

EXPLAINER:

The Additional Member System (AMS)

Three of the UK's devolved assemblies use an electoral system that is referred to as the *Additional Member System* (AMS). This voting system is also used in the New Zealand Parliament, the German Bundestag, and in several other places around the world.

Several variants of AMS are possible, but they all have a basic structure in common:

- About half the MPs in Parliament represent a single constituency, elected under First Past the Post. These seats form a "constituency tier", in which the result is not proportional, but would generally be skewed in favour of the largest party or parties.
- The rest of the MPs in Parliament represent regions rather than constituencies. Seats in this "regional tier" go to parties whose share of MPs in the constituency tier fell short of the share of votes they received, and are allocated by a proportional system.

The rationale behind AMS as an electoral system is that it (a) retains local representation, via the constituency MPs, and (b) produces a Parliament that broadly reflects the votes cast, via the regional MPs. AMS is one of the voting systems that LCER believes would form a viable alternative to First Past the Post.

This document will explain, with examples, how AMS works in practice; it will then discuss a number of decisions which would have to be made before introducing AMS for the UK.

Names for the AMS system

In the UK's devolved assemblies, this voting system is referred to as the *Additional Member System* (AMS). In New Zealand, it's referred to as the *Mixed Member System* (MMS). You might also hear it referred to as *Modified d'Hondt*, a *two-tier system*, or a *top-up system*.

How does it actually work?

The AMS system isn't complicated in operation, but it's a bit different from First Past the Post, because the seat allocation is done in two stages – first for the constituency tier, and then for the regional tier.

In the UK's devolved assemblies, people vote separately for the constituency and regional tiers. Most people vote for the same party for both tiers, but some don't (in particular, some of the smaller parties don't stand candidates in the constituency tier).

In a first step, the constituency votes are counted, and the seats are allocated just as they are in First Past the Post – in each constituency, the candidate getting the most votes wins the seat.

In a second step, the regional votes are counted, and the regional seats are allocated. It's this step which differs from a FPTP election. It's explained on the following pages, with worked examples.

- Panel 1 shows the proportional d'Hondt system in action, not as part of AMS, but in a simpler system of PR. It's easier to understand how AMS works if one first has a working knowledge of d'Hondt.
- Panel 2 shows how d'Hondt is adapted for the second stage of an AMS election (hence the fact that AMS is sometimes referred to as *modified d'Hondt*).
- Panel 3 explains, for the benefit of those who are interested, how the d'Hondt system works to produce proportional results.

Panel 1: The d'Hondt formula

This is a formula used to allocate seats in PR elections with multi-member constituencies. It's used in many elections across the world. It's also used to allocate the regional tier of seats in the Additional Member system.

The example below shows how d'Hondt works, not in AMS but in a "pure" PR system. The example on the next page (Panel 2) shows how d'Hondt works as part of AMS.

Let's suppose there are ten seats up for election, and five parties contesting those seats. We'll call the parties the Red, Blue, Green, Yellow and Orange parties. The total number of votes cast is 760,151 and they are distributed as follows:

Red: 250,048; Blue: 210,584; Green: 145,987; Yellow: 98,213; Orange: 55,319

A super-easy method for calculating the seat allocation is as follows. Draw a grid and write the names of the parties in the left-hand column. Label the remainder of the columns Column 1, Column 2, etc. Then, put some numbers into the grid.

- In Column 1, enter the actual numbers of votes cast for each party.
- In Column 2, enter the numbers of votes cast for each party DIVIDED BY 2.
- In Column 3, enter the numbers of votes cast for each party DIVIDED BY 3.

And so on. Here, we've shown 8 columns – we won't need more than that.

	Col. 1	Col. 2	Col. 3	Col. 4	Col. 5	Col. 6	Col. 7	Col. 8
Red	250,048	125,024	83,349	62,512	50,010	41,675	35,721	31,256
Blue	210,584	105,292	70,195	52,646	42,117	35,097	30,083	26,323
Green	145,987	72,994	48,662	36,497	29,197	24,331	20,855	18,248
Yellow	98,213	49,107	32,738	24,553	19,643	16,369	14,030	12,277
Orange	55,319	27,660	18,440	13,830	11,064	9,220	7,903	6,915

Having filled in the numbers, we recall that there are ten seats up for election, so we simply locate the ten largest numbers in the grid. They are always towards the left-hand side of the grid.

