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## Passports for Sale: The Political Economy of Conflict and Cooperation in a Meta-Club

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# Passports for Sale: The Political Economy of Conflict and Cooperation in a Meta-Club

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OCTOBER 2019

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## ABSTRACT

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# Passports for Sale: The Political Economy of Conflict and Cooperation in a Meta-Club\*

Some of the member states of the European Union sell citizenship or residence to wealthy foreign investors. We analyse these “golden-passport” programs as a study in the political economy of conflict and cooperation in an international meta-club. Seen through the lens of club goods theory, the EU is a club of nations, each of which can be interpreted as itself a club. Each single nation reserves the right to govern the admission of new individual members into its own club, and new members automatically benefit from the EU wide meta-club good. We characterize the unique equilibrium when individual clubs that may differ in membership size are free to choose the terms on which they admit members, and evaluate it from the point of view of the wellbeing of the set of clubs as a whole. We identify club size and benefits as well as differences in cost externalities as the key determinants. We also consider how the set of clubs as a whole can respond to the economic inefficiency problems such a situation creates.

**JEL Classification:** F15, F53, H77

**Keywords:** club of clubs, membership rights, European Union, quotas

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# 1 Introduction

In the European Union (EU), Member States have the sovereign right to decide whether or not to grant citizenship to anyone they choose. Several of the current member states make special use of this freedom. They operate "golden passport" programs that enable wealthy investors from outside the EU to acquire citizenship of a member state. In compensation for a golden passport, they charge fees that increase the revenue to the government budget and/or request large financial investments that benefit the national economy more generally. As a further effect of the golden passport for a member country these wealthy new citizens also acquire citizenship of the European Union (Article 20, *Treaty on the Functioning of the European Union*). They benefit from the services provided by the EU to all citizens of the Union. And given the EU principle of freedom of movement, they can freely choose their place of residence within the EU.

This practice raises political economy issues of conflict and cooperation at the European level and has given rise to discussions and controversies between the central EU government level in Brussels and the individual member states. A report published in 2019 by the European Commission (2019) describes the European discussion process, the critical assessment by the European Parliament of the member states' procedures for selling and issuing citizenships and the commercialization of citizenship by individual states. The report points to possible dangers ("...in particular, risks to security, including the possibility of infiltration of non-EU organized crime groups, as well as risks of money laundering, corruption and tax evasion.") and discusses these concerns in more detail.<sup>1</sup> In view of these considerations, the Commission intends to monitor the citizen admission practices of the individual states and reserves the right to take possible steps.

In economic terms, countries can be interpreted as clubs. Their citizens are club members. They pay fees and benefit from the club good benefits provided to members. Also the 'club' controls and governs the right to choose the terms for the admission of further members and executes this right in the interest of the club's incumbent members. With the foundation of the EU several clubs joined into what could be seen as a meta-club, or a club of

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<sup>1</sup>Residence-or-citizenship-by-investment schemes not only open access to European citizenship rights, but might also serve the purpose of income tax sheltering. A recent report by the OECD presents a shortlist that is distilled from a survey on more than 100 such schemes. This shortlist has a strong overlap with the OECD former blacklist that is sometimes used as an identifier for tax haven countries and contains mostly non-European countries, but Malta is also on this shortlist. See, for the OECD study and the full shortlist <http://www.oecd.org/tax/automatic-exchange/crs-implementation-and-assistance/residence-citizenship-by-investment/> (accessed October 18, 2018, 11:50 CET).

clubs.<sup>2</sup> The meta-club might be seen as the provision of a club good that is funded by its members and provided to its members. And like other clubs, the meta-club has a governance structure that also describes the rules and procedures for the admission (or exit) of a member club. In the end, of course, the funders and beneficiaries are the members of the single clubs. If these single clubs reserve the right to govern the admission of new members into their own club, and if new members automatically benefit from the meta-club good, this creates a possible externality: while "entry fees" for new members of a club go to the incumbent members of that club, the new members benefit also from the meta-club good that is funded not only by the single club which they joined, but also by the members of all the other clubs. It is the potential externalities that we study in this paper and the market equilibrium outcomes. We are aiming at a better understanding of the implications of having the rights of admitting members into one of the member clubs. Moreover, we ask if this allocation of admission rights can cause conflict between the EU layer of government and the single member countries, analyse the distortions the existing allocation of admission rights implies, and suggest what would be a more suitable regime.

Clubs of clubs are not uncommon, at the intra-national as well as international levels. The EU is not a unique example. Different meta-clubs apply different rules about the governance of admission rights for new individual members. The United States of America, for instance, can be seen as a meta-club of states. Notably, the US rules for granting citizenship to new members are very different from the rules that apply inside the EU: admission decisions are mainly made at the federal level. On the other hand, conflicts may arise, as with differences in the enforcement of laws on unauthorised immigrants and so-called "sanctuary" states and cities.

