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Efficient Solidarity Mechanisms in Asylum Policy

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THE EUROPEAN INTERNAL MARKET - CHALLENGES FOR FREE MOVEMENT

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Preface

More than one million migrants reached the European Union in 2015 in search of asylum, putting tremendous pressure on some countries, as well as on the Common European Asylum System (CEAS) as a whole. The policy responses initiated by the European Commission as part of its European Agenda on Migration have tried to address some of the challenges, but the actual implementation of decisions taken so far has more or less failed. The reason for this is partly a lack of support in Member States, but it is also due to purely practical reasons: it is not an easy task to reallocate people, sometimes against their will. The refugee crisis has also put pressure on the EU as a whole, not least the notion of solidarity and sharing of the burden among Member States.

For this reason, this report explores if a fairer distribution of asylum seekers can be realized by using more financial incentives. The authors propose a mechanism that allows for an exchange of refugee admission quotas for monetary contributions. Moreover, they add a matching mechanism to account for the preferences of refugees, in terms of their preferred destination. They argue that this will improve the policy response and they show that the system will go a long way towards addressing the shortcomings of the current failed European system. At the same time, it jointly achieves efficiency and fairness in responsibility sharing.

At times when Member States fail to come up with solutions to a crisis, resulting in a negotiation deadlock, we need to allow ourselves to think outside the box. With this report, SIEPS hopes to contribute to the further development of the European Agenda on Migration.

Eva Sjögren
Director

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Executive summary

Providing asylum is an international public good. The European Member States benefit from receiving refugees; otherwise, there would be no Common European Asylum System (CEAS). However, the reception of refugees is also perceived as costly, so that there are incentives for countries to try to free ride on other Member States for this provision of protection. These free riding incentives become more salient in times of crisis. In 2015, in the context of large refugee flows originating mainly from Syria, the European Commission launched the European Agenda on Migration in order to try to improve the coordination of asylum policies by reducing free-riding incentives through the attribution of responsibilities.

The way these responsibilities were attributed depended on a distribution key based on a set of objective criteria (GDP, population, unemployment, past refugee arrivals) that were supposed to be related to the physical capacity of the Member States to receive refugees and asylum seekers.

This report argues that this attribution of responsibilities is just one necessary, but insufficient first step for the coordination of the reception of asylum seekers across the European Member States. We propose that this first step should be completed with two additional ones.

First, a compensation mechanism should be established in order to combine physical and financial solidarity in the reception of refugees. The existing CEAS separates the two dimensions. On the one hand, physical solidarity, interpreted as the actual reception of asylum seekers, is attributed because individuals claim asylum in their first country of arrival (Dublin regulation). This means that areas neighbouring conflicting regions, such as Greece in the Syrian case, need to take care of a disproportionate share of refugees with respect to the rest of the European Union. On the other hand, financial solidarity depended on the comparison between the contributions to the European Union's budget used to finance the Asylum, Migration and Integration Fund (AMIF) and the disbursements of this fund per refugee hosted in each Member State. Our proposed compensation mechanism would integrate both forms of solidarity. Countries would be given the opportunity to choose between the two of them. If they perceive that their physical obligations (initial quotas) are too large, they would have the option of paying other countries to host part of their quotas: more financial solidarity in exchange for less physical solidarity. This would work as a market. The other side would be formed by countries perceiving their physical obligations as not too large and willing to take more refugees in exchange for a larger compensation: more physical solidarity in exchange for less financial solidarity. The market logic of the argument would lead to an equalisation of the perceived marginal cost of hosting one additional asylum-seeker in every European country. However,

the compensation mechanism does not need to be implemented as a market. There are alternatives, such as the existing tax and subsidy system, but with a flexible subsidy that would increase with the number of refugees hosted overall. In this sense, the failure of the existing CEAS to meet the targets of the European Commission with respect to the total number of refugees that should be relocated could be interpreted as a heavily regulated market where the subsidy per refugee is administratively set at too low a price (6,000 euros per refugee). If this subsidy was increased, more refugees would be relocated.

The final step of the proposal would be a matching mechanism, linking refugees to their preferred destinations and Member States to their preferred types of refugees. The mechanism would follow the literature on how to assign doctors to hospitals or students to schools. Hence, it does not imply that every refugee (student) would be located in their preferred destination (school). There are two reasons to advocate this consideration of preferences. The first one is that refugees' rights should be respected. No refugee should be forced to move to an undesired destination. It is acceptable to let countries compensate each other for the reception of refugees, but it is not acceptable for these trades to determine the final location choices of these refugees. They must have the final say on their location decision, even if it is a restricted one. The second reason is efficiency. It is cheaper to move people when they agree with the move. Also, the possibility of choosing can be argued to improve the long-term integration outcomes of refugees in their destinations.

The compensation mechanism and the matching mechanism do not simply add to the initial distribution key attributing responsibilities. They actually interact, so as to provide incentives for further efficiency in the allocation. The matching mechanism prevents countries from trying to manipulate the compensation mechanism. Such a manipulation could happen if one country offers to take all the refugees for a very low compensation from the other countries. This country could take the money and treat refugees at the minimum expense. Due to the matching, refugees can prevent this from happening by refusing to go to such a country. If this is the case, the country would not receive any compensation, but would instead be penalised, with the proceeds of the penalty going to the refugee camp or to the country where the refugees stay before the mechanism enters into effect. As a result, countries will have an incentive to treat refugees well, because otherwise, they run the risk of being forced to pay penalties as long as refugees refuse to move there.

On the side of the refugees, they also have an incentive to truthfully report where they actually would like to go, even if it is not their first option. If they report truthfully, they have a chance to get into their first option as long as its quota is not full. Otherwise, they could go to their second, or their third, etc. In any case, they have an incentive to report all of the locations that are more preferable for them than the one they currently occupy.

The report offers a series of simulations on how the compensation mechanism would shape the final distribution of responsibilities in terms of financial and physical contributions in the context of the European Union. All of the simulations start from the distribution key proposed by the European Commission and then let refugee-friendly countries be compensated by refugee-unfriendly ones for the reception of additional refugees. The simulations assume that the degree of refugee-friendliness depends on a particular functional form that is varied to show its robustness to different assumptions. In particular, refugees are assumed to be costly in net terms for receiving countries, either because of the physical costs of reception or because of the political and social perceived costs for individual countries that outweigh the potential benefits. We parameterise countries' friendliness towards refugees in two different ways. One is what we call the revealed preferences approach. We consider the voluntary quotas pledged by the European Member States for the resettlement and relocation of refugees in July 2015 as an expression of their unilateral costs of hosting refugees. Another set of simulations is based on what we call the stated preferences approach. In this case, we use survey information on European inhabitants' opinions on refugees to infer the average like or dislike of a government for hosting refugees.

The objective of the simulations is to show what happens when the reception costs are heterogeneous in different dimensions. All of our simulations show that the compensation mechanism is a notable improvement over the rigid distribution key proposed by the European Commission in the European Agenda on Migration. They also show that the subsidy of 6,000 euros per refugee relocated is too low for countries to accept larger numbers of refugees. Furthermore, the simulations show that the attribution of responsibilities through quotas can generate different winners and losers among the Member States, depending on the true (and unknown) perceived costs of hosting refugees. Countries perceiving refugees to be less costly for them tend to benefit from this attribution of responsibilities more than countries that perceive refugees as being more costly for them. This observation has two implications: a positive one and a negative one. The negative one is that it is not easy to sustain a coalition of winners to support the attribution of responsibilities. The positive one is that the system generates incentives for countries to become more refugee-friendly over time.

More generally, the report shows that allowing the European Member States to choose their preferred mix of physical and financial contributions for refugee protection can have large efficiency gains. The efficiency gains come from avoiding the free-riding problem in asylum provision, while making sure that refugees are hosted wherever it is less costly to do so. The matching mechanism makes sure that refugee rights are not jeopardised by the compensation mechanism among the states. Furthermore, it allows further efficiency gains to be reaped from the smoothing of the physical relocation process and from allowing countries to

choose their preferred types of refugees, for example, in terms of skill levels or in terms of countries of origin.

The use of two market mechanisms to combine the physical and financial components of the solidarity of the European Member States towards asylum-seekers will not solve all of the problems of the Common European Asylum System, but it is an obvious source of potential gains for all the parties involved: the European Member States and the refugees and asylum-seekers.

1 Introduction

The drawbacks of the Common European Asylum System (CEAS) were so widely acknowledged that the European Commission itself launched the European Agenda on Migration in May 2015 with the objective of reforming it. One of the main issues of disagreement among the European Member States was how to share the potential costs of receiving asylum-seekers and hosting refugees, which is typically summarised as "burden sharing," although many practitioners and politicians prefer the terminology "responsibility sharing" as being less offensive to refugees. The initial proposal in the European Agenda on Migration (European Commission, 2015a) contemplated a formula to relocate asylum-seekers or resettle refugees according to GDP, population, unemployment and past number of refugees hosted.

This report presents our own proposal for a system that can minimise the cost of allocating refugees at the European level, starting from the European Union distribution key. The distribution key would constitute the first stage of our three-stage proposal. The new elements would be the two following stages.

Stage two would be the creation of a compensation mechanism for the exchange of the refugee-admission quotas distributed in stage one. Allowing the Member States to trade their initial quotas would let them choose whether they want to contribute to the European public good of providing refugee protection by accepting refugees (physical solidarity) or by paying other countries to accept them (financial solidarity). Countries that perceive refugees as less of a "burden" would thus be compensated by other countries that perceive refugees as more of a "burden."

Finally, stage three is needed to ensure that refugees' and asylum-seekers' rights are respected. In particular, we introduce a matching mechanism that would assign refugees to their preferred destination and destinations to their preferred refugees. This has two objectives. First, we make sure that no refugee is forced to go to an undesired destination. Second, there are additional efficiency gains by letting countries choose their preferred types of refugees. The matching mechanism does not alter the cost minimisation properties of the market, as long as we introduce a penalty mechanism for locations that are considered as "undesirable" by refugees. If a country is paid to receive refugees by the market and refugees refuse to go there, we force this country to compensate the country where the refugees actually end up.

Our three-stage proposal was first developed and its efficiency properties were established by Fernández-Huertas Moraga and Rapoport (2014). In Fernández-Huertas Moraga and Rapoport (2015a), we sketched how the proposal could be

adapted to the particular case of reforming the CEAS by considering refugees and asylum-seekers jointly and by reviewing the problems and stated shortcomings of the European Relocation from Malta (EUREMA) programme by which the European Union relocated a number of refugees and asylum-seekers arrived in Malta to other European Member States between 2011 and 2012. More recently, Fernández-Huertas Moraga and Rapoport (2015b) restated the proposal and applied some simulations of how it would work in the case of the refugees from the Syrian civil war.

The contribution of this report focuses on a new set of simulations on how the system of tradable refugee-admission quotas (TRAQs), combined with a matching mechanism, would work. The new simulations incorporate the new elements of the European Agenda on Migration that the European Commission pushed during the second half of 2015, related to the relocation of 160,000 refugees[1] coming from Italy and Greece and to the establishment of a permanent relocation mechanism. We also use the preferences of the European Member States that have been revealed throughout the bargaining process, in particular taking advantage of the differences between the quotas imposed by the European Commission and the voluntary relocation processes that the Member States were willing to accept by July 2015.

These simulations will be done under different assumptions on cost functions. They are helpful to understand which countries would benefit more or less with and without the market for refugee admission quotas that forms the implicit basis of our compensation mechanism. They emphasise the flexibility of the market in adapting to the different circumstances of the Member States and the suitability of the matching mechanism to make sure that refugee rights are respected at all times. Finally, we show how the market can be instrumental in elucidating information about the preferences on countries.

Section 2 of this report briefly sets up the theory behind our proposal, which is more fully developed in Fernández-Huertas Moraga and Rapoport (2014, 2015a). Then, Section 3 reviews the relevant literature, while Section 4 focuses on the elements of the European Agenda on Migration that are more related to our proposal. Section 5 develops our simulations under different scenarios, while Section 6 clarifies some implementation issues related to the proposal. Section 7 concludes the report.

