AN ELECTORAL ANALYSIS: ALTERNATIVE ELECTORAL SYSTEMS APPLIED TO THE UNITED KINGDOM 2005 GENERAL ELECTIONS

Basel N Asmar

2050 Consulting Ltd, 48 Imperial Hall, 104-122 City Road, London EC1V 2NR, United Kingdom
Email: basel.asmar@2050consulting.com

Abstract

The current First Past the Post (FPTP) system used in the UK general elections distorts significantly the voters' choice. A series of simulations are performed to illustrate the different outcomes of the UK 2005 general elections if it was to be conducted under List Proportional Representation (PR) or Mixed Member Proportional (MMP) system. Both alternative systems will lead to a hung parliament. MMP systems with backdoor policies will allow all parties and independents currently represented in the UK parliament to gain seats. However List PR with a natural threshold will deny independents, but will see the UKIP, BNP and the Greens gaining seats. Even though List PR system on the national level is the fairest electoral system, MMP with a backdoor policy of one seat leads to a better compromise as it retains the link between the voter and the MP.

1. Introduction

The outcome of the British general elections 2005 demonstrated and exposed the shortcomings in the elections system. Both the Electoral Reform Society (2005) and "Make My Vote Count" (2005) expressed their concerns that democracy within the UK was being severely diluted by the continued use of the First Past The Post (FPTP) system.

In 1997 the Labour government established an independent commission on the voting system to recommend the best alternative "system or combination of systems" to the existing FPTP system of elections to the House of Commons, taking into account four requirements, namely broad proportionality; the need for stable government; an extension of voter choice; and the maintenance of a link between MPs and geographical constituencies.

In October 1998 the commission - known popularly as the Jenkins Commission - recommended a complex, two-vote mixed system, described as "AV Top-up", under which the majority of MPs (80-85%) would be elected on a single-member constituency basis by the Alternative Vote (AV) system used in Australia to choose members of the House of Representatives. The remaining members (15-20%) were to be elected on a corrective or "Top-up" basis from open lists put forward in 65 multi-member areas by political parties so as to reduce the disproportionality and the geographical divisiveness which are inherent in FPTP. However, the Jenkins report and its recommendations were shelved, and to date there has been no real effort by the Labour government to amend the system.

As it stands today the UK and France are the only EU countries without any proportional representation element in their national electoral systems. This honour is shared by only a third country in Europe – Belarus.

In this article a series of simulations are performed to illustrate the different outcomes of the UK 2005 general elections if it was to be conducted under different electoral systems, which are already practiced elsewhere. Based on the results, recommendations for possible electoral reforms are discussed. The European, regional, or local elections are not discussed.

2. Electoral Systems

An electoral system is the system used to administer an election. Electoral systems are an extremely important tool affecting the way in which a country's system of government works. Even with each voter casting exactly the same vote and with exactly the same number of votes for each party, one electoral system may lead to a coalition government or a minority government while another may allow a single party to assume majority control.

There are a large number of different electoral systems currently in use. They are generally categorized into three broad families (Reynolds et al., 2005):

1. plurality/majority systems (subfamilies: First Past The Post (FPTP), Block Vote (BV), Party Block Vote (PBV), Alternative Vote (AV), and the Two-Round System (TRS)),
2. proportional systems (subfamilies: List Proportional Representation (List PR) and the Single Transferable Vote (STV)),
3. mixed systems (subfamilies: Mixed Member Proportional (MMP) and Parallel systems (PS)).

In addition, a handful of countries use other systems such as the Single Non-Transferable Vote (SNTV), the Limited Vote (LV), and the Borda Count (BC) which do not fit neatly into any particular category.

Debates about whether a system currently in place is the most fair and effective are raging in most democracies, and proposals for change are constantly put forward. Electoral reform proposals are motivated by a range of different perceptions, for example:

- First past the post produces unrepresentative results or is otherwise unfair.
- Proportional representation tends to lead to weak coalition governments.

