THE INTER-INSTITUTIONAL DISTRIBUTION OF POWER IN EU CODECISION

STEFAN NAPEL
MIKA WIDGRÉN

CESIFO WORKING PAPER NO. 1347
CATEGORY 2: PUBLIC CHOICE
DECEMBER 2004

CESifo *Working Paper No. 1347*

THE INTER-INSTITUTIONAL DISTRIBUTION OF POWER IN EU CODECISION

Abstract

This paper analyzes the a priori influence of the European Parliament (EP) and the Council of Ministers (CM) on legislation of the European Union adopted under its codecision procedure. In contrast to studies which use conventional power indices, both institutions are assumed to act strategically. Predicted bargaining outcomes of the crucial Conciliation stage of codecision are shown to be strongly biased towards the legislative status quo. Making symmetric preference assumptions for members of CM and EP, CM is on average much more conservative because of its internal qualified majority rule. This makes CM by an order of magnitude more influential than EP, in contrast to a seeming formal parity between the two 'co-legislators'.

JEL Code: C70, C78, D70, D72.

Keywords: power measurement, European Union codecision procedure, bargaining, spatial voting, decision procedures.

Stefan Napel
University of Hamburg
Department of Economics
Von-Melle-Park 5
20146 Hamburg
Germany
napel@econ.uni-hamburg.de

Mika Widgrén
Turku School of Economics
Rehtorinpellonkatu 3
20500 Turku
Finland
mika.widgren@tukkk.fi

This paper is a substantially revised and updated version of "EU Conciliation Committee: Council 56 vs. Parliament 6", CEPR Discussion Paper No. 4071, London, 2003. Our research has been supported by the Yrjö Jahnsson Foundation. S. Napel also gratefully acknowledges financial support from the German Academic Exchange Service (DAAD). The paper has benefitted from comments by A. B. Ania, C. Argenton, M. Braham, M. J. Holler and responses to presentations at Boston University, Turku University, University of Hamburg, 14th Summer Festival on Game Theory at Stony Brook, GAMES2004 in Marseille, 6th Spanish Meeting of Game Theory and Applications in Elche, and the 2004 LSE Workshop on Voting Power and Procedures.

1 Introduction

The question of who has how much influence on legislation adopted by the European Union (EU) is of interest and importance to politicians, the general public, and academics alike. It has inspired both vigorous methodological debate and a great number of applied studies. These applications have very much concentrated on the intra-institutional balance of power in the EU's main decision-making bodies: Most of the literature investigates the national distribution of voting power in the Council of Ministers (CM)[1], a few other studies evaluate national and/or political parties' influence in the European Parliament (EP).[2] If the aim is to analyze power in the EU, purely intra-institutional analysis may, however, miss the point. The study of either institution in isolation does not permit full statements about power when both have to jointly modify or introduce new legislation. Even at the purely intra-institutional level, influence formally depends on the full context of decision-making, i. e. also how the institution interacts with its environment.

This paper therefore analyzes a somewhat neglected but important element of institutional design and the future EU: the *inter-institutional* balance of power. By taking a wider than usual perspective on EU decision-making this paper sheds new light also on purely intra-Council analysis. As regards methodology, we employ new tools that are able to capture strategic inter-institutional interaction, which is not true for classical power measures. The study is the first of its kind, applying the framework for power measurement of Napel and Widgrén (2004). The framework generalizes the measurement ideas underlying e. g. the Penrose-Banzhaf or Shapley-Shubik indices to non-cooperative models and preference-based strategic interaction. Thus the major limitations of traditional indices are overcome (see Garrett and Tsebelis 1999 for details).

We analyze the relationship between CM and EP, the two key legislative bodies of the EU, under the *codecision procedure* as defined in Article 251 of the EC Treaty, the EU's central legislative procedure. The main goal is to investigate the hypothesis that the EU has – constitutionally speaking – moved towards a bicameral model which is *balanced* in the sense that the intergovernmental chamber, CM, and the directly elected chamber, EP, have equal influence on decisions (see e. g. Tsebelis and Garrett 2000).

Measuring a player's *power* or *constructive influence* as the sensitivity of the collective decision to his or her preferences, CM's a priori power turns out to exceed that of EP by an order of magnitude: While a small shift of CM's position is on average passed through to the collective decision at a rate of approximately 54%, changes of EP's position in expectation induce a move of only about 4% of the original shift. This result is driven by two factors: First, the potential agreement between EP and CM reached in the Conciliation Committee, which under strategic play defines the codecision outcome by backward induction, has a pronounced status quo bias. Second, CM's qualified majority requirement makes the a priori distribution of its collective ideal point – corresponding to the distribution of the

[1] See e. g. Widgrén (1994) or Laruelle and Widgrén (1998) and references therein for the earlier literature, and Baldwin et al. (2001), Felsenthal and Machover (2001, 2004), Leech (2002), or Barr and Passarelli (2003) for recent contributions.

[2] See e. g. Noury and Roland (2002) and the references in Nurmi (1998).

ideal point of its pivotal member – considerably more 'conservative' than that resulting from EP's simple majority rule. Thus, on average, CM is far more often the critical player in determining the codecision outcome.

Power measurement using sensitivity analysis allows to make statements about which players do really shape collective decisions – and which do not. A lobbyist whose objective is to shift the state of affairs in some policy area, say carbon emission levels, the speed of electricity deregulation or smaller things like the fat contents of chocolate, would only want to address political actors who have influence according to our strategic power measure; moreover, the value of different political actors from a lobbyist's viewpoint is ex ante monotonic in the pass-through rate for preference shifts as identified by our measure.[3]

The remainder of the paper is organized as follows: Section 2 describes the codecision procedure and points to recent research on it. Section 3 introduces a simple model which aims to capture the crucial aspects of, first, inter-institutional bargaining between EP and CM for given internal positions and, second, intra-institutional decision making determining these positions. Section 4 introduces our method of power measurement and contrasts it with conventional power index applications. Section 5 then quantifies inter-institutional power in EU codecision and discusses remaining limitations of our investigation. Section 6 concludes.

2 The Codecision Procedure

The European Union's codecision procedure was introduced by the Treaty of Maastricht in 1993 and initially applied to 15 areas of Community activity. Its current version came into force in May 1999 by the Treaty of Amsterdam signed in 1997. Presently, it pertains to 43 areas – including the internal market, environment, transport, public health, education and research, and the Regional Development Fund (notably not including agriculture and taxation). The number of codecisions has increased dramatically over the years, from an annual average of 30 in the Maastricht period to more than 100. According to the former President of the European Parliament, Pat Cox, "the procedure has been a major success, enabling Parliament to become an equal partner of the Council and to make its voice heard in shaping the lives of European citizens" (Cox 2004, p. 3).

The procedure potentially involves up to three readings of proposed legislation by EP and CM. It is initiated by a policy proposal of the European Commission. First, EP can approve this proposal or replace it with an amended version of its own. Then, CM either approves the proposal on the table or initiates a second stage of decision-making by making amendments.[4] This new proposal – CM's 'common position' in EU parlance –

[3]See Morriss (1987/2002, pp. 161–165 and 223–228) and Felsenthal and Machover (1998, pp. 35–36) for an interpretation of the Shapley-Shubik and Penrose-Banzhaf power indices in a similar vein.

[4]In their first readings, EP and CM do not have any time limit. Second readings are to be concluded within three months (extendable by one month), respectively. – These procedural details are unspecified in the EC Treaty, but laid out in a joint declaration of Commission, EP, and CM on practical arrangements. The *Co-decision Guide*, available from the Council of the European Union

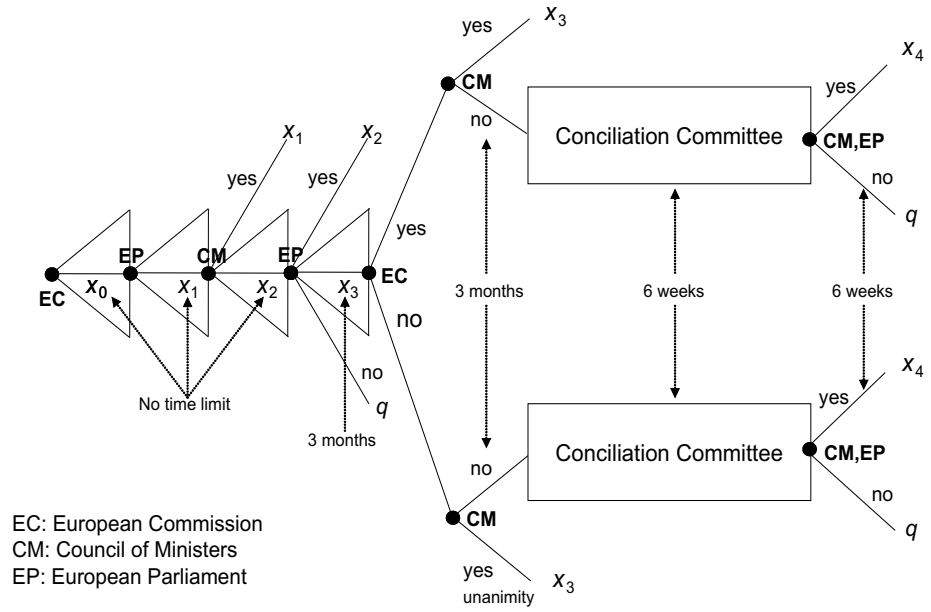

Figure 1: Stylized codecision game tree

is either approved by EP or, again, amended. If in the latter case CM does not accept EP's proposal,[5] the *Conciliation Committee* represents the final chance to – within six weeks (extendable to eight weeks) – seek a change to the status quo. The Committee is composed of all (currently 25) members of CM (or, usually, their civil servant delegates) and a delegation of members of EP (MEPs) of the same size; it is co-chaired by an EP Vice-President and the Minister holding the Council Presidency without fixed negotiation protocol. The Commission only has an informal supporting role in the Committee. If CM and EP agree on a compromise, it is submitted to CM and EP for acceptance in a third reading in which CM and EP use their typical qualified and absolute majority rules, respectively.[6]

The natural formalization of the interaction between Commission, EP, and CM in the codecision procedure is by means of an extensive form game (see Fig. 1). The bargaining outcome that EP, CM, and also the Commission expect to result from invoking the Conciliation Committee plays a crucial role at earlier stages of the procedure. Using backward induction it is straightforward to conclude that it is indeed *the* determinant of any codecision agreement if all players act strategically.[7]

(http://ue.eu.int/codec/en/EN.pdf), offers comprehensive information.

[5]The Commission – by a negative opinion on EP's proposal – can require CM to accept unanimously. EP and CM have six weeks (extendable to eight) to prepare the convening of the Conciliation Committee.

[6]In fact, 3 out of the 43 policy areas require a unanimous CM. We concentrate on the qualified majority case.

