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An economic analysis of the councils of the United Nations.

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AN ECONOMIC ANALYSIS OF THE COUNCILS OF THE UNITED NATIONS

Matthew Gould

A Thesis submitted in partial fulfilment of the requirements of the
University of Westminster for the degree of Doctor of Philosophy

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Declaration

I hereby declare that I have not used before any material contained in this thesis and that this thesis is my own work. A version of Chapter 2 has been published in Public Choice and a version of Chapter 3 has been submitted for publication.

I declare that this thesis has not been submitted for a degree at another university.

Abstract

This thesis consists of three pieces of research focussed on the Councils of the United Nations, predominantly the United Nations Security Council (UNSC). We consider three broad questions: which countries typically get on to the UNSC in its current form; which countries ought to get on to the UNSC; and how well might proposed changes to the UNSC steer it towards such ideals.

In order to address the latter two questions it is sensible to begin by investigating how the current system works and if there are any particular characteristics which influence the chances of a country being elected to the UNSC. In Chapter 2 we develop a model to test the significance of a country's characteristics on their probability of election to the UNSC. Chapter 3 then starts by developing a set of theoretical tests which can be applied to council voting systems, such as the selection of UNSC members from the UN General Assembly. The tests score a voting system based on how well the distribution of power in the council meets the power one would expect under a system where country representatives cast their vote in the council based on the outcomes of country or regional-level referendums. We then apply this, using the implied probabilities of election which are a consequence of the results of Chapter 2, to the UNSC election process. We then finish by applying the tests of Chapter 3, which consider how equitable a proposal is, together with a further test of procedural efficiency, to each of the proposed reforms to the UNSC election process.

Chapter 1

Introduction

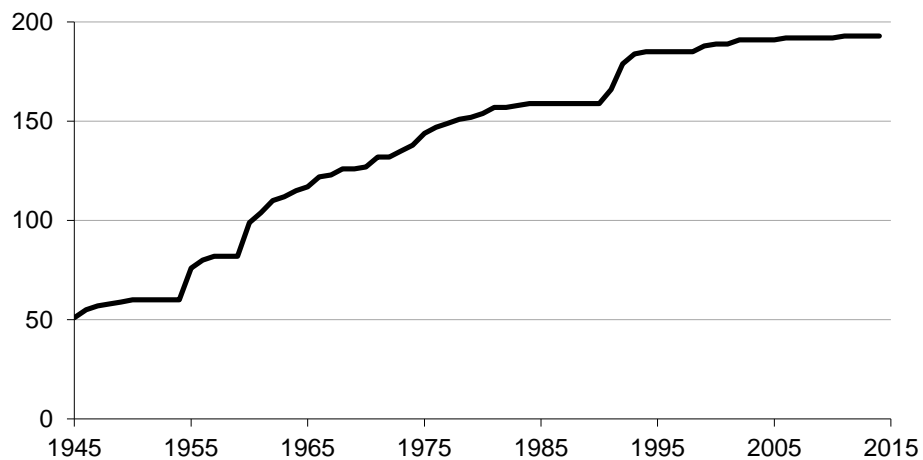
The United Nations (UN) is the leading international body responsible for maintaining international peace and security. Recent conflicts that have occurred without UNSC approval have brutally highlighted the need for reform of the UNSC and its voting system as part of a package of wider UN reform. In particular, the UNSC has been charged with being indecisive and slow to react to such situations, with particular blame being placed on the right of veto of the permanent members. Several deadlocks between opposing permanent members (as was the case in the developing Syrian civil war when China and Russia blocked resolutions which would have imposed sanctions on Syria in 2011 and 2012) have called into question the effectiveness of the UNSC as it is currently formed.

Why should economists be interested in the UNSC and its reform? In maintaining peace, the UNSC is important for culturing the conditions of macro-economic stability that are conducive for economic growth (As supported by findings from empirical studies such as Fischer (1993), Kormendi and Meguire (1985) and Easterly and Rebelo (1993)). In respect of UNSC reform, a core element of the economic discipline is the study of how resources should be allocated across agents. Thus economic theory offers a perspective on how votes, or more precisely voting power, should be allocated across collections of agents (nations) in international political organisations.

We employ an approach to voting system design and evaluation which is explicitly analytic, thereby filling a gap in the literature on the UNSC and its reform left by the largely qualitative work in the political sciences. Whereas qualitative work has summarised the dimensions of the debate, the analytical tools used here enable one to perform critical analysis and make firm recommendations.

1.1 Background Information

The UN began on the 24th October 1945 aiming to maintain international peace and security, and promote international co-operation towards solving cultural, economic, humanitarian and social problems. Since its founding the UN has expanded from fifty-one members to 193 members as of 2014, representing over 99 per cent of world's population (Figure 1.1).



Source: United Nations

Figure 1.1 – UN Membership since 1945

Our focus in this thesis is on two UN bodies: the General Assembly (UNGA) and the Security Council (UNSC). The UNGA is the main deliberative body of the UN it makes non-binding resolutions and provides a platform for multilateral. Each of the 193 member governments has a representative in the UNGA, each of which hold one vote in accordance with the UN principle of sovereign equality. Votes are determined by a simple majority with the exception of some important decisions, such as electing members of the UNSC, which require a two-thirds majority (UN Charter 18). The UNSC, the main focus of our research, has evolved into the dominant political body of the UN. The UNSC, unlike the UNGA, makes binding decisions on narrowly focussed and well-defined subjects. The UN Charter specifically tasks it with the maintenance of international peace and security and it

can take enforcement action in the form of economics sanctions, suspension of diplomatic relations, blockades and the use of military action.

Despite the UN increasing in membership from 51 to 193 nations since 1945, the UNSC has seen reform only once when its membership increased from eleven to fifteen members. The UNSC comprises fifteen members, five of which are Permanent Members (PMs), who, as implied by their name, are continual members of the UNSC, and ten Non-Permanent Members (NPMs) who each serve two year overlapping terms. The Permanent Members are China, France, Russia, the UK, and the USA, i.e., the main Allies who were victorious in the Second World War. Elections to determine the ten NPMs are held in the UNGA towards the end of every year. The elections are subject to the further requirement of paying due regard to equitable geographic distribution, which means in practice that member-states are drawn in fixed numbers from within regional caucusing groups partitioning the UN membership.¹ These groups are the African Group (AF), Asian Group (AS), Eastern European Group (EE), Latin America and the Caribbean Group (GRULAC), and the Western European & Others Group (WEOG). At present, five NPMs must come from AF and AS, two from GRULAC, two from the WEOG, and one from EE. There is tacit agreement the five states allocated to AF and AS, should be divided as three from AF and two from AS. Prior to an election each caucusing group declares to the UNGA a list of candidate countries that will participate in the election. Groups such as AF work by near strict rotation and typically put forward one candidate for each available seat, leaving the UNGA to ratify their decision. Other groups such as the WEOG generally submit more candidate states than available seats, ensuring a competitive election in the UNGA. The sole guidance given to UNGA members on the criteria they should use to elect UNSC members is that they should pay due regard to a candidate state's contributions to international peace and security.

¹ The USA is technically not a member of a caucusing group. However, it sits as an observer in WEOG meetings and is considered part of the group for electoral purposes. Israel for many years was not a member of any grouping, but in 2000 achieved temporary membership of the WEOG.

Like the UNGA, the UNSC members each have one vote. For procedural matters a resolution can pass if at least nine members (60 per cent) vote in favour of it. However, for all non-procedural matters decisions are made by an affirmative vote of nine or more members *including the concurring votes of the PMs*. That is, each PM has an individual right of veto. Each member can abstain from a vote if they so wish and it has become established that by ‘concurring’ it is meant that a PM’s abstention does not constitute the exercise of its veto. We focus entirely on the voting system used for non-procedural matters.

There is wide consensus that the UN, and in particular the UNSC, are in serious need of reform and have become less relevant. In 2013, having been elected for the first time to the UNSC, Saudi Arabia made a very public statement of its desire for reform by rejecting its seat on the UNSC. Most recently, the UNSC was slow to act in preventing escalating violence in Syria owing to vehemently differing positions of PMs. Similarly, in 2003 the US and its allies took multilateral action in Iraq without UNSC approval, because Russia would have exercised its veto. The UNSC has also failed to resolve the long-standing conflict between Israel and Palestine. The UN has had great difficulty in persuading member-states to volunteer troops for its peacekeeping missions, and has suffered high profile embarrassments in Bosnia and Somalia in 1995, when peacekeeping forces were deployed in areas with no peace to keep. Also the UN is suffering an enduring financial crisis, which puts its ability to perform its responsibilities in danger. This is caused by many member-states failing to pay their budget assessments. As of the end of 2011 USD 3.08 billion in assessed contributions to the regular budget and peacekeeping operations were unpaid. This amounts to around a half of the combined budget for that year, a significant proportion of which is owed by the USA (UN, 2012b).

1.2 Voting Theory Essentials

In this thesis we examine the Councils of the United Nations, in particular the UNSC. There is by now a substantial literature that applies the insights of a-priori voting to international voting bodies – Felsenthal and Machover (1997a, 1997b, 2001, 2004, 2007), Laruelle and Widgrén (1998) and Leech (2002a) to the Council of the European Union; Napel and Widgrén (2006) to the European Parliament; Manno (1966), Newcombe, Wert and Newcombe (1971), and Dixon (1983) to the UNGA; Leech (2002b), Leech and Leech (2013), and Rapkin and Strand (2006) to the IMF Executive Board; and Leech and Leech (2005) to the World Bank Executive Boards – but the UNSC stands out as the only major international body not to have been addressed by this literature.²

What lies behind this lacuna? The square-root rule is predicated on a two-stage voting model – first a national vote, second an international vote – which anticipates that all members vote in the second stage. When international decision-making is by a council, this framework cannot be applied directly for at least two reasons. First, only a subset of members votes in the second stage. Second, this subset is not constant over time (the membership of the UNSC changes each year, for instance). Third, the UN Charter does not specify the probabilities with which each UN member gains membership of the UNSC.

1.2.1 A-priori voting theory

The stance we take here is, when designing and evaluating a voting system it should be measured against objectively chosen benchmarks that good voting systems should achieve. We put forward a theoretical model of voting in international bodies in order to facilitate the construction of precise criteria. We employ an analytical tool known as a-priori voting power, which is a measure of the ability of a member of a voting body to influence voting

² The IMF Executive Board is composed of only 24 Executive Directors, and the World Bank Executive Board of only 25 Executive Directors. In both bodies, however, the Executive Directors represent all 188 member-countries, so each can be interpreted as fully representative.

outcomes (Leech, 2002c). The theoretical approach to measurement of voting power is to model a voting body as an n -person game. One should not, however, place much significance on the use of the word ‘game’ here. The principal power indices we employ are not born of co-operative game theory but rather from a probabilistic theory of voting. Although we employ a ternary representation of the UNSC (in which players can vote for a motion, against a motion, or abstain), for the sake of introducing the theory, we begin by describing how the UNSC might be modelled in a binary context (in which players can vote only for or against a motion).

We define a simple voting game (SVG), as set out by Shapley (1962), as a pair (N, W) , where N is a set of the n members of the voting body. W is a collection of subsets of N with the following properties:

$$i) \emptyset \notin W$$

$$ii) N \in W$$

$$iii) \text{ If } S \subseteq T \subseteq N \text{ and } S \in W \text{ then also } T \in W$$

The rules above simply mean that: (i) if all members of the voting body vote against a motion then the motion fails; (ii) if all members of the voting body vote for the motion then it succeeds; and (iii) for a given successful coalition, if the level of support is increased, i.e. some members who voted against changed their vote to ‘yes’, then the motion must still succeed.

Suppose a voting body is taking a vote on a motion and that each of its members can only vote for or against and casts their vote with equal probability independent of all other members. Then all the 2^n possible voting outcomes occur with equal probability. Any theory of voting power derived from such an assumption of random voting is one of a-priori power whereby we describe everything that might happen in a voting body from behind a veil of ignorance, before the members’ preferences are fixed in any fashion. If we

were to develop a theory of actual, or a-posteriori, voting power one would take into account additional factors such as members' actual interests and preferences. This would lead to some coalitions being more likely than others (Felsenthal and Machover, 2000). Some authors, such as Garrett and Tsebelis (1996, 1999a, 1999b), believe a-priori theory is flawed since power indices systematically underestimate the power of members with mainstream preferences, and overstate that for marginal members. We, however, argue that a-priori theory is the more appropriate approach when it comes to voting system evaluation and design. Actual power, even *if* it can be measured objectively, is in constant flux; but by design it must be the case that the measure of a-priori power is the long-run average around which actual power deviates (Lane and Berg, 1999). Therefore a-priori power is the stable criterion against which we should design and evaluate voting systems.

1.2.2 Voting Power Indices

It would be reasonable to develop a notion of voting power by deriving it from the probability that a member of the voting body is on the winning side. There are 2^n equiprobable voting outcomes under the assumptions set out above. A member $i \in N$ is said to be critical if by switching its vote, i can change a coalition from a winning coalition to a losing coalition, that is, $i \in S$, $S \in W$ and $S \setminus \{i\} \notin W$. Define a dummy in (N, W) as a member for whom $S \in W$ if and only if $S \setminus \{i\} \in W$ for all $S \subseteq N$ and a dictator for whom $S \in W$ if and only if $i \in S$ for all $S \subseteq N$.

Let η_i denote the number of times member i is critical, then the probability that i votes on the winning side is:

$$r(i) = \frac{2\eta_i + \frac{1}{2}(2^n - 2\eta_i)}{2^n} = \frac{1}{2} + \frac{\eta_i}{2^n}, \text{ for all } i \in N.$$

Unfortunately, $r(i)$ mingles luck and influence since even a dummy is given 0.5. If we apply the linear transformation $2r(i) - 1$ we can remove this, giving:

$$2r(i) - 1 = 2\left(\frac{1}{2} + \frac{\eta_i}{2^n}\right) - 1 = \frac{\eta_i}{2^{n-1}} \equiv \beta'_i, \quad \text{for all } i \in N.$$

β'_i is the Banzhaf measure (BZM), named after John Banzhaf, who proposed it in Banzhaf (1965).³ It is the a-priori probability that player i is a critical voter in (N, W) and takes a value zero for a dummy and one for a dictator. It measures the *absolute* power of a member, but does not sum to one across all members. Thus this measure of voting power does not conceive of a fixed amount of power that can be divided amongst members. Rather, the power of the voting body as a whole varies from specification to specification. Often it is useful to normalise the BZM to sum to unity across members, giving a measure of the *relative* voting power between members. The Banzhaf Index (BZI) is given by

$$\beta_i = \frac{\beta'_i}{\sum_{j=1}^n \beta'_j}, \quad \text{for all } i \in N.$$

An alternative and explicitly game theoretic measure of voting power, the Shapley-Shubik Index, was been proposed by Shapley and Shubik (1954). It is derived as a special case of the Shapley value for cooperative games. Consider an ordering of N as representing the order in which members of N will join a coalition in support of some bill. The member whose joining turns the developing coalition from a losing coalition into a winning coalition is called the pivotal voter. The SSI is then

$$\begin{aligned} SSI_i &= \frac{\text{number of orderings in which } i \text{ is critical}}{n!} \\ &= \sum_{S \subseteq N} \frac{(n - |S|)! (|S| - 1)!}{n!} (\iota(S) - \iota(S \setminus \{i\})) \end{aligned}$$

where $|S|$ is the number of members in S and $\iota(S) = 1$ if $S \in W$ and 0 otherwise.

³ The Banzhaf indices are sometimes termed the Penrose indices after Lionel Penrose, who in Penrose (1946) stated the central idea behind Banzhaf's indices using exactly the intuition presented here.

This study principally employs the Banzhaf indices for several reasons. Firstly the SSI does not weight each instance of criticality equally, with the weight depending upon the size of the coalition in which a member is critical. This is a perverse property for a measure of a priori power and has been criticised by Coleman (1971). Secondly, the SSI measures fundamentally the wrong notion of voting power to that desired. The SSI views ‘the acquisition of power’ as the payoff of the winning coalition as though power is a prize that can be shared out amongst the winning coalition. A ballot for a US Presidential candidate, in which there is a winning nominee who can share the spoils of office amongst his supporters would fit this model of voting power. However the vast majority of the decisions made in the UNSC are policy issues, where the relevant notion of the power of a member is ability to influence the collective outcome of the voting body. Felsenthal and Machover (1998) have labelled these two different conceptions of voting power as P-Power (power as a prize) and I-Power (power as influence). They suggest that the Banzhaf indices are the most appropriate mode of analysis for a study of I-Power. Other indices of voting power in the literature, such as those by Deegan and Packell (1978, 1982), Johnston (1978) and Holler (1982) are not considered because they have each been shown to display pathological behaviour in certain situations (Felsenthal and Machover, 1998).

1.2.3 Ternary Voting Rules

Much of the existing literature on the UNSC (e.g., Shapley and Shubik, 1954; Straffin, 1983), uses the theory above to model the UNSC decision rule as a binary rule in which members can vote only for or against a resolution. In the UNSC, however, the UN Charter states that decisions over non-procedural matters are made by an affirmative vote of nine or more members, including the *concurring* votes of the PMs. A “concurring” vote has come to be understood, in practice, as either an affirmative vote or an abstention (see Blum, 2005: 636), so a negative vote by a PM is distinct from an abstention. As

commented by Felsenthal and Machover (1997c: 348), this feature of the UNSC decision rule implies that it “cannot be faithfully represented” as a binary decision rule.⁴ In this thesis we therefore employ ternary voting rules.

We can generalise the definitions given in 1.2.1 to a ternary setup, allowing voters the option of abstention.⁵ We define a ternary voting game (TVG) as a pair (N, W) , where N is a set of the n members of the voting body. W is a collection of pairs of disjoint subsets of N (i.e. pairs of subsets (S^+, S^0) of N such that $S^+ \cap S^0 = \emptyset$) satisfying the following properties:

$$i) (\emptyset, \emptyset) \notin W$$

$$ii) (N, \emptyset) \in W$$

$$iii) \text{ If } S^+ \subseteq T^+ \subseteq N, T^0 \subseteq N \setminus S^+ \subseteq N \text{ and } (S^+, S^0) \in W \text{ then } (T^+, T^0) \in W$$

The intuition behind these are the same as in the binary case above, they mean: (i) if all members vote against a motion then it must fail; (ii) if all members vote in favour of a motion then it succeeds; (iii) if for a given successful vote one or more members were to increase their level of support, i.e. a member who voted against changed their vote to ‘abstain’ or ‘yes’ or an abstaining member decided to vote in favour, then the motion would still succeed. In a TVG the notion of a member being critical to a coalition is slightly different. We say member i is critical to a coalition if by decreasing his level of support (i.e. changing from Yes to Abstain or from Abstain to No) he can change the coalition from winning to losing. That is, $i \in S^+ \cup S^0$, $(S^+, S^0) \in W$ and either $(S^+ \setminus \{i\}, S^0 \cup \{i\}) \notin W$ or $(S^+, S^0 \setminus \{i\}) \notin W$.

Under the assumption that abstention is as equally likely as an affirmative or negative vote there are 3^n equi-probable possible outcomes to a vote by the members of N . This is the

⁴ The same point is also made in Freixas and Zwicker (2003).

⁵ See Felsenthal and Machover (1997c) for an alternative and more formal definition.

assumption we make throughout this thesis. However, note that rather than treating the vote as a single event in which a voter can choose three possible actions one could instead think of it as a two-stage process in which first the voter decides whether to participate in the vote or not (i.e. abstain) and then if they do participate they decide how to cast their vote ('yes' or 'no'). Under this alternative interpretation it would be more natural to treat each of the actions in the two stages as being equally likely, thus implying probabilities of 0.5 for abstaining and 0.25 for voting 'yes' or 'no'.

Letting η_i denote the number of times member i is critical, then in a TVG the probability that i votes on the winning side, given that they have a preference, is:⁶

$$r(i) = \frac{\eta_i + \frac{1}{2}(3^{n-1} - \eta_i)}{3^{n-1}} = \frac{1}{2} \left(1 + \frac{\eta_i}{3^{n-1}} \right).$$

As with the binary voting game, a dummy has a non-zero probability of being on the winning side in a TVG, namely $r(i) = \frac{1}{2}$ for a dummy voter. Taking the linear transform $2r(i) - 1$ yields the ternary extension to the (absolute) Banzhaf measure:

$$2r(i) - 1 = \frac{\eta_i}{3^{n-1}} \equiv \beta'_i.$$

1.2.4 Computing power indices

The naïve way to compute the measures above would be to simply check every possible vote of the SVG or TVG and make a record of which members are critical. While this is acceptable for very small systems it involves looking at 2^n (or 3^n) combinations, and so quickly becomes unmanageable. One alternative, which works out very efficient for many

⁶ We assume that an abstaining voter is indifferent between the outcomes of the vote and thus is always on the winning side.

practical voting games, is the method of generating functions which we employ in Chapters 3 and 4.⁷

Generating functions make use of noticing that if we have a polynomial of the form:

$$F(\mathbf{x}, \mathbf{y}) = \prod_{i=1}^n (x_i + y_i),$$

each factor can be thought of as representing the two possible voting options for member i .⁸ If we then expand the factors of this polynomial to

$$F(\mathbf{x}, \mathbf{y}) = \sum_{\varepsilon \in \{0,1\}^n} \prod_{i=1}^n x_i^{\varepsilon(i)} y_i^{1-\varepsilon(i)},$$

then each of the 2^n monomial terms can be thought of as representing a vote in the SVG as it involves exactly one choice of x_i or y_i for each member i . In general this does not really achieve much other than to encode the SVG in the form of a polynomial. However, in reality most SVGs impose additional rules which make them much simpler. For example, a large proportion of real life voting systems are set up so that the influence of a member's vote does not depend on how the other voting body members cast their votes. Such games can be represented as a sub-class of SVGs called Weighted Voting Games (WVGs).⁹ When restricted to such a sub-class the generating function, F , above simplifies greatly. Such simplification then leads to a highly efficient algorithm for partitioning all possible votes according to, say, how many members have voted in favour by following the method one would use to expand the polynomial F . This in turn allows the computation of how many times a given member is critical.

⁷ See Leech (2002d) for a more detailed explanation of generating functions in the binary case along with alternative methods. See Freixas (2012) and Lidner (2004) for details of the use of generating functions for ternary (weighted) voting games.

⁸ This is for a binary voting game, for the ternary case one would add a third term z_i .

⁹ In a WVG each member is assigned a 'weight' for which their positive vote counts towards meeting a set threshold or 'quota'. The success of a vote is then determined by checking whether the sum of the weights of those members who voted in favour meets the quota. See Leech (2002d) for a formal definition of a WVG and its associated generating function.

Let us consider a more concrete example for the case of the UNSC. Suppose that we have a SVG (N, W) satisfying the following property:

- There exist $q_1, q_2 > 0$ and $N_1, N_2 \subseteq N$, such that $N = N_1 \sqcup N_2$ and $S \in W \Leftrightarrow |S \cap N_1| \geq q_1$ and $|S \cap N_2| \geq q_2$.

The UNSC would satisfy this with $q_1 = 5, q_2 = 4, N_1 = \{\text{Permanent Members}\}, N_2 = \{\text{Non-permanent Members}\}$. Let $p = |N_1|, q = |N_2|$ and consider the following polynomial:

$$F(x, y) = (1 + x)^q (y + x)^p.$$

We can interpret this in the following way. Each of the q terms $(1 + x)$ can be thought of as representing the actions available to a non-permanent member, 1 representing a vote against and x an affirmative vote. Similarly each of the p terms $(y + x)$ can be thought to represent a permanent member's voting options: y for a vote against and x for a positive vote. Each monomial term $a_{jk} x^j y^k$ in the expansion of F encodes how many members voted in favour of the motion, j , and how many members in N_1 voted against it, k . The coefficient, a_{jk} , tells us how many of the 2^n possible votes have exactly j members voting 'yes' and k members in N_1 voting 'no'.

Define

$$F_r(x, y) = \begin{cases} 1 & \text{if } r = 0 \\ (1 + x) F_{r-1}(x, y) & \text{if } r \leq q. \\ (y + x) F_{r-1}(x, y) & \text{if } r > q \end{cases}$$

Suppose

$$F_r(x, y) = \sum_{j+k \leq r} a_{j,k}^r x^j y^k,$$

Then, for $1 \leq r \leq n$, we have

$$a_{j,k}^r = \begin{cases} a_{j,k}^{r-1} + a_{j-1,k}^{r-1} & \text{if } r \leq q \\ a_{j,k-1}^{r-1} + a_{j-1,k}^{r-1} & \text{if } r > q \end{cases},$$

where $a_{j,k}^r$ is taken to be zero if not otherwise defined and $a_{0,0}^0 = 1$. Also note that since $F(x, y) = F_n(x, y)$, then $a_{j,k}^n = a_{j,k}^r$. Hence, this gives us an iterative method for working out $a_{j,k}^r$, using $O(n^3)$ computations.¹⁰

Figure 1.2 shows the values of $a_{j,k}^r$ for $r = 0, \dots, 4$.

(j,k)	(0,0)	(1,0)	(2,0)	(3,0)	(4,0)	(0,1)	(1,1)	(2,1)	(3,1)	(0,2)	(1,2)	(2,2)	(0,3)	(1,3)	(0,4)
$r = 0$	1														
$r = 1$	1	1				0									
$r = 2$	1	2	1			0	0			0					
$r = 3$	1	3	3	1		0	0	0		0	0		0		
$r = 4$	1	4	6	4	1	0	0	0	0	0	0	0	0	0	0

Table 1.1 – First five iterations in computing F

Continuing in this manner we obtain $a_{j,k}^{15}$ as shown in Table 1.2 below.

	j															
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
k	0	0	0	0	0	1	10	45	120	210	252	210	120	45	10	1
1	0	0	0	0	5	50	225	600	1050	1260	1050	600	225	50	5	0
2	0	0	0	10	100	450	1200	2100	2520	2100	1200	450	100	10	0	0
3	0	0	10	100	450	1200	2100	2520	2100	1200	450	100	10	0	0	0
4	0	5	50	225	600	1050	1260	1050	600	225	50	5	0	0	0	0
5	1	10	45	120	210	252	210	120	45	10	1	0	0	0	0	0

Table 1.2 – $a_{j,k}$ coefficients of F

Once we have computed $a_{j,k}$ we still have some work to do in order to obtain values for η_i .

To work out how many times member i is critical we need to consider not the possible votes of all members of the voting body but rather all members other than member i . As such, having constructed F , we need to remove the factor coming from member i . That is,

¹⁰ We can do better, by representing the binary interpretation of the UNSC as a WVG F reduces to a polynomial in a single variable and thus requires $O(n^2)$ computations.

in the case of the UNSC, we wish to find $G(x, y) = \sum b_{j,k} x^j y^k$ and $H(x, y) = \sum c_{j,k} x^j y^k$ such that

$$(1 + x) G = F$$

$$(y + x) H = F$$

Here G corresponds to possible votes of all voting body members excluding a given member $i_2 \in N_2$ and H the same but for a given member $i_1 \in N_1$. By expanding the left hand side and equating coefficients we find

$$b_{j,k} = a_{j,k} - b_{j-1,k}$$

$$c_{j,k} = a_{j,k+1} - c_{j-1,k+1}$$

Applying these formulas to the values in Table 1.2 yields:

		j														
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
k	0	0	0	0	0	0	1	9	36	84	126	126	84	36	9	1
	1	0	0	0	0	5	45	180	420	630	630	420	180	45	5	0
	2	0	0	0	10	90	360	840	1260	1260	840	360	90	10	0	0
	3	0	0	10	90	360	840	1260	1260	840	360	90	10	0	0	0
	4	0	5	45	180	420	630	630	420	180	45	5	0	0	0	0
	5	1	9	36	84	126	126	84	36	9	1	0	0	0	0	0

Table 1.3a – $b_{j,k}$ coefficients

		j														
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
k	0	0	0	0	0	1	10	45	120	210	252	210	120	45	10	1
	1	0	0	0	4	40	180	480	840	1008	840	480	180	40	4	0
	2	0	0	6	60	270	720	1260	1512	1260	720	270	60	6	0	0
	3	0	4	40	180	480	840	1008	840	480	180	40	4	0	0	0
	4	1	10	45	120	210	252	210	120	45	10	1	0	0	0	0

Table 1.3b – $c_{j,k}$ coefficients

In the UNSC a motion is successful if at least nine members are in agreement and no permanent members vote against it. This means that a non-permanent member is critical if eight other members vote ‘yes’ and no permanent members vote ‘no’. There are 84 possible ways in which the other member votes can be rearranged, see the highlighted cell

in Table 1.3a. A permanent member is critical if at least eight members vote in favour and no other permanent members vote against. We see from Table 1.3b that there are 848 votes in which a permanent member is critical.

This means that

$$\beta'_{NPM} = 0.0051 \text{ and } \beta'_{PM} = 0.0518.$$

As we previously mentioned, the UNSC cannot be faithfully represented by an SVG, a ternary framework is required. The generating function method of computing β generalises in a straightforward manner to a TVG. For a ternary UNSC we would use the following as our generating function:

$$F^t(x, y) = (2 + x)^q(1 + y + x)^p.$$

F^t performs the same role as F above. Each factor corresponds to the voting options of a member of the voting body, but now with one extra term. Abstention is the same as a ‘no’ vote for a non-permanent member in the UNSC, in terms of its effect on the success or failure of a motion, hence the $(2 + x)$ factors. The permanent member factors change by the addition of 1, corresponding to the option of abstention, which is genuinely distinct for a PM.

If as above we suppose

$$F_r^t(x, y) = \sum_{j+k \leq r} d_{j,k}^r x^j y^k,$$

then, for $1 \leq r \leq n$, we have

$$d_{j,k}^r = \begin{cases} 2d_{j,k}^{r-1} + d_{j-1,k}^{r-1} & \text{if } r \leq q \\ d_{j,k}^{r-1} + d_{j,k-1}^{r-1} + d_{j-1,k}^{r-1} & \text{if } r > q \end{cases}.$$

We can then proceed as in the SVG case. We find that for the ternary UNSC:

$$\beta'_{NPM} = 0.0111 \text{ and } \beta'_{PM} = 0.0227.$$

1.3 Chapter Summary

The thesis is comprised of three chapters, each of which builds on the contributions of the preceding chapter(s). In Chapter 2 we empirically estimate the probability that a country with given characteristics is elected to the UNSC. Addressing this question empirically is not straightforward as it requires a model that allows for discrete choices at the regional and international levels; the former nominates candidates while the latter ratifies them. Using an original multiple discrete choice model to analyse a dataset of 180 elections from 1970 to 2005, we find that UNSC election appears to derive from a compromise between the demands of populous countries to win election more frequently and a norm of giving each country its turn. We also find evidence that richer countries from the developing world win election more often, while involvement in warfare lowers election probability. By contrast, development aid does not predict election.

In Chapter 3 we develop a new class of voting game that is sufficiently general to describe the UNSC. We term this class of games *council voting games*. In a council voting game (CVG), a fully representative voting body delegates decision-making to a subset of the members, as describes, e.g., UNSC. Three equity concepts are proposed: ex-ante (procedural) equity, ex-post (outcome) equity and regional equity. The last two concepts are consistent with a new square-root rule on the probability of council membership, but no CVG can meet all three concepts. We then use the empirically estimated membership probabilities from Chapter 2 to apply the framework to evaluate the equitability of the UNSC, and the claims of those who seek to reform it.

In Chapter 4 we use equity measures developed for council voting games in Chapter 3 to formally appraise alternative reform options for the UNSC. In particular, we analyse eight “structural reforms” contained within eleven current reform proposals, and consider separately the effect of expansion of the UNSC membership. Only two reform proposals – the European Union acting as a single entity, or a weakening of the veto power for

permanent members – robustly dominate the status quo against our measures of equity and efficiency. Several proposals may actually worsen the issues they ostensibly claim to resolve.

Chapter 2

Determinants of Election to the United Nations Security Council

2.1 Introduction

Endowed with the legal power to authorise whatever foreign policies it deems necessary to maintain international peace and security, the Security Council has become the preeminent organ of the United Nations. It has the legal authority to suspend economic and diplomatic relations between countries, impose blockades, and authorise the use of armed force (see Hurd, 2007; Chapman, 2011; Chapman and Reiter, 2004; Voeten, 2001). The body includes 15 members: the five ever-present Permanent Members, and the ten Non-Permanent Members, who must win election to serve limited two-year terms.

Our study seeks to explain which countries win election to the UNSC as NPMs. Note that at least four NPMs must vote in favour of a resolution for it to pass, giving these members a central role on the world stage. The President of the Security Council – a position that rotates among the members – has influence over the agenda and the order of voting (Bailey and Daws, 1998: 130-131). Most importantly, the UNSC votes by open ballot so that the voice of an elected member has a global reach on central matters of world security. Accordingly, some countries appear willing to bribe and reward NPMs. For instance, the United States increases bilateral foreign aid by more than 50 per cent when a country serves on the UNSC (Kuziemko and Werker, 2006). Also, NPMs become more likely to receive World Bank project loans and International Monetary Fund (IMF) loans with relatively soft conditionality (Dreher *et al.*, 2009a, 2009b, 2010). Asian NPMs see their loans from the Asian Development Bank rise around 30 per cent (Lim and Vreeland, 2013).

Understanding which countries receive these rewards can serve to inform longstanding economic questions over the allocation and effects of foreign aid and IMF/World Bank loans (see, e.g., Easterly, 2001; Rajan and Subramanian, 2008; Bueno de Mesquita and Smith, 2010). Does the UNSC election process direct these funds towards countries with particular characteristics? Kuziemko and Werker (2006; 909), following Malone (2000), assert that “Service on the Council is by no means random”. Yet, to our knowledge, no established study details the systematic determinants of election to the Security Council.¹¹

The power to elect the NPMs formally rests in the hands of the United Nations General Assembly, which includes delegates from all UN member countries. Usually, however, the UNGA vote serves as a mere ratification of decisions made by regional caucuses, which play a privileged role in the nomination process. The determinants of UNSC election may therefore differ across regions. Only when there remains disagreement at the regional level, which happens in 20 per cent of elections by our count, does the UNGA vote become meaningful. On these occasions, the interplay of two separate sets of preferences – those at the regional level, and those at the global level (the UNGA) – determine election to the UNSC.

What shapes these preferences? To choose NPMs, the UN Charter calls on government representatives to consider “the contribution of members of the United Nations to the maintenance of international peace and security and to the other purposes of the Organization.” In practice, however, matters are more complex. A detailed set of procedural rules and at least two unwritten gentlemen’s agreements also shape the UNSC election procedure. Moreover, UN Ambassadors appear to consider factors beyond

¹¹ Bueno de Mesquita and Smith (2010) contains a brief analysis using a probit model, though the authors’ primary concern is with the effects of UNSC membership. Narrower analyses of election from particular regions include Lim and Vreeland (2013), who use a logit model conditioned on year to examine the election of Asian countries to the UNSC. Also, Scharioth (2010) presents an analysis of election to various UN committees, including the UNSC, but solely for Western European countries. Two working papers on the broader election of members to the UNSC that have been presented include Iwanami (2012) and Schmitz and Schwarze (2012). In contrast, thorough qualitative accounts of the selection of specific UNSC members have been published, such as those found in Malone (1998, 2000), Jayakumar (2011), and, for the early years of the UNSC, Padelford (1960).

contributions to peacekeeping: political affiliations, economic strength, and foreign aid may all play a role. For instance, Iceland's sudden financial collapse in 2008 seemingly derailed what had previously looked a secure candidacy, while US support for the candidature of Guatemala appeared important in stymieing the rival candidacy of Venezuela in 2006. Cases such as these might just represent idiosyncrasies, but they may also be part of a regular pattern. How then should one go about investigating the systematic determinants of UNSC election?

To investigate discrete choice settings, scholars often employ the conditional (fixed effects) logit model in which a *single* decision-maker chooses a *single* option according to utility maximisation (see McFadden, 1973). The UNSC election process differs from this model in at least two respects. First, as discussed above, up to two different sets of preferences can be in play: the regional and the global. Second, in some election years the UNGA regularly elects two candidates from one region, not just a single candidate. We therefore develop a multiple-discrete choice model that extends the conditional logit model to allow, in a simple way, for the separate identification of two intermingling sets of preferences, and for the number of choices from the set of alternatives to vary (from zero to two).

Our empirical analysis of election to the UNSC considers five broad theoretical perspectives: (i) Does the UNGA follow a norm of choosing countries committed to peace, as directed by the UN Charter? (ii) Does the receipt of foreign aid predict UNSC election? (iii) Is election driven by international power or close relationships with powerful countries? (iv) Do cultural traits play a role? (v) Do governments practice a turn-taking norm of sharing seats by rotating through the eligible candidates? The last hypothesis derives from the common misconception that membership on the UNSC "rotates" through the UN membership. Formally, membership does not rotate, but in practice the regional groups and the UNGA might follow such a norm.

Analysing data on UNSC elections between 1970 and 2005¹², we find some evidence of a commitment to peace. At least countries engaged in intra- or inter-state conflict since the end of the Cold War are less likely to win election from Africa or from Latin America and the Caribbean. There is also a positive link between troop contributions to UN peacekeeping missions and election probability for Africa and Asia.