Several countries have changed their electoral systems in the last decade. The overwhelming majority changed from FPTP into full PR or MMP systems. Examples include New Zealand, Thailand, Ukraine and Lesotho who changed into MMP, and South Africa who adopted a full List PR system (Reynolds et al., 2005).

2.1. First Past The Post system

The First Past The Post (FPTP) system is the simplest form of plurality/majority systems and the easiest to understand by voters. It uses single-member districts (the distinguishing feature of plurality/majority systems) and candidate-centred voting. The voter is presented with the names of the nominated candidates and votes by choosing one, and only one, of them. The winning candidate is simply the person who wins most votes; in theory he or she could be elected with two votes, if every other candidate only secured a single vote.

FPTP systems usually provide a clear-cut choice for voters between two main parties but it excludes smaller parties from "fair" representation, especially minority parties. Third parties often do not reach a level of popular support above which their national vote achieves a comparable percentage of seats in the elected body. Examples include the Liberal Democrats in the UK and the New Democratic Party

(NDP) in Canada. Extreme cases include Progressive Conservatives in the 1993 federal elections in Canada who won 16% of the votes but only 0.7% of the seats, and the Basotho National Party in the 1998 general elections in Lesotho who won 24% of the votes but only 1% of the seats.

FPTP often is praised for its tendency to yield single-party governments meaning that coalition governments are the exception rather than the rule, and for excluding extremist parties from representation in the electoral body. However in recent years this rule has been challenged repeatedly, for example in Canada where a minority government is in power since 2004, and in India where extremists formed part of the Bharatiya Janata Party (BJP) government between 1998 and 2004.

FPTP main advantage is often mooted as the link between constituents and their representatives, where the electoral body is made up of representatives of geographical areas who are chosen by voters as individuals representing parties rather than just parties. As such, FPTP gives a chance for popular independent candidates to be elected. However FPTP leaves a large number of wasted votes which do not go towards the election of any candidate.

Finally, FPTP systems are particularly praised for being simple to use and understand. A valid vote requires only one mark beside the name or symbol of one candidate. Even if the number of candidates on the ballot paper is large, the count is easy for electoral officials to conduct.

2.2. Proportional Representation system

Proportional representation (PR) system translates party shares of the votes into corresponding proportions of seats in the elected body. It requires the use of electoral districts with more than one member, since it is not possible to divide a single seat elected on a single occasion proportionally. Electoral district sizes can be as large as the whole country as in Israel, reflects administrative boundaries as in Turkey, or defined by specific regulations to guarantee, for example, representation of minorities.

Since PR system faithfully translates votes cast into seats won, it avoids some of the more destabilizing and "unfair" results of plurality/majority electoral systems. PR never leads to a party with fewer votes winning the elections, whereas such anomaly occurs in FPTP systems. This has happened several times, for example, in the UK in 1951 the Labour Party won more votes but the Conservatives won most seats and formed the government, while in February 1974 the indignity was reversed with Labour forming the government after the Conservatives had polled more votes.

PR system is generally praised for resulting in very few wasted votes when the threshold is wisely specified. This increases the voters' perception that every vote counts and can make a difference.

Even though PR systems usually lead to coalition governments and fragmented party systems, they lead to greater continuity and stability of policy. The West European experience suggests that parliamentary PR systems score better with regard to governmental longevity, voter participation and economic performance. The rationale behind this claim is that regular switches in government between two ideologically polarized parties, as can happen in FPTP systems, makes long-term economic planning more difficult, while broad PR coalition governments help engender a stability and coherence in decision making which allow for national development (Reynolds et al., 2005). However in some cases PR can allow tiny minority parties to hold larger parties to ransom.