On a much smaller, intra-national scale, the national Golf associations or associations of clubs in other sports are clubs of clubs. There the clubs govern the right to grant membership to their club. And much as in these clubs of states or clubs of nations, the members of a golf club benefit from the meta-club good: they benefit from the actions of the national golf association, and they have specific rights to use the facilities of other member clubs of the national association. Some of these user rights are not for free. A member of one golf club might play on another golf course, but for a fee ("green fee"), and the members of the national association might make a collective choice about what fees or what range of fees might be appropriate. Also, the national association might be selective about whether a particular club that seeks admission is "worthy" in terms of adding facilities that are of

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<sup>2</sup>A precursor for this idea is Casella and Frey (1992).

comparable level to those of other clubs.

These two examples suggest that the allocation of admission rights for new individual members might be chosen differently in different meta-clubs. But it highlights that these choices are important ones. This further motivates an analysis of whether the specific rules that apply inside the European Union in the context of golden passport programs are functional or dysfunctional.

At this point it is important to distinguish the problem we analyse from the study of the phenomenon of mass migration towards the EU that has also reached new dimensions since 2015. While the concerns in the Commission Report of the EU about the dangers of golden-passport-citizens, quoted above, sound similar to the ones sometimes articulated about the phenomenon of mass migration towards Europe more generally, the "golden passports" issue needs to be distinguished from the general political controversy and academic debate about mass migration. Migration of politically or religiously persecuted persons, or of persons who seek a better life in view of the poor economic conditions in their home country, relates to different motives. It typically concerns a completely different and disjoint group of persons. Also, admission to the EU rests on completely different elements of the legal framework for immigration to the EU, such as the right to apply for asylum or regulation of labor market immigration.<sup>3</sup>

More closely related to our analysis is the work of legal scholars and scholars from neighboring social sciences. Shachar and Bauböck (2014) brings together a number of papers from a multiplicity of disciplines which discuss the philosophically-oriented normative question "Should Citizenship be for Sale?". In this wide-ranging volume, Ayelet Shachar reflects upon the relationship between citizenship and wealth. She surveys several of the regimes by which Cyprus, Portugal, Spain and Malta offer either a residence permit or actual citizenship to high-net-worth applicants in what she calls "unfettered cash-for-passport exchanges", arguing critically that citizenship for sale may change important moral, social and cultural aspects of the very nature of citizenship. David Owen in the same volume goes even further and compares the "commodification of citizenship" to the selling of honours.

Another contributor to the 2014 volume, Peter Spiro (2014), spells out this aspect more explicitly: citizenship in one of its member states opens "a backdoor to the rest of Europe". He emphasizes that national citizenship remains within the exclusive competence of the member countries. Raul Magni Berton in the same volume agrees that this allocation of competence is debatable and invites free-riding of some countries on the efforts of others. Maas (2016 p. 544) observes a contradiction between national sovereignty

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<sup>3</sup>Key references on the general mass migration issue towards the EU or its member states are Collier (2013), Dustmann et al. (2016, 2017).

over its own citizenship on the one hand, and citizenship of a member state as being the only way to become an EU citizen on the other. He also takes up the argument according to which citizenship in a member country of the EU provides access to a different type of good: "... functional needs driven by free movement of individuals are coupled with the growing realisation that EU citizenship creates a new political sphere that is 'above' that of the member states and whose subjects, EU citizens, have rights and a status that similarly transcends the member states."

Carrera (2014, p. 426), analysing what he refers to as the "Maltese Citizenship-for-Sale Affair", concludes by posing the question: "Can EU Member States' actions on the acquisition and loss of nationality still be freely practised without any EU supervision and accountability?" He claims that: "Contrary to preliminary assumptions, the Commission and the European Parliament have successfully claimed co-ownership over citizenship matters, especially when domestic regulations have an impact over supranational citizenship, individual freedoms and the EU general principle of sincere cooperation."

We focus in this paper on the political economy of the dilemma presented by the simultaneous existence of the two "basic rights" that emerge from the meta-club structure: the right of members of one club to move freely between clubs inside the meta-club which brings about externality issues between the clubs, and the sovereign right of individual clubs to grant membership on criteria of their own choosing. The EU is a prominent example of this structure as a club of clubs, or meta-club, with the property that membership of any one club automatically entitles one to membership of them all.

