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Why small parties can punch above their weight

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I am writing this column on the morning after the **general election**. Much is unclear, but I strongly suspect that when you read it, people will still be talking about the subject of electoral reform.

The election did not produce the astonishingly perverse outcome that recently seemed possible: Labour achieving the largest number of seats while coming third in the share of the popular vote. The perversity is of the more humdrum kind: that the Liberal Democrats have 23 per cent of the vote but only 8 per cent of the seats.

But before the Liberal Democrats complain, they should realise that in fact they have been treated with perfect fairness by this system. It is the Labour party that has been disadvantaged.

That might seem a bizarre statement, given that Labour has five times as many seats as the Liberal Democrats despite being just a few percentage points ahead in the poll. But my point is that there is no straightforward link between the number of MPs a party has and its influence – 10 per cent of the votes in parliament does not mean 10 per cent of the voting power.

Imagine a small parliament in which there are 12 members and four parties. The Blues have five members, the Reds have four, the Yellows two and the Greens have one. Do the Reds have more power than the Yellows? No. Either the Reds or the Yellows could ally with the Blues to produce a majority, or the Reds and Yellows could form an alliance to deny the Blues that majority. In neither case does it help the Reds that they have twice as many MPs as the Yellows.

More sophisticated ways to think about voting power use similar calculations. The economists Martin Shubik and Lloyd Shapley, pioneers of game theory in the 1950s, imagined each party joining a coalition in random order and counted the proportion of times in which that party's arrival turned the coalition into a majority.

A similar method, separately advanced by Lionel Penrose, John Banzhaf and the sociologist James Coleman, produces somewhat different results. The Banzhaf method asks how often a party's vote will prove pivotal, assuming that all the other parties each toss coins to decide how to vote.

Both the Banzhaf and Shapley-Shubik methods make it clear that there is no simple mapping between the size of a voting bloc and the voting power it commands in practice. A small party can be as powerful as a much larger one, or utterly powerless, depending on how the coalitions fit together.I plugged the election results into a Shapley-Shubik calculator on the website of Dennis Leech, a professor at the University of Warwick. The Conservatives, with 307 likely seats, have 39 per cent of the power having received 36 per cent of the votes. Labour and the Liberal Democrats each have 23 per cent of the voting power, because they are swing voters in the same circumstances. By coincidence, 23 per cent is also the Liberal Democrat share of the popular vote.

The Banzhaf method gives marginally less influence to the three big parties, but again, finds that Labour and the Liberal Democrats have identical voting power (22 per cent).

These voting power algorithms adopt a blank-slate approach to voting and coalition building, and there is much that they leave out, notably ideology. Any argument on electoral reform must consider other issues: local accountability; the need to empower each voter; and the problem of extremist parties.

But let's not fool ourselves into thinking that the chief argument for proportional representation is that it gives each party influence in proportion to its share of the vote. That is simply not how the numbers add up.

Tim Harford's latest book is 'Dear Undercover Economist' (Little, Brown).