

## PR-Squared

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PR-Squared is a new electoral system. It typically elects a majority government; it elects one local MP from each constituency each of whom is dependent on the local vote; yet still ensures that if two parties receive equal votes then they receive equal seats. It works as follows:

- As now, the country is divided into a large number of single-member constituencies;
- As now, each party fields at most one candidate in all or some constituencies;
- As now, each voter casts a single vote in favour of a single candidate;
- The votes for each party are totalled nation-wide;
- The key rule: each party is allocated seats in proportion to the square of its nation-wide vote;
- As only a whole number of seats can be won, the seat allocations must be rounded. The rounding is upwards for those parties with the largest fractional seat allocation, down for those with the smallest (the ‘largest remainder’ rule);
- It is now known how many seats each party has won, but not which constituencies. **Constituencies are allocated to the parties in the manner that maximises the nation-wide total of the number of voters who voted for their local MP.** Equivalently, define a “happy voter” to be a voter who voted for his or her MP, and then assign seat winners so as to maximise the nation’s total “happiness”. In practice this will be First-Past-The-Post in non-marginal seats, with marginal seats being “rearranged” to ensure that parties receive the required number of MPs.

As a first example, recall that in the 1983 election the three large parties split the vote in the proportion 44.5% to 28.9% to 26.6%. Seats would have been allocated in proportion to the squares of these numbers: 1980.25, 835.21 and 707.56. Scaling the ratio of the squares so that they total 650 seats gives 365.4, 154.1 and 130.5. These would be rounded for an actual seat allocation of 365, 154 and 131: a majority of 80 for the largest party.

The following table shows the 1997 election in greater detail:

Party	Votes	Votes Squared	Unrounded seats	Actual Seats
Labour	12,917,988	166,874bn	388.65	389
Conservative	9,600,940	92,178bn	214.68	215
Liberal Democrat	4,724,626	22,322bn	51.99	52
Referendum Party	811,679	659bn	1.53	1
Scottish National Party	617,260	381bn	0.89	1
Labour Co-operative	599,423	359bn	0.84	1
Ulster Unionist Party	258,349	67bn	0.16	0
S. D. & L. P.	192,060	37bn	0.09	0
Plaid Cymru	161,030	26bn	0.06	0
Sinn Fein	126,921	16bn	0.04	0
D. U. P.	107,348	12bn	0.03	0
UK Independence Party	106,001	11bn	0.03	0
others	small	small	small	0

(Assumes that the vote totals were as 1<sup>st</sup> May '97, assumes that the three largest parties would have fielded candidates in every constituency, and that the Speaker was an independent.)

And who would have won which seat? As a randomly-chosen example, in Sedgfield the Labour Party candidate received 33526 votes, against 8383 for the (second-placed) Conservative Party candidate. This would have been sufficient to ensure that the “happiness-maximisation” allocated this seat to the Labour candidate in this constituency; and if in this constituency fewer than 23804 of those who voted Labour had stayed a-bed that day, then this seat would still have been held by the same candidate.

This electoral system satisfies the requirements specified in the Commission’s terms of reference:

- **“Broad proportionality”**: PR-Squared explicitly ensures that equal votes give equal seats, and that more votes — howsoever arranged geographically — give more seats.
- **“Stable government”**: the squaring of votes penalises small parties and penalises party splintering. Hence coalitions have an incentive to form before the election, rather than negotiating for power after the

election. Minority factions within a coalition would have a strong incentive not to undermine that coalition, because if there was a split then the faction would lose most or all of its seats in the following election. Indeed, The Plant report commented favourably on the “exaggerative effect” of FPTP, an effect that penalises small parties and hence prevents them holding the balance of power; the absence of such an exaggerative effect leads to coalition politics in which power moves from the ballot box to the post-election negotiating table.

- **“Extension of voter choice”:** Under FPTP there are many seats in which the result is such a foregone conclusion that there is little purpose to voting. Under PR-Squared, a Conservative vote in Liverpool or a Labour vote in Maidenhead is unlikely to change the result in that seat: but it might help make the difference somewhere else. A supporter of any of the large parties can usefully choose to vote for that large party, so the choice has increased from none to some. But the extension of choice is limited. Because of the squaring, there is little purpose in voting for the Fascists or Communists (or even one of Northern Ireland’s sectarian parties), because these parties are highly unlikely to win any seats anywhere. The voters’ choice is extended to include all the large nation-wide parties, and no others.
- **“Maintenance of a link between MPs and geographical constituencies”:** Although parties are elected by their nation-wide results, every MP is local and dependent on local votes for re-election. Unlike the Additional Member System, there is one type of MP, and that one type of MP is a constituency MP.

The Economist thought that the Prime Minister’s list of requirements was “a bit like ... having your cake and eating it too”. But it can be done, and PR-Squared is how.

