

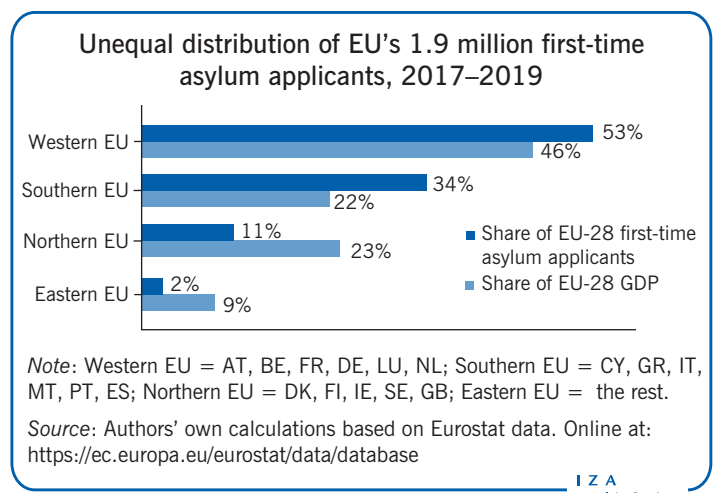
# Can market mechanisms solve the refugee crisis?

## The combination of tradable quotas and matching would benefit host countries as well as refugees

Keywords: international migration, refugees, EU asylum policy, tradable quotas, matching, public goods

### ELEVATOR PITCH

Ever since the major inflow of refugees (the “refugee crisis”) in 2015 and 2016, there has been heated debate about the appropriate distribution of refugees in the EU. Current policies revolve around mandatory quotas, which disregard the preferences of EU members and refugees alike. This problem can be addressed with two market mechanisms. First, tradable quotas minimize the cost of asylum provision for host countries. Second, a matching system gives refugees more discretion over where they are sheltered. While this proposal is theoretically appealing, it has yet to be tested in practice.



### KEY FINDINGS

#### Pros

- + Initially, quotas are assigned to countries according to fairness or other criteria.
- + The market reallocates the quotas to the countries with the lowest costs of hosting refugees.
- + By reducing their costs, countries have more incentives to participate.
- + The matching system respects both refugees' and countries' preferences as much as possible.
- + The introduction of trade and matching makes mandatory quotas more flexible.

#### Cons

- The proposed system is theoretical and has not yet been implemented in practice.
- Some countries may still prefer the status quo and thus refuse to participate.
- The quota market may raise ethical concerns about the commodification of refugees.
- Allowing refugees to choose their destination is a tough sell to some EU member states.
- The mechanism is static and thus better suited for emergency situations than for permanent responsibility sharing.

### AUTHOR'S MAIN MESSAGE

Although the EU's asylum system needs reform, there has not yet been much progress. Most proposals involve mandatory quotas, which distribute refugees according to GDP, population size, and other measures of reception capacity. More flexibility can be achieved through two market elements: tradable quotas and matching. The opportunity to trade quotas minimizes countries' overall costs of providing asylum. The matching system improves refugees' integration outcomes by respecting their preferences over host countries, and vice versa. Beyond the EU, the proposal can be applied to other international efforts, such as refugee resettlement via the UNHCR.

## MOTIVATION

In 2015 and 2016, the EU received more than two million asylum seekers from Syria and other conflict-torn countries. Since then, EU leaders have been quarreling about the adequate distribution of refugees. Part of the EU's ad-hoc response to the "refugee crisis" was to assign each member state a quota of refugees, based on measures of reception capacity. The adoption and implementation of this mechanism was fiercely opposed by several EU members, which felt that their preferences were being ignored. While the idea of mandatory quotas was partially abandoned in 2020, viable alternatives have yet to be identified.

This article describes a novel approach to distribute refugees in the EU and other international organizations. The proposal combines two market mechanisms—tradable quotas and matching—and applies them to asylum policy.