As for international power, all regions bar one exhibit some evidence of a preference for populous countries. We also find evidence that richer countries, measured by gross national income (GNI) per capita, enjoy an advantage in Africa, Asia, and Latin America.

We find only patchy, and somewhat mixed, evidence that foreign financial support determines election. US economic assistance does not predict election from the developing world. US military support similarly plays little role in regional decisions. When the UNGA votes, however, countries that receive US military aid – as opposed to development aid – are more likely to win election.

Political-cultural factors appear to hold occasional influence within regions. Countries that share a common political ideology with their region are more likely to be elected in some regions, but not in others. There are also mixed effects for countries with a history of colonialism. A British colonial legacy helps in Asia, Latin America and Western Europe but not in Africa. Attitudes to corruption are also mixed: corruption pays only in Africa and Latin America, and the effect in Africa is of marginal statistical significance. Contrasting these findings, the UNGA has shunned corrupt countries since the end of the Cold War. Indeed, our results suggest the presence of significant heterogeneity in the determinants of UNSC election across regions. Therefore, while culture and history do not seem to matter for UNSC election within regions, they may nevertheless drive differences across regions.

¹² Although some variables are available past 2005, a significant number of the variables we use only exist up to 2005. Extending the dataset beyond this would therefore require much more significant imputation and likely negate the benefit of the extra data.

The data analysis does reveal a “turn-taking” norm in the regional selection process. A country whose turn arrives is more likely to receive regional nomination, which accords with the common “rotation” perception. This finding stands as the only one that holds across all regions and time periods without exception. As seems reasonable, however, the turn-taking rights that influence selection at the regional level do not seem to influence UNGA voting over contested seats.

The results of this study contribute to a number of literatures. First, they relate to the ongoing discussion of UN reform, and reform of the UNSC in particular (Franck, 2003; O’Neill, 1996; Hosli *et al.*, 2011). This debate centres on the question of representation but strangely lacks a systematic understanding of the current determinants of UNSC membership. Our findings may help to mitigate this difficulty by clarifying whom the election practices advantage. With an understanding that the two main determinants centre on a tendency to choose populous countries and to respect an egalitarian norm of turn-taking, we can recast the debate as connected to a central theme in democratic theory: majoritarian principals versus minority rights.

Our analysis also connects to the wider literature on whether the selection of leaders is fair in the sense that it can be explained solely by the quality of the candidates (e.g., Hamermesh and Schmidt, 2003; Diamond and Toth, 2007). Although “quality” is not easily defined in the context of UNSC membership, we include in our analysis certain country characteristics that seem unrelated to quality, such as religion (the proportion of the population that is Muslim) and voting patterns in the UNGA (how often a country votes with the United States/Russia), and thereby provide an implicit test of the “fairness” of the election process. As we find that these factors do not have systematic effects, reformers can focus on the influences that do appear to matter and judge as to whether populous countries deserve to win election more often or if everyone should have a turn – the two patterns that the data analysis does support.

Our study further contributes to the related literature on the selection of political leaders more generally. For instance, Besley and Reynal-Querol (2011) find that democracies select better educated leaders as compared to autocracies. A link between democracy and UNSC membership might therefore arise if better-educated leaders are better-able to negotiate for UNSC membership. To explore this, we consider whether democracy indeed predicts UNSC membership – we find, however, mixed results: Western Europe has long had a preference for democracy, and we see similar preferences emerging in Latin America and Eastern Europe since the end of the Cold War. We do not detect a robust effect of democracy in Africa or Asia.

Finally, we offer a generic econometric model of elections where there is a nomination process at one level and an endorsement vote at another. In our case, the levels are regional and global, and the model has applicability to a wide range of selection processes including the selection of membership in other UN bodies and other international organisations. Scholars may further employ the model to analyse the selection of leaders within federalist systems or within countries with primary rounds of voting at different district-levels.¹³

The chapter proceeds as follows. Section 2.2 outlines the UNSC election process, and Section 2.3 presents various hypotheses about the determinants of election to the UNSC. In Section 2.4 we formally develop the econometric model, providing a likelihood equation for UNSC election, and we discuss other details of our methodology. Section 2.5 presents the results, and Section 2.6 concludes with a summary discussion of the implications of our main findings.

¹³ Recent contributions in this area with relevance to our approach include Glasgow *et al.* (2012) and Golder *et al.* (2012).

2.2 The election process

The UNSC election process for NPMs follows certain rules and agreements.¹⁴ The ten NPM seats are divided among five regional caucusing groups: one country from Eastern Europe (EE); two from the Western European and Others Group (WEOG); two from the Latin America and Caribbean Group (GRULAC – *el Grupo Latinoamericano y Caribeño*); and five from Africa and Asia.¹⁵ An unwritten, but unbroken, gentlemen’s agreement divides the five seats for Africa and Asia into three seats for Africa and two seats for Asia. Around 1968, a further unrecorded agreement between Africa and Asia reserved one of their five seats for an Arab state with the regions taking turns every two years to provide a suitable candidate (Security Council Report, 2011: 7). This seat is often called the “Arab swing seat.” We control for this institutional arrangement in the empirical analysis.

The UNGA conducts staggered elections for five seats each autumn. Terms begin in January the following year.¹⁶ To be eligible for election as a NPM, a country must, first, belong to one of the five regional caucusing groups. Prior to 2000, when it gained temporary membership in the WEOG, Israel was not a member in any group (Security Council Report, 2011: 6); and Estonia, having joined the UN in 1991, did not become a member in EE until 2004 (Estonia, 2011) while it awaited the outcome of an (ultimately unsuccessful) application to the WEOG (Daws, 1999). Kiribati, which has never delegated a permanent representative to the UN, is the only country to presently belong to no group (UN, 2012). Second, NPMs in the final year of their term cannot run for immediate re-

¹⁴ Much of the background for this section can also be found on the web site of the Security Council Report, an independent non-profit organisation affiliated with Columbia University. We also draw on Luck (2006).

¹⁵ Before 1966, there were only six elected members of the UNSC. Composition was typically: two Latin American countries; one Middle Eastern country; one East European country; and two from the British Commonwealth countries. The “others” in the modern-day WEOG include descendent countries of Western Europe, mainly from the British Commonwealth: Australia, Canada, and New Zealand. The United States also caucuses with this group, as do Turkey and, more recently, Israel (see, e.g., Security Council Report, 2011). See Daws (1999) for a further account of the development of the UN regional groups.

¹⁶ The term of the single Eastern European representative begins in even years. The two representatives of the WEOG group begin their terms in odd years. The terms for the two representatives of the GRULAC are staggered; the UNGA elects one each year. The Asia group’s two seats are similarly staggered. The three seats filled by the Africa group are also staggered with two terms beginning in even years and one term beginning in odd years. The term of the Arab representative (shared between Asia and Africa) begins in even years.

election (UN Charter 23(2)). The Permanent Members of the UNSC – China, France, Russia (formerly the Soviet Union), the United Kingdom, and the United States – cannot be elected as NPMs.

Countries may declare candidacy by notifying the Chairman of their regional group.¹⁷ Before voting begins in the UNGA, the Chairman of each group is invited to announce the countries that have declared candidacy (the Chairman’s list).¹⁸ Despite this apparent ease of candidacy, in practice, few countries make the Chairman’s list. Although details of the negotiations at the regional level are scarce, there appears to be a preference for the choice of NPMs to be kept “in house,” insofar as is possible. The vote in the UNGA is, as a result, usually sidelined by regional groups offering a “clean slate,” whereby the Chairman announces only as many candidatures as seats available. Contested elections, when the Chairman announces more candidatures than seats available, appear to occur when efforts at agreement at the regional level have failed.¹⁹

Africa appears to have the most disciplined rules for selecting candidates.²⁰ It operates a system of turn-taking within sub-regional groups, which should, in theory, ensure that all countries in Africa eventually serve on the Security Council.²¹ Even here, however, the situation is more complex than might first appear. According to Security Council Report (2011: 6) there are at least three complications. First, countries that can claim to straddle more than one geographic region have chosen to shift from one group to another. Second,

¹⁷ We know from the UNGA minutes that the group Chairmen stand up in sequence before the vote and announce the group candidacies. The Chairman position rotates among the region members, and terms last one month. See various issues of the *Journal of the United Nations* for details on specific elections (<http://www.un.org/en/documents/journal.asp>, accessed 5 April 2012).

¹⁸ Sometimes countries announce their intention to run years in advance. Other times they do so much later, even in the midst of the elections themselves. The timing of such announcements appears idiosyncratic and data are, unfortunately, not kept.

¹⁹ For the 36 election-years (1970-2005) we analyse, the WEOG is the most competitive group, with nine contested elections, and EE is the least competitive, with just five. As we detail further in footnote 23, we define an election as “contested” if an additional candidate receives ten votes or more. Using this threshold, there are a total of 36 “contested” elections out of 180 total elections, or 20 per cent.

²⁰ Africa is the only region for which we have found explicit rules, codified by the African Union in their “Rules of Procedure of the Ministerial Committee on Candidatures within the International System – Doc. EX.CL/213 (VIII).” See African Union (2006: 8).

²¹ North Africa and Central Africa rotate one seat every two years; Western Africa has one seat every two years; and Eastern Africa and Southern Africa rotate one seat every two years. See Security Council Report (2011: 6).

challengers can emerge within the same sub-regional grouping, upsetting the rotation.²² Last, within a subgroup, some members may choose to run more often, while others choose, or are persuaded, to run less frequently or not at all.

To win election, a country must receive at least two-thirds of the votes in the UNGA (UN Charter 18(2)). When no candidate meets this threshold, the UNGA holds runoff elections. On rare occasions, there are many rounds, and no country can garner the required two-thirds majority; compromise candidates have emerged in these instances. In theory, members of the UNGA face no requirement to vote for “Chairman’s list” countries, though in practice, they seldom do otherwise (save for isolated protest votes). Therefore, to date, after a Chairman has announced a “clean slate” the UNGA has almost always ratified the regional selection.²³

2.3 Hypotheses

Who wins election to the UNSC? Bueno de Mesquita and Smith (2010) present a cursory examination of this question using a simple probit model in an effort to show the exogenous nature of UNSC membership selection for their study of the effects of membership.²⁴ No published study has presented, however, an exclusively focused examination of the question of UNSC election using quantitative methods. In the next section, we offer the main contribution of this chapter: a multiple-discrete choice model to examine the joint determinants of UNSC election at the regional and global levels. First, however, we draw on the broad literature in international relations and political economy,

²² According to Security Council Report (2009: 6), such queue-jumping occurred three times in the sample period: Nigeria queue-jumped Niger in 1977, and Guinea-Bissau in 1993, and Ghana queue-jumped Liberia in 1985.

²³ We are aware of only one exception. In the elections of 1993, Rwanda and Guinea-Bissau were nominated by the group Chairman for the two African seats. Rwanda garnered sufficient votes (153) in the first round to win election, while Guinea-Bissau only received 82 votes, at which point Nigeria entered the race, eventually winning election in four rounds, when Guinea-Bissau withdrew its candidacy.

²⁴ Bashir and Lim (in press) challenge this assumption.

as well as qualitative accounts of UNSC election, to develop the testable hypotheses that we apply to our statistical model.

We begin with the UN Charter, which asks members of the UNGA to elect UNSC members on the basis of their contributions to the maintenance of international peace and security. We thus propose to test the impact of the contributions that countries make to UN peacekeeping missions, measured as the log of the number of troops supplied. We also include indicator variables of whether a country is involved in conflict, such as an international military dispute or a civil war. We further test for an effect of democracy, which is linked to the idea of peace in the sense that it is associated with a commitment to openness and the principles of justice.²⁵

Two further hypotheses reflect ideas coming from the political economy literature. A growing literature shows that countries receive perks from UNSC membership, including US foreign aid (e.g., Kuziemko and Werker, 2006), World Bank projects (Dreher *et al.*, 2009a), and IMF loans with comparatively soft conditionality (Dreher *et al.*, 2009b, 2010). If these same perks that result from UNSC membership were also found to predict UNSC membership, this would point to the presence of development cycles whereby countries that gain election receive perks that, in turn, increase their prospects of future election. Countries outside of this cycle would, however, lose out. To test this possibility, we consider whether US economic and military assistance, IMF program participation, and the number of new World Bank projects, predict election to the UNSC.²⁶

²⁵ On the association of democracy with openness, see Hollyer *et al.* (2011). On the association with justice see Dowding *et al.* (2004). On the general proclivity of democracies to peace, see Russett and Oneal (2001). For a contrasting view, see Ferejohn and Rosenbluth (2008).

²⁶ IMF programs themselves come in cycles (Conway, 2007). Omitting participation in IMF programs might thus bias our results in favour of finding a turn-taking norm. A substantial literature argues that IMF and World Bank loans might be given for political-economic reasons rather than need (e.g., Copelovitch, 2009; Fleck and Kilby, 2006; Kaja and Werker, 2010; Kilby, 2009, 2013; Reynaud and Vauday, 2009; Stone, 2002, 2004). As for bilateral foreign aid, we limit our attention to the US role for two reasons: (1) its prominent place – both in quantitative magnitude and in the literature, (2) parsimony. If we include foreign aid from all potential countries, degrees of freedom become low in certain regions. Preliminary analyses of foreign aid patterns from other OECD countries did not reveal any statistically significant correlation with UNSC election. We suggest that more in depth analyses – for example Japan’s use of foreign aid to win favour – be explored in country- or region-specific studies.

If countries expect perks from membership on the UNSC, then perhaps more heavily indebted governments push harder to be elected. Or causality may run the other way: perhaps when governments anticipate that they will be elected to the UNSC, they allow their countries to go deeper into debt, anticipating a bail-out on the horizon. Either way, levels of indebtedness may predict UNSC membership. We test this hypothesis using the log of debt service as a percentage of gross national income.

If UNSC membership is valuable, heavily indebted countries may well desire membership, but they may not be in a strong position to win. Stiff competition for UNSC seats may lead the most powerful countries to win election most often. Having worked with the Canadian government in their successful 1998 election bid, Malone (2000) notes the importance of campaign funds. Canada, for example, apparently spent USD 1.3 million. Scharioth (2010) argues that “realist” variables measuring a country’s power predict election to a wide range of UN committees, at least for the WEOG. To test the impact of a country’s strength, we consider three measures: population size (logged), per capita income (logged, measured in constant USD), and territorial size (logged).²⁷

A government’s connections to powerful countries might also affect its country’s election prospects. We measure international connections in four ways. First, we include two variables to capture how frequently each country votes in the UNGA with the United States and USSR/Russia, respectively. Second, we include an indicator for countries with “pariah” status in the eyes of one or more of the major powers, and hence subject to US and/or UN sanctions, as defined by Morgan *et al.* (2006). Third, we test whether membership of various political groupings that operate within the UN – the Group of 77 (G77), Non-Aligned Movement (NAM), Organisation of Islamic Cooperation (OIC), and JUSCANZ (a subset of the WEOG including Japan, United States, Canada, Australia, and

²⁷ We use GNI/capita, as opposed to the more common GDP/capita, as it is the measure of income used by the UN in the computation of member state contributions to the General and Peacekeeping budgets. We also follow the UN’s methodology in using USD exchange rate estimates of GNI. These, we argue, are more appropriate than PPP estimates in this context, as what is more relevant is international, rather than domestic, purchasing power.

New Zealand) – predicts UNSC election.²⁸ Last, membership in other non-UN groupings may also be important, so we allow for an effect of membership of the European Union (EU) and NATO.

Cultural affinity may also matter. Variables we use to test the influence of culture include the percentage of the country that is Muslim or, alternatively, Catholic. We also test if a history of British or French colonisation plays a role.²⁹ Beyond religious and historical affinities, we test the importance of political affinity within the region, measuring the percentage of the region with which the chief executive shares the same broad political ideology (either left, centre, or right).³⁰ We also consider another variable that may be related to culture: the level of corruption associated with a country. On the one hand, perceived corruption may hurt if regions and the UNGA disdain such countries. On the other, corruption may help if such countries willingly disregard norms of turn-taking, jumping the queue while paying whatever bribes necessary to win support.

Finally, behavioural norms that have evolved within the decision-making process may also play a role. One such norm, which is widely observed in human evolution, as well as in a wide range of other species, is that of turn-taking (Colman and Browning, 2009; Franz *et al.*, 2011). In the context of the UNSC election process, the turn-taking norm implies that membership on the UNSC should rotate among the members of each caucusing group. This turn-taking norm relates to the egalitarian norm, which features importantly in the literature on distributive justice (e.g., Rawls, 1971; Deutsch, 1985), and is consistent with recent models of inequity-aversion (Fehr and Schmidt, 1999; Bolton and Ockenfels, 2000).

The Africa group explicitly claims to operate according to the turn-taking norm, but whether some degree of turn-taking occurs among the remaining regions is less clear. To

²⁸ Because of substantial overlap in membership between G77 and NAM, indicator variables for membership of each cannot be included in the same regression equation. Instead we create three separate indicator variables: one for countries that are members of both groupings, and one for countries that are members only of NAM or only of G77, respectively.

²⁹ Given that UNSC membership is consequential for foreign aid, membership is a transmission channel by which colonial history can affect current development. See Feyrer and Sacerdote (2009), Iyer (2010) and Bruhn and Gallego (2012) for recent analyses.

³⁰ The variable is coded zero for non-ideological governments.

test the possibility that a region practices the turn-taking norm, we construct a variable, “turn-taking,” which is calculated as the number of years a country has waited to serve on the UNSC divided by the number of countries currently eligible for election.³¹ If the turn-taking norm holds, this variable should be positively correlated with election.

Thus, we consider five broad perspectives: (i) a commitment to peace, (ii) a foreign aid story, (iii) a realist international relations perspective, (iv) a cultural approach, and (v) a turn-taking norm. Table 2.1 summarises our hypotheses and the variables we use to test them along with their sources.

2.4 Econometric Model and Methodology

2.4.1 Preliminaries

Let the set of members of the UNGA in year t be decomposed into the set of member countries with permanent member status (PM) and the set of all other “ordinary” member countries. Denote $J = \{Africa, Asia, EE, GRULAC, WEOG\}$ as the set of caucusing groups (regions), and let the set of ordinary member countries belonging to region j in year t be denoted R_{jt} , where $t \in \{0, \dots, T\}$. We let $R_j = \cup_t R_{jt}$ denote the set of all past and present members of caucusing group j , and we define C_{ij} as the i^{th} country within R_j . The set of ordinary member countries belonging to a caucusing group in year t (a necessary condition to serve as a NPM in year $t + 1$) is therefore $R_t = \cup_j R_{jt}$.

Let NPM_t denote the set of NPMs on the UNSC in year t , then the UNSC in a given year, t , is defined by

$$UNSC_t = NPM_t \cup PM.$$

It is helpful to partition R_t to reflect different categories of eligibility. In any given year a

³¹ Using the empirical model, which we present in the next section, we tested several possible measures of a turn-taking norm against a benchmark of perfect turn-taking. In a given year, let t_i denote the number of years since C_{ij} was last elected to the UNSC (or since it entered the UN, if no such instance), \bar{t} denote the mean of t_i and η denote the number of countries, excluding C_{ij} , eligible for election. The measures we considered were: (1) t_i ; (2) t_i / η ; (3) $t_i - \eta$; (4) $\mathbf{1}_{\{t_i > \bar{t}\}}$; and (5) $(t_i - \bar{t})\mathbf{1}_{\{t_i > \bar{t}\}}$, where $\mathbf{1}_{\{A\}}$ is the function taking the value 1 if condition A is true and 0 otherwise. We found the second of these measures to be best suited for capturing turn-taking effects.

set of ordinary member countries – NPMs in the first year of their terms – gain automatic membership of the UNSC in the following year (A_t):

$$A_t = NPM_t \setminus NPM_{t-1}.$$

A second set of ordinary member countries, those that are in the final year of their term on the UNSC, are ineligible for election to the UNSC in the following year (I_t):

$$I_t = NPM_t \cap NPM_{t-1}.$$

The remaining ordinary member countries are eligible for election to the UNSC in the following year (E_t):

$$E_t = R_t \setminus NPM_t.$$

Each of the sets $\{A_t, E_t, I_t, NPM_t\}$ can, in turn, be partitioned by region to give the sets $\{A_{jt}, E_{jt}, I_{jt}, NPM_{jt}\}$. Last, historical data on non-permanent membership of the UNSC are summarised by the indicator variable d_{ijt} , where:³²

$$d_{ijt} = \begin{cases} 0 & C_{ij} \notin NPM_t; \\ 1 & C_{ij} \in NPM_t. \end{cases}$$

2.4.2 Preferences

Denote the utility to the members of region j from electing country i in period t to the UNSC (to serve in periods $t + 1$ and $t + 2$) as $u_{ijt} = \beta_j \mathbf{x}_{ijt}$, where \mathbf{x}_{ijt} contains the characteristics of C_{ij} in year t and β_j contains the preference weights of region j . Similarly, denote by $u_{it}^{GA} = \beta^{GA} \mathbf{x}_{ijt}$ the utility to the members of the UNGA of electing country i in period t .

Election to the UNSC can be conceived as a two-stage process. In the first stage, the regional groups make nominations, resulting in the Chairman of each region announcing to the UNGA a set of candidate countries $N_{jt} \subseteq E_{jt}$ for election to the UNSC. In the second

³² UNSC membership data are found on its official Web site (<http://www.un.org/Docs/sc>).

stage, the UNGA votes. As discussed in Section 2.2, because members of the UNGA almost always choose to vote for members of N_t , the vote in the second-stage can be viewed as taking place over these countries only.

One approach to estimation is to model this two-stage process explicitly (see, e.g., de Vries *et al.*, 2009). The resulting likelihood function is complex, however, and often fails to converge in estimations that include more than a few variables.

Instead, we simplify the problem in two important ways. First, we treat the decision-maker in the first stage (the region) as myopic. That is, the region's selection does not depend on how the UNGA will act. To allow for strategic interdependence would make our model intractable. Moreover, we suspect that regions do not act strategically in proposing candidates, although we acknowledge that individual countries have made strategic decisions to enter – and not to enter – specific elections.

Second, we treat the actors in each stage as unitary decision-makers. We make this simplification because we are interested in a country's overall chance of election onto the UNSC. Our reduced-form representation of the real election process should be a good approximation, for the vast majority of elections result in landslides for the winning candidate. Regions tend to operate by consensus while the two-thirds majority rule in the UNGA tends to produce a single dominant candidate – with some exceptions. These exceptions notwithstanding, our decision to model each collective decision-maker as a unitary actor allows us to construct an estimable model that proxies the typical election process fairly well. Future work might explore modifications of one or more of these assumptions.³³ One could, for instance, model the UNGA as a collective and estimate how many votes the candidate-countries receive.

Under these assumptions we may employ a simple mathematical formulation to capture the idea that election to the UNSC may be co-determined by two separate sets of preferences:

³³ We are grateful to an anonymous reviewer for these two possible extensions.

those of the caucusing group (which shape the nominations) and those of the UNGA (which votes over nominated candidates). Specifically, we model UNSC election as arising from a composite latent utility function, U , of electing C_{ij} at time t , given by

$$U_{ijt} = \alpha_{jt} u_{it}^{GA} + (1 - \alpha_{jt}) u_{ijt} + \varepsilon_{ijt}, \quad (2.1)$$

which is a weighted average of the underlying regional and UNGA preferences, plus a stochastic component ε_{ijt} . The parameter $\alpha_{jt} \in [0,1]$ measures the weight attributable to the preferences of the UNGA, and may vary by region and year. In particular, we relate α_{jt} to the size of N_{jt} . If $|N_{jt}|$ equals the number of eligible seats, n_{jt} , the UNGA merely “rubber stamps” the clean slate of nominations from the caucusing group, and its preferences play no role ($\alpha_{jt} = 0$). At the other end of the spectrum, if $|N_{jt}| = |E_{jt}|$ (every eligible member of a region is nominated to the UNGA), then the regional preferences play no direct role, thus $\alpha_{jt} = 1$. We assume that α_{jt} adjusts linearly between these two extremes, such that:³⁴

$$\alpha_{jt} = \frac{|N_{jt}| - n_{jt}}{|E_{jt}| - n_{jt}}.$$

2.4.3 Election Probabilities

We view the elections to the UNSC as choosing, for each region, $n_{jt} \in \{0,1,2\}$ countries from the set of eligible countries according to the utility function U_{ijt} , where $n_{jt} = |NPM_{jt}| - |A_{jt}|$. This setting extends the well-known choice model of McFadden (1973) in two important respects. First, the set of alternatives is time varying. This occurs because (i) countries move between the sets (A_{jt}, E_{jt}, I_{jt}) from year-to-year as a result of the realisations of d_{ijt} ; and (ii) entry and exit from R_t , principally as new members join the UN and others

³⁴ We compute α_{jt} using Costa Rica (2005), which contains full UNGA voting records for all UNSC elections prior to 2004. Voting records for 2004 onwards are taken directly from the relevant UNGA minutes. Costa Rica (2005) does not explicitly identify the “Chairman’s list” countries. In the overwhelming majority of elections the patterns of voting in the UNGA clearly identify the “Chairman’s list” countries (who garner large numbers of votes) from countries who are merely recipients of votes cast in protest or error (who garner only one or two votes). In a small number of cases the voting patterns identify the “Chairman’s list” countries less clearly, as a country garners an intermediate number of votes between five and fifteen. In these cases we identify the set of “Chairman’s list” countries as those that received ten or more votes. Our main results are, however, robust to any choice of threshold between three and twenty votes.

leave.³⁵ Second, the number of members to be chosen from E_{jt} is also time-variant, and need not be unity.

The tractability of McFadden's model is lost when, as in the UNSC, more than a single alternative is chosen simultaneously. To retain tractability, we therefore model election by the UNGA as a sequential process, in which countries are elected one-by-one. This methodology develops that of Manski and Sherman (1980), who use a multiple-discrete choice model to examine household car purchases. Whereas a family may buy two of the same car, however, a country cannot have dual membership of the UNSC in any year, so we must explicitly rule out this possibility. Formally, in each of n_{jt} rounds, there is a new realisation of ε and a single country from E_{jt} is elected according to utility maximisation ($d_{ij} = 1 \Leftrightarrow U_{ij} > U_{kj} \forall k \neq i$). In the case when $n_{jt} = 2$, if the same country is elected in both rounds, the result is annulled and the whole process repeated until two distinct countries are selected.

If we assume, following Manski and Sherman (1980), that the ε_{ijt} in equation (1) are independent across regions and time and have identical type-1 extreme value distributions, we then have that:³⁶

$$\Pr(d_{ij,t+1} = 1 | C_{ij} \in A_{jt}) = 1; \quad (2.2)$$

$$\Pr(d_{ij,t+1} = 1 | C_{ij} \in I_{jt}) = 0; \quad (2.3)$$

$$p_{ijt}^0 \equiv \Pr(d_{ij,t+1} = 1 | C_{ij} \in E_{jt}, n_{jt} = 0) = 0; \quad (2.4)$$

$$p_{ijt}^1 \equiv \Pr(d_{ij,t+1} = 1 | C_{ij} \in E_{jt}, n_{jt} = 1) = \frac{\exp(\alpha_{jt} u_{it}^{GA} + (1 - \alpha_{jt}) u_{ijt})}{\sum_{k \in E_{jt}} \exp(\alpha_{jt} u_{kt}^{GA} + (1 - \alpha_{jt}) u_{kjt})}; \quad (2.5)$$

³⁵ In the sample period 68 countries joined the UN, and four (Czechoslovakia, East Germany, Yemen Arab Republic, and Yugoslavia) left. Table 2.3 provides further details.

³⁶ Elections are not independent across time, however. Each year's election depends on the outcome of the previous year's election in a recursive manner, owing to the evolution of E_t .

$$p_{ijt}^2 \equiv \Pr(d_{ij,t+1} = 1 | C_{ij} \in E_{jt}, n_{jt} = 2) = \frac{2p_{ijt}^1(1 - p_{ijt}^1)}{1 - \sum_{k \in E_{jt}} (p_{kjt}^1)^2}. \quad (2.6)$$

When only one seat is contested in a region, the distributional assumptions on ε_{ijt} imply that the probability in equation 2.5 of a single country being elected to the UNSC from E_{jt} follows the conditional logit form.³⁷ We then use p_{ijt}^1 to form equation 2.6 as the binomial probability of observing a distinct country pair containing C_{ij} , where the denominator corrects for the impossibility of a single country obtaining dual membership. Note that, by construction, $\sum_{k \in E_{jt}} p_{kjt}^1 = n_{jt}$. Equations 2.2-2.4 require no further explanation.

Using equations 2.1-2.6 the likelihood of having observed a given NPM_{jt} is therefore

$$L_{jt}^{n_{jt}} = \begin{cases} 1 & \text{if } n_{jt} = 0; \\ p_{ijt}^1 & \text{if } n_{jt} = 1; \\ \frac{2 \prod_{k \in NPM_{jt}} p_{kjt}^1}{1 - \sum_{k \in E_{jt}} (p_{kjt}^1)^2} & \text{if } n_{jt} = 2; \end{cases}$$

where L_{jt}^2 uses the relevant multinomial distribution to compute the joint probability of having observed a given country pair. The likelihood function for having observed $\{NPM_t : t \in \{1, \dots, T\}\}$ is then

$$\log L = \sum_{j \in J} \sum_{t=1}^T \log L_{jt}^{n_{jt}}. \quad (2.7)$$

2.4.4 Imputation

Table 2.2 summarises the descriptive statistics of our data. Less than three per cent of our data points are coded as missing, yet a significant number of country-years are incomplete

³⁷ Although these distributional assumptions are strong, we note their necessity for retaining the conditional logit form. Also, when estimating the final likelihood in equation 2.7, we can allow for the possibility of within-group clustering. Because we model the probability of choosing C_{ij} in year t as conditional on the number of eligible countries in year t , our model, like the original conditional logit, implicitly addresses fixed effects for year. For an approach that relaxes our distributional assumptions at some conceptual and computational cost see Hendel (1999).

for at least one variable (2,853 of 5,330). Dropping incomplete country-years is problematic for both theoretical and practical reasons. From a theoretical perspective, as the probability of election in equations 2.5 and 2.6 are functions of the characteristics of every member of the eligible set, artificially excluding a country-year biases the estimates for the remaining countries in that year. From a practical perspective, the sample size becomes unduly small for some regions, leading to a failure of model convergence.

We therefore employ multiple imputation techniques (with ten imputations).³⁸ Of the variables that contain missing values, those that are continuous are each imputed using a truncated regression (to reflect, e.g., non-negativity constraints) that includes as independent variables all those that are fully observed. IMF program participation (the only binary variable to have missing observations) is similarly imputed, but with a logistic regression.

2.4.5 Preference change

Preferences, both regional and global, may change over time. In particular, Kim and Russett (1996) present evidence of a shift in preferences around the end of the Cold War: voting patterns in the UNGA shifted from an East-West orientation towards a North-South orientation.³⁹ Accordingly, we consider two distinct time periods – during and after the Cold War, where we deem the Cold War to end in 1989. We report separate estimates for these two periods for variables where the effects for each period differ.

2.4.6 Country-specific effects

We would like to control for country-specific effects, as outlying countries that exhibit an idiosyncratic effect might drive some results, and obscure others. Indeed, as is observed by Schwartzberg (2003) and Zacher (2004), the UNSC membership data in Table 2.3 do

³⁸ The variables that contain missing values are: United States and Russia voting in the UNGA; debt service; shared regional ideology; control of corruption; and IMF program participation.

³⁹ Although Voeten's (2000) analysis suggests much subtler changes between the two periods.

contain some surprises. In particular, these studies highlight Saudi Arabia, which has never served on the UNSC, and before 2013 had not even gained a regional nomination, and Panama, which has been a UNSC member unusually often – it served three terms on the UNSC in the sample period (only Brazil and Argentina served more). We are also aware of the case of Mexico, whose participation in the UNSC elections of 2001 marked the end of two decades in which it had adopted a policy of not seeking election to the UNSC (Malone, 2000: note 7).⁴⁰

A complication is that a country-specific effect, if present at all, may exist at either the regional or global (UNGA) level, or at both levels. We therefore allow separately for country-specific effects at the regional and global levels.

2.4.7 Model selection

The discussions above imply that there is a vector of explanatory variables $\mathbf{x} = (\mathbf{s}, \mathbf{s} \times w, \mathbf{c}, \mathbf{r})$ we would like to use to explain UNSC election, where \mathbf{s} denotes the vector of substantive variables relating to the hypotheses discussed in Section 2.3 (see Table 2.1), $\mathbf{s} \times w$ denotes the vector of interaction terms between each substantive variable and a Cold War indicator variable, \mathbf{c} is a vector of country indicator variables to be included in the region utility function, and \mathbf{r} is a vector of country indicator variables to be included in the UNGA utility function. Estimating this “full” model is infeasible however, for \mathbf{x} contains some 436 variables, which exhausts the degrees of freedom for certain regions in the earlier years, and prevents estimation of the model.

Instead, we adopt a model selection procedure that chooses a subvector of the explanatory variables for inclusion in the model. Our approach to model selection reflects a number of factors. First, because the full model cannot be estimated, backward-looking approaches cannot be applied. Second, because of the large number of explanatory variables, methods

⁴⁰ For more on the Mexican case, see, for example, Serrano and Kenny (2006: 298-314). We are grateful to Diego Dewar for this suggestion.

based upon computing a reasonable criterion for all possible subsets of \mathbf{x} are also infeasible. These two considerations point to a forward-looking approach. As our model is non-linear, however, popular forward-looking algorithms for linear regression, such as the least absolute shrinkage and selection operator (Tibshirani, 1996) and least angle regression (Efron *et al.*, 2004), are inapplicable in this context.

We therefore employ a stepwise forward selection procedure that, in each stage, selects one additional variable into the model. In each stage, all elements of \mathbf{x} not already selected into the model are added individually into the model, and the t-statistic of each variable is recorded. The variable recording the highest t-statistic is added to the model (and a new stage commenced) if it records statistical significance at the ten per cent level. Otherwise, the procedure ends.⁴¹

We employ this model selection procedure to select two independent models. Model 1 is intended to provide a broad-based analysis of UNSC election in the presence of a full set of control variables. It is selected under the a-priori assumption that the elements of \mathbf{s} belong to the model, such that the model selection procedure is applied only to the selection of Cold War interactions and regional and global country-specific effects. Model 2 is a test of the robustness of the substantive variables with respect to model selection, for it is selected without a-priori assumptions on inclusion.

A subtlety that arises in the selection of Model 2 is that it is possible that the interaction between a substantive variable and a Cold War indicator is selected into the model, but the substantive variable itself is not. Because the interaction variable takes the value of the substantive variable during the Cold War and zero thereafter, this implies that the substantive variable is, in effect, included in the model for the Cold War period only. As it stands, however, there is no means for the selection procedure to include a substantive variable in only the post-Cold War period. In selecting Model 2, we therefore augment \mathbf{x} with a further vector, $\mathbf{s} \times (\mathbf{1} - \mathbf{w})$, which contains the interaction between each substantive

⁴¹ This is the same as the ‘stepwise regression procedure’ described by Draper and Smith (1981: 307-309).

variable and a post-Cold War indicator variable.

We also note that, because of the different assumptions maintained in selecting the two models, it is not, in general, expected that the variables selected into Model 2 will form a proper subset of those selected into Model 1. Also, although every variable selected into Model 2 shows statistical significance at ten per cent or better in the stage where it is selected, in some cases variables already included in the model may gradually lose statistical significance as further variables are included. Some variables may, therefore, not show statistical significance at the ten per cent level in the final model.

2.5 Results

We present two sets of results, which are both estimated using the likelihood function in equation 2.7 for UNSC elections between 1970 and 2005. The first set (presented in 2.4a) results from the procedure for Model 1 and thus includes the full set of control variables, as described in the previous section. The second set (presented in Table 2.4b) results from the procedure for Model 2 and thus includes the more robust findings, again, as described in the previous section. To match the timing of the election process, we lag the independent variables by one year relative to UNSC membership. We report robust standard errors, adjusted for the imputed data, and clustered on region \times year, thereby allowing for within-region and within-year correlation, respectively, and heteroskedasticity.⁴² We control for the operation of the Arab swing seat by the inclusion of an indicator for Arab countries eligible for election to the seat in a given year (see Table 2.1).

The model selection procedure described in Section 2.4.7 selects 17 Cold War interaction effects into each of Models 1 and 2, although note that these 17 effects differ between

⁴² As in other contexts, we are unable to adjust the standard errors for the effective degrees of freedom used by the model selection procedure itself. As such, it is appropriate to urge caution in the interpretation of findings on the margin of statistical significance at conventional levels. We note the necessity of such model selection, however, given the weak steer provided by theory, and the number of potential explanatory variables.

models. In Table 2.4a, cases where a Cold War interaction is selected show two separate coefficients side-by-side in the relevant column. The left-side coefficient is only for the period during the Cold War, and the right-side coefficient is only for the post-Cold War period.

To present the results in this form, we re-analysed the final selected model, and, instead of including the substantive variable alongside its interaction variable, we include instead the two interaction variables associated with the substantive variable – one for the interaction with the Cold War indicator and the other for the interaction with the post-Cold War indicator. The coefficients for these two interaction variables are those reported in Table 2.4a. Hence, the estimated coefficient we obtained for the Cold War interaction variable when included alongside the substantive variable corresponds to the difference between the two coefficients we report.⁴³ The interpretation of the results in Table 2.4b is similar. In instances, however, where the selection procedure selected either the Cold War interaction variable or the post-Cold war interaction variable but not the associated substantive variable, two coefficients appear side-by-side, of which one is missing.

