

A SECOND BREXIT REFERENDUM – AND THE SEARCH FOR COMMON GROUND

A constructive proposal

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Summary

Advocates for a second referendum on Brexit have struggled to articulate what such a referendum should look like. There are very divergent views on the question that should be asked – or the options that should be included. There is also little agreement on the voting system that should be used.

A second referendum can only be held if the public is convinced that the outcome would be conclusive, unambiguous and fair. The options presented and the voting system used would have to be simple enough to be easily understood. The voting system would also need to take the result of the first referendum into account by placing restrictions on the circumstances in which the leave result could be overturned.

In the absence of a proposal that satisfies these criteria, a second referendum might be a good idea whose time will never come. It needs to become a credible political proposition. As this paper shows, a referendum that satisfies demanding criteria and points the way towards a new consensus in a highly polarised UK debate is both possible and promising, presenting the best way forward. With a concrete and fair proposal on the table it becomes more likely to obtain the essential bipartisan public support for holding one.

A further referendum should be a three-way referendum between Deal – No deal – and Remain, in order to:

- establish whether a majority of the voting public now wishes to remain in the EU in light of the available options (or not); and
- avoid an inconclusive outcome, the securing of which would be hostage to further political debate or conditional on the agreement of the EU.

It should use a “Preferential Vote + Qualified Lock” voting system, in order to

- remove incentives for tactical voting;
- ensure that No Deal has a shot at winning;
- prevent Remain winning if a majority of voters prefer either leave option to Remain counting across all preferences;
- allow Remain to win even if it secures a minority of first preferences, if majorities prefer it to both leave alternatives counting across all preferences.

Both sequential voting options are problematic as they almost certainly preclude a No Deal victory. This is likely to generate considerable resentment amongst those who want it. No referendum should exclude the possibility of victory of an option on the ballot that could conceivably win under another reasonable voting system. A standard preferential voting system is also unsatisfactory as it would encourage tactical voting on the part of No Deal voters and would allow Remain to win even if there were leave options that a majority preferred to it counting across all preferences. This would not provide an adequate mandate to overturn the result of the June 2016 referendum. In short, a sequential or standard alternative vote referendum would not be unambiguous or fair: the outcomes would be disputed.

This leaves the two kinds of preferential voting system with a leave-favouring “lock”. There are compelling arguments for both. They pit two criteria against each other: the fairness / accuracy of the outcome, on the one hand, and the need to take the result of the 2016 referendum into account, on the other.

An “absolute lock” pays the greatest respect to the original referendum, as it would require an absolute majority of first choices for Remain for the result of the original referendum to be overturned. However, it could also result in a situation in which the UK leaves the EU with a deal, despite a majority of voters preferring to remain in the EU to *both* leave options counting across all preferences.

A “qualified lock” would satisfy the requirement that Remain should not be able to win in the event of an overall majority preferring one or other leave option to Remain counting across all preferences. But it would allow for a “minority” Remain victory if it beat both leave options after taking all voters’ complete preferences into account.

Under a qualified lock, Remain is already handicapped relative to both leave options. It faces an additional hurdle that the other two options do not. This is justified – indeed necessary – on account of the result of the 2016 referendum. However, the additional requirement of an outright majority of first preferences for Remain to overturn to the original result could result in an outcome that was clearly inconsistent with actual voter preferences and would be irreconcilable with the criterion of fairness.

In short, a new referendum on Brexit should be a single-round, preferential (alternative) vote on three options: Deal, No Deal or Remain, with a built-in “lock”. The lock would prevent Remain from winning unless it was preferred by a majority of voters to *both* leave options taking all voter’s complete list of preferences into account.

How might a second referendum on Brexit work?

As the choice of voting system and question heavily influences outcomes (i.e. the same set of voter preferences will yield a different result depending on which questions are asked and how votes are counted), it is difficult to come to a view on what a new referendum on Brexit should look like that is not influenced by one's own preferences. This paper attempts to do this, however, by setting the following criteria:

A new referendum must be:

Conclusive: the options presented must require no new negotiations. A second referendum only makes sense if it results in the conclusion of the Brexit process, not a new beginning;

Simple: the question is / or the options are / clear;

Unambiguous: the voting system must encourage the expression of real voter preferences; i.e. it must not encourage tactical voting;

Fair: the voting system should not effectively preclude an included option from winning that might have won under another system under a foreseeable voter distribution;

the choices presented do not exclude altogether a (conclusive) option that might have enjoyed majority support;

the result must be consistent with expressed voter preferences; i.e. in a multiple-option referendum with no outright winner, an option preferred to *all* others counting across all preferences should win.

