition (destination/source). There is no host country with zero well-being that has received asylum applications in our sample.

Focusing on well-being differences rather than on absolute country well-being measures is not only an empirical limitation, but it was justified as well by the model. Recall that one of the fundamental principles of behavioural economics shows how important relativity is for human decision-making (Ariely, 2009). For descriptive purposes, however, showing the data in levels might be useful. Figures and 5 and 6 display scatter plots for the composite well-being measures, at both aggregate and dimension levels, with the asylum flows in host and source countries, respectively. With very few exceptions, the correlations have the expected sign: positive for host countries and negative for source countries.

[Figure 5 about here.]

[Figure 6 about here.]

5 Results

5.1 Baseline estimations

The results shown in Table 3 are the baseline estimates for asylum flows. Our analysis starts by estimating the effect of the well-being host to home ratio. We would expect that an increase in this ratio (associated with an increase (decrease) of the well-being indicator at the destination (source) country) would have a positive effect on the asylum flows. Overall, the gravity equation specification fits the data well, explaining 99% of the variance of the sample in column 2, which include a full set of fixed effects with PPML.

[Table 3 about here.]

We start by performing an exercise to quantify the bias due to not controlling for remoteness (i.e., multilateral resistance) and country pair heterogeneity and we introduced fixed effects in the estimates gradually. In column 1 of Table 3 we do not include any fixed effect. Since we do not control for time-invariant unobserved country pair heterogeneity, we introduce the distance between country pairs and the population in each country. This specification is a naive estimation of the gravity equation (2). As expected from theory, the distance has a negative effect on asylum flows (as it captures relocation costs) and that population has a positive effect (as it captures country size). We also introduce the stock of previous migrants from the same origin and, as expected, it has a positive and significant effect on asylum flows. However, since country pair fixed-effects are omitted, we are in fact estimating the effects between country-pairs rather than within country-pairs, which is not very informative. The positive and significant effect in column 1 has to be interpreted as follows: country pairs with higher well-being ratio have more asylum flows on average (0.48% increase due to one point increase in the ratio).

The estimates of the effect of the covariates disappear when we run a fixed-effects regression in column 2 of Table 3 (thus, we cannot introduce distance nor population). Now in column 2, we are estimating the effect within country pairs, our preferred specification with the full set of controls as proposed in equation (7). While in column 1 we were only holding constant population and distance, in column 2 we control for any country specific time-varying variable like wages, income, population or GDP. The effect of the migrant stock is not significant. However, the stock of migrants is close to be time-invariant within country pairs in our sample and consequently its effect is absorbed by the country-pairs fixed effects.

Focusing on our variable of interest, after controlling for the migrant stock, time invariant unobserved heterogeneity at the country pair level and time-variant unobserved heterogeneity at the source and destination country, the well-being ratio has a positive and significant effect on asylum flows. In particular, increasing one point the well-being ratio within country pairs, increases asylum flows by 0.63% on average.

The bias stemming from omitting multilateral resistance is evident when comparing the coefficients of columns 1 and 2. Once all time-variant country variables have been controlled for, we are able to obtain a clean effect of well-being differences on asylum flows. As we elaborated earlier, PPML estimates consider the remoteness of country pairs relative to rest of the world and captures multilateral resistance adequately with fixed effects (Fally, 2015). In other words, the impact of well-being differences would be biased if we do not consider the structural forces of the rest of the countries. This bias can be seen at a glance when we repeat the estimations with OLS in the last two columns. While results in column 3 are similar to those in column 1, the explanatory capacity of the model is much lower. In column 4, no significant effect is found. These results might explain why only a few studies have tackled this issue empirically.

5.2 Robustness checks

After the baseline estimates have confirmed our model, we test their robustness. We start by performing a test of strict exogeneity in column 1 of Table 4. The test introduces the lead of the well-being ratio as a regressor in the equation. A significant coefficient would imply that asylum-seekers are anticipating the well-being ratio or that there is an endogeneity bias related to reverse causality. However, the results suggest that the well-being ratio is strictly exogeneous. However, we introduced in column 2 the lag of the ratio to contest any possible concerns in this respect. The lagged estimate was positive, significant, and larger than the contemporaneous well-being variable.

[Table 4 about here.]

Next, we rule out the possibility that our results are driven by the construction of the well-being ratio or by harmful collinearity with fixed effects. In column 1 of Table 5 we take the absolute value of the difference in the well-being indicator of the host and home countries instead of using the ratio. The result is positive and significant (to the 0.1 level). In column 2 we computed a well-being indicator without the income dimension to exclude the possibility that income is driving our results. This is not the case since increasing the ratio of this indicator has a positive and significant effect on asylum flows.

However, when we combine two country-specific indexes, we could be really identifying a functional form adjustment, captured with fixed effects. To prevent this, we construct bilateral indexes in two ways. In column 3 we calculate the standard deviation of the well-being ratio by year. This is calculated with respect to the mean of all country pairs, meaning that increasing one standard deviation is the effect of moving away from the mean towards the frontier. We obtain a positive and significant estimate that can interpreted as a frontier effect. When the ratio of well-being within country pairs moves away from the mean, it relatively increases with respect to the rest of country pairs, the flow of asylum-seekers increases significantly. Lastly, in column 4 we recode the indicator as bilateral rank after ranking countries according to their well-being level. In other words, each country pair ratio is compared to the greatest bilateral well-being distance in each year. Again, we obtain positive and significant results using this rank-in-rank measure.

