Strength in Numbers?
Representation and Redistribution in the European Union

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I. Introduction

From Philadelphia in 1787 to Nice in 2000, it has become clear that the apportionment of votes among territorial units is the most contentious stumbling block in the negotiation of voluntary federal bargains. The fault lines are understandable: small states fight for unit representation, while large states prefer population-based representation. The compromise reached in Philadelphia is now a standard feature of virtually all of the world's federations-- the creation of a population-based lower chamber and a territorial upper chamber. In order to achieve the collective goods associated with integration—common defense, free trade, or perhaps a common currency—the large states find it necessary to assuage the fears of the small states by giving them disproportionate influence in a strong territorial upper chamber.

From the beginning, the large states in the European Community—most notably Germany—have explicitly sacrificed voting power in EU institutions in order to establish their commitment to integration and assuage the fears of smaller states. Successive enlargements of the Union—which have brought in seven new small states and only two new large ones—have shifted representation even further in favor of small states. The enlargement addressed by the Nice summit will also be dominated by relatively small countries. However, the willingness of large states to sacrifice their voting strength in order to achieve further integration appears to have reached its limit at Nice, provoking consternation and brinksmanship from small states like Belgium and Portugal. Transcripts reveal that squabbling over voting weights in the Council of Ministers nearly scuttled the agreement several times.[2]

It is not surprising that Germany in particular, which pays nearly $13 billion more to the EU than it gets back in benefits and has the fewest votes per capita in both the Parliament and the Council, would draw a connection between representation and redistribution. Schroeder has declared Germany's unwillingness to "solve Europe's problems with the German checkbook"—a position intimately linked with Germany's insistence on moving closer to population-based representation.

Schroeder's implicit connection leads to an empirical question: to what extent does the nature of territorial representation drive fiscal redistribution? Are over-represented member states systematically favored in the distribution of EU fiscal transfers? Perhaps more importantly, do *changes* in representation lead to changes in redistribution? By examining the distribution of transfers between the member states of the European Union over time, this paper attempts to establish exactly how much is at stake in fights over political representation.

The answers may have important implications for the post-Nice future. Some of the thorniest issues on the road ahead include the reform of agricultural and regional development subsidies after several new rural, poor countries are admitted to the Union. Moreover, European "fiscal federalists" argue that the European Monetary Union and its Stability Pact, if enforced, require a much larger tax base for Brussels and a broader system of inter-regional risk-sharing and

[1] The author wishes to thank Clifford Carrubba for sharing his data on net fiscal transfers in the EU, and Diana Rheault for excellent research assistance.

[2] A partial transcript was published in *The Economist,* Dec. 16, 2000: p. 26.

redistribution along the lines of continental currency unions like the United States and Canada. The results of this study suggest that the ability to achieve consensus on such reforms—and their likelihood of success—will almost certainly be wrapped up in continuing conflicts over representation.

The motivation for this analysis springs not only from its potential importance for the future of European fiscal federalism, but also for its potential to contribute to a nascent comparative literature on representation and redistribution. Perhaps the most obvious comparison is with the United States, where each state—from Rhode Island to California—has two Senators. Studies by Atlas, et al. (1995) and Lee (1998) find evidence that expenditures and net transfers per capita are significantly greater in smaller, over-represented states. Similarly, Rodden (2001) shows that the small over-represented German Laender are favored in the distribution of discretionary transfers. Gibson et al. (1998) have discovered much larger over-representation effects for expenditures in Brazil and Argentina. The American case is especially interesting because the *Baker v. Carr* Supreme Court decision mandated a shift from malapportionment to "one person-one vote" in the U.S. House of Representatives and the state legislatures, which allowed researchers to examine the effects of changes in apportionment over time. McCubbins and Schwartz (1988) found that the shift led to redistribution from rural to non-rural Congressional districts. Ansolabehere, et al. (2001) found that transfers from states to counties favored over-represented districts prior to redistricting, and counties that lost seats subsequently received a smaller share of state funds per capita.

The European Union should provide an especially useful case for comparative analysis. Small states are rather severely over-represented in both legislative chambers, and allegiances to federation-wide political parties that might cut against pure regional self-seeking are absent. Moreover, although not as dramatic as in the United States, frequent reapportionment associated with successive enlargements allows for the examination of changes over time. The next section introduces some data on legislative malapportionment, placing European institutions in a comparative context. The third section explains why a link between representation and redistribution might exist in the first place, and makes some specific arguments about the European Union. The fourth section analyzes the distribution of agricultural and regional development expenditures, total expenditures, and net transfers. Like the other studies cited above, it examines the effect of representation by examining votes per capita in both legislative chambers. Unlike other studies, it also uses indices of voting power. The final section discusses implications, conclusions, and avenues for further research.