The model selection procedure also selects a regional country-specific effect for 16 countries into Model 1, and a global country-specific effect for nine countries.⁴⁴ We include indicator variables for these countries in the model of Table 2.4a, though, for reasons of space, we do not report their effects in the Table. As well as selecting the known outliers discussed in Section 2.4.6, the other countries identified as possible outliers include Nigeria, an African country which has pursued an overt policy of queue-jumping (Security Council Report, 2009: 6).

⁴³ We do not include a separate Cold War intercept dummy because the conditional logit model has the property that any variable that takes the same value for every country in a group in a particular year (a Cold War dummy would come into this category) simply cancels out of the numerator and denominator (see equation 2.5 and footnote 37 above).

⁴⁴ The regional country-specific effects we allow for are (by region), Africa: Benin, Guinea, Madagascar, Malawi, South Africa, Zimbabwe; Asia: India, Japan, Nepal, Philippines, Saudi Arabia; EE: Bulgaria; the GRULAC: Costa Rica, Mexico, Panama; the WEOG: Austria, Belgium, Switzerland. We allow for a global country-specific effect for Australia, Austria, Burkina Faso, Egypt, Greece, Madagascar, Romania and Slovakia.

As discussed previously, the country-specific effects selected into Model 2 need not correspond to those of Model 1. In practice, however, we observe a high degree of congruence: each of the 16 region country-specific effects allowed for in Model 1 are also selected into Model 2; only one global country-specific effect not selected into Model 1 is selected into Model 2 (the Philippines); and only one global country-specific effect selected into Model 1 is not selected into Model 2 (Egypt).

Before discussing the results, we stress special caution in interpreting the results for Eastern Europe and the UNGA because of the limited number of observations that they include. The EE group contains the fewest countries and the most imputed data, while only 36 out of the 180 elections in our sample are contested in the UNGA.⁴⁵

2.5.1 Commitment to peace

Turning to the results, we hypothesise above that a country's commitment to peace should influence UNSC membership because of the explicit guidelines in the UN Charter. We test this hypothesis using a measure of inter- and intra-state conflict, a measure of peace-keeping contributions, and a measure of democracy. At the regional level, we find some evidence to support the commitment-to-peace conjecture, albeit in somewhat different guises in each region. We find no evidence supporting the conjecture at the UNGA level – if anything, we find dictatorships more likely to win contested UNGA elections.

During the Cold War period we find little evidence of an association between UNSC election and engagement in intra- or inter-state conflict. The effect of conflict for the GRULAC is actually positive during the Cold War (in both models). The finding is mainly driven by the nomination of Peru in 1983, which was engaged in civil conflict with

⁴⁵ The estimates for the UNGA in Tables 2.4a-b seem of a different order of magnitude compared to the estimates for the regional groups. This can be explained with reference to equation 2.1, which weights UNGA preferences by α_{jt} , and group preferences by $(1 - \alpha_{jt})$ in the composite utility function. Even for election years with non-zero values of α_{jt} , its value is typically close to zero; $E(\alpha_{jt} | \alpha_{jt} \neq 0) = 0.039$, so the apparently large UNGA effects we estimate are offset by the very low weight UNGA preferences receive in the composite preference.

Sendero Luminoso (Shining Path). Note, however, that Barbados contested that election as a second GRULAC candidate. Since the end of the Cold War, Table 2.4b shows that, for Africa and the GRULAC, involvement in an international conflict significantly reduces a country's chances of sitting on the UNSC; for both regions, the negative effect is statistically significant at the one per cent level. The implied marginal effects of the model in Table 2.4a suggest, for instance, that engagement in conflict reduces the probability of election by around 0.01 in Africa – post-Cold War.⁴⁶ This may seem small, but note that the average election probability in Africa for this period was only around 0.05. Hence, involvement in international conflict cuts this probability by around one-fifth.

The UNGA does not appear to have strong preferences over engagement in conflict: during the sample period it twice elected conflict countries in contested elections: Nicaragua in 1982, Peru in 1983. In 1993 it also elected Rwanda – then engaged in civil war – in a clean slate election, but did not elect the other African country on the slate, Guinea-Bissau, which was then not coded as being engaged in conflict (see footnote 23 for further details of this election). Overall, in neither time period do we observe a statistically significant effect at the ten per cent level.

We also detect a role for peacekeeping troop contributions, although not in every region. Specifically, Table 2.4b shows that in Africa and Asia, the more troops a country contributes, the more likely it is to gain UNSC membership. The effect is significant at the one per cent level in Asia and at the five per cent level in Africa. A one per cent increase in troop contributions is associated with a 0.41 per cent rise in election probability in Asia, and a 0.19 per cent rise in election probability in Africa. We find no evidence of a role for

⁴⁶ We calculate elasticity and marginal effect estimates (marginal effects shown in tables 2.5a and b) for 2006, the final year of our sample, using equation 2.5. We evaluate these using the `mi predict` command in Stata 12, at the group-specific means \bar{x}_{jt} . Different estimates apply to “clean slate” and “contested” elections. The former are evaluated at $\alpha_{jt} = 0$, and the latter at $E_j(\alpha_{jt} | \alpha_{jt} \neq 0)$. We find negligible differences between these estimates, however, so we do not report each separately. Estimates also vary according to n_{jt} : we report estimates for $n_{jt} = 1$, but in group-years with $n_{jt} = 2$, a different estimate based on equation 2.6 does apply in practice. Last, the estimates vary across years due to the evolution of the eligible set. We have evaluated the estimates for 2006 under different assumed eligibility conditions, and find this source of variation to be of minor proportions.

troop contributions in EE, the GRULAC, or the WEOG. Peacekeeping contributions do not appear to influence the UNGA either.

Both models indicate that democratic countries in EE and the GRULAC are more likely to be elected in the post-Cold War era. This contrasts with the effect of political regime in these regions during the Cold War, when autocracies were more likely to be selected (although the autocracy effect in Eastern Europe is essentially artifactual – only one country-year is coded as a democracy, Poland in 1989). Table 2.4a also shows that democracy is positively associated with regional nomination in the WEOG. As may be seen from Table 2.4b, this result is driven by the Cold War era, for all countries in the WEOG are coded as democratic in the post-Cold War era. The only authoritarian regime ever elected to represent the WEOG was Spain in 1968. The dictatorships in Portugal and Greece never won election. Since democratising, Spain has been elected three times, and Portugal and Greece have each been elected twice. Democratic countries are less likely to be elected in the UNGA in Table 2.4a, but this result may not be robust, as democracy is not selected for the UNGA in Model 2.

2.5.2 Foreign aid and debt

With respect to foreign aid, we find only weak evidence that it plays a role, and not always in a consistent direction. In Table 2.4a, IMF program participation plays a role in the WEOG, where it is positively associated with election, and in Asia, where it is negatively associated with UNSC election. The IMF has become supremely unpopular in Asia since the East Asian Financial Crisis, so Asian support may genuinely decline for governments cooperating with the institution. Alternatively, IMF program participation might indicate political or economic weakness, reducing the incentives to apply, and the probability to receive, temporary UNSC membership. Neither of the IMF findings, however, is robust to

the stricter selection procedure of Model 2, and IMF program participation is thus not present at all in Table 2.4b.

New World Bank projects are positively associated with receiving a regional nomination in Asia in both sets of results. The same finding also holds for the WEOG in Table 2.4a – but this effect does not survive in Table 2.4b – and for Africa during the Cold War in Table 2.4b, but the effect is not robust to the presence of further controls in Table 2.4a. Both sets of results show, however, that countries with more newly approved World Bank projects are actually less likely to be elected by the UNGA. As there are contrasting effects at the regional and global levels, it is unclear whether, even in Asia, new World Bank projects have an overall positive effect upon election probability.

US economic assistance plays a role only in the WEOG, where it associates negatively with UNSC election during the Cold War (Table 2.4b). This result, however, does not hold in the presence of wider controls in Table 2.4a. A somewhat stronger role is found for US military assistance, which, in both sets of results, associates positively with the probability of election by the UNGA. We also find that, during the Cold War, receipt of US military assistance associated negatively with obtaining a regional nomination in the WEOG. This result is present at the one per cent level in Table 2.4b, but at only the ten per cent level in Table 2.4a. Table 2.4a shows a negative correlation with nomination in Africa, statistically significant at the ten per cent level. A final result, seen only in Table 2.4b, is that US military assistance is positively associated with regional nomination in EE.

Of interest, more heavily indebted countries are more likely to be elected in Africa and the GRULAC. As debt service contains the most imputed values of our variables, it is sensible to be cautious in interpreting these results. Indeed, the result for the GRULAC holds only in Model 2 (Table 2.4b), not in the presence of all the control variables. Still, as we find evidence of a turn-taking norm in these regions, governments may have a good idea of when they will get their chance to serve on the UNSC, and thus pursue lax macroeconomic policies in anticipation of the windfall in foreign aid that UNSC membership brings.

2.5.3 International power: population, economic development, political ties, and Pariah states

Strictly speaking, US military aid does not count as official overseas development assistance, according to the Organisation of Economic Co-operation and Development. The fact that this variable influences UNGA contested elections may indicate that politically powerful countries strategically employ their influence in the UNSC election process. Further exploring the role of international power, we find that the statistical significance of one of our measures holds across all-but-one regions: the more populous a country, the more likely it is to take a seat on the UNSC. In both sets of results the statistical significance of the effect holds at least at the one per cent level in all regional groups except EE (although only during the post-Cold War period for the GRULAC). The coefficient estimates in Table 2.4b imply that a one per cent increase in population generates an increase in election probability of between 0.46 per cent (Africa) and 3.6 per cent (Asia). Interestingly, however, we find no evidence that the UNGA takes population into account in its voting decisions.

In light of the significance of population, one might expect the statistical significance of a country's level of economic development. We find a robust effect in Africa, Asia and the GRULAC (significant at the five per cent confidence level or better in Table 2.4b): richer countries in these regions are more likely to gain representation on the UNSC. Territorially large countries are also more likely to obtain a regional nomination in Asia and the GRULAC, as well as in EE, but these findings hold only in Table 2.4b. The UNGA does not appear to take either income or territorial size into account in its election decisions.

As for political connections to powerful countries, we find no evidence that voting with the United States in the UNGA has an effect upon election to the UNSC. Voting with the Soviet Union/Russia is, however, positively associated with gaining group nomination in

Africa and the GRULAC (Table 2.4b). Interestingly, Table 2.4b also shows that voting with the Soviet Union/Russia is associated with a large positive effect in the UNGA, significant at the five per cent level. The finding suggests a strong Soviet influence within the UNGA. None of these findings hold, however, in the presence of further controls in Table 2.4a.

The “Pariah state” indicator for countries subject to US and/or UN sanctions shows evidence of a change in preferences over time. During the Cold War, sanctioned countries were largely unable to obtain regional nomination, as indicated by the strong negative findings in Africa and Asia. The principal exception was Cuba, which won election from the GRULAC in 1989. Since the Cold War, however, Table 2.4b indicates that sanctions do not predict UNSC election, with the exception of a negative association in the GRULAC. In the post-Cold War period, Nigeria in 1993, Indonesia in 1994, Sudan in 2000, and Syria in 2001 have all obtained a regional nomination. Indonesia and Syria went on to win election in “clean slate” votes in the UNGA, Nigeria triumphed in a contested vote, and Sudan lost in a competitive vote.

We also investigate whether membership in particular political groupings influences election to the UNSC. We find evidence that such membership matters in some regions, but not in the UNGA. Moreover, the effects on regional nomination go in different directions. In both models, we see that membership in the G77 – but not in the NAM – has a negative effect in Asia, but a positive effect in the GRULAC. In the GRULAC, dual membership in NAM and G77 also positively predicts regional nomination. No statistically significant effects from OIC membership are found in Table 2.4a, and it is, unsurprisingly, missing from the model in Table 2.4b. Similarly, membership in JUSCANZ is included only in the UNGA in Table 2.4b, and the estimated positive effect falls short of significance at the ten per cent level. As for groupings external to the UN, EU membership appears to raise a country’s probability of receiving a regional nomination in EE, but not in

the WEOG. NATO membership has a pronounced negative effect on regional nomination probability for members of EE, but also has no effect in the WEOG.

2.5.4 Culture: colonial heritage, religion, and corruption

Do cultural traits of a country influence its election prospects? In both sets of results we find evidence that countries with a history of British colonialism experience a greater probability of election in Asia, the GRULAC, and the WEOG, but the effect does not hold for Africa or the UNGA.⁴⁷ In contrast, countries with a history of French colonialism do not appear to experience a greater probability of election. A common political ideology is seen in Table 2.4b to be associated with an increased probability of election for EE and the GRULAC. The finding survives the presence of further controls for the GRULAC but not for EE. We find no evidence of an effect of shared political ideology for the other regions or the UNGA.⁴⁸

We also consider religion, in particular the proportion of the country's population that is Muslim or Catholic. There are three findings regarding Muslim countries that appear in both sets of results. The first is that in the GRULAC Muslim countries are less likely to be elected to the UNSC in the post-Cold War era. Note that this finding may just be an artifact of the data, however, and not evidence of a real bias against Muslim countries in the GRULAC region. After all, there are only three countries coded as having a significant Muslim population (Suriname: 19.6 per cent, Guyana 9.0 per cent, and Trinidad and Tobago 5.9 per cent). Both Guyana and Trinidad and Tobago served on the UNSC during the Cold-War era, but none have served in the post-Cold War era.

The second finding is that in the WEOG Muslim countries are less likely to be elected to the UNSC. Here the effect appears driven by one country, Turkey, which never won

⁴⁷ The former British colonies in the WEOG are Ireland (elected twice) and Malta (elected once).

⁴⁸ Note, however, that Potrafke (2009) finds that government ideology affects a country's UNGA voting behaviour.

election to the UNSC during the sample period, but served three earlier terms representing Asia and one subsequent term representing the WEOG. The third finding is that Muslim countries are more likely to be selected to represent Asia. This finding may, however, owe to the effect of political groupings for all Asian countries with significant Muslim populations are members in OIC.⁴⁹ As for the Catholic variable, a higher proportion of Catholics among the population is associated with a lower probability of election in Asia (the finding holds in both Tables 2.4a and 2.4b). A much smaller negative effect is also found for the WEOG in Table 2.4b, but this result does not hold in the presence of further controls.

The regions appear to have heterogeneous preferences over the control of corruption. In Table 2.4b we find no role for corruption in Asia or the WEOG. In Africa and the GRULAC, however, we find that corruption pays: we find a negative effect of the control of corruption on a country's chances of becoming a UNSC member (significant at the ten and, respectively, five per cent levels). Ironically, Africa's commitment to fairness in taking turns may be what makes corruption pay in this region, while in more competitive regions corruption plays no role because countries disregard turn-taking norms regardless of how corrupt their governments may be. On the other hand, the UNGA has tended to shun more corrupt countries at the global level, at least in the post-Cold War era (Table 2.4b).

2.5.5 The norm of taking turns

We find widespread evidence of the operation of a turn-taking norm – not only in Africa: the longer a country has been waiting to appear on the Council the higher the probability of receiving the endorsement of the regional caucus. Both sets of results show the importance of the effect at the five per cent significance level or stronger. The estimates in Table 2.4b

⁴⁹ We do not control for OIC in Asia due to collinearity with the Muslim variable. When we do include them together, neither variable is statistically significant.

imply a range of substantive effects across regions: a one per cent increase in waiting time increases election probability by 6.1 per cent in the WEOG and 5.7 per cent in Asia, down to an increase of just 1.8 per cent in the GRULAC. The common misperception that membership on the UNSC rotates therefore finds some support in the electoral patterns at the regional level. As might be expected, the UNGA does not appear influenced by the turn-taking rights that apply within the regions.

2.6 Conclusion

The Security Council is the preeminent organ of the United Nations. Membership confers significant international influence and also economic benefits. We set out to consider the characteristics of countries toward which the UNSC election process diverts these economic benefits. To that end, we considered five different perspectives as to the determinants of election to the UNSC.

As candidature decisions at the regional level follow no codified rules (with the exception of Africa), and governments keep their negotiations behind closed doors, many factors likely remain unobserved. It is thus appropriate to treat our results with caution. Nevertheless, if election to the UNSC were entirely random, we would not expect the types of systematic relationships we report in Section 2.5.

Our results suggest that the regional nomination process tends to allocate membership, and its associated economic benefits, according to a compromise between a norm to elect more powerful countries – populous countries from throughout the world and richer countries from Africa, Asia, and the GRULAC – and a norm for each country to receive a turn. Mediating this central compromise are a norm against nominating countries involved in civil or international war (in post-Cold War Africa and the GRULAC) and a norm in favour of countries that contribute more personnel to UN peacekeeping missions (in Africa and Asia). During the Cold War, the regions of Africa and Asia may have followed a norm

against nominating pariah countries whose presence on the UNSC would have upset one or more of the permanent members. If so, the norm seems to have weakened or disappeared in these regions during the post-Cold War era, and it may have emerged in the GRULAC.

The UNGA has the opportunity to participate meaningfully in the UNSC election process in only around one election in five. When it does have a say, we see some evidence of the influence of powerful countries. Governments receiving US military aid are more likely to win contested elections, while countries voting with the Soviet Union/Russia in the UNGA also win contested elections more frequently. The UNGA appears less likely, however, to select countries heavily reliant on projects funded multilaterally through the World Bank. Since the end of the Cold War, the UNGA has also systematically directed membership away from countries perceived as having high levels of corruption. In contrast to the regional groups, however, UNGA decisions do not appear influenced by regional turn-taking norms or by a country's population or income. Broadly speaking, there is a lack of consistent evidence across regions and the UNGA for a role of foreign aid, and only occasional and heterogeneous evidence for cultural influences.

These findings speak to a number of literatures. For instance, our findings on the control of corruption inform the debate over whether corrupt governments receive more or less foreign aid (e.g., Alesina and Weder, 2002). Our finding that countries involved in armed conflict sacrifice foreign aid through fewer appearances on the UNSC suggests an additional cost of conflict that is yet to be considered in the literature that seeks to measure such costs (e.g., Bozzoli *et al.*, 2011). Last, our finding that preferences over election to the UNSC exhibit heterogeneity across regions may prove useful, as a case study, to scholars interested in the evolution of norms (e.g., Binmore and Samuelson, 1994; Bendor, 2001). Because Security Council participation is consequential for different types of foreign aid, a heterogeneous election process implies that UNSC membership may serve as an instrument that such scholars can use as a measure of international political importance.

We caution, however, that our results suggest the importance of controlling for population and income.⁵⁰

As no detailed empirical analysis of the determinants of UNSC election currently exists, we note that our study represents a first step and offer the following suggestions for future research. As an extension to our analysis, researchers may seek to augment country-level data with personal-level data on UN Ambassadors. Malone (2000), citing Dutch officials, notes that up to a quarter of UN representatives vote without instructions from their capitals. The personal characteristics and interactions of the individuals on the New York scene may therefore play a role in some elections. While we suspect that this avenue of research would prove fruitful, we note that it would involve intensive and detailed data collection.

As for reform of the UNSC, we propose considering what currently determines representation: Election depends partly on a random draw of idiosyncratic factors, partly on how powerful a country is – in terms of population and income – and partly on a norm of giving everyone a turn. Those who feel that powerful countries should serve on the UNSC more often – perhaps because they play a crucial role in global politics – should try to undermine the regional nomination process and push for more contested elections at the UNGA level. After all, we find no evidence of a turn-taking norm when the UNGA decides contested elections. Allowing for reelection, for example, would enable powerful countries to run for election more often.

Other reformers, who may feel that every country should have its turn on the world stage, should favour endowing the regional groups with the power to elect their own representatives. For, in contrast to the UNGA, all of the regions follow the turn-taking norm to some extent. Alternatively, one could ensure turn-taking if election relied on an

⁵⁰ We stress here that turn-taking is likely an exogenous source of variation that scholars can use, and it has a statistically significant effect for the 80 per cent of the sample, where regions make the decision. Turn-taking, however, does not hold for the UNGA, so scholars may wish to flag the contested elections (20 per cent of the sample) as factors such as voting with the Soviet Union/Russia appear to play a role. See, for example, Bueno de Mesquita and Smith (2010), Dreher *et al.* (forthcoming) and Dreher *et al.* (2013) for recent studies using UNSC membership as an instrument.

actual rotation across all UN members. We suspect that interests on both sides – in favour of powerful countries and in favour of taking turns – counterbalance each other so that the status quo is likely to prevail.

Appendix

Table 2.1: Potential determinants of UNSC election

<i>Do governments practice a turn-taking norm, rotating membership through eligible candidates?</i>	
Turn-taking norm	Number of years since most recently becoming eligible for election to the UNSC divided by number of other countries eligible (author calculations).
<i>Does foreign aid determine election?</i>	
IMF program participation	Indicator coded 1 if a country participated in an IMF program for at least five months in a year, 0 otherwise (http://axel-dreher.de/Dreher%20IMF%20and%20WB.xls).
New World Bank projects	Number of new World Bank projects starting during the year (http://axel-dreher.de/Dreher%20IMF%20and%20WB.xls , coded as in Dreher et al., 2009a).
US Economic Aid (log)	Log (plus 1) of US economic aid going to the country in constant \$US (USAID, 2011).
US Military Aid (log)	Log (plus 1) of US military aid going to the country in constant \$US (USAID, 2011).
Debt service	Debt service as a percentage of gross national income (World Bank).
<i>Is election driven by international power or relationships with powerful countries?</i>	
Population (log)	Log of population (UN Statistics Division).
GNI per capita (log)	Log of real GNI per capita in \$US (UN Statistics Division).
Territory (log)	Log of territorial size in square kilometers (CIA Factbook).
Pariah state	Indicator coded 1 if a country is subject to UN/US sanctions (Morgan et al., 2006). ¹
US voting in UNGA	Voting in line with the United States at the UNGA – % all votes the same; abstain = 0.5 (Strezhnev and Voeten, 2012; coded as in Dreher and Sturm, 2012).
USSR/Russia voting in UNGA	Voting in line with the Soviet Union/Russia at the UNGA – % all votes the same; abstain = 0.5 (Strezhnev and Voeten, 2012; coded as in Dreher and Sturm, 2012).
OIC	Indicator coded 1 if a country is a member of OIC, 0 otherwise (http://www.oic-oci.org/).
JUSCANZ	Indicator coded 1 if a country is a member of JUSCANZ, 0 otherwise. (http://www.eyeontheun.org/view.asp?p=55&l=11).
G77 only	Indicator coded 1 if a country is a member of the G77 and not a member of NAM, 0 otherwise (http://www.g77.org/).
NAM only	Indicator coded 1 if a country is a member of NAM and not a member of the G77, 0 otherwise (http://www.nam.gov.za/).
G77 and NAM	Indicator coded 1 if a country is a member of the G77 and NAM, 0 otherwise.
EU	Indicator coded 1 if a country is a member of EU, 0 otherwise (http://www.europa.eu/).
NATO	Indicator coded 1 if a country is a member of NATO, 0 otherwise (http://www.nato.int/).
<i>Do governments follow a norm of choosing countries committed to peace?</i>	
Conflict	Indicator coded 1 if a country is engaged in a conflict, 0 otherwise (Themnér and Wallensteen, 2012).
Peacekeeping troops (log)	Log (plus 1) of the average monthly military manpower supplied to UN peacekeeping operations per year (Heldt, 2008).
Democracy indicator	Indicator coded 1 if contested elections fill the executive and legislative branches of government, 0 otherwise (Cheibub et al., 2010).
Control of corruption	Score indicating perceptions of the extent to which public power is exercised for private gain (Kaufmann et al., 2011).
<i>Do shared cultural traits play a role?</i>	
Muslim (%)	Muslims as a proportion of the total population, time invariant (Przeworski et al., 2000).
Catholic (%)	Catholics as a proportion of the total population, time invariant (Przeworski et al., 2000).
Shared regional ideology	Proportion of the chief executives in the region sharing the same political ideology – left, center, right (Beck et al., 1999). Coded 0 for non-ideological governments.
Former British colony	Indicator coded 1 if a country is a former British colony, 0 otherwise (Przeworski et al., 2000).
Former French colony	Indicator coded 1 if a country is a former French colony, 0 otherwise (Przeworski et al., 2000).
<i>Controls</i>	
Arab seat	Indicator for Arab countries eligible for election to the Arab swing seat (coded 1 for Arab countries in Africa every fourth year beginning 1972; 1 for Arab countries in Asia every fourth year beginning 1970; 0 otherwise).

¹ We code a country-year observation as a “pariah” if it is subject to sanctions imposed by the United States and/or conducted through the United Nations (through the Security Council or General Assembly). We do not code country-years as “pariahs” if (1) sanctions target trade practices, (2) the anticipated costs are not coded as “major” or “severe” (so, we only consider pariahs as those under “major” and/or “severe” sanctions), or (3) the country acquiesced to demands before sanctions were imposed or capitulated at the threat stage. We use the 2009 updated version of the Morgan et al. (2006) dataset (TIES version 3.5), which covers 1971-2008. We extend the data by including four major sanctions episodes, which begin before 1971: Cuba (1960-present), North Korea (1950-present), South Africa (1963-1994) and Vietnam (1954-1994). For a discussion of these additional cases see Combs (2012) and Levy (1999). Our main findings on the pariah variable hold, however, whether or not we include these additional sanctions episodes.

Table 2.2: Descriptive Statistics (by region)*

Variable	N (5757 max.)	Africa (n = 1823 max.)	Asia (n = 1519 max.)	EE (n = 502 max.)	GRULAC (n = 1123 max.)	WEOG (n = 790 max.)	UNGA (n = 1199 max.)
Turn-taking norm	5757	0.507 (0.355)	0.826 (0.424)	2.065 (1.444)	0.951 (0.630)	0.986 (0.863)	0.877 (0.774)
GNI per capita (log)	5757	6.133 (1.017)	7.003 (1.572)	7.564 (0.794)	7.436 (0.937)	9.387 (0.964)	7.265 (1.562)
Population (log)	5757	15.368 (1.556)	15.424 (2.344)	16.004 (0.958)	14.787 (2.852)	15.381 (3.044)	15.270 (2.500)
Territory (log)	5757	12.143 (2.062)	11.326 (2.576)	11.533 (0.919)	10.998 (2.852)	11.306 (3.044)	11.522 (2.500)
USA voting in UNGA	5584	0.366 (0.121)	0.368 (0.136)	0.439 (0.115)	0.390 (0.127)	0.551 (0.103)	0.411 (0.136)
Russia voting in UNGA	5584	0.755 (0.108)	0.755 (0.110)	0.784 (0.103)	0.743 (0.105)	0.664 (0.103)	0.744 (0.105)
Pariah state	5757	0.037 (0.190)	0.085 (0.279)	0.010 (0.099)	0.045 (0.208)	0.003 (0.050)	0.039 (0.194)
IMF program participation	5716	0.417 (0.493)	0.188 (0.391)	0.396 (0.489)	0.398 (0.490)	0.042 (0.201)	0.319 (0.466)
New World Bank projects	5757	1.754 (1.852)	1.735 (3.012)	1.552 (2.068)	1.653 (2.418)	0.280 (1.054)	1.571 (2.292)
US economic aid (log)	5757	15.335 (4.748)	10.663 (8.236)	9.623 (8.298)	13.169 (6.905)	3.133 (6.504)	11.796 (7.754)
US military aid (log)	5757	7.862 (6.865)	6.729 (7.435)	6.806 (7.674)	10.964 (6.156)	4.623 (7.431)	8.150 (7.185)
Debt service (% GNI)	3258	1.497 (0.710)	1.435 (0.701)	1.549 (0.876)	1.814 (0.623)	1.639 (0.659)	1.644 (0.720)
OIC	5757	0.447 (0.497)	0.467 (0.499)	0.058 (0.234)	0.016 (0.126)	0.046 (0.209)	0.270 (0.444)
JUSCANZ	5757	0.000 (0.000)	0.034 (0.182)	0.000 (0.000)	0.032 (0.176)	0.338 (0.473)	0.068 (0.251)
EU	5757	0.000 (0.000)	0.001 (0.036)	0.032 (0.176)	0.000 (0.000)	0.435 (0.496)	0.076 (0.265)
NATO	5757	0.000 (0.000)	0.000 (0.000)	0.070 (0.256)	0.000 (0.000)	0.576 (0.494)	0.101 (0.302)
G77 and NAM	5757	0.980 (0.139)	0.789 (0.408)	0.000 (0.000)	0.649 (0.477)	0.000 (0.000)	0.639 (0.481)
G77 only, not in NAM	5757	0.000 (0.000)	0.103 (0.304)	0.030 (0.170)	0.319 (0.466)	0.000 (0.000)	0.089 (0.285)
NAM only, not in G77	5757	0.020 (0.139)	0.036 (0.187)	0.072 (0.258)	0.000 (0.000)	0.046 (0.209)	0.028 (0.164)
Peacekeeping troops (log)	5757	0.933 (2.005)	0.972 (2.220)	1.542 (2.355)	0.671 (1.534)	3.367 (2.781)	1.270 (2.321)
Democracy	5757	0.155 (0.362)	0.259 (0.438)	0.449 (0.498)	0.714 (0.452)	0.975 (0.158)	0.457 (0.498)
Former British colony	5757	0.309 (0.462)	0.496 (0.500)	0.000 (0.000)	0.326 (0.469)	0.100 (0.301)	0.295 (0.456)
Former French colony	5757	0.336 (0.472)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.113 (0.317)
Conflict	5757	0.075 (0.263)	0.088 (0.283)	0.018 (0.133)	0.026 (0.159)	0.013 (0.112)	0.063 (0.242)
Muslim (%)	5757	0.359 (0.388)	0.453 (0.433)	0.117 (0.240)	0.010 (0.037)	0.052 (0.207)	0.239 (0.368)
Catholic (%)	5757	0.220 (0.268)	0.096 (0.230)	0.495 (0.284)	0.657 (0.325)	0.529 (0.412)	0.361 (0.370)
Shared regional ideology	4715	0.127 (0.164)	0.079 (0.101)	0.419 (0.404)	0.291 (0.188)	0.376 (0.148)	0.187 (0.183)
Control of corruption	5345	-0.560 (0.627)	-0.213 (0.801)	-0.326 (0.693)	-0.073 (0.773)	1.595 (0.760)	-0.001 (1.035)
Arab seat	5757	0.048 (0.213)	0.068 (0.251)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.025 (0.156)

*Numbers shown are group-specific means. Numbers in parentheses are standard deviations. UNGA statistics are reported only for contested elections.

Table 2.3: UNSC Membership (terms held 1971–2006)

Africa		Asia		EE		GRULAC		WEOG	
Algeria	2	Japan	7	Romania	3	Argentina	5	Germany ⁵	4
Benin	2	India	4	Bulgaria	2	Brazil	4	Italy	4
Cameroon	2	Pakistan	4	Poland	2	Panama	3	Canada	3
Congo	2	Bangladesh	2	Ukraine ⁶	2	Peru	3	Spain	3
Democratic Rep. of the Congo	2	Indonesia	2	Yugoslavia ⁴	2	Venezuela	3	Australia	2
Egypt	2	Malaysia	2	Belarus ⁵	1	Chile	2	Austria	2
Gabon	2	Philippines	2	Czechoslovakia ³	1	Colombia	2	Belgium	2
Ghana	2	Bahrain	1	Czech Republic ³	1	Costa Rica	2	Denmark	2
Guinea	2	Iraq	1	East Germany ⁵	1	Guyana	2	Ireland	2
Kenya	2	Jordan	1	Hungary	1	Jamaica	2	Netherlands	2
Mauritius	2	Kuwait	1	Slovakia ³	1	Mexico	2	Norway	2
Nigeria	2	Nepal	1	Slovenia ⁴	1	Bolivia	1	Portugal	2
Tunisia	2	Oman	1	Albania	0	Cuba	1	Sweden	2
United Rep. of Tanzania	2	Qatar	1	Armenia	0	Ecuador	1	Finland	1
Zambia	2	Rep. of Korea	1	Azerbaijan	0	Honduras	1	Greece	1
Zimbabwe	2	Singapore	1	Bosnia & Herzegovina ⁴	0	Nicaragua	1	Malta	1
Angola	1	Syrian Arab Rep.	1	Croatia ⁴	0	Trinidad & Tobago	1	New Zealand	1
Botswana	1	Thailand	1	Estonia	0	Antigua & Barbuda	0	Andorra	0
Burkina Faso	1	United Arab Emirates	1	Georgia	0	Barbados	0	Iceland	0
Cape Verde	1	Yemen ¹	1	Latvia	0	Bahamas	0	Israel ⁷	0
Cote d'Ivoire	1	Afghanistan	0	Lithuania	0	Belize	0	Liechtenstein	0
Djibouti	1	Bhutan	0	Rep. of Moldova	0	Dominica	0	Luxembourg	0
Ethiopia ²	1	Brunei	0	Serbia & Montenegro ⁴	0	Dominican Rep.	0	Monaco	0
Gambia	1	Cambodia	0	TFYR Macedonia ⁴	0	El Salvador	0	San Marino	0
Guinea-Bissau	1	Cyprus	0			Grenada	0	Switzerland	0
Libya	1	DPR Korea	0			Guatemala	0	Turkey	0
Mali	1	Fiji	0			Haiti	0		
Madagascar	1	Iran	0			Paraguay	0		
Mauritania	1	Kazakhstan	0			St Lucia	0		
Morocco	1	Kyrgyzstan	0			St Vincent & the Grenadines	0		
Namibia	1	Laos	0			St Kitts & Nevis	0		
Niger	1	Lebanon	0			Suriname	0		
Rwanda	1	Marshall Islands	0			Uruguay	0		
Senegal	1	Maldives	0						
Somalia	1	Micronesia	0						
Sudan	1	Mongolia	0						
Togo	1	Myanmar	0						
Uganda	1	Nauru	0						
Burundi	0	Palau	0						
Central African Rep.	0	Papua New Guinea	0						
Chad	0	Saudi Arabia	0						
Comoros	0	Samoa	0						
Equatorial Guinea	0	Solomon Islands	0						
Eritrea ²	0	Sri Lanka	0						
Lesotho	0	Tajikistan	0						
Liberia	0	Timor Leste	0						
Malawi	0	Tonga	0						
Mozambique	0	Tuvalu	0						
Sao Tome & Principe	0	Turkmenistan	0						
Seychelles	0	Uzbekistan	0						
Sierra Leone	0	Vanuatu	0						
South Africa	0	Vietnam	0						
Swaziland	0	Yemen Arab Rep. ¹	0						

¹ Yemen and Yemen Arab Republic were separate members of the UN until 1990 when the two countries united, becoming represented on the UN by the single member Yemen.

² Eritrea was part of Ethiopia until around 1991. Eritrea officially joined the UN as a separate member in 1993 and Ethiopia retained its membership of the UNGA.

³ Czechoslovakia dissolved in 1992. The Czech Republic and Slovakia subsequently joined as separate members in 1993.

⁴ Yugoslavia dissolved in 1992, being replaced by separate membership in EE for Bosnia & Herzegovina, Croatia, Slovenia, TFYR Macedonia and Serbia & Montenegro.

⁵ East Germany was a member in EE and West Germany a member in the WEOG. With effect from 3 October 1990, the two German states united to form one sovereign state. As from the date of reunification, West Germany acts in the UN under the designation "Germany" (New Zealand, 2012). Hence, two of the four terms attributed to "Germany" were served as "West Germany," and two as "Germany."

⁶ Although only gaining full independence in 1991, Ukraine and Belarus were founding members of the UN, having separate membership from the USSR. According to Noguee (2004), this arrangement was agreed between the UK, USA and USSR at the Yalta Convention in 1945, so as to give the USSR three votes in the UNGA.

⁷ Israel joined the UN in 1949 but only became a temporary member in the WEOG, and thus eligible for election to the UNSC, in 2000.