## DISCUSSION OF PROS AND CONS

### Background on current asylum policy

The 1951 Refugee Convention, together with its 1967 Protocol, constitutes the legal backbone of international refugee protection. At the heart of the Convention is the prohibition against expelling refugees to a country where they face serious threats to their life or freedom ("non-refoulement"). The Convention also endows refugees with fundamental rights, such as freedom of movement, access to education, and the right to work. With 145 state parties, the Convention enjoys almost universal acceptance. Refugee protection therefore appears to be an international public good, valued by most states. But since asylum provision is costly, each individual state prefers others to do the work. Such "free riding" implies that fewer refugees are protected than is collectively optimal for the international community.

A vivid demonstration of free riding was the EU's response to the upsurge in irregular migration in 2015 and 2016. In each of the two years, the EU registered more than one million asylum applicants, mostly from Syria, Afghanistan, and Iraq. Their main points of entry into the EU were Greece and Italy, whose reception facilities were quickly overwhelmed. Other EU members showed little willingness to help them out. As refugees tried to make their way toward Western and Northern Europe, several states reacted with border closures. Hungary, Slovenia, and Austria, among others, even erected fences to keep asylum seekers from entering their territories.

To tackle the escalating situation, the European Commission launched the European Agenda on Migration in May 2015 [1]. One of its main components was an emergency mechanism to relocate 160,000 asylum seekers from Greece and Italy to the rest of the EU. A distribution key specified a quota of refugees for each EU member, based on measures of reception capacity (mainly GDP and population size). For each relocated person, the receiving country was financially compensated with €6,000 from the EU budget. Several Eastern European countries staunchly opposed the mandatory quotas but were overruled in the Council. Partly reflecting their reluctance, only about 35,000 refugees were eventually relocated.

While fewer refugees have arrived after 2016, they are still unequally distributed across the EU. Of the 1.9 million first-time asylum applicants registered between 2017

and 2019, a disproportionately large share was lodged in member states at the EU's southern border. By contrast, Northern and Eastern European countries received relatively few asylum applications (see the Illustration on p. 1). Since the European Agenda on Migration failed to even out this imbalance, the Commission proposed a "fresh start" in September 2020 [2]. Titled the New Pact on Migration and Asylum, it still contemplates relocation quotas but makes them more flexible. When a country comes under migratory pressure, as Greece and Italy did in 2015, other EU members are supposed to show solidarity. The novel ingredient is that they can choose how to contribute: either by relocating asylum seekers or by helping with the deportation of those migrants whose asylum applications have been rejected. The reactions to the New Pact have been lukewarm. It is thus unclear whether, and to which extent, it will be implemented.

### **An alternative proposal to distribute refugees in the EU**

It appears clear that an alternative system is needed to distribute refugees in the EU. The main idea behind the mechanism proposed in this article is to introduce two market elements: tradable quotas and matching. Both have been widely studied in the economics literature and implemented in various policy areas. The novelty of the proposal is to combine them and apply them to refugee protection [3], [4].

Tradable quotas have gained great popularity in climate policy, where they are usually part of a cap-and-trade program. For example, the EU's Emissions Trading System fixes a cap on the overall level of greenhouse gas emissions in the EU, assigns a quota to each regulated firm (which together sum up to the cap) and then allows firms to trade their quotas among each other. A firm that wishes to pollute more than its initial quota must buy additional permits in the market, whereas a less polluting firm can sell its unused permits and thus make a profit. Provided that firms act as price takers, cap-and-trade systems are cost effective, which means that emissions will be reduced by those firms for which it is least costly to do so [5].

The first part of the proposal applies the cap-and-trade logic to asylum provision. Each country is assigned an initial quota of refugees for whom it is responsible. Countries can then participate in a market to exchange their obligations. If a country wishes to reduce its quota, it must pay the market price to another country willing to step up its contribution. This market introduces a novel degree of flexibility to balance physical and financial responsibility toward refugees.

An important difference to cap-and-trade systems in climate policy is that "refugees are not widgets," as economist and Nobel Prize laureate Alvin Roth puts it [6]. In particular, refugees have preferences over *where* they receive asylum. While the right to choose a specific country is not enshrined in the 1951 Refugee Convention, there are practical reasons to give refugees a say. First, refugees themselves know best where they could thrive. For example, some of them might speak Lithuanian, whereas others have family in Belgium. Taking this information into account could improve their integration outcomes, which would benefit not only the refugees themselves but also their host countries. Second, the absence of internal borders in the Schengen Area makes it difficult to prevent secondary migration. If refugees are sent to an undesired destination, they have some scope to express their preferences "with their feet."