The formal analysis in this paper is related to the economic theory of clubs that studies production of public goods with crowding externalities, the allocation of these goods to an exclusive set or 'club' of users, and the number of such clubs. Sandler and Tschirhart (1980, 1997) survey a large part of this literature. Hillman and Swan (1983) contribute to the important role of participation rules. An important aspect of this theory is the objective of clubs when admitting members: how much of the club good should be produced and by how many members should it be financed. A club might, for instance, maximize the average utility of its members, or the overall utility of all members, or might be governed by profit-maximizing managers as discussed in Scotchmer (1985). In our framework the club goods, both the national club goods and the international, Europe-wide good, are produced and given already. And the different countries already have given indigenous populations. The objectives of the nations will be the maximization of utility of this ex-ante given set of incumbent members who share any surplus



from adopting further members.<sup>4</sup> The club-good theory mostly concentrates on club goods without direct spillovers for other clubs. In our context, an exception is Sterbenz and Sandler (1992) who consider two clubs that each allow their members to use the facilities of the other club. In their framework there is no meta-club good the access to which single clubs can sell, and their clubs differ in their objectives, but the golf-club example discussed above reveals a similarity in spirit with the overselling of golden EU passports in our institutional framework. Our framework is also related to the idea of functional federalism as an institutional framework with multiple overlapping clubs discussed in Casella and Frey (1992).

The formal analysis in this paper, based on the economic theory of clubs, can be seen as an endorsement of Carrera's argument for co-ownership at the level of European governance. The ethical issue of making citizenship a commodity is not, as such, our main concern, since, as we learn from other clubs and associations, membership fees and strong and stable citizenship ties need not be mutually exclusive. We focus rather on the externalities that emerge inside a union of clubs if these, by selling their own membership, sell entry to the union as well. In contrast to the ethical discussion of the negative side effects of the commodification of citizenship, this paper is the first to provide an economic analysis of the implications for the political economy of a union of countries. It highlights weaknesses of the current golden-passport regime and provides an economic basis for explicit agreements on the levels of sales that individual countries may undertake. We draw on economic theory to suggest possible forms for these agreements, and to that extent our analysis is also normative. We describe the unique Nash equilibrium that exists if all countries independently choose the price of citizenships they want to sell and offer them to anyone prepared to pay this price. We identify an externality that implies that too many passports are sold from the point of view of the union as a whole, and we rationalise why the small countries among the members of the union are particularly likely to engage in this business. We then go on to analyse the "back door" problem identified by Spiro, and draw on the classic Edgeworth/Bertrand model of oligopoly<sup>5</sup> to suggest how it can be solved.

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<sup>4</sup>If one is prepared to accept the associated technical complications, one can also give the nation states the opportunity to produce further club goods in addition to taking advantage of the natural advantages of citizenships. However, this leads to questions that are not directly related to our research interests.

<sup>5</sup>As placed in a modern setting by Levitan and Shubik (1972) and Kreps and Scheinkman (1983), among others.

## 2 Equilibrium Pricing

We consider a union of two clubs. The aim of the analysis is to clarify and characterise what is likely to be the equilibrium outcome when individual clubs are free to offer membership and to choose the price they charge for this. The focus of the model is to clarify the determinants of price, and in particular the role that a club's own size in comparison to the size of other club plays in this.

Suppose the union consists initially of a total number of members,  $n = n_1 + n_2$ , where  $n_i$  is the number of members in club  $i$  and  $n_1 \leq n_2$ . The two clubs simultaneously and independently choose the prices  $p_1$  and  $p_2$ . At these prices they offer new membership to all-comers. Denote by  $z_i$  the number of members admitted by club  $i$  and  $z = z_1 + z_2$ . Purchase of the membership of club  $i$  allows the buyer to become a member of the other club as well.

The benefit to an initial member of club  $i$  is

$$\pi_i = h_i - (n_i + z_i)\eta_i + g - (n + z)c + \frac{p_i z_i}{n_i}.$$

Here  $h_i$  is the benefit enjoyed by each member of club  $i$ , arising for example from the provision of club services,  $g$  is analogously the additional benefit of being a member of the union of clubs,<sup>6</sup>  $\eta_i$  is a social cost externality<sup>7</sup> in club  $i$ ,  $c$  a corresponding social cost to each member of the union.

In this formulation, the term  $p_i z_i / n_i$  is the revenue  $p_i z_i$  from selling admissions, which we assume to be shared equally among the initial membership of club  $i$ . The term  $(n_i + z_i)\eta_i$  assumes that all new members of  $i$  will continue using the services of  $i$ , while on grounds of generality the model allows that both clubs may be simultaneously selling membership. We consider the consequences of relaxing these assumptions below.

Consider the demand for membership. If new members enjoy the amenities of the club they enter plus the global amenities of joining the union as well, then the price a would-be member is willing to pay for membership in a given club  $i$  rather than not purchasing membership in any club in the union is defined to be:

$$w_i(z_1, z_2) = h_i - (n_i + z_i)\eta_i + g - (n + z)c = \pi_i - \frac{p_i z_i}{n_i}. \quad (1)$$

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<sup>6</sup>So that  $h_i$  could be thought of as a "local" public good, and  $g$  as a union-wide public good.