Table 2.4a: Model 1 (results of maximising the likelihood function set out in equation (2.7), with dependent variable being election to the UNSC)

Variables	Africa		Asia		EE		GRULAC		WEOG		UNGA	
	≤ 1989	> 1989	≤ 1989	> 1989	≤ 1989	> 1989	≤ 1989	> 1989	≤ 1989	> 1989	≤ 1989	> 1989
Turn-taking norm	4.90*** (0.98)		7.81*** (2.15)		1.74*** (0.66)		1.69** (0.76)		7.61*** (2.05)		-6.81 (10.49)	
GNI per capita (log)	0.30 (0.41)	1.35*** (0.32)	1.36** (0.56)		-1.03 (1.04)		1.38*** (0.50)		2.83 (2.14)		4.21 (14.16)	
Population (log)	0.75*** (0.26)		4.35*** (1.19)		0.65 (2.08)		0.61 (0.57)	1.32*** (0.51)	5.81*** (1.71)		16.56 (11.52)	
Territory (log)	-0.15 (0.19)		-0.60 (0.42)		1.78 (2.45)		0.58 (0.37)		-1.15 (0.74)		-9.27 (8.48)	
USA voting in the UNGA	-2.35 (5.24)		5.73 (5.92)		-1.02 (8.73)		-3.04 (6.88)		-24.14 (14.58)		-15.71 (224.63)	
Russia voting in the UNGA	6.53 (5.79)		6.71 (4.52)		-7.89 (12.05)		6.30 (6.12)		-7.95 (13.27)		102.27 (213.50)	
Pariah state	-15.54*** (2.01)	-0.54 (1.80)	-20.50*** (2.96)	0.66 (1.22)	—		-1.05 (1.70)	-10.29*** (2.65)	—		20.51 (58.40)	
IMF program participation	0.67 (0.57)		-1.42** (0.72)		1.75 (1.39)		0.32 (0.56)		4.63* (2.77)		-20.31 (17.75)	
New World Bank projects	0.18 (0.13)		0.28** (0.13)		-0.21 (0.28)		0.03 (0.08)		4.07*** (1.47)		-10.34** (4.55)	
US economic aid (log)	0.03 (0.04)		0.06 (0.07)		-0.07 (0.10)		-0.09 (0.06)		-0.25 (0.18)	-0.005 (0.08)	-1.49 (2.22)	
US military aid (log)	-0.08* (0.04)		0.01 (0.05)		0.42 (0.33)		-0.01 (0.04)		-0.26* (0.15)	0.03 (0.11)	7.93*** (2.10)	
Debt service (% GNI)	1.01** (0.41)		0.01 (0.67)		-0.49 (0.84)		0.82 (0.59)		-0.19 (0.98)		11.85 (12.11)	
OIC	-0.28 (0.75)		—		—		—		—		62.31 (53.10)	
JUSCANZ	—		—		—		—		4.46 (2.87)		58.24 (38.59)	
EU	—		—		40.68*** (4.58)		—		1.99 (1.89)		4.84 (36.59)	
NATO	—		—		-22.24*** (3.26)		—		-0.14 (1.84)		-40.66 (24.80)	
G77 and NAM	—		1.71 (1.81)		—		6.93*** (1.99)		—		-36.43 (60.51)	
G77 only, not in NAM	—		-7.79* (4.41)		—		4.64** (1.85)		—		-48.10 (64.42)	
NAM only, not in G77	—		—		—		—		—		-57.54 (64.69)	
Peacekeeping troops (log)	0.20* (0.11)		0.41*** (0.15)		0.08 (0.34)		0.23 (0.16)		0.36 (0.34)		-1.42 (4.03)	
Democracy	0.82 (0.69)		1.82 (1.11)	-1.52 (1.02)	-20.02*** (2.27)	16.79*** (3.10)	-1.53** (0.77)	19.42*** (2.01)	8.77* (4.89)		-63.88** (29.47)	
Former British colony	0.06 (0.59)		4.19*** (1.14)		—		3.75** (1.68)		7.74** (3.57)		19.05 (25.02)	
Former French colony	0.65 (0.46)		—		—		—		—		-16.36 (44.99)	
Conflict	-0.62 (0.89)	-18.49*** (1.91)	-1.86 (1.34)		—		2.33** (1.13)	-17.85*** (1.88)	—		21.53 (37.99)	-182.25 (143.71)
Muslim (%)	0.14 (0.96)		2.47** (1.08)		-4.49 (4.66)		0.16 (14.19)	-286.20*** (32.85)	-297.99** (131.44)		-40.74 (64.10)	-147.55** (59.09)
Catholic (%)	0.02 (1.02)		-90.66** (35.49)		2.29 (2.36)		1.90 (2.90)		-3.84 (3.52)		-0.51 (26.65)	
Shared regional ideology	-0.59 (1.14)		1.60 (3.28)		3.98 (2.79)		3.70* (1.89)		10.98 (14.62)	1.78 (4.02)	81.01 (51.07)	
Control of corruption	-0.75* (0.40)		0.38 (0.83)		1.54 (2.13)		-1.01** (0.50)		0.85 (1.76)		-29.41 (18.48)	15.69 (19.82)
Arab seat	2.01*** (0.42)		27.74*** (3.32)		—		—		—		-8.86 (37.76)	

Numbers in parentheses are robust standard errors clustered on region × year. * significant at 10%, ** significant at 5%, *** significant at 1%.

Table 2.4b: Model 2 (results of maximising the likelihood function set out in equation (2.7), with dependent variable being election to the UNSC)

Variables	Africa		Asia		EE		GRULAC		WEOG		UNGA	
	≤ 1989	> 1989	≤ 1989	> 1989	≤ 1989	> 1989	≤ 1989	> 1989	≤ 1989	> 1989	≤ 1989	> 1989
Turn-taking norm	3.84*** (0.72)		6.42*** (1.81)		1.05*** (0.40)		1.46** (0.59)		5.07*** (1.15)			
GNI per capita (log)	0.52** (0.22)		1.21*** (0.34)		—		1.43*** (0.41)		—			
Population (log)	0.46*** (0.14)		3.58*** (0.94)		—		—	0.92*** (0.28)	3.61*** (0.77)			
Territory (log)	—		0.52* (0.28)		2.12*** (0.80)		0.76*** (0.24)		—			
Russia voting in the UNGA	6.59** (3.34)		—		—		8.39** (3.48)		—		231.63** (95.44)	
Pariah state	-16.40*** (1.04)	—	-18.44*** (1.84)	—	—		—	-13.67*** (2.68)	—			
New World Bank projects	0.24** (0.10)	—	0.29*** (0.10)		—		—	—	0.95 (0.60)		-6.35** (2.56)	
US economic aid (log)	—		—		—		—	—	-0.14** (0.06)	—		
US military aid (log)	—		—		0.32** (0.14)		—	—	-0.24*** (0.09)	—	4.75*** (1.28)	
Debt service (% GNI)	0.86*** (0.30)		—		—		0.89* (0.51)		—			
JUSCANZ	—		—		—		—	—	—		31.06 (19.74)	
EU	—		—		—	39.89*** (1.99)	—	—	1.25 (0.87)			
NATO	—		—		—	-22.70*** (1.38)	—	—	—			
G77 and NAM	—		—		—	—	—	3.58*** (1.15)	—			
G77 only, not in NAM	—		-12.99*** (3.01)		—		—	2.34** (1.03)	—			
NAM only, not in G77	—		—		—		—	—	—			
Peacekeeping troops (log)	0.19** (0.09)		0.30*** (0.09)		—		—	—	—			
Democracy	—		—	-1.87** (0.75)	-19.67*** (1.40)	16.29*** (1.36)	-1.23* (0.69)	19.70*** (1.25)	10.73*** (2.20)	—		
Former British colony	—		3.66*** (1.00)		—		1.61** (0.70)	—	6.33*** (2.07)			
Conflict	—	-18.80*** (0.98)	-1.45 (1.05)		—		2.52** (1.02)	-20.32*** (1.61)	—			
Muslim (%)	—		1.81* (1.06)		—		—	-262.06*** (30.50)	-209.38*** (81.46)			
Catholic (%)	—		-76.16** (30.34)		—		—	—	-4.36*** (1.65)			
Shared regional ideology	—		—		3.55** (1.75)		3.97** (1.72)		—			
Control of corruption	-0.58* (0.30)		—		1.06 (0.81)		-0.86** (0.39)		—		21.99** (10.60)	
Arab seat	1.50*** (0.30)		24.13*** (2.16)		—		—		—			

Numbers in parentheses are robust standard errors clustered on region × year. * significant at 10%, ** significant at 5%, *** significant at 1%.

Table 2.5a: Marginal Effects (Model 1, results of the model set out in section 2.4, see footnote 46. Dependent variable: election to UNSC)

Variables	Africa*			Asia*			EE*			GRUAC*			WEOG*					
	Group ≤ 1989	> 1989	UNGA ≤ 1989 > 1989	Group ≤ 1989	> 1989	UNGA ≤ 1989 > 1989	Group ≤ 1989	> 1989	UNGA ≤ 1989 > 1989	Group ≤ 1989	> 1989	UNGA ≤ 1989 > 1989	Group ≤ 1989	> 1989	UNGA ≤ 1989 > 1989			
Turn-taking norm	5.88	3.62	17.60	9.98	1.74	0.16	0.33	2.88	0.16	1.67	0.45							
GNI per capita (log)	0.36	1.62	0.22	3.07	1.74	-0.10	-0.19	0.24	0.13	0.62	0.17							
Population (log)	0.89	0.55	9.82	5.56	0.06	0.12	0.10	0.10	0.13	1.28	0.35							
Territory (log)	-0.18	-0.11	-1.36	-0.77	0.17	0.33	0.10	0.10	0.06	-0.25	-0.07							
USA voting in the UNGA	-2.82	-1.74	12.90	7.33	-0.09	-0.19	-0.52	-0.52	-0.29	-5.31	-1.44							
Russia voting in the UNGA	7.83	4.83	15.10	8.57	-0.73	-1.48	1.07	1.07	0.60	-1.75	-0.47							
Pariah state	-18.63	-11.49	-46.30	1.49	-26.20	0.85	-	-0.18	-1.75	-0.10	-0.98							
IMF program participation	0.80	0.49	-3.20	-1.81	0.16	0.33	0.05	0.05	0.03	1.02	0.28							
New World Bank projects	0.22	0.13	0.62	0.35	-0.02	-0.04	0.01	0.01	0.003	0.90	0.24							
US economic aid (log)	0.04	0.02	0.14	0.08	-0.01	-0.01	-0.02	-0.02	-0.01	-0.06	-0.001							
US military aid (log)	-0.09	-0.06	0.03	0.02	0.04	0.08	0.08	-0.001	-0.001	-0.06	0.01							
Debt service (% GNI)	1.21	0.75	0.02	0.01	-0.05	-0.09	0.14	0.14	0.08	-0.04	-0.01							
OIC	-0.34	-0.21	-	-	-	-	-	-	-	-	-							
JUSCANZ	-	-	-	-	-	-	-	-	-	0.98	0.27							
EU	-	-	-	-	-	3.78	-	7.61	-	0.44	0.12							
NATO	-	-	-	-	-	-2.07	-	-4.16	-	-0.03	-0.01							
G77 and NAM	-	-	3.85	2.18	-	-	-	-	-	-	-							
G77 only, not in NAM	-	-	-17.60	-9.95	-	-	-	0.79	0.44	-	-							
NAM only, not in G77	-	-	-	-	-	-	-	-	-	-	-							
Peacekeeping troops (log)	0.24	0.15	0.92	0.52	0.01	0.01	0.04	0.04	0.02	0.08	0.02							
Democracy	0.98	0.60	4.12	-3.42	2.33	-1.94	-1.86	1.56	-3.74	3.14	-0.26	3.31	-0.15	1.85	1.93	-	0.52	-
Former British colony	0.07	0.04	9.45	5.35	-	-	-	0.64	0.36	1.70	0.46							
Former French colony	0.78	0.48	-	-	-	-	-	-	-	-	-							
Conflict	-0.74	-22.16	-0.46	-13.67	-4.19	-2.37	-	-	0.40	-3.04	0.22	-1.70	-	-	-	-	-	
Muslim (%)	0.16	0.10	5.58	3.16	-0.42	-0.84	0.03	-48.78	0.01	-65.50	-17.70							
Catholic (%)	0.03	0.02	-205.00	-116.00	0.21	0.43	0.32	0.18	0.18	-0.85	-0.23							
Shared regional ideology	-0.70	-0.43	3.62	2.05	0.37	0.75	0.63	0.35	0.35	2.41	0.39	0.65	0.11					
Control of corruption	-0.90	-0.55	0.87	0.49	0.14	0.29	-0.17	-0.10	-0.10	0.19	0.05							
Arab seat	2.41	1.49	62.60	35.50	-	-	-	-	-	-	-							

*Scale applied to columns:

1×10³

1×10¹⁸

1×10⁹

1×10¹²

1×10⁴

1×10⁷

Table 2.5b: Marginal Effects (Model 2, results of the model set out in section 2.4, see footnote 46. Dependent variable: election to UNSC)

Variables	<i>Africa</i> [*]		<i>Asia</i> [*]		<i>EE</i> [*]		<i>GRU/LAC</i> [*]		<i>WEOG</i> [*]	
	Group ≤ 1989	> 1989	UNGA ≤ 1989	> 1989	Group ≤ 1989	> 1989	UNGA ≤ 1989	> 1989	Group ≤ 1989	> 1989
Turn-taking norm	0.88	0.81	1.73	0.86	0.36	0.03	0.04	0.03	1.29	2.14
GNI per capita (log)	0.12	0.11	0.33	0.16	-	-	0.04	0.03	-	-
Population (log)	0.11	0.10	0.97	0.48	-	-	0.02	0.02	0.92	1.52
Territory (log)	-	-	-0.14	-0.07	0.73	0.05	0.02	0.02	-	-
Russia voting in the UNGA	1.51	1.39	-	-	-	-	0.22	0.18	-	-
Pariah state	-3.77	-	-3.45	-	-4.98	-	-	-	-	-
New World Bank projects	0.05	-	0.05	-	0.08	-	-	-0.37	0.24	0.40
US economic aid (log)	-	-	-	-	-	-	-	-	-0.04	-0.06
US military aid (log)	-	-	-	-	0.11	0.01	-	-	-0.06	-0.10
Debt service (% GNI)	0.20	0.18	-	-	-	-	0.02	0.02	-	-
EU	-	-	-	-	13.70	0.96	-	-	0.32	0.53
NATO	-	-	-	-	-7.81	-0.55	-	-	-	-
G77 and NAM	-	-	-	-	-	-	0.10	0.08	-	-
G77 only, not in NAM	-	-	-3.51	-1.75	-	-	0.06	0.05	-	-
Peacekeeping troops (log)	0.04	0.04	0.08	0.04	-	-	-	-	-	-
Democracy	-	-	-0.51	-0.25	5.61	-0.47	0.39	-0.03	2.73	4.53
Former British colony	-	-	0.99	0.49	-	-	0.04	0.04	1.61	2.67
Conflict	-	-4.32	-	-3.95	-	-	0.07	0.05	-	-
Muslim (%)	-	-	0.49	0.24	-	-	-7.00	-5.71	-53.20	-88.30
Catholic (%)	-	-	-20.60	-10.20	-	-	-	-	-1.11	-1.84
Shared regional ideology	-	-	-	-	-	0.09	-	-	-	-
Control of corruption	-0.13	-0.12	-	-	0.37	0.03	-0.02	-0.02	-	-
Arab seat	0.34	0.31	6.51	3.24	-	-	-	-	-	-

*Scale applied to columns:

1×10^{-2}

1×10^{-5}

1×10^9

1×10^3

1×10^6

Chapter 3

Equitable Representation in the Councils of the United Nations: Theory and Application

3.1 Introduction

Decision-making within international organisations is sometimes made by voting bodies that comprise a proper subset of the membership (a “council”). The pre-eminent such council, and the primary motivator of this Chapter, is the UNSC, the only international body with the power to authorise the use of armed force. At any one time, the UNSC contains only 15 members from a total UN membership of 193. A second council operating within the UN, the United Nations Economic and Social Council (ECOSOC), contains 54 elected member countries at any one time. It is responsible for coordinating the economic, social and related work of 14 UN specialised agencies including the World Bank and International Monetary Fund.⁵¹

In this Chapter we develop a theoretical framework for analysing democratic equitability in such Councils. We then apply the theory to the UNSC. The standard approach to formal quantitative appraisal of democratic equitability in international voting bodies is based upon Penrose’s (1946) square-root rule. As discussed in Chapter 1, the UNSC is essentially the only major international body that is yet to receive a formal quantitative appraisal of its democratic equitability.

The research in this Chapter contributes to both the theory and application of democratic equitability in voting bodies. In respect of theory, our first contribution is to formally define a council voting game (CVG), to describe the Councils empirically observed in the

⁵¹ Why do councils exist? In the case of military or emergency action, the lengthy deliberations of a fully representative body are thought to prevent such a body from being able to react with sufficient speed to developing security threats. Alternatively, councils may function in domains deemed to require detailed or specialised analysis (ECOSOC being an example). Councils can also arise at the national level. For instance, some countries have “Privy” or “Executive” Councils with the right to enact legislation during states of emergency, and/or committees that perform detailed tasks such as voting over proposed new legislation on a clause-by-clause basis prior to final approval by the parliament.

UN. In particular, we consider a setting in which a fully representative “assembly” allocates (by election or otherwise) members to a “council”. Existing measures of democratic equity with respect to fully representative bodies at time t require the triple (A_t, Q_t, V_t) , where A_t is the set of members, Q_t is the set of member populations, and V_t is the set of member relative voting powers. By contrast equity measures for CVGs are defined at time t with respect to a 7-tuple, C , that nests (A_t, Q_t) , but in which V_t derives from two primitives – one that determines the total relative voting power of the countries belonging to a region, and a second that divides this total between countries. In addition, C also details (i) the regional partition on the members of the fully representative body (the UN membership is divided into five regions) (ii) the division of council seats to regions; and (iii) the stochastic process that determines the allocation of countries to the council.

Second, we define three equity concepts for CVGs that distinguish between ex-ante and ex-post notions of equity, and between equity at the country and regional levels. Ex-ante equity requires that the democratic principle of one person one expected vote (OPOEV) applies among all world citizens before the allocation of countries to the council is known. Ex-ante equity, therefore, depends upon both a country’s voting power when a council member, and *how often* they are a council member. Ex-post equity requires that, once allocation to the council is known, the democratic principle of one person one vote (OPOV) applies among the citizens of member countries of the council. It is applicable if council members are viewed as representing only their own citizens, rather than the region they belong to as a whole. Region equity requires that the total voting power of a region on the council (if its members vote independently) corresponds to that which it would obtain in a fully representative body under the OPOV principle. It is applicable if members on the council are viewed as representing their region as a whole, rather than solely their own population.

We show there is an equity rule that implements each equity concept. The ex-post equity concept is satisfied by the implementation among the members of the council of Penrose’s

(1946) square-root rule for voting power. Ex-ante equity also requires a square-root rule to hold, but on the expected voting powers before the allocation of countries to the council is known. Regional equity does not require any property of the individual voting powers, but requires that a form of aggregated square-root rule for voting power hold at the regional level. We establish an impossibility result among our notions of equity: no CVG can be both ex-post equitable and also region equitable. As such, a CVG that is equitable if council members only represent themselves (as opposed to their region) will necessarily fail to achieve the desired level of regional representation, and the reverse also holds.

Given that no CVG can attain all three of our equity concepts, we look for (first-best) equity rules that implement two of the three concepts. We define a CVG as *country first-best* if it attains both the ex-post equity and ex-ante equity concepts and as *regional first-best* if it attains both the ex-ante equity and regional equity concepts. We find that attainment of the country first-best requires, first, that voting power on the council satisfies Penrose's square-root rule, and, second, that every country have an equal probability of allocation to the council. The latter condition implies that the number of council seats allocated to each region must be in proportion to the number of countries within each region. The regional first-best, however, is consistent with a range of rules. These include, as a special case, a square-root rule on the allocation probabilities (rather than on the voting powers), together with a flat rule for voting power.

With respect to application, this is the first research we are aware of to present a quantitative assessment against formal equity concepts of the equitability of the UNSC for both individual countries and regions. As we discuss in more detail in Section 3.3, the UNSC is witnessing a protracted reform debate that centres on national and regional representation (see, e.g., Franck, 2003). At the regional level, reformers argue that Africa and Asia have too little power, and there is a claimed north-south divide. At the national level, countries such as Germany and Japan – who are only eligible for NPM status on the UNSC – claim to be severely under-represented, and the Permanent Members (PMs) – who

wield an individual veto – are argued to have too much representation.

Our analysis presents more nuanced conclusions. Our regional equity concept indeed shows that Africa, Asia and Latin America are under-represented as a whole, and that substantial north/south inequity exists. Within this picture, however, some countries in these regions actually receive too much voting power.

We do not find that the PMs receive too much voting power according to our ex-post equity concept – indeed these countries are in some cases substantially under-represented. We do, however, find that the combination of preferential voting power *and* the right to be ever-present on the UNSC makes PMs substantially over-represented in the metric of *expected* voting power. Japan is under-represented from both an ex-ante and ex-post perspective, but Germany is, we find, over-represented according to our ex-ante equity concept.

Our first-best concepts provide little support for the notion that the power of veto should be abolished. Both concepts are consistent with the existence of veto players, and our country first-best entails some countries receiving substantially higher voting power than do PMs under the present arrangements. We find, however, that no country is a veto player when a member of the UNSC *and* ever-present on the UNSC under either first-best concept. The analysis also suggests a case for allocating the right of veto to a different set of countries.

The plan of the chapter is as follows: Section 3.2 develops a theoretical framework for the analysis of democratic equity in councils; Section 3.3 presents an application of the theory to the UNSC; and Section 3.4 concludes. All proofs are located in the Appendix.

3.2 Theory

In this section we consider a setting in which a fully representative “assembly” allocates members to a “council”. As with other aspects of the model, this setting is intended to

mirror the structure observed within the UN, in which context the assembly should be interpreted as the UNGA, the main deliberative body of the UN containing all 193 of its members, and the council could refer either to the UNSC or to ECOSOC. As in the UNGA, we partition the assembly membership into regional groups. Countries are then allocated to the council in fixed proportions from each of the regions.

3.2.1 Council Voting Games

In this section we formally develop a class of voting game we term a *council voting game* (CVG). We begin by describing the elements of a CVG at a given time t .

Let the (fully-representative) assembly be denoted as the finite set A_t . We write $A_t = \cup_j R_{jt}$, where R_{jt} is the j^{th} region, $j \in J$. Let $R_t = \{R_{jt}\}_{j \in J}$ denote the set of regional partitions of A_t . Each region is a set of countries and we define a_{ij} as the i^{th} country within R_{jt} . Each country possesses a population denoted $q_{ijt} \in \mathbb{N}$, and let $Q_t = \{q_{ijt}\}_{a_{ij} \in A_t}$ denote the set of member populations.

The council is formed of a set of members $M_t \subset A_t$. The number of seats belonging to the members of each region j is given by the vector $\mathbf{n}_t = (n_{1t}, n_{2t}, \dots, n_{|J|t})^T$, where it is assumed that the number of seats for each region is always smaller than the size of the region, $|R_{jt}| > n_{jt}$. The size of the council is denoted by $N_t \equiv |M_t| = \mathbf{1} \cdot \mathbf{n}_t < |A_t|$.

Rather than specify a method of allocation of countries to the council, here we adopt a reduced form representation that allows for essentially any allocation method. An *allocation process* P is a stochastic process that induces, at every time t , a probability $p_{ijt} \equiv \Pr(a_{ij} \in M_t)$ of council membership. By definition, the p_{ijt} must satisfy $\sum_{a_{ij} \in R_j} p_{ijt} = n_{jt}$. The allocation process applying at time t is denoted P_t .

We assume that each country possesses a score $s_{ijt} \geq 0$, where the set of scores is denoted as $S_t = \{s_{ijt}\}_{a_{ij} \in A_t}$. If allocated to the council, s_{ijt} translates into a realised voting power, β_{ijt} ,

according to $\beta_{ijt} = w_{jt}s_{ijt}$, where $\sum_{a_{ij} \in M_t} w_{jt}s_{ijt} = 1$. The w_{jt} are regional weights of the form $w_{jt} = w_t \left(\sum_{a_{ij} \in M_t \cap R_{jt}} s_{ijt} \right)$. Note that the s_{ijt} are specified ex-ante (before M_t is realised), but the w_{jt} are not, in general determined until M_t is realised.⁵² Thus, once M_t is known, the w_{jt} may be employed to choose the sum of the voting powers of the countries belonging to a given region.

We may now define a CVG in two parts:

Definition 3.1

- (i) A council voting game at time t is a tuple $C_t = (A_t, \mathbf{n}_t, R_t, Q_t, P_t, S_t, w_t)$.
- (ii) A council voting game is the set $C = \{C_t\}_{t \in T}$.

3.2.2 Equity in CVGs

In order to derive equity concepts for a CVG at a point in time t_0 we conduct a thought experiment in which we hold constant the elements of C as at time t_0 , and examine the CVG formed by the resulting infinite repetition of C_{t_0} .

This approach may be interpreted as yielding *a-priori* measures of equity, for the assessment of equitability is based on the hypothetical continuation of a fixed state that is based only on information known up to time t_0 .⁵³ This a-priori approach implies that to determine equity concepts for C at time t_0 , and regardless of the actual evolution of C beyond time t_0 , we may consider the CVG C' described at every time $t \in T'$ by $C'_t = C_{t_0}$, where $T' = 1, 2, \dots$ is an infinite set. For notational emphasis, we drop all time subscripts with respect to C_{t_0} , such that $C_{t_0} = (A, \mathbf{n}, R, Q, P, S, w)$. Accordingly, we write $w_{t_0}(\cdot) = w(\cdot)$, $q_{ijt_0} = q_{ij}$, $s_{ijt_0} = s_{ij}$, and so on.

⁵² In practice, once the β_{ijt} are known, they must be induced by an appropriate decision rule – a mapping from the space of voting outcomes of the council members to an outcome space, satisfying appropriate monotonicity conditions. See, e.g., Freixas and Zwicker (2003) for a general class of (j,k) decision rules.

⁵³ The alternative *a-posteriori* approach is instead backwards looking, using historical data to estimate realised equitability over a period of time.

With respect to C' , let the *expected voting power* under P of country a_{ij} at time t (before the allocation to the council is realised) be given by $\alpha_{ijt} = p_{ijt}s_{ij}\mathbf{E}_{M_t \in \mathcal{M}_t}(w_{jt})$, where $\mathbf{E}_{M_t \in \mathcal{M}_t}(w_{jt})$ denotes the expectation of w_{jt} over \mathcal{M}_t , where $M_t \in \mathcal{M}_t$ if and only if $|M_t \cap R_j| = n_{jt}$ and $p_{ijt} > 0$ for all $a_{ij} \in M_t$. Between the elements of two vectors \mathbf{x} and \mathbf{y} containing country-level statistics x_{ij} and y_{ij} , we write $x_{ij} \propto_M y_{ij}$ to denote that there exists a $\lambda_t > 0$ at every time t such that $x_{ij} = \lambda_t y_{ij}$ for all $a_{ij} \in M_t$ such that $M_t \in \mathcal{M}_t$. We define \propto_R and \propto_A analogously, but where \propto_R requires proportionality to hold for all $a_{ij} \in R_j$; and \propto_A requires proportionality to hold for all $a_{ij} \in A$. Likewise, we define \propto_J , which requires proportionality to hold for all $j \in J$ between the elements of two vectors containing region-level statistics.

To focus on empirically relevant cases, we henceforth impose three further assumptions. First, as no two UN members have identical recorded populations, we assume that more than N of the q_{ij} are distinct. Second, we assume that $p_{ijt} = 0$ for less than $|A| - N$ countries at any time t , to rule out degenerate cases in which the same N countries are allocated to the council every time an allocation is made. Together, these assumptions are sufficient to imply that $\sum_{a_{ij} \in M_t} \sqrt{q_{ij}}$ is a random variable before M_t is realised. Third, we assume that $p_{ijt} \neq 0$ on a non-empty subset of T' for every $a_{ij} \in A$. This assumption rules out the existence of countries that can never be allocated to the council, hence $s_{ij} \propto_M \beta_{ijt}$ implies $s_{ij} \propto_A \beta_{ijt}$.

2.2.1 Equity concepts

We base our concepts of democratic equity upon an idealised three-stage decision-making process. In Stage 1, a national ballot is held in each country $a_{ij} \in A$ under a simple majority decision rule. In Stage 2, a subset $M_t \subset A$ of countries are allocated to the council. In Stage 3, countries $a_{ij} \in M_t$ cast their vote according to the outcome of their national ballot in Stage 1.

We develop three distinct equity concepts. Our first notion of equity we term ex-ante equity (AE). According to AE, it is desirable that the expected voting power of every

world citizen is equal before the allocation of countries to the council is made in Stage 2, i.e., OPOEV. The ex-ante perspective acknowledges that the power of a world citizen in the council depends not only on the voting power of his or her country when it is a member of the council, but also on how frequently his or her country is a member of the council.

We develop two alternative concepts of ex-post equity. The first, which we term simply ex-post equity (PE), is that it is desirable that the democratic principle of OPOV hold among the citizens of council member countries, once these are known. This concept is of particular relevance if council members are viewed as representing their own populations, rather than their region at large.

Our final concept of equity, regional equity (RE), is also ex-post in nature. According to RE, it is desirable that the combined voting power of the council members from each region be proportionate with the level of representation that each region would obtain in a fully representative voting body satisfying OPOV. This concept is of particular relevance if council members are viewed as representing their region, rather than only themselves, for it entails that voting power be commensurate with the population of the region a country belongs to (rather than with its own country-specific population).⁵⁴

The distinction between our ex-ante and ex-post concepts of equity is analogous to the distinction made by scholars of law between “procedural” and “distributive” justice (e.g., Konovsky, 2000); and by scholars of psychology between “procedural” and “outcome” fairness (e.g., De Cremer *et al.*, 2010). The AE concept requires procedural equitability, but not outcome equitability, whereas PE and RE require outcome equitability, but not procedural equitability.

All three equity concepts need not apply to every council, or in equal degrees. In some contexts, country concerns may prevail over regional, while the opposite could apply in

⁵⁴ The logical ex-ante counterpart to RE is that the combined *expected* voting power of the council members from each region be proportional to the level of representation that each region would obtain in a fully representative voting body satisfying OPOV. We do not consider this equity concept separately, however, for if a CVG satisfies AE at time t , then the ex-ante counterpart to RE is necessarily satisfied too. See footnote 59 for further details.

other contexts. The applicability of RE relative to PE, for instance, depends largely on whether countries are viewed as representing only themselves, or the whole of the region to which they belong, when a member of the council. In the case of the UNSC, we appear to observe evidence of a concern for each equity notion. As we detail later, both country- and regional-level equity concepts are frequently cited by those that propose reform. In respect of ex-ante equity, it is notable that several of the proposals for reform of the UNSC detailed in Cox (2009) leave the country voting powers unchanged, but modify the allocation probabilities, suggesting that world leaders understand (at least intuitively) the importance of allocation probability as well as voting rights.⁵⁵

To help formalise each of these equity concepts we make the following assumption on voting in Stage 1:

Assumption 3.1 *Voting in Stage 1 is assumed, a-priori, to be independent within and across countries.*

As argued by, e.g., Felsenthal and Machover (1997c, 2003), Assumption 3.1 should be understood as reflecting Bernoulli's Principle of Insufficient Reason: a-priori we do not know how countries will actually vote. An alternative a-priori assumption might be that voting is perfectly correlated within regions, but independent across regions, such that the regions act as unitary blocs. We note, however, that if regions become unitary players the council becomes a fully-representative body that may be analysed with existing theory. In this sense, the analysis of equity in CVGs differs from that in fully representative bodies only if individual countries are a-priori distinct from regions.⁵⁶

Proposition 3.1 *Under Assumption 3.1:*

⁵⁵ Examples include proposals that allow some current NPMs to be ever-present members, proposals that would extend the term length of some NPM seats, and proposals that would introduce seats that are allocated on a strict rotation basis within regions.

⁵⁶ Empirically, countries on the UNSC do seem to act as distinct entities within regions. Each council member has full sovereignty over how it votes and countries pour large sums of money into campaigns for election to the UNSC (see, e.g., Malone, 2000), suggesting that they do not perceive membership by another of their regional group to be a perfect substitute for their own membership. Also, the voting behaviour in the UNGA of serving members of the UNSC is no more similar to that of their regional members than to the votes of the remaining UNGA members (Lai and Lefler, 2009).

- (i) a CVG is AE at time t_0 if and only if C' satisfies $\alpha_{ijt} \propto_A \sqrt{q_{ij}}$;
- (ii) a CVG is PE at time t_0 if and only if C' satisfies $\beta_{ijt} \propto_M \sqrt{q_{ij}}$;
- (iii) a CVG is RE at time t_0 if and only if C' satisfies $\sum_{a_{ij} \in M_i \cap R_j} \beta_{ijt} \propto_J \sum_{a_{ij} \in R_j} \sqrt{q_{ij}}$.

In interpreting Proposition 3.1, it is most straightforward to begin with part (ii), which restates the inspiration of Penrose (1946) that, under Assumption 3.1, OPOV is achieved by a decision rule that sets voting power in the council to be in proportion to the square-root of each country's population.⁵⁷ Part (i) may then be understood as simply requiring the same square-root rule to hold, but this time on the *expected* voting powers (before the allocation to the council in Stage 2 is known).

For part (iii), note that, under Assumption 3.1, it holds that the voting power of a region is the sum of the voting powers of the individual members.⁵⁸ Hence, via Penrose's square-root rule, a region's voting power in a fully representative body satisfying OPOV is proportional to $\sum_{a_{ij} \in R_j} \sqrt{q_{ij}}$.⁵⁹

3.2.3 Equity Rules

What restrictions are required on the underlying parameters to implement the conditions in Proposition 3.1? To assist in the analysis of this and later questions we first define some special cases in which either the s_{ij} , β_{ijt} or p_{ijt} are invariant on some dimensions:

Definition 3.2

- (i) (*regional s-invariance*) C' satisfies regional s -invariance if and only if $s_{ij} = s_{ij} = s_j$ for all $a_{ij}, a_{ij} \in R_j$ and for all $j \in J$;

⁵⁷ For equity rules under alternatives to Assumption 3.1 see Kirsch and Langner (2011).

⁵⁸ If Assumption 3.1 were replaced with the assumption that voting is correlated across countries within a region, but independent across regions, then a different concept would be required as regions would vote as blocs on the council and, in general, the voting power of a bloc does not equal the sum of the individual voting powers of the members when voting independently.

⁵⁹ Following on from footnote 54, if the condition for AE ($\alpha_{ijt} \propto_A \sqrt{q_{ij}}$) is summed over $a_{ij} \in R_j$ on both sides, then one obtains the natural statement of the ex-ante counterpart to RE.

- (ii) (β -invariance) C' satisfies β -invariance if and only if $\beta_{ijt} = \beta_{ij't} = \beta_{ij't'} = \beta$ for all $a_{ij}, a_{ij'} \in A$ and for all $t, t' \in T'$;
- (iii) (p_t -invariance) C' satisfies p_t -invariance if and only if $p_{ijt} = p_{ij't} = p_{ij}$ for all $a_{ij} \in A$ and for all $t, t' \in T'$;
- (iv) (regional p -invariance) C' satisfies regional p -invariance if and only if $p_{ijt} = p_{ij't} = p_{ij't} = p_j$ for all $a_{ij}, a_{ij'} \in R_j$, for all $t, t' \in T$ and for all $j \in J$;
- (v) (p -invariance) C' satisfies p -invariance if and only if $p_{ijt} = p_{ij't} = p_{ij't} = p$ for all $t, t' \in T'$ and for all $a_{ij}, a_{ij'} \in A$.

It is straightforward to observe that p -invariance and regional p -invariance both imply p_t -invariance, and that p -invariance implies regional p -invariance. Less obvious is that β -invariance implies regional s -invariance. As the weights w_{jt} are region specific, they cannot be used to adjust the s_{ij} of an individual country. Hence, β -invariance is implemented if and only if regional s -invariance holds and $w(z_{jt}) = n_j(Nz_{jt})^{-1}$.

We now state our implementation rules:

Proposition 3.2 *Under Assumption 3.1:*

- (i) C is AE at time t_0 if and only if C' satisfies (a) p_t -invariance; and (b) $p_{ij}^{\text{AE}} s_{ij}^{\text{AE}} \propto_R \sqrt{q_{ij}}$;
- (ii) C is PE at time t_0 if and only if C' satisfies (a) $w(z_{jt}) = \frac{1}{\sum_{j \in J} z_{jt}}$; and (b) $s_{ij}^{\text{PE}} \propto_A \sqrt{q_{ij}}$;
- (iii) C is RE at time t_0 if and only if C' satisfies $w(z_{jt}) = \left(\frac{\sum_{A_{ij} \in R_j} \sqrt{q_{ij}}}{\sum_{A_{ij} \in A} \sqrt{q_{ij}}} \right) \frac{1}{z_{jt}}$.

Part (i) of Proposition 3.2 establishes a rule for AE. Intuitively, it states that, under p_t -invariance, any choice of the s_{ij} and p_{ij} such that $p_{ij}^{\text{AE}} s_{ij}^{\text{AE}} \propto_R \sqrt{q_{ij}}$ holds within region is implied by AE, and implies AE for an appropriate choice of $w(\cdot)$. This result is consistent with a range of rules for the underlying s_{ij} and p_{ij} , including a flat rule for the p_{ij} together

with a square-root rule for the s_{ij} , and vice-versa. Part (ii) of Proposition 3.2 establishes an equity rule that implements PE. Condition (a) requires that $w_{jt} \propto_A \left(\sum_{a_{ij} \in M_t} s_{ij} \right)^{-1}$, for this choice of $w(\cdot)$ implies that, at each time t , the β_{ijt} are obtained by simply normalising the s_{ij} of the council members, such that $s_{ij}^{\text{PE}} \propto_A \beta_{ijt}$. Condition (b) then ensures Penrose's square-root rule by asking the s_{ij}^{PE} to satisfy a square-root rule. As PE does not require procedural equity, however, it imposes no requirements on the p_{ijt} .