Just like refugees have preferences over states, states have preferences over refugees. Language skills, professional qualifications, and other characteristics are more valuable to some countries than to others. The question of how to suitably aggregate the preferences of both refugees and states falls into the realm of “matching theory,” a research area at the intersection of economics and computer science. Matching theory has not only produced a large body of academic work but also been successfully implemented in practice. Famous examples are the assignment of medical interns to hospitals, students to colleges, and organ donors to patients [7]. The second part of the proposal aims to add refugee protection to this list.

### **How the mechanism works in detail**

The proposal can be divided into three stages: an initial allocation of quotas, a market for these quotas, and a matching system.

#### ***Stage 1: Initial allocation of quotas***

In the first stage, each participating country is assigned an initial quota of refugees for whom it bears the responsibility of providing shelter. Two decisions must be taken: how many refugees to cover in total, and how to allocate them across countries. Neither decision is unique. One possibility is to start with the status-quo distribution of refugees in the EU (which is determined by the interplay of existing policies, such as the Dublin Regulation, and migration dynamics). A more ambitious approach is to assign refugees equitably. For example, the relocation mechanism set up by the European Agenda on Migration in 2015 calculated quotas via the weighted average of GDP (40%), population size (40%), unemployment rate (10%), and the number of asylum applications in the past five years (10%). These four measures were meant to reflect a country’s “reception capacity,” but there has been debate about which specific factors to consider and how to weigh them [8]. While the initial distribution determines how much each country gains or loses compared to the status quo, it does not affect the aggregate welfare properties of the mechanism. Hence, any initial allocation is compatible with the proposal.

#### ***Stage 2: Quota trading***

In the second stage, countries are invited to trade the quotas that they received in the first stage. Why is it desirable to establish a market? The reason is that the initial quotas will typically not reflect states’ preferences. How willing a country is to admit refugees depends on the perceived costs and benefits. These are determined by various factors: the country’s economic situation, its cultural homogeneity, experience with immigration, and many more. The importance that the government attaches to each of these factors is likely unknown to the party in charge of setting the initial quotas (e.g. the European Commission). Even if these factors were known, it might be politically infeasible or ethically undesirable to incorporate them into the distribution key. Hence, a rather “refugee-friendly” state may end up with a low initial quota, whereas a more reluctant country may receive a high number of refugees. Both states would gain if the latter paid the former to assume some of its obligations for refugee protection. Enabling such mutually beneficial trades is precisely what a market does.

In theory, the market price adjusts so that all mutually beneficial trades are realized in equilibrium. The resulting distribution of refugees is “cost effective,” meaning that the market reallocates the initial quotas in the least costly way across countries. For this theoretical prediction to play out in practice, the market must be competitive. One might be concerned that political heavyweights, such as Germany or France, could try to strategically influence the market price to pay less, or be paid more, for the quotas they trade. However, there is evidence that sophisticated double auctions, like those employed in stock exchanges around the world, can induce price-taking behavior even in the presence of big players [3].

A numerical example helps to illustrate the workings of the market. Figure 1 simulates how tradable quotas could have facilitated the relocation of 160,000 refugees in 2015. The distribution key proposed by the European Commission is reported in column (1). To gauge how much of the initial quotas will be traded, assumptions must be made about countries’ costs of hosting refugees. The literature assumes that an additional asylum seeker imposes a larger burden on a country which is already sheltering many refugees [9].