[Table 5 about here.]

5.3 Home and host effects

Once we have estimated the baseline model and made sure that the results are robust, we continue by expanding the breadth of the empirical analysis. The first step consists in estimating the effect of well-being at home and the host separately, i.e. the push and pull factors. This can be done in two ways. First, by omitting multilateral resistance terms altogether as in columns 1 and 2 of Table 6. Second, by omitting Home*year fixed effects when estimating the effect of the home's well-being as in column 3 and omitting Host*year fixed effects when estimating the effect of the host's well-being as in column 4.

[Table 6 about here.]

The effect of the well-being indicator is only positive and significant in the destination country. In this case, omitting multilateral resistance terms (in column 1) biases the estimates upwards. The results from this exercise suggest that well-being pull factors (host) are weaker than push factors (home). This would stand at odds with evidence showing that contrary to non-asylum migration, push factors like terror and human rights abuse at origin countries have more influence than pull factors on asylum seekers (Hatton, 2020). However, our results should be interpreted with caution for two reasons. Firstly, omitting multilateral resistance terms either at the host or home countries is not theoretically consistent and biases the results. Secondly, these estimates suffer a country selection bias. When we estimate home effects (columns 1 and 3), our sample is limited to OECD home and host countries. However, when we estimate host effects (columns 2 and 4) our sample includes 200 home countries and the OECD countries, which explains the great difference in the number of observations across models. Therefore, we are estimating the host effects without controlling for source country factors and we can only conclude that well-being at the host is a relevant factor to explain asylum flows, but we cannot compare its relevance against push factors at home.

With these considerations in mind, in Table 7 we estimate the individual dimensions of the composite well-being indicator by origin in column 1 and destination in column 2. Estimates reveal that only certain dimensions of well-being are relevant push or pull factors. Regarding push factors, only education, health and work-life balance are significant for OECD origin countries. Pull factors are jobs, civic engagement, safety and work-life balance.

[Table 7 about here.]

Let us now contextualise our results with previous empirical evidence. Previous studies have suggested that the dimension of jobs (indicators of job security, personal earnings, long-term unemployment rate, and employment rate), civic engagement (stakeholder engagement for developing regulations and voter turnout) and safety (homicide rate and feeling safe walking alone at night) would act as significant push factors (Davenport et al., 2003; Hatton, 2009, 2016). In our estimates, however, they appear as significant pull factors. There are two potential explanations. Firstly, previous authors studied events like genocide, civil war, dissident conflicts, which are not present in OECD countries during our time frame. Secondly, our pull estimates include all origins and only OECD destinations. It would be plausible that push and pull factors are correlated since asylum migrants might select countries with higher well-being precisely in the most relevant pull dimensions. Regarding the effect of jobs, Kang (2020) reports similar non-significant estimates of unemployment at the origin in a sample of European Union countries.

We observe, however, that some push factors align with other studies that analysed education and health. Increasing the education dimension at origin countries increases asylum flows within OECD countries. In our OECD context, our result can be interpreted in line with the human capital literature, suggesting that countries with higher level of education will be more prepared to migrate or file an asylum petition (Aksoy and Poutvaara, 2019; Damm, 2009). A decrease in the well-being at the origin country related to health or work fosters significantly asylum flows. Health is the dimension with the highest coefficient, albeit its significance is weaker (10%). This result aligns with the ample evidence that relates natural frictions, and death-threatening persecution and asylum flows (Hatton, 2020).

Work-life balance is related to societal structure in line with Vogler and Rotte (2000), and it is a significant push factor with the expected negative sign. However, it has a counter-intuitive negative and significant sign also as a pull factor. The magnitude of the push coefficient, however, doubles that of the pull coefficient. Therefore, in relative terms it should be a net push factor. Additionally, the negative sign of work-life balance at the destination could be interpreted along with the evidence that shows an education-occupation mismatch of asylum migrants (Widmaier and Dumont, 2011). Asylum-seekers might be willing to work longer hours to compensate for the lower salaries obtained in an occupation that does not match their professional training.

6 Conclusions and policy issues

Our paper used a theory-driven structural gravity equation (that is, including multilateral resistance terms along with country pair fixed effects) to estimate the effect of a composite well-being indicator on asylum flows with a short panel of OECD countries. The model accounts for well-being in the decision to seek asylum, incorporating it into a structural gravity framework, which delivers a tractable equation that accounts for income and well-being differences as well as multilateral resistance. Estimates reveal that differences in well-being between source and host countries are relevant determinants of asylum flows. The results also reveal that despite informational frictions, asylum-seekers seem to receive positive signals and respond to them rationally.

One of the main contributions of the paper is to show the theoretical and empirical relevance of considering multilateral resistance to asylum-seekers. Our results show that well-being differences surface only after controlling adequately for the joint remoteness of countries. This leads to a better understanding of forced migration flows.

Our results also highlight that the relative differences observed by the asylum-seekers are relevant. Moreover, our findings lend support to the use of this new set of multidimensional measures of well-being, namely the Better Life Index measure, since some of its dimensions can explain important phenomena such as population movements. Nevertheless, there is still a long way to go to further improve the accuracy of composite indicators. In this paper, we refined some of the latest techniques in the construction of synthetic indicators by using the raw indicators rather than dimension-level measures generated using equal weights (see Peiró-Palomino and Picazo-Tadeo, 2018).