PR systems are sometimes accused of the inability of the voter to enforce accountability by throwing a party out of power because it may be very difficult to remove a reasonably-sized centre party from power, and because some political parties are ever-present in coalition governments. However in recent years the voters are becoming aware of this and had thrown not only reasonably size parties but big parties out of the electoral body entirely as happened in Turkey in 2002 elections where none of the parties in the outgoing coalition government managed to win a single seat in the new parliament. In a

spectacular collapse, the share of votes for the Democratic Left Party (Demokratik Sol Parti, DSP), the party of the outgoing prime minister, dropped from 22.2% in 1999 to only 1.2% in 2002.

List PR is the simplest and most used PR system. It involves each party presenting a list of candidates to the electorate in each multi-member electoral district. Voters cast a vote for a party, and parties receive seats in proportion to their overall share of the vote in the electoral district. Winning candidates are taken from closed lists in order of their position on the lists, or from open lists where candidates with the most votes on each party list win the seats allocated to that party. The allocation of seats after the votes have been counted is performed using either a Highest Average (D'Hondt and Sainte-Lague) or a Largest Remainder Method. The formula chosen has a small but sometimes critical effect on the outcomes of elections under PR.

An important issue in List PR systems is the level of the threshold - the minimum level of support which a party needs to gain representation - required for representation in elected body. This threshold may be formal and legally specified at a certain level say 5% as in Germany or effective or natural (equalling to the minimum percentage to gain a seat) as in the Netherlands and South Africa. A high threshold (for example 10%, as used by Turkey) is likely to exclude smaller parties, while a low threshold (for example 1.5%, as used by Israel) may promote their representation.

2.3. Mixed Member Proportional system
Generally, mixed systems use both a PR element and a plurality/majority (or other) element. If the elements are running independently of each other the system is called "Parallel system", whereas if the PR element compensates for any disproportionality arising under the plurality/majority or other system the system is called Mixed Member Proportional (MMP) system. In MMP voters may get two separate choices (one for a district and one national) as in Germany and New Zealand. Alternatively, voters may make only one choice, with the party totals being derived from the totals for the individual district candidates.

Although MMP is designed to produce proportional results, it is possible that the disproportionality in the single-member district results is so great that the list seats cannot fully compensate for it. This is more likely when the PR electoral districts are defined not at national level but at regional or provincial level. A party can then win more plurality/majority seats in a region or province than its party vote in the region would entitle it to. To deal with this, proportionality can be closely approached if the size of the elected body is slightly increased: the extra seats are called overhang mandates. This has occurred in most elections in Germany and is also possible in New Zealand.

MMP retains the proportionality benefits of PR systems; it also ensures that elected representatives are linked to geographical districts. However, it can create two classes of representative: one group linked to constituencies and another from the national party list without geographical ties.

3. Current UK general elections system
Originated in England, the electoral system in the UK general elections is the First Past The Post (FPTP). Each elector casts a vote for one of the candidates running for MP in his or her constituency, and the candidate with the largest number of votes is elected to office. An absolute majority is not a requisite for election.

The United Kingdom is currently divided into 646 constituencies (England 529, Scotland 59, Wales 40, and Northern Ireland 18). Each constituency returns one Member of Parliament (MP) to the House of Commons, elected for a maximum term of five years. Although constituencies are approximately equal in population size, there are built-in imbalances. Wales is deliberately over-represented in the House of

Commons, as was Scotland until 2005 elections, where the establishment in 1999 of a Scottish Parliament with devolved powers has led to a reduction of the number of Scottish constituencies. In addition to that some rural constituencies are allowed to have population sizes well below the national average to avoid districts with very large geographical areas. The average number of electors per constituency for the 2005 elections was 68698. The lowest number of electors was 21576 in the Western Isles (Na h-Eileanan an Iar), whereas the highest was 109046 in the Isle of Wight.

The final result of the UK 2005 general elections is shown in Table 1. The numbers include the results for the delayed elections in Staffordshire South constituency.