Figure 1. Simulation of a refugee quota market in the EU

Country	(1) Initial quotas	(2) Anti-refugee sentiment in %	(3) Market quota	(4) Quota change	(5) Welfare gain in %
Austria	4,735	18.9	2,177	-2,558	29.2
Belgium	5,935	26.8	2,016	-3,918	43.6
Bulgaria	2,065	10.4	3,486	1,421	47.3
Croatia	1,377	16.8	1,258	-119	0.8
Cyprus	356	20.5	202	-155	18.9
Czechia	3,857	22.2	2,321	-1,536	15.9
Estonia	482	27.2	240	-242	25.2
Finland	3,118	11.9	2,225	-893	8.2
France	31,423	26.0	12,296	-19,128	37.1
Germany	41,299	11.1	35,397	-5,903	2.0
Hungary	3,137	30.9	1,587	-1,550	24.4
Latvia	681	29.1	351	-331	23.6
Lithuania	1,008	14.6	1,025	17	0.0
Luxembourg	575	13.8	182	-392	46.6
Malta	172	12.0	170	-2	0.0
Netherlands	9,455	8.0	10,188	733	0.6
Poland	12,320	6.8	27,512	15,192	152.1
Portugal	3,981	13.2	3,927	-54	0.0
Romania	6,000	6.5	15,322	9,322	241.4
Slovakia	1,944	18.7	1,416	-528	7.4
Slovenia	817	16.8	601	-216	7.0
Spain	19,668	8.8	26,030	6,362	10.5
Sweden	5,811	4.6	10,073	4,262	53.8
Total	160,000	16.3	160,000	0	28.7

Note: The initial quotas in column (1) are derived from the distribution key that the Council of the European Union approved in 2015 (Council Decision 2015/1601). The anti-refugee sentiment in column (2) refers to the share of the population who, in 2011, disagreed with the statement “The EU member states should offer protection and asylum to people in need” (Special Eurobarometer 380). Since there were no data for Croatia, Slovenia’s value was used instead. The data in columns (3) to (5) are based on the simulations in the source.

Source: Authors’ own calculations from Fernández-Huertas Moraga, J., and H. Rapoport. “Tradable refugee-admission quotas (TRAQs), the Syrian crisis and the new European agenda on migration.” *IZA Journal of European Labor Studies* 4:23 (2015) [9].

To introduce cross-country heterogeneity, it is further assumed that refugee protection is more costly for a country whose population shows less sympathy for asylum seekers. A country's anti-refugee sentiment is measured by the share of its population who disagree with the statement "The EU member states should offer protection and asylum to people in need." As shown in column (2), the anti-refugee sentiment ranges from 4.6% in Sweden to 30.9% in Hungary. The market will reallocate quotas from "refugee-unfriendly" countries (e.g. Hungary) to "refugee-friendly" countries (e.g. Sweden); see columns (3) and (4). For example, Hungary's quota decreases by 1,550, whereas Sweden's quota increases by 4,262. Overall, 23% of the quotas will be traded. The welfare gains, relative to the initial allocation, are presented in column (5). Every country, regardless of whether it buys or sells quotas, will be at least as well off as without trading. Moreover, the welfare gains tend to be larger for countries that adjust their initial quotas more. The aggregate welfare gain, equivalent to the overall cost reduction, amounts to 28.7%.

Note that Figure 1 is meant for illustrative purposes only. The simulation relies on specific assumptions about countries' cost structures, which cannot capture all relevant factors. Accordingly, it is difficult to predict with certainty how much each country will benefit from the market. But since every country can choose not to trade, its market outcome will always be at least as good as the initial allocation. Hence, regardless of the underlying assumptions, tradable quotas yield a so-called Pareto improvement over mandatory quotas.

### **Stage 3: Matching refugees to countries**

The third, and final, stage of the proposal complements the market with a two-sided matching mechanism. "Two-sided" means that refugees express their preferences over host countries, and vice versa. This information is then used to "fill" the quotas determined in stage 2. Since each country's quota corresponds to the largest number of refugees it is willing to accept, typically every refugee will not get their first choice. But a systematic matching procedure can accommodate their preferences as much as possible. The need to give refugees a say on where they receive asylum has been reiterated by scholars, politicians, and non-governmental organizations. In fact, in the consultation procedure about the relocation of refugees from Greece and Italy to other EU members in 2015, the European Parliament proposed something remarkably similar to a two-sided matching mechanism:

While applicants do not have a right to choose the Member State of their relocation, their needs, preferences and specific qualification should be taken into account to the extent possible. (...) As an initial step, applicants should be given the opportunity to express their preferences. They should rank Member States by order of preference and support their preferences by elements such as family ties, social ties and cultural ties such as language skills, previous stay, previous studies and previous work experience. (...) As a second step, the respective Member States should be informed about the applicants' preferences. They should then be given the opportunity to indicate their preferences for applicants among those applicants who had expressed their preference for the Member State concerned [10], Amendments 18 and 19.