<sup>7</sup>In the economics literature this is often referred to as a "congestion cost". We assume here that the members of the indigenous population and the new citizens lead in a very similar way to congestion effects. With regard to the concerns of the EU Commission cited in the introduction, one could also assume that the new citizens are of a different type and have a different effect on the overcrowding costs. This would not fundamentally change the issues discussed here.

Let there be an infinitely large group of individuals who are interested in purchasing membership, who all have the same reservation price defined by (1). The number of new members in club  $i$  is determined by the solution of the equations

$$w_i(z_{-i}, z_i) = h_i - (n_i + z_i)\eta_i + g - (n + z_i + z_{-i})c = p_i \quad (2)$$

for  $i = 1, 2$ , which can be solved for

$$z_i(p_i; z_{-i}) = \max \left\{ \frac{h_i - n_i\eta_i + g - (n + z_{-i})c}{\eta_i + c} - \frac{p_i}{\eta_i + c}, 0 \right\}.$$

Note that  $z_{-i}$  is an anticipated equilibrium value that depends on  $p_1$  and  $p_2$ .

**Proposition 1** *Any given  $\mathbf{p} = (p_1, p_2)$  determines unique numbers of new members in the two clubs.*

**Proof.** Recall the indifference condition

$$h_i - (n_i + z_i)\eta_i + g - (n + z)c = p_i$$

that determines demand for membership of club  $i$  as a function of  $z$  as

$$z_i(p_i; z) = \max \left\{ \frac{h_i - n_i\eta_i + g - (n + z)c}{\eta_i} - \frac{p_i}{\eta_i}, 0 \right\}.$$

Summing up yields  $\sum_{i=1}^2 z_i(p_i; z) = z$  and

$$z = \sum_{i=1}^2 \max \left\{ \frac{h_i - n_i\eta_i + g - (n + z)c}{\eta_i} - \frac{p_i}{\eta_i}, 0 \right\}. \quad (3)$$

Note that the left-hand side is the identity function and is strictly increasing in  $z$ . The right-hand side is a decreasing function in  $z$ . Accordingly, for given  $\mathbf{p}$  the function has a unique solution for  $z$ . But once  $z$  is inserted in each club's demand function  $z_i(p_i; z)$  this also determines unique equilibrium demands for  $z_i$  in each club  $i$ . ■

This result describes the market equilibrium that emerges as a subgame for all possible pricing choices made by clubs 1 and 2. If we assume that this subgame is played, the objective functions can be written as functions of the two prices  $p_1$  and  $p_2$  only. Assuming that  $z_i \geq 0$ , the condition

$$p_1 = h_1 - (n_1 + z_1)\eta_1 + g - (n + z_1 + z_2)c \quad (4)$$

yields

$$z_1 = \left( \frac{h_1 - n_1\eta_1 + g - cn - cz_2}{\eta_1 + c} - \frac{p_1}{\eta_1 + c} \right). \quad (5)$$

Inserting  $z_1$  from (5) into

$$p_2 = h_2 - (n_2 + z_2)\eta_2 + g - (n + z_1 + z_2)c$$

and sorting terms yields

$$\begin{aligned} z_2(p_1, p_2) = & \frac{h_2\eta_1 + h_2c - n_2\eta_2\eta_1 - n_2\eta_2c + g\eta_1 - cn\eta_1 - ch_1 + cn_1\eta_1}{\eta_2\eta_1 + \eta_2c + \eta_1c} (6) \\ & - \frac{\eta_1 + c}{\eta_2\eta_1 + \eta_2c + \eta_1c} p_2 + \frac{c}{\eta_2\eta_1 + \eta_2c + \eta_1c} p_1. \end{aligned}$$

Analogously,

$$\begin{aligned} z_1(p_1, p_2) = & \frac{h_1\eta_2 + h_1c - n_1\eta_1\eta_2 - n_1\eta_1c + g\eta_2 - cn\eta_2 - ch_2 + cn_2\eta_2}{\eta_2\eta_1 + \eta_2c + \eta_1c} (7) \\ & - \frac{\eta_2 + c}{\eta_2\eta_1 + \eta_1c + \eta_2c} p_1 + \frac{c}{\eta_2\eta_1 + \eta_1c + \eta_2c} p_2. \end{aligned}$$

These two equations show that the number of new members joining club  $i$  is smaller if the club charges a higher price, and larger if the other club charges a higher price. The latter is an externality: if club 2 chooses a higher  $p_2$  this discourages some customers of club 2 from purchasing membership in this club. This leads to less congestion of the union-wide good and makes the purchase of membership in club 1 more attractive. Moreover, the equilibrium demands for given prices  $p_1$  and  $p_2$  depend on the primitives of the model. In particular, the numbers of initial members of the clubs enter negatively. It follows from (6) and (7) that

$$\frac{\partial z_1}{\partial n_1} = \frac{\partial z_2}{\partial n_2} = -\frac{\eta_2\eta_1 + \eta_1c + \eta_2c}{\eta_2\eta_1 + \eta_1c + \eta_2c} = -1.$$