Given all the above arguments, this paper sheds some additional light on these important topics. In a context of growing numbers of asylum applications and given the need for a deeper understanding of the determinants of that phenomenon, our results may be useful for a more balanced design of migration policies. The inspirational foundations of the European project (*liberté, égalité, fraternité* and prosperity) are falling apart at the seams in the face of the refugee crisis. Neither policy-makers nor academia can evade the responsibility of designing, advocating and implementing policies that mitigate the humanitarian crisis and help prevent the deaths in the Mediterranean. Previous research has shown that coordination is desirable for asylum policies (Facchini et al., 2006). Some of the lessons learned from our study might be useful to those seeking an understanding of asylum migration and thus contribute modestly to the design of better policies, like the 'Dublin rule' (Garcés-Mascareñas, 2015).

Such policies might include those aimed to decrease the gap between the West and the rest by reinforcing particular dimensions of well-being. In particular, our results highlight the relevance of jobs, civic engagement and safety as pull factors and education, health and work-life balance as push factors. These results point towards two types of policies. On the one hand, the focus is on the host countries, by broadening the scope of economic policies at the source with a wider range of targets and political and civil actors. Regarding source countries, our results suggest that a better design of policies should take into account other well-being variables apart from jobs and income.

Finally, the paper also has some limitations, which might spur new research. For instance, the well-being index is only computed for OECD countries, which severely limits the geographical scope of the analysis. A second limitation is the short time span considered, which is determined by the availability of data. In that regard, future updates of the datasets used will allow for the construction of longer panels, which may provide more accurate insights. Future research exploring the relationship between diverse types of migrants and well-being would be certainly welcome.

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Appendix A: Derivation of the model

Let the probability of a random asylum-seeker selecting a particular destination be given by the multinomial logit form. This kind of setup has allowed scholars to model migration flows (e.g. Grogger and Hanson, 2011). In line with these models,[15] we assume that the aggregate probability is the proportion of identical asylum-seekers from i (except for the values of ϵ_{ijz}) that choose j. The predicted aggregate flow of asylum-seekers from i to j is:

$$A_{ij} = G(u_{ij})N_i, \tag{A.1}$$

where $G(u_{ij}) = \frac{\exp(u_{ij})}{\sum_k \exp(u_{ik})}$ is the proportion of individuals from i that seek asylum in j and N_i is the population of country i.

With logarithmic utility, **?** shows that the aggregate equation for asylum flows has the CES demand structure that is familiar from trade gravity models:

$$A_{ij} = \frac{\varphi_{ij}/\tau_{ij}}{\sum_k \varphi_{ik}/\tau_{ik}/\tau_{ik}} N_i. \tag{A.2}$$

Let us now define $L_i \equiv \sum_k \varphi_{ik} w_{ik}/\tau_{ik}$ and the total asylum-seekers arriving in j from all origin countries as $S_j \equiv \sum_i A_{ij}$. The total asylum-seekers worldwide is defined as $N \equiv \sum_i A_i = \sum_j S_j$. It is useful to define $\Omega_j \equiv \sum_k \frac{w_{kj}^{\sigma}\varphi_{kj}^{1-\sigma}/\tau_{kj}}{L_i}\frac{N_k}{N}$ so that the following identity holds:

$$N = \frac{S_j}{\Omega_j} \tag{A.3}$$

To close the model, we clear the asylum-seeker market:

$$S_j = \sum_i \frac{\varphi_{ij}/\tau_{ij}}{W_i} N. \tag{A.4}$$

and substitute equation (A.4) in L_i:

[15] By making utility depending on differentials we depart from the original version of McFadden (1973) where utility depended on levels.

$$L_i = \sum_k \frac{\varphi_{ij}/\tau_{ij}}{\Omega_k} \frac{S_k}{N}. \tag{A.5}$$

Lastly, we substitute equations (A.5) and (A.3) in the asylum-seeker in equation (A.2) to obtain our equation gravity equation (2) from Section 3.1.

Table 1: Description of well-being dimensions and their indicators in the BLI

Dimension	Indicators
Housing	(i) Dwellings without basic facilities; (ii) Housing expenditure; (iii) Rooms per person
Income	(i) Household net adjusted disposable income; (ii) Household net financial wealth
Jobs	(i) Employment rate; (ii) Long-term unemployment rate; (iii) Personal earnings
Community	(i) Quality of support network
Education	(i) Educational attainment; (ii) Student skills; (iii) Years in education
Environment	(i) Air pollution; (ii) Water quality
Civic engagement	(i) Consultation on rule-making; (ii) Voter turnout
Health	(i) Life expectancy; (ii) Self-reported health
Safety	(i) Assault rate; (ii) Homicide rate
Work-life balance	(i) Employees working very long hours; (ii) Time devoted to leisure and personal care

Note: A detailed description of these dimensions and their indicators can be found at the OECD Better Life Index (BLI) webpage (`http://www.oecdbetterlifeindex.org/`). Furthermore, the indicator "job security" in the BLI was dropped from the dimension "jobs" because of changes in the elements considered for its measurement over the years.