[7]The actual use of the Conciliation Committee as the means to find an agreement has decreased significantly since its introduction. During 1994–99 the annual average share of codecisions concluded after the Conciliation phase was 40% while in 2002–2003 and 2003–2004 it was 15% and 16%, respectively.

Accepted new legislation will usually come into effect at some date in the medium-term future. It therefore is reasonable to assume that neither EP nor CM has a pronounced preference for agreeing on a policy change a few weeks sooner rather than later. The codecision outcome can then be identified with the policy which CM and EP expect to agree on in Conciliation (either a new policy or the status quo, in which case a Commission with rational expectations need not even initiate the procedure). Therefore, our quantitative analysis of EP's and CM's influence on codecision outcomes can actually be confined to the Conciliation stage.

Several authors have already devoted their attention to codecision and the Conciliation Committee, including Steunenberg and Dimitrova (1999), Crombez (1997, 2000), Tsebelis and Garrett (2000), and Steunenberg and Selck (2002). However, their assessments of who shapes the agreements reached by EP and CM – and hence the distribution of power between these two players – are mostly qualitative, as well as diverging.

Crombez regards EP as the agenda setter in the Conciliation Committee but concludes nevertheless that both EP and CM "genuinely codecide which policy to implement" (1997, p. 113). His analysis does not discriminate much between the Maastricht and Amsterdam versions of codecision, although the original version laid out in the Treaty of Maastricht was revised specifically in order to make the procedure more symmetric.[8] Tsebelis and Garrett (2000) focus on the Amsterdam version and argue that the EU has moved a long way towards bicameralism. They find no reason to suggest that either CM or EP is favored by the procedure, so that both can be expected to have the same influence. In contrast, Steunenberg and Dimitrova (1999) observe an advantage to CM in a model that assumes the Council president to make a take-it-or-leave-it offer to EP. The commitment problems associated with such offers are an important, but not the only, reason which make this assumption controversial. It also builds an inter-institutional *asymmetry* into the model, and not surprisingly gives greater power to CM. However, we find that Steunenberg and Dimitrova's conclusion of a significant advantage for CM can remain valid also for *symmetric* bicameral bargaining, as assumed by Garrett and Tsebelis. Key to this conclusion are factually asymmetric intra-institutional majority rules, whose important inter-institutional impact the literature on power in the EU has so far neglected.

3 Predicted Codecision Outcomes

Quantitative analysis of codecision outcomes – and based on it the power distribution between Council and Parliament – requires some kind of model. This should be as simple as possible, but not simpler. We deem it inappropriate to force the extensive form game sketched above into the mould of simple voting games, excluding therefore the – after such a reduction – straightforward computation of e. g. the Penrose-Banzhaf or Shapley-Shubik

Slightly less than 40% of legislation was already enacted by the first readings of EP and CM in 2003–2004 (European Parliament 2004).

[8]See e. g. the comments by Tsebelis and Garrett (2000), Tsebelis and Money (1997), Crombez (2000), Crombez et al. (2000), and Garrett et al. (2001).

power indices (Penrose 1946 and Banzhaf 1965; Shapley and Shubik 1954). Instead we will assume a particular policy space, preferences for players which are all assumed to be rational and strategic, plus some more structure for negotiations in the Conciliation Committee. This allows us to then apply standard game-theoretic solution concepts and use the generalized framework for power measurement outlined in Sect. 4.

We will consider a convex Euclidean policy space $X \subseteq \mathbb{R}^n$ with metric d, where for most of the analysis $n = 1$ and $X = [0, 1]$. The considered political actors have single-peaked preferences characterized by an individual *bliss point* or *ideal point* $\lambda \in X$: The smaller the distance $d(\lambda, x)$, the higher the agent values a policy $x \in X$. This is a standard assumption. We also suppose that not only do individual members of EP and CM have such preferences but – at least during their dealings in the Conciliation Committee – there are representatives of both EP and CM who possess spatial preferences of the same kind. It is then possible to predict the Conciliation – and thus codecision – outcome by specifying, first, how EP's and CM's respective internal decision rules translate preferences of individual members into the institutions' ideal points π (for Parliament) and μ (for Ministers) and, second, how the institutions' (collective) preferences jointly determine an agreement. We start by addressing the latter.

3.1 Inter-institutional Bargaining

Models which determine an agreement based on a given status quo and EP's and CM's ideal policies have been investigated in considerable detail by Napel and Widgrén (2003). It is argued there that – mainly because of highly unrealistic requirements for agents' commitment opportunities – ultimatum bargaining with either CM or EP making a take-it-or-leave-it offer (as conflictingly proposed by Steunenberg and Dimitrova, 1999, and Crombez, 2000, respectively) is no particularly useful model of the Conciliation Committee. Alternating offers bargaining with multiple rounds seems more realistic. Since there is no focal number of rounds, Rubinstein's (1982) infinite horizon bargaining model becomes the natural benchmark. As shown by Binmore (1987), the utility levels achieved in Rubinstein's subgame perfect equilibrium can conveniently be approximated by the *asymmetric Nash bargaining solution* (Nash 1950, Kalai 1977) if players – as we have assumed above – are almost indifferent to the *period* of reaching an agreement. The latter predicts the agreement utility levels u^* which solve the maximization problem

$$\max_{u \in \mathcal{U}, u \geqq u^q} (u_\pi - u_\pi^q)^\alpha \cdot (u_\mu - u_\mu^q)^\beta, \tag{1}$$

where $\mathcal{U}$ denotes the set of all feasible utility combinations constructed by mapping each policy $x \in X$ to the utility pair $u = (u_\pi, u_\mu) = (u_{\mathrm{EP}}(x), u_{\mathrm{CM}}(x))$ that reflects players' preferences for it. Exponents α and β are a function of possibly asymmetric time preferences of EP and CM and $u^q \equiv (u_{\mathrm{EP}}(q), u_{\mathrm{CM}}(q))$ summarizes players' evaluation of the status quo situation.

We see neither empirical nor theoretical reasons to consider either EP or CM a more impatient or skilled bargainer. So we will use the *symmetric Nash bargaining solution* (i. e.,

$\alpha = \beta > 0$ in (1)) to predict the Conciliation agreement and, using backward induction, the codecision outcome. For the benchmark case of a unidimensional policy space and utility that linearly decreases with distance to the ideal point, we obtain the following prediction $x^*(\pi, \mu)$ for the agreed policy:

Proposition 1 *Assume that preferences of EP and CM are represented by utility functions $u_i(x) = -d(\lambda_i, x)$ for $\lambda_i, x \in X \subseteq \mathbb{R}$ where X is convex. Then the symmetric Nash bargain corresponds to agreement on the ideal point which is closer to the status quo whenever there are gains from trade, i. e.*

$$\operatorname{sign}(q - \pi) = \operatorname{sign}(q - \mu) \Longrightarrow x^*(\pi, \mu) = \begin{cases} \pi; & d(\pi, q) \leq d(\mu, q) \\ \mu; & d(\pi, q) > d(\mu, q). \end{cases}$$

Proof. For $d(\pi, q) = d(\mu, q)$ the result is trivial. So consider gains from trade and $d(\pi, q) < d(\mu, q)$. On contract curve $C = [\min\{\pi, \mu\}, \max\{\pi, \mu\}]$ the sum of utilities of EP and CM is constant and equals $-d(\pi, \mu)$. The Nash bargain thus corresponds to the maximizer of

$$N(u_\pi, u_\mu) = (u_\pi + d(\pi, q))(u_\mu + d(\mu, q)) \tag{2}$$

subject to $(u_\pi, u_\mu) \geqq (-d(\pi, q), -d(\mu, q))$ and $u_\pi + u_\mu = -d(\pi, \mu)$. Substituting, one obtains

$$\begin{aligned} \frac{dN}{du_\pi} =& \frac{d\left[(u_\pi + d(\pi, q))(-d(\pi, \mu) - u_\pi + d(\mu, q))\right]}{du_\pi} \\ =& -2u_\pi + d(\mu, q) - d(\pi, q) - d(\pi, \mu) \end{aligned}$$

where $d(\pi, q) < d(\mu, q)$ implies $d(\mu, q) - d(\pi, q) = d(\pi, \mu)$. So $N(\cdot)$ increases for $u_\pi < 0$ and achieves its unique maximum at $u_\pi = 0$. This is equivalent to $x^*(\pi, \mu) = \pi$. ■

The result is illustrated in Fig. 2. The strategic bargaining behavior captured by the Nash solution makes the intuitively appealing prediction of a symmetric compromise too quick: EP and CM do not agree on some policy 'in the middle' but the party less eager to replace the status quo gets *exactly* its ideal policy. This extreme instance of *status quo bias of bargaining* rests on unidimensional X and linear utility. However, the bias itself is a very robust phenomenon:

Proposition 2 *Assume that preferences of EP and CM on convex $X \subseteq \mathbb{R}^n$ are represented by utility functions $u_i(x) \equiv u(d(\lambda_i, x))$ which are strictly decreasing and weakly concave in $d(\lambda_i, x)$ and yield a Pareto frontier described by a function $\phi\colon u_{EP}(x) \mapsto \max\{u_{CM}(y)\colon y \in X$ and $u_{EP}(y) = u_{EP}(x)\}$ which is differentiable on the interior of the contract curve. Then the symmetric Nash bargain $x^*(\pi, \mu) \equiv x^*$ is closer to the ideal point which is closer to the status quo, i. e.*

$$d(\pi, q) < d(\mu, q) \Longleftrightarrow d(\pi, x^*) < d(\mu, x^*).$$

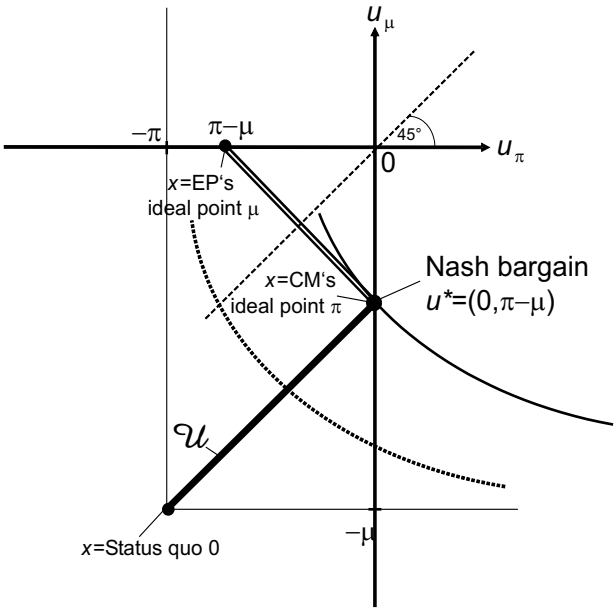

Figure 2: Bargaining set $\mathcal{U}$ and Nash bargain u^*

The proof is provided in the appendix. If EP's and CM's utility is strictly concave (corresponding to risk aversion or decreasing marginal returns from moving closer to the considered player's ideal point, e. g. $\tilde{u}(\lambda, x) = -(\lambda - x)^2$), then $\mathcal{U}$'s Pareto frontier, connecting the two extreme utility levels $\overline{u} \equiv (0, \tilde{u}(\mu, \pi))$ and $\underline{u} \equiv (\tilde{u}(\pi, \mu), 0)$, becomes strictly concave as well. Keeping the symmetry between EP and CM (they have the same underlying utility function $\tilde{u}(\lambda_i, x)$, just different ideal points), this implies that the hyperbola corresponding to the highest attainable level of the product of both players' utility gains touches the Pareto frontier no longer at its right endpoint (cf. Fig. 2), but somewhere between it and the middle of the curve.