Turn now to the equilibrium choices of  $p_1$  and  $p_2$ . Club 1 maximizes

$$\pi_1 = h_1 - (n_1 + z_1)\eta_1 + g - (n + z_1 + z_2)c + \frac{p_1 z_1}{n_1}.$$

The first-order condition for a maximum of  $\pi_1$  is

$$\frac{\partial \pi_1}{\partial p_1} = \left( \frac{p_1}{n_1} - \eta_1 - c \right) \frac{\partial z_1}{\partial p_1} - c \frac{\partial z_2}{\partial p_1} + \frac{z_1}{n_1} = 0.$$

Using  $z_1(p_1, p_2)$  and  $z_2(p_1, p_2)$  as in (6) and (7) yields

$$p_1 = \frac{1}{2} \frac{h_1\eta_2 + ch_1 + g\eta_2 - h_2c}{\eta_2 + c} + \frac{1}{2} \frac{p_2c}{\eta_2 + c}$$

and analogously

$$p_2 = \frac{1}{2} \frac{h_2\eta_1 + ch_2 + g\eta_1 - h_1c}{\eta_1 + c} + \frac{1}{2} \frac{p_1c}{\eta_1 + c}.$$

These are the optimal reply functions of clubs 1 and 2 if we focus on interior solutions. These functions have an abscissa that is positive if

$$\begin{aligned} h_2\eta_1 + g\eta_1 + c(h_2 - h_1) &> 0 \\ h_1\eta_2 + g\eta_2 + c(h_1 - h_2) &> 0 \end{aligned} \tag{A1}$$

which we assume to hold in what follows, and a constant positive slope that is smaller than one. This ensures that the optimal reply functions intersect once and only once for positive  $p_1$  and  $p_2$ , and this intersection characterizes the pricing equilibrium. Solving for this equilibrium yields:

**Proposition 2** *If (A1) holds the equilibrium is interior and the equilibrium prices of the two clubs can be written as*

$$p_1 = \frac{2(h_1\eta_2 + ch_1 + g\eta_2 - h_2c)(c + \eta_1) + (h_2\eta_1 + ch_2 + g\eta_1 - h_1c)c}{4\eta_2c + 4\eta_2\eta_1 + 4\eta_1c + 3c^2}$$

and

$$p_2 = \frac{2(h_2\eta_1 + ch_2 + g\eta_1 - h_1c)(c + \eta_2) + (h_1\eta_2 + ch_1 + g\eta_2 - h_2c)c}{4\eta_2c + 4\eta_2\eta_1 + 4\eta_1c + 3c^2}.$$

This equilibrium has some interesting properties. First, the sizes of the initial memberships do not affect the equilibrium prices. Of course, they play a role for the number of new memberships bought, as these occur only up to the break-even point at which the price of membership is equal to the benefit of its acquisition and this benefit is smaller in club  $i$  if  $n_i$  and  $n$  are larger. Hence, a club that is already quite congested will, for given prices  $(p_1, p_2)$ , sell fewer new memberships. What matters for pricing are the marginal congestion costs  $\eta_1$  and  $\eta_2$  and  $c$  as well as the genuine per-capita benefits  $h_1$  and  $h_2$  of the club-specific public goods and  $g$ , the per-capita gross benefit of the union-wide public good. This can be illustrated by two examples which we state as corollaries:

**Corollary 3** *Let  $h_1 = h_2 = h$ , but  $\eta_1 > \eta_2$ . Then  $p_2 - p_1 > 0$ .*

**Proof.** From the equilibrium values of  $p_1$  and  $p_2$  we obtain that

$$p_2 - p_1 > 0 \text{ if } (2h + 2g)(\eta_1^2 - \eta_2^2) + (h + g)(\eta_1 - \eta_2)c > 0.$$

This is the case for  $\eta_1 > \eta_2$ . ■

We might interpret  $\eta_i$  as a measure of club  $i$ 's size. Small clubs become congested faster, such that  $\eta_1 > \eta_2$  relates to this case. Another dimension that is interesting to address is the size of the gross benefit of the local public good. We find:

**Corollary 4** *Let  $\eta_1 = \eta_2$ , but  $h_2 > h_1$ . Then in an interior equilibrium  $p_2 - p_1 > 0$ .*

**Proof.** Note that by the characterization of the equilibrium prices,  $p_2 - p_1 > 0$  if

$$-(-5h_2\eta c - 2h_2\eta^2 - 2h_2c^2 + 2c^2h_1 + 5ch_1\eta + 2h_1\eta^2) > 0$$

or, equivalently,

$$5\eta c(h_2 - h_1) + 2\eta^2(h_2 - h_1) + 2c^2(h_2 - h_1) > 0.$$

A necessary and sufficient condition for this inequality to hold is  $h_2 - h_1 > 0$ .