Part (iii) establishes an equity rule that implements RE. As RE imposes a requirement upon the sum of the voting powers of the council members from each region, a restriction must be placed on the regional weights in order to guarantee that $\sum_{a_{ij} \in M_t \cap R_j} \beta_{ijt} \propto_J \sum_{a_{ij} \in R_j} \sqrt{q_{ij}}$. Note, however, that RE imposes nothing upon the distribution of voting power within each region, so no restriction upon the s_{ij} is made.

Although we show in the next section that AE is compatible with both PE and RE, we find that no CVG can be both PE and RE:

Proposition 3.3 *Under Assumption 3.1 no C is both PE and RE at time t_0 .*

The proof of Proposition 3.3 shows that for both PE and RE to hold, then $\sum_{a_{ij} \in M_t \cap R_j} \sqrt{q_{ij}}$ must be non-random. The most general way this could occur is if the q_{ij} satisfied the following property:

Definition 3.3 (*q sub-regional invariance – qSRI*) *C' satisfies qSRI if and only if $q_{ij} = q_{i'j}$ for all $a_{i'j}, a_{ij} \in r_{k_j}$ where the r_{k_j} partition R_j for each j , and $k_j = 1, \dots, g_j$, where g_j is an integer belonging to $[1, n_j]$.*

If n_{k_j} seats are allocated to each sub-region r_{k_j} , where $\sum_{a_{ij} \in r_{k_j}} n_{k_j} = n_j$, then under qSRI we have that $\sum_{a_{ij} \in M_t \cap R_j} \sqrt{q_{ij}} = \sum_{k_j \in g_j} n_{k_j} \sqrt{q_{ij}}$, which is non-random. But we rule out qSRI by assumption in Section 3.2.2 (as, empirically, it is wholly implausible), from which the Proposition follows. Accordingly, in a world where country populations are distinct, it is

necessary for world leaders to accept that a CVG that achieves PE will necessarily entail some degree of regional inequity, and that the reverse also holds.

3.2.3.1 The first-best

Proposition 3.3 implies that no equity rule can achieve all three concepts we consider. It is possible, however, to derive equity rules that achieve two of the three concepts. The rule that achieves both AE and PE we term the *country first-best* (CFB), and the rule that achieves both AE and RE we term the *regional first-best* (RFB).

We first prove a helpful Lemma:

Lemma 3.1 *If a CVG satisfies $p_{ijt} \propto_A f_{ijt}$, then $n_j \propto_J \sum_{a_{ij} \in R_j} f_{ijt}$.*

Lemma 3.1 follows from the observation that the allocation probabilities must, by definition, satisfy $\sum_{a_{ij} \in R_j} p_{ijt} = n_j$, hence $n_j = \sum_{a_{ij} \in R_j} p_{ijt} \propto_J \sum_{a_{ij} \in R_j} f_{ijt}$.⁶⁰

Proposition 3.4 *Under Assumption 3.1:*

(i) *(Country first-best) C is AE and PE at time t_0 if and only if C' satisfies (a)*

$$w(z_{jt}) = \frac{1}{\sum_{j \in J} z_{jt}}; \text{ (b) } p\text{-invariance} - \text{hence } n_j^{\text{CFB}} \propto_J |R_j|; \text{ and (c) } s_{ij}^{\text{CFB}} \propto_A \sqrt{q_{ij}}.$$

(ii) *(Regional first-best) C is AE and RE at time t_0 if and only if C' satisfies (a)*

$$w(z_{jt}) = \left(\frac{\sum_{A_{ij} \in R_j} \sqrt{q_{ij}}}{\sum_{A_{ij} \in A} \sqrt{q_{ij}}} \right) \frac{1}{z_{jt}}; \text{ and (b) } p_{ijt}^{\text{RFB}} s_{ij}^{\text{RFB}} \mathbf{E}_{M_t \in \mathcal{O}_t} \left(\frac{1}{\sum_{A_{ij} \in M_t \cap R_j} s_{ij}^{\text{RFB}}} \right) \propto_A \frac{\sqrt{q_{ij}}}{\sum_{A_{ij} \in R_j} \sqrt{q_{ij}}}.$$

According to Proposition 3.4, the country first-best is achieved by the combination of Penrose's square-root rule for voting power (which is implied by conditions *a* and *c*) together with a flat rule for allocation probability. The proof is a straightforward consequence of parts (i) and (ii) of Proposition 3.2. The result illustrates that, although the

⁶⁰ As the n_j are integers, this proportionality condition cannot hold exactly unless $(N \sum_{a_{ij} \in R_j} f_{ijt}) (\sum_{j \in J} \sum_{a_{ij} \in R_j} f_{ijt})^{-1}$ is an integer for every j . We therefore interpret the condition $n_j \propto_J \sum_{a_{ij} \in R_j} f_{ijt}$ to imply that, for given f_{ijt} , the n_j are set to achieve maximal proximity to exact proportionality (under an appropriate metric).

AE and PE concepts are compatible, potential tensions exist between them. On the one hand, there is no inherent conflict if all countries share the same allocation probability. On the other hand, if the major world powers desire to be members of bodies such as the UNSC and ECOSOC on a more regular basis than are lesser powers, then unequal allocation probabilities are required. With unequal allocation probabilities, AE implies that a country with a low allocation probability must be compensated for longer expected spells outside the council by the exercise of greater voting power when a member of the council. In this case, AE is in conflict with PE, for it results in systematic deviations from Penrose's square-root rule.

Part (ii) of the Proposition, which is a straightforward consequence of parts (i) and (iii) of Proposition 3.2, establishes the conditions needed for AE and RE. The Proposition clarifies that $p_{ij}^{\text{AE}} s_{ij}^{\text{AE}} \propto_R \sqrt{q_{ij}}$ is a necessary condition for RFB, but it is not sufficient, for (unlike under AE alone) we can now no longer choose $w(\cdot)$ arbitrarily. As there remains a degree of flexibility over the choice of the underlying s_{ij} and p_{ij} , that satisfy RFB, in the following corollary we highlight some special cases.

Corollary 3.1 *If C satisfies AE and RE at time t_0 then:*

(i) *If C satisfies regional s-invariance then it also satisfies (a)*

$$w(s_j^{\text{RFB}}) = \frac{1}{n_j s_j^{\text{RFB}}} \left(\frac{\sum_{A_{ij} \in R_j} \sqrt{q_{ij}}}{\sum_{A_{ij} \in A} \sqrt{q_{ij}}} \right); \quad (b) \quad p_{\tau}\text{-invariance}; \quad \text{and} \quad (c)$$

$$p_{ij}^{\text{RFB}} \propto_A n_j \left(\frac{\sqrt{q_{ij}}}{\sum_{A_{ij} \in R_j} \sqrt{q_{ij}}} \right) \propto_R \sqrt{q_{ij}};$$

(ii) *If C satisfies β -invariance then it also satisfies (a) $w(s_j^{\text{RFB}}) = \frac{1}{N s_j^{\text{RFB}}}$; (b) p_{τ} -*

invariance; and (c) $p_{ij}^{\text{RFB}} \propto_A \sqrt{q_{ij}}$.

(iii) *If C satisfies regional p-invariance then it also satisfies*

$$s_{ij}^{\text{RFB}} \left(\sum_{0 \leq h_1 < \dots < h_{n_j} \leq |R_j|} \frac{1}{\sum_{k=1}^{n_j} s_{h_k j}^{\text{RFB}}} \right) \propto_A \frac{1}{p_j^{\text{RFB}}} \left(\frac{|R_j|!}{n_j! (|R_j| - n_j)!} \right) \left(\frac{\sqrt{q_{ij}}}{\sum_{A_{ij} \in R_j} \sqrt{q_{ij}}} \right) \propto_R \sqrt{q_{ij}} ;$$

(iv) If C' satisfies p -invariance then it also satisfies

$$s_{ij}^{\text{RFB}} \left(\sum_{0 \leq h_1 < \dots < h_{\lfloor N|R_j||A|^{-1} \rfloor} \leq |R_j|} \frac{1}{\sum_{k=1}^{\lfloor N|R_j||A|^{-1} \rfloor} s_{h_k j}^{\text{RFB}}} \right) \propto_A \frac{|R_j|!}{\left(\frac{N|R_j|}{|A|} \right)! \left(\frac{(|A| - N)|R_j|}{|A|} \right)!} \left(\frac{\sqrt{q_{ij}}}{\sum_{A_{ij} \in R_j} \sqrt{q_{ij}}} \right) \propto_R \sqrt{q_{ij}} .$$

If the s_{ij} in part (ii) of Proposition 3.4 are restricted to satisfy regional s -invariance then we have $\sum_{a_{ij} \in M_i \cap R_j} s_{ij}^{\text{RFB}} = n_j s_j^{\text{RFB}}$. As this is non-random, $\sum_{a_{ij} \in M_i \cap R_j} s_{ij}^{\text{RFB}}$ may be removed from the expectation in condition (b) of part (ii) of Proposition 3.4 to give part (i) of Corollary 3.1. Part (ii) uses Lemma 3.1 to additionally impose $n_j^{\text{RFB}} = N \left(\sum_{a_{ij} \in R_j} \sqrt{q_{ij}} \right) \left(\sum_{a_{ij} \in A} \sqrt{q_{ij}} \right)^{-1}$. According to part (i), therefore, RFB is consistent with a flat rule for voting power together with a square-root rule for allocation probability (where both rules hold within, but not across, regions). Part (ii) clarifies, that, if the division of seats to regions is made proportional to $\sum_{a_{ij} \in R_j} \sqrt{q_{ij}}$, then RFB is consistent with a flat rule for voting power together with a square-root rule for allocation probability (where both rules hold within and across regions). Thus, the RFB concept is consistent with a square-root rule that – unlike Penrose’s – holds on the allocation probabilities rather than the voting powers.

Part (iii) of the Corollary considers the RFB concept when the allocation probabilities satisfy a flat rule within regions. Under this assumption, the s_{ij} follow a complex rule that relates to (but does not correspond to) a within-region square-root rule. Part (iv) is obtained by further setting $n_j^{\text{RFB}} = N|R_j||A|^{-1}$ in part (iii).⁶¹ Despite their apparently complex forms, these two rules for s_{ij} have a straightforward intuition. Suppose that we assert the approximation $\mathbf{E}_{M_i \in \mathcal{M}_i} \left(\left(\sum_{a_{ij} \in M_i \cap R_j} s_{ij} \right)^{-1} \right) \approx \left(\mathbf{E}_{M_i \in \mathcal{M}_i} \left(\sum_{a_{ij} \in M_i \cap R_j} s_{ij} \right) \right)^{-1}$ and, in violation of

⁶¹ As discussed in footnote 60, if $N|R_j||A|^{-1}$ is not an integer for some j , then that $N|R_j||A|^{-1}$ must be replaced in part (iv) of Corollary 3.1 with either $\lfloor N|R_j||A|^{-1} \rfloor$ or $\lceil N|R_j||A|^{-1} \rceil$ as appropriate.

Jensen's inequality, proceed under the basis of equality holding between these two entities.

Under regional p -invariance, we then obtain $\mathbf{E}_{M_t \in \mathcal{M}_t} \left(\sum_{a_{ij} \in M_t \cap R_j} s_{ij} \right) = n_j |R_j|^{-1} \sum_{a_{ij} \in R_j} s_{ij}^{\text{RFB}}$.

Substituting this expression into condition (b) in part (ii) of Proposition 3.4 we then obtain a within-region square-root rule for s_{ij} , which becomes a square-root rule within and across regions under p -invariance. Therefore, the rules for s_{ij} in parts (iii) and (iv) of the Corollary

deviate from square-root rules to the extent that $\mathbf{E}_{M_t \in \mathcal{M}_t} \left(\left(\sum_{a_{ij} \in M_t \cap R_j} s_{ij} \right)^{-1} \right)$ deviates from

proportionality with $\left(\mathbf{E}_{M_t \in \mathcal{M}_t} \left(\sum_{a_{ij} \in M_t \cap R_j} s_{ij} \right) \right)^{-1}$.

Note that all the rules in Corollary 3.1 are monotonic within region in the sense that $s_{ij} \geq s_{i'j}$

$\Leftrightarrow q_{ij} \geq q_{i'j}$ for all $a_{ij}, a_{i'j} \in R_j$ and for all $j \in J$; and that an equivalent condition holds on the

p_{ijt} at all times $t \in T'$. If C' satisfies both of these conditions, we say it is *regional*

monotonic. Rules that imply regional monotonicity seem the most relevant empirically,

and we concentrate upon this class accordingly. We note, however, that AE may be

satisfied by a range of less empirically plausible rules in which one of s_{ij} or p_{ij} is a strictly

decreasing function of q_{ij} , and the other is an increasing function of q_{ij} that increases faster

than $\sqrt{q_{ij}}$.

3.3 Application

In this section we apply the theory of Section 3.2 to the case of the UNSC, the most

powerful organ within the United Nations, with the authority to make legally binding

resolutions to fulfil its mandate of maintaining international peace and security. To that

end, it can suspend economic and diplomatic relations between countries, impose

blockades, and authorise the use of armed force.

Under the present arrangements – which have been in place since 1965 – the UNSC is

comprised of 15 members, of which five – China, France, Russia, the United Kingdom,

and the United States – are ever-present and wield a veto on all non-procedural matters.

The remaining ten members are elected NPMs who serve time-limited two-year terms. The ten NPM seats are divided between five regional caucusing groups: one country from Eastern Europe (EE); two countries from each of the Western European and Others Group (WEOG), the Latin America and Caribbean Group (GRULAC – *el Grupo Latinoamericano y Caribeño*) and Asia; and three countries from Africa.⁶²

Both country and regional perspectives on equity are frequently cited by those that propose reform (e.g., Russett, O'Neill and Sutterlin, 1996; Hammer, 2002; Schwartzberg, 2003; Annan, 2005; Blum, 2005). From the country perspective, it is commonly argued that the right of veto of the five PMs gives these countries too great an influence; and that other countries are more deserving of PM status than are France and the UK (Germany and Japan both have larger populations and economies, and contribute more to the UN regular budget).⁶³ Nearly all governments wish to abolish or limit the right of veto, which is viewed as an unfair and anachronistic legacy of the Second World War (Fassbender, 2004; Schwartzberg, 2003).

From the regional perspective it is argued that Africa and Asia are under-represented as together they account for around 75 per cent of the UN population, but are allocated only 20 per cent of the PM seats, and 50 per cent of the NPM seats; and that there exists a broader representational imbalance between the north – defined in Zifcak (2006: footnote 9) as comprising EE, and the WEOG – and south (Africa, Asia and the GRULAC).

In the absence of a formal theoretical framework for measuring the equitability of CVGs, or for addressing issues relating to region- and country-specific notions of equity, existing quantitative analyses are unable to directly assess these claims. Instead, extant studies use the voting power of a PM relative to a NPM as an informal indicator of equitability (see,

⁶² See Table 3.1 for the full membership of each of the regional groups (excluding PMs). Of the PMs, China is a member in Asia, Russia in EE, and France and the UK in the WEOG. Technically, the United States is not a member of any regional group, but it attends meetings of the WEOG as an observer and is considered to be a member of that group for electoral purposes (UN, 2012). For the purposes of this Chapter, therefore, we give the United States membership in the WEOG.

⁶³ As of 2012, Japan contributes 12.5 per cent of the UN regular budget, Germany 8.0 per cent, the UK only 6.6 per cent, and France only 6.1 per cent (UN Secretariat, 2011).

e.g., Hosli *et al.*, 2011; O’Neill, 1996; Strand and Rapkin, 2011; Straffin, 1993: 180). The theoretical framework of Section 3.2 permits, for the first time, a formal quantitative assessment of the equitability of the UNSC for both individual countries and regions.

Another contribution with respect to the extant literature is the choice of decision rule to represent the UNSC. The studies above model the UNSC decision rule as a binary rule in which members can vote only for or against a resolution, yet – as discussed in Chapter 1 – this framework does not faithfully represent voting rules in the UNSC. We therefore allow here for a ternary decision rule, which is a map from the set $\{-1, 0, 1\}^N$ to the set $\{-1, 1\}$, satisfying the monotonicity conditions set out in Felsenthal and Machover (1997c: Definition 2.2).

3.3.1 Measuring Deviations from Equitability

It is desirable to be able to measure, in an objective sense, the proximity of the CVG representing the UNSC, $C_{\text{UNSC}} = \{C_{\text{UNSC},t}\}_{t \in T}$, to each equity concept at time t_0 , where we set $t_0 = 2012$. To this end, we adopt the metric $d(\mathbf{X}, \mathbf{Y}) = \frac{1}{2} \sum |X_i - Y_i|$, where \mathbf{X} and \mathbf{Y} are unit-vectors, which corresponds to the *index of distortion* used in Felsenthal and Machover (2004, 2007), and commonly attributed to Loosemore and Hanby (1971).

Let PM be the set of PMs and OM be the set of the remaining 188 “ordinary” members. We model the UNSC in the framework of the previous section by setting $s_{ij} = \beta_{PM}$ for $a_{ij} \in PM$, $s_{ij} = \beta_{NPM}$ for $a_{ij} \in OM$, and $w(z_{jt}) = \left(\sum_{j \in J} z_{jt}\right)^{-1} = 1$. As PMs are guaranteed allocation to the UNSC, we have $p_{ijt} = 1$ for these countries. We then obtain $\alpha_{ijt} = \beta_{PM}$ for $a_{ij} \in PM$ and $\alpha_{ijt} = p_{ijt} \beta_{NPM}$ for $a_{ij} \in OM$. From part (i) of Proposition 3.1 and condition (b) of part (ii) of Proposition 3.2, we define proximity measures on C_{UNSC}^1 (as at 2012) with respect to our two country-based equity measures as

$$AE = 1 - \mathbf{E}_{t \in T'} (d(\boldsymbol{\alpha}_t, \boldsymbol{\alpha}^{\text{AE}})); \quad PE = 1 - d(\boldsymbol{\beta}, \boldsymbol{\beta}^{\text{PE}});$$

where α_t is the scaled $|A| \times 1$ unit vector of the α_{ijt} ; $\alpha^{\text{AE}} = \beta^{\text{PE}}$ is the scaled $|A| \times 1$ unit vector of the $\sqrt{q_{ij}}$; and β is the scaled $|A| \times 1$ unit vector of the UNSC voting powers.⁶⁴ Note that these two measures lie on the unit interval, with unity indicating maximal proximity, and zero indicating the minimum possible proximity.

To define an analogous proximity measure for C'_{UNSC} with respect to RE we note that we may write

$$\sum_{a_{ij} \in M_i \cap R_j} \beta_{ijt} = n_{j,\text{PM}}\beta_{\text{PM}} + (n_j - n_{j,\text{PM}})\beta_{\text{NPM}}. \quad (3.1)$$

Hence, using part (iii) of Proposition 3.1, we define

$$RE = 1 - d(\sum\beta, \beta^{\text{RE}}),$$

where $\sum\beta$ is the scaled $|J| \times 1$ unit vector of the right-side of equation 3.1, and β^{RE} is the scaled $|J| \times 1$ unit vector of the $\sum_{a_{ij} \in R_j} \sqrt{q_{ij}}$. To measure proximity to each of our two concepts of the first-best we examine the average proximity to the relevant two equity concepts:

$$CFB = 1 - \frac{1}{2} (\mathbf{E}_{t \in T'} (d(\alpha_t, \alpha^{\text{AE}})) + d(\beta, \beta^{\text{PE}})) = \frac{1}{2} (AE + PE);$$

$$RFB = 1 - \frac{1}{2} (\mathbf{E}_{t \in T'} (d(\alpha_t, \alpha^{\text{AE}})) + d(\sum\beta, \beta^{\text{RE}})) = \frac{1}{2} (AE + RE).$$

3.3.2 Computing equity measures

As is by now conventional in the literature, we adopt the normalised Banzhaf index as our measure of relative a-priori voting power. Note, however, that we adopt the ternary interpretation of the normalised Banzhaf index, as set out by Felsenthal and Machover (1997c), rather than the more conventional binary interpretation. We compute the ternary normalised Banzhaf index using the method of generating functions (see, e.g., Freixas,

⁶⁴ In the case of the UNSC we have $w(\cdot)$ of the form in condition (a) of part (ii) of Proposition 3.2. Hence, for PE, it is sufficient to test for proximity to condition (b).

2012). In this way we obtain the relative voting power of a PM as $\beta_{PM} \approx 0.10$ and $\beta_{NPM} \approx 0.05$, implying that a PM has almost exactly twice the voting power of a NPM.⁶⁵

Using country population data for 2012 we compute the vectors β^{PE} , $\Sigma\beta$, and β^{RE} defined in Section 3.3.1.⁶⁶ To compute α^{AE} , however, requires knowledge of the p_{ijt} for $a_{ij} \in OM$. We specify the allocation process P_{UNSC} by assigning each country in OM with a probability, $\rho_{ij} \in [0,1]$, where $\sum_{a_{ij} \in R_j} \rho_{ij} = 1$, with which it will be allocated to the UNSC if it is in competition with all members of its region and if only a single seat is being allocated.

We use empirical estimates of the ρ_{ij} that apply in the actual UNSC. These are taken from our earlier analysis of Chapter 2, in which we empirically estimate the systematic determinants of the election of OMs to the UNSC, accounting for the two-stage process by which such members are presently elected.⁶⁷ There we show that three country characteristics systematically predict UNSC election: population, gross national income per capita, and waiting time since last serving on the UNSC. The estimated co-efficients for these three variables can be used in a straightforward way to compute estimates of the ρ_{ij} .⁶⁸ The resulting estimates are listed in Table 3.2.

In practice, the UNGA simultaneously allocates OMs to the UNSC. For the purposes of developing a tractable simulation model, however, we suppose that when the UNGA must elect more than one NPM from the same region in a given year, countries are elected sequentially, one-by-one. Hence, if there are two seats to be allocated to members of

⁶⁵ Note, in contrast, that if the UNSC decision rule is modeled as binary, then we obtain $\beta_{PM} \approx 0.167$ and $\beta_{NPM} \approx 0.017$, which implies that a PM has around ten times as much voting power as a NPM.

⁶⁶ Population data are from the CIA World Factbook (<https://www.cia.gov/library/publications/the-world-factbook/index.html#>).

⁶⁷ In the first stage, the regions make nominations to the UNGA and, in the second stage, the UNGA votes. See Chapter 2 for a detailed account.

⁶⁸ Because the dataset used in Chapter 2 ends at 2006, we obtain estimates of country population and gross national income per capita (current USD) for 2012 from the CIA World Factbook (see footnote 66). We update the variable measuring waiting time since last serving on the UNSC to 2012 using historical UNSC membership data from the UNSC Web site (<http://www.un.org/Docs/sc>). To produce the estimates in Table 3.1, these data, along with the co-efficient values for population, gross national income per capita, and waiting time since last serving on the UNSC reported in Table 2.3a, are fed into equation 2.5, where we assume that the sum in the denominator is over all countries in the region (i.e., their “ E_{jt} ” – the set of countries competing for the seat – is assumed to be R_{jt}).

region j , then, in each of two rounds, there is a new realisation of a random variable that, if all countries in the region are competing for the seat, elects country a_{ij} with probability ρ_{ij} . Because, however, UNSC rules prohibit countries from having dual membership, if the same country is elected in both rounds the process is repeated again in full. This continues until distinct countries are elected.

What does this procedure imply for the relationship between the ρ_{ij} and the p_{ijt} ? In a given year, a first set of countries, those half-way through their two-year term, gain automatic renewal of their NPM status in the following year (R_t); a second set of countries, I_t , are those ineligible for election to the UNSC in the following year (UNSC rules prohibit NPMs from seeking immediate re-election); and a final set of countries is eligible for election to the UNSC (E_t). Hence we can write

$$p_{ijt} \begin{cases} = 0 & \text{if } a_{ij} \in I_t; \\ \in (0,1) & \text{if } a_{ij} \in E_t; \\ = 1 & \text{if } a_{ij} \in R_t. \end{cases}$$

For $a_{ij} \in E_t$, let p_{ijt}^n denote p_{ijt} when n NPM seats are being elected in region j , in which case

$$p_{ijt}^0 = 0 ; \quad p_{ijt}^1 = \frac{\rho_{ij}}{\sum_{a_{ij} \in E_{jt}} \rho_{ij}} ; \quad p_{ijt}^2 = \frac{2p_{ijt}^1(1-p_{ijt}^1)}{1 - \sum_{a_{ij} \in E_{jt}} (p_{ijt}^1)^2}.$$

Note that the numerator of p_{ijt}^2 is the binomial probability of observing a distinct country pair containing a_{ij} , and that the denominator corrects for the impossibility of a country obtaining dual UNSC membership.

3.3.2 Simulating the UNSC

The complexity of P_{UNSC} precludes analytical derivation of $\mathbf{E}_{t \in T'}(d(\boldsymbol{\alpha}_t, \boldsymbol{\alpha}^{\text{AE}}))$. We therefore compute an estimate of this statistic from the realisation (via computer simulation) of a

CVG, C_{UNSC}^{Ω} , which is the finite-repetition analogue of C_{UNSC} on $t \in \Omega$ (Ω a finite set). For the purposes of simulation, we choose Ω to be the set of natural numbers from one to 100,000.⁶⁹

We adopt the same pattern of elections as occurs in the present UNSC: the term of the single EE NPM begins in even years. The two NPMs of the WEOG begin their terms in odd years. The terms for the two NPMs of the GRULAC are staggered; one is elected each year. The Asia's two NPM seats are similarly staggered. The three Africa NPM seats are also staggered with two terms beginning in even years and one term beginning in odd years.

3.3.3 Results

Simulating the UNSC according to the approach of the previous section, our proximity measures are found as

$$AE = 0.45; \quad PE = 0.66; \quad RE = 0.70;$$

$$CFB = 0.56; \quad RFB = 0.68.$$

These measures show that the UNSC is (i) more inequitable from a country perspective than from a regional perspective; and (ii) more inequitable from an ex-ante (procedural) perspective than from an ex-post (outcome) perspective.

To explain these findings, in Table 3.2 we show country-by-country measures for each of our three equity concepts. Whereas our proximity measures above are based upon *absolute* deviations, the measures reported in Table 3.2 report individual *relative* deviations from each of our equity concepts. In particular, we report the measure R where

⁶⁹ Precisely, we realise marginally more than 100,000 periods, but discard the very earliest periods. This is necessary as we begin with a UNSC containing the five PMs and ten vacant seats. In each period we elect five new NPMs, hence, it is not until the completion of the election in period two that there remain no vacant seats on the elected UNSC. We discard the first four periods, which corresponds to twice the term length of a NPM, as, in all periods beyond the fourth, the elected UNSC contains no vacant seats, and eligibility for election to the UNSC does not depend upon whether a country was elected to the UNSC in either of periods one or two (when, abnormally, $I_t = \emptyset$).

$$R_{ij}^{\text{AE}} = \frac{\mathbf{E}_{t \in \Omega}(\alpha_{ijt})}{\alpha_{ij}^{\text{AE}}}; \quad R_{ij}^{\text{PE}} = \frac{\beta_{ij}}{\beta_{ij}^{\text{PE}}}; \quad R_j^{\text{RE}} = \frac{(\sum \beta)_j}{\beta_j^{\text{RE}}}.$$

We begin with an analysis of the UNSC from a country perspective. The conclusions are, however, sensitive to whether this is done from an ex-ante or ex-post perspective. Taking the ex-post perspective first, the relevant equity concept is PE. The relatively middling score achieved by the UNSC largely reflects two factors. First, within the PM and NPM categories, each country is awarded the same voting power regardless of its population. As may be seen in the first column of Table 3.3, a consequence is that, within each membership category, the most populous countries receive a voting power that is much too low. The most extreme example is India, which receives only 10.7 per cent of its voting power under PE. In spite of receiving the voting power of a PM, China receives only 21 per cent of its voting power under PE. Two further PMs – Russia and the United States – are also substantially underweighted. In the remaining regions, countries such as Brazil (27 per cent), Nigeria (30 per cent), Germany (41 per cent) and Ukraine (56 per cent) also find themselves substantially under-represented according to PE.

An analogous consequence, which principally manifests itself among the NPMs, is that the least populous countries receive a voting power that is much too high. The most extreme example is Tuvalu, which receives 37.9 times its voting power under PE. In the remaining regions, countries such as San Marino (21 times), St. Kitts and Nevis (16 times), The Seychelles (13 times), and Montenegro (5 times) also find themselves substantially over-represented under PE.

The second factor is the division of voting power between the five PMs and the remaining UN membership. It is conventionally assumed that this division is too favourable to the PMs, but we conclude the opposite. Consistent with our comments regarding the underweighting of China, the United States, and Russia above, we calculate the total voting power of the PMs to be only 47 per cent of that consistent with PE. The remaining UN members therefore receive, on average, too much voting power on the UNSC under PE.

When we repeat the same analysis from an ex-ante perspective, however, we observe some important differences. For instance, the balance of power between *PM* and *OM* remains a problem, but now because far too much expected voting power is given to citizens of PM countries. On average, the PMs wield around 4.6 times too much expected voting power: the UK, in particular, wields some 9.6 times more expected voting power than that consistent with AE, and even China wields around twice too much expected voting power. How can the PMs be simultaneously under-represented according to PE, and over-represented according to AE? The answer lies in the observation that PM countries are always able to cast their vote in Stage 3, whereas all other countries can do so only periodically. It is the combination of their right to be ever-present, together with their right of veto, which gives the PMs a disproportionately large share of the *expected* voting power.

Accordingly, ordinary members suffer a deficit of expected voting power. Therefore, only a small proportion of such countries exceed their expected voting power under AE, and the major individual deviations are for countries that receive too little expected voting power. For instance, under the estimated membership distribution in Table 3.1, Dominica receives just 0.6 per cent of its expected voting power under AE. In other regions, countries such as Chad (11 per cent), Samoa (1 per cent), Montenegro (3 per cent) and Liechtenstein (0.7 per cent) also receive much too little expected voting power.

In summary, the current UNSC deviates significantly from both the AE and PE concepts. The deviations from AE are the more severe, because PMs enjoy the highest voting power *and* the highest allocation probability, whereas these should be traded-off under AE. Whether the PMs are favoured hinges, however, on whether an ex-ante or ex-post perspective is adopted: PMs obtain decisively too much expected voting power ex-ante, but too little realised voting power ex-post. Accordingly, proposals for reform of the UNSC should not seek to erode the voting power of the existing PMs when members of the UNSC (indeed, this should be increased), but should instead focus upon eroding the right

of these countries to be ever-present on the UNSC.

We now analyse the UNSC from a regional perspective using the RE concept. We find evidence in the third column of the table in Table 3.3 to support the widely-made claim that Africa and Asia are under-represented. We find that Asia is the most under-represented region, with only 55 per cent of its voting power under RE, closely followed by Africa with just 57 per cent. The GRULAC is also under-represented, but by a smaller margin – it receives 76 per cent of its voting power under RE. Balancing off the under-represented regions are the WEOG – which receives around 2.6 times its voting power under RE, and EE, which is over-represented by 61 per cent. These results imply the existence of a substantial north/south inequity. We find that, overall, the south receives just 60 per cent of its voting power under RE. Accordingly, proposals for reform of the UNSC should principally seek to shift voting power away from the WEOG, and towards Asia and Africa.

Last, we use our theoretical framework to address some of the remaining issues raised by reformers. Should some countries be ever-present on the UNSC? If so, which ones? Under the CFB concept the answer is negative: all countries receive a common allocation probability $p = N|A|^{-1} < 1$. The RFB concept does not preclude ever-present members, but only if the country is sufficiently populous. To see this, note that within the class of regional monotonic C' satisfying RFB, the maximal variation in the p_{ijt} across countries is achieved under a flat rule for voting power. In this case, by Corollary 3.1, the allocation probabilities are set such that $p_{ij}^{\text{RFB}} \propto_A \sqrt{q_{ij}}$, in which case a country is ever-present if

$$p_{ij}^{\text{RFB}} = N \frac{\sqrt{q_{ij}}}{\sum_{a_{ij} \in A} \sqrt{q_{ij}}} \geq 1.$$

We find, however, that no country is sufficiently populous to meet this condition. Rather, in this case, China would be represented on the UNSC most often, obtaining membership in around 73 out of every 100 years. India would be represented next most often, obtaining

membership in around seven years in every ten. The United States would qualify for membership in only around seven years in every twenty, while the UK and France would qualify for membership in only around four in every 25 years.

Our first-best concepts can also shed some light on whether the right of veto should be abolished and, if not, which countries should exercise a veto. A direct analysis is not feasible, however, for, even when we know the first-best voting power of each country, this information is insufficient to determine whether a country exercises a veto. The difficulty is that voting power indices mix two distinct concepts – the power to prevent action by voting against a resolution, and the power to initiate action by voting for a resolution (Coleman, 1971). Hence, the degree of preventative power associated with a given vector of voting powers is a-priori unknown.

By Corollary 3.1, under RFB and β -invariance council members receive a common voting power $\beta = N^{-1}$. This case is sufficiently simple that we can conclude that either all council members exercise a veto (under a unanimity decision rule), or none do. Hence the RFB concept does not preclude a veto right. Under the CFB concept – in which voting powers are set such that $\beta_{ij} \propto_A \sqrt{q_{ij}}$ – we can instead examine which, if any, countries obtain a voting power that is at least as large as that currently wielded by a PM. Under CFB, countries do not obtain the same voting power every time they are allocated to the UNSC as the w_{jt} are random variables. To investigate this case we therefore examine each of the 100,000 realised M_t from the simulation of C_{UNSC}^{Ω} under the CFB voting powers. We measure the proportion of a country's appearances on the UNSC for which it votes with a power $\beta_{ij} > \beta_{\text{PM}}$ under CFB. We find that, in our 100,000 realisations, China and India always receive a voting power higher than β_{PM} under CFB. China, in particular, receives, on average, a voting power of around 0.23, which is slightly more than double β_{PM} .⁷⁰

In summary, we do not find clear support for the abolition of the veto: RFB does not

⁷⁰ The remaining countries that sometimes (but not always) receive $\beta_{ij} > \beta_{\text{PM}}$ are the United States (77 per cent of council appearances), Indonesia (33 per cent), Brazil (3.5 per cent), Pakistan (0.6 per cent), Russia (0.06 per cent) and Nigeria (0.04 per cent).

preclude veto countries, and the CFB concept suggests that some countries warrant more voting power than currently received by a PM. Three points are of note, however: first, our first-best concepts imply that no country should have a veto *and* be ever-present on the UNSC. Second, the CFB concept suggests that if a veto right is to be allocated to five countries it should be the five most populous: China, India, the United States, Indonesia, and Brazil. Thus we agree with reformers that, if the right of veto is to remain, attention should be focused upon its allocation. As, however, we consider democratic ideals rather than economic might, or peacekeeping contributions, our analysis does not suggest that either Germany or Japan should be the recipients of a veto.⁷¹ Last, a possible avenue for reform based on our findings may be for the PMs to trade-off extra voting power when a UNSC member with the loss of the right to be ever-present.

The final issue we address is how the 15 UNSC seats should be divided between regions. According to Proposition 3.4, the CFB concept implies that the n_j should be set proportional to $|R_j|$, i.e., four each to Africa and Asia, three to the GRULAC, and two each to EE and the WEOG. The RFB concept is consistent with a number of rules for n_j . Under p -invariance RFB yields the same rule as under CFB, but, under β -invariance, RFB requires $n_j \propto_J \sum_{a_{ij} \in R_j} \sqrt{q_{ij}}$. Relative to the rule for n_j under CFB, this rule gives one extra seat to Asia (five seats), one less to the GRULAC (two seats), and leaves the entitlements of the remaining regions unchanged. Thus the WEOG, with four seats in the present UNSC, has twice its entitlement under either first-best concept, while Asia and Africa – which both receive three seats – are under-represented by at least one seat (and Asia by two seats under the RFB rule above).

⁷¹ As seen in Table 3.2, Japan and Germany – like the PMs – are heavily under-represented according to PE. Both countries have historically achieved election to the UNSC on a regular basis, however, hence their representation under AE tells a different story. Japan’s expected voting power is roughly in accordance with AE, while Germany is actually over-represented by 65 per cent under AE.

3.4 Conclusion

The Councils of the United Nations – the UNSC and ECOSOC – play an important role in global wealth and security. Yet, to our knowledge, no previous analysis has developed formal equity principles for the analysis of such bodies, in which only a subset of member countries may vote at a point in time.

In this Chapter we develop a new class of voting game we term a council voting game. We then develop three democratic equity concepts for this new class of game. These three concepts differ according to whether equity is in an ex-ante (or procedural) sense, or in an ex-post (or outcome) sense; and whether council members are viewed as regional representatives, or solely as representatives of themselves. Fundamental trade-offs exist between these concepts, for if a CVG is PE then it cannot be RE. The AE concept is consistent with either PE or RE on their own, but even here the conditions required are stringent: either allocation probabilities must be equal across all countries (under the CFB concept) or a more general trade-off between voting power and allocation probability must hold (under the RFB concept).

We demonstrate the utility of our theoretical framework with an application to the UNSC. Significant degrees of inequity exist irrespective of the precise equity concept used, but we find that the UNSC is more inequitable in an ex-ante sense than in an ex-post sense, and more inequitable if countries are viewed as representing themselves, than if they are viewed as representing their region.