In the final decision adopted by the Council, the Parliament's proposal was redacted to a *one-sided* matching mechanism that gave countries the possibility to express their preferences over refugees but not vice versa. Both on paper and in practice, the matching procedure was rather ad-hoc. A more systematic approach that incorporates insights from matching theory can improve the outcomes for refugees and countries alike.



As envisioned by the European Parliament, a two-sided matching mechanism would allow refugees to rank EU members from most preferred to least preferred. Conversely, countries would rank different types of refugees, stratified according to family ties, language skills, education levels, and so on. This information would be collected and fed into a centralized algorithm, which would return an assignment of refugees to countries. In designing the ideal mechanism, the matching literature emphasizes three properties. First, the mechanism should be “stable,” meaning that each participant should find its match acceptable, and no refugee-country pair should prefer each other to their respective matches. Stability is important to prevent the market from “unraveling,” which occurs when participants try to achieve better assignments outside the mechanism. For example, a refugee who is matched to an undesirable country may simply migrate to a better destination. Second, the mechanism should be “strategy-proof,” that is, no participant should be able to obtain a better match by lying about their preferences. Strategy-proofness matters because refugees typically have private information about how they rank countries, and vice versa. Third, the mechanism should be “Pareto efficient” for one or even both sides of the market. Pareto efficiency guarantees that no alternative matching procedure makes all refugees, and/or all countries, better off. Unfortunately, these three properties—stability, strategy-proofness, and Pareto efficiency—are usually incompatible. But there exist mechanisms that satisfy some of them to varying degrees. Such mechanisms have been successfully implemented in practice, for example to match medical interns to hospitals [7].

Among the existing applications, the one closest to refugee matching is the assignment of students to colleges. Both are instances of a “many-to-one” matching problem, where each agent on one side of the market (e.g. a college) receives many agents on the other side of the market (e.g. students). In principle, the mechanisms that have been developed for college admission could be applied directly to refugee relocation. However, one subtle difference is that refugees form part of families, whose members typically want to stay together. The presence of families of varying sizes renders most existing matching mechanisms unstable. An ad-hoc solution would be to treat each family as a single unit, but then some countries might end up with more refugees than their quotas. Small deviations are probably a minor concern in practice, given that most countries receive thousands of refugees per year. But capacity constraints certainly matter if the matching mechanism is extended to the regional or municipal level. This and other issues specific to refugee matching have been addressed in recent studies [11].

Matching does not mean that refugees can freely choose their destination. While some of them will get their most preferred country, others will not. In fact, a refugee ranked low by all countries will likely end up in a less preferred destination than if the assignment is random. One particular concern is that the matching mechanism disfavors vulnerable refugees, such as elderly, traumatized, or chronically sick persons. A simple way to prevent discrimination is to require all countries to rank vulnerable persons first. Alternatively, a certain share of each country’s quota could be reserved for specific groups of refugees, akin to affirmative-action policies in the US school system [12].

### **Interaction between the matching mechanism and the quota market**

The matching mechanism interacts with the quota market. For example, suppose that country A has such a bad reputation that the number of refugees willing to go there falls

short of the quota that *A* obtained in the market. Since a stable matching mechanism never sends a refugee to an unacceptable country, some of *A*'s quota will remain unfilled. The financial compensation that *A* received or made in the market should then be adjusted. More precisely, *A*'s payment should be based on the number of refugees it is assigned through the matching procedure. Otherwise, *A* may want to strategically increase its market quota to secure a larger payment without ever having to exercise the corresponding obligations for refugee protection. What is more, countries might even want to become particularly unattractive destinations to keep their quotas unfilled. To eliminate these bad incentives, the payments exchanged between countries must be made dependent on the matching outcome [3].