■

This result can also be interpreted as club 1 being the smaller of the two clubs: membership in this club is, given everything else equal, less attractive. Both corollaries give the characterization of the pricing equilibrium a meaning that suggests that ‘smaller’ clubs should charge lower prices to new members.

### 3 Optimal collective pricing

One might compare the competitive pricing equilibrium with the optimal pricing policy if the whole union (of two clubs) sells new memberships in a way that maximizes the joint welfare of *all* their initial members. In this case the objective function is

$$\Pi = n_1\pi_1 + n_2\pi_2.$$

Maximization of this function with respect to  $p_1$  yields the first-order condition

$$\frac{\partial \Pi}{\partial p_1} = n_1 \frac{\partial \pi_1}{\partial p_1} + n_2 \frac{\partial \pi_2}{\partial p_1} = 0.$$

Note that

$$\frac{\partial \Pi}{\partial p_1} \frac{1}{n_1} = \frac{\partial \pi_1}{\partial p_1} + \frac{n_2}{n_1} \left[ -(\eta_2 + c) \frac{\partial z_2}{\partial p_1} - c \frac{\partial z_1}{\partial p_1} + \frac{p_2}{n_2} \frac{\partial z_2}{\partial p_1} \right].$$

At the equilibrium values of  $p_1$  and  $p_2$  we have that  $\partial\pi_1/\partial p_1 = 0$ , such that

$$\begin{aligned} \frac{\partial\Pi}{\partial p_1} \frac{1}{n_1} &= \frac{n_2}{n_1} \left[ -(\eta_2 + c) \frac{\partial z_2}{\partial p_1} - c \frac{\partial z_1}{\partial p_1} + \frac{p_2}{n_2} \frac{\partial z_2}{\partial p_1} \right] \\ &= \frac{n_2}{n_1} \left[ \begin{array}{c} -(\eta_2 + c) \frac{c}{\eta_2 \eta_1 + \eta_2 c + \eta_1 c} \\ + c \frac{\eta_2 + c}{\eta_2 \eta_1 + \eta_1 c + \eta_2 c} + \frac{p_2}{n_2} \frac{c}{\eta_2 \eta_1 + \eta_2 c + \eta_1 c} \end{array} \right] \\ &= \frac{n_2}{n_1} \left[ \frac{p_2}{n_2} \frac{c}{\eta_2 \eta_1 + \eta_2 c + \eta_1 c} \right] > 0. \end{aligned}$$

This shows that  $p_1$  is too low from a welfare point of view. The same reasoning applies for  $p_2$ . Both clubs sell their new memberships at a price that is too low from a point of view the members of all clubs.

## 4 The "Back-Door" Problem

We now consider the situation in which some, typically small, clubs sell new membership, and a significant proportion of new members then in fact consume the services of the large clubs and so impose specific costs on them, rather than on the selling clubs. Selling a large number of new memberships would be more profitable to the small clubs when buyers do not use their services, so do not increase their costs that partly offset the revenue gains. We might therefore expect that *price competition* among small clubs could increase the number of sales to these buyers.

We formalize this by assuming now three clubs: one large club  $L$  that does not recruit new members, and two small clubs,  $i = 1, 2$ , that do. To keep things simple, we assume that all new membership is of the back-door type, and all new members consume entirely in club  $L$ . This asymmetry is modeled by assuming that  $g = c = 0$ . In this case the buyers of membership of club  $i \in \{1, 2\}$  are not interested in that club itself but are interested in the opportunity to benefit from  $h_L$  by using the public goods  $h_L$  and amenities of club  $L$ , and they congest these facilities ( $\eta_L > 0$ ). Furthermore, we normalize this coefficient that measures this congestion in club  $L$  to  $\eta_L = 1$ . Otherwise the structure of the problem is as in section 2: new members in  $i \in \{1, 2\}$  have the same benefit and this benefit is

$$w(z_1, z_2) = h_L - n_L - (z_1 + z_2). \quad (8)$$

Each club  $i \in \{1, 2\}$  chooses a non-negative price  $p_i$  and sells a number  $z_i$  of new memberships equal to the demand it faces. We also allow for an

exogenously given<sup>8</sup> quota  $\bar{z}$ , such that  $z_i$  is the minimum of actual demand and this quota.