Table 1: Results of the UK 2005 general elections

Party	England		Scotland		Wales		Northern Ireland		United Kingdom	
	Votes	*Seats*	*Votes*	*Seats*	*Votes*	*Seats*	*Votes*	*Seats*	*Votes*	*Seats*
Lab	35.45	286	39.52	41	42.71	29	0	0	35.23	356
Con	35.74	194	15.83	1	21.39	3	0.38	0	32.36	198
LD	22.91	47	22.63	11	18.4	4	0	0	22.05	62
SNP	0	0	17.66	6	0	0	0	0	1.52	6
PC	0	0	0	0	12.55	3	0	0	0.64	3
UUP	0	0	0	0	0	0	33.70	1	0.89	1
DUP	0	0	0	0	0	0	17.76	9	0.47	9
SDLP	0	0	0	0	0	0	24.32	3	0.46	3
SF	0	0	0	0	0	0	17.51	5	0.64	5
Respect	0.30	1	0	0	0.05	0	0	0	0.25	1
IKHH	0.08	1	0	0	0	0	0	0	0.07	1
Ind.	0	0	0	0	1.47	1	0	0	0.08	1
Other Parties (not won)	4.93	0	3.75	0	2.43	0	4.18	0	4.68	0
Ind. (not won)	0.58	0	0.61	0	1.01	0	2.16	0	0.65	0

Votes are in percentage. Lab: Labour Party, Con: Conservative Party, LD: Liberal Democrats, SNP: Scottish National Party, PC: Plaid Cymru, DUP: Ulster Democratic Unionist Party, UUP: Ulster Unionist Party, SF: Sinn Fein, SDLP: Socialist Democratic and Labour Party, UKIP: United Kingdom Independence Party, BNP: British National Party, Green: Green Party for England and Wales, Respect: Respect - Unity Coalition, IKHH: Independent Kidderminster Hospital & Health Concern, Ind.: Independent
Totals may not add to 100 percent due to rounding
Data Sources: Electoral Commission (2005), Kimber (2005)

At a glance it is obvious that the results of the elections show disparities. The Labour party won 55.1% of the seats securing a majority of 66 despite polling only 35.2% of the votes which translates to only 21.6% of the electorate. Labour's share of the vote was the lowest ever recorded for a majority government. In England, the Conservative party polled almost 67000 voted more than Labour (0.3% advantage) but ended with 92 seats less. The number of parties gaining seats is 11 plus 1 independent.

The unfairness in the elections is quantified using three different disproportionality indices: the Loosemore-Hanby Index (LHI) (Loosemore and Hanby, 1971), Gallagher Index (GhI) (Gallagher, 1991) and the Unfairness Index (UI) (Asmar, 2005), each of which calculates the deviation of the seat shares of the parties from their vote shares.

For full discussion of disproportionality measures see Taagepera and Grofman (2003). Table 2 shows the results obtained for the UK 2005 general elections and its comparison with selected general elections using MMP system (Germany, New Zealand), List PR system (Netherlands, Israel, South Africa), and FPTP

system (Canada). As can be seen from Table 2, the UK electoral system scores considerably higher values in all indices compared to MMP and List PR systems. Its score is even considerably higher than the Canadian score which suffers from the same unfairness symptom. The results demonstrate clearly the unfairness of the British 2005 general elections in comparison to democracies around the world.

Table 2: Comparison of disproportionality indices between the UK 2005 general elections and selected elections

Country	Electoral System	Election Year	LHI	GhI	UI
UK	FPTP	2005	20.7	16.7	24.1
Canada	FPTP	2004	15.0	10.0	18.1
Germany	MMP	2002	6.7	4.3	9.3
New Zealand	MMP	2002	4.9	4.0	9.6
Netherlands	List PR	2003	2.4	1.1	2.8
Israel	List PR	2003	6.2	3.7	8.8
South Africa	List PR	2004	0.9	0.6	1.5

Data Sources: Electoral Commission (2005), Kimber (2005), Elections Canada (2005), Federal Returning Officer (2005), Elections New Zealand (2005) Statistics Netherlands (2005), Knesset (2005), Independent Electoral Commission (2005)

Party advantage scores, defined as the ratio of seats to votes share, for the Labour, Conservative, and Liberal Democrat parties are 1.56, 0.94, and 0.44 respectively, which indicate a strong bias favouring the Labour party on the expense of the Liberal Democrats.