Table 2: Asylum-seekers and well-being dimensions (0 worst, 1 best) and composite indicator by country

Country	Asylum Source	Asylum Destination	Housing	Income	Jobs	Community	Education	Environment	Civic	Health	Safety	Work-life balance	Well-being
Australia	4	10,258	0.780	0.255	0.574	0.855	0.468	0.810	0.354	0.802	0.759	0.508	0.586
Austria	4	39,981	0.458	0.314	0.547	0.838	0.423	0.680	0.217	0.608	0.742	0.564	0.574
Belgium	10	20,502	0.718	0.500	0.449	0.833	0.443	0.643	0.190	0.652	0.645	0.859	0.778
Canada	13	12,319	0.824	0.417	0.551	0.867	0.469	0.772	0.254	0.830	0.761	0.555	0.695
Chile	27	0	0.220	0.088	0.276	0.517	0.290	0.247	0.063	0.459	0.351	0.467	0.260
Czech Republic	80	678	0.392	0.090	0.314	0.620	0.529	0.698	0.157	0.459	0.737	0.659	0.339
Denmark	1	13,021	0.597	0.252	0.556	0.933	0.495	0.813	0.250	0.614	0.722	0.953	0.633
Estonia	7	91	0.335	0.031	0.247	0.659	0.491	0.728	0.081	0.350	0.496	0.668	0.267
Finland	1	12,364	0.574	0.133	0.481	0.870	0.567	0.809	0.241	0.589	0.733	0.692	0.465
France	15	63,352	0.531	0.307	0.405	0.749	0.336	0.737	0.136	0.607	0.693	0.746	0.577
Germany	19	231,567	0.529	0.313	0.513	0.857	0.498	0.802	0.136	0.558	0.730	0.767	0.602
Greece	28	9,234	0.310	0.077	0.104	0.259	0.406	0.408	0.159	0.675	0.708	0.672	0.260
Hungary	542	77,036	0.184	0.063	0.204	0.661	0.447	0.646	0.182	0.371	0.713	0.724	0.292
Iceland	0	120	0.450	0.238	0.624	1.000	0.480	0.814	0.183	0.729	0.749	0.537	0.558
Ireland	46	1,607	0.644	0.180	0.367	0.988	0.407	0.729	0.244	0.757	0.746	0.752	0.529
Israel	116	0	0.237	0.323	0.384	0.672	0.374	0.472	0.071	0.758	0.630	0.472	0.468
Italy	48	56,309	0.384	0.345	0.304	0.697	0.264	0.542	0.163	0.586	0.701	0.707	0.531
Japan	12	5,023	0.480	0.517	0.463	0.725	0.506	0.622	0.165	0.205	0.787	0.433	0.678
Korea	129	3,136	0.293	0.162	0.438	0.160	0.447	0.470	0.298	0.232	0.745	0.469	0.370
Luxembourg	0	1,216	0.602	0.420	0.561	0.686	0.277	0.760	0.240	0.650	0.693	0.744	0.712
Mexico	14,578	0	0.163	0.037	0.264	0.000	0.015	0.405	0.222	0.472	0.000	0.061	0.116
Netherlands	12	23,747	0.607	0.454	0.569	0.816	0.429	0.614	0.187	0.689	0.692	0.845	0.746
New Zealand	5	140	0.835	0.144	0.481	0.906	0.428	0.806	0.294	0.847	0.745	0.612	0.491
Norway	5	17,022	0.595	0.060	0.609	0.870	0.465	0.817	0.245	0.669	0.725	0.840	0.487
Poland	242	9,746	0.200	0.048	0.268	0.754	0.531	0.446	0.238	0.418	0.768	0.517	0.259
Portugal	13	442	0.437	0.176	0.243	0.557	0.170	0.696	0.144	0.374	0.670	0.654	0.381
Slovak Republic	307	194	0.295	0.039	0.169	0.701	0.450	0.717	0.149	0.471	0.729	0.683	0.267
Slovenia	5	188	0.382	0.106	0.354	0.800	0.498	0.627	0.245	0.513	0.723	0.624	0.374
Spain	30	7,470	0.568	0.142	0.203	0.872	0.276	0.518	0.198	0.687	0.714	0.920	0.455
Sweden	8	86,765	0.493	0.338	0.523	0.805	0.563	0.900	0.356	0.746	0.689	0.759	0.624
Switzerland	3	25,560	0.554	0.835	0.653	0.923	0.458	0.764	0.162	0.769	0.717	0.682	0.998
Turkey	5,961	88,451	0.101	0.017	0.158	0.325	0.064	0.000	0.212	0.489	0.656	0.000	0.069
United Kingdom	35	32,903	0.571	0.390	0.486	0.867	0.371	0.820	0.295	0.692	0.770	0.611	0.645
United States	239	97,584	0.812	0.850	0.554	0.739	0.472	0.703	0.221	0.799	0.365	0.501	0.985
OECD average	663	27,883	0.4524	0.2442	0.4577	0.7171	0.3603	0.6492	0.1862	0.5541	0.7195	0.6057	0.5087

Notes: Figures correspond to the composite indicators elaborated using the methodology described in Section 3.2. Average values for the period 2013-2015.
Asylum-seekers from all sources and destinations.