This problem of capacity constrained price competition is well-studied, so we can rely on existing results. A solution to the particular problem with a function that describes marginal willingness to pay as a linear function of the number  $z_1 + z_2$  of units sold has been offered by Levitan and Shubik (1972)<sup>9</sup> and we draw on the results of this seminal paper.<sup>10</sup> The equilibrium prices are (see Levitan and Shubik, 1972, Table 1, p.116)

$$\begin{aligned} p_1 = p_2 = 0 & \quad \text{if } h_L - n_L \leq \bar{z} \\ p_1 = p_2 = h_L - n_L - 2\bar{z} & \quad \text{if } 0 < \bar{z} \leq \frac{h_L - n_L}{3}. \end{aligned} \quad (9)$$

The first line in (9) describes a quota  $\bar{z}$  for each club that is sufficiently large that it is non-binding. The equilibrium price is then the same as if there were no quota. The two small clubs engage in Bertrand price competition in a market for a homogenous good. This competition eliminates the sellers' rents from citizenships. Note that, in contrast to a standard market with Bertrand competition, this does not mean that the market outcome is efficient, or that this competition is to the advantage of the buyers. To the contrary, these price choices also drive down the rents of all new members to zero: the number of memberships sold in this equilibrium is so high and attracts so many persons to club  $L$  that each buyer's willingness to pay for membership is zero, and this is what they pay for it in the equilibrium. In addition, this aggressive pricing behavior also eliminates the location rents of the initial membership of  $L$  that they would enjoy in the absence of this market. The rent of each citizen in club  $L$  was equal to  $h_L - n_L$  and drops to zero in the Bertrand equilibrium as well.

The second line in (9) describes the case of a very tight quota. For this case both small clubs choose a pure strategy described by a price that is just

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<sup>8</sup>Initially we simply take this quota as given but go on to consider what would be optimal from the viewpoint of the union of clubs as a whole.

<sup>9</sup>This paper is a formulation in game theoretic terms of a classic paper by Edgeworth (1925), who gave a basic characterisation of the market equilibrium but used the approach of Cournot and Bertrand to derive it. This involves players taking decisions sequentially, and assuming that they can take the other's choice as given when they make their own, even though this assumption is falsified at every step of the resulting dynamic process.

<sup>10</sup>A difference between our approach and Levitan and Shubik (1972) is the interpretation of (8). They consider a standard demand curve that sorts buyers by their willingness to pay for the product. If there are two sellers with fixed capacities selling for different prices, this generates a rationing issue and they have to make specific assumptions about efficient rationing. Their results are not robust to changes in assumptions about the rationing process (Davidson and Deneckere (1976)). In our context, all buyers have unit demand and have the same willingness to pay for this unit, but this willingness depends on the number of buyers.



so high that each of them can sell its full quota for this price. Intuitively, consider the choice of club  $i$  given that the other club  $-i$  chooses this price. Club  $i$  could lower its price and would immediately attract additional demand. But because of the quota restriction it could not satisfy any of this additional demand. So this deviation is not profitable for club  $i$ . Club  $i$  could raise its price. But the price  $(h_L - n_L - 2\bar{z})$  chosen in this range of quotas is already as high or higher than the monopoly price; a higher price reduces the quantity that  $i$  could sell, and this quantity effect outweighs the benefit of a higher price. Thus choosing a price that just allows the quota to be sold is a mutually best reply.

The characterization of pure-strategy equilibrium in (9) leaves a wide gap for capacity limits in the range of  $\bar{z} \in (\frac{h_L - n_L}{3}, h_L - n_L)$ . In this range pure-strategy equilibrium does not exist. Levitan and Shubik (1972, p.118) show that the equilibrium is in symmetric mixed strategies for these capacity choices, that the prices are independently chosen as random variables drawn from a distribution with support  $p \in [\frac{1}{\bar{z}}(\frac{h_L - n_L - \bar{z}}{2})^2, \frac{h_L - n_L - \bar{z}}{2}]$  and according to a cumulative distribution function

$$\Phi_i(p) = \frac{\bar{z}p - (\frac{h_L - n_L - \bar{z}}{2})^2}{p(p + 2\bar{z} - (h_L - n_L))}. \quad (10)$$

This outcome illustrates the potential problems of regulating the "back door" problem with quotas. If the quota is sufficiently high and does not bind in the equilibrium, the small clubs destroy all surplus from the public good in  $L$ : the surplus that could emerge for the new members and the surplus for the initial members of the club  $L$ . Moreover, the two small clubs have no benefit from this activity for themselves, as their sales revenues are also zero. If the quota is smaller and binding but not sufficiently tight, then the pricing equilibrium is in mixed strategies, and this implies that the precise quantities of memberships that are sold are random outcomes. Only if the quotas do not exceed the Cournot-Nash sales levels given by  $(h_L - n_L)/3$  does the game have a well-defined equilibrium in pure price strategies, namely  $p_1 = p_2 = h_L - n_L - (2\bar{z})$ , the price that clears the market when both clubs sell exactly their quotas.