It should also acknowledge the result of the June 2016 referendum.

The voting system should exclude the possibility of victory for Remain if there is a conclusive leave alternative that is preferred to it by a majority of voters, counting across all preferences. Such an outcome would be legitimately contested, given that a majority of the voting public has already voted once to leave the EU.

These criteria aim to ensure that the result of any new referendum on Brexit is as undisputed as possible. Given the importance of the issue for the future of the country and the depth of feeling it provokes, it is crucial that any new referendum delivers a conclusive outcome that cannot reasonably and legitimately be challenged. The best referendum is one which the most people can agree to in advance and the least people can dispute once it has taken place. No new referendum can exclude the possibility that those who do not get their preferred outcome feel robbed. But it is crucial – and possible – that they cannot feel robbed by the format chosen.

Which options should be on the ballot?

The proposal in this paper is based on the deal negotiated by the government with the EU being one of the options. However, the considerations and conclusions that follow would apply equally to ANY deal. For now at least, whether Parliament likes it not, the current deal is the one on the table. But what should the other option or options be?

A binary referendum?

It would be possible to ask the public to choose simply between the deal the government has negotiated and a no deal departure from the EU. This has a certain logic: the question of whether or not to leave has been asked already. On the other hand, given the clarity that now exists on the alternatives on offer, and the possibility that a majority now favours remain, it would not be fair, and far from democratic, to leave this option off the ballot altogether. If you are going to ask people their opinion on Brexit again, you cannot confine this to how it should happen, when a good many may well have changed their minds on the desirability of the entire enterprise.

It would also be possible to run a straight deal-remain referendum. But this would also exclude a popular, possible option: no deal. It would face the same practical and principled shortcomings in terms of the legitimacy of the outcome.

A new two-way referendum would not satisfy the criteria of fairness and unambiguousness set out above. So a new referendum should at offer at least three choices: deal – no deal – remain, in order to maintain democratic legitimacy.

A multiple-choice referendum?

Should any other options should be on the ballot? After all, Parliament has considered a range of alternatives in the course of the “indicative votes process”.

One could argue for the inclusion of soft Brexit options that the EU would likely agree to: remaining in either or both of the customs union or the single market. It is likely that there are voters who would prefer one or both of these options to all of the other three. This speaks for their inclusion.

However, a four-/five-/ or even six-way referendum would be excessively complicated. An outcome requiring entirely new negotiations would also fail the test of conclusiveness.

A new referendum should therefore offer a three-way choice between remaining in the EU, leaving with the government’s deal and leaving with no deal at all. These are all realistic, understandable, conclusive options that the UK can decide to pursue unilaterally.

What voting system should be used in a three-way referendum?

Even if the choices in a further referendum are narrowed down to three, it is still complicated. Whatever system the referendum employs, voters will be asked to rank their preferences. There are six ways in which they can do this.

Table 1: The six possible categories of voters in a three-way referendum

1	2	3	Summarised in tables below as
Deal	No deal	Remain	$D > N > R$
Deal	Remain	No Deal	$D > R > N$
No Deal	Remain	Deal	$N > R > D$
No Deal	Deal	Remain	$N > D > R$
Remain	Deal	No deal	$R > N > D$
Remain	No Deal	Deal	$R > D > N$

There are 2 obvious ways of running a three-way referendum.¹ It could employ either a sequential or a preferential (alternative) voting system. Both these options can be constructed in a number of different ways.

Option 1: Sequential Voting (SV)

A two-round “sequential vote”, with the winner of a head-to-head play-off going up against the third option in a final round. There are only two ways of sequencing such votes that make sense: first whether to leave, then how to leave, or first how to leave and then whether to leave in that way.

Option 1a: Leave vs Remain; if Leave, then Deal vs No Deal

Option 1b: Deal vs No Deal; the winner against Remain

Option 2: Preferential (Alternative) Voting (AV)

A one-round preferential vote, requiring voters to rank the three options in their order of preference. In the event of no option securing an outright majority of first preferences, the second preferences of the option receiving the least first place votes would be reallocated between the remaining two options so as to produce an eventual winner.

This voting system could be constructed in three ways:

Option 2a: A regular preferential voting system:

This is the system described above.