Table 3: Baseline estimations

	(1)	(2)	(3)	(4)
Well-being ratio	0.365***	0.582***	0.343***	-0.004
	(0.04)	(0.15)	(0.04)	(0.13)
Stock of migrants (log)	0.531**	0.269	0.051**	-0.039
	(0.21)	(1.12)	(0.02)	(0.07)
Population home (log)	1.483***		0.038**	
	(0.35)		(0.02)	
Population host (log)	0.612**		0.041**	
	(0.30)		(0.02)	
Distance (log)	-0.850**		-0.022	
	(0.34)		(0.03)	
Observations	2304	2304	2304	2304
R^2	0.934	0.997	0.424	0.900
Method	PPML	PPML	OLS	OLS
Country Pair FE	No	Yes	No	Yes
Home*year FE	No	Yes	No	Yes
Host*year FE	No	Yes	No	Yes

Notes: Robust standard errors in parentheses, clustered by country pair.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4: Robustness checks: endogeneity

	(1)	(2)
Well-being ratio	0.981**	
	(0.22)	
Well-being ratio (Lead)	0.253	
	(0.29)	
Well-being ratio (Lag)		1.687**
		(0.78)
Observations	2108	2108
R^2	0.9981	0.9952
Country Pair FE	Yes	Yes
Home*year FE	Yes	Yes
Host*year FE	Yes	Yes

Notes: Robust standard errors in parentheses, clustered by country pair. PPML estimation.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 5: Robustness checks: alternative specifications

	(1)	(2)	(3)	(4)
Well-being ratio diff	2.630*			
	(1.63)			
Well-being ratio No income		0.628***		
		(0.12)		
Well-being ratio STD			0.925***	
			(0.24)	
Well-being ratio rank				10.212***
				(2.43)
Observations	2304	2302	2304	2304
R^2	0.994	0.994	0.994	0.994
Country Pair FE	Yes	Yes	Yes	Yes
Home*year FE	Yes	No	Yes	Yes
Host*year FE	Yes	No	Yes	Yes

Notes: Robust standard errors in parentheses, clustered by country pair. PPML estimation
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 6: Home and host effects

	(1)	(2)	(3)	(4)
Population home (log)	4.814	6.660		
	(9.60)	(7.00)		
Population host (log)	21.637	40.131**		
	(16.90)	(18.06)		
Well-being home	0.857		-2.369	
	(4.50)		(3.60)	
Well-being host		9.228***		3.082**
		(2.38)		(1.42)
Observations	2108	11346	2108	11346
R^2	0.996	0.978	0.997	0.988
Country Pair FE	Yes	Yes	Yes	Yes
Home*year FE	No	No	No	Yes
Host*year FE	No	No	Yes	No

Notes: Robust standard errors in parentheses, clustered by country pair.
Well-being is lagged on year. PPML estimation.
Models for home effects include only home and host OECD countries.
Models for host effects include 200 home countries and host OECD countries.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 7: Individual dimensions of well-being by source and destination

	(1) Home	(2) Host
Housing	14.524	-1.862
	(9.41)	(1.77)
Income	-17.611	2.662
	(12.66)	(1.84)
Jobs	-4.204	1.896*
	(2.62)	(1.09)
Community	-3.084	-0.351
	(2.46)	(0.53)
Education	3.896**	0.474
	(1.94)	(1.63)
Environment	2.621	-0.560
	(10.39)	(1.45)
Civic engagement	13.763	12.965**
	(13.88)	(5.17)
Health	-13.718*	-0.400
	(7.65)	(0.41)
Safety	-0.660	0.905***
	(1.08)	(0.27)
Work-life balance	-3.762*	-1.570**
	(2.09)	(0.79)
Observations	2108	11346
R^2	0.996	0.985
Country Pair FE	Yes	Yes
Home*year FE	No	Yes
Host*year FE	Yes	No

Notes: Robust standard errors in parentheses, clustered by country pair.
The model for home effects includes only home and host OECD countries.
The model for host effects includes 200 home countries and host OECD countries.
Well-being dimensions are lagged. PPML estimation.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Figure 1: Asylum-seekers (2000-2015)