[1] This figure comes from adding the 40,000 relocations suggested by the European Commission in May 2015 to the additional 120,000 proposed by its President, Jean-Claude Juncker, in September 2015. The relocation plan actually approved in September 2015 only assigned 98,256 to specific countries, although there was a commitment to relocate the remaining 61,744 as well (European Commission, 2016).

2 The model

This section outlines the model that combines the physical and financial solidarity aspects of the proposed scheme. The model is simply sketched here, while its mathematical properties are relegated to the appendix.

The theoretical problem that needs to be solved is the allocation of a total number of refugees and asylum-seekers across a set of destination countries, which can be assimilated to the Member States in the European Union that will be participating in the mechanism. The model takes as given both the total number of refugees and asylum-seekers to be allocated (such as the 160,000 in the EU proposal of September 2015) and the perceived costs and benefits that the refugees impose on the destination countries.

2.1 Setup

In the current absence of any coordination mechanism and abstracting from the rights of refugees and asylum-seekers, each country will decide how many refugees and asylum-seekers to accept by maximising a welfare function with two elements.

The first one represents how countries benefit from the fact that other countries receive asylum-seekers or refugees. There may be two fundamental reasons for this. On the one hand, there is the international public good aspect. We can consider that one country, either its government or its inhabitants, receive utility (welfare) from the fact that refugees are protected, regardless of where. On the other hand, even in the case in which this country does not directly care about refugees and perceives them as a simple cost, it benefits indirectly from the fact that other countries host them, since this may alleviate the pressure for it to host them itself. In other words, a country can expect its asylum claims to go down, the larger the number of refugees hosted by other destinations. Both explanations imply that refugees and asylum-seekers hosted by other countries exert a positive externality on the welfare of one particular country. This implies that the unilateral provision of protection to refugees and asylum-seekers by individual countries leads to a globally inefficient solution. Fewer refugees are hosted overall than would be optimal from a global perspective. The second element of the welfare function is the net cost of hosting refugees and asylum-seekers. This includes all of the perceived costs and benefits associated with hosting refugees and asylum-seekers. In particular, it includes the potential altruism of a country towards the reception of refugees, that is, the international public good element by which its welfare is increased whenever refugees and asylum-seekers are protected. It also includes the physical and administrative costs of receiving refugees and asylum-seekers and processing their paperwork, initial allowances, initial accommodation for the period, etc. The net cost also

considers the potential long-run expected economic consequences of hosting these refugees and asylum-seekers as assessed by the country, for example, the immigration surplus or the fact that these refugees may either benefit or harm domestic workers once they integrate into the labour market. Finally, the net cost also includes the social and political costs (or benefits) of hosting these refugees and asylum-seekers.

The reason why unilateral policies are not optimal is that individual countries do not take into account the fact that their reception of refugees and asylum-seekers has a positive effect on other countries, and hence, they perform this activity at a lower level than that implied by a full maximisation problem.

As proved in Fernández-Huertas Moraga and Rapoport (2014, 2015a), the optimal solution involves equating the marginal costs of hosting refugees and asylum-seekers among all the potential destination countries to a positive number that depends on the strength of the externality, while the non-coordinated solution equates these marginal costs to zero. Hence, the non-coordinated solution results in fewer refugees and asylum-seekers receiving protection.

2.2 The compensation mechanism with tradable refugee-admission quotas

The optimal solution can be replicated by distributing responsibilities over the number of refugees and asylum-seekers that each Member State must host (quotas) and letting them trade these responsibilities.

We define the initial quotas as the total sum of refugees and asylum-seekers that it becomes the responsibility of particular countries to host. If one country prefers to host a number lower than its quota, it should compensate another country a price per unfilled refugee admission quota, so that this other country will host them.

This means that every country would simply equate the marginal cost of hosting an additional refugee or asylum-seeker to the refugee-admission quota price. This is exactly the global optimal solution. Countries with a marginal cost over the price would prefer to pay other countries to comply with part of their quota. Conversely, countries with a marginal cost below the price would be willing to host more refugees or asylum-seekers than their quota implies.

As long as the market is competitive[2] and countries are unable to manipulate the quota price, every country will be better off under the compensation scheme than fulfilling their compulsory initial responsibilities. This does not imply that individual countries would be better off than under the non-cooperative solution. However, the total welfare of all of the Member States would be higher

[2] We discuss this issue below in the implementation subsection.

under the compensation scheme than under the non-cooperative solution or a mandatory distribution of quotas such as the one proposed by the European Commission.

It would be theoretically feasible to manipulate the initial quotas so that absolutely every country participating in the compensating scheme would actually prefer to do so. We will come back to this point later, when we discuss our different simulations. The fact that this is theoretically possible does not mean that gathering the necessary information to implement it is feasible, without generating perverse incentives for countries to manipulate their behaviour.

2.3 The matching mechanism

2.3.1 Refugees' preferences

One crucial drawback with setting up the problem that countries face as described above is the fact that refugees or asylum-seekers are perceived as interchangeable and can be moved around at the will of the European Member States. This is clearly not acceptable, since every movement for relocation or resettlement must be done with the full consent of the individuals involved.

A way to obtain this consent, while improving the final allocation of refugees, is to ask them directly to express whether they are willing to be relocated to any particular destination at all and also to rank the destinations to which they would be willing to be relocated, rather than remaining in their location at the time of questioning.

The matching literature (Roth, 2002) provides many examples of how this information can be used to match refugees to their preferred destinations. The objective would be to find a mechanism such that no pair of refugees can exchange their destinations and be made better off at the same time. One example is the top trading cycles mechanism (Abdulkadiroglu and Sonmez, 1999), also known as the random serial dictatorship. It would work in the following way:

1. Each refugee ranks all potentially desired destinations (preferred to the current one).
2. An ordering of refugees is randomly chosen.
3. Assign the first refugee her first choice, the second refugee her first choice, and so on, until a refugee's first choice is a country whose quota is filled. Assign that refugee her second choice, or if that one is also filled, her third choice, and so on.

This type of mechanism does not present any problem for the quota allocation coming out of the market. In fact, there is only one situation in which the matching mechanism might interfere with the market. If one of the destinations

is such an undesirable place that no refugee would consider going there, the quota of that country would not be filled, and some refugees, the last in the random ordering, would prefer to remain in their original location (say, a refugee camp) rather than to move there. If this is the case, some countries could have an incentive to create a "bad image" (e.g., be lenient on violence against refugees) to discourage applications. They could actually bid in the market to be paid for hosting refugees that they would then hope would refuse to move there.

How can this possibility be avoided? There are actually two solutions to prevent this from happening:

- Since refugee preferences can be collected before opening the market, countries could be forbidden to bid beyond the actual number of individuals willing to relocate there. We would have trade restrictions, but this would ensure that all refugees are actually relocated through the market.
- Alternatively, we can allow for a case in which the overall number of refugees and asylum-seekers to be relocated or resettled is not realised and the "rejected" country pays the price for the unfilled part of its quota. This acts as a penalty and provides incentives for countries to become attractive destinations.

In equilibrium, the penalty would always be zero, but it is needed so that countries do not have incentives to become unattractive from the point of view of refugees and asylum-seekers. In practice, the EU could be in charge of collecting this penalty in the case of some off-equilibrium behaviour.

Still, equating the marginal costs of hosting refugees and asylum-seekers across countries to the quota price would be an optimal solution, even in the presence of the matching mechanism.

2.3.2 Host countries' preferences

Not only can refugee preferences be taken into account, there is also a scope for considering the preferences of host countries regarding the type of refugees that they would be more willing to host.

In the same way that refugees can establish a ranking of their preferred destinations, countries could establish a ranking of their preferred types of refugees or asylum-seekers. For example, some countries might be more willing to host refugees than asylum-seekers.

The only difference between the expressions of preferences on the side of host countries lies in the fact that they should not be allowed to refuse to take any particular type of refugee. Otherwise, they would have an incentive to misrepresent their preferences and declare that some types of refugees are unacceptable for them. Refugees, on the other hand, should keep the option of refusing to move to an undesired destination.

If countries' preferences are taken into account, we would need to change the algorithm governing the allocation of refugees to host countries. Both the country-proposing and the refugee-proposing deferred acceptance algorithm could be applied (Fernández-Huertas Moraga and Rapoport, 2014, 2015a). According to Azevedo and Leshno (2015), both would attain the same result, given that the number of refugees and asylum-seekers will be large.

In previous papers (Fernández-Huertas Moraga and Rapoport, 2014, 2015a), we have argued that it could be best to adopt a country-proposing deferred acceptance algorithm on the grounds of its lower degree of manipulability according to Pathak and Sonmez (2013). Under this algorithm, countries would first propose their market-assigned quotas to their preferred refugees. Then, these refugees would have the option to accept or refuse among their offers. For the unfilled part of their quota, countries would then propose their second most preferred types of refugees, and so on, until all the quotas would be filled, unless there is a destination that is so undesirable that no refugee is willing to go there. The introduction of the preferences of hosting countries would have the benefit of reducing their participating costs. As a result, either more refugees could be hosted at the same total cost, or the same number of refugees could be hosted at a lower total cost.

In exchange for these advantages, the matching mechanism would introduce some uncertainty about the types of refugees and asylum-seekers that countries would end up receiving. Again, this introduces a new bias favouring refugee-friendly countries, since it is more likely that the offers of these countries will be accepted earlier than the offers that are perceived as less refugee-friendly, and hence, are at the end of the line in terms of refugee preferences.

3 Related literature

There is a large body of literature on how to reform the European Union Asylum Policy. Perhaps the best review of this literature corresponds to Hatton (2015), who explains how the harmonisation of European policies alone is not enough for an efficient asylum policy. The reason for this is that the cost functions of the Member States are too different, and harmonising policies constrains the set of achievable outcomes. In this sense, the market we propose here could offer the flexibility countries would need.

The idea of using a market to coordinate refugee-reception responsibilities across countries can be traced back to Schuck (1997), who offered the example of the Comprehensive Plan of Action for the resettlement of refugees from Vietnam in the 80s. Bubb, Kremer and Levine (2011) took Schuck's idea one step further and coupled his bilateral exchange with a screening device aimed at separating "true" refugees from bogus asylum claims.

The main difference with the current proposal is the lack of a formal market in his case. We propose a centralised institution, rather than a set of bilateral exchanges. The rationale for this is the need to design the market so that large players cannot manipulate the price. Furthermore, we argue for the consideration of refugee preferences over destinations and countries' preferences over refugees, both on humanitarian and on efficiency grounds.

The first stage of our proposal, that is, the allocation of initial responsibilities among the Member States, has often been considered in the literature. For example, Thielemann et al. (2010) and Wagner and Kraler (2014) calculated many different "burden-sharing" rules, comparable to the one finally adopted by the European Council (2015).[3] In the case of Thielemann et al. (2010), they suggested that "fair burden sharing" would imply that between 33 and 40 percent of asylum-seekers should be transferred to different European countries, a large share going to new Member States. In their view, this policy should be complemented with a harmonisation of asylum-seekers' costs across countries. They also advocated the use of larger financial compensation for receiving countries. Finally, they argued for the voluntary movement of asylum-seekers from over-burdened to less affected states. The reason they gave for these voluntary movements is the fact that forced movements up being very costly. In fact, the two last elements are included in our proposal: The financial compensation operates through the market, while the matching mechanism makes sure that all movements are voluntary, and hence, less costly.

[3] The "fairness" of this rule was questioned, among others, by Bovens and Bartsch (2016).

Finally, Hatton (2015) also argued for the need to redistribute refugees across the European Member States in order to achieve a social optimum. However, he also offered the option of providing asymmetric subsidies per refugee hosted to different countries, that is, the per capita compensation that the European Refugee Fund or the Asylum and Migration Fund has traditionally offered for the reception of refugees should have different levels for different countries. Countries for which it is more costly to host refugees should receive higher subsidies, while countries for which it is less costly should receive lower subsidies. The problem of this scheme is the lack of information on the true costs and benefits of hosting refugees. Furthermore, such a system would create an incentive for countries to over-report how costly it is for them to host refugees.

4 The European Agenda on Migration

What is the actual solution that the European Union proposed to reform the European Asylum System? In May 2015, the European Union launched the European Agenda on Migration.