Similarly, for *multidimensional* policy spaces, status quo bias remains important: The agreement will generically correspond to an interior point of the contract curve C which is closer to the institution with smaller status quo distance. It approaches the latter's preferred endpoint of C as the angle between vectors $\pi - q$ and $\mu - q$ gets small. In case of convex utility and the special case of spatial preferences considered in this paper, the individually rational and Pareto-efficient policy x^* most beneficial to the player with smallest status quo distance remains the focal prediction.[9] Moreover, status quo bias is robust to the introduction of moderately asymmetric bargaining powers α and β in the Nash bargaining solution (and hence slight differences between EP's and CM's patience in Rubinstein bargaining). For details on this and the connection to finite and infinite horizon alternating offers bargaining see Napel and Widgrén (2003).

[9]See e. g. Osborne and Rubinstein (1990, pp. 16ff) or Harsanyi (1956) for justifications of the constrained maximizer u^* of (2), which corresponds to x^*, as the expected bargaining result that do *not* rely on Nash's original axiomatic argument and do not assume convex $\mathcal{U}$.

3.2 Intra-institutional Decisions

Before EP and CM can negotiate in the Conciliation Committee, they have to internally agree on their respective bargaining positions. While it is typically only the member holding the Presidency of the Council who speaks on its behalf, parliamentary delegates – MEPs in approximately EP's party proportion – often express heterogenous views. So for both practical and theoretical reasons our presumption of spatial preferences characterizing EP and CM as monolithic rational bargainers is somewhat bold. We still regard it as the best available route for estimating power of these institutions. Here, we consider the question of how ideal points π and μ attributed to EP and CM in their negotiations may reasonably be linked to the ideal points of the institutions' individual members. We concentrate on the theoretically least contentious case of a unidimensional policy space X.

Consider first the European Parliament. Its currently 732 members need to approve any Conciliation compromise by simple majority.[10] Entering negotiations with CM about some policy change to the right of the status quo q, some of the potential positions of the EP delegation are such that a majority of MEPs would find it beneficial to intervene and select a different delegation. More concretely, denote the ordered ideal points of all MEPs by $\pi_{(1)} \leq \pi_{(2)} \leq \ldots \leq \pi_{(732)}$ and consider a provisional bargaining position π with $q < \pi < \pi_{(366)}$. Parliamentarians with ideal points $\pi_{(366)}, \ldots, \pi_{(732)}$ then have the necessary majority and common interest to instead select some delegation with $\pi \geq \pi_{(366)}$ as EP's position for Conciliation negotiations. Similarly, parliamentarians with ideal points $\pi_{(1)}, \ldots, \pi_{(367)}$ would block a position $\pi > \pi_{(367)}$. One can hence restrict EP's ideal point in negotiations about policies $x > q$ to $\pi \in [\pi_{(366)}, \pi_{(367)}]$. According to the strategic bargaining model of the previous section it is the institution whose ideal point is closer to the status quo which is determining the Conciliation agreement. With this in mind we take the influence-maximizing $\pi = \pi_{(366)}$ to be EP's position in negotiations about $x > q$ and refer to the corresponding MEP as EP's *pivotal player*. By analogous reasoning, we identify EP with position $\pi = \pi_{(367)}$ for policies $x < q$.

Note that, in principle, the internal position of EP need not coincide with the position taken by its delegation to the Conciliation Committee. In general, there could be gains from strategically picking a delegation whose interests diverge from the pivotal voter's (see e. g. Segendorff 1998). However, under the above assumptions this cannot be advantageous: By Prop. 1, any Conciliation agreement replacing the status quo amounts to the ideal point of EP's or CM's delegation. Picking an EP delegation with a position to the left or right of its 'true' ideal point π thus has either no effect (CM's position is closer to status quo) or actually hurts EP's pivot. Namely, it may induce agreement on the distorted position π' instead of π when this would have been the outcome in the unmanipulated case, or it prevents agreement on the position of CM when that is actually closer to π than π' and hence preferable by EP's pivot.

The Council of Ministers, with the Treaty of Nice slightly modified by the Act Concerning the Conditions of Accession for the EU's enlargement in 2004, decides nearly all

[10] There actually have been 2 out of 86 Conciliation agreements in the last 5-year parliamentary term which failed to be approved by EP.

issues pertaining to the codecision procedure by a qualified majority with three dimensions: First, there have to be at least 232 votes out of 321 ($\approx 72.2\%$) in favor of a proposal, with 29 votes each for France, Italy, Germany, and the UK, 27 votes each for Poland and Spain, etc. Second, these votes have to be cast by a simple majority of member states. Third, the 'yes'-votes have to represent 62% of total EU population. The second and third requirements have almost negligible effect on the possible winning coalitions (see e. g. Felsenthal and Machover, 2001) and affect the quantitative results presented in Sect. 5 only at the 5^{th} or 6^{th} digit. In fact, there is little loss of precision – but considerable gain in terms of computation – from ignoring even the country-specific weights of the first requirement. So for much of our quantitative analysis we will assume uniform voting with an 18 out of 25 ($= 72\%$) majority rule. This is a good approximation of CM's internal decision making as regards the *inter*-institutional distribution of power, while for *intra*-institutional analysis of influence inside CM national weights would, of course, be essential. In line with the reasoning for EP, we will identify CM with $\mu = \mu_{(8)}$ in negotiations about $x > q$ and $\mu = \mu_{(18)}$ for policies $x < q$.[11]

It can be checked that negotiations in the Conciliation Committee can, for given preferences of MEPs and members of CM, never be simultaneously about policies $x > q$ *and* policies $x' < q$: If both institutions would support, say, moving to the right of the status quo, i. e. both $\pi_{(366)}$ and $\mu_{(8)}$ lie to the right of q, then there is necessarily insufficient support for any $x < q$ because $\pi_{(367)} \geq \pi_{(366)}$ and $\mu_{(18)} \geq \mu_{(8)}$ must also lie to the right of q.

Also note that when weighted voting in CM is assumed – as we will do discussing the robustness of our more qualitative findings in Sect. 5.4 – one cannot determine CM's pivotal player by looking only at a fixed order statistic $\mu_{(i)}$. Rather, one needs to aggregate voting weights of the players in the right order. One thus finds the endogenous *pivotal position* p which then allows to use $\mu_{(p)}$ as a reasonable proxy for CM's position in codecision.

4 Measurement of Strategic Power

If our goal were to give an estimate of the power distribution for the current Council and Parliament in the context of the presently most pressing political issues, the way to proceed would be to look at data and estimate players' coordinates in a number of policy dimensions (see e. g. Pajala and Widgrén 2004 for empirical analysis of intra-institutional power in this vein). However, this is not our goal. We want to investigate EP's and CM's influence on codecision outcomes from a *constitutional* point of view, caring about possible *structural* biases. These may translate into a smaller or larger *actual* bias depending on actual preferences. We therefore ignore the positions of MEPs and Council members

[11] The bounds on μ implied by blocking considerations are not as tight as in the case of EP. The member holding the Council's presidency may plausibly use its agenda-setting power to select the $\mu \in [\mu_{(8)}, \min\{2\mu_{(8)}, \mu_{(18)}\}]$ for $x > q$ that it prefers. The effect is to somewhat weaken the aggregate power of CM in inter-institutional bargaining to the individual benefit of the Presidency. A detailed analysis of this issue is beyond the scope of this paper; it would not change our qualitative findings.

involved in yesterday's or today's politics. Instead, we consider random ideal points that are drawn independently from the same distribution for both MEPs and ministers. Thus, any systematic bias in influence must result from institutional rules rather than differences between the politicians involved in either decision body.

In order to obtain quantitative statements, we apply the new framework for analysis of power in collective decision making proposed by Napel and Widgrén (2004). It defines a player's *a priori power* in a given decision procedure and for a given probabilistic distribution of all relevant players' preferences as the *expected change to the equilibrium collective decision which would be brought about by a change in this player's preferences*. Alternatively, one could also make probabilistic assumptions about players' *actions*, rather than preferences which induce actions. Traditional power indices take this 'short-cut', but thus lose the ability to transparently account for strategic interaction.

In a spatial voting context, the framework links power to the question: Which impact would a marginal or fixed-size shift of a given player's ideal policy have on the collective decision? Or suppose that a player (or a lobbyist with influence over the player) wanted to move the collective decision in some direction, to what degree would he succeed?[12] This approach to power measurement via a *sensitivity analysis* of collective decisions generalizes the weighted counting of players' pivot positions which is the basis of conventional power indices.[13] The general measurement strategy is to start with a well-defined model of the decision situations which can arise, then to predict a (possibly stochastic) outcome and the *a posteriori power* associated with it for each situation, and finally to aggregate this information using a probability measure on decision situations with a priori credentials.

For the rest of the paper we will assume a unidimensional policy space $X = [0, 1]$ and linear spatial preferences. Decision situations are hence characterized by all actors' ideal points and the status quo. The Nash solution predicts (Prop. 1)

$$x^*(\pi, \mu, q) = \begin{cases} \pi & \text{if } q < \pi \leq \mu \text{ or } \mu < \pi < q, \\ \mu & \text{if } q < \mu < \pi \text{ or } \pi \leq \mu < q, \\ q & \text{otherwise} \end{cases}$$

as the bargaining outcome. To evaluate a posteriori power, we consider the effect of a *marginal* shift of ideal points π and μ to the left or right on this policy outcome (see Napel and Widgrén 2004 for some alternatives). It is captured by the partial derivatives of the predicted outcome. So the a posteriori power of EP for a *given* realization of status quo q and ideal points π and μ is

$$\frac{\partial x^*(\pi, \mu, q)}{\partial \pi} = \begin{cases} 1 & \text{if } q < \pi < \mu \text{ or } \mu < \pi < q, \\ 0 & \text{if } q < \mu < \pi,\ \pi < \mu < q,\ \pi < q < \mu, \text{ or } \mu < q < \pi. \end{cases} \tag{3}$$

[12] Note that a player can well be *powerful* in defining the collective decision without being the one to benefit the most from it, i. e. without being particularly *successful*. This does not happen in the model used in this paper.