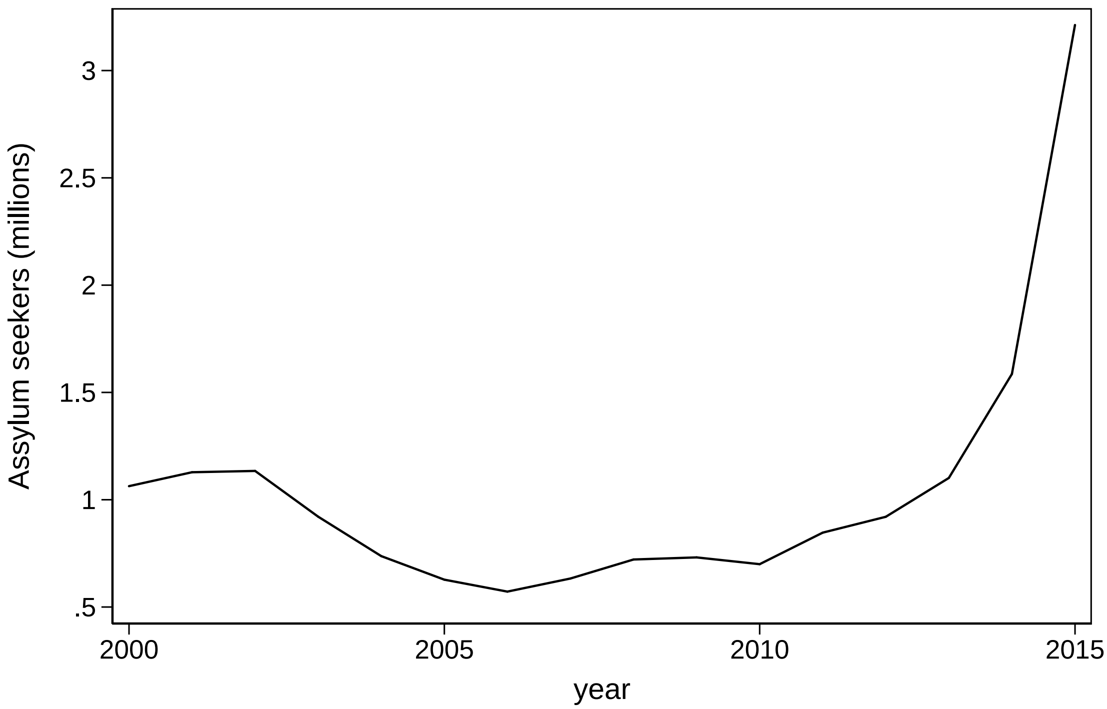
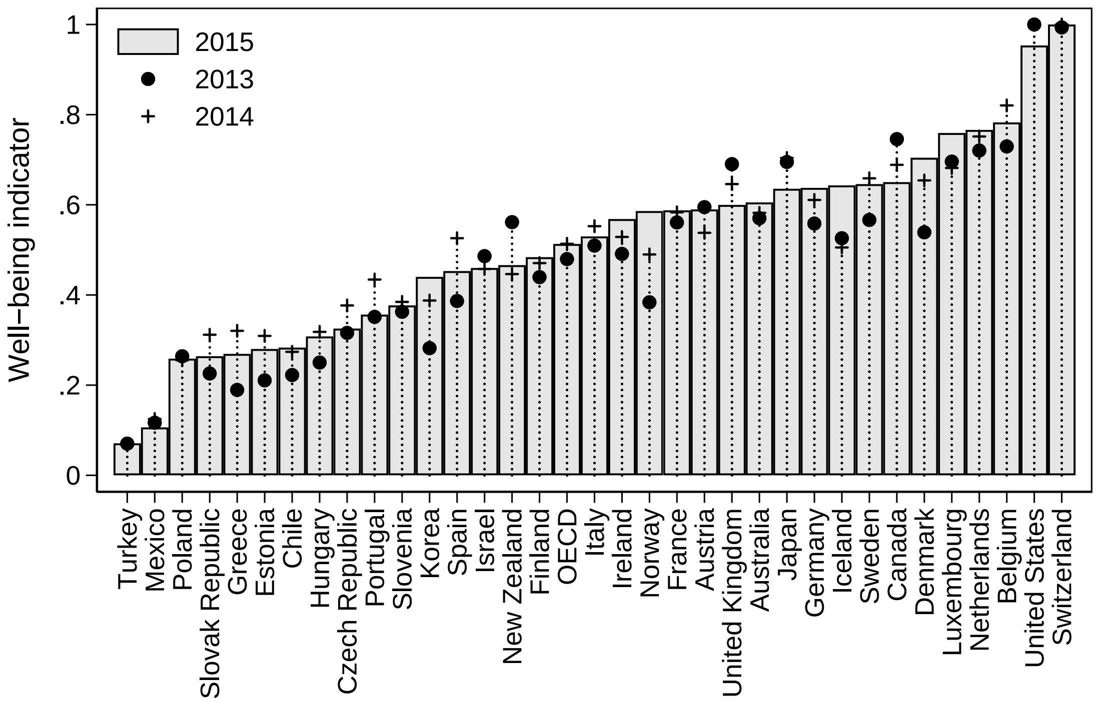
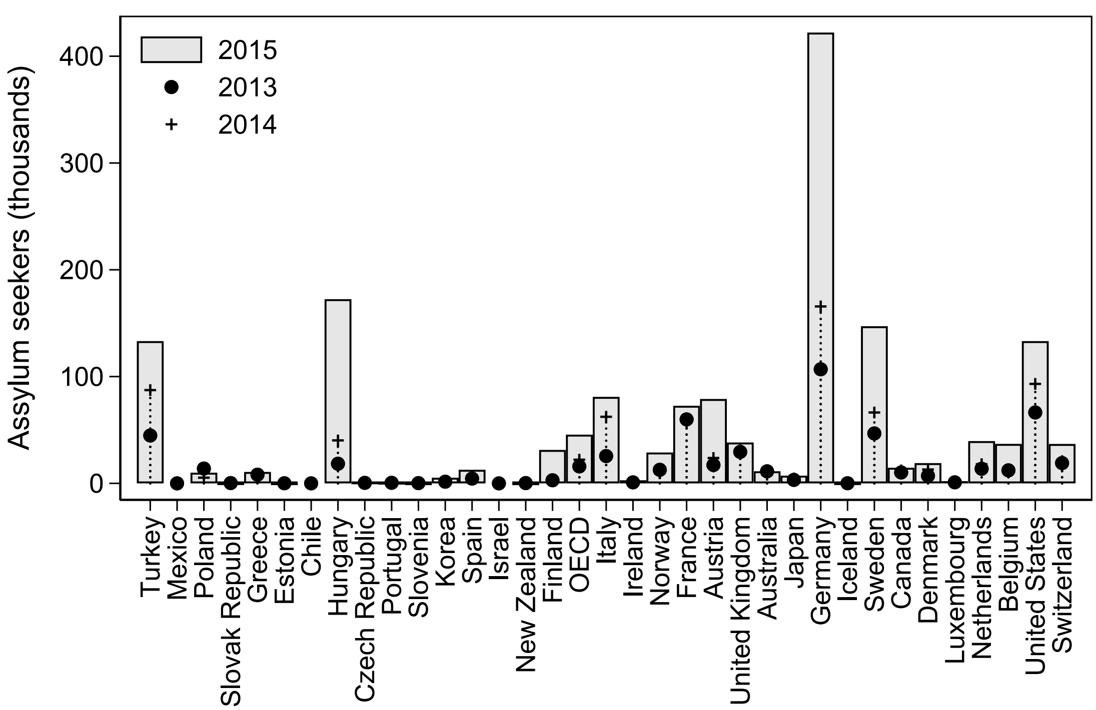