According to Kreps and Scheinkman (1983), if the game is such that the clubs choose binding quotas first and then choose prices, the small clubs would choose quotas  $((h_L - n_L)/3, (h_L - n_L)/3)$  and the corresponding price  $(h_L - n_L)/3$  as a subgame perfect equilibrium. The point of significance in this for the present paper is that a quota choice in the framework of Kreps and Scheinkman is the choice of capacity, where capacity cannot be enlarged instantaneously and each capacity unit is costly. In the framework we consider, there is no natural mechanism by which small clubs could credibly

commit on a quota. The quota might, however, be *exogenously* set by agreement among the members of the union and the level chosen might be at or below the Cournot-Nash quantities. This then effectively prevents the small clubs from rent-destroying sales at a price of zero. This leads us to the issue of the optimal choice of quotas at the meta-club level, the union of all clubs.

## 5 Quota choice: a normative view

We now also bring club  $L$  into the game and take the normative approach of asking: what is the best policy from the point of view of the union of 3 clubs as a whole? The answer is straightforward, given that the union's benefit function does not include the welfare of the buyers of new members. Define the union's payoff function as:

$$\Pi(z_1 + z_2) = n_L(h_L - (n_L + z_1 + z_2)) + (z_1 + z_2)p \quad (11)$$

Suppose the price can also be regulated by the union. Then the price for a new membership will be equal to the value  $h_L - (n_L + z_1 + z_2)$ , and this leads to

$$\Pi(z_1 + z_2) = (n_L + z_1 + z_2)(h_L - (n_L + z_1 + z_2)). \quad (12)$$

Note that this is the total rent of all initial members of  $L$ . As the new members pay a price that is exactly equal to the rent they enjoy from it, this payment is already included in  $\Pi(z_1 + z_2)$ . Maximization of (12) with respect to  $(z_1 + z_2)$  yields

$$z_1 + z_2 = \frac{1}{2}h_L - n_L. \quad (13)$$

Inserting (13) into (12) yields

$$\Pi^* = \frac{1}{4}(h_L)^2. \quad (14)$$

A comparison of the optimal quota and the Cournot-Nash quota  $z^C = (h_L - n_L)/3$  shows that they cannot be clearly ranked in size. The comparison depends on the size of the initial membership of  $L$ :

$$z^* = \frac{1}{2}\left(\frac{h_L}{2} - n_L\right) \text{ compared to } \frac{1}{3}(h_L - n_L) = z^C \quad (15)$$

This indeterminacy and the dependence on  $n_L$  are intuitively plausible, as the two small clubs do not take into account that the selling of new memberships reduces the per-capita rents of the initial members in  $L$ , and that the size of this effect depends on the size of the membership of  $L$ . Note also that

the Cournot-Nash quantity  $z^C$  that emerges in the Kreps-Scheinkman (1983) outcome of capacity choice followed by Bertrand competition is unlikely to emerge in our framework. As discussed, it would be difficult for small clubs to commit and constrain their behavior to a voluntary quota. The predicted equilibrium in the absence of an exogenously imposed quota is the worst possible for the three clubs, the Bertrand outcome in which all rents are dissipated and even the small clubs do not gain anything.

## 6 Conclusions and Some Policy Implications

Several EU countries sell citizenship, or close substitutes for it, to anyone prepared to pay the price. Given the right of free movement of people within the EU, this is in effect a market for EU citizenship. Considering countries as clubs, this situation then raises issues in the political economy of an international club-of-clubs. If member states of a confederation are fully sovereign in their decisions on whether and how to award national citizenship to non-citizens, and if national citizenship comes with the benefits of union citizenship, then a market for golden passports for wealthy investors from outside the EU may emerge in which at least some nation states overuse their privilege of selling citizenship, compared to what would be optimal from a union-wide perspective.

The adequate allocation of rights to sell citizenship to wealthy investors can, we believe, only be resolved by economic models of the kind analysed in this paper, that increase the transparency and awareness of the issues involved. The Nash equilibrium we have described shows what can happen if all countries independently choose the price of citizenships they want to sell and offer them to anyone prepared to pay this price. We identify the externality that implies that too many citizenships are sold from the point of view of the union as a whole, and we have rationalised why the small countries among the members of the union are particularly likely to engage in this business, as the observations discussed earlier show is in fact the case. Our analysis of the "back door" problem suggests how it can be solved. It suggests the value of explicit agreements in the form of quotas on the passport sales that individual countries may undertake. One important aspect of this is the extent to which new citizens move out of the countries that initially admitted them and into other countries that have had no say in the admission process, but may bear at least some of the cost. In this respect, our analysis can be seen as providing support for cooperation between nation states and the central EU institutions, as the representatives of the "meta-club", on matters of citizenship.

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