Before getting to that point, it can be useful to summarise some of the main elements of the existing Common European Asylum System. Following Hatton (2015), we can situate the beginning of the policy with the signing of the Dublin Convention in 1990. The Dublin system, renewed in 2003 and 2013 (Dublin III), generally established that the country responsible for an asylum claim in the European Union would be the country of first entry. We had to wait until 1999 for the formal launching of the CEAS in Tampere. The treaty of Amsterdam allowed the European Commission to legislate on asylum issues, and this prompted a whole series of directives aimed at harmonising the asylum systems of the European Member States in terms of reception conditions, recognition rates, border surveillance, etc. For example, the European Refugee Fund was created in 2000 with the objective of formally sharing the financial costs of hosting refugees among the Member States. The fund continued after 2014 under the name of the Asylum and Migration Fund.

Other European programmes and agencies were born out of the harmonisation efforts, such as EURODAC in 2003, FRONTEX in 2005 and the European Asylum Support Office (EASO) in 2010.

It could be argued that the European Agenda on Migration emerged as a result of the concerns in European public opinion created by several shipwrecks involving asylum-seekers on the Mediterranean shores. In fact, the main elements of the Agenda (European Commission, 2015a) were:

- Emergency operations (Triton, Poseidon) to save lives at sea.
- Budget increases for existing policies and further harmonisation.
- Relocation (40,000 from Italy and Greece) and resettlement (20,000 from outside the EU) of refugees and asylum-seekers following a distribution key. This distribution key was the real new policy included in the European Agenda on Migration. It meant the creation of a new scheme for sharing the responsibility of hosting refugees that went beyond the Dublin regulations and the existence of financial compensation. The distribution key divided quotas according to a formula weighting:
  - 40% total GDP of the Member States. The larger the GDP of the Member States, the larger their responsibility in the relocation and resettlement of refugees and asylum-seekers.

– 40% population. The criterion works in the same way as the GDP. Larger countries in terms of population are supposed to have a larger capacity to absorb refugees.
– 10% unemployment rate. This works in the opposite direction. Countries with a larger unemployment rate would have to host fewer refugees.
– 10% number of asylum applications received and refugees resettled per 1 million inhabitants between 2010 and 2014. The rationale is that those countries that contributed the most to the international public good of the reception of refugees would be required to assume a lower responsibility.

The initial response of the Member States to these proposals was not very favourable. In July 2015, the European Council refused to adopt mandatory quotas. The European countries preferred to stick to voluntary pledges that fell short of the European Commission's numbers: 32,256 for relocation (rather than 40,000) and 18,425 for resettlement (rather than 20,000). However, the European Commission insisted, and in September 2015, its President, Jean-Claude Juncker, extended the relocation mechanism to Hungary, while proposing to relocate 120,000 additional refugees and asylum-seekers following the same distribution key. He also announced a permanent relocation mechanism that could only be avoided in exceptional cases by paying compensation equal to 0.002% of the GDP of the non-quota-complying state (European Commission, 2015c).

Somewhat surprisingly, later in September 2015, the European Council approved the quotas for the relocation of 160,000 refugees and asylum-seekers from Italy and Greece, although they still refused to approve the permanent mechanism.

The European Parliament also approved Juncker's plan, and it added that refugee preferences must be taken into account in the relocation and resettlement procedures (European Parliament, 2014-2019).

5 Simulations

This section presents a series of simulations of the outcomes that a compensation mechanism with tradable refugee-admission quotas might deliver if applied to the proposals of the European Agenda on Migration. The simulations will focus on the compensation aspect and will leave aside the matching component. In other words, we will assume that enough migrants want to move to each of the destinations so as to fill the quotas that come out of the market. Another implicit simplifying assumption is that the participating countries will be indifferent about the types of refugees and asylum seekers to be hosted. Hence, from now on, we will refer exclusively to refugees for simplicity, although conceptually we are considering both refugees and asylum-seekers.

The simulations must start from an initial distribution of responsibilities across the Member States, that is, an initial distribution of quotas to be traded. We also take this initial distribution as given by the European Council decision of 22 September 2015 (European Council, 2015).

There are two crucial inputs for the simulations that we present below. The first one is the cost function. The assumptions on the cost function determine what the equilibrium price will be and how much countries will gain or lose from the application of a particular mechanism. The second crucial input is the total number of refugees to be resettled or relocated. Obviously, the larger the number of refugees to be resettled, the higher the quota price and also the total cost of the mechanism will be.

We will present one particular cost function in this section and will leave simulations of a different one for the appendix. Both will have a key parameter governing the anti-refugee sentiment in each destination country. We will obtain two different values of this parameter for each country. The first one, which we denote as revealed preferences, will be based on the voluntary quotas accepted by the European Member States in the Justice and Home Affairs Council of 20 July 2015. The second one, denoted by stated preferences, will be based, as in Fernández-Huertas Moraga and Rapoport (2015b), on the share of individuals in each EU country disagreeing with the statement "The EU Member States should offer protection and asylum to people in need" from the Special Eurobarometer 380 in 2011.

In terms of the total number of refugees to be resettled, we will propose two different scenarios as well. The first one will be based on the first European Commission proposal from May 2015 for resettling 20,000 refugees from outside the EU and relocating 40,000 who arrived in Italy and Greece (European Commission, 2015b), for a total of 60,000 refugees to be allocated among the

European Member States. The second one will correspond to the addition of 120,000 refugees in September 2015 (European Commission, 2015c), thus totalling 180,000 refugees to be resettled across Europe. We will only present the first one in this section and will leave the simulations of the second one to the appendix.

Overall, this adds up to eight different simulations: two cost functions times two preference parameterisations times two refugee totals. Two of them are presented in the main text, and we relegate the rest to the appendix. The appendix also introduces mathematically the two cost functions that we will use for the simulations.

5.1 Outcomes

In this subsection, we present the outcomes from two of the eight different simulation scenarios that we have run. We let every European Union Member State participate in the market, including those that did not choose to do so in the distribution key that we use (European Council, 2015). These countries, namely Denmark, Greece, Ireland, Italy and the United Kingdom,[4] are assigned a zero quota.

5.1.1 Simulation 1: Revealed preferences; 60,000 refugees, Quadratic Cost

Table 5.1.1 shows the results from the first simulation. We start from an overall quota of 60,000 refugees to be distributed across the 28 European Member States. As stated above, the cost functions of the countries are assumed to be quadratic in the number of refugees hosted from the total quota, proportional to the revealed taste parameter and inversely proportional to the population of the host country.

The "Voluntary quotas" column in Table 5.1.1 first shows the quotas agreed to by the European Member States as of July 2015. They are shown for comparison purposes and because they were used to back out the refugee cost parameter shown in the third data column. The voluntary quotas from July 2015 fell short of the objective of 60,000 refugees to be resettled or relocated proposed by the European Commission, as they only totalled 50,671.

The column of "Initial quotas (EU proposal)" represents the distribution of 60,000 refugees that would be deduced from the key that the European Council approved in September 2015. We will consider this as the initial allocation of quotas in the market that can then be traded, that is, the first step of our market of tradable-refugee admission quotas with matching.

[4] Denmark, Ireland and the United Kingdom had the option of opting out of the distribution scheme in their accession treaties. Italy and Greece did not participate, since the refugees were supposed to be relocated from there.

For most countries, the voluntary quotas are not very far from the initial EU allocation. The reason is that the distribution key had already been made public in May 2015, so that many countries had already made their voluntary contributions around the number they were supposed to get because of the key. In principle, this goes against the usefulness of the market in this simulation, since we are considering countries' "true" preferences to be close to the proposal of the European Commission.

The results of the market are shown in the column "Market quota." We can see that even in this case, when, by construction, there is not a large difference between the voluntary scheme and the mandatory one, the market is able to reduce overall costs by 95%. This result is heavily influenced by the cost function for Hungary. The refusal of Hungary to participate in the voluntary mechanism implies that the calibrated revealed refugee cost parameter is extremely large. Hence, Hungary has a lot to gain from the market, which allows the country to host just 1 refugee rather than the 1,176 assigned by the EU proposal. Nevertheless, even if we disregard Hungary, the total cost reduction achieved by the market with respect to the initial EU quotas would be equal to 23%, which is not a negligible amount: 60 million euros according to our simulation.

We must point out that we are able to assign monetary variables because we have assumed that the marginal cost of the voluntary quotas for each country equals 6,000 euros, the per refugee subsidy offered by the Asylum and Migration Fund. Using this metric, we can actually provide a monetary figure for the quota price in the market: It would be equal to 7,105 euros. This makes intuitive sense. The voluntary scheme managed to resettle just over 50,000 refugees, while the market deals with up to 60,000, an 18% increase. As a result, the price increases by 18% with respect to the subsidy, which is what we could expect from linear marginal costs.

The result of the market is simple for individual countries. Each of them tries to revert from the initial quota allocation to their preferred (voluntary) quota from the first data column. However, they end up with higher numbers because the total number to be distributed is larger. The simulation shows that 17% of the initial quotas distributed would be traded.

The first cost reduction column (fifth data column) in Table 5.1.1 shows how the overall 95% (23% without Hungary) cost reduction of the market is distributed across the participating countries. Absolutely all of them see cost reductions. Otherwise, they would not trade. The larger the difference between the EU's initial distribution of quotas and the voluntary quotas, the larger the cost reduction will be for participating countries. For some countries, the cost reduction is such that they are able to turn a profit out of the market. In this simulation, Cyprus, Denmark, Greece, Ireland, Italy and the UK do so. The

Table 1 Revealed Preferences, 60,000 refugees, Quadratic Cost

Countries	*Voluntary quotas*	*Initial quotas (EU proposal)*	*Refugee Cost Parameter: deduced from voluntary quotas*	*Market Quota*	*Cost Reduction with respect to initial quota*	*Cost Reduction with respect to voluntary quotas*
Austria	1 900	1 775	26,9	2 250	7%	19%
Belgium	2 464	2 225	27,3	2 918	10%	26%
Bulgaria	500	775	86,9	592	6%	-127%
Croatia	550	516	46,3	651	7%	18%
Cyprus	242	134	21,3	287	131%	109%
Czech R.	1 500	1 446	42	1 776	5%	12%
Denmark	1 000	0	33,8	1 184	inf	240%
Estonia	150	181	52,6	178	0%	-45%
Finland	1 085	1 169	30,1	1 285	1%	-15%
France	9 127	11 784	43,3	10 807	1%	-66%
Germany	12 100	15 488	40	14 327	1%	-63%
Greece	354	0	186,3	419	inf	240%
Hungary	0	1 176	59 264,2	1	100%	-inf
Ireland	1 120	0	24,7	1 326	inf	240%
Italy	1 989	0	183,4	2 355	inf	240%
Latvia	250	255	48	296	3%	-2%
Lithuania	325	378	54,3	385	0%	-35%
Luxembourg	350	215	9,4	414	85%	94%
Malta	74	65	34,5	88	13%	34%
Netherlands	3 047	3 546	33,1	3 608	0%	-35%
Poland	2 000	4 620	114,1	2 368	24%	-307%
Portugal	1 500	1 493	41,7	1 776	4%	5%
Romania	1 785	2 250	67	2 114	0%	-58%
Slovakia	200	729	162,5	237	46%	-623%
Slovenia	250	306	49,5	296	0%	-50%
Spain	2 749	7 294	101,5	3 255	31%	-388%
Sweden	1 860	2 179	31,1	2 202	0%	-37%
UK	2 200	0	175,4	2 605	inf	240%
Total	50 671	60 000		60 000	95%	-40%
Quotas traded				17%		

Source: Authors' elaboration. Cost parameter divided by one million with Hungary assumed to host 1 refugee voluntarily.

reason is that most of them are assigned a zero responsibility in the initial quota distribution.[5]

Finally, the last data column in Table 5.1.1 shows the comparison of costs with respect to the voluntary scheme. As could be expected, given that the voluntary scheme resettles 50,671 refugees, while the market would resettle 60,000, the market actually increases costs with respect to the voluntary scheme, overall by 40%. The simulated total cost would increase from 152 million euros under the voluntary scheme to 213 million under the market. The total cost increases more than 18% (the increase in the number of refugees resettled) because we are assuming convex cost functions.