II. EU Legislative Malapportionment in Comparative Perspective

Like other federations, the EU has a very strong, highly disproportionate upper house-- the Council of Ministers. The EU uses a range of decision procedures and voting weights depending on the issue, and these have changed considerably over time. Starting with unanimity rules in virtually every policy area, the Council of Ministers has slowly increased its use of qualified majority voting since the 1980s. The lower chamber, the European Parliament, has also gained power over the last two decades, especially in its role as "conditional agenda setter" in the cooperation procedure (Tsebelis 1994, 1996) and "conditional blocker" in the co-decision procedure (Schneider 1995). Of these decision-rules, over-representation of small states is obviously most pertinent when all states have veto authority in the Council, and least so when changes to the status quo require only a simple majority in the Parliament. Thus as qualified majority voting and parliamentary power grow, it would appear that the power of the small state might be diminishing.

However, the importance of these changes must be placed in proper perspective. Unanimity rules still apply for a wide variety of important legislation. Though expanding, qualified majority voting in the Council applies primarily to legislation on the internal market, agriculture, and the free movement of goods. The extent of disproportionate influence for small states, even under QMV, is striking. It must also be stressed that small states are over-represented in the Parliament as well.

A recent study by Samuels and Snyder (2000) allows one to place these EU institutions in comparative perspective. For a large sample of upper and lower chambers in democracies around the world, Samuels and Snyder calculate legislative malapportionment using the Loosemore-Hanby index of electoral disproportionality as follows:

$$MAL=(1/2)\ \Sigma\ |s_i-v_i|$$

where s_i is the percentage of all seats allocated to district i, and v_i is the percentage of the overall population residing in district i. I have calculated this index for the EU Parliament and Council of Ministers for each of their manifestations since the EC 9, considering each decision rule. Though the Samuels-Snyder data set includes 80 countries, the most natural comparison is with other federations. Table 1 displays the index for each of the federations in the Samuels-Snyder data set and includes averages for the European Parliament and the Council of Ministers from 1995 to 1999 (the Samuels-Snyder data are calculated for 1995-1998), both under unanimity and QMV rules.

[TABLE 1 ABOUT HERE]

First, note that on average, upper chambers are more malapportioned than lower chambers, especially in federations. Under qualified majority voting, the index of malapportionment for the EU Council of Ministers is roughly similar to the average of all upper chambers in federations. However, when each state is weighted equally, the Council nearly surpasses the Argentine Senate as the world's most malapportioned upper chamber. It is important to note that in the balance of power between chambers, the Council of Ministers is without a doubt the most powerful upper chamber among the world's federations. Perhaps it is more surprising to note that the European Parliament is the second-most malapportioned lower chamber among the world's federations, and it surpasses the average for the entire 80-country sample.

[TABLE 2 ABOUT HERE]

Table 2 traces out changes in the European Union over time. It shows that with each enlargement (except for 1986, which included Spain, a large state), the index of malapportionment has increased for each body. Thus while the move to qualified majority voting and the empowerment of the Parliament represent significant moves in the direction of population-based representation, enlargement has created a counter-veiling trend towards increasingly disproportionate influence for small states.

[TABLE 3 ABOUT HERE]

The most straightforward way to compare the representation of the member states is by examining the number of votes per capita. Table 3 provides this information for both the Council (under weighted and non-weighted voting) and Parliament. Over-represented states (where s_i-v_i is positive) are in italics; under-represented states are in normal font. Not surprisingly, the most

over-represented state by far is Luxembourg, followed by Ireland, and the most under-represented states are Germany and France.

Though straightforward, this method of comparing member states does not take into account voting rules (e.g. the QMV threshold), and is less useful for tracking changes in apportionment over time. Although a debate about the use of power indices to infer member state bargaining positions has become a contentious cottage industry in EU studie,[3] for the purposes of this paper, the Shapley-Shubik index of voting power is a useful tool for comparing the evolution of voting power over time. The SS Index considers all possible permutations. The first voter in a permutation whose vote would make the coalition a winning coalition is the pivotal voter in that coalition, and each permutation has exactly one pivotal voter. A voter's SS Index is the fraction of all permutations for which that voter is pivotal. I have calculated the SS Index for each member state in each voting system since 1973 (EC9, EC10, EU12, and EU15). Table 4 compares each member state for the EU15. In both chambers, Germany, France, Italy, and the UK have the most voting power, but the least voting power per capita.

[TABLE 4 ABOUT HERE]

[TABLE 5 ABOUT HERE]

In order to demonstrate the differential effects of enlargements for different member states, Table 5 shows the evolution of voting power for each member state in the Council under successive Qualified Majority Voting schemes. Of course the general trend is downward since the likelihood of being pivotal decreases as more countries are added. But Table 5 is useful because it shows that each enlargement has had different relative winners and losers depending on the size of the countries added and the representation scheme selected. Above all, the large states like Germany have been relative losers in each of the last reapportionments, while some small states like Ireland have retained much of their voting power.