[13] All established indices for simple games, such as the Penrose-Banzhaf index or the Shapley-Shubik index, can be obtained in this generalized framework by rather simple distribution assumptions and decision protocols. See Napel and Widgrén (2004) for details.

This formalizes that any (small) change of the player's ideal point with smaller status quo distance translates into a same-size shift of the agreed policy, provided there is agreement about changing the status quo at all.

A priori, the expected impact that any marginal shift of EP's ideal policy π would have on the codecision outcome is therefore

$$\xi_\pi = \Pr(\tilde{q} < \tilde{\pi} < \tilde{\mu}) + \Pr(\tilde{\mu} < \tilde{\pi} < \tilde{q}), \tag{4}$$

where $\tilde{q}$, $\tilde{\pi}$, and $\tilde{\mu}$ denote the random variables corresponding to status quo and ideal points. Not surprisingly, a priori power crucially depends on the a priori distribution assumption for EP's and CM's ideal points and the status quo. Recall that we do not try to quantify today's politics in this constitutional analysis. In the absence of compelling reasons to do otherwise, we assume that the status quo is *uniformly* distributed on X (i. e. we simply apply the principle of insufficient reason), implying

$$\xi_\pi = \int_0^1 \Pr(q < \tilde{\pi} < \tilde{\mu})\, dq + \int_0^1 \Pr(\tilde{\mu} < \tilde{\pi} < q)\, dq. \tag{5}$$

We also assume that individual members of EP and CM have random ideal points $\tilde{\pi}_1, \ldots, \tilde{\pi}_{732}$ and $\tilde{\mu}_1, \ldots, \tilde{\mu}_{25}$ drawn independently from the uniform distribution on $X = [0, 1]$. This is the natural generalization to our spatial voting setting of a uniform distribution over coalitions or player orderings, which is the assumption underlying the Penrose-Banzhaf and Shapley-Shubik indices, and the impartial culture and anonymous impartial culture assumptions used in the social choice literatue.

For the moment, ignore that the members of CM have a rather complex weighted voting rule and assume one-man-one-vote in both EP and CM. Since we assume uniform ideal points for MEPs (and members of CM) the order statistics $\tilde{\pi}_{(366)}$ and $\tilde{\pi}_{(367)}$ whose realizations have been motivated in Sect. 3.2 as defining EP's position in codecision (and correspondingly $\tilde{\mu}_{(8)}$ and $\tilde{\mu}_{(18)}$ for CM) are drawn from different *beta distributions*. Equation (5) thus becomes

$$\begin{aligned}\xi_\pi = \int_0^1 \int_q^1 \left[F_{\tilde{\pi}_{(366)}}(\mu) - F_{\tilde{\pi}_{(366)}}(q)\right] f_{\tilde{\mu}_{(8)}}(\mu)\, d\mu\, dq \\ + \int_0^1 \int_0^q \left[F_{\tilde{\pi}_{(367)}}(q) - F_{\tilde{\pi}_{(367)}}(\mu)\right] f_{\tilde{\mu}_{(18)}}(\mu)\, d\mu\, dq\end{aligned} \tag{6}$$

with

$$F_{\tilde{\pi}_{(k)}}(x) = \int_0^x 732 \binom{731}{k-1} s^{k-1} (1-s)^{732-k}\, ds$$

and

$$f_{\tilde{\pi}_{(k)}}(x) = 732 \binom{731}{k-1} x^{k-1} (1-x)^{732-k},$$

and analogous density and cumulative distribution functions for $\tilde{\mu}_{(8)}$ and $\tilde{\mu}_{(18)}$. Exploiting symmetry properties for order statistics of random variables with identical symmetric

distributions (see e. g. Arnold et al., 1992, p. 26), which amounts to acknowledging that situations in which both EP and CM want to change policy to the right or, respectively, the left of the status quo are symmetric, the two summands in (6) can be shown to be equal. Our *measure of strategic power*[14] for EP therefore becomes

$$\xi_\pi \;=\; 2 \cdot \int_0^1 \int_q^1 [F_{\tilde{\pi}_{(367)}}(\mu) - F_{\tilde{\pi}_{(367)}}(q)]\, f_{\tilde{\mu}_{(18)}}(\mu)\, d\mu\, dq. \tag{7}$$

The expression for CM is analogous.

In case of weighted voting in the Council, its ideal point μ can no longer be identified with $\mu_{(8)}$ and $\mu_{(18)}$. The current asymmetric weights used in the European Union imply that, considering a policy $x < q$, the pivotal member of CM may be at position $p = 13$, 14, ..., 21, or 22. The exact probabilities for these events can be calculated.[15] One can then evaluate the weighted-voting analogue of (7) by replacing $f_{\tilde{\mu}_{(18)}}(x)$ with a corresponding density $f_{\tilde{\mu}_{(\tilde{p})}}(x)$ (see Sect. 5.4). This is a computationally arduous task. So, with no qualitative and little quantitative loss, most of the following analysis concentrates on the one-country-one-vote approximation of CM.

5 Results

As noted above, a priori power in EU decision-making has been analyzed with *power indices* defined on the domain of cooperative *simple games* in many studies (see e. g. Nurmi, 1998, ch. 7, or Holler and Owen, 2001, for overviews). Condensing the codecision procedure into that dichotomous 0-1-framework yields a unanimity game in which both players have *equal* a priori power. Given the lack of any obvious asymmetry between CM and EP inside the Conciliation Committee or the procedure as such, this might seem a reasonable assessment at first sight, loosely corresponding to qualitative conclusions of Crombez (2000) and Tsebelis and Garrett (2000). An analysis based on the explicit game-theoretic model studied here, however, leads to a very different assessment – and one which we maintain is more convincing.

In particular, we find that CM is by an order of magnitude more influential in codecision than EP. In the following, we first point out the intuition behind this result by looking at the somewhat artificial case of the status quo fixed to $q \equiv 0$. We then discuss results for varying status quo. We also look at different possible majority requirements inside CM

[14] For a detailed discussion and derivation of this measure in general applications, see Napel and Widgrén (2004).

[15] Note that these probabilities are an interesting positional analogue of the Shapley-Shubik index (SSI), but not equivalent to it: The SSI corresponds to the probability that some *player* is pivotal given that all ideal point configurations on $[0, 1]$ are equally likely. Here, we need the probability that some *position* hosts the pivotal player, e. g. that the agent who just brings about the required majority is, say, the 14^{th} counted from the left. For simple voting with a k out of n rule, this 'positional SSI' would be 1 for position k and zero for all others, while all players have SSI $1/n$; for a game with a dictator, all positions have 'positional SSI' $1/n$.

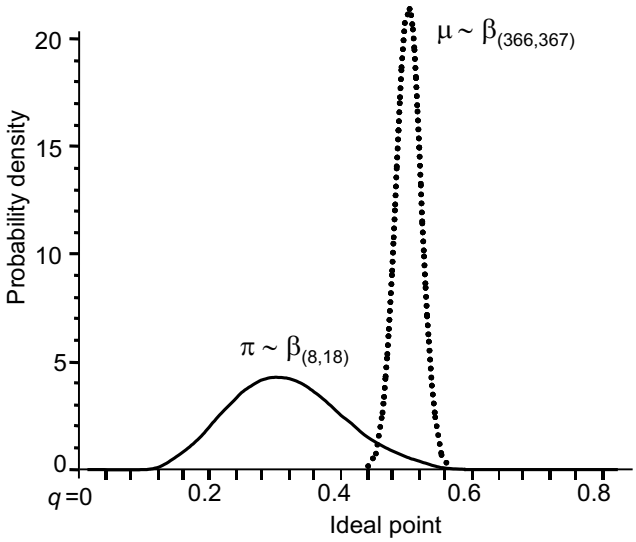

Figure 3: Distribution of pivotal ideal point in Council and Parliament

and compare the current European Union of 25 members with the former one of only 15. Enlargement significantly decreased EP's influence on codecision. Finally, we discuss the robustness of our findings concerning the one-country-one-vote simplification of CM and the assumed independence of actors' ideal points.

5.1 Fixed Legislative Status Quo

If the reference point for an agreement, q, is uniformly distributed as assumed above, there may frequently be no mutual gains from an agreement. For the moment, let us fix the legislative status quo to zero so that there *are* gains from trade: players agree about the direction but not the degree of change. This might be regarded as a kind of interim analysis of the Conciliation phase invoked when a mutually acceptable compromise is known to exist.

For $q \equiv 0$, the predicted outcome is always the ideal point π or μ which is closer to 0. The expected impact of a marginal shift of EP's ideal policy on the collective decision is shown in row 1 of Table 1: a shift in CMs ideal point by a small amount $\Delta\mu$ in expectation shifts the outcome by $0.976 \cdot \Delta\mu$; in contrast, a shift in EPs position π is passed through at a rate of only 0.024. This is a striking asymmetry of influence on outcomes.

Its intuitive explanation is that bargaining's status quo bias translates the event "CM is more conservative" into "CM defines x^*" and "CM has power". The distribution of CM's and EP's ideal points as derived from their respective majority rules (see Fig. 3) implies that CM indeed is the more conservative institution much more often than EP. This seems in line with anecdotal evidence on the EU. It remains true and drives results also in the case of a status quo allowed to vary from issue to issue.

	Model	Parliament	Council
1	Fixed status quo (EP732-CM25)	0.024	0.976
2	Varying status quo (EP732-CM25)	0.023	0.590
3	Varying status quo (EP626-CM15)	0.061	0.557
4	Varying status quo, weighted voting in CM (EP732-CM25)	0.037	0.543
5	Varying status quo, weighted voting in CM (EP7-CM25)	0.089	0.464
6	Varying status quo, weighted voting in CM (EP1-CM25)	0.097	0.390

Table 1: Inter-institutional distribution of power in the EU

5.2 Varying Status Quo

Now let status quo q vary uniformly on $X = [0, 1]$. Again, approximate the Council's complex weighted voting rule by one-country-one-vote with, crucially, a qualified majority requirement as discussed in Sect. 4. One obtains 0.023 and 0.590 as ex ante power values for EP and CM respectively (row 2 in Table 1). While a small shift of CM's position is passed through to the collective decision at a rate of approximately 59%, an opinion change $\Delta\mu$ of EP has almost negligible effect on policy – causing a move Δx^* which in expectation amounts to only about 2% of the original shift of EP's position.

The main effect of considering a varying status quo is that there may not be gains from trade between EP's and CM's respective pivotal players. If their ideal points happen to lie on opposite sides of the status quo, the latter will just be confirmed.[16] For such preference configurations neither EP nor CM has any *constructive influence* on EU politics and would not be worth lobbying. Compared to the conditional influence for $q \equiv 0$ in the previous section, this possibility of not influencing the status quo at all restricts CM's power more than EP's, in both absolute and relative terms.