Again, the distribution of this increase in cost is shared very differently across countries. Cost increases are notably larger for countries whose initial quota is further from their voluntary scheme, notably Hungary, Slovakia and Spain. On the other side, for countries with a large voluntary contribution with respect to the initial quotas, the market is an improvement even with respect to their voluntary contributions. This is the case for 13 out of the 28 countries, notably for the zero-quota countries mentioned above.

5.1.2 Simulation 2: Stated preferences; 60,000 refugees, Quadratic Cost

In this simulation, the refugee cost parameter is not calibrated to match previous choices of countries, but it is assumed to come from stated preferences. More precisely, we use the share of people in each country who disagreed with the statement "The EU Member States should offer protection and asylum to people in need" in the Special Eurobarometer 380 in 2011.

Table 5.1.2 presents this information in the fourth column.[6] According to this measure, Sweden appears as the country with a more favourable opinion towards refugees (only 4% of the respondents disagreed with the statement), followed by Denmark, Poland and Romania with 7%. At the other side of the spectrum, 31% of Hungarian respondents disagreed with the statement, followed by Latvia (29%), Belgium and Estonia (27%). The interpretation that we give to these shares is that they are related to the political cost of hosting refugees in each of the countries. Hence, hosting refugees would be comparatively more costly, relative to its population, for Hungary than for Sweden.

Other than the refugee cost parameter, the simulation in Table 5.1.2 is directly comparable to the simulation in Table 5.1.1. The total number of refugees to be

[5] Italy and Greece were exempt because some refugees were supposed to be relocated from there, although they were also participating in the resettlement scheme, hence their positive voluntary quotas. Denmark, Ireland and the UK could opt out of the EU distribution key because of their status in the EU.

[6] Lacking data on Croatia, we have assigned the same number as that of Slovenia: 17%.

Table 2 Stated Preferences, 60,000 refugees, Quadratic Cost

Countries	*Voluntary quotas*	*Initial quotas (EU proposal)*	*Refugee Cost Parameter: taken from Eurobarometer 2011*	*Market Quota*	*Cost Reduction with respect to initial quota*	*Cost Reduction with respect to voluntary quotas*
Austria	1 900	1 775	19	660	39%	47%
Belgium	2 464	2 225	27	612	53%	61%
Bulgaria	500	775	11	972	6%	-124%
Croatia	550	516	17	369	8%	19%
Cyprus	242	134	21	60	30%	79%
Czech R.	1 500	1 446	22	705	26%	31%
Denmark	1 000	0	7	1 186	inf	241%
Estonia	150	181	27	72	36%	7%
Finland	1 085	1 169	12	670	18%	5%
France	9 127	11 784	26	3 735	47%	11%
Germany	12 100	15 488	11	10 832	9%	-49%
Greece	354	0	12	1 351	inf	1557%
Hungary	0	1 176	31	470	36%	-inf
Ireland	1 120	0	15	453	inf	116%
Italy	1 989	0	17	5 274	inf	803%
Latvia	250	255	29	102	36%	33%
Lithuania	325	378	15	289	6%	-28%
Luxembourg	350	215	14	58	53%	82%
Malta	74	65	12	52	4%	27%
Netherlands	3 047	3 546	8	3 103	2%	-33%
Poland	2 000	4 620	7	8 012	54%	-146%
Portugal	1 500	1 493	13	1 183	4%	5%
Romania	1 785	2 250	7	4 204	75%	61%
Slovakia	200	729	19	421	18%	-991%
Slovenia	250	306	17	179	17%	-24%
Spain	2 749	7 294	9	7 624	0%	-603%
Sweden	1 860	2 179	4	3 557	40%	18%
UK	2 200	0	25	3 795	inf	398%
Total	50 671	60 000		60 000	42%	21%
Quotas traded				32%		

Source: Authors' elaboration. Cost parameter from the share of individuals in each EU country disagreeing with the statement "The EU Member States should offer protection and asylum to people in need" from the Special Eurobarometer 380 in 2011. Croatia is assigned the Slovenian value.

relocated is 60,000, and the assumed functional form is the quadratic one. The resulting quotas from the market, though, are quite different in both cases.

First, it must be noted that more quotas are traded in the stated preferences simulation than in the revealed preferences one: 32% vs. 17%. The reason is that the stated preferences are further away from the initial allocation of quotas proposed by the European Commission than the revealed preferences.

Second, the distribution of quotas is quite different in this case. Sweden takes relatively more refugees under the stated preferences: 3,557 rather than 2,202, but this means that its cost is reduced more due to the market (40% vs. a cost reduction barely larger than 0 in the first simulation). Under the highest refugee cost assumption, Hungary ends up taking 470 refugees rather than 1. The reason is that the revealed preferences for Hungary implied an even larger refugee cost parameter than the stated preferences approach.

The countries that would be more involved in trade in this simulation would be France on the paying side and Italy on the receiving side. In the case of France, this happens because they state a lower preference for refugees due to their relatively high cost: 26%. This results in France paying other countries to receive 8,048 of their initially assigned 11,784 refugees. For Italy, they are assigned a zero quota, so it is natural that it can be advantageous for them to host some refugees. For this simulation, this means that they would end up hosting 5,274. Among the countries with a non-zero initial quota, Poland would be the one receiving more extra refugees and being paid for it: 3,392 in excess of their initially allocated 4,620. This comes from the fact that Poland states a relatively low cost of hosting refugees in this simulation: 7%. For comparison purposes, in the first simulation, the biggest traders were Spain on the paying side (4,039 refugees) and the UK on the receiving side (2,605 refugees).

The total cost reduction from adopting the market instead of the initial allocation is 42% with the assumed cost functions. Leaving Hungary out to make the comparison easier with respect to the previous simulations, the cost reduction is 43%, which is notably larger than the 23% coming out of the first simulation. In general, we can expect that more trade will be related to larger cost reductions, as in this case. The largest cost reduction (aside from zero-quota countries) accrues to Romania (75%), while the lowest corresponds to Spain, whose initial allocation turns out to be very close to the one resulting from the market, so that it trades very little. In this particular simulation, only the countries with an initial zero quota would actually turn a profit from the market.

One remarkable aspect about this simulation is that the total cost of the market is 21% lower than the total cost of the voluntary quotas described in the second column of Table 5.1.2. This is the case despite the fact that 60,000 refugees would be relocated, rather than 50,671. The reason is that the preferences stated

by the citizens of the Member States in 2011 may be far from the actual costs that government leaders had in mind when they agreed to host refugees in July 2015. However, this is useful to illustrate how the initial allocation of quotas could have been done in a way that would benefit every single Member State, even without taking the externalities of refugee protection into account.

The fact that the total cost is lower under the market does not mean that there are not winners and losers from its creation due to the initial distribution of quotas. In the last column of Table 5.1.2, it can be seen that 19 out of the 28 European Member States would be better off with the market, notably the zero-quota countries, but also Luxembourg, Cyprus, Romania and Belgium. On the negative side, the remaining nine countries would be worse off, notably Hungary, but also Slovakia, Spain, the Netherlands and Bulgaria.

In principle, it would be theoretically possible to assign larger initial quotas to favoured countries, such as Luxembourg, Cyprus, Romania, or the rest of the countries with positive cost reductions in Table 5.1.2, while reducing the initial quotas assigned to Hungary, Slovakia, Spain, the Netherlands, Bulgaria and the rest of the countries with negative cost reductions (cost increases) in Table 5.1.2. For example, reducing the initial Hungarian quota by 1,000 (from 1,176 to 176) and increasing the French one by the same amount (from 11,784 to 12,784) would make Hungary turn a profit in the market, while France would still see its cost being reduced by 2%, rather than by 11%.

The fact that this is theoretically possible does not imply that it is both feasible and desirable. From a feasibility point of view, the only way to achieve an allocation satisfying every Member State would be to know their "true" cost functions. If that was the case, the market would not be needed to begin with, since the initial quotas would already be enough to share responsibilities. In terms of desirability, taking these "true" costs into account would introduce incentives for countries to try to manipulate them. For example, it would be beneficial for Hungary to show that refugees are particularly costly for them so as to be assigned a lower initial quota than France.

With the methodology spelled out in the appendix, the quota price associated with the simulations in Table 5.1.2 would be 6,600 euros, below the 7,105 euros obtained in the first simulation with revealed preferences. The total cost of the market would be 198 million euros, which would compare favourably with the 344 million euros associated with the initial allocation of quotas and even with the 251 million euros that the voluntary quotas would imply.

5.2 Discussion

The two simulations that we just presented (together with the six in the appendix) are useful to illustrate several characteristics of the market for refugee-admission quotas. The first one is the relevance of the total number of refugees and asylum-

seekers to be relocated. Under the simple functional form assumptions for costs that we have described, the size of the total quota translates directly into both the final costs that countries bear and the equilibrium price in the market. Obviously, this is true both with and without a market. If refugees are assumed to represent a cost, it will be easier to relocate smaller numbers than larger numbers. In the case of the market, this is reflected in the equilibrium price.

With respect to the individual outcome of each of the countries from participating in the market, the key element is the initial attribution of responsibilities, that is, the distribution key for the initial quotas. Theoretically, we can set initial quotas in a way that encourages participation by absolutely every Member State (Fernández-Huertas Moraga and Rapoport, 2014). We discussed an example of how this could be done in our description of Table 5.1.2. As we mentioned there, it is not clear that this theoretical possibility is either feasible or desirable.

The feasibility argument lies in the lack of information about the actual cost functions of each of the countries. Generally, it is difficult to estimate the size of the externality in the welfare functions that governments maximise. As Fernández-Huertas Moraga and Rapoport (2014) showed, we would need this externality to make sure that we can distribute initial quotas so that every participating country is better off under the market. Even in cases like simulations 2 and B4, where the savings from the market are so large that it makes countries have lower costs overall than under a voluntary distribution of quotas,[7] we would still need to know what the precise functional form of the cost function that each country attaches to refugees is.

The market serves the role of revealing the actual marginal cost for each country in equilibrium. This equilibrium marginal cost of hosting an additional refugee runs from 6,600 euros in the first simulation to 266,985 in the last one in the appendix. The price is larger when the total number of refugees to be hosted is larger and when the cost functions are assumed to be more sensitive to the number of refugees hosted (cubic vs. quadratic cost functions).

In order to reveal the marginal costs and to lead to an efficient (cost-minimising) distribution, prices must be set up in a competitive market. We assumed that markets were competitive throughout our simulations, but empirically, there can be concerns that countries with a large initial allocation, such as Germany, or simply quite rich, such as the UK, could exercise some market power and distort the pricing mechanism. In this sense, there is scope for designing the market so as to prevent this from happening. Fernández-Huertas Moraga and Rapoport (2014) argued for a continuous computerised double auction mechanism, where buyers and sellers would submit ask and bid prices repeatedly, and an auctioneer, say the European Commission, would choose the price clearing the market.

[7] By construction, this cannot happen under revealed preferences.

Different experimental studies, starting with Friedman and Ostroy (1995), have shown that such a mechanism converges to the competitive equilibrium price, even in the presence of a reduced number of buyers and sellers. Intuitively, the mechanism promotes a Bertrand-type competition, even among large players.

6 Implementation issues

This section clarifies some implementation issues related to our proposal. We do so by offering a direct comparison of how the system works according to the CEAS and the European Agenda on Migration and how it should work according to the proposal.

The Common European Asylum System implies that physical solidarity in the area of asylum provision is shared according to the country of arrival of the asylum-seekers (Dublin Regulation). With the European Agenda on Migration, physical solidarity could also be achieved by relocating some refugees from overburdened countries to other Member States according to a distribution key. At the same time, financial solidarity was exercised through contributions to the Asylum, Migration and Integration Fund (AMIF) out of the general European Union budget. Hence, there were separate systems for physical and financial solidarity.

According to our proposal, physical and financial solidarity can be combined through the compensation mechanism, while the rights of refugees to choose their preferred destinations (and not be forced to go to undesired ones) would be guaranteed by the matching mechanism. We would still keep the distribution key as a way to attribute responsibilities, but this time, there would be a combined physical and financial system.