What do our findings imply for the ongoing debate on UNSC reform? First, we believe our framework clarifies the nature of the underlying trade-offs. For instance, simultaneous achievement of PE and RE is unfeasible; and, if realpolitik makes giving every country an equal probability of council allocation unfeasible, then some trade-off between AE and PE is unavoidable. Second, our analysis highlights that a successful reform of the UNSC must simultaneously address the distribution of voting power and the distribution of allocation

probability, for attempting to achieve our equity concepts by changing only one or the other will lead to extreme outcomes. For instance, if the current allocation probabilities are retained, then our calculations show that attainment of AE requires that (tiny) countries such as Nauru, Micronesia, Palau, and San Marino receive a voting power well in excess of the current β_{PM} when a member of the UNSC, as compensation for being a member very infrequently.

The apparent tension between realpolitik and the first-best concepts we develop suggests that the latter should be understood as purely theoretical benchmarks against which to assess the equitability of the UNSC and the desirability of alternative reforms. While this in no way undermines the usefulness of these concepts, an avenue for future research might, therefore, be to investigate second-best rules that move a CVG as “close” as possible to our first-best benchmarks under an additional realpolitik constraint. While this idea must await a proper treatment, however, we hope the present contribution at least marks a first step in the analysis of democratic equitability in councils.

Appendix

Proof of Proposition 3.1: For a proof of Penrose's square-root rule (from which the Proposition follows) see Felsenthal and Machover (1998). ■

Proof of Lemma 3.1: If $p_{ijt} \propto_A f_{ijt}$ then $n_j = \sum_{a_{ij} \in R_j} p_{ijt} \propto_J \sum_{a_{ij} \in R_j} f_{ijt}$. ■

Proof of Proposition 3.2

(i) Under AE we have $\alpha_{ijt} = p_{ijt} s_{ij} \mathbf{E}_{M_t \in \mathcal{M}_t}(w_{jt})$ and $\alpha_{ijt} \propto_A \sqrt{q_{ij}}$, so $p_{ijt} s_{ij} \propto_A (\mathbf{E}_{M_t \in \mathcal{M}_t}(w_{jt}))^{-1} \sqrt{q_{ij}}$. For this condition to hold at all t implies p_t -invariance (for the p_{ijt} have a fixed sum across each region, so increasing one p_{ijt} implies another must fall, leading to a violation of regional proportionality between these two countries). Hence $p_{ij} s_{ij} \propto_A (\mathbf{E}_{M_t \in \mathcal{M}_t}(w_{jt}))^{-1} \sqrt{q_{ij}}$. Then $(\mathbf{E}_{M_t \in \mathcal{M}_t}(w_{jt}))^{-1} \sqrt{q_{ij}} \propto_R \sqrt{q_{ij}}$ so $p_{ij} s_{ij} \propto_R \sqrt{q_{ij}}$. Now suppose $p_{ij} s_{ij} \propto_R \sqrt{q_{ij}}$ then there exists a $w(\cdot)$ such that $p_{ij} s_{ij} \propto_A (\mathbf{E}_{M_t \in \mathcal{M}_t}(w_{jt}))^{-1} \sqrt{q_{ij}}$, which is AE. ■

(ii) Under (a) we have $w_{jt} \propto_A (\sum_{a_{ij} \in M_t} s_{ij})^{-1}$, hence $s_{ij} \propto_M \beta_{ijt}$. Then, by condition (b), $s_{ij} \propto_M \beta_{ijt} \propto_M \sqrt{q_{ij}}$, which is PE. Now suppose $\beta_{ijt} \propto_M \sqrt{q_{ij}}$ holds, which implies condition (a). Then $\beta_{ijt} \propto_M s_{ij}$, hence $s_{ij} \propto_M \sqrt{q_{ij}}$, which implies $s_{ij} \propto_A \sqrt{q_{ij}}$. ■

(iii) We have $\sum_{a_{ij} \in M_t \cap R_j} \beta_{ijt} \propto_J \sum_{a_{ij} \in R_j} \sqrt{q_{ij}}$ by construction. Conversely, suppose we have $\sum_{a_{ij} \in M_t \cap R_j} \beta_{ijt} \propto_J \sum_{a_{ij} \in R_j} \sqrt{q_{ij}}$, then $\sum_{a_{ij} \in M_t \cap R_j} w_{jt} s_{ij} \propto_J \sum_{a_{ij} \in R_j} \sqrt{q_{ij}}$. As this condition must hold for arbitrary $s_{ij} \geq 0$, it implies that $w(z_{jt})$ is of the form $w(z_{jt}) = x_j(z_{jt})^{-1}$, where $x_j \propto_J \sum_{a_{ij} \in R_j} \sqrt{q_{ij}}$. Then the condition that $\sum_{a_{ij} \in M_t} w_{jt} s_{ij} = 1$ implies $\sum_{a_{ij} \in M_t} x_j = 1$. ■

Proof of Proposition 3.3: Under RE we have $\sum_{a_{ij} \in M_t \cap R_j} \beta_{ijt} \propto_J \sum_{a_{ij} \in R_j} \sqrt{q_{ij}}$. Under PE we have $\beta_{ijt} \propto_M \sqrt{q_{ij}}$, hence $\sum_{a_{ij} \in M_t \cap R_j} \beta_{ijt} \propto_J \sum_{a_{ij} \in M_t \cap R_j} \sqrt{q_{ij}}$. For both conditions to hold we must

have $\sum_{a_{ij} \in R_j} \sqrt{q_{ij}} \propto_J \sum_{a_{ij} \in M_t \cap R_j} \sqrt{q_{ij}}$. For this to hold $\sum_{a_{ij} \in M_t \cap R_j} \sqrt{q_{ij}}$ must be non-random, but this contradicts the assumptions of Section 3.2.2. ■

Proof of Proposition 3.4

(i) Conditions (a) and (c) yield PE by part (ii) of Proposition 3.2. Then, by condition (a) we have $\mathbf{E}_{M_t \in \mathcal{M}_t'}(w_{jt}) \propto_A s_{ij}$, hence $\alpha_{ijt} \propto_A p_{ijt}s_{ij}$. By condition (b) we have $\alpha_{ijt} \propto_A p_{ijt}s_{ij} \propto_A s_{ij}$ so, by (c), we obtain $\alpha_{ijt} \propto_A p_{ijt}s_{ij} \propto_A \sqrt{q_{ij}}$, which is AE. Now suppose AE and PE hold. Then, as (a) must hold for PE, we have $\alpha_{ijt} = p_{ijt}s_{ij}\mathbf{E}_{M_t \in \mathcal{M}_t'}(w_{jt}) \propto_A p_{ijt}s_{ij} \propto_A \sqrt{q_{ij}}$, which implies that $p_{ijt}s_{ij}$ must be time invariant, i.e., $\alpha_{ijt} \propto_A \sqrt{q_{ij}}$. By PE it also holds that $s_{ij} \propto_A \sqrt{q_{ij}}$, which is condition (c): both conditions hold if and only if condition (b) is satisfied. ■

(ii) We have $\alpha_{ijt} = p_{ijt}s_{ij}\mathbf{E}_{M_t \in \mathcal{M}_t'}(w_{jt})$. Under AE $p_{ijt}s_{ij}\mathbf{E}_{M_t \in \mathcal{M}_t'}(w_{jt}) \propto_A \sqrt{q_{ij}}$. Then substituting for w_{jt} using condition (a) yields condition (b). ■

Table 3.1: Estimated ρ_{ij} ($t = 2012$)

Africa		Asia		EE		GRULAC		WEOG	
Algeria	0.0860	India	0.47728	Poland	0.3681	Brazil	0.34235	Germany	0.28949
Morocco	0.0501	Japan	0.12114	Ukraine	0.2470	Mexico	0.19389	Turkey	0.16346
Nigeria	0.0497	Pakistan	0.09212	Romania	0.1122	Venezuela	0.16637	Italy	0.11347
Egypt	0.0424	Malaysia	0.04707	Hungary	0.0591	Argentina	0.08081	Spain	0.07454
Ghana	0.0384	Republic of Korea	0.04376	Czech Republic	0.0525	Colombia	0.04673	Austria	0.07041
Tunisia	0.0377	Indonesia	0.03583	Belarus	0.0256	Chile	0.04251	Netherlands	0.04505
Tanzania	0.0376	Bangladesh	0.02381	Serbia	0.0227	Peru	0.02556	Canada	0.03614
South Africa	0.0336	Singapore	0.01899	Bulgaria	0.0191	Ecuador	0.01801	Sweden	0.03072
Zimbabwe	0.0329	Thailand	0.01732	Azerbaijan	0.0178	Uruguay	0.01334	Switzerland	0.02616
Zambia	0.0322	Jordan	0.01521	Slovakia	0.0145	Cuba	0.01019	Ireland	0.02483
Mozambique	0.0319	Philippines	0.01487	Croatia	0.0112	Dominican Republic	0.00765	Denmark	0.02285
Kenya	0.0319	United Arab Emirates	0.01314	Republic of Moldova	0.0078	Honduras	0.00712	Belgium	0.02184
Senegal	0.0309	Sri Lanka	0.01113	Georgia	0.0074	Costa Rica	0.00605	Finland	0.01849
Mali	0.0245	Iran	0.00657	Albania	0.0062	Guatemala	0.00538	Portugal	0.01692
Niger	0.0226	Saudi Arabia	0.00630	Lithuania	0.0060	Panama	0.00484	Norway	0.01666
Cote d'Ivoire	0.0220	Kuwait	0.00579	Slovenia	0.0052	Trinidad and Tobago	0.00458	Australia	0.01228
Guinea	0.0218	Myanmar	0.00518	Bosnia & Herzegovina	0.0047	Guyana	0.00415	New Zealand	0.01027
Congo	0.0218	Nepal	0.00516	Latvia	0.0037	Paraguay	0.00409	Greece	0.00497
Ethiopia	0.0213	Qatar	0.00462	TFYR Macedonia	0.0034	Jamaica	0.00381	Israel	0.00054
Angola	0.0198	Yemen	0.00414	Armenia	0.0034	Nicaragua	0.00371	Malta	0.00039
Libya	0.0189	Iraq	0.00332	Estonia	0.0019	Bolivia	0.00340	Luxembourg	0.00025
Uganda	0.0184	Vietnam	0.00324	Montenegro	0.0005	El Salvador	0.00165	Iceland	0.00007
Burkina Faso	0.0173	Oman	0.00323			Bahamas	0.00149	Monaco	0.00007
Malawi	0.0172	Kazakhstan	0.00257			Belize	0.00070	Andorra	0.00005
Madagascar	0.0170	Fiji	0.00203			Suriname	0.00061	San Marino	0.00004
Mauritania	0.0163	Cyprus	0.00200			Barbados	0.00046	Liechtenstein	0.00003
Sudan	0.0159	Papua New Guinea	0.00196			Haiti	0.00020		
Togo	0.0150	Syrian Arab Republic	0.00168			Antigua and Barbuda	0.00015		
Gabon	0.0147	Bahrain	0.00149			Saint Lucia	0.00013		
Benin	0.0136	Uzbekistan	0.00148			Saint Kitts and Nevis	0.00002		
Namibia	0.0124	Brunei	0.00092			St Vincent & Grenadines	0.00002		
Mauritius	0.0121	Lebanon	0.00082			Grenada	0.00001		
Cameroon	0.0104	DPR Korea	0.00076			Dominica	0.00001		
South Sudan	0.0098	Afghanistan	0.00075						
Botswana	0.0097	Cambodia	0.00062						
Sierra Leone	0.0087	Turkmenistan	0.00060						
Lesotho	0.0087	Mongolia	0.00048						
DR Congo	0.0082	Tajikistan	0.00044						
Eritrea	0.0072	Kyrgyzstan	0.00042						
Djibouti	0.0071	Laos	0.00040						
Gambia	0.0062	Bhutan	0.00033						
Central African Republic	0.0061	Maldives	0.00022						
Burundi	0.0059	Solomon Islands	0.00022						
Rwanda	0.0055	Timor Leste	0.00018						
Swaziland	0.0050	Tonga	0.00008						
Somalia	0.0048	Kiribati	0.00007						
Cape Verde	0.0045	Vanuatu	0.00007						
Comoros	0.0030	Samoa	0.00005						
Chad	0.0029	Micronesia	0.00003						
Guinea-Bissau	0.0024	Nauru	0.00002						
Liberia	0.0023	Marshall Islands	0.00002						
Sao Tome and Principe	0.0019	Tuvalu	0.00002						
Equatorial Guinea	0.0012	Palau	0.00002						
Seychelles	0.0005								

Estimates computed from Table 2.3a. Countries are listed in descending order of probability.

Table 3.2: Entitlements and relative deviations

Country	PE		AE		RE	
	β_{ij}^{PE}	R_{ij}^{PE}	α_{ij}^{AE}	R_{ij}^{AE}	β_j^{RE}	R_j^{RE}
<i>Africa</i>	–	–	–	–	0.259	0.573
Algeria	0.0080	0.631	0.0080	1.301	–	–
Angola	0.0059	0.861	0.0059	0.523	–	–
Benin	0.0040	1.264	0.0040	0.556	–	–
Botswana	0.0019	2.654	0.0019	0.811	–	–
Burkina Faso	0.0054	0.927	0.0054	0.500	–	–
Burundi	0.0039	1.299	0.0039	0.253	–	–
Cameroon	0.0059	0.849	0.0059	0.283	–	–
Cape Verde	0.0009	5.339	0.0009	0.789	–	–
Central African Republic	0.0028	1.792	0.0028	0.361	–	–
Chad	0.0045	1.122	0.0045	0.113	–	–
Comoros	0.0012	4.387	0.0012	0.423	–	–
Congo	0.0027	1.870	0.0027	1.256	–	–
Cote d'Ivoire	0.0060	0.846	0.0060	0.574	–	–
Democratic Republic of the Congo	0.0109	0.463	0.0109	0.129	–	–
Djibouti	0.0013	3.989	0.0013	0.889	–	–
Egypt	0.0121	0.418	0.0121	0.507	–	–
Equatorial Guinea	0.0011	4.493	0.0011	0.171	–	–
Eritrea	0.0031	1.641	0.0031	0.398	–	–
Ethiopia	0.0122	0.413	0.0122	0.268	–	–
Gabon	0.0016	3.065	0.0016	1.386	–	–
Gambia	0.0018	2.860	0.0018	0.608	–	–
Ghana	0.0066	0.761	0.0066	0.834	–	–
Guinea	0.0042	1.190	0.0042	0.822	–	–
Guinea-Bissau	0.0017	3.055	0.0017	0.230	–	–
Kenya	0.0085	0.591	0.0085	0.550	–	–
Lesotho	0.0020	2.552	0.0020	0.721	–	–
Liberia	0.0027	1.882	0.0027	0.140	–	–
Libya	0.0034	1.492	0.0034	0.878	–	–
Madagascar	0.0061	0.826	0.0061	0.434	–	–
Malawi	0.0052	0.974	0.0052	0.513	–	–
Mali	0.0053	0.959	0.0053	0.707	–	–
Mauritania	0.0025	2.022	0.0025	1.024	–	–
Mauritius	0.0015	3.299	0.0015	1.286	–	–
Morocco	0.0076	0.665	0.0076	0.895	–	–
Mozambique	0.0065	0.778	0.0065	0.726	–	–
Namibia	0.0020	2.489	0.0020	0.955	–	–
Niger	0.0053	0.955	0.0053	0.653	–	–
Nigeria	0.0169	0.299	0.0169	0.404	–	–
Rwanda	0.0044	1.154	0.0044	0.203	–	–
Sao Tome and Principe	0.0005	9.246	0.0005	0.610	–	–
Senegal	0.0047	1.066	0.0047	0.972	–	–
Seychelles	0.0004	12.784	0.0004	0.241	–	–
Sierra Leone	0.0033	1.552	0.0033	0.442	–	–

Country	PE		AE		RE	
	β_{ij}^{PE}	R_{ij}^{PE}	α_{ij}^{AE}	R_{ij}^{AE}	β_j^{RE}	R_j^{RE}
Somalia	0.0041	1.231	0.0041	0.193	–	–
South Africa	0.0095	0.531	0.0095	0.517	–	–
South Sudan	0.0042	1.192	0.0042	0.378	–	–
Sudan	0.0078	0.649	0.0078	0.327	–	–
Swaziland	0.0015	3.453	0.0015	0.604	–	–
Togo	0.0033	1.532	0.0033	0.718	–	–
Tunisia	0.0043	1.162	0.0043	1.254	–	–
Uganda	0.0078	0.650	0.0078	0.359	–	–
United Republic of Tanzania	0.0089	0.570	0.0089	0.612	–	–
Zambia	0.0049	1.039	0.0049	0.957	–	–
Zimbabwe	0.0048	1.061	0.0048	1.020	–	–
<i>Asia</i>	–	–	–	–	0.362	0.552
Afghanistan	0.0075	0.671	0.0075	0.016	–	–
Bahrain	0.0015	3.348	0.0015	0.166	–	–
Bangladesh	0.0164	0.308	0.0164	0.225	–	–
Bhutan	0.0011	4.413	0.0011	0.050	–	–
Brunei	0.0008	5.954	0.0008	0.196	–	–
Cambodia	0.0050	1.000	0.0050	0.022	–	–
China	0.0487	0.211	0.0487	2.072	–	–
Cyprus	0.0012	4.180	0.0012	0.278	–	–
DPR Korea	0.0066	0.762	0.0066	0.021	–	–
Fiji	0.0012	4.053	0.0012	0.240	–	–
India	0.0470	0.107	0.0470	0.547	–	–
Indonesia	0.0208	0.243	0.0208	0.261	–	–
Iran	0.0115	0.437	0.0115	0.095	–	–
Iraq	0.0076	0.668	0.0076	0.071	–	–
Japan	0.0151	0.334	0.0151	0.941	–	–
Jordan	0.0033	1.512	0.0033	0.727	–	–
Kazakhstan	0.0054	0.939	0.0054	0.072	–	–
Kiribati	0.0004	11.918	0.0004	0.019	–	–
Kuwait	0.0022	2.273	0.0022	0.434	–	–
Kyrgyzstan	0.0031	1.628	0.0031	0.022	–	–
Laos	0.0033	1.510	0.0033	0.020	–	–
Lebanon	0.0028	1.829	0.0028	0.042	–	–
Malaysia	0.0072	0.706	0.0072	0.938	–	–
Maldives	0.0008	6.691	0.0008	0.054	–	–
Marshall Islands	0.0003	16.176	0.0003	0.016	–	–
Micronesia (Federated States of)	0.0004	11.284	0.0004	0.013	–	–
Mongolia	0.0022	2.265	0.0022	0.043	–	–
Myanmar	0.0093	0.543	0.0093	0.089	–	–
Nauru	0.0001	37.133	0.0001	0.015	–	–
Nepal	0.0073	0.687	0.0073	0.118	–	–
Oman	0.0022	2.254	0.0022	0.232	–	–
Pakistan	0.0177	0.285	0.0177	0.667	–	–
Palau	0.0002	26.282	0.0002	0.026	–	–

Country	PE		AE		RE	
	β_{ij}^{PE}	R_{ij}^{PE}	α_{ij}^{AE}	R_{ij}^{AE}	β_j^{RE}	R_j^{RE}
Papua New Guinea	0.0035	1.436	0.0035	0.089	–	–
Philippines	0.0130	0.389	0.0130	0.178	–	–
Qatar	0.0018	2.835	0.0018	0.397	–	–
Republic of Korea	0.0093	0.542	0.0093	0.678	–	–
Samoa	0.0006	8.788	0.0006	0.009	–	–
Saudi Arabia	0.0070	0.718	0.0070	0.139	–	–
Singapore	0.0030	1.667	0.0030	0.974	–	–
Solomon Islands	0.0010	5.126	0.0010	0.046	–	–
Sri Lanka	0.0061	0.823	0.0061	0.278	–	–
Syrian Arab Republic	0.0061	0.832	0.0061	0.044	–	–
Tajikistan	0.0035	1.434	0.0035	0.020	–	–
Thailand	0.0112	0.452	0.0112	0.241	–	–
Timor Leste	0.0014	3.546	0.0014	0.022	–	–
Tonga	0.0004	11.657	0.0004	0.027	–	–
Turkmenistan	0.0030	1.675	0.0030	0.029	–	–
Tuvalu	0.0001	37.933	0.0001	0.022	–	–
United Arab Emirates	0.0037	1.372	0.0037	0.576	–	–
Uzbekistan	0.0070	0.718	0.0070	0.034	–	–
Vanuatu	0.0007	7.681	0.0007	0.014	–	–
Vietnam	0.0126	0.401	0.0126	0.042	–	–
Yemen	0.0066	0.767	0.0066	0.101	–	–
<i>EE</i>	–	–	–	–	0.093	1.613
Albania	0.0024	2.101	0.0024	0.160	–	–
Armenia	0.0024	2.138	0.0024	0.086	–	–
Azerbaijan	0.0041	1.241	0.0041	0.267	–	–
Belarus	0.0042	1.214	0.0042	0.375	–	–
Bosnia and Herzegovina	0.0026	1.939	0.0026	0.113	–	–
Bulgaria	0.0037	1.374	0.0037	0.332	–	–
Croatia	0.0028	1.792	0.0028	0.259	–	–
Czech Republic	0.0043	1.161	0.0043	0.727	–	–
Estonia	0.0016	3.247	0.0016	0.080	–	–
Georgia	0.0028	1.802	0.0028	0.173	–	–
Hungary	0.0042	1.190	0.0042	0.821	–	–
Latvia	0.0020	2.506	0.0020	0.110	–	–
Lithuania	0.0024	2.063	0.0024	0.152	–	–
Montenegro	0.0011	4.732	0.0011	0.032	–	–
Poland	0.0083	0.608	0.0083	1.767	–	–
Republic of Moldova	0.0025	1.989	0.0025	0.198	–	–
Romania	0.0062	0.811	0.0062	1.034	–	–
Russian Federation	0.0160	0.641	0.0160	6.292	–	–
Serbia	0.0036	1.386	0.0036	0.380	–	–
Slovakia	0.0031	1.609	0.0031	0.289	–	–
Slovenia	0.0019	2.639	0.0019	0.169	–	–
TFYR Macedonia	0.0019	2.620	0.0019	0.108	–	–
Ukraine	0.0090	0.558	0.0090	1.299	–	–

Country	PE		AE		RE	
	β_{ij}^{PE}	R_{ij}^{PE}	α_{ij}^{AE}	R_{ij}^{AE}	β_j^{RE}	R_j^{RE}
GRULAC	–	–	–	–	0.130	0.760
Antigua and Barbuda	0.0004	12.625	0.0004	0.047	–	–
Argentina	0.0085	0.592	0.0085	1.174	–	–
Bahamas	0.0008	6.422	0.0008	0.318	–	–
Barbados	0.0007	7.193	0.0007	0.119	–	–
Belize	0.0007	6.736	0.0007	0.130	–	–
Bolivia	0.0042	1.193	0.0042	0.126	–	–
Brazil	0.0187	0.269	0.0187	1.237	–	–
Chile	0.0056	0.909	0.0056	1.064	–	–
Colombia	0.0091	0.553	0.0091	0.695	–	–
Costa Rica	0.0029	1.742	0.0029	0.301	–	–
Cuba	0.0045	1.121	0.0045	0.335	–	–
Dominica	0.0003	14.446	0.0003	0.006	–	–
Dominican Republic	0.0042	1.193	0.0042	0.281	–	–
Ecuador	0.0051	0.989	0.0051	0.508	–	–
El Salvador	0.0033	1.511	0.0033	0.077	–	–
Grenada	0.0004	11.633	0.0004	0.007	–	–
Guatemala	0.0051	0.991	0.0051	0.165	–	–
Guyana	0.0012	4.329	0.0012	0.562	–	–
Haiti	0.0042	1.190	0.0042	0.006	–	–
Honduras	0.0037	1.364	0.0037	0.284	–	–
Jamaica	0.0022	2.271	0.0022	0.260	–	–
Mexico	0.0143	0.353	0.0143	1.273	–	–
Nicaragua	0.0032	1.563	0.0032	0.165	–	–
Panama	0.0025	2.005	0.0025	0.292	–	–
Paraguay	0.0034	1.480	0.0034	0.176	–	–
Peru	0.0072	0.697	0.0072	0.503	–	–
Saint Kitts and Nevis	0.0003	16.427	0.0003	0.006	–	–
Saint Lucia	0.0006	9.008	0.0006	0.034	–	–
Saint Vincent and the Grenadines	0.0004	11.372	0.0004	0.011	–	–
Suriname	0.0010	5.192	0.0010	0.099	–	–
Trinidad and Tobago	0.0016	3.247	0.0016	0.419	–	–
Uruguay	0.0025	2.049	0.0025	0.813	–	–
Venezuela	0.0072	0.699	0.0072	2.294	–	–
WEOG	–	–	–	–	0.155	2.592
Andorra	0.0004	12.908	0.0004	0.020	–	–
Australia	0.0063	0.797	0.0063	0.254	–	–
Austria	0.0039	1.298	0.0039	2.033	–	–
Belgium	0.0044	1.149	0.0044	0.638	–	–
Canada	0.0078	0.645	0.0078	0.570	–	–
Denmark	0.0032	1.596	0.0032	0.920	–	–
Finland	0.0031	1.624	0.0031	0.750	–	–
France	0.0108	0.953	0.0108	9.351	–	–
Germany	0.0122	0.415	0.0122	1.652	–	–
Greece	0.0045	1.116	0.0045	0.149	–	–

Country	PE		AE		RE	
	β_{ij}^{PE}	R_{ij}^{PE}	α_{ij}^{AE}	R_{ij}^{AE}	β_j^{RE}	R_j^{RE}
Iceland	0.0008	6.646	0.0008	0.008	–	–
Ireland	0.0028	1.779	0.0028	1.088	–	–
Israel	0.0037	1.381	0.0037	0.022	–	–
Italy	0.0104	0.483	0.0104	1.101	–	–
Liechtenstein	0.0003	19.810	0.0003	0.008	–	–
Luxembourg	0.0010	5.279	0.0010	0.032	–	–
Malta	0.0009	5.827	0.0009	0.059	–	–
Monaco	0.0003	19.984	0.0003	0.051	–	–
Netherlands	0.0055	0.923	0.0055	1.001	–	–
New Zealand	0.0028	1.799	0.0028	0.472	–	–
Norway	0.0030	1.702	0.0030	0.720	–	–
Portugal	0.0044	1.151	0.0044	0.508	–	–
San Marino	0.0002	21.176	0.0002	0.021	–	–
Spain	0.0091	0.554	0.0091	0.921	–	–
Sweden	0.0041	1.228	0.0041	0.926	–	–
Switzerland	0.0037	1.358	0.0037	0.878	–	–
Turkey	0.0114	0.441	0.0114	1.299	–	–
United Kingdom	0.0106	0.973	0.0106	9.552	–	–
United States of America	0.0236	0.435	0.0236	4.270	–	–

Chapter 4

Reform of the United Nations Security Council: Equity and Efficiency

“No reform of the UN will be complete without the reform of the Security Council”

- Former Secretary-General of the United Nations Kofi Annan

4.1 Introduction

The UN is the foremost international body responsible for the maintenance of international peace and security. The UNSC is its most powerful organ, with the authority to make legally binding resolutions to fulfil its mandate of maintaining international peace and security. To that end, it can suspend economic and diplomatic relations between countries, impose blockades, and authorise the use of armed force.

Our study appraises possible reforms to the UNSC. Since its beginnings in 1946, the UNSC has undergone reforms only once: in 1963, the UNGA – which includes delegates from all UN member countries – voted to expand the UNSC from 11 to 15 members (UNGA, 1963).⁷² Momentum for a second round of reforms can be traced back to 1993, when an Open-ended Working Group (OEWG) was established to explore proposals for UNSC reform.⁷³ This Working Group, now often dubbed the “Never-ending Working Group”, has entered its 20th consecutive year of deliberations.

Many proposals for UNSC reform have been put forward. This Chapter presents, to our knowledge, the first formal quantitative study of the equity and efficiency properties of these proposals. We apply new formal equity measures developed in Chapter 3 to

⁷²The reforms did not come into effect until 1965, however, due to opposition among two of the Permanent Members.

⁷³In full, the Open-ended Working Group on the Question of Equitable Representation and Increase in the Membership of the Security Council (OEWG, 1994). The call for the creation of the OEWG, UNGA (1993), followed an overwhelming response to an earlier UNGA Resolution, UNGA (1992), which invited members to submit written comments on a possible review of the Security Council.

understand the effects of eight “structural reforms” contained within eleven reform proposals currently under consideration by world leaders. A key aspect of the implementation is a computer simulation of the UNSC under each structural reform over a period of 100,000 years.

Under the present arrangements, the 15 UNSC members comprise five PMs – China, France, Russia, the United Kingdom, and the United States – that are ever-present and wield a veto on all non-procedural matters. The remaining ten members are elected NPMs, who serve time-limited two-year terms. The ten NPM seats are divided between five regional caucusing groups: one country from Eastern Europe (EE); two countries from each of the Western European and Others Group (WEOG), the Latin America and Caribbean Group (GRULAC) and Asia; and three countries from Africa.⁷⁴

Two distinct sets of criticism are widely levelled against these arrangements: one relating to the *efficiency* with which they allow the UNSC to respond to its member’s preferences, and another relating to the degree to which they achieve *equity* in the allocation of political power.

On efficiency, critics argue that the UNSC is too often impotent, not least because a preference against a resolution by a single PM can override a preference for the resolution by all remaining members. For instance, the UNSC is presently under criticism for its inability to respond decisively to the Syrian crisis. The UNSC has also appeared slow to react to earlier conflicts, notably the 1994 genocide in Rwanda (Barnett, 2002). This lack of efficiency has sometimes led powerful countries to bypass the UNSC in favour of multilateral action. For instance, in 1999 NATO undertook military action in Kosovo, and

⁷⁴ See Table 3.1 for the full membership of each of the regional groups (excluding PMs). Of the PMs, China is a member in Asia, Russia in EE, and France and the UK in the WEOG. Technically, the United States is not a member of any regional group, but it attends meetings of the WEOG as an observer and is considered to be a member of that group for electoral purposes (UN, 2012a). For the purposes of this Chapter, therefore, we give the United States membership in the WEOG.

in 2003 the US and its allies invaded Iraq, both lacking a UNSC mandate.⁷⁵

On equity, Chapter 3, finds, first, that the voting power of a NPM is far too low for a populous country such as India, but far too high when awarded to smaller countries. Second, although, in isolation, the voting power of a PM is not excessive, we find that the *conjunction* of preferential voting power when a member of the UNSC *and* the right to be an ever-present member gives the PMs substantially too much representation. Third, although we do not find compelling support for the abolition of the veto, we find that if the right does remain, it should be re-allocated to different countries. From a regional perspective we find that Asia and Africa are each substantially under-represented, as is the GRULAC (but to a lesser degree), which implies a broader representational imbalance between North (EE and the WEOG) and South (Africa, Asia and the GRULAC).

We find that only two of the eight structural reforms considered, and only one of the eleven reform proposals considered, improve upon the status quo in both the equity and efficiency dimensions. One structural reform strictly worsens both equity and efficiency relative to the status quo, and another three worsen equity, leaving efficiency unchanged. These findings are relatively robust to variations in methodology. Part of the problem is, first, that expansion, although good for equity, is harmful to efficiency. Second, many of the structural reforms concentrate the distribution of expected voting power, when they should ideally do the opposite. The most promising structural reform we consider is to require two PMs to vote against a resolution for a veto to be constituted. This improves both equity and efficiency, but the gains are still relatively modest. For instance, if this reform is accompanied with UNSC expansion by five or more members, then the efficiency gain is entirely eliminated. Accordingly, we fail to see that any of the reform proposals presently under consideration will (or should) break the reform impasse.

Earlier quantitative studies of UNSC reform include Hosli *et al.* (2011), O'Neill (1996),

⁷⁵ Perhaps owing to this disenfranchisement with the organisation, many countries fail to pay their assessed contributions: as of the end of 2011, the UN was owed USD 454 million by member states (UN, 2012b).

and Strand and Rapkin (2011). These studies, however, lack a formal theoretical framework for measuring equity in such bodies, or for addressing issues relating to region- and country-specific notions of equity. Instead, they use the voting power of a PM relative to a NPM as an informal indicator of equitability. The theoretical framework developed in Chapter 3 permits, for the first time, a formal quantitative assessment of the equitability of UNSC reforms for both individual countries and regions, and of how equity interacts with efficiency.

As in Chapter 3, we allow for the UNSC decision rule to be ternary in nature. Last, in analysing reform of the UNSC, this Chapter contributes to the wider literature discussed in Chapter 1 that uses measures of a-priori voting power to appraise reform options for international voting bodies.

The plan of the Chapter is as follows: Section 4.2 sets out the theoretical framework; Section 4.3 outlines the structural reforms contained in the reform proposals of UN members; Section 4.4 details the simulation analysis; Section 4.5 presents the results; Section 4.6 considers whether the findings are robust to some alternative methodological assumptions; and Section 4.7 concludes.

4.2 Equity and Efficiency in the UNSC

The UNSC in its current form (and under the structural reforms we consider) may be represented as a Council Voting Game (CVG), in the sense proposed in Chapter 3. In a CVG, a fully representative “assembly” allocates (by election or otherwise) members to a “council”. For the purposes of this Chapter the assembly should be interpreted as the UNGA, the main deliberative body of the UN containing all 193 of its members, and the council should be interpreted as the UNSC.

In the context of the CVG describing the present arrangements, let $UNGA$ denote the set of UNGA members, and $UNSC_t \subset UNGA$ denote the UNSC members (in year t). We partition

UNGA into regional groups R_j , and we denote by a_{ij} the i^{th} member of region j . We also allow for the UNSC to have different membership categories, indexed by k . To encompass the various reform proposals, we allow membership categories to vary according to, for instance, the mode of granting UNSC membership (e.g., by right or by election), the length of term, the provision for immediate re-election, and voting rights. The present UNSC, for instance, has two membership categories: permanent and non-permanent. PMs are UNSC members in every year by Charter (NPMs by election to two-year terms) and have preferential voting rights in the form of an individual veto.

4.2 Equity Principles

In order to appraise alternative UNSC reform proposals we employ concepts of democratic equity that prescribe rules for the appropriate representation of countries and regions. Here we outline three such equity concepts based upon those we developed in Chapter 3.

We base our concepts of democratic equity upon an idealised three-stage decision-making process. In Stage 1, a national ballot is held in each country $a_{ij} \in \text{UNGA}$ under a simple majority decision rule. In Stage 2 a proper subset of countries are elected to the UNSC. In Stage 3, countries elected to the UNSC cast their vote according to the outcome of their national ballot in Stage 1.

Our first notion of equity we term expected ex-ante equity (EAE). According to EAE, it is desirable that, over time, the expected voting power of every world citizen is equal before the allocation of countries to the UNSC is made in Stage 2, i.e., one person, one expected vote (OPOEV).⁷⁶ The ex-ante perspective acknowledges that the power of a world citizen in the UNSC depends not only on the voting power of his or her country when it is a member of the UNSC, but also on how frequently his or her country is a member.

⁷⁶ EAE is a mathematically weaker equity concept than the “ex-ante equity” (AE) concept we develop in Chapter 3. AE requires that OPOEV hold at every point in time, whereas EAE requires OPOEV to hold over time on average. As we discuss further in footnote 93, the reason for using a weaker concept is that we are able to compute proximity measures for EAE, but not for AE.

We use two alternative concepts of ex-post equity. The first, which we term country ex-post equity (CPE), is that it is desirable that the democratic principle of one person one vote (OPOV) hold among the citizens of UNSC member countries, once these are known.⁷⁷ This concept is of particular relevance if UNSC members are viewed as representing their own populations, rather than their region at large.

Our second ex-post concept of equity, regional ex-post equity (RPE), is that it is desirable that the combined voting power of the UNSC members from each region be consistent with the level of representation that each region would obtain in a fully representative voting body satisfying OPOV.⁷⁸ This concept is of particular relevance if UNSC members are viewed as representing their region, rather than only themselves, for it entails that voting power be commensurate with the population of the region a country belongs to (rather than with its own country-specific population).⁷⁹

The distinction between our ex-ante and ex-post notions of equity is analogous to the distinction made by scholars of law between “procedural” and “distributive” justice (e.g., Konovsky, 2000); and by scholars of psychology between “procedural” and “outcome” fairness (e.g., De Cremer *et al.*, 2010). The EAE concept requires procedural equitability hold over time, but not outcome equitability, whereas CPE and RPE require outcome equitability, but not procedural equitability.

All three equity concepts need not apply to every council, or in equal degrees. In the case of the UNSC, however, we appear to observe evidence of a concern for each notion of equity. As discussed in the Introduction, both country- and regional-level equity concepts are frequently cited by reformers. In respect of ex-ante equity, it is notable that several of the reform proposals we consider leave the country voting powers unchanged, but modify

⁷⁷ CPE is identical to the “ex-post equity” (PE) concept we define in Chapter 3. The renaming here is purely for emphasis and clarity (see also footnote 78).

⁷⁸ RPE is identical to the “regional equity” (RE) concept we define in Chapter 3.