Option 2b: Preferential Voting + Lock:

A variation on an ordinary preferential voting would be a preferential voting system with a “lock”: namely, that remain could only win if it achieved over 50% of first choice votes. This

¹ A third way of running a three-way referendum would be to use a points system. This system would allocate points to each preference: 2 for the first preference, 1 for a second and 0 for a third. This is known as a Borda Count. This system is obviously problematic in that it very heavily favours least worst option (in this case the “compromise” option of Deal. This is advanced as virtue by the system’s advocates. However, a system that defines the most favoured option as the least disliked one is problematic. This system also strongly encourages Remain voters to place No Deal in second place in order to avoid giving points Deal. For more detail, see the Addendum.

sounds similar to Option 2a (sequential voting with a leave/remain in the first round) in that it preserves the same requirement of an absolute majority of first choice preferences for remain. But it would yield different outcomes under certain highly relevant voter preferences.

Option 2c: Preferential Voting + Qualified Lock

This variation on a standard preferential voting system would not require a 50% majority of first preferences for Remain. It would still allow Remain to win if it secured a minority of first preferences, but only if a majority of voters *overall* preferred to it to both leave options, counting across second and third choices. It would eliminate remain, even if it would win on a standard AV system, if this was not the case.

Variations in outcome if no option secures 50 percent of first preferences

To understand the pros and cons of these different systems it is helpful to consider concrete scenarios.

The hypothetical voter distributions considered below are not intended to reflect any views on likely voter preferences beyond the assumptions that

- a similar percentage of voters – perhaps a little higher, perhaps a little lower – is likely to vote remain, as in 2016;
- a very great majority of these would prefer to exit with a deal than with no deal at all;
- and
- leave voters are likely to be sufficiently split for neither leave option to secure an outright majority of first choices.

If these assumptions are accurate, then, if remain does not enjoy majority support, even very small variations in the proportion of voters in the four possible “leave” categories can lead to very different outcomes depending on the voting system used. In at least one foreseeable scenario, all three options can win depending on the system used.

Obviously, none of these complications arise in the event of one of the options securing an overall majority of first preferences. However, it is the real possibility that they might not that makes the choice of system so sensitive.

Table 2 sets out the eight possible distributions of voters across the six available categories if Remain secures 47% of first preferences. They are perhaps not all equally likely, but none are inconceivable. The precise numbers are arbitrary. What is important is the relationships between them. In particular, if Remain falls fractionally short of a majority of first preferences, the percentages of voters preferring a leave option to Remain but Remain to the other leave option are crucial (the highlighted lines in Table 2).

Table 2: Possible voter distributions if Remain gets 47% of first preferences

	Voter Share 1	Voter Share 2	Voter Share 3	Voter Share 4	Voter Share 5	Voter Share 6	Voter Share 7	Voter Share 8
Key features	Deal beats No deal into 3 rd				No Deal beats Deal into 3 rd			
	N > R > D > 3%		N > R > D < 3%		D > R > N > 3%		D > R > N < 3%	
	D > R > N > 3%	D > R > N < 3%	D > R > N > 3%	D > R > N < 3%	N > R > D > 3%	N > R > D < 3%	N > R > D > 3%	N > R > D < 3%
D > N > R	20	27	19	25	20	20	24	20
D > R > N	9	2	10	2	6	6	2	2
N > R > D	4	4	2	2	4	2	4	2
N > D > R	20	20	22	24	23	25	23	29
R > D > N	45	45	45	45	45	45	45	45
R > N > D	2	2	2	2	2	2	2	2

Table 3 shows the results that the different voting systems would yield for each of the eight hypothetical distributions of voters.

Table 3: Outcomes under each system if Remain scores 47% of first preferences

Voter Share	Order of 1 st choices D v N	% of 3 rd place option preferring Remain to leave alternative	% of 2 nd place option preferring Remain to leave alternative	SV L v R, L ⇒ D v N	SV (D v N) v R	AV	AV 50% lock	AV Qualified Lock
1	D > N	(N > R > D) > 3%	(D > R > N) > 3%	D	R	R	D	R
2			(D > R > N) < 3%	D	R	R	D	D
3		(N > R > D) < 3%	(D > R > N) > 3%	D	D	D	D	D
4			(D > R > N) < 3%	D	D	D	D	D
5	N > D	(D > R > N) > 3%	(N > R > D) > 3%	D	R	R	D	R
6			(N > R > D) < 3%	D	D	R	D	D
7		(D > R > N) < 3%	(N > R > D) > 3%	D	R	N	N	N
8			(N > R > D) < 3%	D	D	N	N	N