Does this mean that countries could "buy their way out" of hosting refugees? Yes, but only if other countries and refugees themselves accept it. The other countries would have to accept it by obtaining a financial compensation large enough so that it is advantageous for them. The refugees would have to accept it by not objecting to moving to the final destination. In this sense, the deal between the European Union and Turkey, so that Turkey accepts asylum-seekers present in Greece in exchange for a financial compensation (European Council, 2016) would only be acceptable in our proposal as long as asylum-seekers accept being removed from Greece to Turkey. Otherwise, the financial compensation should correspond to Greece, rather than to Turkey. This should incentivise Turkey to become attractive to refugees, because otherwise Turkey would be unable to get any compensation.

It would not be feasible for every country to "buy its way out" of physical solidarity. Suppose every country in Europe refused to admit additional refugees: This implies that those with a large quota should increase the financial compensation they offer to get rid of it. If nobody accepted it, they should increase the amount until it would eventually become attractive for some country to take care of the

refugees. Hence, not contributing physically could be very expensive financially. The expected outcome would be a mixture of the two contributions.

The compensation mechanism can be represented as a market in which more refugee unfriendly countries sell the provision of protection to refugee-friendly countries. However, it does not need to be implemented as a market, and this is why we often use the more general term compensation mechanism. A tax and subsidy system could implement the market solution or the European Commission could act as an auctioneer increasing the subsidy (currently 6,000 euros) until all refugees are protected.

Regarding the implementation of the matching mechanism, the fact that refugees can choose their preferred destinations does not mean that all of them would get into their first preference. In fact, they would only be allowed to go to destinations where some slots are available. The collection of preferences should and can, of course, take into account the fact that families should move together. If there is a country to which no refugee wants to go, the optimal strategy for that country would be to contribute financially, rather than physically, in a voluntary way, through the compensation mechanism. Otherwise, the country risks being penalised, because it would need to compensate the final destination of the refusing refugees (possibly, the original refugee camp) for those refugees who do not accept the move.

7 Conclusion

This report explores the ways in which tradable refugee-admission quotas (TRAQs), coupled with a matching mechanism taking into account refugees' preferences in terms of destination (as well as, possibly, countries' preferences about refugees' characteristics) may allow for an improved policy response.

The first part of the report shows, theoretically, that the combination of TRAQs and matching can go a long way toward addressing the shortcomings of the current system and provides a sound basis for asylum policies to try to jointly achieve efficiency and fairness in responsibility sharing at the European level. It also demonstrates that the usual concern with tradable quotas, namely social (or environmental or, in our context, humanitarian) "dumping", can largely be prevented due to the role of the matching mechanism in determining the market (i.e., final) quota. Similarly, the existence of the market in which an implicit price is put on a visa allows for avoiding the risk of a race to the bottom in humanitarian standards that a matching mechanism alone would entail.

The second part of the report is dedicated to simulations of the possible workings of a market for refugee-admission quotas under different scenarios. In the absence of reliable information on countries' effective costs of admission (which include the full economic, social and political costs of hosting refugees that a TRAQs system is precisely designed to reveal), it should be clear that these simulations are illustrative only. However, they constitute a useful exercise in that they demonstrate not only the overall gains, but also the distributive effects the proposed system would generate. As such, they have the potential to identify the participation constraints that impinge on the negotiations of the European Member States, as well as the likely coalitions that can emerge in support of the quota system.

References

Abdulkadiroglu, A. and T. Sonmez (1999): House Allocation with Existing Tenants, Journal of Economic Theory 88: 233-260.

Azevedo, E. M. and J.D. Leshno (2015): A Supply and Demand Framework for Two Sided Matching Markets, Journal of Political Economy, forthcoming.

Bovens, L. and A. Bartsch (2016): Towards a Fairer Distribution of Asylum Seekers, VoxEurop, 28 January 2016. Web accessed on 03-28-2016:
http://www.voxeurop.eu/en/content/article/5041680-towards-fairer-distributionasylum-seekers

Bubb, R., M. Kremer and D. I. Levine (2011): The Economics of International Refugee Law, The Journal of Legal Studies 40: 367-404.

European Commission (2015a): A European Agenda on Migration. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. Brussels, 13.05.2015. COM (2015) 240 Final.

European Commission (2015b): Proposal for a Council Decision establishing provisional measures in the area of international protection for the benefit of Italy and Greece. Brussels, 27.5.2015. COM (2015) 286 Final.

European Commission (2015c): Proposal for a Regulation of the European Parliament and of the Council establishing a crisis relocation mechanism and amending Regulation (EU) No 604/2013 of the European Parliament and of the Council of 26 June 2013 establishing the criteria and mechanisms for determining the Member State responsible for examining an application for international refugee protection lodged in one of the Member States by a third country national or a stateless person. Brussels, 9.9.2015. COM (2015) 450 final. 2015/0208 (COD).

European Commission (2016): Communication from the Commission to the European Parliament, the European Council and the Council. First report on relocation and resettlement. Brussels, 16.3.2016. COM(2016) 165 final.

European Council (2015): COUNCIL DECISION (EU) 2015/1601 of 22 September 2015 establishing provisional measures in the area of international protection for the benefit of Italy and Greece. Official Journal of the European Union, 24.9.2015, L 248/80.

European Council (2016): EU-Turkey Statement, 18 March 2016. Press Release 144/16.

European Parliament (2014-2019): Provisional measures in the area of international protection for the benefit of Italy and Greece. European Parliament legislative resolution of 9 September 2015 on the proposal for a Council decision establishing provisional measures in the area of

international protection for the benefit of Italy and Greece (COM(2015) - 0286: C8-0156/2015 - 2015/0125(NLE)) (Consultation). P8 TAPROV(2015)0306.

Fernández-Huertas Moraga, J. and H. Rapoport (2014): Tradable Immigration Quotas, Journal of Public Economics 115: 94-108.

Fernández-Huertas Moraga, J. and H. Rapoport (2015a): Tradable Refugee-admission Quotas and EU Asylum Policy, CESifo Economic Studies 61 (3-4): 638-672.

Fernández-Huertas Moraga, J. and H. Rapoport (2015b): Tradable Refugee-admission Quotas (TRAQs), the Syrian Crisis and the new European Agenda on Migration, IZA Journal of European Labor Studies 4: 23.

Friedman, D. and J. Ostroy (1995): Competitivity in Auction Markets: An Experimental and Theoretical Investigation, Economic Journal 105 (428): 22-53.

Hatton, T. (2015): Asylum Policy in the EU: The Case for Deeper Integration, CESifo Economic Studies 61 (3-4): 605-637.

Pathak, P. and T. Sonmez (2013): School Admissions Reform in Chicago and England: Comparing Mechanisms by Their Vulnerability to Manipulation, American Economic Review 103: 80-106.

Roth, A. E. (2002): The Economist as an Engineer: Game Theory, Experimental Economics and Computation as Tools of Design Economics, Econometrica 70: 1341-1378.

Schuck, P. H. (1997): Refugee Burden-Sharing: A Modest Proposal, Yale Journal of International Law 22: 243-297.

Thielemann, E., R. Williams, C. Boswell, and Matrix Insight Ltd. (2010): What system of burden-sharing between Member States for the reception of asylum seekers? Study. Directorate General for Internal Policies, Policy Department C: Citizens' Rights and Constitutional Affairs, Civil Liberties, Justice and Home Affairs, European Parliament, Brussels.

Wagner, M. and A. Kraler (2014): An Effective Asylum Responsibility-Sharing Mechanism, ICMPD Asylum Programme for Member States: Thematic Paper.

Svensk sammanfattning

Att erbjuda asyl är en internationell kollektiv nyttighet. EU:s medlemsstater tjänar på att ta emot flyktingar, annars hade det gemensamma europeiska asylsystemet (CEAS) inte funnits. Samtidigt ses flyktingmottagandet som kostsamt, varför det i tider av kris uppstår starka incitament att åka snålskjuts på andra länder. I ljuset av de stora flyktingströmmarna från framför allt Syrien lanserade Europeiska kommissionen 2015 en europeisk migrationsagenda, för att förbättra koordineringen av asylpolitiken samt genom en uttalad ansvarsfördelning söka motverka snålskjutsincitamenten.

Ansvarsfördelningen i kommissionens migrationsagenda vilar på en fördelningsnyckel som baseras på ett antal objektiva kriterier (BNP, population, arbetslöshet, tidigare mottagande av flyktingar) vilka antas spegla medlemsstaters fysiska förmåga att ta emot flyktingar och asylsökande. I den här rapporten argumenterar vi för att ansvarsfördelningen endast är ett första steg i att koordinera flyktingmottagandet. Vi föreslår att det kompletteras med ytterligare två steg.

För det första introducerar vi en kompensationsmekanism som gör det möjligt att kombinera fysisk och finansiell solidaritet i flyktingmottagandet. Det befintliga CEAS separerar de två dimensionerna. Å ena sidan har vi den fysiska solidariteten, det vill säga det faktiska mottagandet av flyktingar, vilken tillskrivs medlemsstaterna genom principen om första asylland. Den innebär att konflikter i närliggande områden drabbar vissa länder i långt högre grad än andra, vilket exempelvis är fallet för Grekland när det gäller de syriska flyktingarna. Å andra sidan finns också den finansiella solidariteten, vilken beror på förhållandet mellan vad en medlemsstat betalar in till EU:s budget – vilket i sin tur styr det individuella bidraget till asyl-, migrations- och integrationsfonden (AMIF) – och de utbetalningar som görs från AMIF till respektive medlemsstater baserat på hur många flyktingar de tar emot.

Den kompensationsmekanism vi föreslår kombinerar de båda dimensionerna, fysisk och finansiell solidaritet, genom att låta medlemsstaterna välja mellan dem. Om en medlemsstat anser att det fysiska åtagandet (den initiala kvoten) är för stort, finns möjligheten att betala andra länder för att de ska överta en del av kvoten: således mer finansiell solidaritet i utbyte mot mindre fysisk solidaritet. Systemet fungerar som en marknad, där den andra sidan består av länder som inte anser att den fysiska bördan är för stor och som står redo att mot ersättning ta emot ett större antal flyktingar. Marknadslogiken i argumentet är att den upplevda marginalkostnaden för att ta emot ytterligare en flykting jämnas ut och blir lika i respektive medlemsstater.

Kompensationsmekanismen behöver emellertid inte utformas som en marknad. Det finns alternativ. Exempelvis det befintliga skatte- och subventionssystemet, men där subventionen skulle vara flexibel och öka baserad på storleken i det totala flyktingmottagandet. Det faktum att det gemensamma europeiska asylsystemet inte lyckas omfördela tillräckligt många flyktingar, skulle kunna ses som följden av ett för hårt reglerat systemet med subventioner som har satts alldeles för lågt (6 000 euro per flykting). Om subventionen höjdes skulle fler flyktingar omfördelas.

Det tredje och sista steget i vårt förslag är en matchningsmekanism som kopplar samman flyktingar med deras önskade destination och medlemsstater med de flyktingar dessa helst ser. Det rör sig om samma matchningsmekanism som är vanlig när det gäller hur läkare fördelas mellan sjukhus och eller mellan skolor. Det innebär med andra ord att inte varje flykting hamnar i det önskade destinationslandet. Det finns dock två skäl som motiverar att man tar hänsyn till preferenser. Det första skälet är att flyktingarnas rättigheter respekteras. Ingen flykting bör tvingas att flytta till en oönskad destination. Det är acceptabelt att länder kompenserar varandra för flyktingmottagande, men det är inte acceptabelt att denna handel styr flyktingarnas val av land. Flyktingarna måste få sista ordet, även om deras val i någon mån begränsas av systemet. Det andra skälet är effektivitet. Det är billigare att flytta människor när de accepterar flytten. Dessutom förbättras sannolikt utsikterna att integreras i mottagarlandet.

Kompensations- och matchningsmekanismerna är inte enbart tillägg till den befintliga fördelningsnyckeln; i själva verket påverkar de varandra så att det uppstår incitament att ytterligare effektivisera fördelningen. Matchningsmekanismen hindrar helt enkelt medlemsstaterna från att manipulera kompensationsmekanismen. En sådan manipulering skulle annars kunna inträffa om ett land erbjuder sig att mot låg ersättning ta alla flyktingar och sedan lägger minimala med resurser på dem. Genom matchningsmekanismen kan flyktingen själv hindra att detta händer, genom att vägra att flytta till det landet. I sådana fall får landet i fråga ingen ersättning, utan måste betala böter som tillfaller flyktinglägret i fråga eller det land som tar emot flyktingen. Därigenom har medlemsstaterna incitament att behandla flyktingarna väl, eftersom man riskerar att behöva betala böter om flyktingar vägrar att flytta dit.