Figure 2: Well-being and asylum-seekers in OECD countries (2013–2015)

(a) Well-being in OECD



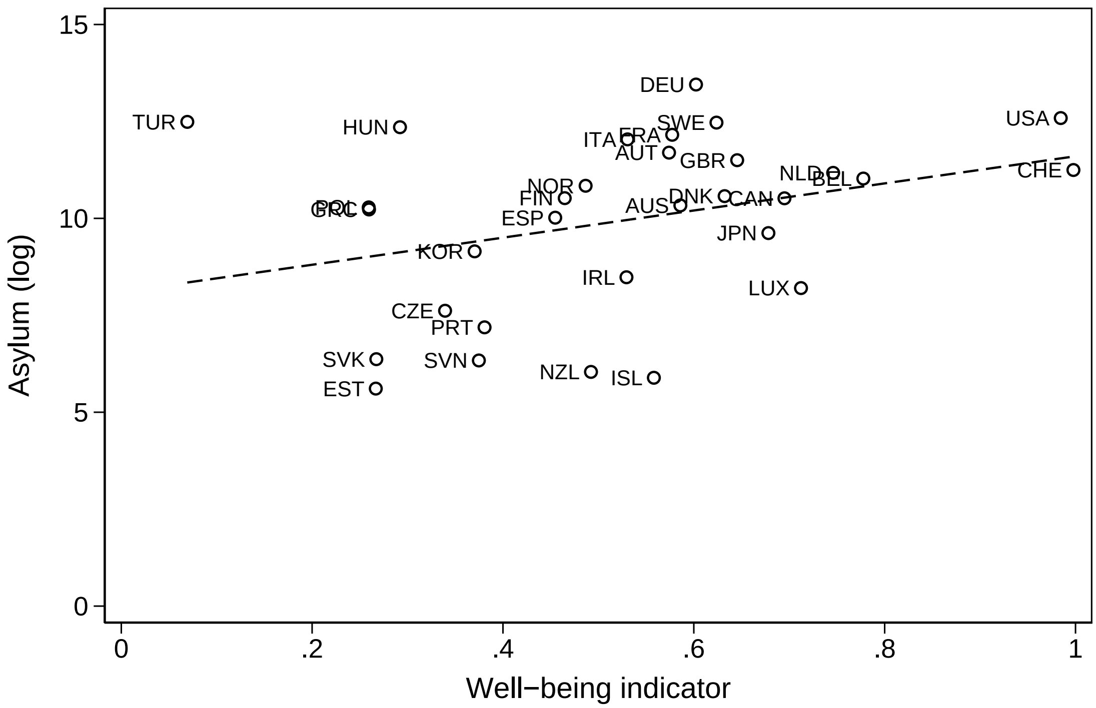
(b) Asylum-seekers in OECD



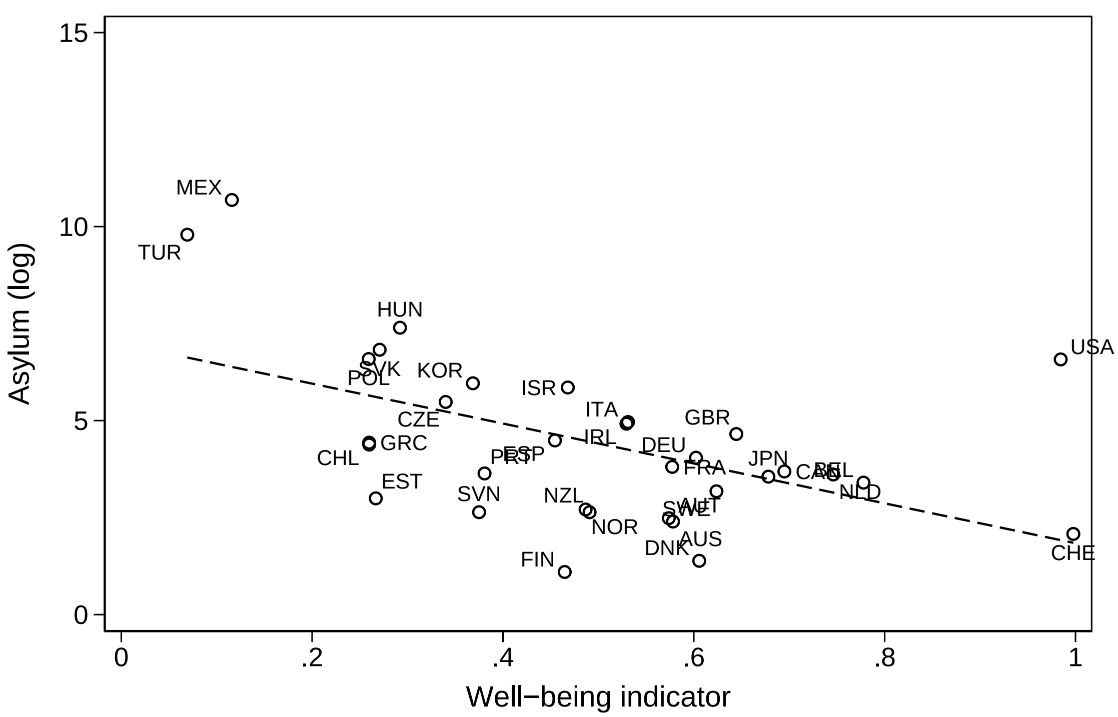
Notes: The well-being indicator lies between 0 (worst well-being) and 1 (best well-being).