4. Application of PR to UK 2005 elections

To illustrate the extent of distortion in voters' choice a series of simulation runs is performed running an alternative List PR system using the voting data of the UK 2005 general elections. The analysis is performed on two different levels:

- National level, where the UK is considered as one electoral district.
- Country level, where each of the four UK countries (England, Scotland, Wales, and Northern Ireland) is treated as an electoral district.

Initially a third level was considered, namely:

- Regional level, which divides the UK into 12 electoral districts: Scotland, Wales, Northern Ireland, and nine English regions: North East, North West, Yorkshire and Humberside, East Midlands, West Midlands, Eastern, London, South East, and South West. The regions mirror the divisions used in the UK elections for the 2004 European Parliament.

This level was however discarded following the results of the referendum in Northeast England in 2004 that rejected overwhelmingly the establishment of a regional assembly. Thus, performing any UK general elections on this level is unthinkable at the moment, and for all practical purposes, the idea of even entertaining it is dead and buried.

Simulation runs on the national level varied the threshold for any party to qualify for parliament representation from the natural minimum threshold, which equals 0.155% for the 646 seats House of

Commons, to a maximum of 5% in gradual increments. Results of the simulation runs are shown in Table 3.

Table 3: Results of the UK 2005 general elections under List PR, national level

Party	Threshold natural	0.25	0.5	1	1.5	2	2.5	5
Con	231	231	234	241	244	248	254	254
Lab	212	212	215	221	224	227	233	233
LD	144	144	146	151	152	155	159	159
UKIP	14	15	15	15	15	16	0	0
BNP	5	5	5	0	0	0	0	0
Green	7	7	7	7	0	0	0	0
IKHH	0	0	0	0	0	0	0	0
Respect	2	2	0	0	0	0	0	0
SNP	10	10	10	11	11	0	0	0
SSP	1	0	0	0	0	0	0	0
PC	4	4	4	0	0	0	0	0
UUP	3	3	0	0	0	0	0	0
DUP	6	6	6	0	0	0	0	0
SDLP	3	3	0	0	0	0	0	0
SF	4	4	4	0	0	0	0	0
Ind.	0	0	0	0	0	0	0	0
Total Seats	646	646	646	646	646	646	646	646

Lab: Labour Party, Con: Conservative Party, LD: Liberal Democrats, SNP: Scottish National Party, PC: Plaid Cymru, DUP: Ulster Democratic Unionist Party, UUP: Ulster Unionist Party, SF: Sinn Fein, SDLP: Socialist Democratic and Labour Party, UKIP: United Kingdom Independence Party, BNP: British National Party, Green: Green Party for England and Wales, Respect: Respect - Unity Coalition, IKHH: Independent Kidderminster Hospital & Health Concern, Ind.: Independent
Totals may not add to 100 percent due to rounding
Data sources used for calculation: Electoral Commission (2005), Kimber (2005)

Simulation runs on the country level used either varied or uniform threshold in each country. The natural minimum threshold on the country level was 0.189% for England. In the case of natural threshold each country had different threshold. In other threshold runs all countries had the same threshold with the exception of Northern Ireland which had the threshold of 5.56% all the time as this was its natural threshold. Results of the simulation runs are shown in Table 4.

Note that when performing the calculations each independent candidate is treated as a separate party, and invalid votes are excluded.

The key results observed from Tables 3 and 4 show that the resulting parliament will be a hung parliament with Labour majority disappearing. The main beneficiaries from the List PR system will be the Liberal Democrats who will see their seats more than double, and the UKIP who will gain seats if moderate threshold is used.