Table 4 shows the ranking of the three options taking all preferences into account – i.e. including second and third preferences – under each voter distribution. Deal beats No Deal on every distribution of voters if 45% of voters order their preferences Remain > Deal > No Deal. However, Remain is preferred to *both* leave options in only two scenarios: voter distributions 1 and 5. In these scenarios the number of Deal voters who put Remain as their second choice and the number of No Deal voters who put Remain as their second are *both* larger than the number of votes by Remain fell short of an outright majority of first preferences. In other words,

if Remain scores 47% of all first preferences then it will only be preferred to both leave options counting across all preferences if 3% of voters order their preferences Deal > Remain > No Deal *and* 3% of voters order their preferences No Deal > Remain > Deal. It is perhaps unlikely that many voters will put No Deal first and Deal last. But the closer Remain is to an outright majority of first preferences the smaller this number needs to be – and the more likely and significant this possibility becomes.

Table 4: Ranking of Options counting across all preferences

	1	2	3	4	5	6	7	8
Ranking of options across all three preferences	D > N	D > N	D > N	D > N	D > N	D > N	D > N	D > N
	R > D R > N	R > D N > R	D > R R > N	D > R R > N	R > D R > N	D > R R > N	R > D N > R	D > R N > R
Voting System	RESULT							
SV: L v R	D	D	D	D	D	D	D	D
SV: (D v N) v R	R	R	D	D	R	D	R	D
AV	R	R	D	D	R	R	N	N
AV + lock	D	D	D	D	D	D	N	N
AV + QL	R	D	D	D	R	D	N	N

Possible outcomes under Sequential Voting Systems

Option 1a: Sequential Voting: Leave vs. Remain / If leave, Deal vs No-Deal

Voter Pref	Voter Share 1		Voter Share 2		Voter Share 3		Voter Share 4		Voter Share 5		Voter Share 6		Voter Share 7		Voter Share 8	
D > N > R	20		27		19		25		20		20		24		20	
D > R > N	9		2		10		2		6		6		2		2	
N > R > D	4		4		2		2		4		2		4		2	
N > D > R	20	D	20	D	22	D	24	D	23	D	25	D	23	D	29	D
R > D > N	45		45		45		45		45		45		45		45	
R > N > D	2		2		2		2		2		2		2		2	

A sequential voting system with a first-round head-to-head between Leave and Remain will almost certainly result in ultimate victory for Deal, if Remain does not secure a majority of first preferences, as the great majority of Remain voters will prefer to exit with a deal than with no deal. The highlighted boxes in the table, showing all those who prefer Deal to No Deal show this clearly.

The distribution of voters across the two possible deal preferring categories is irrelevant. A far larger proportion of remain voters could prefer No Deal to Deal and Deal would still win comfortably. A lot less people could want to remain and a lot more people want to exit with no

deal – indeed, No Deal could even lead on first preferences – and still the likely result would be a win for Deal. In short, it is a system for ensuring that most people’s least worst outcome wins.

This system prevents remain winning without an outright majority of support, but it also prevents Remain winning even if its preferred to both leave options counting across all preferences: see voter distributions 1 and 5 in the table below.

Table 5: Ranking of Options counting across all preferences: Outcome SV Option 1a

Voter distribution	1	2	3	4	5	6	7	8
Ranking of options across all three preferences	D > N R > D R > N	D > N R > D N > R	D > N D > R R > N	D > N D > R R > N	D > N R > D R > N	D > N D > R R > N	D > N R > D N > R	D > N D > R N > R
Outcome under standard AV	DEAL	DEAL	DEAL	DEAL	DEAL	DEAL	DEAL	DEAL

This system also precludes a No Deal victory in the very likely event of its failing to secure an outright majority of first preferences. This is a problem because No Deal does have a chance of winning under at least two conceivable voter distributions (7 and 8) under a preferential voting system.

A sequential voting system with a first-round run-off between leave and remain therefore fails the test of fairness (criterion 3).