Även flyktingarna själva har incitament att sanningsenligt berätta vart de vill flytta, även om det inte handlar om förstahandsvalet: om de ärligt uppger sina preferenser, har de en chans att nå den önskade destinationen så länge kvoten inte har fyllts. I annat fall kan de nå det alternativ som listats i andra eller tredje hand och så vidare. I alla händelser har de skäl att ange samtliga alternativ de föredrar framför den plats där de för tillfället befinner sig.

Den här rapporten innehåller flera simuleringar av hur kompensationsmekanismen påverkar den slutliga ansvarsfördelningen i EU, när det gäller medlemsstaternas respektive finansiella och fysiska bidrag. Samtliga simuleringar börjar med EU-kommissionens fördelningsnyckel och låter sedan länder som är positiva till att ta emot flyktingar kompenseras av länder som är mindre positiva till flyktingmottagning. I beräkningarna utgår vi från att viljan att ta emot flyktingar beror på en funktion som varieras för att visa hur robusta resultaten är för olika antaganden. Framför allt antar vi att flyktingmottagandet är kostsamt för mottagarländerna; det kan röra sig om såväl fysiska som sociala och politiska kostnader som kan antas överväga fördelarna med att ta emot flyktingar.

Vi skapar två olika parametrar som mäter länders mottagningsbenägenhet. Den första kallar vi ”avslöjade preferenser”, där vi utgår från att de frivilliga kvoter som medlemsstaterna gick med på i juli 2015 är ett uttryck för deras mottagningskostnader. Den andra parametern kallar vi ”angivna preferenser”, och där använder vi enkäter som undersöker attityder till mottagande bland medlemsstaternas medborgare för att mäta ländernas preferenser.

Syftet med simuleringarna är att visa vad som händer när mottagningskostnaderna på olika plan skiljer sig åt. Samtliga simuleringar visar att kompensationsmekanismen innebär en noterbar förbättring jämfört med EU-kommissionens rigida fördelningsnyckel. De visar också att subventioneringen med 6 000 euro per omfördelad flykting är alldeles för liten för att länder ska acceptera ett större antal flyktingar. Vidare ser vi också att ansvarsfördelning via kvoter skapar vinnare och förlorare bland medlemsstaterna, beroende på vad som är den verkliga kostnaden för att ta emot flyktingar. Länder som uppfattar mottagandet som mindre kostsamt tenderar att vinna mer på kvottilldelningen än länder som uppfattar mottagandet som mer kostsamt. Denna observation leder oss till en negativ och en positiv slutsats. Den negativa slutsatsen är att det kommer att bli svårt att upprätthålla en koalition av vinnare som kan ge ansvarsfördelningen sitt stöd. Den positiva slutsatsen är att systemet producerar incitament för medlemsstaterna att med tiden bli mer intresserade av att ta emot flyktingar.

Generellt visar rapporten att det finns stora potentiella effektiviseringsvinster att hämta genom att låta EU:s medlemsstater välja vad som ska bli deras fysiska och finansiella bidrag till flyktingmottagandet. Effektivitetsvinsten är ett resultat av att man undviker snålskjutsproblemet i flyktinghanteringen, samtidigt som man försäkrar sig om att flyktingarna hamnar där kostnaderna för mottagandet är som lägst. Matchningsmekanismen säkerställer att flyktingarnas rättigheter inte äventyras av kompensationsmekanismen. Ytterligare effektivitetsvinster görs genom att den fysiska omlokaliseringsprocessen förbättras samt genom att länderna ges möjlighet att välja vilka flyktingar de vill ta emot, exempelvis utifrån kriterier som kompetens och ursprungsländer.

Användande av två marknadsmekanismer som kombinerar fysiska och finansiella komponenter i syfte att förbättra EU-ländernas solidaritet visavi asylsökande, kan inte lösa alla problem som CEAS brottas med. De kan dock ge stora vinster för samtliga parter, det vill säga för såväl EU:s medlemsstater som för flyktingar och asylsökande.

A Mathematical presentation of the model

The theoretical problem that needs to be solved is the allocation of a total number of refugees and asylum-seekers, denoted by $R + A$, across a set of destination countries, denoted by N, which can be assimilated to the Member States in the European Union that will be participating in the mechanism. The model takes as given both the total number of refugees and asylum-seekers to be allocated (such as the 160,000 in the EU proposal of September 2015) and the perceived costs and benefits that the refugees impose on the destination countries.

A.1 Setup

In the current absence of any coordination mechanism and abstracting from the rights of refugees and asylum-seekers, each country i will decide how many refugees (r_i) and asylum-seekers (a_i) to accept by maximizing their welfare function:

$$\max_{r_i, a_i} g_i\ (R_{-i}, A_{-i}) - c_i(r_i, a_i) \qquad (1)$$

This welfare function has two elements. The first one is $g_i(R_{-i}, A_{-i})$, where $R_{-i} = \sum_{j \neq i} r_j$ and $A_{-i} = \sum_{j \neq i} a_j$ denote the total number of refugees and asylum-seekers that are received by other destination countries different from i. This function represents how country i benefits from the fact that other countries receive asylum-seekers or refugees. There may be two fundamental reasons for this. On the one hand, there is the international public good aspect. We can consider that country i, either its government or its inhabitants, receives utility from the fact that refugees are protected, regardless of where. On the other hand, even in the case where country i does not directly care about refugees and perceives them as a simple cost, they benefit indirectly from the fact that other countries host them, since this may alleviate the pressure for it to host them itself. In other words, country i can expect its asylum claims to go down, the larger the number of refugees hosted by other destinations. Both explanations imply that refugees and asylum-seekers hosted by other countries exert a positive externality on the welfare of country i. This would mean $\partial g_i / \partial R_{-i} > 0$ and $\partial g_i / \partial A_{-i} > 0$. The positive sign of these derivatives leads the individual maximization of expression (1) to a globally inefficient solution. Fewer refugees are hosted overall than would be optimal from a global perspective.

The second element of the welfare function of country i represented in (1) is the net cost function of hosting refugees and asylum-seekers, denoted by $c_i(r_i, a_i)$. This

function is a reduced form that includes all of the perceived costs and benefits associated with hosting refugees and asylum-seekers. In particular, it includes the potential altruism of country *i* towards the reception of refugees, that is, the international public good element by which the welfare in country *i* is increased whenever refugees and asylum-seekers are protected in *i*. It also includes the physical and administrative costs of receiving refugees and asylum-seekers and processing their paperwork, initial allowances, and initial accommodation for the period decided by country *i*. The function also considers the potential long-run expected economic consequences of hosting these refugees and asylum-seekers as assessed by country *i*, for example, the immigration surplus or the fact that these refugees may either benefit or harm domestic workers once they integrate into the labour market. Finally, the function also includes the social and political costs (or benefits) of hosting these refugees and asylum-seekers.

To make sure that the problem in (1) actually has a solution, we assume that the net cost function is convex in the number of refugees and asylum-seekers, that $\partial^2 c_i/\partial r_i^2 > 0$ and $\partial^2 c_i/\partial a_i^2 > 0$. Given the externality, the individual solutions for (1) will not be optimal from a global point of view. The reason is that individual countries do not take into account the fact that their reception of refugees and asylum-seekers has a positive effect on other countries, and hence, they perform this activity at a lower level than that implied by a full maximization problem. This full maximization problem can be represented as

$$\max_{\{r_i,a_i\}_{i=1}^{N}} \quad \sum_{i=1}^{N} [g_i(R_{-i}, A_{-i}) - c_i(r_i, a_i)] \tag{2}$$

As proved in Fernández-Huertas Moraga and Rapoport (2014, 2015a), the optimal solution to (2) involves equating the marginal costs of hosting refugees and asylum-seekers among all the potential destination countries to a positive number that depends on the strength of the externality, while the optimal solution to (1), the non-coordinated solution, equates these marginal costs to zero.

A.2 The compensation mechanism for tradable refugee-admission quotas

The optimal solution can be replicated by distributing responsibilities over the number of refugees and asylum-seekers that each Member State must host (quotas) and letting them trade these responsibilities.

We define initial quotas q_{i0} as the total sum of refugees and asylum-seekers whose hosting becomes the responsibility of country *i*. If country *i* prefers to host a number $r_i + a_i < q_{i0}$, then it should pay another country the market price *p* per unfilled refugee-admission quota, so that this other country will host them. That means country *i* should pay $p(q_{i0} - r_i - a_i)$.

More generally, country *i* would be solving the following maximization problem:

$$\max_{\{r_i,a_i\}} g_i\,(R_{-i}, A_{-i}) - c_i(r_i, a_i) + p(r_i + a_i - q_{i0}) \tag{3}$$

The optimal solution to such a problem is:

$$\frac{\partial c_i}{\partial r_i}(r_i^M, a_i^M) = p = \frac{\partial c_i}{\partial a_i}(r_i^M, a_i^M) \tag{4}$$

If we denote market outcomes by *M*, initial quotas by *Q* and non-cooperative unilateral solutions by *NC*, it would be true that:

$$g_i(R_{-i}^M, A_{-i}^M) - c_i(r_i^M, a_i^M) + p(r_i^M + a_i^M - q_{i0}) > g_i\left(R_{-i}^Q, A_{-i}^Q\right) - c_i\left(r_i^Q, a_i^Q\right) \tag{5}$$

Inequality (5) implies that every participating country is better off under the market than under a system of mandatory quotas, such as the one proposed by the European Commission.

$$\sum_{i=1}^{N}[g_i(R_{-i}^M, A_{-i}^M) - c_i(r_i^M, a_i^M) + p(r_i^M + a_i^M - q_{i0})] > \sum_{i=1}^{N}[g_i(R_{-i}^{NC}, A_{-i}^{NC}) - c_i(r_i^{NC}, a_i^{NC})] \tag{6}$$

It follows from inequality (6) that it would be theoretically feasible to manipulate q_{i0} so that absolutely every country participating in the market would actually prefer to do so.

A.3 The matching mechanism

A.3.1 Refugees' preferences

We can allow for the case where the overall number $R + A$ is not realized and the "rejected" country pays the price p for the unfilled part of its quota. This acts as

a penalty and provides incentives for countries to become attractive destinations. The problem that the countries solve becomes:

$$\max_{\{r_i,a_i\}} g_i\left(R_{-i}, A_{-i}\right) - c_i(r_i^{MM}, a_i^{MM}) + p(r_i + a_i - q_{i0}) - p(r_i + a_i - r_i^{MM} - a_i^{MM})$$

$$s.t. \quad r_i^{MM} = F_i(r_1, r_2, \dots, r_N; a_1, a_2, \dots, a_N)$$
$$a_i^{MM} = G_i(r_1, r_2, \dots, r_N; a_1, a_2, \dots, a_N) \quad (7)$$

The term $p(r_i + a_i - r_i^{MM} - a_i^{MM})$ is a penalty that unattractive countries would have to pay for not being able to attract as many refugees and asylum-seekers through the matching mechanism as they would bid for in the market. We denote by *MM* the allocations coming out of the matching mechanism, which is mathematically represented by the functions $F_i(.)$ and $G_i(.)$. Countries would bid quotas $\{r_i, a_i\}$, but finally only $r_i^{MM} + a_i^{MM}$ individuals would end up going to country *i* through the matching mechanism. If some individuals refuse to move to country *i*, we would have $r_i^{MM} + a_i^{MM} < r_i + a_i$

In equilibrium, the penalty would always be zero, but it is needed so that countries do not have incentives to become unattractive from the point of view of refugees and asylum-seekers. In practice, the EU could be in charge of collecting this penalty in case of some off-equilibrium behaviour.