	Col. 1	Col. 2	Col. 3	Col. 4	Col. 5	Col. 6	Col. 7	Col. 8
Red	250,048	125,024	83,349	62,512	50,010	41,675	35,721	31,256
Blue	210,584	105,292	70,195	52,646	42,117	35,097	30,083	26,323
Green	145,987	72,994	48,662	36,497	29,197	24,331	20,855	18,248
Yellow	98,213	49,107	32,738	24,553	19,643	16,369	14,030	12,277
Orange	55,319	27,660	18,440	13,830	11,064	9,220	7,903	6,915

And this gives you the result of a d'Hondt election! The Red party has won four seats, the Blues have won three seats, the Greens have won two, and the Yellows have won one. It's as easy as that.

Please bear in mind that this simple method will always give you the correct result, but it doesn't provide much insight into *why* or *how* the d'Hondt formula works. If you're interested in the maths behind d'Hondt, please see our more detailed explainer.

Panel 2: AMS in practice – an example.

The following example is taken from the Scottish Assembly elections of 2021, for the Glasgow region. 16 seats were up for election – nine constituency seats, and seven regional seats.

In the first stage, the constituency votes were counted by First Past the Post, and the SNP won every single one of the nine constituency seats. This is clearly a disproportionate result; the SNP did gain most votes, but Labour won around a third of all votes and the Conservatives won around 10%, without either party winning any seats.

In the second stage, the regional votes were counted, with seats being allocated *to parties that lost out in the first stage*. Thus, we'd expect parties other than the SNP to win most or all of the seats in the second stage, and this is exactly what happens.

Below, you'll see the grid drawn up, as described in Panel 1. Just as before, Column 1 contains the numbers of votes gained by each party, Column 2 contains the same numbers divided by 2, Column 3 contains the same numbers divided by 3, and so on.

We first shade out the seats that have been won in the first stage. In this case it's easy: nine seats have been won by the SNP, so we shade out the first nine cells in the SNP's row.

	Col. 1	Col. 2	Col. 3	Col. 4	Col. 5	Col. 6	Col. 7	Col. 8	Col. 9	Col. 10
SNP	133,917	66,959	44,639	33,479	26,783	22,320	19,131	16,740	14,880	13,392
Labour	74,088	37,044	24,696	18,522	14,818	12,348	10,584	9,261	8,232	7,409
Conservative	37,027	18,514	12,342	9,257	7,405	6,171	5,290	4,628	4,114	3,703
Greens	36,114	18,057	12,038	9,029	7,223	6,019	5,159	4,514	4,013	3,611
Lib Dems	6,079	3,040	2,026	1,520	1,216	1,013	868	760	675	608

To allocate the seven regional seats, we now look for the seven highest numbers in the remaining cells in the table. Once again, this is pretty easy once you know what you're doing – you'll see the regional seats shaded in pink. Labour wins four of the regional seats, the Conservatives win two, and the Greens win one.

	Col. 1	Col. 2	Col. 3	Col. 4	Col. 5	Col. 6	Col. 7	Col. 8	Col. 9	Col. 10
SNP	133,917	66,959	44,639	33,479	26,783	22,320	19,131	16,740	14,880	13,392
Labour	74,088	37,044	24,696	18,522	14,818	12,348	10,584	9,261	8,232	7,409
Conservative	37,027	18,514	12,342	9,257	7,405	6,171	5,290	4,628	4,114	3,703
Greens	36,114	18,057	12,038	9,029	7,223	6,019	5,159	4,514	4,013	3,611
Lib Dems	6,079	3,040	2,026	1,520	1,216	1,013	868	760	675	608

This example illustrates clearly the improvement which AMS can make. The SNP, having done very well at this election, remains the largest party - but AMS makes the difference between a one-party state and an accountable Parliament with an effective opposition.

A final observation: if the seats in this election had been allocated by a fully proportional system ("pure" d'Hondt, as illustrated in Panel 1) the Greens would have won one extra seat, and the SNP would have 8 seats, not 9. The extra seat won by the SNP is called an "overhang", and happened because the SNP won so many seats in the constituency tier that the result couldn't be made fully proportional in the second stage. The slight deviation from full proportionality that we see in this case is a trade-off for having constituency representation.