III. Representation and Spending in the European Union

Protections for small states may be crucial for the formation or enlargement of a voluntary federation, but these protections can make changes from the status quo quite difficult, perhaps even undermining the provision of some of the collective goods that motivated the federal bargain in the first place. Self-interested member states may attempt to exploit the others, aiming for side-payments by threatening to veto even legislation that is welfare-improving for a large majority or all of the member states. In particular, the small states may be in a strong position to exploit the large. If a core group of states strongly prefers a change from the status quo but does not constitute the requisite majority, other states that can credibly claim indifference might hold out and demand extra benefits in exchange for their votes. Of these, the small over-represented states might be very attractive coalition partners. Since they are effectively endowed with more votes per capita than larger states, they can offer a good value—more votes can be purchased in exchange for fewer benefits.

Of course these benefits need not take the form of fiscal transfers—small states might demand special regulatory favors or trade protection for their industries. Nevertheless, fiscal transfers are a very likely demand, and of course, unlike regulatory benefits, they can be compared over time

[3] See, e.g., Johnston (1995), Morriss (1995), Garrett, McLean, and Machover (1996), Tsebelis and Garrett (1996).

and across jurisdictions. In most intergovernmental fiscal systems around the world, however, the distribution of transfers is quite sticky over time, and formulas and eligibility requirements limit the discretion of policy-makers to target benefits to certain states. Indeed, the distribution of spending in the EU budget, which consists primarily of agricultural and regional development subsidies, is determined largely by coherent eligibility criteria rather than ad hoc discretion. Nevertheless, member states bargain over the eligibility criteria themselves with a very clear understanding of the distributive stakes, and no observers would claim that the bargaining process is insulated from politics.

The requirements and formulas that determine the distribution of agricultural and structural funds are only renegotiated periodically; thus a non-simultaneity problem might make it difficult to directly exchange votes for transfers in the manner described above. In other words, Luxembourg might vote for a policy favored by France in October in exchange for special treatment in the distribution of agricultural transfers in November, only to find that France reneges on its promise. Even if norms, repeat play, and reputational sanctions are insufficient to resolve this problem, over-represented states might receive disproporationate transfers simply because they are important veto players in the budget process itself. Although recent changes have increased the role of the Parliament and QMV in the Council in determining changes to agricultural policy, unanimity is still the decision rule for structural funds.

In addition, though representation and voting rules in the Council were the most contentious items at Nice, malapportionment in the Parliament, which now plays a major role in the budget process, may actually be more important. Snyder and Ting (2001) show that in a pure two-chamber vote-buying model without political parties, if a group of states "buys" the most inexpensive coalition in a "one person-one vote" lower chamber, they may already have a regional winning coalition in the upper chamber without needing to buy more votes. Thus small states are most likely to benefit from over-representation if *both* chambers are malapportioned. This may help explain why Gibson et al (1998) find a much stronger small state bias in Argentina and Brazil, which have highly malapportioned lower chambers, than in the United States and Mexico (refer to Table 1 above).

One reason to be skeptical about pure vote-buying models based on state-level interests is that national political parties often create a cross-cutting basis for coalition-building. As in the German *Bundesrat* or Australian Senate, for instance, regional self-interest might sometimes give way to party discipline (Braueniger and Koenig, 1998, Rodden 1998). If transfers are used to buy votes, perhaps they will be distributed along party lines. However, this complication does not arise in the European Union, which lacks anything resembling disciplined, federation-wide political parties that would exert pressure on ministers or MPs when voting on issues like subsidies.

IV. Empirical Analysis

For all of these reasons, it seems unlikely that the small states would *not* be systematically favored in the distribution of spending. Yet no systematic empirical work has tested this claim. This section examines data on the distribution of EU transfers from 1977 to 1999. The main dependent variables are (1) real per capita *net* transfers paid or received (total transfers received less revenue contributed to the EU) and (2) real per capita transfers received by each member

state (both in 1995 Euro).[4] Although both are useful for analyzing cross-section and diachronic variation in fiscal redistribution carried out by the European Union, the latter is more likely to be subject to bargaining and discretion, since the revenues contributed by the member states (primarily through the VAT) are much less frequently renegotiated.