There are five other advantages that should be mentioned here.

- **The mechanism of voting is simple:** voters just place a mark by the desired candidate. There is no requirement to sort a large number of candidates into a preferred order.
- Parties’ representation is independent of the geographical distribution of the votes. Thus boundary commissions become far less important. Moving a seat’s boundary might still cause a rearrangement of seats, but not a change in any party’s total number of seats. From the viewpoint of a party seeking a national mandate, **boundary changes are irrelevant.**
- **Party headquarters are denied the power and patronage** that would result from a ‘list system’;
- **All votes carry equal weight**, even if constituencies vary in size;
- **There are no “wasted votes”**, because parties gain or lose power on the basis of the nation-wide vote totals.

## Criticisms

Five criticisms have been levied at PR-Squared, and because I might not have the chance to reply to any criticisms in person, I shall briefly reply to them here.

- **Criticism 1: The perception of complexity**  
It is true that the algorithm by which seats are assigned is complicated. This is true in many other countries, especially those with PR systems. But voting itself — the one thing that people must be able to do unaided — is neither easier nor harder than it is now: a voter marks a single cross by a single candidate.
- **Criticism 2: Not all MPs receive the most votes in their constituency**  
David Lipsey wrote that “...[PR-Squared] does have one consequence I do not believe would be acceptable, namely that some constituencies are represented by an MP who did not receive the most votes in that constituency” (October 1996, personal communication). But this criticism must also be true of any non-FPTP electoral system in which MPs are all constituency MPs. The only way to avoid this

### PR-Squared and the Additional Member System

There is a possibility that the Commission might approve of allocating seats in proportion to the square of the votes received, but not of the ‘happiness maximisation’ method of choosing which candidates are elected. In this eventuality the Commission might wish to consider the merits of combining PR-Squared with the Additional Member System. Voters would choose one candidate and one party. Constituencies would be contested on a FPTP basis. Additional MPs would be appointed from party lists, such that each party received a total number of seats in proportional to the square of that party’s vote.

criticism is either to use FPTP, or to have non-constituency representatives — contrary to the Commission's terms of reference.

- **Criticism 3: By-elections do not fit cleanly into this regime**

Under FPTP a 'general' election is in effect many simultaneous by-elections. This is not so under PR-Squared, and two possible accommodations would work as follow:

- Seats vacated by resignation or death remain vacant until the next general election (as in the US); or
- Seats vacated by a death from natural causes trigger a FPTP-style by-election; others remain vacant until the next general election.

Neither of these is perfectly clean, but most non-FPTP electoral systems without a party list suffer from a similar disadvantage.

- **Criticism 4: PR-Squared will still encourage tactical voting**

This is no criticism, this is praise. Tactical voting is not only good for representative democracy, it is the essence of it. A British voter who desires a Communist or a Fascist government knows that voting for either of these parties is pointless, and so instead votes for a less extreme political party. The effect of this incentive is to deny the Communists and the Fascists a base from which to grow into a significant force in UK politics. Hence the incentive to vote tactically (as embedded in both FPTP and PR-Squared) is part of the reason that UK governments have historically been moderate — as have most MPs.

But tactical voting plays a bigger role than 'merely' keeping the Fascists out. Imagine a hypothetical election in which there was a complete absence of tactical voting, every voter standing as a candidate and then voting for himself or herself. This would be direct rather than representative democracy. Representative democracy necessitates voters choosing between the candidates (or parties) with a realistic chance of being elected.

This is why PR-Squared encourages tactical voting, deliberately and by design.

Alternatively, the squaring of the vote can be viewed differently, by likening it to conventional PR with a cutoff. A 5% cutoff rule in PR is akin to taxing seats: a party with an 'income' of 4.9% of the vote has its seat allocation 'taxed' at a rate of 100%, whereas a party with an 'income' of 5.1% is 'taxed' at a rate of 0%. Squaring the vote is akin to a 'soft' cutoff, in which the 'tax rate' falls smoothly as the number of votes rises.

- **Criticism 5: PR-Squared is new**

This is the strongest criticism, and in practice the hardest to overcome. PR-Squared was designed — and designed recently — for the UK's House of Commons. No other country uses it. This newness will make it harder for the Commission to "sell" PR-Squared to both politicians and to voters.

However, the country has been bold enough to consider a change of electoral system: perhaps the country will be willing to consider an electoral system — despite its newness — that has the advantages of FPTP (stable government, a simple voting form and local MPs) that also has the advantage of PR (equal votes mean equal seats).

In summary, PR-Squared is an electoral system in which voting is simple, in which voters choose a local MP, which gives stable government, but which treats equally parties with dispersed and parties with concentrated support. It may not be perfect, but it is materially less imperfect than any other electoral system.

*Julian Wiseman, 14<sup>th</sup> February 1998*