As expected more parties will be represented in the parliament if the threshold is low. The outcome of using the natural threshold on the national level is that 14 parties gain seats in the parliament. These parties are: Labour Party, Conservative Party, Liberal Democrats, Scottish National Party, Plaid Cymru,

Ulster Democratic Unionist Party, Ulster Unionist Party, Social Democratic and Labour Party, Sinn Fein, UK Independence Party, Green Party of England and Wales, British National Party, Respect and Scottish Socialist Party. However the number is reduced to 4 if the threshold is 2.0% and only 3 if it is 2.5%. A relatively higher number of parties will be represented at same levels of threshold on level. This illustrates the localised nature that most small parties have in the UK, such as Scottish or Welsh nationalists, or Northern Irish loyalists or republicans.

Table 4: Results of the UK 2005 general elections under List PR, country level

Threshold Party	natural	2.5	5
Con	232	236	241
Lab	209	215	220
LD	144	147	151
UKIP	14	14	0
BNP	4	0	0
Green	6	0	0
IKHH	0	0	0
Respect	2	0	0
SNP	11	11	11
SSP	1	0	0
PC	5	5	5
UUP	3	3	3
DUP	7	6	7
SDLP	3	3	3
SF	5	5	5
Ind.	0	0	0
Total Seats	646	645	646

Lab: Labour Party, Con: Conservative Party, LD: Liberal Democrats, SNP: Scottish National Party, PC: Plaid Cymru, DUP: Ulster Democratic Unionist Party, UUP: Ulster Unionist Party, SF: Sinn Fein, SDLP: Socialist Democratic and Labour Party, UKIP: United Kingdom Independence Party, BNP: British National Party, Green: Green Party for England and Wales, Respect: Respect - Unity Coalition, IKHH: Independent Kidderminster Hospital & Health Concern, Ind.: Independent
Totals may not add to 100 percent due to rounding
Data sources used for calculation: Electoral Commission (2005), Kimber (2005)

Note that the proportion of wasted votes under List PR drops to as low as 1.4% from the current 5.3%. Despite this no independent candidates will win any seats, and this applies also to the Independent Kidderminster Hospital & Health Concern (IKHH) candidate.

Table 5 shows the results of the disproportionality indices LHI, GhI and UI for all List PR simulation runs. The scores are very low as expected when natural thresholds are used, and increase with increasing thresholds. The scores are in all cases considerably lower than the results scored by the UK 2005 general elections and are comparable to the results obtained in List PR countries. See Table 2.

Table 5: Comparison of disproportionality indices between List PR UK 2005 general elections simulation runs

Level	Threshold	LHI	GhI	UI
National	natural	1.5	0.7	2.7
	0.25	1.5	0.7	3.0
	0.5	2.7	1.2	5.3
	1	5.6	2.5	10.8
	1.5	6.6	3.0	12.8
	2	8.1	3.7	15.6
	2.5	10.4	4.9	19.6
	5	10.4	4.9	19.6
Country	natural	1.6	0.7	2.8
	2.5	3.5	1.6	6.7
	5	5.7	2.8	11.2

The results in Table 5 illustrate that the larger the electoral district the more proportional are the elections with natural threshold. This is illustrated with the lower scores obtained with the national level simulations compared to the country level.

5. Application of MMR to UK 2005 elections

A second series of simulation runs is carried out running an MMP system using the voting data of the UK 2005 general elections. Three runs are performed in total. Runs 1 and 2 are analogous to the MMP systems used in Germany and New Zealand respectively.

In all runs a split in the geographical representation to top-up seats is taken as 50:50. In each run the simulation retained the current constituencies with 646 FPTP electoral system, and assumed the addition of an equal number of MPs who are elected on a List PR system in national or country top-up electoral districts with a national minimum threshold of 2.5% of the votes for each party to be included in the seats distribution. The largest reminder method is used to allocate the seats. The three runs differ in the backdoor policy which allows parties who do not pass the threshold to be qualified for inclusion in seats allocation calculation. In Run 1, a party must win at least 3 constituencies, as in Germany. In Run 2, a party must win at least one constituency, as in New Zealand. In Run 3 no backdoor policy is allowed.