First of all, Table 6 presents basic descriptive statistics for the entire period, but divides between over-represented and under-represented member states. The first line shows that on average, the over-represented states are net contributors, while under-represented states are net contributors. Disregarding revenues paid into the system, the second line shows that on average, over-represented states receive over twice as much from the EU as under-represented states. Of course these differences could be mere artifacts of other characteristics of member states. The redistribution programs that dominate the EU budget are, after all, designed to do two rather specific things—subsidize farmers and poor regions. Thus I have collected information on agricultural employment as a share of total employment[5] and real per capita GDP.[6] Additionally, Carrubba (1997) argues that transfers can be seen as side payments in exchange for further integration made by governments whose voters support integration to those whose citizens are Euro-skeptics. Thus following Carrubba, I have also collected survey data on the level of support for the European Union among the citizens of each member state.[7]

Descriptive statistics for these data are also presented in Table 6. Upon first glance, these factors do not appear to be driving the difference in transfers between the over- and under-represented states—for each of these variables the difference between the two groups is trivial. Though striking, these initial observations must be confirmed with more careful multivariate analysis. The rest of this section provides results of several regressions. Since we are primarily interested in cross-country effects and differences between each reapportionment, year to year variation is not useful. Thus the panel data set used below consists of averages for each country for each manifestation of the European Community/Union. Thus the data set includes 46 total observations,[8] though because of its status as an extreme outlier on the main independent variables of interest, Luxembourg is not included in any of the models presented below. First I present the results of models that emphasize cross-section effects; second, I examine changes in apportionment over time.

Levels

The most straightforward way to examine the effect of legislative apportionment on spending is used in all of the studies cited above—regressions of real per capita transfers on votes per capita. A study of the EU poses a unique challenge not present in other federations—the balance of power between chambers and voting rules within chambers have evolved over time as described above. For instance, measures of *votes per capita in the Parliament* or *qualified majority votes per capita in the Council* are less appropriate in the 1970s, but may be useful today. *Unanimity votes per capita*, on the other hand, are less appropriate today than in the 1970s. The easiest way to deal with this is to simply estimate separate models for each of these possibilities.

[4] Data from 1977 to 1990 were kindly provided by Clifford Carrubba, and data from 1991 to 1999 were obtained from the same source used by Carrubba-- reports of the European Court of Auditors, published in the EU *Official Journal*, various years.

[5] Source: OECD Statistical Compendium.

[6] Source: Penn World Tables.

[7] Source: Eurobarometer Survey, various years. Respondents are asked whether the European Union is a "good thing," a "bad thing," or neither. The measure used is simply the share of respondents answering "good" less the share who answer "bad."

[8] 9 for the period from 1977 to 1980, 10 for 1981-1985, 12 for 1986-1994, 15 for 1995-1999.

Additionally, following David and Eisenberg (1961) and Ansolabehere, et al (2001), who deal with bicameralism by taking 2-chamber averages, I consider the *average votes per capita* for the three decision rules.

Table 7 provides results of the basic model, using real *net* transfers as the dependent variable. It reports results of four separate estimations—each using a different measure of votes per capita. Since we are primarily interested in cross-section variation and it is possible that the relationship between votes and transfers per capita changes over time with each reapportionment, each model estimates separate effects for each time period, and country dummies are not included. The estimation technique for the results reported in Table 7 (and all subsequent tables) is OLS with panel corrected standard errors.[9]

[TABLE 7 ABOUT HERE]

First of all, note that the models explain a large amount of variation, ranging from 75 to 80 percent. Surprisingly, agricultural share of total employment does not have a significant effect on average net transfers. But as expected, poor countries are larger net recipients of EU transfers. Additionally, public opinion on European unification does not seem to affect average net transfers.

The effect of votes per capita on transfers per capita is quite striking. Regardless of which measure of over-representation is used or which period is considered, votes per capita have a large, highly significant positive effect on net transfers per capita. Very similar results are obtained when real transfers per capita are used as the dependent variable. To save space, Table 8 only reports the results of a model that includes average vote share (the average of the three measures used in model 4).[10]

[TABLE 8 ABOUT HERE]

Again, over-representation has a strong positive effect on redistribution in each period. Figure 1 presents a scatter-plot of average votes per capita (the measure used in Models 4 and 5) on the horizontal axis and average real transfers per capita on the vertical axis for the EU15. The relationship is clearly strong, though Figure 1 suggests that the results may be driven excessively by one case—Ireland. Models 1 through 5 have also been estimated without Ireland, and though the coefficients were slightly smaller, the large, significant positive relationship held up.

[FIGURE 1 ABOUT HERE]

The marginal effects of over-representation are very large. For instance, model 5 predicts that moving from Belgium, with the median number of votes per capita in the EU15, to Denmark, which is not even a quarter of a standard deviation higher, leads to over a 25 percent increase in transfers per capita.

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[9] Similar results have also been obtained with GLS random effects and GEE population averaged models. There is no significant first- or second-order auto-correlation within panels, and though the EC9 observations must be sacrificed, similar results can be obtained with the inclusion of a lagged dependent variable (as recommended by Beck and Katz).

[10] Results for the other measures are quite similar.

