The distribution of power across parties in parliament

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British media and most commentators are not practised in understanding where power lies in a hung Parliament situation. Here Patrick Dunleavy explains what light political scientists can throw on the situation, using two kinds of power or influence measures.

Whenever a large decision-making body (like the current British parliament) or a small committee (like the EU's Council or a company board) has groupings of actors into blocs or parties, we are in what political scientists call a 'weighted voting' situation. Each party or bloc casts a vote, but the size or weight of each vote varies from one bloc to another.

In the 2010 House of Commons there are ten parties with MPs (I've excluded the 5 Sinn Fein MPs who never show up on principle). The table below shows how many MPs each party has, ranging from the top two parties with hundreds each, through the Liberal Democrats with tens, four more nationalist and Northern Ireland parties each with a handful of MPs, and three with one MP each. The third column shows the percentage shares of all MPs that each party has, with the Tories tantalisingly close to the 50% + 1 level they need to govern alone, but have not quite got.

Power index scores for parties in the 2010 House of Commons	Number of MPs	Per cent MPs	Party per cent shares of all power	Per cent Power per MP
Conservative	307	47.6	36.7	0.8
Labour	258	40.0	22.0	0.6
Liberal Democrat	57	8.8	22.0	2.5
Democratic Unionist Party (NI)	8	1.2	7.3	5.9
Scottish National Party	6	0.9	5.5	5.9
Plaid Cymru	3	0.5	1.8	4.0
Social Democratic & Labour Party (NI)	3	0.5	1.8	4.0
Green	1	0.2	0.9	5.9
Alliance Party (NI)	1	0.2	0.9	5.9
Others	1	0.2	0.9	5.9
TOTAL MPs	646	100 per cent	100 per cent	

POWER SCORES

Using sophisticated computers, political scientists have developed a way of estimating what share of power each party has in this situation. (If you are interested in details here I explain how this works at the bottom of this blog. If you're already an expert, I am using here the 'normalized Banzahf score'). Essentially we look at every conceivable way in which a majority coalition could come about, and then add how many times a party's joining or leaving is critical. For each party their power score is given by number of times they are vital to winning, divided by the total number of possible coalitions.Thus we get a share of all power that goes to each party.

On this basis, the fourth column in the Table above shows that although the Tories have 47 per cent of MPs

they actually have only 37 per cent of the power. It also shows that although Labour has five times as many MPs as the Liberal Democrats, on this basis the two parties' power is *exactly* the same, at just under a quarter each. The smaller parties all have smaller power scores, but these are several times bigger than their shares of MPs.

The last column in the table shows the party's total power share divided by the number of its MPs, to give the average power weight of each MP. It can be seen that this is lower for Labour. (Normally in fact the second largest bloc comes off worst on power scores). Theis measure also suggests that the Liberal Democrats MPs are individually each three times more powerful than the Tory MPs. All of this assumes that the blocs stay together of course – a group of Tory rebels who broke away and formed a faction would become individually more powerful, like the other small parties. This fact explains some of the great difficulties of forming a coalition – since the large parties' MPs look at their colleagues in the smaller parties and envy their greater influence.

INFLUENCE SCORES

Of course the power index approach above has many critics in political science. Power scores are completely situational and locked into the present – they do not take any account of the past or future of the parties making deals. And small changes in the numbers of blocs (e.g. some backbench dissenters from any of the main parties) can make exaggerated differences to power scores.

Above all power scores do not work very well in predicting what will happen empirically. In the table above, Labour and the Liberal Democrats are assigned the same score – so if a Lab-Lib cabinet formed this seems to predict that it would include equal numbers of ministers for both parties. This seems to greatly overstate Liberal Democrat influence. Empirically we might expect that Labour would get the large majority of cabinet seats and the Liberal Democrats a minority (perhaps 7 posts in a cabinet of 23).