Figure 4 depicts (interpolated) numbers for alternative qualified majority rules. While influence of EP on codecision outcomes monotonically approaches zero as the Council moves towards a unanimity requirement, CM's influence is inversely U-shaped. CM's power is maximized approximately when it has a 65% qualified majority rule. The impact of a quota change on CM's influence on decisions is two-fold. On the one hand, a quota increase raises the probability that the CM pivot is closer to status quo than the EP pivot *conditional* on existence of mutually beneficial policy changes. This may be labelled the *relative vote threshold effect* of higher quota (from an intergovernmentalist's perspective beneficial, from a parliamentarist's perspective detrimental); it is nicely picked up by conditional analysis with $q \equiv 0$ (see previous section). On the other hand, higher CM quota also lowers the probability of CM pivot and EP pivot finding themselves on the same side of the status quo. If they do not, there is no acceptable alternative to the latter and hence no influence for either institution – a detrimental *absolute vote threshold effect*. Strategic power is

[16] Anticipating this, the Commission may not even start the codecision procedure by putting a proposal on the table. This may explain why cases of terminal disagreement in the Conciliation Committee or of EP and CM postponing their first readings indefinitely (an implicit way of confirming the status quo) are rare in practice.

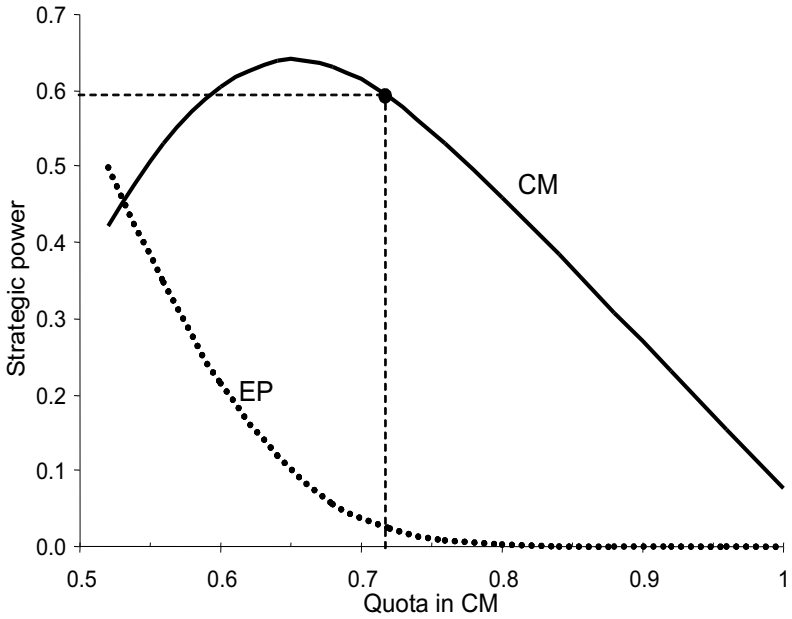

Figure 4: Inter-institutional distribution of power in EU25 for different quotas

determined by the product of both. Up to about 65%, the relative effect of quota changes dominates. Above this level, the absolute effect begins to dominate: CM as an institution loses power in absolute terms but relative power as measured by $\xi_\mu/(\xi_\mu+\xi_\pi)$ would increase.

Note that CM being considerably more powerful in the codecision procedure than EP does *not* mean that CM is 'better off' than EP. The ideal point π deduced from its pivotal member's preferences is a useful device to predict codecision outcomes, and hence to gauge who on average shapes it to what extent. It does not, however, yield a meaningful welfare indicator for the institution. Such an indicator might be constructed using a measure of average success of *members* of CM, and then might be compared to a similar measure for EP.

Our question goes in a different direction: How *influential* is the European Parliament (which represents the people of the Union) in comparison to the Council of Ministers (which represents national governments) in the EU's central decision procedure? For this we get a clear answer: much less than a casual look at the seemingly symmetric codecision procedure would suggest. Moreover, Fig. 4 illustrates that even the governments' scope for exercising constructive influence through codecision is limited by its internal qualified majority rule. For those 3 out of 43 areas in which codecision requires CM's unanimity[17] chances to have EP and CM agree are less than 8%.

Claims that the gradual extension of the codecision procedure to more of the EU's policy areas has moved EU decision making towards a balanced bicameral system need to

[17]Unanimity is required for measures in the field of social security as are necessary to provide freedom of movement of workers (Art. 42), mutual recognition of diplomas, certificates, etc. in order to make it easier to take up and pursue activities as self-employed persons (Art. 47) and recommendations in the field of cultural cooperation (Art. 151).

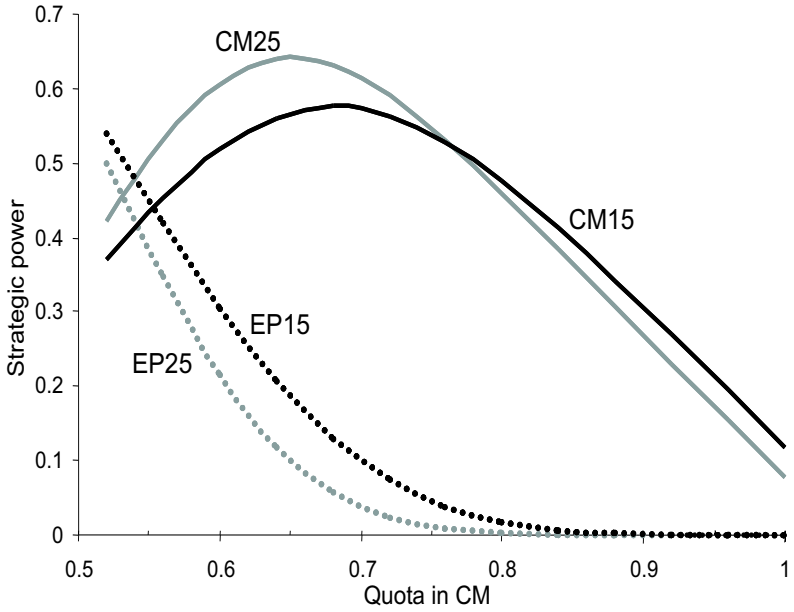

Figure 5: Distribution of power in EU15 compared with EU25

be qualified. The codecision procedure is clearly that of the EU's legislative procedures in which EP's influence is greatest. Still, it is very small.[18]

5.3 Enlargement and Reforms

The most recent enlargement from a Union of 15 to one of 25 members had implications for the inter-institutional balance of power at least from an a priori point of view. The numbers for CM using an 11 out of 15 rule (again approximating the weighted voting rule by one-country-one-vote) and EP using simple majority for 626 members are 0.061 for EP and 0.557 for CM, respectively.

Influence on codecision outcomes was already quite asymmetric in EU15. This has been magnified by enlargement: it has slightly increased CM's influence and considerably decreased EP's influence (compare rows 2 and 3 in Table 1). Figure 5 shows the impact of the eastern enlargement on EP's and CM's strategic power for various quotas. The change in membership inter-plays with the mentioned absolute and relative threshold effects. For low quotas, the relative vote threshold effect works stronger in favour of CM after enlargement. The turning point beyond which the absolute effect dominates is, however, reached at lower vote threshold level than in EU15. The absolute effect then decreases CM's power at faster pace in the enlarged EU than it did in EU15. This implies that, at high quotas,

[18]EP also has its say on the EU's budget. The same asymmetry holds, however, also in budget procedures and EP's influence is limited only to a small part of the budget. EP's acceptance is also required for the entry of new member states, the ratification of international agreements, the so-called *assent procedure*, and, moreover, the appointment of the Commission. In three latter cases, however, EP merely exerts veto power rather than constructive power, which is the main emphasis of this paper.

both EP and CM have less scope for affecting the status quo than before enlargement.

Recent attempts to reform EU decision-making, like the proposal of the Convention headed by Mr. Giscard d'Estaing, have aimed at lowering the majority threshold in CM. In relative terms, CM's quota has remained practically unchanged through the history of the EC/EU. In Nice, despite the awareness of enlargement's deteriorating impact on EU's capacity to act, national governments actually decided to increase the quota (for discussion see Baldwin et al. 2001). The Nice agreement has been slightly modified by 2003's Act Concerning the Conditions of Accession, but still the quota in the weight dimension is higher than it was before Nice. The two additional requirements relating to the number of supporters of a proposal and their aggregate population size compound this. Enlargement according to the (modified) Nice rules has made EP almost powerless and shifted codecision back towards inter-governmentalism. Moreover, combined with the effects of expanding membership, it has weakened the EU's capacity to act quite considerably. Baldwin et al. (2001), using quite different methodology, argue that in order to restore EU15's capacity to act in an enlarged Union, the Council's quota should be lowered to around 67%. This is broadly in line with our findings because for a constant quota EP's loss of constructive influence due to enlargement is only partially compensated by a corresponding increase for CM.

In October 2004, the EU Heads of States signed the Treaty establishing a Constitution for Europe, which comes into force in November 2006 if ratified by the member states. As part of the Treaty, new voting rules for the Council were set. They will come into force in November 2009.[19] Then, passage of a proposal requires 55% of member states representing 65% of EU population; at least four member states are needed for a blocking minority and at least 15 member states must vote yes (for an assessment of dual majority rules see Baldwin and Widgrén 2004a, 2004b). The last condition becomes irrelevant after the EU is enlarged to 27 members ($\frac{15}{27} < 55\%$). The new rules decrease the effective quota compared to the Nice rules, but it is difficult to say to which level since three rules are mixed.[20] As Fig. 4 indicates, the rules in the Constitutional Treaty would increase both EP's and CM's constructive power.

5.4 Discussion

This section looks at the justification for some of our simplifying assumptions and discusses the robustness of our findings. To start with, let us reconsider voting in CM and relax the above one-country-one-vote simplification.

The *generating function* method for the computation of the Shapley-Shubik index, first used by Mann and Shapley (1962) (also see Algaba et al. 2003), can be adapted to compute

[19]The next enlargement may materialize in 2007, the year to which the entry of Rumania and Bulgaria currently are scheduled. The Treaty defines CM's voting rule also for EU27 but not the distribution of national seats in EP. The maximum number of seats is set to 750; details will be decided before the next European elections in 2009.

[20]Note e.g. that 22 smallest member states have 88 per cent of membership but less than 65 per cent of population. The blocking minority requirement allows them to pass proposals nevertheless.

the exact probability that the pivotal player for the current three-dimensional weighted voting rule is found at position $k = 1, \ldots, 25$. The event "pivotal player found at position k" corresponds to a set of particular permutations $(\cdot)$ of the list of players $1, \ldots, 25$, which are all equiprobable under our a priori assumption of independently identically distributed ideal points. The event is independent of the realization of an ordered list $(\mu_{(1)}, \ldots, \mu_{(25)})$ of 25 anonymous ideal points, with each $\mu_{(k)}$ a priori having a beta distribution with density $f_{\tilde{\mu}_{(k)}}$. Denoting the probability of finding the pivotal Council member at position k by p_k, the probability density function of the random pivotal player's ideal point is thus given ex ante by

$$f_{\tilde{\mu}_{(\tilde{p})}}(x) = \sum_{k=1}^{25} p_k \cdot f_{\tilde{\mu}_{(k)}}(x).$$

Using this instead of $f_{\tilde{\mu}_{(18)}}(x)$ in (7), one can calculate EP's and CM's expected marginal impact on the codecision outcome for *weighted voting in CM*. For current weights, we obtain 0.037 and 0.543 for EP and CM, respectively. So intra-institutional *weights* – in contrast to the intra-institutional *quota* – have a very minor effect on inter-institutional power.