As argued above, the Shapley-Shubik index may be a more useful measure of voting power than the mere number of votes, and as a result, SS voting power per capita might be as better way of understanding the disproportionate power of small states in EU decision-making processes. Moreover, the Shapley-Shubik index measures the likelihood that a member state will be pivotal in forming a winning coalition under the applicable decision rules, thus it seems to be more consistent with the arguments above about the "blackmail" potential of small states. For this reason, it is useful to estimate similar models using "average voting power per capita" as the independent variable. As before, I take the average of the index for each decision rule (unanimity, qualified majority in the Council, and simple majority in the parliament). The results, reported in Table 9, are once again quite striking. Model 6 examines net transfers, while model 7 considers only transfer receipts. In each case, other things equal, states with the most voting power per capita receive highly disproportionate fiscal benefits.

[TABLE 9 ABOUT HERE]

Finally, it is useful to disaggregate transfers into their two main components. I have been unable to obtain data that are acceptably comparable over time, so it is only possible to estimate simple cross-section OLS models for real agricultural and structural (regional development) funds per capita. The results are displayed in Table 10. Once again, the coefficients for the representation variables are consistently positive and significant.[11]

Changes over Time

In each model presented thus far, the magnitude of the coefficient for the representation variable increases with each reapportionment. In each case, a Wald test reveals that the difference between the EC9 and EU15 coefficients is significant. Thus it appears that as malapportionment has grown with enlargement, the relationship between representation and redistribution has grown stronger. Battles over seats, voting weights, and thresholds appear to have distributive consequences. To examine this possibility with greater precision, it is useful to regress changes in redistribution on changes in representation associated with each reapportionment. As argued above, the appropriate representation variable for analyzing changes over time, taking into account both voting weights and thresholds, is voting power (measured with the Shapley-Shubik index) per capita. Battles over reappportionment have focussed on the Council of Ministers, but given the arguments presented above, it is useful to examine the parliament as well. Table 11 presents the results of two models—one examining changes in Council voting power per capita under qualified majority rules (model 12), and the other assessing changes in parliamentary voting power per capita under simple majority rules (model 13). Once again, separate effects are estimated for each reapportionment. The dependent variable in models 12 and 13 is real total transfers per capita.[12]

[TABLE 11 ABOUT HERE]

In both models, the coefficient for the change from EC 9 to EC10 is negative but not statistically significant. Perhaps this should not be surprising, since changes in voting power were minimal

[11] An additional surprise in Table 10 is the fact that even when CAP expenditures are isolated, agriculture's share of employment does have a significant effect on the distribution of transfers.

[12] Once again, similar results are obtained if real net transfers per capita are used instead. Auto-correlation is not a problem, and similar results are obtained with the inclusion of a lagged dependent variable and a variety of alternative estimation techniques.

for most countries (See Table 5) and in the early 80s, qualified majority voting and parliamentary power were very limited. However, the coefficients for the most recent reapportionments are positive for both the Parliament and the Council, and highly significant for the council. Only the change to the EU15 in the Parliament does not quite attain statistical significance. In short, these results show that other things equal, the winners in battles over seats and voting rules are subsequently the winners in the game of distributive politics.

V. Conclusion

This paper has demonstrated a close connection between the distribution of votes and fiscal transfers in the institutions of the European Union. Other things equal, small member states with more votes and relative voting power per capita are favored in the distribution of transfers. This relationship has held up and even gained strength through successive enlargements. In fact, in the most recent enlargements, the relative winners in the redistribution of voting power per capita have also been relative winners in the game of fiscal redistribution.

Perhaps these results should not be at all surprising. Large states might desire the gains associated with forming and deepening a federal union—so much so that they are willing to pay off fearful, indifferent, or simply manipulative states. Perhaps when such states are offered more votes per capita in the initial bargain, fiscal redistribution in the future is an implicit part of the offer. In other words, Germany may well have initially wooed some potential member states by offering to solve some of their problems with its checkbook. Perhaps the evidence presented in this paper merely demonstrates that the bargain has held up.

Such explicit exchanges involving representation and guaranteed redistribution are often involved in federal bargaining. For example, in such diverse federations as Mexico, Germany, Argentina, and Australia, state-level officials have explicitly traded wide-ranging authority and tax autonomy for (1) guaranteed fiscal redistribution and (2) veto power in future renegotiations. Perhaps in these scenarios, it should not be surprising if the over-represented states are systematically favored.

However, over time the conditions that underlie the initial bargain might change, but due to the multiplicity of veto players, the bargain might be extremely difficult to renegotiate. Once the collective goods have been obtained— e.g. common defense or free trade have been secured— public support for transfers from under- to over-represented states might decline. Such support may not have been strong in the first place. When the extent of redistribution is publicized, political entrepreneurs in "paying" states-- from Buenos Ares and Sao Paulo to Baden-Wuerttemberg and Alberta to Germany itself-- face incentives to call into question the rationale of the bargain. In such cases, mounting evidence that the initial bargain *has* been honored can have vast political importance.