⁷⁹ The logical ex-ante counterpart to RPE is that the combined expected voting power of the regional members be proportional to the level of representation that each region would obtain in a fully representative voting body satisfying OPOV. We do not consider this equity concept separately, however, for if a CVG satisfies EAE at time t , then the ex-ante counterpart to RPE is necessarily satisfied too. See Chapter 3 for further details.

the probabilities of membership, suggesting that world leaders understand (at least intuitively) the importance of membership probability as well as voting rights.

4.3 Equity Rules

To derive formal rules for each equity concept we make the following assumption:

Assumption 4.1 *Voting in Stage 1 is assumed, a-priori, to be independent within and across countries.*

As argued by, e.g., Felsenthal and Machover (1997c, 2003), Assumption 4.1 should be understood as reflecting Bernoulli's Principle of Insufficient Reason: a-priori we do not know how countries will actually vote. Empirically, countries on the UNSC do seem to act as distinct entities. Each member has full sovereignty over how it votes and countries pour large sums of money into campaigns for election (see, e.g., Malone, 2000), suggesting that they do not perceive membership by other countries to be a perfect substitute for their own membership. Also, the voting behaviour in the UNGA of serving members of the UNSC is no more similar to that of their regional members than to the votes of the remaining UNGA members (Lai and Lefler, 2009).

Let p_{ijt} be country a_{ij} 's ex-ante probability of gaining UNSC membership in year t (across all categories of membership). Denote the population (as of a fixed time) of country a_{ij} as q_{ij} , and let its relative voting power (according to a given notion of this concept) if a member of the UNSC be β_{ij} , where $\sum_{a_{ij} \in UNSC_t} \beta_{ij} = 1$.⁸⁰ As, when not a member of the UNSC, a country has a voting power of zero, the *expected voting power* of country a_{ij} is given by $\alpha_{ijt} = \beta_{ij} p_{ijt}$. The expectation of α_{ijt} over time we denote by $\bar{\alpha}_{ij} = \mathbf{E}_{t \in T}(\alpha_{ijt}) = \beta_{ij} \bar{p}_{ij}$,

where $\bar{p}_{ij} = \mathbf{E}_{t \in T}(p_{ijt})$.

⁸⁰ The existing UNSC and all reforms we consider may be analysed without requiring country voting powers to be time-variant. See Chapter 3 for a consideration of the more general case, however.

With this notation, and under Assumption 4.1, the EAE, CPE and RPE concepts are equivalent to the following conditions:

$$\text{EAE: } \bar{\alpha}_{ij} \propto \sqrt{q_{ij}}; \quad \text{CPE: } \beta_{ij} \propto \sqrt{q_{ij}}; \quad \text{RPE: } \sum_{a_{ij} \in \text{UNSC}_i \cap R_j} \beta_{ij} \propto \sum_{a_{ij} \in R_j} \sqrt{q_{ij}}. \quad (4.1)$$

It was the inspiration of Penrose (1946) that, under Assumption 4.1, the condition for CPE in (1), which must hold for all countries, achieves the OPOV principle among the citizens of member countries of a voting body. The condition for EAE in (4.1) may then be understood as simply requiring the same square-root rule to hold, but this time for *expected* voting power. The condition for RPE in (4.1), which must hold across all regions, states that the combined voting powers of UNSC members from each region must be proportional to the sum of the square-root populations of the region members. This follows as, under Assumption 4.1, it holds that the voting power of a region is the sum of the voting powers of the individual members. Hence, via Penrose's square-root rule, a region's voting power in a fully representative body satisfying OPOV is proportional to $\sum_{a_{ij} \in R_j} \sqrt{q_{ij}}$.

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In Chapter 3 we show that no CVG can simultaneously achieve CPE and RPE, but that it is possible for a CVG to satisfy either both EAE and CPE, or both EAE and RPE.

4.4 Measuring Deviations from Equitability

It is desirable to be able to measure, in an objective sense, the proximity of a given CVG to each of our equity notions. Accordingly, we adopt the metric $d(\mathbf{X}, \mathbf{Y}) = \frac{1}{2} \sum |X_i - Y_i|$, where \mathbf{X} and \mathbf{Y} are unit-vectors, which corresponds to the *index of distortion* used in Felsenthal and Machover (2004, 2007), and commonly attributed to Loosemore and Hanby (1971).

⁸¹ If Assumption 4.1 were replaced with the assumption that voting is correlated across countries within a region, but independent across regions, then a different concept would be required as regions would vote as blocs on the UNSC and, in general, the voting power of a bloc does not equal the sum of the individual voting powers of the members when voting independently.

We then define proximity measures on the unit interval (where unity indicates maximal proximity) for each of our equity concepts as

$$EAE = 1 - d(\boldsymbol{\alpha}, \boldsymbol{\alpha}^{EAE}); \quad CPE = 1 - d(\boldsymbol{\beta}, \boldsymbol{\beta}^{CPE});$$

where $\boldsymbol{\alpha}$ is the scaled $|A| \times 1$ unit vector of the $\bar{\alpha}_{ij}$; $\boldsymbol{\alpha}^{EAE} = \boldsymbol{\beta}^{CPE}$ is the scaled $|A| \times 1$ unit vector of the $\sqrt{q_{ij}}$; and $\boldsymbol{\beta}$ is the scaled $|A| \times 1$ unit vector of the β_{ij} . To define an analogous proximity measure with respect to RE we note that we may write

$$\sum_{a_{ij} \in UNSC_t \cap R_j} \beta_{ij} = n_{j,PM} \beta_{PM} + (n_j - n_{j,PM}) \beta_{NPM}, \quad (4.2)$$

where $n_{j,PM}$ is the number of PM seats for members of region j and n_j is the total number of UNSC seats for members of region j . Hence, from equation 4.1, we define

$$RE = 1 - d(\sum \boldsymbol{\beta}, \boldsymbol{\beta}^{RPE}),$$

where $\sum \boldsymbol{\beta}$ is the scaled $|J| \times 1$ unit vector of the right-side of (4.2), and $\boldsymbol{\beta}^{RPE}$ is the scaled $|J| \times 1$ unit vector of the $\sum_{a_{ij} \in R_j} \sqrt{q_{ij}}$.

2.4.1 A summary measure

It is helpful for the purposes of comparison between reforms to have a single encompassing measure of equity. To present our main results we utilise a weighted average, or ‘‘utilitarian’’, measure of the form

$$E = \phi_{EAE} EAE + \phi_{CPE} CPE + \phi_{RPE} RPE,$$

where ϕ_i is the preference weight assigned to equity concept i , with $\sum_i \phi_i = 1$. If the preference weights of world-leaders were known, we would clearly utilise these. As, however, these are not known, we weight the concepts of ex-post and ex-ante equity equally to reflect this Bernoullian uncertainty. As we have two ex-post measures to one ex-ante, we halve the weight on ex-post measures, giving $\phi_{EAE} = 1/2$ and $\phi_{CPE} = \phi_{RPE} = 1/4$. The findings arising under this choice of preference weights will not hold for all such choices, however. Accordingly, in Section 4.6 we discuss the main qualitative changes that arise as

the weights are varied, and also show our results under an alternative “Rawlsian” measure for E .

4.5 Efficiency

Our notion of efficiency relates to the decision rule that governs whether UNSC resolutions pass or fail. As discussed in the Introduction, we assume a ternary decision rule: a map from the set of all possible votes by UNSC members (each member may vote either no, yes, or abstain) to an outcome (which is either “pass” or “fail”), that satisfies the monotonicity conditions set out in Felsenthal and Machover (1997c: Definition 2.2). The efficiency of a decision rule refers to the efficiency with which it responds to the preferences of the members. The more difficult, a-priori, it is for a resolution to pass, the lower the efficiency of the decision rule.

Our formal measure of efficiency is based on the ternary extension of the “power of a collectivity to act” (PTA) of Coleman (1971), which is the a-priori probability of a resolution being approved rather than blocked. For ternary decision rules this is given in Freixas (2012) as $PTA = \omega(3^N)^{-1}$, where ω is the number of divisions of the N UNSC members for which a resolution is passed.⁸² As our remaining measures are scaled to the unit interval, but PTA lies on the interval $(0, \frac{1}{2})$, we report $2PTA$ as our measure of efficiency.⁸³

4.3 Proposed UNSC Reforms

Since the 1990s many different proposals for a second reform of the UNSC have been

⁸² For a good introduction to PTA , and its relationship to the Banzhaf index, see Leech (2002c).

⁸³ The minimum and maximum possible values of PTA when there are N voters are $PTA_{\min} = 3^{-N}$ and $PTA_{\max} = \frac{1}{2}\{1 - 3^{-N}\sum_{i=0}^{\lfloor \frac{2-1}{2}N \rfloor} N!(i!)^{-1}((N-i)!)^{-1}\}$. PTA_{\min} , which converges to zero with N , is attained under the unanimity decision rule in which, for a resolution to pass, all members must vote in favour. PTA_{\max} , which converges to $\frac{1}{2}$ with N , is attained under the simple majority decision rule in which the simple majority is taken over all members that do not abstain.

made.⁸⁴ A difficulty, however, with taking these reform proposals themselves as the unit of analysis is that most bundle several distinct reforms. Most reform proposals advocate expansion of the category of NPM alongside one-or-more “structural” reforms (for instance, the introduction of a new membership category).⁸⁵ Analysis of reform proposals is, therefore, unable to isolate the effects due to the structural reform from those due to expansion.

A more informative approach, which we adopt here, is to take individual structural reforms as the unit of analysis. We analyse eight structural reforms that encompass eleven reform proposals put forward by actors within the UN (Table 4.3).⁸⁶ A detailed description of each of the structural reforms in Table 4.3 is contained in Table 4.1, and of each of the reform proposals in Table 4.2. As we discuss further in Section 4.4, we initially impose each structural reform holding the size of the UNSC constant, so as to capture the pure effect of the structural reform. We then expand the resulting council along an “expansion path” to separately observe the effects of expansion.

The earliest proposed structural reform we consider is the creation of a new membership category that gives permanent membership of the UNSC, but not the right of veto (Permanent Non-Veto Member – PNVM). The “2+3” reform proposal, which, according to Davis (2010: 23), was put forward in 1995 by the Non-Aligned Movement (NAM), was one of the first to embrace the *PNVM* structural reform.⁸⁷ The creation of a PNVM category is also the only structural reform in the reform proposal of the “Group of Four” (G4), comprised of Brazil, Germany, India and Japan (G4, 2006); and the 1997 reform

⁸⁴ See, e.g., Cox (2009) and von Freiesleben (2008) for recent qualitative reviews of these reform proposals.

⁸⁵ The UNSC has not increased in size in line with the growth in UN membership: the ratio of UNSC members to UN members has gone from 13.5 per cent in 1966, to only 7.8 per cent in 2012. Accordingly, there is widespread agreement on the need to expand the membership of the UNSC (although by what degree is hotly disputed).

⁸⁶ We focus on the structural reforms associated with reform proposals that are sufficiently concrete to be simulated. This rules out some recent, but vague, reform proposals such as those found in OEWG (2008) and in UfC (2010), and the two NAM reform proposals discussed in Weiss (2005: 18). We also ignore a number of structural reforms associated with UNSC reform proposals made in the academic literature, notably Model C (Hoffmann and Ariyork, 2005), Model X (Hoffmann, 2006) and the reform proposals found in Russett, O’Neill and Sutterlin (1996), Schwartzberg (2003) and Strand and Rapkin (2010). We do this as, so far as we know, none of these reform proposals is under active consideration by UN members.

⁸⁷ For more on the origins of this reform proposal, see Fassbender (2004: 346) and Bourantonis (2005: 49).

proposal of Ismail Razali (*Razali*), then Chair of the OEWG (OEWG, 1997).

Nearly all governments wish to abolish or limit the right of veto, which is viewed as an unfair and anachronistic legacy of the Second World War (Fassbender, 2004; Schwartzberg, 2003). It is widely believed, however, that the five PMs would resist any such change (Weiss and Young, 2005). The position of the African Union (AU) is, therefore, that although it opposes the right of veto, if some countries are to have the right of veto, then this right must be extended. Accordingly, the AU reform proposal (AU, 2005) has as its structural reform the extension of the right of veto to eleven UNSC members (*Veto+*). As a fall-back position, the AU has joined with several other states (Italy, Mongolia, Singapore and Tunisia), to advocate particular structural reforms aimed at weakening the right of veto. In particular, we analyse the Weak Veto reform proposal, (*WV*), which contains as its structural reform that at least two PMs must vote against a resolution for it to necessarily fail (*Veto-*).⁸⁸

A further structural reform we consider is the redefining of the existing regional groups (*RR*). In 2003, the then UN Secretary-General set up the High-level Panel on Threats, Challenges and Change (HLP). The Panel's report (HLP, 2004) contains two different reform proposals – *HLP_A* and *HLP_B* – each incorporating a modified set of regions. While *HLP_A* additionally allows for PNVMs, *HLP_B* instead features two new structural reforms. First, it calls for a new category of long-term NPM seat (*Term+*) with a four-year term. Second, it proposes that the long-term NPM membership category allow immediate re-election (*Renew*) – at present, NPMs must allow one year before seeking re-election. Allowing renewable membership is also the principal structural reform in the reform proposal of the Uniting for Consensus (UfC) group (UfC, 2005) headed by Italy. In 2007 Panama put forward a reform proposal (*Panama*) that also allows for renewable membership, but with the twist that members elected to the UNSC for four consecutive

⁸⁸ Fassbender (2004: 351) and Wouters and Ruys (2005: 22) discuss further the origins of this reform proposal.

terms would acquire PNVM status (Panama, 2007).

We consider two further structural reforms, each associated with Italy (which plays an especially active role in the UNSC reform debate). Italy (2005) put forward a reform proposal (*Italy*) that, as its structural reform, creates a new category of seat that rotates among the members of each regional group (*Rotate*). A more radical structural reform – regional members (*RM*) – is to create a category of seat held by a region, rather than by any individual country. In this vein, Italy has advocated the creation of a permanent European Union (EU) seat on the UNSC, endowed with the right of veto (the *EU* reform proposal).⁸⁹ In April 2011 this idea received the backing of the European Parliament, which passed a resolution stating that “...a seat in an enlarged UNSC remains a central, long-term goal of the European Union” (European Parliament, 2011).⁹⁰

4.4 Simulation

In this section we detail our approach to simulating the UNSC under each reform process.

The reader not interested in these details may skip this section.

4.4.1 Election to the UNSC

We begin by determining, for each region, the number of seats of each membership category that are vacant in a given year: as only a subset of UNSC members complete their terms in a given year, this is not unique. For instance, in the present UNSC the GRULAC and the WEOG both receive two NPM seats: the GRULAC elect one of their seats each year – the sequence {1,1} – whereas the WEOG elect both their seats in odd years, and

⁸⁹ See, e.g., Kirkup (2009).

⁹⁰ The EU already enjoys observer status in the UNGA under Resolution A/65/L.64/Rev.1 (UNGA, 2011). As an observer the EU has the right to speak at UNGA meetings and to present proposals agreed by EU members, but not the right to vote on resolutions and other substantive matters. Note that our *EU* reform proposal assumes that the veto for the EU replaces the separate vetoes presently wielded by France and the UK. It is unclear whether this is also envisaged by the European Parliament, or whether it seeks an EU seat in addition to the France and the UK retaining their existing PM status.

hold no elections in even years – the sequence $\{2,0\}$. As, the WEOG aside, the remaining regions display a preference for temporal smoothing of vacancies we look (under each structural reform) for the set of sequences that makes maximally smooth the number of vacant seats per year within each region, and which also makes maximally smooth the total number of vacancies per year across regions.⁹¹

With the number of vacant seats decided, we specify an election procedure for membership categories that require members to be elected. At present, the UNGA simultaneously elects new NPMs to the UNSC in an annual ballot. In order to obtain a tractable model for purposes of simulation, however, we suppose that elections are conducted sequentially, with countries elected one-by-one to each membership category in turn. As countries that win UNSC membership in the category elected first become ineligible for election to the membership category elected second, and so on, we assume that the elections for each membership category are held in order of desirability, with seats belonging to the most desirable membership category elected first. This assumption rules out the possibility a country might not participate in the elections for the first membership category, so as to ensure eligibility for a later membership category. PNVN membership is deemed the most desirable, with further membership categories ranked by term length, followed by renewable status. The least desirable membership category – two years non-renewable – is therefore elected last.⁹²

As in Chapter 3, we model the \bar{p}_{ij} as deriving from a (time-invariant) probability ρ_{ijk} , where

$\sum_k \sum_{a_{ij} \in R_j} \rho_{ijk} = 1$, with which country a_{ij} will be elected to the UNSC in membership

⁹¹ Specifically, we employ a lexicographic procedure in which, first, we identify the sets of sequences that makes maximally smooth the number of vacant seats per year within each region. Second, among these sets of sequences, we identify those that maximally smooth the total number of vacant seats across regions. Last, if a unique set of sequences is not yet determined, a final choice is made according to a random draw from the remaining sequence sets.

⁹² The *Rotate* structural reform is the introduction of ten regional rotating seats to replace the ten existing NPM seats. To analyse this structural reform, for each region, we draw the countries one-by-one without replacement under a uniform distribution to determine the order of rotation. In some instances a country may be elected to a more desirable membership category when its “turn” for a rotating seat comes, in which case its turn as a rotating member is delayed until its UNSC term has ended. Similarly, a country may be ineligible to serve on the UNSC when its “turn” for a regional seat comes, in which case its turn is delayed until it next becomes eligible.

category k when in competition with all members of its region and if only a single seat is being elected. If, in year t , there are n_{jkt} seats of membership category k to be filled by new members from region j , then, in each of n_{jkt} rounds, there is a new realisation of a random variable that elects country a_{ij} with probability ρ_{ijkt} . The only complication is that countries cannot have dual membership of the UNSC, so, if the same country is elected in more than one round, the process is repeated again in full until distinct countries are elected. The probability, therefore, of country a_{ij} being elected to one of n_{jkt} seats in membership category k from a set of eligible countries E_{jkt} is given by

$$\frac{n_{jkt} \sum_{\substack{h_1 < \dots < h_{n_{jkt}-1} \\ h_1, \dots, h_{n_{jkt}-1} \neq i}} \rho_{ijkt} \rho_{h_1 jkt} \dots \rho_{h_{n_{jkt}-1} jkt}}{\sum_{h_1 < \dots < h_{n_{jkt}}} \rho_{h_1 jkt} \dots \rho_{h_{n_{jkt}} jkt}}, \quad (4.3)$$

the sum in the numerator being over all n_{jkt} -subsets of E_{jkt} containing country a_{ij} and in the denominator being over all n_{jkt} -subsets of E_{jkt} . The numerator of equation 4.3 is the probability of observing a distinct country sequence of length n_{jkt} containing country a_{ij} , and the denominator is the probability of observing any distinct country sequence of length n_{jkt} . When a country is eligible for only one elected membership category then equation 4.3 corresponds to p_{ijt} . If, however, a country is eligible for more than one elected membership category, its p_{ijt} will reflect the probabilities with which it is elected to each of the membership categories for which it is eligible.⁹³

How should the ρ_{ijk} be chosen? One perspective is that, for countries without a specified UNSC election probability in the either structural reform or the UN Charter, Bernoulli's Principle of Insufficient Reason applies. According to this Principle, the ρ_{ijk} for such countries should be set equal within each region. An alternative perspective is that past behaviour offers the best guide to future behaviour, in which case it is necessary to

⁹³ In this case the precise form of p_{ijt} is complex, as it must reflect all possible orderings in which a country could be elected to the UNSC. Moreover, the denominator of (3) will frequently contain a (prohibitively) large number of terms as the size of the UNSC is increased. With the individual p_{ijt} unobservable, we are unable to compute proximity measures for the AE concept we use in Chapter 3. We are, nonetheless, able to compute proximity measures for the weaker EAE concept we employ here.

understand empirically the implied ρ_{ijk} arising from the current system of election to the UNSC. In Chapter 2 we detail the systematic determinants of election to the UNSC, accounting for the two-stage process by which members are presently elected.⁹⁴ The analysis finds that UNSC election is non-random, depending instead on three country characteristics: population, gross national income, and waiting time since last serving on the UNSC.⁹⁵ The estimated co-efficients for these three variables can be used in a straightforward way to compute estimates of the ρ_{ijk} .⁹⁶ These are presented in Table 3.1. Our main results are based upon this latter approach, but – as a robustness check – in Section 4.6 we re-run the analysis under the assumption that, within each region, the ρ_{ijk} for countries without a specified membership probability in either the structural reform or the UN Charter are equal.

4.4.2 Structural reforms and expansion path

We would like to distinguish the effects of each structural reform, s , separately from those of expansion. Therefore, we write the structural reforms in Table 4.1 such that each leaves the size of the UNSC unchanged at $N = 15$. We then create the CVG C_s associated with each structural reform s . For example, C_{PNVM} , is created from $C_{Present}$ by reducing by one the number of NPM seats for Africa, Asia, GRULAC and the WEOG in the present UNSC, and adding one new PNVM seat for each of these regions. Under each structural reform we denote the total number of UNSC seats (of all categories) belonging to region j with a vector $\mathbf{n}^0 = (n_1^0, n_2^0, \dots, n_{|j|}^0)^T$.

⁹⁴ In the first stage, the regions make nominations to the UNGA and, in the second stage, the UNGA votes. See, Chapter 2 for further details.

⁹⁵ As noted by Lucas (1976), however, the parameter estimates of Chapter 2 may be conditional on the existing institutional arrangements. If so, they may no longer apply if these arrangements were to change.

⁹⁶ We obtain estimates of country population and gross national income per capita (current USD) for 2012 from the CIA World Factbook (<https://www.cia.gov/library/publications/the-world-factbook/index.html#>). We update the variable measuring waiting time since last serving on the UNSC (which ends in 2006 in the data used in Chapter 2) to 2012 using membership records from the UNSC Web site (<http://www.un.org/Docs/sc>). To produce the estimates in Table 3.1, these data, along with the co-efficient values for population, gross national income per capita, and waiting time since last serving on the UNSC reported in Table 2.3a, are fed into equation 2.5, where we assume that the sum in the denominator is over all countries in the region ($E_{ji} = R_{ji}$). We assume, a-priori, that election to new membership categories different from the existing NPM category, also follows the probabilities in Table 3.1, i.e., $\rho_{ijk} = \rho_{ij,NPM}$ for all k .

To then observe separately the effects of expansion, we increase the size of the UNSC under each structural reform by adding new NPM seats one-by-one until $N = 30$.⁹⁷ Expansion of the UNSC is performed according to a probabilistic “expansion path”. Specifically, for a given s , to allocate x new NPM seats we give each region $\gamma_{jx} = \lfloor \psi_j x \rfloor$ extra seats for sure, and consider all possible divisions of the remaining $h_x = x - \sum_j \gamma_{jx}$ seats.⁹⁸ Let an outcome of this procedure for a given x be represented by the vector $\mathbf{x}_x = (x_1, x_2, \dots, x_{|J|})^T$, where $\mathbf{1} \cdot \mathbf{x}_x = x$; and let $\Psi_{\mathbf{x}_x}$ be the set of all feasible \mathbf{x}_x for a given x , i.e., $\mathbf{x}_x \in \Psi_{\mathbf{x}_x}$ if and only if $x_j \geq \gamma_{jx}$ for all $j \in J$. We assume a multinomial probability distribution over $\mathbf{x}_x \in \Psi_{\mathbf{x}_x}$ such that a given \mathbf{x}_x is realised with probability

$$(h_x)! \prod_{j \in J} \frac{(\psi_j)^{x_j - \gamma_{jx}}}{(x_j - \gamma_{jx})!}. \quad (4.4)$$

Last, for each structural reform, we denote as $\mathcal{C}_x = \{C_{\mathbf{x}_x}\}_{\mathbf{x}_x \in \Psi_{\mathbf{x}_x}}$ the set of CVGs that enter into the computation of the expansion path at expansion x .

How to choose the ψ_j ? According to the UN Charter, NPM seats on the UNSC should be given to regions according to the principle of “equitable geographical distribution” (Article 23(1)), but there is no agreed upon interpretation of this principle, however. Instead, we note that one of our equity concepts – RPE – makes a clear prediction regarding the division of council seats to regions. From equations 4.1 and 4.2, RPE requires that

$$n_{j,\text{PM}}\beta_{\text{PM}} + (n_j - n_{j,\text{PM}})\beta_{\text{NPM}} \propto \sum_{a_{ij} \in R_j} \sqrt{q_{ij}}. \quad (4.5)$$

As the left-side sums to unity across regions, (4.5) can be used to re-arrange for n_j^{RPE} as

⁹⁷ We do not analyse the cases $N > 30$ as there is broad agreement among UN members that, in order to be able to perform its role effectively, the UNSC must contain a limited number of members (e.g., Zifcak, 2006). The largest UNSC expansion advocated in the reform proposals we consider is 11 new members (AU), bringing total membership to $N = 26$ countries.

⁹⁸ Hence, we do not consider extreme divisions of seats to regions in which the number of new NPM seats given to one or more region deviates significantly from its expected value $\psi_j x$.

$$n_j^{\text{RPE}} = n_{j,\text{PM}} + \frac{\sum_{a_{ij} \in R_j} \sqrt{q_{ij}} - n_{j,\text{PM}} \beta_{\text{PM}} \sum_{a_{ij} \in A} \sqrt{q_{ij}}}{\beta_{\text{NPM}} \sum_{a_{ij} \in A} \sqrt{q_{ij}}} \quad (4.6)$$

We choose the ψ_j such that, for each s , the UNSC would attain the RPE concept at the maximal expansion $x = 193 - 15 = 178$. To do this, for each s , we (i) add 178 new NPM seats to \mathbf{n}^0 to give \mathbf{n}^{178} ; (ii) compute β_{PM} and β_{NPM} for \mathbf{n}^{178} ; (iii) use (4.6) to determine the n_j^{RPE} that implement RPE for \mathbf{n}^{178} , (iv) compute the vector of implied x_j : $\mathbf{x} = \mathbf{n}^{178} - \mathbf{n}^0$; and (v) set $\psi_j = (178)^{-1}x_j$.

4.4.3 Voting power and decision rule

As is by now conventional in the literature, we adopt the normalised Banzhaf index as our measure of relative a-priori voting power. Note, however, that we adopt the ternary interpretation of the normalised Banzhaf index, as set out by Felsenthal and Machover (1997c), rather than the more conventional binary interpretation. We compute the ternary normalised Banzhaf index using the method of generating functions (see, e.g., Freixas, 2012).

At present, the UNSC decision rule requires, as a necessary condition, that nine of 15 members vote in favour of a resolution for it to pass. It is only possible to retain the ratio 0.6 when N is divisible by five, however. One option, when N is not divisible by five, is to set the threshold number of members required for a decision to pass, Q_N , such that the fraction $Q_N N^{-1}$ is made as close as possible to 0.6. This, however, introduces marked jaggedness into the results. Instead we adopt a probabilistic approach with mean $0.6N$. We assume $Q_N \geq \lfloor 0.6N \rfloor$ and $N - Q_N \geq \lfloor 0.4N \rfloor$ for sure, and allocate the remaining quantity $N - \lfloor 0.6N \rfloor - \lfloor 0.4N \rfloor$ to Q_N with probability 0.6, and to $N - Q_N$ with probability 0.4. Under this procedure, if $0.6N$ is an integer then $Q_N = 0.6N$; otherwise $Q_N = \lfloor 0.6N \rfloor$ with probability

$\lceil 0.6N \rceil - 0.6N$, and $Q_N = \lceil 0.6N \rceil$ with probability $0.6N - \lfloor 0.6N \rfloor$. This is sufficient to remove much of the jaggedness associated with a deterministic Q_N .

4.4.4 Computation of Measures

For a given s , at every point on the expansion path ($x = 1, 2, \dots, 15$) we, first, realise the set of CVGs \mathcal{C}_x . We choose the number of years over which each CVG is realised in the following way. For every x , we perform a total of 100,000 realisations across the CVGs belonging to \mathcal{C}_x . We divide these 100,000 realisations equally between each CVG in \mathcal{C}_x such that each CVG is realised over $100,000/|\mathcal{C}_x|$ periods.⁹⁹ Second, we compute an estimate of \bar{p}_{ij} for each country from the realisations of each CVG. If a CVG is realised over T years, the estimated \bar{p}_{ij} is computed as $\bar{p}_{ij}^T = T^{-1} \#_{a_{ij} \in \text{UNSC}}$, where $\#_{a_{ij} \in \text{UNSC}}$ is the number of realisations in which country a_{ij} is a member of the UNSC. We take the mean of the \bar{p}_{ij}^T across realised CVGs according to the probabilities in (4.4) as our final estimate of \bar{p}_{ij} . Last, we then able, for each x , to compute β^{CPE} , β^{RPE} and α^{EAE} for each CVG in \mathcal{C}_x . Our final estimates of these measures are, again, the mean across realisations under the probabilities in (4.4). We are then able to compute *EAE*, *CPE* and *RPE* for each structural reform at each point on the expansion path.

4.5 Results

Our main results are shown in Figure 4.1. On the horizontal axis is our summary equity

⁹⁹ When $100,000/|\mathcal{C}_x|$ is not an integer we realise $\lceil 100,000/|\mathcal{C}_x| \rceil$ years. Precisely, for each CVG we realise marginally more than $\lceil 100,000/|\mathcal{C}_x| \rceil$ periods, but discard the very earliest periods. This is necessary as we begin each CVG with a UNSC containing just the PMs (with the remaining seats vacant). Hence, it requires a number of years before the elected UNSC becomes filled with members. The number of initial years we discard corresponds to twice the maximum term length.

measure E , and on the vertical axis is our efficiency measure $2PTA$. As, however, $2PTA$ becomes very close to zero as the UNSC is expanded, we show the logarithm of $2PTA$ for visual ease.

The left-most point of each expansion line in Figure 4.1 records the equity and efficiency of the unexpanded UNSC under each structural reform. Each expansion line is then formed as the locus of equity and efficiency results we obtain as the membership of the UNSC is expanded according to the relevant expansion path. Accordingly, the right-most point of each expansion line records the equity and efficiency of the expanded council at the maximum expansion $x = 15$ under each structural reform. Comparison of the left-most points of each expansion line therefore reveals the pure effect of the structural reform separate from the effects of expansion. Comparison of the expansion lines away from the left-most point reveals the separate effect of expansion of the UNSC under each structural reform.

The equity and efficiency measures for each UNSC reform proposal appear in Figure 4.1 as a point estimate, marked “×”. To help interpret the findings in Figure 4.1 we show, in Figure 4.2, the three components to our summary equity measure (EAE, CPE and RPE) on an expansion-by-expansion basis under each structural reform.

4.5.1 Structural reforms

We begin with an appraisal of the structural reforms (separate from the effects of expansion). We say that structural reform i “0-dominates” j if, at expansion $x = 0$, it holds that $2PTA_i > 2PTA_j$ and $E_i > E_j$, and that structural reform i “weakly 0-dominates” j if one or both of these inequalities is weak. We see in Figure 4.1 that the structural reforms fall into two categories: three alter both efficiency and equity (RM , $Veto+$ and $Veto-$), but the remaining five alter equity only. Structural reforms in the latter category can, at best, weakly 0-dominate *Present*, but we find that three of the five are actually weakly 0-

dominated by *Present*. Of the structural reforms in the former category, two strictly 0-dominate *Present*, and one is strictly 0-dominated by *Present*.

The only structural reform to be strictly 0-dominated by *Present* is *Veto+*, under which six existing NPM seats are replaced by six new PM seats. The effect of this structural reform upon efficiency is deleterious: it reduces the a-priori probability of a resolution being approved from one per cent at present to just 0.2 per cent, leaving the UNSC barely able to pass a resolution. *Veto+* also leads to a fall in overall equity: Figure 4.2 shows this to be the result of an improvement against CPE and RPE, but a worsening against EAE. The improvement against CPE arises as the veto right is awarded to countries such as India and Brazil who are presently heavily under-represented by this concept. The improvement in RPE arises as *Veto+* gives four of the six new vetoes to countries from the under-represented regions of Africa and Asia. The worsening against EAE, which transpires to be the dominant effect, arises as *Veto+* concentrates (rather than dilutes) expected voting power in the hands of the countries selected to be new PMs.

Of the three structural reforms that are weakly 0-dominated by *Present*, the one that is weakly dominated by the remaining two such reforms is seen to be *PNVM*, under which four NPM seats are converted into *PNVM* seats. As this proposal affects only the membership probabilities, and not the voting powers, *PNVM* leaves proximity to the CPE and RPE concepts unchanged, but results in a worsening against EAE. The reason is, again, that the proposal concentrates (when it would ideally dilute) the distribution across countries of expected voting power.

The second worst of these three structural reforms is *Rotate*, under which NPM seats are replaced with seats that rotate within region. Like *PNVM*, *Rotate* alters only proximity to the EAE concept. The worsening against this concept arises as *Rotate* does not shift expected voting power away from the PMs to the remainder of the UN membership (as would be desirable), but instead re-allocates (equalises) expected voting power within those remaining members. This equalisation of expected voting power is counter-

productive, for, under EAE, more populous countries warrant greater expected voting power than less populous countries.

The final structural reform in this group of three – which weakly 0-dominates *Rotate* and *PNVM*, but remains weakly 0-dominated by *Present* – is *Renew*, under which NPM seats allow re-election. Once again, *Renew* alters only proximity to the EAE concept. The worsening against this concept arises as permitting re-election benefits disproportionately those countries that gain election more often, but such countries already receive at least their share of expected voting power under *Status quo*.

Only two structural reforms weakly 0-dominate *Present*: *Term+* and *RR*. *Term+* allows for a new category of membership with a four-year term. As may be seen in Figure 4.1, however, the equity gain vis-à-vis *Present* at expansion 0 is so small as to be nugatory. To a first, approximation, therefore, the *Term+* structural reform at expansion 0 simply replicates *Status quo*. Under *RR* the five existing regional groupings would collapse to four. Voting rights are left unchanged, so the proposal does not alter *CPE*. *RR* does lead to a very slight improvement in proximity to the EAE concept, but the principal improvement is in proximity to the RPE concept. This improvement arises as *RR* disperses some of the excess representation of the WEOG by moving the United States and Canada into the Americas group, and countries such as Australia and New Zealand into the Asia and Pacific group.

RM, under which all EU members act as a single PM, is one of only two structural reforms that 0-dominate *Present*. By reducing the number of players that wield the right of veto from five at present to four (for the UK and France would no longer exercise separate vetoes) *RM* improves efficiency: it increases the a-priori probability of a resolution being approved from 1.02 per cent at present to 1.68 per cent. Although it worsens proximity to both *CPE* and *RPE*, *RM* leads to an overall improvement in equity, for it dilutes the distribution of expected voting power by reducing the number of PMs – which improves proximity to EAE in Figure 4.2a. Why does *RM* worsen *CPE*? The reason is that the voting

power of a PM substantially under-represents these countries, giving them just 35 per cent of their voting power under CPE. *RM* additionally worsens proximity to the RPE concept, for the remainder (less EU members) of both the EE group and the WEOG become substantially over-represented.

The only other structural reform to 0-dominate *Present* is *Veto-*. Under *Veto-* two PMs would need to vote against a resolution for this to constitute an automatic veto. By reducing the blocking power of each PM, *Veto-* increases the a-priori probability of a resolution being approved to 2.21 per cent. As may be seen in Figure 4.2a the improvement in overall equity is due to a substantial improvement in ex-ante equity (EAE). This arises as *Veto-* succeeds in diluting the share of expected voting power held by the PMs by reducing their voting power. Note, however, that *Veto-* worsens proximity to the CPE concept (Figure 4.2b), which offsets some of the improvement against EAE in the summary measure of equity. The worsening against CPE may be explained as follows: in Chapter 3 we find that the PMs exercise too *little* voting power, but exercise too *much* expected voting power. The implication of these joint findings is that UNSC reform should seek to erode the right of the existing PMs to be ever-present on the UNSC, rather seeking to reduce their voting power when UNSC members. Thus, *Veto-* reduces the expected voting power of the PMs in the “wrong” manner: by reducing their voting power rather than by reducing their time as a UNSC member.

4.5.2 Expansion

We now consider the effects of expansion. Strengthening the definition of 0-dominance, we say that structural reform *i* “expansion-dominates” *j* if it holds that $2PTA_i > 2PTA_j$ and $E_i > E_j$ for all expansions $x = 0, 1, \dots, 15$. Recall that, in Figure 4.1, the UNSC under each structural reform is expanded so as to attain (in expectation) the RPE concept at expansion 178. Although there is some modest variation across structural reforms, the typical

proportion of new NPM seats given to each region by this procedure is: Africa 27 per cent, Asia 38 per cent, EE nine per cent; the GRULAC 13 per cent and the WEOG 13 per cent. Under these proportions the first ten additional NPM seats would be allocated three to Africa, four to Asia, and one to each of EE, the GRULAC and the WEOG.

The effects of UNSC expansion are seen in Figure 4.1 to be similar under each of the different structural reforms:¹⁰⁰ it improves equity, but worsens efficiency. Our simulations show that equity is increasing, but concave, in the size of the UNSC, which indicates diminishing equity returns to expansion. Efficiency, however, is decreasing and convex in the size of the council, indicating that the marginal loss of efficiency from adding one additional NPM falls with the size of the UNSC. Thus, the largest marginal gains in equity from expansion are associated with the largest losses of efficiency.