Just like the matching mechanism may disadvantage some refugees, an unattractive country may expect to receive a “worse” mix of refugees than in the absence of matching. Anticipating this outcome, the country may then optimally reduce its quota in the market. By contrast, a country that expects to receive a positively selected set of refugees may want to increase its quota. The bottom line is that the matching mechanism alters the composition of refugees that countries expect to host. Whether this effect increases or decreases countries' willingness to participate in the mechanism is difficult to predict and, thus, a matter for empirical research.

### Major challenges

The idea of allocating refugees via market mechanisms faces two major challenges. First, some participants may become worse off. Specifically, a country that currently hosts few refugees may oppose switching to the new mechanism. This was precisely the reason why several Eastern European governments objected to the EU's mandatory-quota system in 2015. Making the quotas tradable, however, benefits all countries. The market thus relaxes states' participation constraints compared to mandatory quotas.

Second, there will likely be ethical concerns about the commodification of refugees. At first glance, it may seem repulsive to imagine countries haggling over the price of refugees. But there are several counterarguments to the claim that markets are demeaning to refugees. Above all, the market does not involve the exchange of *people* but of *quotas*. This difference is subtle but important. Since the matching mechanism is run after the quota market, a country's supply of, or demand for, quotas is unrelated to the identities of those who will eventually receive protection. A second counterargument is that financial incentives for refugee protection are already in place. For example, the emergency relocation program that the EU set up in 2015 rewarded countries with €6,000 per refugee. The European Commission's proposal for a New Pact on Migration and Asylum increases the payment to €10,000 in general and €12,000 if the relocated person is an unaccompanied minor. A market only differs in that the price is endogenously determined through the interplay of supply and demand. An intriguing question, for both economists and philosophers, is whether and how price mechanisms can be designed to be morally acceptable [13].

### LIMITATIONS AND GAPS

Refugee allocation via tradable quotas and matching so far only exists in theory. The proposal should be tested on the ground to fine-tune the mechanism and answer



theoretically elusive questions. Does the matching procedure make countries more willing to offer protection? Do refugees have the information necessary to identify the countries that suit them best? However, there does not yet appear to be enough political support for a pilot project. Giving refugees a say over their destination is a taboo for some EU leaders because they fear that more migrants would then be encouraged to set off for Europe.

There also remain important theoretical questions to be answered. For example, the proposal has only been studied in a static model. In principle, quota trading and matching could be performed repeatedly over time (as an alternative to the Dublin Regulation). This system would not reap all possible efficiency gains, however, because countries' attitudes toward asylum provision evolve and likely depend on their past refugee intake. Which mechanism optimally exploits these dynamic effects to minimize the cost of refugee protection is not yet understood.

## SUMMARY AND POLICY ADVICE

How to share the responsibility of refugee protection is one of the main debates in the EU. Existing policies and proposals revolve around mandatory quotas, which assign each state its “fair share.” But since they disregard countries' preferences toward immigration, mandatory quotas have been rejected by several EU members. This article has described an alternative mechanism that incorporates two market elements: tradable quotas and matching. Put together, they have clear theoretical advantages over mandatory quotas: the market reduces countries' costs of asylum provision, while the matching procedure gives refugees some discretion over where they receive shelter.

The discussion here has focused on the EU. Its institutional structure and partially harmonized asylum system make the EU particularly suited to implement reforms. But market mechanisms can also be useful in other international settings, such as refugee resettlement under the UNHCR's mandate. A natural first step is to test the proposal in a pilot project and, if successful, scale up.

## Acknowledgments

The authors thank the anonymous referees and the IZA World of Labor editors for many helpful suggestions on earlier drafts. Previous work of the first author, joint with Hillel Rapoport, contains a larger number of background references for the material presented here and has been used intensively in all major parts of this article [3], [4], [9]. Support from the Ministerio de Ciencia e Innovación (Spain), grant PID2019-111095RB-I00 and Comunidad de Madrid (Spain), grant EPUC3M11 (V PRICIT), is gratefully acknowledged. Version 2 of the article completely revises the text, figures, and references.

## Competing interests

The IZA World of Labor project is committed to the IZA Code of Conduct. The authors declare to have observed the principles outlined in the code.

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