To cope with such problems my second table shows a modified version of power indices, called the *Influence score (or I-score)*, which is essentially an average of each party's power score *plus* their resource weight (in this case their per cent share of all MPs). Resources are built up over time, and are added to or lost only partly in future. And so that averaging situational power in the present with parties' resources gives a much better guide to real influence.

Influence scores for parties in the 2010 House of Commons	Per cent MPs	Party per cent shares of all influence	Per cent influence per MP
Conservative	47.6	42.2	0.9
Labour	40.0	31.0	0.8
Liberal Democrat	8.8	15.4	1.8
Democratic Unionist Party (NI)	1.2	4.3	3..5
Scottish National Party	0.9	3.2	3.5
Plaid Cymru	0.5	1.1	2.5
Social Democratic & Labour Party (NI)	0.5	1.2	2.5
Green	0.2	0.5	2.7
Alliance Party (NI)	0.2	0.5	2.7
Others	0.2	0.5	2.7
TOTAL MPs	100 per cent	100 per cent	

The I-score gives a somewhat changed picture of where influence lies, as the Table below demonstrates. The Conservatives as much more close to control with two fifths of total influence. And Labour has twice as much influence as the Liberal Democrats. Thus the I-score predicts that if a Labour-Liberal Democrat

cabinet was formed then Labour would have roughly two thirds of the posts and the Liberal Democrats only one third.

The I-score also gives lower average scores for influence-per-MP scores to the smaller parties and higher ones for the top two parties. Again this seems both more realistic and more optimistic for the chances of a workable coalition being established.

More detailed explanation of power scores and influence scores

There are many different power indices. The one I use here is a Banzahf score, normalized to show shares of 100 per cent of power. Let me give an ultra simple example of how it works. Suppose we have a body of 100 members where 51 must vote in favour to get a decision. Suppose also that we have 3 parties as follows:

- party A has 49 votes
- party B has 48 votes
- party C has 3 votes.

There are four possible winning coalitions:

ABC = 100 votes

AB = 97 votes

AC = 52 votes

BC = 51 votes

Within each coalition I show in bold each party whose departure would cause the coalition to stop winning. In the first outcome (the grand coalition) no party is vital for winning: any one can leave and the remaining partners can win without them. In the other three coalitions (each with two members) both parties are vital. Thus the Banzahf score for each party is 3 divided by 4, or 0.75. If we add up the scores we get a total of 2.25, which is not a convenient denominator – so we normalize each score by dividing it by 2.25. So for A, B and C power = 0.75/2.25, which is 0.333 or 1/3. Multiply by 100 to get a percentage score. The conclusion then is that although party C is far smaller than the other two, in this situation every party has a third of total power each.

Turning to the *influence score*, it is a weighted average of an actor's power score and their vote share. Many different weighted averages are possible across different empirical contexts. For simplicity above I have assumed that the P-score and votes are weighted equally, so we add up the P-score and I-score for each party and divide by 2.

If you'd like to learn more about power indices, the very best way to get to understand how they work is to play around with the excellent website built by Professor Dennis Leech of the Economics Department at Warwick University. It's free to use and very powerful, so try it out at:

http://www.warwick.ac.uk/~ecaae/ipgenf.html#data_input

Dennis also has references that tell you a lot more about how power indices work and the main different types of power indices, although they may be a bit heavy-duty for some readers. An easy guide for beginners is: Alan D. Taylor, Mathematics and Politics (London: Springer-Verlag, 1995), Chapter 5.

You may also be interested in the following posts (automatically generated):

1. Every key 'Westminster model' country now has a hung Parliament, following Australia's 'dead heat' election
2. Just 224 large donations from fewer than 60 sources accounted for two fifths of the donation income of the top three parties across a decade of British politics. This is far too narrow a base for the health of UK democracy.

3. Power Index on today's World at One Programme
4. The Tory honeymoon dulls, Labour revives even without a leader and the Liberal Democrats are teetering on a precipice – the State of the Parties in September 2010