Figure 3: Asylum-seekers vs. well-being

(a) OECD host



(b) OECD source



Notes: The well-being indicator lies between 0 (worst well-being) and 1 (best well-being).

Figure 4: Evolution of well-being

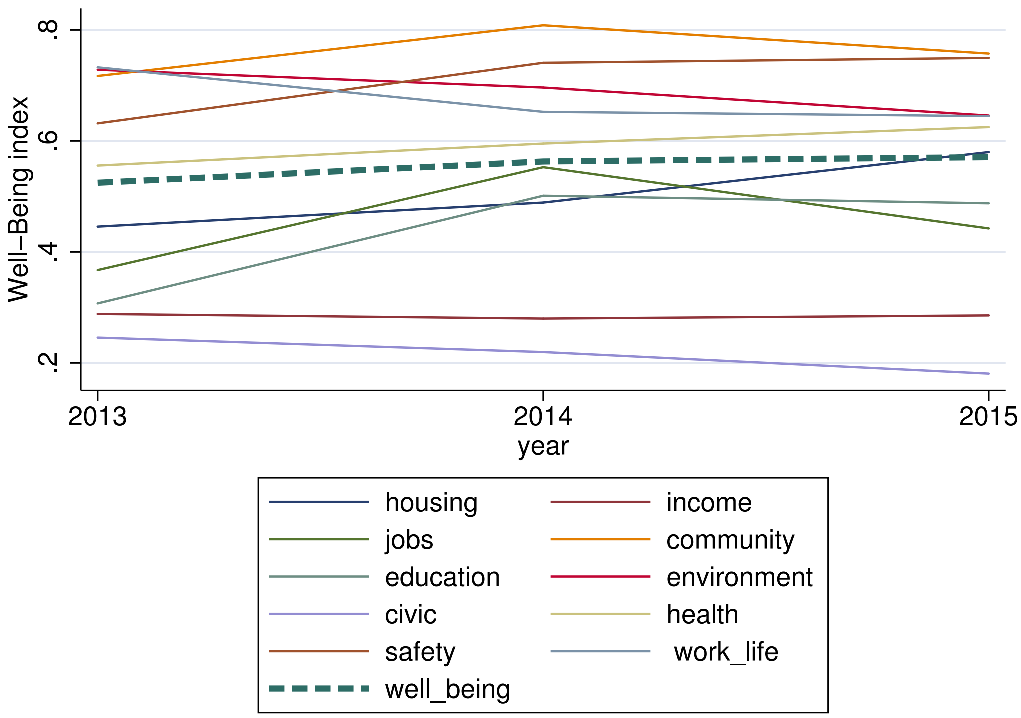


Figure 5: Asylum and well-being, correlations for host countries

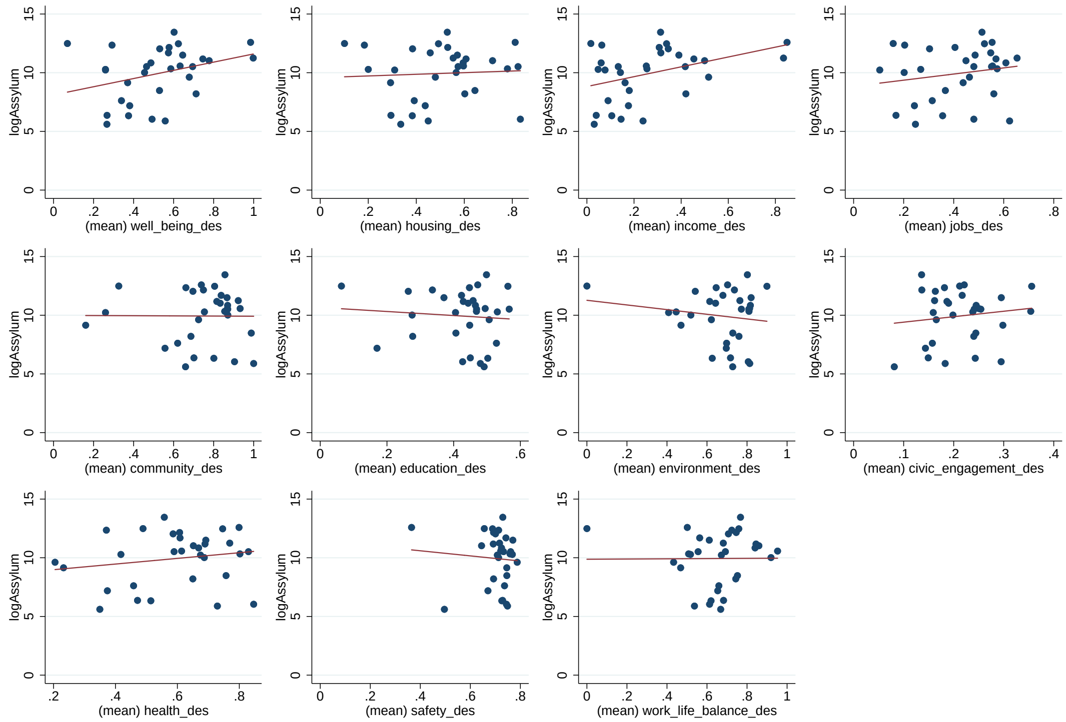


Figure 6: Asylum and well-being, correlations for source countries