The resulting parliament composed of between 1296 and 1322 seats is then rescaled back to 648 and 661 seats so the results of the runs are readily comparable to the current UK parliament. The rescaling is performed due to the overhang effect. Note that this process will result in some parties gaining half seats, which - even though impossible to implement - is only performed to conduct more accurate numerical comparisons. This approach is preferred to the methods that pair each 2-3 constituencies to create artificial enlarged constituencies which are supposed to compose the 50% of the parliament retained for geographical representation.

Table 6 shows the results of the two runs. Note that the 50:50 ratio used in these simulations is much higher than the low 83:17 ratio recommended by the Jenkins report (Independent Commission on Voting System, 1998), the latter ratio was shown to be highly disproportional by Dunleavy and Margetts (2005) and therefore is not considered here.

It's also worth noting that since the existing data does not include two separate votes for geographical and top-up regional lists, the party totals are derived from the totals of the individual constituencies. Evidence from Germany and New Zealand indicated that although vote splitting occurs, its magnitude is not large. However a significant number of the voters in regional elections in Scotland, Wales, and London where variations of MMP systems are used split their votes, and thus total votes derived from the single votes need to be treated with caution.

Table 6: Results of the UK 2005 general elections under MMP

Run	1: Backdoor = 3		2: Backdoor = 1		3: No Backdoor	
Seats Party	Calculated	Equivalent	Calculated	Equivalent	Calculated	Equivalent
Con	451	225.5	446	223	466	233
Lab	491	245.5	485	242.5	508	254
LD	307	153.5	304	152	318	159
UKIP	0	0	0	0	0	0
BNP	0	0	0	0	0	0
Green	0	0	0	0	0	0
IKHH	1	0.5	1	0.5	1	0.5
Respect	1	0.5	1	0.5	1	0.5
SNP	21	10.5	21	10.5	6	3
SSP	0	0	0	0	0	0
PC	3	1.5	9	4.5	3	1.5
UUP	1	0.5	1	0.5	1	0.5
DUP	13	6.5	12	6	9	4.5
SDLP	3	1.5	6	3	3	1.5
SF	9	4.5	9	4.5	5	2.5
Ind.	1	0.5	1	0.5	1	0.5
Total Seats	1302	651	1296	648	1322	661

Lab: Labour Party, Con: Conservative Party, LD: Liberal Democrats, SNP: Scottish National Party, PC: Plaid Cymru, DUP: Ulster Democratic Unionist Party, UUP: Ulster Unionist Party, SF: Sinn Fein, SDLP: Socialist Democratic and Labour Party, UKIP: United Kingdom Independence Party, BNP: British National Party, Green: Green Party for England and Wales, Respect: Respect - Unity Coalition, IKHH: Independent Kidderminster Hospital & Health Concern, Ind.: Independent
Totals may not add to 100 percent due to rounding
Data sources used for calculation: Electoral Commission (2005), Kimber (2005)

For Run 1 the calculation is performed on 1288 seats since the seats need allocation exclude 4 directly elected seats won by parties or independents who do not qualify for inclusion in seats allocation calculations. Parties qualified for passing the threshold are the Labour, Conservative, and Liberal Democrat parties. While the Scottish National Party, Plaid Cymru, Ulster Democratic Unionist Party, Sinn Fein and Socialist Democratic and Labour Party qualified via the backdoor policy.

For Run 2 all 1292 seats are included in the calculation. Parties qualified for passing the threshold are the Labour, Conservative, and Liberal Democrat parties. While the Scottish National Party, Plaid Cymru, Ulster Democratic Unionist Party, Ulster Unionist Party, Sinn Fein, Socialist Democratic and Labour Party, Respect, IKHH, and an independent candidate (here treated as a party) qualified via the backdoor policy.

For Run 3 the calculation is performed on 1262 seats since the seats need allocation exclude 30 directly elected seats won by parties or independents who do not qualify for inclusion in seats allocation calculations. Parties qualified for passing the threshold are the Labour, Conservative, and Liberal Democrat parties only.