Placed in this broader context, the findings of this paper make it clear that a good deal was at stake at Nice indeed. It is not surprising that the minutia of voting weights and blocking thresholds were such contentious issues. Nor is it surprising that the large member states drove such a hard bargain. In fact, they succeeded in reversing the trend towards greater malapportionment. The complex bargain reached in Nice will for the first time increase the voting power of the large states. For example, according to the calculations of Brauninger and Koenig (2001), Germany's Shapley-Shubik value will increase from .117 to .138, while Ireland's will fall from .035 to .028. However, malapportionment has only been slightly reduced—Ireland will still have much more power per capita in the Council and Parliament.

These arguments and findings suggest several promising avenues for future research. First of all, several years hence, it will be interesting to return to the issue and find out whether the Nice reapportionment led to changes in patterns of public expenditure. Second, future studies in the EU and other federations might attempt to make apportionment itself an endogenous variable. Under what conditions do large member states allow themselves to be under-represented? Under what conditions do they demand reapportionment, and what shapes their likelihood of success? A more specific puzzle is the Nice compromise itself—how did the outnumbered large member states manage to win? One interesting possibility is that steep declines in public attitudes towards European unification in the large, transfer-paying member states enhanced pressure on politicians to push for reforms, and hence strengthened their bargaining positions at Nice. This leads to a related proposition—that transfers themselves affect public opinion. If member states attempt to buy public support with transfers, are they successful? This paper has only touched the tip of the iceberg of a complex dynamic interplay between transfers, public opinion, representation, and federal bargaining. Further exploration is likely to shed considerable light on the problems and prospects for fiscal federalism in Europe.

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Table 1: EU Legislative Malapportionment in Comparative Perspective

	Lower Chamber	Upper Chamber	Two-Chamber Average
Argentina	0.141	0.485	0.313
EU (Equal Weight in Council)	**0.115**	**0.459**	**0.287**
Brazil	0.091	0.404	0.248
Venezuela	0.072	0.327	0.199
Spain	0.096	0.285	0.191
USA	0.014	0.364	0.189
Russia	0.038	0.335	0.186
Switzerland	0.019	0.345	0.182
EU (QMV Rule in Council)	**0.115**	**0.241**	**0.178**
Australia	0.024	0.296	0.160
Mexico	0.064	0.230	0.147
Germany	0.034	0.244	0.139
South Africa	0.034	0.226	0.130
Canada	0.076	na	0.076
India	0.062	0.075	0.068
Austria	0.064	0.030	0.047
Average, Federations	0.066	0.290	0.178
Average, 80 Countries	0.076	0.217	0.146

Sources: Samuels and Snyder (1999), Article 148(2) EC, as amended, and author's calculations.

Table 2: The effect of successive enlargements on malapportionment in EU legislative institutions

Period	Years	Countries Added	Council of Ministers		Parliament
			QMV	Unanimity	
EC9	1973-1980		0.185	0.430	0.084
EC10	1981-1985	Greece	0.207	0.442	0.095
EU12	1986-1994	Spain, Portugal	0.206	0.421	0.100
EU15	1995-1999	Austria, Finland, Sweden	0.241	0.459	0.115

Sources: Article 148(2) EC, as amended, and author's calculations

Table 3: Votes per Capita, EU 15 (1995-1999)

	Council			Parliament	
	QM votes	QM votes/capita	Unweighted votes/capita	Votes	Votes/capita
Austria	4	4.95E-07	1.24E-07	21	2.60E-06
Belgium	5	4.91E-07	9.82E-08	25	2.45E-06
Denmark	3	5.68E-07	1.89E-07	16	3.03E-06
Finland	3	5.84E-07	1.95E-07	16	3.11E-06
France	10	1.71E-07	1.71E-08	87	1.49E-06
Germany	10	1.22E-07	1.22E-08	99	1.21E-06
Greece	5	4.75E-07	9.51E-08	25	2.38E-06
Ireland	3	8.21E-07	2.74E-07	15	4.11E-06
Italy	10	1.74E-07	1.74E-08	87	1.51E-06
Luxembourg	2	4.75E-06	2.38E-06	6	1.43E-05
Netherland	5	3.20E-07	6.41E-08	31	1.99E-06
Portugal	5	5.03E-07	1.01E-07	25	2.51E-06
Spain	8	2.04E-07	2.54E-08	64	1.63E-06
Sweden	4	4.52E-07	1.13E-07	22	2.49E-06
U.K.	10	1.70E-07	1.70E-08	87	1.48E-06

Source: Article 148(2) EC, as amended, and author's calculations

Table 4: Voting Power per Capita, EU 15 (1995-1999)