Panel 3: How does it work?

Please skip this section if you're not interested in the maths behind electoral systems!

FPTP is unfair because seats don't match votes. In the 2019 general election, the Conservatives needed an average of only 38,264 votes for each of the seats they won, while Labour needed many more votes (50,836 on average) to win each seat, and small parties were even more disadvantaged, with the Greens polling 865,715 votes and winning only a single seat. The d'Hondt system is designed to equalise, as far as possible, the number of votes needed to win each seat.

Going back to the hypothetical example in Panel 1, we recall that the numbers in Column 1 are the total votes won by each party; the numbers in Column 2 are those same numbers divided by 2, the numbers in Column 3 are the total votes divided by 3, and so on.

Thinking about it another way, these numbers also represent the number of votes per seat that a party would have obtained, if it won different numbers of seats. So, for example:

- If the Blues won 4 seats at the election, they would need 52,646 votes for each seat won (their total votes of 210,584 divided by 4 - the entry in the Blue row and the 4th column).
- If the Yellows won 7 seats at the election, they would have needed an average of 14,030 votes to win each of those seats.
- If the Reds won 6 seats, they would need an average of 41,675 votes for each seat.

	Col. 1	Col. 2	Col. 3	Col. 4	Col. 5	Col. 6	Col. 7	Col. 8
Red	250,048	125,024	83,349	62,512	50,010	41,675	35,721	31,256
Blue	210,584	105,292	70,195	52,646	42,117	35,097	30,083	26,323
Green	145,987	72,994	48,662	36,497	29,197	24,331	20,855	18,248
Yellow	98,213	49,107	32,738	24,553	19,643	16,369	14,030	12,277
Orange	55,319	27,660	18,440	13,830	11,064	9,220	7,903	6,915

In the hypothetical example, there were 10 seats up for election, so we selected the 10 cells with the highest numbers.

	Col. 1	Col. 2	Col. 3	Col. 4	Col. 5	Col. 6	Col. 7	Col. 8
Red	250,048	125,024	83,349	62,512	50,010	41,675	35,721	31,256
Blue	210,584	105,292	70,195	52,646	42,117	35,097	30,083	26,323
Green	145,987	72,994	48,662	36,497	29,197	24,331	20,855	18,248
Yellow	98,213	49,107	32,738	24,553	19,643	16,369	14,030	12,277
Orange	55,319	27,660	18,440	13,830	11,064	9,220	7,903	6,915

Having done this, we look at the number in the rightmost shaded cell for each row.

- The Reds won 4 seats. The rightmost shaded cell contains the number 62,512, indicating that the Reds needed an average of 62,512 votes for each of the 4 seats they won.
- The Blues needed an average of 70,195 votes for each of the 3 seats they won.
- The Greens needed an average of 72,994 votes for each of the 2 seats they won.
- The Yellows needed 98,213 votes for the single seat it won.

The numbers of votes per seat aren't identical, and the largest party still enjoys a "winner's bonus". However, there is no way that the seat allocation can be changed to make the outcome any more equitable than it is now.

Policy-makers may decide that they want a larger winner's bonus, or that they want to improve the representation of small parties, and it's possible to tweak the d'Hondt system in either direction – these tweaks are beyond the scope of this Explainer.

AMS for Parliamentary elections in the UK?

AMS is a simple voting system. However, it's also a very flexible system, with several potential variations which would allow an electoral commission to choose exactly the properties they want for a new voting system. If the UK were to switch to AMS for Parliamentary elections, decisions would have to be made on the following questions.

1. How many seats should be for constituency MPs, and how many for regional MPs?

The German Bundestag splits the seats 50-50; in the Scottish and New Zealand Parliaments, about 55% of seats are allocated to constituency representatives. Allocating more seats to regional MPs leads to a more proportional result, but to slightly larger constituencies.

2. How should the regions used for the regional tier of elections be defined?

There are many possibilities here. One could define very small "regions", consisting of just 4 or 5 contiguous parliamentary constituencies. Larger "regions" could be defined on the basis of counties or local government areas. One could use much larger regions, for example the nine large administrative regions of the UK. There's a trade-off between local representation and proportionality. Larger regions lead to a more proportional result, of the election – but smaller regions may help people feel closer to their regional representatives.