One structural reform expansion-dominates all the remaining seven: *Veto-*. In this sense, this structural reform wins out among those we consider. The only other structural reform to expansion-dominate *Present* is *RM*. At the other end of the scale, *Veto+* is expansion-dominated by all the remaining seven structural reforms, making it, in this sense, the worst of the structural reforms we consider. Two further structural reforms are weakly expansion-dominated by *Present*: *PNVM* and *Renew*.

4.5.3 Reform proposals

Last, we consider our results for the reform proposals. We say that a reform proposal *i* “dominates” *j* if $2PTA_i > 2PTA_j$ and $E_i > E_j$. In Figure 4.1 we shade the space that is dominated by *Status quo* (the “south-west” corner), and the space that dominates *Status quo* (the “north-east” corner). Note that, in Figure 4.1, not all reform proposals lie on the

¹⁰⁰ One exception is *Rotate*, which is 0-dominated (but not expansion-dominated) by *Renew*, *Term+* and *Present*. The reason *Rotate* generates stronger equity effects from expansion than, e.g., *Present*, is that it promotes a clean division of duties between membership categories: the more populous countries utilise the additional NPM seats, while the rotating seats substantially increase the membership probability (and therefore expected voting power) of the least populous countries (that, in Chapter 3, we find to be substantially under-represented in an ex-ante sense).

expansion line of a particular structural reform. There are two reasons for this. Most straightforwardly, some reform proposals combine more than one structural reform, and therefore appear somewhere between the relevant expansion lines. Alternatively, a second reason is that some reform proposals imply expansion proportions (in terms of the proportion of new NPM seats that are allocated to each region) that are different from the “optimal” proportions we employ in the simulation.¹⁰¹ Indeed, we find that none of the reform proposals considered fully exploits the potential equity improvements from expansion, typically because the proportion allocated to Asia is too low (relative to the optimal proportion of 40 per cent), and too high a proportion is given to either the GRULAC or the WEOG.

Only one reform proposal dominates *Status quo*: *WV*. Indeed, Figure 4.1 shows that it is possible to augment *WV* with expansion of the UNSC by up to four members and still dominate *Status quo*. It is not possible, however, to augment *WV* with expansion of the UNSC such that all the remaining reform proposals would be dominated. On its own *EU* does not dominate *Status quo*. Figure 4.1 indicates, however, that if it is augmented with expansion of the UNSC by one member (which moves us to the left-most point of the *RM* expansion line), then it too dominates *Status quo*, but not if expansion is by more than a single member.

Of the remaining nine reform proposals, each improves upon equity relative to *Status quo*, but worsens efficiency. Of these, only four – *2+3*, *HLP_B*, *Italy*, and *Panama* – are undominated proposals. Of the five reform proposals that are at least weakly dominated by at least one other proposal, the most heavily dominated is *AU*, which is dominated by four reform proposals. If world leaders were willing to reduce $Q_N N^{-1}$ – the proportion of the

¹⁰¹ Two clarifications: first, the *EU* reform proposal in Table 4.2 reduces the size of the UNSC to $N = 14$ as France and the UK are no longer separate members. The *RM* structural reform in Table 4.1 adds back this lost member to retain the size of the UNSC at $N = 15$. The *EU* reform proposal therefore appears to the left of the left-most point of the *RM* expansion line in Figure 4.1. Second, as detailed in Table 4.2, *2+3*, *G4* and *Razali* each specify different numbers of new PNVM seats. Technically, we should treat the replacement of one NPM seat by a PNVM seat as a distinct structural reform from the replacement of two NPM seats by two PNVM seats, and so on. To reduce the number of lines in Figure 4.1, however, in Table 4.1 we simply define a single *PNVM* structural reform that replaces four NPM seats with four PNVM seats.

total votes required to be affirmative for a resolution to pass – as part of any reform proposal, then the point estimates in Figure 4.1 would all shift upwards. For a sufficient reduction in $Q_N N^{-1}$, some or all of these nine reform proposals would dominate *Status quo*. There appears, however, little appetite among world leaders to relax $Q_N N^{-1}$, which is why, in our simulation, we set it to be consistent with the current requirement that, as a necessary condition, three-fifths of members must vote in favour of a resolution for it to pass.

4.6 Robustness

The results of the previous section are predicated upon a number of assumptions. In this section we explore how our findings change under variants of these assumptions.

4.6.1 Equity Measure

The results of Section 4.5 are for a summary equity measure that employs a weighted average of *EAE*, *CPE* and *RPE*, with the weights chosen to reflect the a-priori uncertainty over their true values. We first discuss the implications of different weights, which may be assessed using Figure 4.2. According to panel (a) *Veto-* and *RM* would be the chief winners from a rule that placed a higher weight on the *EAE* concept, which would benefit the associated *WV* and *EU* reform proposals. The principal loser would be *Veto+*, and the associated *AU* reform proposal. Conversely, *Veto+* would be the principal winner if more weight were placed on either the *CPE* or *RPE* concepts; and *RM* and the associated *EU* reform proposal, would be the principal loser.

A second perspective is to construct *E* in a different way. A prominent alternative is the “Rawlsian” measure $E = \min(EAE, CPE, RPE)$, the results under which are shown in Figure 4.3. The majority of the findings of the previous section remain. In particular, that

Veto- 0-dominates *Present* is robust to the Rawlsian interpretation, and now *RM* also 0-dominates *Present* (and the associated *EU* reform proposal now dominates *Status quo*). *Present* continues to 0-dominate *Veto+*, and weakly 0-dominate *PNVM*, *Renew*, and *Rotate*. Turning to the reform proposals, *WV* continues to dominate *Status quo*, and the 2+3, *HLP_B*, *Italy* and *WV* reforms continue to be undominated. The principal difference between results is that *Veto-* no longer expansion-dominates all other structural reforms, for it is held back by its weak performance against the CPE equity concept beyond a given degree of expansion.

4.6.2 Decision rule, voting power index, and membership probability

We now investigate the sensitivity of our qualitative findings to (i) the measurement of voting power; (ii) the representation of the UNSC decision rule; and (iii) the estimated membership probabilities. To address part (i) above we repeat the analysis of Section 4.4 using the principal alternative to the Banzhaf index of voting power – the (ternary) Shapley-Shubik index – as defined in Felsenthal and Machover (1997c). To address part (ii) we repeat the analysis with the (normalised) binary Banzhaf index.¹⁰² To address part (iii) we repeat the analysis under the a-priori assumption that the ρ_{ijk} are equal within region for all countries without a specified membership probability within the UN Charter, or within the rules of the structural reform. We reason that if our qualitative results are robust to this (significant) perturbation of the estimated ρ_{ijk} in Section 4.4 then we may conclude that our results are not sensitive to the precise estimates employed.

The results of these three analyses are presented in Table 4.4, which summarises our findings for the structural reforms in respect of 0-dominance (part a) and expansion dominance (part b); and for dominance with respect to the reform proposals (part c). In Table 4.4a, for instance, a “>” in the i^{th} row and j^{th} column would imply that structural

¹⁰² The normalised binary Banzhaf index is computed using the method of generating functions applied to binary games (see, e.g., Bilbao *et al.*, 2000). A good introductory account of these methods may be found in Leech (2002d).

reform i 0-dominates j in the analysis of Section 4.4 and all three analyses (i)-(iii) above. Conversely, “>TB,SS,EP” would indicate that structural reform i 0-dominates j in the ternary Banzhaf (TB) analysis of Section 4.4, in the Shapley-Shubik (SS) analysis of part (i), and in the “equal ρ_{ijk} ” (ER) analysis of part (iii), but not in the binary Banzhaf (BB) analysis of part (ii).

Our key qualitative conclusions are robust to these additional analyses. We see in Table 4.4a that the finding that *RM* and *Veto-* 0-dominate *Present* is robust across all four analyses considered, as are the findings that *Present* 0-dominates *Veto+*, and weakly 0-dominates *PNVM* and *Rotate*. In Table 4.4b we see that *Veto-* expansion-dominates all other proposals across all four analyses, confirming this structural reform as the best among those we consider. *RM* also expansion-dominates *Present* in all four analyses. Under ER the *Present*, *Renew*, *Rotate* and *Term+* structural reforms become equivalent, so some weak-dominance relationships hold in both Tables 4.4a and 4.4b under ER that do not hold in the remaining analyses. In Table 4.4c, which considers the reform proposals, we see that *WV* always dominates both *Status quo* and *EU*, and is the only reform proposal that is undominated in each analysis, confirming its position as the most promising of the reform proposals we consider. *AU* is always dominated by four reform proposals *G4*, *HLP_B*, *Italy* and *UfC*; and *HLP_B* always dominates *AU*, *G4*, *HLP_A*, and *Razali*.

The analysis under SS is seen, however, to produce several dominance relations in Table 4.4c that do not hold in any of the three remaining analyses. This arises as, under SS, the voting power of a PM is much higher than under TB. Under, *Status quo*, for instance, a PM has almost exactly twice as much voting power as a NPM according to TB, but almost exactly 9.5 times as much voting power under SS. Accordingly, under SS, voting power shifts from the PMs to the remaining UNSC members much more slowly with expansion of the UNSC, making the analysis more pessimistic concerning the equity benefits of expansion. The point estimates of those reform proposals that expand the UNSC therefore shift to the left in Figure 4.1. The two reform proposals that do not expand the UNSC – *EU*

and *WV* – therefore dominate additional reform proposals (and *WV* dominates all other proposals).

4.7 Conclusion

The UNSC plays an important role in ensuring global peace – the bedrock of macroeconomic stability. Although reform of the UNSC is one of the most pressing issues facing the international community, as yet no previous analysis has appraised the options for UNSC reform against formal equity and efficiency desiderata.

In this Chapter we present such an appraisal. Nearly all countries support expansion of the UNSC membership, but, so far, no expansion has taken place, as some countries worry that an expansion-only reform would be merely a “sticking plaster” that ultimately delayed the implementation of the deeper “structural” reforms needed for a lasting solution to the Council’s difficulties. On the basis of our analysis we agree that expansion at the levels currently under consideration will provide only modest improvements in equity, and will also come at the expense of efficiency, unless world leaders are also willing to relax the threshold for the proportion of members that must vote in favour of a resolution for it to pass. On the other hand, we find that at least two of the structural reforms under consideration – *PNVM* and *Renew* – seem sure to make the Council’s woes worse rather than better, for in Table 4.4a both these proposals are weakly dominated by the present UNSC under all analyses. Also, the *Veto+* structural reform is (strictly) dominated by the present arrangements in our main results. As such, an expansion-only reform would be preferable to expansion with structural reform in these cases.

The most promising reform proposal among those we consider is one in which two PMs would have to cast a vote against a resolution for this to constitute a veto (*WV*). Its success owes to the fact that, by reducing the voting power of the PMs, it dilutes the distribution of expected voting power away from these countries. By contrast, many of the other reform

proposals advocate structural reforms that fail to dilute the distribution of expected voting power, or even further concentrate it in the hands of the PMs (e.g., the African Union's proposal). But *WV* is still far from being "optimal" in respect of our equity concepts, for it reduces the expected voting power of the PMs by reducing their voting power, rather than by requiring them to lose their right to permanent representation. As such, *WV* conflicts with the CPE equity notion, under which the PMs (individually and collectively) warrant more voting power when a UNSC member.

Realpolitik would appear to impose heavily upon the set of feasible reforms. In the case of *WV*, the PMs would be reluctant to relinquish their veto right, and enjoy an apparently impregnable right of double-veto – they exercise a veto on all non-procedural matters and over whether matters should be treated as procedural or non-procedural (see, e.g., Köchler, 1995).

More generally, it has been recognised by political scientists that when the interests and responsibilities of the members of an organisation are not shared equally, the functioning of such organisations may be impaired if these inequalities are not reflected in the voting system.¹⁰³ This observation might stimulate future research into "second-best" reforms that are as proximate as possible to the equity concepts adopted in this Chapter, but which satisfy a "functionality" or realpolitik constraint. While this idea must await a proper treatment, we believe that the present contribution has at least clarified what (little) can be achieved with the reform proposals presently on the table.

¹⁰³ The League of Nations and the International Trade Organization are two now deceased international organisations whose demise has been attributed to a failure to accommodate the interests of the United States and other Western powers in voting procedures (see, e.g., Zamora, 1980; Malone, 2004).

Appendix

Table 4.1: Structural Reforms

Reform	Details
<i>PNVM</i>	Four new PNVM seats (replacing one NPM seat for each of Africa, Asia, the GRULAC and the WEOG). ¹
<i>Present</i>	Implement no structural reform.
<i>Renew</i>	All NPM seats made renewable.
<i>RM</i>	All EU members act jointly as a single PM with the right of veto within the WEOG. One new NPM seat (to restore the UNSC to 15 members) allocated to regions according to the relevant expansion path (see Section 4.4.2).
<i>Rotate</i>	Ten seats that rotate among the region members (replacing existing NPM seats).
<i>RR</i>	New regional groupings: Africa, Asia and Pacific, Europe, and the Americas (three NPMs for Africa; 2.5 for each of the Asia and Pacific and the Americas; two for Europe). ²
<i>Term+</i>	Eight seats with a four-year term (replacing two NPM seats for each of Africa, Asia and the GRULAC; one NPM seat for each of EE and the WEOG).
<i>Veto+</i>	Six new PM seats with the right of veto (replacing two NPM seats for each of Africa and Asia; one NPM seat for each of the GRULAC and the WEOG). ³
<i>Veto-</i>	Two PM votes against a resolution required to form a veto.

¹ We assume on the basis of Table 3.1 that the PNVM seats are given to Nigeria in Africa, India in Asia, Brazil in the GRULAC, and Germany in the WEOG.

² These proportions are chosen to maintain, insofar as possible, the regional allocation of NPM seats between the existing five regional groups. The two NPM seats currently allocated to the WEOG are split one to Europe, and the other shared (rotated) between the Americas and Asia and Pacific (hence the fractional number of NPMs for these two regions). The new regional groupings are based on the report of the UN's High-level Panel on Threats, Challenges and Change (HLP, 2004). The report does not detail the precise membership of each group, but does indicate the number of countries belonging in each (allowing some inference to be made over the intended membership). We assume the Africa group to correspond to the existing Africa group; the Europe group to correspond to the existing EE group and the European countries in the WEOG; Asia and the Pacific to correspond to the existing Asia group with the addition of New Zealand and Australia; and the Americas group to correspond to the existing GRULAC plus Canada and the United States.

³ As this structural reform is associated with the AU reform proposal we follow Table 4.2 (note 2) in assuming that the new PM seats are given to Nigeria and Egypt in Africa, India and Japan in Asia, Brazil in the GRULAC and Germany in the WEOG.

Table 4.2: Reform Proposals

Proposal	Details
<i>2+3</i>	Two new PNVM seats and three new NPM seats (one each for Africa, Asia and the GRULAC). ¹
<i>AU</i>	Six new PM seats with the right of veto (two each for Africa and Asia; one each for the GRULAC and the WEOG) and five new NPM seats (two for Africa; one each for Asia, EE and the GRULAC). ²
<i>EU</i>	All EU members act jointly as a single PM with the right of veto.
<i>G4</i>	Six new PNVM seats (two each for Africa and Asia; one each for the GRULAC and the WEOG) and four NPM seats (one each for Africa, Asia, EE and the GRULAC). ³
<i>HLP_A</i>	New regional groupings: Africa, Asia and Pacific, Europe, and the Americas. Six new PNVM seats (two each for Africa and Asia and Pacific; one each for Europe and the Americas). A total of 13 NPM seats (four for Africa and Americas; three for Asia and Pacific; two for Europe). ⁴
<i>HLP_B</i>	New regional groupings: Africa, Asia and Pacific, Europe, and the Americas. Eight new renewable four-year seats (two for each region). A total of 11 NPM seats (four for Africa; three each for Asia and Pacific and the Americas; one for Europe).
<i>Italy</i>	Ten new regional rotating seats (three each for Africa and Asia; two for the GRULAC; one each for EE and the WEOG). ⁵
<i>Panama</i>	Six new renewable five-year seats (two each for Africa and Asia; one each for the GRULAC and the WEOG). Any country elected for four consecutive terms to these new seats to become a PNVM.
<i>Status quo</i>	Do nothing.
<i>Razali</i>	Five new PNVM seats (two for Asia; one each for Africa, the GRULAC and the WEOG). Four new NPM seats (one each for Africa, Asia, EE, the GRULAC). ⁶
<i>UfC</i>	All NPM seats to be renewable. Ten new renewable NPM seats (three each to Africa and Asia; two for the GRULAC; one each for EE and the WEOG). ⁷
<i>WV</i>	Two PM votes against a resolution required to form a veto.

¹ According to Davis (2010), Germany and Japan were widely seen as deserving the two NPVM seats. We therefore allocate these seats on this basis.

² As the identities of the new PMs is not specified, we assume that the new PM seats are allocated to Nigeria and Egypt in Africa, India and Japan in Asia, Brazil in the GRULAC and Germany in the WEOG.

³ We assume the six new PNVMs to be the same six countries assumed to be PMs in the *AU* reform proposal.

⁴ We assume that the six new PNVMs are identical those in the *G4* reform proposal.

⁵ Italy (2005) terms the ten new seats as “Regional” seats. Rotation is not proposed explicitly, but, according to Martini (2009: 7), is implicit in the Italian position.

⁶ Specifically, the reform proposal allocates two new PNVM seats to the “industrialized states”. According to Macqueen (2010), these two seats were intended for Germany and Japan. The reform proposal then allocates one PNVM seat to “developing states” in Africa, Asia and the GRULAC respectively. We allocate these seats to Nigeria, India and Brazil respectively.

⁷ The *UfC* reform proposal we examine here superseded two earlier reform proposals made by the UfC (the “Blue” and “Green” Models). For a discussion of these reform proposals see Hoffmann and Ariyoruk (2005).

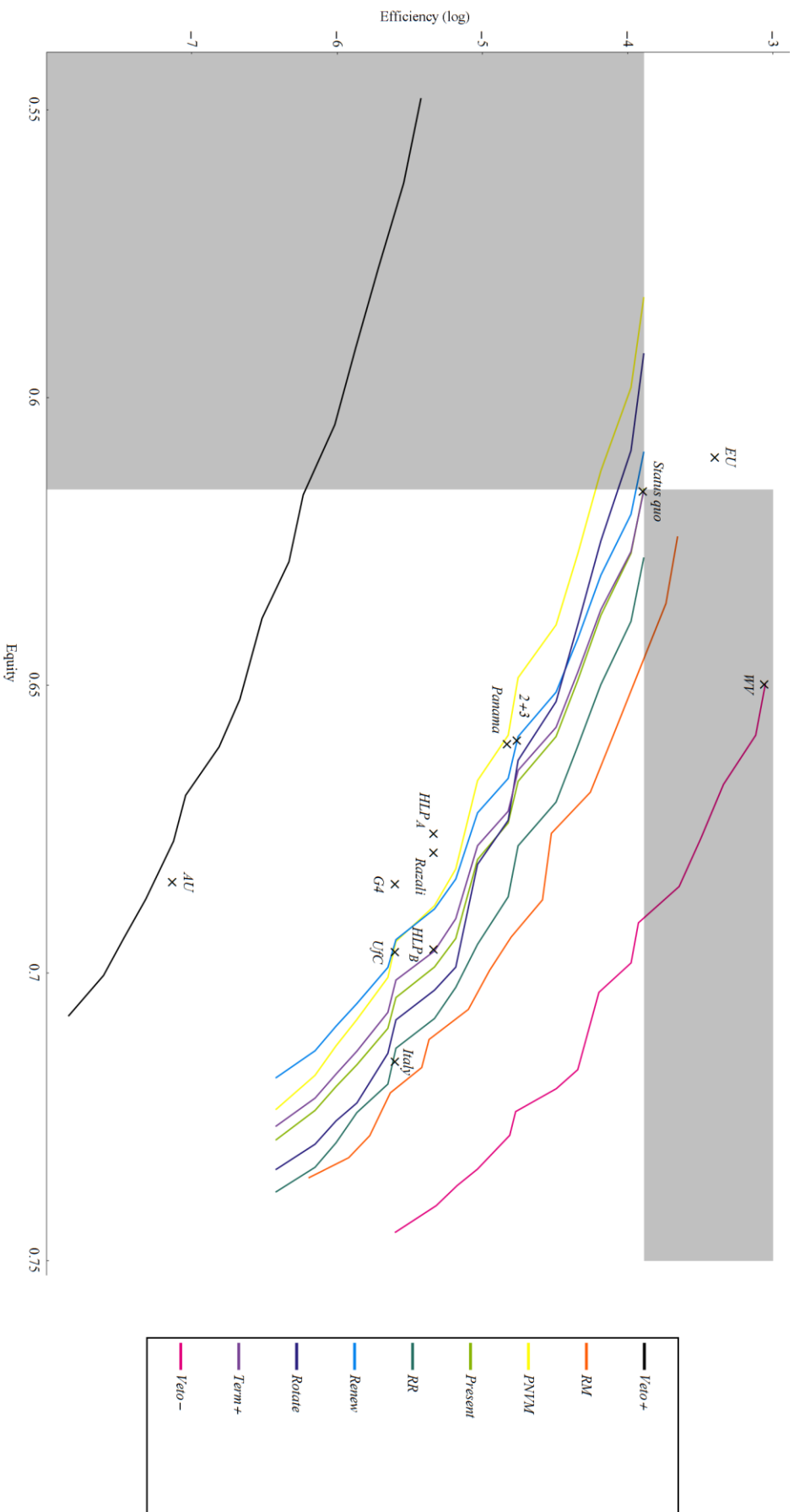


Figure 4.1: Equity and efficiency (normalised ternary Banzhaf index)

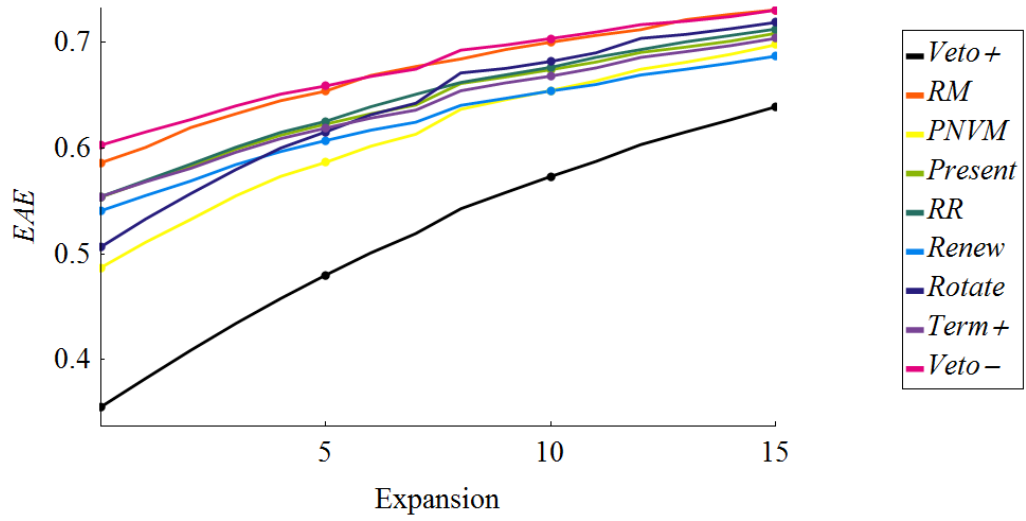


Figure 4.2a: EAE by expansion

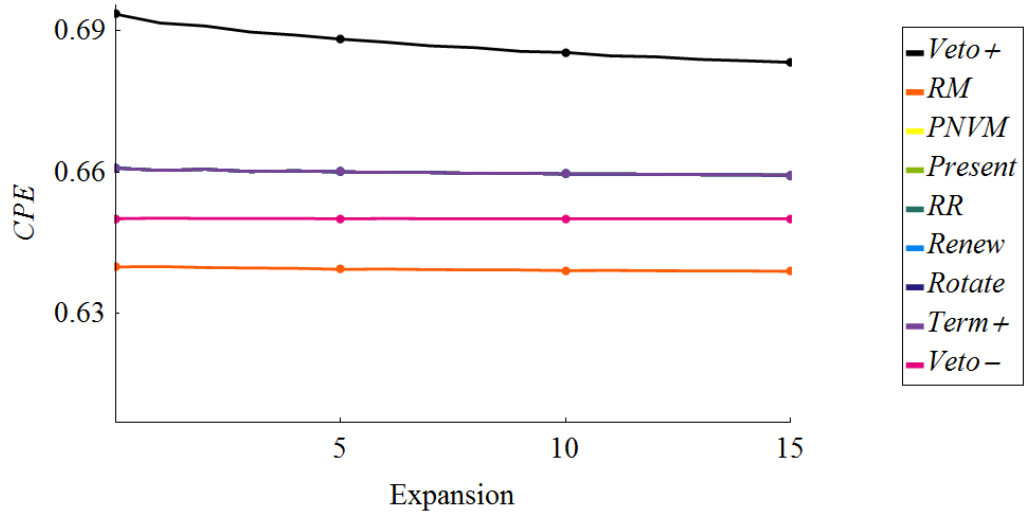


Figure 4.2b: CPE by expansion

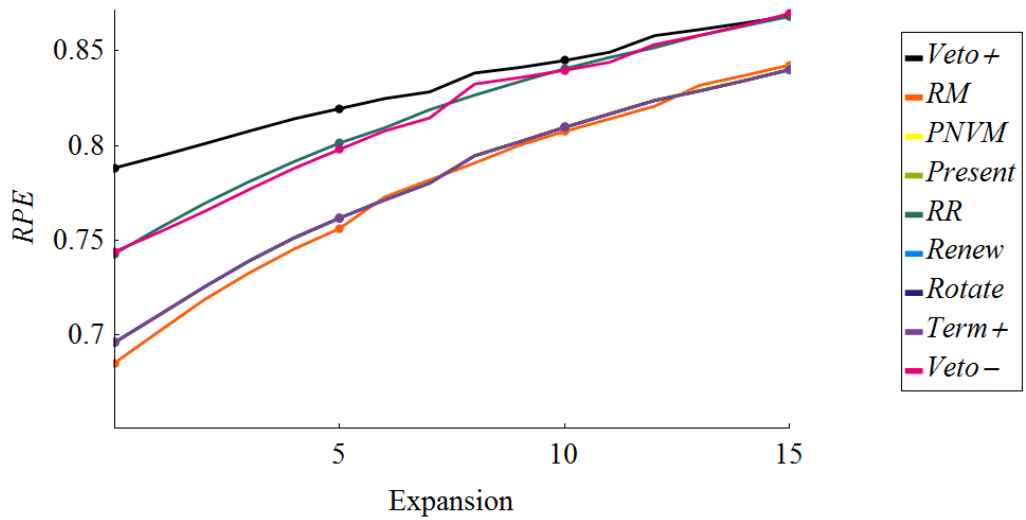


Figure 4.2c: RPE by expansion

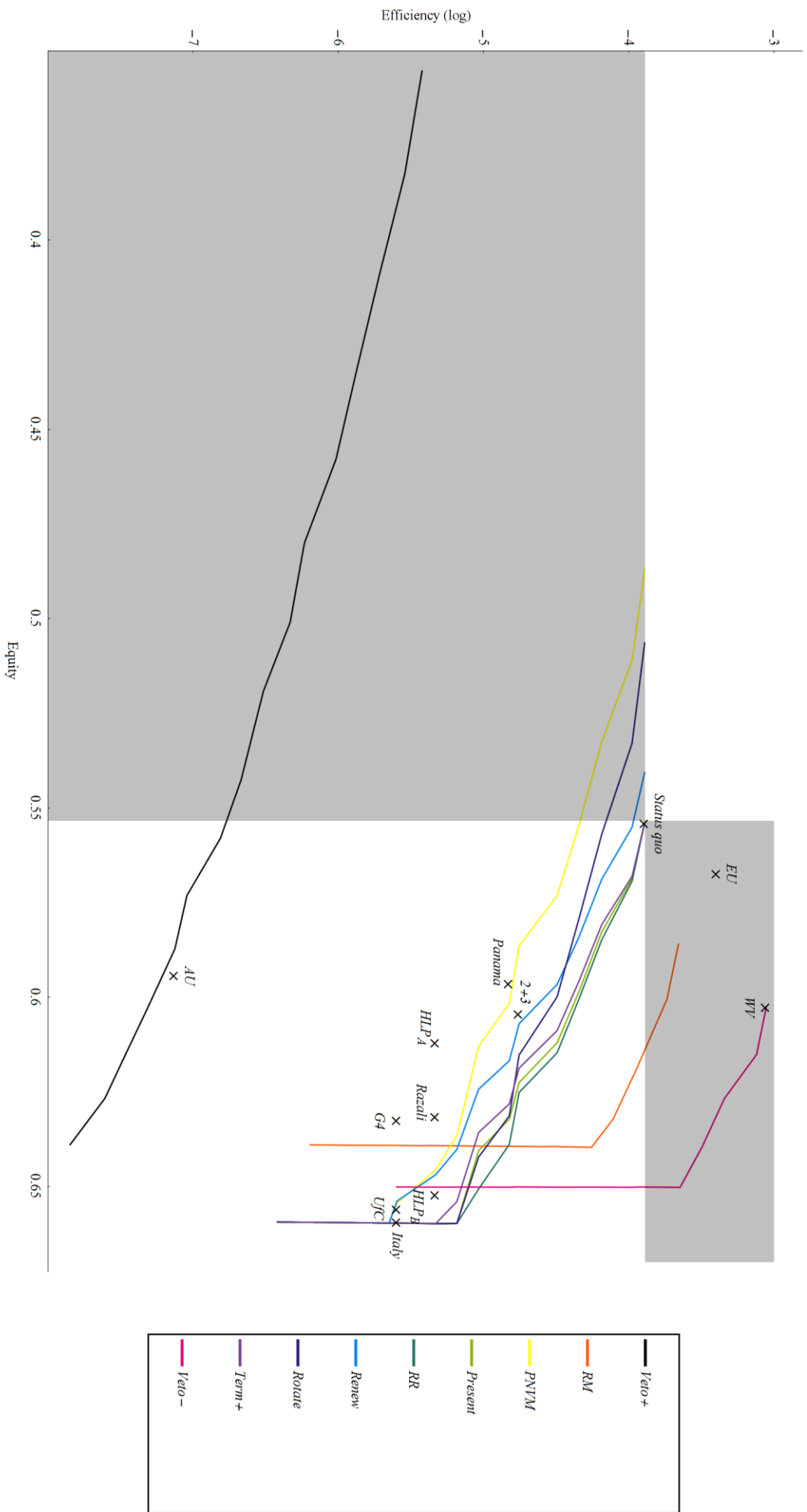


Figure 4.3: Equity and efficiency under Rawlsian E (normalised ternary Banzhaf index)

Table 4.3: Structural reforms and associated reform proposals

Structural Reform	Associated Reform Proposals
PNVM seats (<i>PNVM</i>)	<i>2+3, G4, HLP_A, Panama, Razali</i>
Renewable seats (<i>Renew</i>)	<i>HLP_B, Panama, UfC</i>
Regional members (<i>RM</i>)	<i>EU</i>
Regional rotating seats (<i>Rotate</i>)	<i>Italy</i>
Region re-allocation (<i>RR</i>)	<i>HLP_A, HLP_B</i>
Increase term length (<i>Term+</i>)	<i>HLP_B, Panama</i>
Expand right of veto (<i>Veto+</i>)	<i>AU</i>
Weaken right of veto (<i>Veto-</i>)	<i>WV</i>

Table 4.4a: 0-dominance (structural reforms)

	<i>Veto+</i>	<i>RM</i>	<i>PNVM</i>	<i>Present</i>	<i>RR</i>	<i>Renew</i>	<i>Rotate</i>	<i>Term+</i>	<i>Veto-</i>
<i>Veto+</i>									
<i>RM</i>	>		>	>	>BB,SS	>	>	>	
<i>PNVM</i>	>TB,BB,ER						≥BB,TS		
<i>Present</i>	>TB,BB,ER		≥			≥TB,ER	≥	≥ER	
<i>RR</i>	>		≥	≥		≥	≥	≥	
<i>Renew</i>	>TB,BB,ER		≥	≥ER			≥	≥ER	
<i>Rotate</i>	>TB,BB,ER		≥TB,ER	≥ER		≥ER		≥ER	
<i>Term+</i>	>TB,BB,ER		≥	≥TB,ER		≥TB,ER	≥		
<i>Veto-</i>	>	>	>	>	>	>	>	>	

Table 4.4b: Expansion-dominance (structural reforms)

	<i>Veto+</i>	<i>RM</i>	<i>PNVM</i>	<i>Present</i>	<i>RR</i>	<i>Renew</i>	<i>Rotate</i>	<i>Term+</i>	<i>Veto-</i>
<i>Veto+</i>									
<i>RM</i>	>		>TB,BB,SS	>	>BB,SS	>	>BB,SS,ER	>	
<i>PNVM</i>	>TB,BB,ER						≥BB,TS		
<i>Present</i>	>TB,BB,ER		≥TB,BB,TS			≥TB,BB,ER	≥BB,TS,ER	≥BB,ER	
<i>RR</i>	>		≥	≥		≥	≥	≥	
<i>Renew</i>	>TB,BB,ER		≥TS	≥ER			≥BB,TS,ER		
<i>Rotate</i>	>TB,BB,ER		≥TB	≥ER		≥ER		≥ER	
<i>Term+</i>	>TB,BB,ER		≥TB,BB,TS			≥TB,BB,TS	≥BB,TS,ER		
<i>Veto-</i>	>	>	>	>	>	>	>	>	

Table 4.4c: Dominance relations (reform proposals)

	2+3	AU	EU	G4	HLP _A	HLP _B	Italy	Panama	Status quo	Razali	Ufc	WV
2+3		>BB,SS										
AU												
EU	>SS	>BB,SS		>SS			>SS		>BB,SS	>SS	>SS	
G4		>					≥SS			≥SS		
HLP _A		>BB,SS		>BB,SS			>SS			≥BB,SS	>SS	
HLP _B		>		>	≥		>BB,SS			≥	>BB,SS	
Italy		>		≥TB,BB,ER							≥TB,ER	
Panama		>BB,SS										
Status quo												
Razali		>BB,SS			≥TB,ER		>SS					
Ufc		>		≥TB,BB,EP			≥BB,SS,ER					
WV	>BB,SS	>BB,SS	>	>SS	>SS	>SS	>SS	>BB,SS	>	>SS	>SS	

Conclusion

In this thesis we have examined the election of representatives to a council from a fully-representative assembly, with particular focus on the UNSC.

In Chapter 2 we aimed to determine the influence of the attributes of a country on their chances of being elected to the UNSC. We began by developing a multiple discrete choice model for choosing more than one alternative without allowing for duplications. This removed the potential bias arising from not accounting for the impossibility of one country occupying more than one seat in the UNSC, which would be present if using a model such as the conditional logit, without too significant a computational cost. We then applied this model to data of elections of UN representatives to the UNSC. We employed a two part utility function allowing us to capture the two preferences at play (that of the UNGA as a whole and the Caucusing Groups). We found that there was significant heterogeneity between the preferences of the five caucusing groups. However, we did find evidence of a common norm of allowing every country their turn on the council, mediated by a norm for allowing more powerful countries greater representation. We also found that countries who were engaged in conflict were less likely to be represented on the UNSC, and that there has been a shift in preferences since the last reform of the UNSC.

A secondary outcome of the model of Chapter 2 was that it allowed us to compute estimates of how likely each country in the UN was to be elected to the UNSC. This then permitted us to investigate how fair the distribution of power in the UNSC is currently and under various proposed reforms.

In Chapter 3 we first set out a series of equity ideals which can be applied to non-fully representational councils elected from a wider assembly, as is the case for the UNSC. We developed three tests based on these ideals, looking at representation from a regional or country perspective and comparing long-run expected power vis a vis the power achieved

if elected. We demonstrated that these three ideals were mutually incompatible, it is only possible to achieve two of the ideals for a given CVG. This led us to propose two first best concepts, according to whether regional or country based representation was desirable. We then applied these tests to the specific example of the UNSC using the ternary Banzhaf index as our measure of voting power. We found that the UNSC is worse in terms of our ex-ante measure than from an ex-post perspective. We found that contrary to the popular focus on the reduction of the power of permanent members, actually the situation is more nuanced and it could be argued that certain countries warrant more power than a PM currently achieves. That said, this would have to come at the cost of giving up the right to permanent representation.

Finally in Chapter 4 we used the equity tests from Chapter 3 in conjunction with a test of how efficiently the council can reach decisions to appraise the main reform proposals for restructuring the UNSC. Furthermore, we considered the core structural reforms making up this set of proposals separately from a pure expansion of the council. We found that of the eight structural reforms considered, most made only modest changes to the status quo. Of those that did have an impact we found increasing the number of permanent members with veto was strictly worse than the present rules and the best performing structural reforms were those that reduced the PM power, either by reducing their number by subsuming UK and France into an EU seat or by requiring two PM votes against to activate a veto. This was echoed by the specific reform proposals we considered, the best performing being that which implemented the weakened veto as above. Overall, we found that any reform discussion necessarily involves a compromise between achieving a council which can operate efficiently and one which is equitable. Our results also indicate that to enact real change, quite significant changes to the current system would need to be made.

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