	Council		Parliament	
	Voting Power, QMV	Voting Power/Capita, QMV	Voting Power, Simple Maj.	Voting Power/Capita, Simple Maj.
Austria	0.04536	5.62E-09	0.030395	3.76E-09
Belgium	0.055175	5.42E-09	0.037404	3.67E-09
Denmark	0.035254	6.67E-09	0.023438	4.44E-09
Finland	0.035254	6.86E-09	0.023438	4.56E-09
France	0.116667	1.99E-09	0.144952	2.47E-09
Germany	0.116667	1.42E-09	0.168379	2.05E-09
Greece	0.055175	5.25E-09	0.037404	3.56E-09
Ireland	0.035254	9.65E-09	0.021137	5.79E-09
Italy	0.116667	2.03E-09	0.144952	2.52E-09
Luxembourg	0.02069	4.91E-08	0.008247	1.96E-08
Netherland	0.055175	3.53E-09	0.044938	2.88E-09
Portugal	0.055175	5.55E-09	0.037404	3.76E-09
Spain	0.09546	2.43E-09	0.100813	2.57E-09
Sweden	0.04536	5.13E-09	0.032146	3.63E-09
U.K.	0.116667	1.98E-09	0.144952	2.46E-09

Shapley-Shubik indices calculated using IOP ("Indices of Power") 2.0, created by Thomas Braeuninger and Thomas Koenig, http://www.uni-konstanz.de/FuF/Verwiss/koenig/IOP.html.

Table 5: The Evolution of Voting Power among EC9 Countries, 1973-1999

	Period	Voting Power, QMV
Belgium	ec9	0.081
	ec10	0.071
	eu12	0.064
	eu15	0.055
Denmark	ec9	0.057
	ec10	0.030
	eu12	0.043
	eu15	0.035
France	ec9	0.179
	ec10	0.174
	eu12	0.134
	eu15	0.117
Germany	ec9	0.179
	ec10	0.174
	eu12	0.134
	eu15	0.117
Ireland	ec9	0.057
	ec10	0.030
	eu12	0.043
	eu15	0.035
Italy	ec9	0.179
	ec10	0.174
	eu12	0.134
	eu15	0.117
Luxembourg	ec9	0.010
	ec10	0.030
	eu12	0.012
	eu15	0.021
Netherland	ec9	0.081
	ec10	0.071
	eu12	0.064
	eu15	0.055
U.K.	ec9	0.179
	ec10	0.174
	eu12	0.134
	eu15	0.117

Shapley-Shubik indices calculated using IOP ("Indices of Power") 2.0 (see Table 4).

Table 6: Descriptive Statistics, Comparison of Over- and Under-Represented Member States, 1977-1999

Over-Represented Member States

	Mean	Std. Dev.	Min	Max
Real net transfers per capita (1995 Euro)	0.000094	0.0002	-0.0002	0.0006
Real EU grants per capita (1995 Euro)	0.000283	0.0002	0.00004	0.0008
Agriculture share of workforce	0.090560	0.0742	0.0235	0.2955
GDP per capita (1985 US dollars)	11726.68	3578.55	6008	21208.60
Popular Support for European Union (%)	47.81	24.18	-0.4000	77.78

Under-Represented Member States

	Mean	Std. Dev.	Min	Max
Real net transfers per capita (1995 Euro)	-0.000024	0.00007	-0.00014	0.00016
Real EU grants per capita (1995 Euro)	0.0001268	0.00005	0.0001	0.000281
Agriculture share of workforce	0.0658541	0.0387	0.019404	0.151101
GDP per capita (1985 US dollars)	11926.52	1684.85	9200.11	14765.80
Popular Support for European Union (%)	42.95	23.09	-7.75	71.11

Table 7: Determinates of Real Net Transfers per Capita

	Model 1		Model 2		Model 3		Model 4	
Representation Variables:								
Unanimity Votes/Capita								
EC9	789.90	(312.26) **						
EC10	728.33	(317.39) **						
EU12	1430.07	(308.82) ***						
EU15	1595.29	(133.91) ***						
Qualified Majority Votes/Capita								
EC9			310.86	(95.31) ***				
EC10			271.28	(97.21) ***				
EU12			479.44	(88.76) ***				
EU15			567.18	(41.72) ***				
Parliamentary Votes/Capita								
EC9					90.66	(17.37) ***		
EC10					86.05	(16.52) ***		
EU12					126.49	(18.52) ***		
EU15					143.47	(2.57) ***		
Average Votes/Capita								
EC9							196.18	(196.18) ***
EC10							183.88	(183.88) ***
EU12							281.90	(281.90) ***
EU15							322.85	(322.85) ***
Control Variables:								
Agriculture share of employment	295.30	(288.80)	184.00	(351.00)	39.50	(366.30)	67.60	(358.80)
GDP per capita	-0.02	(0.004) ***	-0.03	(0.003) ***	-0.03	(0.004) ***	-0.03	(0.004) ***
Popular Support for EU	1.12	(0.782)	0.92	(0.99)	1.24	(0.92)	1.18	(0.92)
Constant	301.50	(85.00) ***	294.40	(74.20) ***	250.10	(72.70) ***	268.90	(70.50) ***
R^2	0.79		0.75		0.8		0.8	
# Observations	42		42		42		42	
# Countries	14		14		14		14	

OLS coefficients with panel corrected standard errors in parentheses. For ease of presentation, coefficients and standard errors for the control variables and constant have been multiplied by 1000000.
*** significant at 1%; ** significant at 5%.