Using a one-country-one-vote approximation somewhat understates the influence of EP and slightly overstates that of CM (compare rows 2 and 4 in Table 1). Intuitively, this is because the existence of large players inside CM spreads out the distribution of the position $\tilde{\pi}$ determining CM's bargaining success. This is most obvious in the asymmetric limit case of weighted voting, namely one member of CM being a dictator. Then, $\tilde{\pi}$ would always be identical to this member's uniformly distributed ideal point. CM would hence no longer be a priori more conservative than EP and, as an institution, be roughly equally powerful as EP.

A second slight understatement of EP's influence in the previous sections arises from our assumption that the ideal points of all MEPs matter equally in the determination of $\tilde{\mu}$. MEPs in reality belong to political parties who attempt to coordinate voting behavior amongst their members. The position of the pivotal party need not actually coincide with what is the pivotal MEP's ideal point. This has a slight impact on the position of the EP median and the aggregate influence of EP.

Currently, EP has seven major parties. The enlargement did not change this, so that the decrease in EP's power as a result of enlargement should in reality be less dramatic than shown in Fig. 5. Still, the earlier qualitative conclusion remains valid: Expanding membership and thus the number of players in CM boosts the relative threshold effect at low quotas, which works in favour of CM. It also strengthens the absolute threshold effect at high quotas, which decreases both bodies' constructive power. The rate at which EP's power decreases is slightly lower if we assume correlation in EP, and the turning point beyond which CM's power decreases shifts towards lower quotas.

For weighted voting in CM and assuming seven equal-sized parties in EP we obtain 0.089 and 0.464 for EP and CM respectively (row 5 in Table 1). To obtain an upper bound for EP's influence, one can consider the extreme case of only *one* party in the Parliament. Even then, using the current quota, CM's power is roughly four times EP's power (row 6

in Table 1). Our main qualitative conclusion of pronounced asymmetry is very robust.

A third potential source of understatement of EP's power stems from our uniform distribution assumption. Assuming a unimodal distribution with smaller variance, e. g. truncated normal with mean 0.5, for members of CM and EP would shift the distribution of CM's pivot closer to that of EP's median. This would somewhat raise EP's chances to be critical, and lower CM's at least in relative terms.[21] Parliamentary systems selecting the members of CM (vs. direct proportional election of EP) might moreover justify to assume smaller variance for ministers' than for MEPs' ideal points. This would again somewhat increase the likelihood of EP holding the more conservative position (and determining the codecision outcome). However, unless very extreme distributional asymmetries are considered, CM by its qualified majority rule remains the by far more influential institution.

Another feature with limited qualitative impact is potential national bias in MEPs' voting behaviour. Textbook presentations of the EP usually characterize it as a mixture of national and political dimensions that interplay in MEPs' decisions. Noury and Roland (2002) show, however, that MEPs vote more along party than country lines, making EP a truly supranational European body which has a party cohesion comparable to that of the U. S. Congress. Introducing moderately positive correlation between a country's minister and its MEPs would not very significantly change results and actually decrease EP's influence. If MEPs voted purely according to their nationality, EP would be powerless in the sense that it did little more than rubber-stamping the decisions of the Council in view of the latter's more restrictive majority requirement (see Bindseil and Hantke 1997 on this argument).

Our analysis has been based on spatial voting and – where available – the official rules for codecision. We believe that this rather legalistic approach is appropriate for the constitutional analysis we do. However, the model may not predict particular policy outcomes or influence in *today's* decisions in the EU that well. The empirical success of (procedural) spatial voting models in explaining actual outcomes of EU decision-making has so far been limited (see Thompson et al. 2003). So-called *institutional realists* point out that this results from paying too much attention to the legal details of a particular decision procedure and too little to global voting power and economic power in the EU (see Achen 2003). They propose to view outcomes as compromises reached in informal bargaining without predetermined rules; these are later officially adopted according to the official rules. This is a plausible explanation for the observation that decisions, at least by CM, are often taken (almost) unanimously where only a qualified majority is required. The latter can, however, have other and quite trivial reasons, e. g. that dissenting ministers do not want to be seen losing and keep their face by pretending to agree.

In our view the main limitation of our analysis is not that we take the legal rules seriously, but that we neglect effects of their *repeated* invocation. We treated every issue – corresponding to a new realization of status quo and individual ideal points – as isolated, i. e. there was no cross-issue compromising or logrolling. This seems to us a reasonable as-

[21] Both institutions would find themselves on the same side of status quo more frequently, so that the absolute effect on CM's influence depends on the particular distribution.

sumption at the inter-institutional level: different issues frequently fall into the competence of different parliamentary committees and hence different EP delegations; ministers with different portfolios are involved on CM's part, whose rotating presidency should further decrease repeated game effects. However, at the intra-institutional level log-rolling can be more of an issue. This applies, in particular, to CM whose members interact repeatedly with an indefinite time horizon.

So what happens to inter-institutional power if we assume CM to not espouse the ideal point of the member who happens to be pivotal on a given policy issue, but rather some convex combination of this point and a kind of average of all positions? The latter could, for example, be an informal repeated game compromise in which members' ex ante voting power is used to weight positions.[22] Council members' ex ante voting powers by definition do not depend on the particular realization of ideal points for an issue at hand. The mean of the a priori distribution of CM's ideal point in this case lies closer to the mean of individual ideal points than when only the pivotal member's position is considered. This would make CM less conservative on average – increasing both the chances to reach an agreement with EP and the latter's average influence. However, as long as CM's issue-specific pivot comes with any extra influence on the aggregate ideal point, $\tilde{\pi}$, CM's quota has an effect on the probability of CM determining the codecision agreement. A significantly higher quota in CM than in EP then still implies more power for the EU's intergovernmental body and less for its directly elected one.

6 Concluding Remarks

In this paper, we have dealt with the impact of internal voting rules on the inter-institutional distribution of power. Our interest has been in EU codecision, but it should be obvious that the analysis extends to other contexts (for example, the U. N. Security Council understood as a chamber of five permanent members with unanimity rule and a second chamber of rotating members with only 4/10 majority rule). We found that a high internal quota makes it highly likely that CM via *bargaining's status quo bias* determines outcomes. This gives it much more constructive influence than EP. The high internal quota of CM also promotes *institutional status quo bias*: It is quite probable that respective EP and CM pivots prefer opposite changes to the status quo.[23] Thus, fewer and fewer proposed policy changes get implemented as the quota is increased or kept constant for expanding membership; players then exercise less and less constructive influence.

We agree with most observers of European integration that EU decision-making has developed in the direction of a balanced bicameral system. The set of policy areas to which codecision applies has been extended, gradually making it the most important decision-

[22]This is exactly what the *compromise model* favoured by institutional realists does. For an excellent and detailed discussion see Achen (2003).

[23]Note that we do not consider actors' blocking power. In our setting, blocking takes only place if EP's and CM's ideal points are on a different side of the legislative status quo. This situation is symmetric – each institution would have the same ex post and, hence, ex ante blocking power.

making procedure of the EU. Moreover, the Amsterdam version of codecision gives neither EP nor CM a significant *direct* procedural advantage. However, the – only apparent – symmetry between Parliament and Council in the crucial stage of codecision, the Conciliation Committee, is *not* sufficient to make them equally powerful co-legislators.

Our arguments are based on common spatial voting assumptions, bargaining theory, and the strategic power framework of Napel and Widgrén (2004). We made several simplifications that should be relaxed in future research.

First, we did not carry out very detailed analysis of the impact of weighted voting in the Council (see, however, the previous section and rows 4–6 in Table 1). Our preliminary computations confirm that current weights in CM have only second-order effects on inter-institutional power, very slightly strengthening EP. Looking at the measures of national power of CM's members which we obtain as intermediate results to the inter-institutional computations, it turns out that the figures are roughly proportional to those of the intra-CM Shapley-Shubik index (which are, in turn, very similar to those of the normalized Penrose-Banzhaf index). Together with our finding of CM being the institution that dominates even the codecison procedure, this gives some new spatial-voting and strategic-analysis support to the application of classical power indices in the EU context (much criticized by Garrett and Tsebelis 1999). Still, it deserves emphasis that our strategic setting makes a difference. Without actually doing the strategic analysis, a wholesale restriction of power investigations to CM has little legitimation. Also, classical indices cannot pick up implications of strategic interaction like bargaining's status quo bias. They therefore, e. g., must treat swings or pivot positions in an institution like CM independently of their actual effects in the decision process as a whole. Some countries' pivotal positions come with greater likelihood that CM (and so CM's pivot) actually prevails in its codecision interaction with EP. This is why national power in codecision *via CM* is only roughly proportional to classical indices. There are quite large relative errors for small member states whose (few) pivot positions turn out to matter more per position than those of large countries. Furthermore, the danger of a high quota bringing decision making to a standstill, i. e. institutional status quo bias, is more reliably quantified when players are assumed to actively negotiate compromises *if* they exist, rather than to be randomly in favour or against unspecified exogenous proposals.[24]

Second, we considered one isolated instance of bargaining between players who suffered exactly the same disutility from distance to their respective ideal points. Thus, repeated-game effects (typically allowing for a great multiplicity of equilibrium outcomes) and log-rolling based on player-specific utility and / or different distance functions (weighting policy dimensions by subjective measures of salience), were not dealt with. These simplifications have limited policy implications, though: Log-rolling complicates the derivation of the contract curve considerably, but the essential bargaining problem of selecting among many Pareto-efficient alternatives (with different distributional consequences) remains the same.

[24]The non-normalized Penrose-Banzhaf index is sometimes used to analyse 'resistance' against implementing change in the latter vein. Actors' Penrose-Banzhaf measures typically do not sum up to one. The higher the vote threshold in a voting body, the lower this sum gets – indicating high resistance (see e. g. Widgrén 1996 or Felsenthal and Machover 2001).

Also, regular national and European elections limit the scope for sophisticated repeated-game strategies of EP and CM as institutions. More controversial in our view is the hypothesis that Council and Parliament are represented essentially by their respective pivotal members in their negotiations – which is unfortunately standard. This neglects the effects of intra-institutional informal compromising and log-rolling (especially inside the Council) and restricts both institutions to exhibit a high level of collective rationality.