The first order conditions of the problem are:

$$\frac{\partial F_i}{\partial r_i}\left(\frac{\partial c_i}{\partial r_i}(r_i^{MM}, a_i^{MM}) - p\right) + \frac{\partial G_i}{\partial r_i}\left(\frac{\partial c_i}{\partial a_i}(r_i^{MM}, a_i^{MM}) - p\right) = 0$$

$$\frac{\partial F_i}{\partial a_i}\left(\frac{\partial c_i}{\partial r_i}(r_i^{MM}, a_i^{MM}) - p\right) + \frac{\partial G_i}{\partial a_i}\left(\frac{\partial c_i}{\partial a_i}(r_i^{MM}, a_i^{MM}) - p\right) = 0 \quad (8)$$

Still, equating the marginal costs of hosting refugees and asylum-seekers across countries to the quota price would be an optimal solution, even in the presence of the matching mechanism.

A.3.2 Host countries' preferences

The formulation of problem (7) is general enough that not only can refugee preferences be taken into account, there is also scope for considering the preferences of host countries regarding the type of refugees that they would be more willing to host (Fernández-Huertas Moraga and Rapoport, 2014).

B Mathematical presentation of the cost functions and additional simulations

B.1 Cost functions

The first cost function that we employ comes from the original paper by Fernández-Huertas Moraga and Rapoport (2014), but it was also used in Fernández-Huertas Moraga and Rapoport (2015b). It is assumed to take this shape:

$$c_i^{quad}(r_i) = \frac{\gamma_i}{2}\frac{r_i^2}{pop_i} \quad (9)$$

The cost perceived by each country *i* increases convexly on the total number of refugees resettled (r_i). The two other elements in the function are the population of the country (pop_i) and a parameter that expresses the "dislike" for refugees (γ_i). The function is decreasing in the population, with the rationale being that more populated countries can have a comparative advantage in hosting larger numbers of refugees. The population numbers are those corresponding to 2014 according to Eurostat. We will refer to the cost function in (9) as the quadratic one.

In order to understand the role of functional form assumptions, we introduce a second cost function that multiplies the costs of hosting refugees that we will term the cubic cost function. The exact expression is the following:

$$c_i^{cub}(r_i) = \frac{\gamma_i}{3}\frac{r_i^3}{pop_i} \quad (10)$$

The marginal cost associated with the cubic cost function simply multiplies the marginal cost of the quadratic one times the total number of resettled refugees.

The parameter γ_i is the one for which we offer two different simulations. In the case of revealed preferences, we will back it up as:

$$c_i^{quad\prime}\left(r_i^{voluntary}\right) = \gamma_i^{revealed}\frac{r_i^{voluntary}}{pop_i} = s$$

$$c_i^{cub\prime}\left(r_i^{voluntary}\right) = \gamma_i^{revealed}\frac{\left(r_i^{voluntary}\right)^2}{pop_i} = s \qquad (11)$$

The value of s can be used to pin down a monetary valuation for the cost functions.

We will be using the reference of 6,000 euros, since this is what the Asylum and Migration Fund from the Common European Asylum System offered the Member States for each particular refugee that they committed to resettle (European Commission, 2015c).

In the case of stated preferences, the value of the parameter γ_i will just be equated to the share of individuals in each EU country disagreeing with the statement "The EU Member States should offer protection and asylum to people in need" from the Special Eurobarometer 380 in 2011. In this case, we do not have a direct monetary equivalence, which is a disadvantage. For stated preferences, equation (12) no longer holds, that is:

$$c_i^{quad\prime}\left(r_i^{voluntary}\right) = \gamma_i^{stated}\frac{r_i^{voluntary}}{pop_i} \neq s \qquad (12)$$

In order to pin down a monetary value for comparison purposes, we can scale the marginal cost in expression (12) by a factor f, so that the marginal cost for each country approximates the subsidy of 6,000 euros established by the Asylum and Migration Fund (s = 6,000):

$$f\gamma_i^{stated}\frac{r_i^{voluntary}}{pop_i} \neq s \qquad (13)$$

We can transform the inequality in expression (13) into a proper equality by introducing an error term (ε_i):

$$\log f + \log y_i^{stated} + \log r_i^{voluntary} - \log pop_i - \log s = \varepsilon_i \quad (14)$$

Finally, we can estimate the value of f that minimizes the sum of errors: $\sum_i^{\varepsilon i}$.

B.2 Outcomes

B.2.1 Simulation B1: Revealed preferences; 60,000 refugees, Cubic Cost

Table B.2.1 simulates the same market as Table 5.1.1 in the main text, but under a more convex cost function, cubic on the number of refugees hosted, rather than quadratic. Given the way we back out the refugee cost parameter, the cubic cost function leads to exactly the same market quota as the quadratic cost function. The only difference between the two markets lies in the difference in total costs, which is obviously more pronounced for the case of the cubic cost function.

Under the assumed cubic costs of hosting refugees, the quota price increases from 7,105 euros to 8,412 euros. However, larger costs also imply larger cost reductions resulting from the market. In this case, the total cost reduction increases from 96% (23% excluding Hungary) to 100% (48% excluding Hungary). As before, every country stands to benefit from participating in the market rather than keeping the initial EU allocation.

The relative winners and losers from Table 5.1.1 are still the same, although their relative earnings and losses are accentuated by the larger assumed costs.

B.2.2 Simulation B2: Revealed preferences; 180,000 refugees, Quadratic Cost

This simulation goes back to the cost function assumed in the first one (Table 5.1.1). This time, the difference comes from the total number of refugees to be relocated, three times as many: 180,000 rather than 60,000.

The effect from having to allocate a larger number of refugees can be observed in Table B.2.2. Given the assumed linear marginal cost, Table B.2.2 simply multiplies by 3 the columns of the initial allocation of quotas and the market quotas from Table 5.1.1.

The market price also multiplies by 3 and goes up to 21,314 euros. In the case of the total cost, it multiplies times 9 rather than 3, due to its quadratic structure, but in relative terms, the savings are the same. Excluding Hungary, the euro savings from the market would still be 23%, but this would mean 540 million, rather than 60 million.

B.2.3 Simulation B3: Revealed preferences; 180,000 refugees, cubic cost

This simulation presents the last combination for the case of revealed preferences. In this case, the cubic cost functions are assumed to guide countries in allocating the 180,000 refugees.

Table B.2.3 is also a scaled version of Tables 5.1.1 and B.2.1 where the initial quotas and the quotas resulting from the market are triplicated.

The difference between Table B.2.2 (quadratic cost) and Table B.2.3 (cubic cost) lies in the equilibrium market price. The latter is nine times the former: 75,711 euros, rather than 8,412. The difference is compounded for the total costs, which multiply in this case by 27 with respect to the second simulation. Again, we must remind the reader that larger costs also imply larger savings coming from the market in absolute terms.

Table B1 Revealed Preferences, 60,000 refugees, Cubic Cost

Countries	*Voluntary quotas*	*Initial quotas (EU proposal)*	*Refugee Cost Parameter: taken from Eurobarometer 2011*	*Market Quota*	*Cost Reduction with respect to initial quota*	*Cost Reduction with respect to voluntary quotas*
Austria	1 900	1 775	14,1	2 250	25%	39%
Belgium	2 464	2 225	11,1	2 918	35%	52%
Bulgaria	500	775	173,9	592	14%	-220%
Croatia	550	516	84,2	651	24%	37%
Cyprus	242	134	87,9	287	692%	200%
Czech R.	1 500	1 446	28,0	1 776	18%	26%
Denmark	1 000	0	33,8	1 184	inf	432%
Estonia	150	181	350,9	178	0%	-75%
Finland	1 085	1 169	27,8	1 285	3%	-21%
France	9 127	11 784	4,7	10 807	2%	-111%
Germany	12 100	15 488	3,3	14 327	2%	-106%
Greece	354	0	526,3	419	inf	432%
Hungary	0	1 176	59264190,0	1	100%	-inf
Ireland	1 120	0	22,0	1 326	inf	432%
Italy	1 989	0	92,2	2 355	inf	432%
Latvia	250	255	192,1	296	8%	2%
Lithuania	325	378	167,2	385	0%	-57%
Luxembourg	350	215	26,9	414	413%	173%
Malta	74	65	466,1	88	47%	65%
Netherlands	3 047	3 546	10,9	3 608	0%	-57%
Poland	2 000	4 620	57,0	2 368	48%	-540%
Portugal	1 500	1 493	27,8	1 776	12%	13%
Romania	1 785	2 250	37,6	2 114	1%	-98%
Slovakia	200	729	812,4	237	75%	-1101%
Slovenia	250	306	197,9	296	0%	-83%
Spain	2 749	7 294	36,9	3 255	58%	-684%
Sweden	1 860	2 179	16,7	2 202	0%	-61%
UK	2 200	0	79,7	2 605	inf	432%
Total	50 671	60 000		60 000	100%	-66%
Quotas traded				17%		

Source: Authors' elaboration. Cost parameter divided by one thousand with Hungary as-sumed to host 1 refugee voluntarily.

Table B2 Revealed Preferences, 180,000 refugees, Quadratic Cost

Countries	*Voluntary quotas*	*Initial quotas (EU proposal)*	*Refugee Cost Parameter: taken from Eurobarometer 2011*	*Market Quota*	*Cost Reduction with respect to initial quota*	*Cost Reduction with respect to voluntary quotas*
Austria	1 900	5 326	26,9	6 749	7%	-630%
Belgium	2 464	6 676	27,3	8 753	10%	-563%
Bulgaria	500	2 324	86,9	1 776	6%	-1940%
Croatia	550	1 549	46,3	1 954	7%	-639%
Cyprus	242	401	21,3	860	131%	185%
Czech R.	1 500	4 339	42,0	5 328	5%	-693%
Denmark	1 000	0	33,8	3 552	inf	1362%
Estonia	150	543	52,6	533	0%	-1209%
Finland	1 085	3 507	30,1	3 854	1%	-935%
France	9 127	35 351	43,3	32 421	1%	-1390%
Germany	12 100	46 463	40,0	42 982	1%	-1366%
Greece	354	0	186,3	1 257	inf	1362%
Hungary	0	3 529	59264,2	4	100%	-inf
Ireland	1 120	0	24,7	3 979	inf	1362%
Italy	1 989	0	183,4	7 065	inf	1362%
Latvia	250	766	48,0	888	3%	-816%
Lithuania	325	1 135	54,3	1 154	0%	-1118%
Luxembourg	350	646	9,4	1 243	85%	50%
Malta	74	194	34,5	263	13%	-497%
Netherlands	3 047	10 637	33,1	10 824	0%	-1118%
Poland	2 000	13 860	114,1	7 105	24%	-3562%
Portugal	1 500	4 478	41,7	5 328	4%	-759%
Romania	1 785	6 750	67,0	6 341	0%	-1325%
Slovakia	200	2 187	162,5	710	46%	-6408%
Slovenia	250	919	49,5	888	0%	-1250%
Spain	2 749	21 881	101,5	9 765	31%	-4293%
Sweden	1 860	6 537	31,1	6 607	0%	-1135%
UK	2 200	0	175,4	7 815	inf	1362%
Total	50 671	180 000		180 000	95%	-1162%
Quotas traded				17%		

Source: Authors' elaboration. Cost parameter divided by one thousand with Hungary as-sumed to host 1 refugee voluntarily.