Table 8: Determinates of Real Transfers per Capita

	Model 5	
Representation Variables:		
Average Votes/Capita		
EC9	235.9486	(40.14) ***
EC10	247.4971	(39.12) ***
EU12	328.5509	(39.22) ***
EU15	369.6546	(11.79) ***
Control Variables:		
Agriculture share of employment	-279.1	(349.60)
GDP per capita	-0.0174	(0.003) ***
Popular Support for EU	1.7	(0.72) *
Constant	197.2	(53.80) ***
R^2	0.79	
# Observations	42	
# Countries	14	

OLS coefficients with panel corrected standard errors in parentheses. For ease of presentation, coefficients and standard errors for the control variables and constant have been multiplied by 1000000.
*** significant at 1%; ** significant at 5%;
* significant at 1%.

Table 9: Determinates of Real Transfers and Real Net Transfers per Capita

	Model 6		Model 7	
Dependent Variable:	Ave Real Net Transfers/Capita		Ave Real Grants/Capita	
Representation Variables:				
Average Voting Power/Capita				
EC9	16828.3	(5199.78) ***	20666.22	(4970.89) ***
EC10	16672.57	(6514.41) ***	23942.03	(6009.19) ***
EU12	34573.07	(6854.39) ***	40055.69	(6330.36) ***
EU15	43428.38	(3046.57) ***	49306.02	(3524.36) ***
Control Variables:				
Agriculture share of employment	197.5	(296.80)	-131.1	(293.50)
GDP per capita	-0.0273	(0.00) ***	-0.0152	(0.00) ***
Popular Support for EU	1.06	(0.82)	1.57	(0.62) *
Constant	308.8	(79.10) ***	245.4	(46.30) ***
R^2	0.79		0.78	
# Observations	42		42	
# Countries	14		14	

OLS coefficients with panel corrected standard errors in parentheses. For ease of presentation, coefficients and standard errors for the control variables and constant have been multiplied by 1000000.

*** significant at 1%; ** significant at 5%; * significant at 1%

Table 10: Determinates of Real Agricultural and Structural Funds per Capita, EC 15 (1995-1999)

Dependent Variable:	Average Real Agricultural Transfers per Capita				Average Real Structural Funds per Capita			
	Model 8		**Model 9**		**Model 10**		**Model 11**	
Representation Variables:								
Average Votes/Capita	172.142	(67.36) **			107.536	(44.82) **		
Average Voting Power/Capita			21981	(8251.54) **			13336	(5609.26) **
Control Variables:								
Agriculture share of employment	700.8	(1022.10)	642.4	(1009.20)	-124	(680.10)	-137.8	(686.00)
GDP per capita	0.00977	(0.01)	0.00829	(0.01)	-0.0239	(0.01) **	-0.025	(0.01) **
Popular Support for EU	1.69	(1.09)	1.74	(1.07)	1.55	(0.73) *	1.57	(0.73) *
Constant	-323.9	(324.40)	-238.7	(327.60)	416.2	(215.90) *	464.2	(222.70) *
R^2	0.66		0.67		0.84		0.84	
# Observations	14		14		14		14	

OLS Regressions, standard errors in parentheses

*** significant at 1%; ** significant at 5%; * significant at 1%.

Table 11: Determinates of Changes in Real Transfers per Capita

	Model 12		Model 13	
Representation Variables:				
Δ Average Voting Power/Capita				
Council, QMV				
EC10	-2277.91	(2020.95)		
EU12	16172.89	(1416.90) ***		
EU15	24330.14	(2005.22) ***		
Parliament				
EC10			-2953.85	(2202.89)
EU12			18629.49	(9793.43) **
EU15			27496.01	(22927.47)
Control Variables:				
Δ Agriculture share of employment	-2929.9	(526.50) ***	-3079.10	(632.10) ***
Δ GDP per capita	-0.02	(0.01) ***	-0.02	(0.01) **
Δ Popular Support for EU	-0.83	(0.70)	-0.38	(0.76)
Constant	-20.5	(21.40)	-15.30	(22.90)
R^2	0.74		0.67	
# Observations	26		26	
# Countries	11		11	

OLS coefficients with panel corrected standard errors in parentheses. For ease of presentation, coefficients and standard errors for the control variables and constant have been multiplied by 1000000.

*** significant at 1%; ** significant at 5%; * significant at 1%

Figure 1: Average Votes per Capita and Real Total Grants per Capita, EU 15 (1995-1999)