Appendix 1

Proposition 2 – Proof. Without loss of generality assume $q = 0$ and let $u_i(\lambda_i) = 0$. Utility is the same concave strictly decreasing function of distance to the respective ideal point for both players. Hence it suffices to show $u_\pi^q > u_\mu^q \iff u_\pi^* > u_\mu^*$. The Pareto frontier of $\mathcal{U}$

$$\begin{aligned} P(\mathcal{U}) &= \Big\{\Big(u_{\mathrm{EP}}\big(\gamma\pi + (1-\gamma)\mu\big), u_{\mathrm{CM}}\big(\gamma\pi + (1-\gamma)\mu\big)\Big) : \gamma \in [0,1]\Big\} \\ &= \Big\{\Big(u\big((1-\gamma)d(\pi,\mu)\big), u\big(\gamma d(\pi,\mu)\big)\Big) : \gamma \in [0,1]\Big\} \end{aligned}$$

is symmetric w. r. t. the 45°-line. So $\phi(\phi(u_\pi)) = \phi(u_\mu) = u_\pi$, which implies

$$\phi'(\tilde{u}_\pi) = -1 \tag{8}$$

for fixed point $\tilde{u}_\pi = \phi(\tilde{u}_\pi)$. Concavity of utility function $u(\cdot)$ translates into concavity of $\phi(\cdot)$, so (8) implies

$$\phi'(u_\pi) \begin{cases} \geq -1; & u_\pi < \tilde{u}_\pi, \\ \leq -1; & u_\pi > \tilde{u}_\pi. \end{cases} \tag{9}$$

Now assume $u_\pi^q > u_\mu^q$ and first note that in this case EP and CM will not agree on the endpoint of the contract curve most preferred by CM:

1. Consider $u_{\mathrm{EP}}(\mu) < u_\pi^q$, i. e. CM's ideal point leaves EP worse off than the status quo. The endpoint of the contract curve preferred by CM then gives exactly utility $u_\pi = u_\pi^q$ to EP, implying that the Nash product $N(u_\pi, u_\mu) \equiv (u_\pi - u_\pi^q)(u_\mu - u_\mu^q)$ is zero. Since it is positive in the interior of the contract curve, this cannot be the Nash bargaining outcome.

2. Consider $u_{\mathrm{EP}}(\mu) \geq u_\pi^q$, i. e. CM's ideal point leaves EP weakly better off than the status quo. CM's preferred endpoint of the contract curve in this case is μ and yields utility 0 to CM and $\phi(0) < 0$ to EP. This is no solution either: The change in the Nash product $N(u_\pi, u_\mu)$ implied by moving slightly from μ towards π is captured by its directional derivative at $(\phi(0), 0)$ along the Pareto frontier, i. e. in direction of vector $a \equiv (1, \phi'(\phi(0)))$:

$$\begin{aligned} N'_a(\phi(0),0) &= (0 - u_\mu^q, \phi(0) - u_\pi^q) \begin{pmatrix} 1 \\ \phi'(\phi(0)) \end{pmatrix} \\ &= -u_\mu^q + \phi(0)\phi'(\phi(0)) - u_\pi^q \phi'(\phi(0)) \\ &= -(u_\mu^q + u_\pi^q \phi'(\phi(0))) + \phi(0)\phi'(\phi(0)). \end{aligned}$$

$\phi(0) < \tilde{u}_\pi$, so (9) implies $0 \geq \phi'(\phi(0))) \geq -1$. Therefore, given $u_\mu^q < u_\pi^q < 0$, the first summand is strictly positive. Both $\phi(0)$ and $\phi'(\phi(0))$ are negative, so the second summand is positive, too. Therefore, $N'_a(\phi(0), 0) > 0$ and $(\phi(0), 0)$ cannot maximize $N(\cdot)$.

It follows that EP and CM must either agree on π, in which case $u_\pi^* > u_\mu^*$ is obvious, or on some point in the interior of the contract curve which is characterized by tangency of an iso-$N(\cdot)$ line and $\phi(\cdot)$ in (u_π^*, u_μ^*). For the latter case, note that the slope of iso-$N(\cdot)$ line

$$g(u_\pi) = \frac{k}{u_\pi - u_\pi^q} + u_\mu^q$$

with $k = (u_\pi^* - u_\pi^q) \cdot (u_\mu^* - u_\mu^q)$ is

$$g'(u_\pi^*) = -\frac{u_\mu^* - u_\mu^q}{u_\pi^* - u_\pi^q}$$

in (u_π^*, u_μ^*). Suppose $u_\pi^* \leq u_\mu^*$. Then $g'(u_\pi^*) < -1$ given $u_\pi^q > u_\mu^q$. However, $u_\pi^* \leq u_\mu^*$ means $u_\pi^* \leq \tilde{u}_\pi$, which implies $\phi'(u_\pi) \geq -1$ by (9). This is a contradiction, so that indeed $u_\pi^* > u_\mu^*$.

Similarly, assuming $u_\pi^q \leq u_\mu^q$ and supposing $u_\pi^* > u_\mu^*$ a contradiction can be shown (for any interior solution $g'(u_\pi^*) > -1$, while (9) implies $\phi'(u_\pi^*) \leq -1$). ■

References

Achen, C. (2003), Institutional Realism and Bargaining Models, in: Thompson, R., Stokman, F., Achen, C. and König, T. (eds.): *The European Union Decides*, Book manuscript prepared for the European Consortium for Political Research, Marburg, September 2003.

Algaba, E., J.M. Bilbao, J.R. Fernández García, and J.J. López (2003), Computing power indices in weighted multiple majority games, *Mathematical Social Sciences* 46: 63-80.

Arnold, B.C., N. Balakrishnan, and H. N. Nagaraja (1992), *A First Course in Order Statistics*, New York, NY: John Wiley & Sons.

Baldwin, Richard, Erik Berglöf, Francesco Giavazzi, and Mika Widgrén (2001), Nice Try: Should the Treaty of Nice Be Ratified? *Monitoring European Integration* 11. London: Centre for Economic Policy Research.

Baldwin, R., and Widgrén, M. (2003a), Decision-Making and the Constitutional Treaty: Will the IGC discard Giscard?, CEPS Policy Brief No. 37.

Baldwin, R., and Widgrén, M. (2003b), The draft Constitutional Treaty's voting reform dilemma?, CEPS Policy Brief No. 44.

Baldwin, R., and Widgrén, M. (2004a), Winners and Losers under Various Dual Majority Rules for the EU Council of Ministers, in Wiberg, M. (ed.): *Reasoned Choices – Essays in Honor of Academy Professor Hannu Nurmi on the Occasion of His 60th Birthday*, Helsinki: Finnish Political Science Association.

Baldwin, R. and Widgrén, M. (2004b), Council Voting in the Constitutional Treaty: Devil in the Details, CEPS, Policy Brief No. 53.

Banzhaf, John (1965), Weighted Voting Does Not Work: A Mathematical Analysis, *Rutgers Law Review* 19: 317-343.

Barr, J., and F. Passarelli (2003), Who has the power in the EU?, Dartmouth College and Bocconi University, mimeo [http://www.andromeda.rutgers.edu/∼jmbarr/powerEU.html].

Berglöf, E., Eichengreen, B., Roland, G., Tabellini, G. and Wyplosz, C. (2003): Built to last: A political architecture for Europe, *Monitoring European Integration* 12. London: Centre for Economic Policy Research.

Bindseil, U. and Hantke, C. (1997): The power distribution in decision-making among EU member states, *European Journal of Political Economy* 13, 171-185.

Binmore, K. G. (1987), Nash bargaining theory II, In K. G. Binmore and P. Dasgupta (Eds.), *The Economics of Bargaining*, 61–76, Oxford: Blackwell.

Consolidated version of the Treaty establishing the European Community, Office Journal of the European Communities C325/33, 20.12.2002.

Cox, P. (2004), Foreword, in: European Parliament, *Activity report 1 May 1999 to 30 April 2004 (5th parliamentary term) of the delegations to the Conciliation Committee* [http://www.europarl.eu.int/code/information/activity_en.htm].

Crombez, C. (1997), The codecision procedure of the European Union, *Legislative Studies Quarterly* 22, 97-119.

Crombez, C. (2000), The institutional reform and codecision in the European Union, *Constitutional Political Economy* 11, 41–57.

Crombez, C., Steunenberg, B. and Corbett, R. (2000), Understanding the EU legislative process: political scientists and practitioners' perspectives, *European Union Politics* 1, 363–381.

Felsenthal, Dan, and Moshé Machover (1998), *The Measurement of Voting Power: Theory and Practice, Problems and Paradoxes*, Cheltenham: Edward Elgar.

Felsenthal, Dan, and Moshé Machover (2001), The Treaty of Nice and Qualified Majority Voting, *Social Choice and Welfare* 18: 431–64.

Felsenthal, Dan, and Moshé Machover (2004), Analysis of QM Rules in the Draft Constitution for Europe Proposed by the European Convention in 2003, *Social Choice and Welfare* 23: 1–20.

Garrett, G. and Tsebelis, G. (1999), Why Resist the Temptation to Apply Power Indices to the EU, *Journal of Theoretical Politics* 11: 291–308.

Garrett, G., Tsebelis, G. and Corbett, R. (2001), The EU legislative process: Academics vs. practitioners – Round 2, *European Union Politics* 2, 353–366.

Harsanyi, J.C. (1956), Approaches to the Bargaining Problem Before and After the Theory of Games: A Critical Discussion of Zeuthen's, Hicks', and Nash's Theories, *Econometrica* 24, 144–157.

Holler, M.J., and G. Owen (2001), *Power Indices and Coalition Formation*, Dordrecht: Kluwer.

Kalai, E. (1977), Nonsymmetric Nash solutions and replications of 2-person bargaining, *International Journal of Game Theory 6*, 129–133.

Laruelle, Annick, and Mika Widgrén (1998), Is the Allocation of Power Among EU States Fair? *Public Choice* 94: 317–39.

Leech, Dennis (2002), Designing the Voting System for the Council of Ministers of the European Union, *Public Choice* 113, 3/4, 437-464.

Mann, I. and Shapley, L.S. (1962), Values of Large Games, VI: Evaluating the Electoral College Exactly, Memorandum RM-3158-PR, RAND Corporation, Santa Monica, CA.

Morriss, P. (1987/2002). *Power: A Philosophical Analysis*, 2nd ed., Manchester: Manchester University Press.

Napel, S., and Widgrén, M. (2003), Bargaining and Distribution of Power in the EU's Conciliation Committee, CESifo Discussion Paper No. 1029, Munich.

Napel, S., and Widgrén, M. (2004), Power Measurement as Sensitivity Analysis – A Unified Approach, *Journal of Theoretical Politics* 16(4), 517–538.

Nash, J. F. (1950), The bargaining problem, *Econometrica 18*, 155–162.

Noury, A. and Roland, G. (2002), More power to the European Parliament?, *Economic Policy* 17(35), 279-319.