3. How should constituency MPs be elected?

Most existing systems use First Past the Post to elect constituency MPs. However, it's possible that another system, such as the Alternative Vote, or AV (the same system that is used to elect the leader of the Labour Party) could be used to elect the constituency MPs. This is the basis of the AV+ system recommended by the Jenkins Commission in the 1990s.

4. The question of thresholds

Some proportional systems incorporate a threshold, so that very small parties cannot enter Parliament. In New Zealand, a party is entitled to regional seats only if it passes a threshold of *either* 5% of the overall vote, *or* at least one constituency. In Germany, the threshold is set at 5% of the overall vote, or at least three constituencies.

5. How to handle an "overhang"?

In the constituency section, larger parties will generally get a higher share of seats than votes. This is to be expected, and the purpose of the regional tier is to compensate for this. But it's possible that a large party may win *so many* seats in the constituency section, that their over-representation can't satisfactorily be compensated by the regional allocation. This is called an "overhang". In UK's devolved assemblies, no action is taken in respect of an overhang. However, some countries deal with an overhang by allocating additional regional seats until the overhang is fully compensated for. LCER's view is that this compensatory measure does enhance proportionality, but it adds complexity and would not enhance public acceptance of AMS.

6. How should party lists be produced?

The regional members in AMS are elected from lists of candidates produced by the political parties in each region. There are many different ways in which these lists may be drawn up:

- By regional or even central party hierarchies, with minimal involvement of party members. LCER does not believe this mechanism works in the best interests of democracy.
- Lists produced with the democratic involvement of local party members
- An "open list" system, where voters can choose who to prioritise when voting. This adds to voter choice but also increases the complexity of the voting process.
- Regional seats could be allocated to candidates who stood in the constituency election, and who secured the best results for their party, despite not winning a constituency seat. "Best results" could be defined as those winning the highest number of votes, or the largest vote share. This system would mean that all regional members would have undergone a selection

and run a campaign in an individual constituency; it also means that all candidates, even those in unwinnable seats, would have the incentive to run a vibrant local campaign, in order to increase their chances of being elected as a regional MP.

7. One vote or two?

In many AMS systems, including those currently in use in the UK's devolved assemblies, people get two votes: one for a constituency MP (which is used to establish the winners in the constituency section), and one for a party (which is used to allocate the regional seats). This arrangement has a number of advantages, in that it allows people:

- a. To vote for an Independent candidate at constituency level, and also to have a meaningful vote at regional level
- b. To vote tactically at constituency level (ie, for the party), and to vote for the party they actually support at regional level
- c. To vote for the party they support at regional level, but to vote against a candidate that they dislike at constituency level.

However, this could have the potential for parties to "game the system". In 2019, Alex Salmond attempted to persuade voters to vote for the SNP in the constituency section, and for his new Alba party in the regions, thereby securing a "super-majority" for independence. This was unsuccessful, but in some countries (eg South Korea), AMS has evolved into a system of "twin" parties, where one contests the constituencies and the other contests the regions. Potential solutions include:

- Accepting a small possibility that unscrupulous politicians may game the system, in the knowledge that such attempts have not been successful in (eg) Germany and New Zealand.
- Giving voters one rather than two votes. This would make it difficult for Independents to win seats, but would simplify the voting process and would remove the possibility of gaming the system.
- Formalising a system whereby each party registers separate entities for contesting the constituency and regional sections.

8. A more representative Parliament

AMS, together with other systems with a list-based component, has the advantage that it tends to lead to greater representation of women and other traditionally under-represented groups, since party lists consisting predominantly of (eg) privileged white men are a potential embarrassment to any party. This improvement in representation tends to occur even in the absence of legislation. However, it is possible to legislate that a certain proportion of list candidates should be (eg) women, or from ethnic minorities; or to legislate that parties may introduce this requirement.

Maria Iacovou, 2021

Maria Iacovou is Professor of Quantitative Sociology at the University of Cambridge and a member of the LCER Executive. This explainer presents her personal analysis and does not necessarily represent the views of the LCER Executive.