The main results observed from Table 5 show that the resulting parliament will be a hung parliament with Labour majority evaporating. The main beneficiary from the MMP system will be the Liberal Democrats who will see their seats more than double.

The MMP backdoor policies will allow all small regional parties that gained representation in the 2005 UK parliament to be represented even though none of them gained more than 1% of the vote. On the other hand, MMP will not allow relatively larger parties but whose vote is uniformly distributed such as the UK Independence party and the Green party to gain any seats even though the former gained 2.3% of the national vote. This result illustrates that regional parties and local single issue parties can still gain seats under MMP systems and retain the local geographical link in the parliament; while at the same time the overall parliament reflects a fairer representation of the voters' choice.

Table 7 shows the results of the disproportionality indices LHI, GhI and UI for all MMP simulation runs. The scores are considerably higher than List PR simulations with natural threshold on national and country levels. However the values are comparable to List PR systems with 5% threshold on country level, and is lower than the values for the 5% national threshold. Note though that although the disproportionality indices magnitudes are not far the composition of the parliament is different. Significant differences in smaller parties' representation exist.

Table 7: Comparison of disproportionality indices between MMP UK 2005 general elections simulation runs

Run	Backdoor	LHI	GHI	UI
1	3	6.5	3.2	11.2
2	1	5.9	3.0	10.8
3	none	8.1	3.9	12.2

At the same time the disproportionality indices scores are as expected lower than the results scored by the UK 2005 general elections and are comparable to the results obtained in MMP countries. See Table 2.

6. Discussion

Multi-preference electoral systems such as AV and TRS cannot be simulated as there are no viable data on the second and subsequent preferences of the voters. As a result the TRS system used in France was not attempted. In addition to that, TRS shares many of the disadvantages of FPTP, and research has shown that in France it produces the most disproportional results of any Western democracy, and that it tends to fragment party systems in new democracies (Reynolds et al., 2005). Who can forget Le Pen reaching the final round in 2002 French presidential elections?

Even though the results obtained by larger parties are relatively similar under both List PR and MMP, the results of smaller parties differ considerably. Relatively large smaller parties will gain seats under List PR but not under MMP.

In 2005 elections, the UK Independence Party, the British National Party and the Green party will gain seats under List PR but not under MMP. This illustrates one feature of the MMP system which is the exclusion of the extreme parties such as the BNP.

The IKHH and an independent candidate gain seats under MMP, but not under List PR. This also illustrates that MMP can maintain a geographical link between the voters and their geographical representative (where the IKHH as a single local issue party won representation) where these candidates cannot win even under natural threshold system.

From comparing the actual seats distribution, and the LHI, GhI and UI values for List PR, MMP and the actual results, the best system recommended for the UK elections will be the MMP with 2.5% national threshold and a backdoor policy of 1 constituency win. This system is a welcome compromise as it has considerably low disproportionality values (lower of List PR systems with same threshold), and still maintains highest possible geographical links between voters and their MPs.

7. Conclusions

The current FPTP system used in the UK general elections distorts significantly the voters' choice and is inherently less fair than either MMP or List PR systems. Reforming the system to either alternative system will reduce significantly the disproportionality in the system measured by LHI, GhI or UI.

Applying any form of List PR or MMP will lead to a hung parliament.

MMP systems with backdoor policies will allow all parties and independents currently represented in the UK parliament to gain seats. However List PR with a natural threshold will deny IKHH and the independent MP their seats, but will see the UKIP, BNP and the Greens gaining seats.

As expected List PR system on the national level is the fairest electoral system. However as all List PR alternatives considered do not retain a link between the voters and their local representative. MMP with a backdoor policy of one seat leads to a better compromise. It retains the link between the voter and the MP, and results in a parliament reflecting closely the voters' wishes.

And finally, since Labour party are the main beneficiary from the current UK elections system, and the Conservative party does not gain much from reforming the system, no wonder that both parties resist any form of electoral reform.

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