Table B3 Revealed Preferences, 180,000 refugees, Cubic Cost

Countries	*Voluntary quotas*	*Initial quotas (EU proposal)*	*Refugee Cost Parameter: taken from Eurobarometer 2011*	*Market Quota*	*Cost Reduction with respect to initial quota*	*Cost Reduction with respect to voluntary quotas*
Austria	1 900	5 326	14,1	6 749	25%	-1548%
Belgium	2 464	6 676	11,1	8 753	35%	-1193%
Bulgaria	500	2 324	173,9	1 776	14%	-8528%
Croatia	550	1 549	84,2	1 954	24%	-1597%
Cyprus	242	401	87,9	860	692%	2793%
Czech R.	1 500	4 339	28,0	5 328	18%	-1886%
Denmark	1 000	0	33,8	3 552	inf	9065%
Estonia	150	543	350,9	533	0%	-4632%
Finland	1 085	3 507	27,8	3 854	3%	-3172%
France	9 127	35 351	4,7	32 421	2%	-5598%
Germany	12 100	46 463	3,3	42 982	2%	-5471%
Greece	354	0	526,3	1 257	inf	9065%
Hungary	0	3 529	59264190,0	4	100%	-inf
Ireland	1 120	0	22,0	3 979	inf	9065%
Italy	1 989	0	92,2	7 065	inf	9065%
Latvia	250	766	192,1	888	8%	-2540%
Lithuania	325	1 135	167,2	1 154	0%	-4150%
Luxembourg	350	646	26,9	1 243	413%	2074%
Malta	74	194	466,1	263	47%	-841%
Netherlands	3 047	10 637	10,9	10 824	0%	-4150%
Poland	2 000	13 860	57,0	7 105	48%	-17169%
Portugal	1 500	4 478	27,8	5 328	12%	-2237%
Romania	1 785	6 750	37,6	6 341	1%	-5251%
Slovakia	200	2 187	812,4	710	75%	-32336%
Slovenia	250	919	197,9	888	0%	-4852%
Spain	2 749	21 881	36,9	9 765	58%	-21067%
Sweden	1 860	6 537	16,7	6 607	0%	-4240%
UK	2 200	0	79,7	7 815	inf	9065%
Total	50 671	180 000		180 000	100%	-4383%
Quotas traded				17%		

Source: Authors' elaboration. Cost parameter divided by one thousand with Hungary as-sumed to host 1 refugee voluntarily.

B.2.4 Simulation B4: Stated preferences; 60,000 refugees, cubic cost

In this sixth simulation, stated preferences are assumed again to allocate 60,000 refugees. The difference compared to the one in Table 5.1.2 is the cost function, which becomes cubic, rather than quadratic.

Table B.2.4 presents the results. The larger total and marginal costs lead both to more trading (36% vs. 32% in the previous simulation) and to larger cost reductions: 78% vs. 42% in the previous simulation. This also means that the savings from the market with respect to the voluntary quotas are larger: 55% rather than 21%. In fact, under this sixth simulation, only four countries would be worse off under the market than under the voluntary quotas: Hungary, Spain, Poland and the Netherlands.

If we follow the methodology described in the previous section to scale, the marginal costs into monetary values, the equilibrium price would be calculated at 29,665 euros, more than a four-fold increase over the second simulation. The increase is also notable with respect to table B.2.1, which also featured cubic cost functions, where the price was just 8,412 euros. Such a high price would lead many countries on the receiving side of the market to actually obtain a profit. In addition to the five zero-quota countries, 12 out of 23 remaining countries would be in that situation. This simulated market would only have six countries on the paying side: Germany, France, Spain, Belgium, the Netherlands and Austria.

This simulation in Table B.2.4 is quite different in terms of the final distribution of market quotas from the one in Table 5.1.2. The difference stemming from the comparison between the quadratic and the cubic cost functions is particularly striking if we remember that the first simulation in the text and the first in the appendix led to exactly the same distribution of market quotas (see Tables 5.1.1 and B.2.1). This comes from the fact that the refugee cost parameter (γ_i) took different values in the first simulation in the text and the first in the appendix, while we are keeping the same value for the second simulation in the text and this one. Hence, the equivalent results in Tables 5.1.1 and B.2.1 were due to the way we defined revealed preferences, while the differences between Table 5.1.2 and Table B.2.4 can be completely traced back to the distinction in the functional forms.

Table B4 Stated Preferences, 60,000 refugees, Cubic Cost

Countries	*Voluntary quotas*	*Initial quotas (EU proposal)*	*Refugee Cost Parameter: taken from Eurobarometer 2011*	*Market Quota*	*Cost Reduction with respect to initial quota*	*Cost Reduction with respect to voluntary quotas*
Austria	1 900	1 775	19	1 468	8%	25%
Belgium	2 464	2 225	27	1 413	30%	49%
Bulgaria	500	775	11	1 781	945%	3240%
Croatia	550	516	17	1 097	663%	566%
Cyprus	242	134	21	444	4106%	775%
Czech R.	1 500	1 446	22	1 517	1%	11%
Denmark	1 000	0	7	1 967	inf	1623%
Estonia	150	181	27	484	1788%	3061%
Finland	1 085	1 169	12	1 479	25%	6%
France	9 127	11 784	26	3 491	79%	55%
Germany	12 100	15 488	11	5 945	67%	31%
Greece	354	0	12	2 100	inf	41852%
Hungary	0	1 176	31	1 239	1%	-inf
Ireland	1 120	0	15	1 216	inf	356%
Italy	1 989	0	17	4 149	inf	1915%
Latvia	250	255	29	576	870%	922%
Lithuania	325	378	15	972	1514%	2327%
Luxembourg	350	215	14	435	522%	198%
Malta	74	65	12	413	40244%	26740%
Netherlands	3 047	3 546	8	3 182	3%	-53%
Poland	2 000	4 620	7	5 113	4%	-1088%
Portugal	1 500	1 493	13	1 965	36%	37%
Romania	1 785	2 250	7	3 704	179%	259%
Slovakia	200	729	19	1 171	155%	2769%
Slovenia	250	306	17	764	1336%	2374%
Spain	2 749	7 294	9	4 988	24%	-1326%
Sweden	1 860	2 179	4	3 407	131%	150%
UK	2 200	0	25	3 519	inf	919%
Total	50 671	60 000		60 000	78%	55%
Quotas traded				36%		

Source: Authors' elaboration. Cost parameter from the share of individuals in each EU country disagreeing with the statement \The EU Member States should oer protection and asylum to people in need" from the Special Eurobarometer 380 in 2011. Croatia is assigned the Slovenian value.

B.2.5 Simulation B5: Stated preferences; 180,000 refugees, quadratic cost

The seventh simulation goes back to the quadratic cost function assumption under stated preferences. This means that the simulation corresponds to the same cost function that was underlying the second simulation in the text. The only difference is that the number of refugees to be allocated triples from 60,000 to 180,000.

In that case, the market leads to the final distribution of quotas that can be observed in Table B.2.5. As we could already see in the comparison between simulations 1 and B2 (Tables 5.1.1 and B.2.2), the linear marginal cost associated with the quadratic cost function implies that tripling the total number of refugees to be allocated just triples the market quota of each of the participating countries. Of course, the market price is also tripled: from 6,600 euros to 19,799 euros, while the total costs are multiplied by nine.

The multiplication of the total costs means that the market for allocating 180,000 refugees is no longer cheaper than the voluntary contributions to allocate 50,671. Only the zero-quota countries are better off and can actually make a profit, although we must remind the reader that our definition of "worse" or "better off" only contemplates cost functions, since we did not make any assumption on the positive effect of the externality that the market addresses.

B.2.6 Simulation B6: Stated preferences; 180,000 refugees, cubic cost

Our last simulation replicates the previous one under stated preferences for a cubic cost function. Hence, it is directly comparable to the sixth simulation in terms of its cost function, with the only difference being that 180,000 refugees are distributed, rather than 60,000.

The results are presented in Table B.2.6. Since the relative differences in marginal costs are the same as in the sixth simulation, the final distribution of market quotas is exactly the same that can be observed in Table B.2.4, but multiplying every number by three. For example, Germany would host 5,945 refugees in Table B.2.4, while it would host 17,836 in Table B.2.6. However, the quota price does not triple, as in simulation B4, it multiplies by 9, due to the quadratic marginal costs implied by the cubic total cost functions. The total price is hence 266,985 euros, the largest in all the simulations we ran.[8]

Other than in magnitudes, this simulation is completely analogous to the sixth one. The total costs are exacerbated (they multiply by 27) but the sellers and the buyers in the market are still the same. They are just willing to trade at higher prices and three times as much, as the total size of the quota market is three times larger.

[8] The second largest is 75,711 euros, and it corresponds to the fourth simulation depicted in Table B.2.3.

Table B5 Stated Preferences, 180,000 refugees, Quadratic Cost

Countries	*Voluntary quotas*	*Initial quotas (EU proposal)*	*Refugee Cost Parameter: taken from Eurobarometer 2011*	*Market Quota*	*Cost Reduction with respect to initial quota*	*Cost Reduction with respect to voluntary quotas*
Austria	1 900	5 326	19	1 981	39%	-376%
Belgium	2 464	6 676	27	1 836	53%	-248%
Bulgaria	500	2 324	11	2 915	6%	-1920%
Croatia	550	1 549	17	1 106	8%	-628%
Cyprus	242	401	21	181	30%	-92%
Czech R.	1 500	4 339	22	2 115	26%	-517%
Denmark	1 000	0	7	3 558	inf	1366%
Estonia	150	543	27	216	36%	-734%
Finland	1 085	3 507	12	2 010	18%	-755%
France	9 127	35 351	26	11 206	47%	-700%
Germany	12 100	46 463	11	32 495	9%	-1241%
Greece	354	0	12	4 054	inf	13215%
Hungary	0	3 529	31	1 410	36%	-inf
Ireland	1 120	0	15	1 359	inf	247%
Italy	1 989	0	17	15 823	inf	6429%
Latvia	250	766	29	305	36%	-500%
Lithuania	325	1 135	15	868	6%	-1052%
Luxembourg	350	646	14	174	53%	-59%
Malta	74	194	12	157	4%	-560%
Netherlands	3 047	10 637	8	9 310	2%	-1100%
Poland	2 000	13 860	7	24 036	54%	-2114%
Portugal	1 500	4 478	13	3 550	4%	-753%
Romania	1 785	6 750	7	12 611	75%	-252%
Slovakia	200	2 187	19	1 262	18%	-9718%
Slovenia	250	919	17	537	17%	-1017%
Spain	2 749	21 881	9	22 871	0%	-6223%
Sweden	1 860	6 537	4	10 671	40%	-641%
UK	2 200	0	25	11 384	inf	2778%
Total	50 671	180 000		180 000	42%	-611%
Quotas traded				32%		

Source: Authors' elaboration. Cost parameter from the share of individuals in each EU country disagreeing with the statement \The EU Member States should oer protection and asylum to people in need" from the Special Eurobarometer 380 in 2011. Croatia is assigned the Slovenian value.

Table B6 Stated Preferences, 180,000 refugees, Cubic Cost

Countries	*Voluntary quotas*	*Initial quotas (EU proposal)*	*Refugee Cost Parameter: taken from Eurobarometer 2011*	*Market Quota*	*Cost Reduction with respect to initial quota*	*Cost Reduction with respect to voluntary quotas*
Austria	1 900	5 326	19	4 404	8%	-1928%
Belgium	2 464	6 676	27	4 240	30%	-1288%
Bulgaria	500	2 324	11	5 342	945%	84887%
Croatia	550	1 549	17	3 290	663%	12673%
Cyprus	242	401	21	1 331	4106%	18315%
Czech R.	1 500	4 339	22	4 550	1%	-2303%
Denmark	1 000	0	7	5 902	inf	41212%
Estonia	150	543	27	1 453	1788%	80058%
Finland	1 085	3 507	12	4 437	25%	-2441%
France	9 127	35 351	26	10 474	79%	-1128%
Germany	12 100	46 463	11	17 836	67%	-1762%
Greece	354	0	12	6 300	inf	1127417%
Hungary	0	3 529	31	3 716	1%	-inf
Ireland	1 120	0	15	3 647	inf	7007%
Italy	1 989	0	17	12 447	inf	49108%
Latvia	250	766	29	1 729	870%	22288%
Lithuania	325	1 135	15	2 916	1514%	60237%
Luxembourg	350	646	14	1 304	522%	2756%
Malta	74	194	12	1 239	40244%	719385%
Netherlands	3 047	10 637	8	9 547	3%	-4029%
Poland	2 000	13 860	7	15 340	4%	-31963%
Portugal	1 500	4 478	13	5 895	36%	-1593%
Romania	1 785	6 750	7	11 112	179%	4383%
Slovakia	200	2 187	19	3 514	155%	72158%
Slovenia	250	919	17	2 292	1336%	61509%
Spain	2 749	21 881	9	14 964	24%	-38397%
Sweden	1 860	6 537	4	10 221	131%	1448%
UK	2 200	0	25	10 557	inf	22200%
Total	50 671	180 000		180 000	78%	-1108%
Quotas traded				36%		

Source: Authors' elaboration. Cost parameter from the share of individuals in each EU country disagreeing with the statement \The EU Member States should oer protection and asylum to people in need" from the Special Eurobarometer 380 in 2011. Croatia is assigned the Slovenian value.

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