Nurmi, H. (1998), *Rational Behaviour and Design of Institutions*, Cheltenham: Edward Elgar.

Pajala, A. and Widgrén, M. (2004), A Priori vs. Empirical Power in the EU Council of Ministers, *European Union Politics* Vol. 5, 73-97.

Penrose, Lionel (1946), The Elementary Statistics of Majority Voting, *Journal of the Royal Statistical Society* 109: 53–7.

Osborne, M. J. and A. Rubinstein (1990), *Bargaining and Markets*, San Diego, CA: Academic Press.

Rubinstein, A. (1982), Perfect equilibrium in a bargaining model, *Econometrica 50*, 97–109.

Segendorff, B. (1998), Delegation and threat in bargaining, *Games and Economic Behavior* 23, 266–283.

Shapley, Lloyd and Martin Shubik (1954), A Method of Evaluating the Distribution of Power in a Committee System, *American Political Science Review* 48: 787–92.

Steunenberg, B., and Dimitrova (1999), Interests, legitimacy and constitutional Choice: The extension of the codecision procedure in Amsterdam, University of Twente, mimeo.

Steunenberg, B., and T. Selck (2002), The insignificance of the significance? A review of procedural models on EU decision making, University of Leiden, mimeo.

Thompson, R., Stokman, F., Achen, C. and König, T., eds., (2003), The European Union Decides, Book manuscript prepared for the European Consortium for Political Research, Marburg, September 2003.

Tsebelis, G., and Garrett, G. (2000), Legislative politics in the European Union, *European Union Politics* 1, 5–32.

Tsebelis, G., and Money (1997), *Bicameralism*, Cambridge, MA: Cambridge University Press.

Widgrén, M. (1994), Voting Power in the EU and the Consequences of Two Different Enlargements, *European Economic Review* 38, 1153–70.

Widgrén, M. (1996), Voting Rule Reforms in the EU Council: Needs, Means and Consequences, in K. Alho, M. Erkkilä, and M. Kotilainen (eds.): *The Economics and Policies of Integration – A Finnish Perspective*, Dordrecht: Kluwer.

CESifo Working Paper Series

(for full list see www.cesifo.de)

1285 Luis H. R. Alvarez and Erkki Koskela, Does Risk Aversion Accelerate Optimal Forest Rotation under Uncertainty?, September 2004

1286 Giorgio Brunello and Maria De Paola, Market Failures and the Under-Provision of Training, September 2004

1287 Sanjeev Goyal, Marco van der Leij and José Luis Moraga-González, Economics: An Emerging Small World?, September 2004

1288 Sandro Maffei, Nikolai Raabe and Heinrich W. Ursprung, Political Repression and Child Labor: Theory and Empirical Evidence, September 2004

1289 Georg Götz and Klaus Gugler, Market Concentration and Product Variety under Spatial Competition: Evidence from Retail Gasoline, September 2004

1290 Jonathan Temple and Ludger Wößmann, Dualism and Cross-Country Growth Regressions, September 2004

1291 Ravi Kanbur, Jukka Pirttilä and Matti Tuomala, Non-Welfarist Optimal Taxation and Behavioral Public Economics, October 2004

1292 Maarten C. W. Janssen, José Luis Moraga-González and Matthijs R. Wildenbeest, Consumer Search and Oligopolistic Pricing: An Empirical Investigation, October 2004

1293 Kira Börner and Christa Hainz, The Political Economy of Corruption and the Role of Financial Institutions, October 2004

1294 Christoph A. Schaltegger and Lars P. Feld, Do Large Cabinets Favor Large Governments? Evidence from Swiss Sub-Federal Jurisdictions, October 2004

1295 Marc-Andreas Mündler, The Existence of Informationally Efficient Markets When Individuals Are Rational, October 2004

1296 Hendrik Jürges, Wolfram F. Richter and Kerstin Schneider, Teacher Quality and Incentives: Theoretical and Empirical Effects of Standards on Teacher Quality, October 2004

1297 David S. Evans and Michael Salinger, An Empirical Analysis of Bundling and Tying: Over-the-Counter Pain Relief and Cold Medicines, October 2004

1298 Gershon Ben-Shakhar, Gary Bornstein, Astrid Hopfensitz and Frans van Winden, Reciprocity and Emotions: Arousal, Self-Reports, and Expectations, October 2004

1299 B. Zorina Khan and Kenneth L. Sokoloff, Institutions and Technological Innovation During Early Economic Growth: Evidence from the Great Inventors of the United States, 1790 – 1930, October 2004

1300 Piero Gottardi and Roberto Serrano, Market Power and Information Revelation in Dynamic Trading, October 2004

1301 Alan V. Deardorff, Who Makes the Rules of Globalization?, October 2004

1302 Sheilagh Ogilvie, The Use and Abuse of Trust: Social Capital and its Deployment by Early Modern Guilds, October 2004

1303 Mario Jametti and Thomas von Ungern-Sternberg, Disaster Insurance or a Disastrous Insurance – Natural Disaster Insurance in France, October 2004

1304 Pieter A. Gautier and José Luis Moraga-González, Strategic Wage Setting and Coordination Frictions with Multiple Applications, October 2004

1305 Julia Darby, Anton Muscatelli and Graeme Roy, Fiscal Federalism, Fiscal Consolidations and Cuts in Central Government Grants: Evidence from an Event Study, October 2004

1306 Michael Waldman, Antitrust Perspectives for Durable-Goods Markets, October 2004

1307 Josef Honerkamp, Stefan Moog and Bernd Raffelhüschen, Earlier or Later: A General Equilibrium Analysis of Bringing Forward an Already Announced Tax Reform, October 2004

1308 M. Hashem Pesaran, A Pair-Wise Approach to Testing for Output and Growth Convergence, October 2004

1309 John Bishop and Ferran Mane, Educational Reform and Disadvantaged Students: Are They Better Off or Worse Off?, October 2004

1310 Alfredo Schclarek, Consumption and Keynesian Fiscal Policy, October 2004

1311 Wolfram F. Richter, Efficiency Effects of Tax Deductions for Work-Related Expenses, October 2004

1312 Franco Mariuzzo, Patrick Paul Walsh and Ciara Whelan, EU Merger Control in Differentiated Product Industries, October 2004

1313 Kurt Schmidheiny, Income Segregation and Local Progressive Taxation: Empirical Evidence from Switzerland, October 2004

1314 David S. Evans, Andrei Hagiu and Richard Schmalensee, A Survey of the Economic Role of Software Platforms in Computer-Based Industries, October 2004

1315 Frank Riedel and Elmar Wolfstetter, Immediate Demand Reduction in Simultaneous Ascending Bid Auctions, October 2004

1316 Patricia Crifo and Jean-Louis Rullière, Incentives and Anonymity Principle: Crowding Out Toward Users, October 2004

1317 Attila Ambrus and Rossella Argenziano, Network Markets and Consumers Coordination, October 2004

1318 Margarita Katsimi and Thomas Moutos, Monopoly, Inequality and Redistribution Via the Public Provision of Private Goods, October 2004

1319 Jens Josephson and Karl Wärneryd, Long-Run Selection and the Work Ethic, October 2004

1320 Jan K. Brueckner and Oleg Smirnov, Workings of the Melting Pot: Social Networks and the Evolution of Population Attributes, October 2004

1321 Thomas Fuchs and Ludger Wößmann, Computers and Student Learning: Bivariate and Multivariate Evidence on the Availability and Use of Computers at Home and at School, November 2004

1322 Alberto Bisin, Piero Gottardi and Adriano A. Rampini, Managerial Hedging and Portfolio Monitoring, November 2004

1323 Cecilia García-Peñalosa and Jean-François Wen, Redistribution and Occupational Choice in a Schumpeterian Growth Model, November 2004

1324 William Martin and Robert Rowthorn, Will Stability Last?, November 2004

1325 Jianpei Li and Elmar Wolfstetter, Partnership Dissolution, Complementarity, and Investment Incentives, November 2004

1326 Hans Fehr, Sabine Jokisch and Laurence J. Kotlikoff, Fertility, Mortality, and the Developed World's Demographic Transition, November 2004

1327 Adam Elbourne and Jakob de Haan, Asymmetric Monetary Transmission in EMU: The Robustness of VAR Conclusions and Cecchetti's Legal Family Theory, November 2004

1328 Karel-Jan Alsem, Steven Brakman, Lex Hoogduin and Gerard Kuper, The Impact of Newspapers on Consumer Confidence: Does Spin Bias Exist?, November 2004

1329 Chiona Balfoussia and Mike Wickens, Macroeconomic Sources of Risk in the Term Structure, November 2004

1330 Ludger Wößmann, The Effect Heterogeneity of Central Exams: Evidence from TIMSS, TIMSS-Repeat and PISA, November 2004

1331 M. Hashem Pesaran, Estimation and Inference in Large Heterogeneous Panels with a Multifactor Error Structure, November 2004

1332 Maarten C. W. Janssen, José Luis Moraga-González and Matthijs R. Wildenbeest, A Note on Costly Sequential Search and Oligopoly Pricing, November 2004

1333 Martin Peitz and Patrick Waelbroeck, An Economist's Guide to Digital Music, November 2004

1334 Biswa N. Bhattacharyay and Prabir De, Promotion of Trade, Investment and Infrastructure Development between China and India: The Case of Southwest China and East and Northeast India, November 2004

1335 Lutz Hendricks, Why Does Educational Attainment Differ Across U.S. States?, November 2004

1336 Jay Pil Choi, Antitrust Analysis of Tying Arrangements, November 2004

1337 Rafael Lalive, Jan C. van Ours and Josef Zweimueller, How Changes in Financial Incentives Affect the Duration of Unemployment, November 2004

1338 Robert Woods, Fiscal Stabilisation and EMU, November 2004

1339 Rainald Borck and Matthias Wrede, Political Economy of Commuting Subsidies, November 2004

1340 Marcel Gérard, Combining Dutch Presumptive Capital Income Tax and US Qualified Intermediaries to Set Forth a New System of International Savings Taxation, November 2004

1341 Bruno S. Frey, Simon Luechinger and Alois Stutzer, Calculating Tragedy: Assessing the Costs of Terrorism, November 2004

1342 Johannes Becker and Clemens Fuest, A Backward Looking Measure of the Effective Marginal Tax Burden on Investment, November 2004

1343 Heikki Kauppi, Erkki Koskela and Rune Stenbacka, Equilibrium Unemployment and Capital Intensity Under Product and Labor Market Imperfections, November 2004

1344 Helge Berger and Till Müller, How Should Large and Small Countries Be Represented in a Currency Union?, November 2004

1345 Bruno Jullien, Two-Sided Markets and Electronic Intermediaries, November 2004

1346 Wolfgang Eggert and Martin Kolmar, Contests with Size Effects, December 2004

1347 Stefan Napel and Mika Widgrén, The Inter-Institutional Distribution of Power in EU Codecision, December 2004