Option 1b: Sequential Voting: Deal vs. No-Deal / winner vs Remain

Voter Pref	Voter Share 1	Voter Share 2	Voter Share 3	Voter Share 4	Voter Share 5	Voter Share 6	Voter Share 7	Voter Share 8
D > N > R	20	27	19	25	20	20	24	20
D > R > N	9	2	10	2	6	6	2	2
N > R > D	4	4	2	2	4	2	4	2
N > D > R	20	20	22	24	23	25	23	29
R > D > N	45	45	45	45	45	45	45	45
R > N > D	2	2	2	2	2	2	2	2

A sequential voting system requiring a run-off between remain and the victorious first-round leave option will almost certainly pit Remain against Deal. Arguably, Deal is the most likely result, but a remain outcome is possible if enough no deal voters prefer staying in the EU to exiting on the terms of the deal (voter distributions 1,2, 5 and 7 above). The more people that put Remain in first place, the smaller this number needs to be.

Under this system Remain could win despite a majority of the voting public preferring a leave option to Remain, counting across all preferences. In voter distributions 2 and 7, a No Deal exit is preferred to Remain by a majority of voters (see table 5). Such an outcome would be heavily

contested by those who voted to leave the EU in the June 2016 referendum. This voting system fails criterion 5 and should be avoided.

Table 6: Ranking of Options counting across all preferences: Outcome SV Option 1b

Voter distribution	1	2	3	4	5	6	7	8
Ranking of options across all three preferences	D > N R > D R > N	D > N R > D N > R	D > N D > R R > N	D > N D > R R > N	D > N R > D R > N	D > N D > R R > N	D > N R > D N > R	D > N D > R N > R
Outcome under standard AV	REMAIN	REMAIN	DEAL	DEAL	REMAIN	DEAL	REMAIN	DEAL

This voting system also precludes a No Deal victory in the very likely event of its failing to secure an outright majority of first preferences. It therefore fails to satisfy the criterion of fairness.

The use of a sequential voting system would be likely to generate considerable resentment amongst those preferring a no deal Brexit to both the alternatives. No referendum should preclude the possibility of victory of an option on the ballot that could conceivably win under another reasonable voting system.

This leaves the various preferential voting systems in play.

Possible outcomes under Preferential Voting Systems

Option 2a: Preferential Voting: ordinary AV

Voter Pref	Voter Share 1		Voter Share 2		Voter Share 3		Voter Share 4		Voter Share 5		Voter Share 6		Voter Share 7		Voter Share 8	
D > N > R	20		27		19		25		20		20		24		20	
D > R > N	9		2		10		2		6		6		2		2	
N > R > D	4	R	4	R	2	D	2	D	4	R	2	R	4	N	2	N
N > D > R	20		20		22		24		23		25		23		29	
R > D > N	45		45		45		45		45		45		45		45	
R > N > D	2		2		2		2		2		2		2		2	

Under a strict preferential voting system, every option stands a chance of winning under a conceivable voter distribution. Obviously, they can all win if they secure an outright majority of first preferences, but they can also all win with a minority.

However, the margins will likely be very tight given the likelihood of remain securing the most first-choice votes and being not too far short of an outright majority. If Remain secures 47% of first choices, it needs only 3% more votes to win from the third-place option whether this is No Deal (voter distributions 1 and 2) or Deal (voter distributions 5 and 6). This is significant.

There are two problems with using a regular preferential voting system for a new referendum on Brexit.

The first is that a standard alternative voting system encourages tactical voting. The margins for those voting in the order of preference No-Deal > Deal > Remain (likely the largest group of No Deal voters) between securing their desired outcome and ending up with their worst are very tight. To stand a chance of winning, No Deal must secure the second highest number of first preferences (voter distributions 5,6,7 and 8). No deal voters must then hope that the number of Deal voters preferring Remain to No Deal is too small to push Remain over the line (voter distribution 7,8). Many may well conclude that this is unlikely. If they do think this, they will be well advised to switch the order of their first preferences from No Deal to Deal, to avoid the arguably much more likely scenario set out in voter distribution 6, where Remain wins in virtue of Deal being pushed into third place. If No Deal > Deal > Remain do switch their first preferences, however, they can avoid this outcome (so long as not enough No deal voters prefer remaining to the deal). But if they do this, they compromise their chances of getting the result they want. In short No deal voters face the dilemma that the pursuit of their preferred option increases the likelihood of their least favoured outcome. Do they risk this? Or do they play it safe and put Deal in first place?

Table 5: Tactical voting considerations for ND > D > R voters

Voter Preference	Required Voter distribution (8)	Feared voter distribution (6)	Tactical voting outcome
D > N > R	20	20	25 (+5)
D > R > N	2	6	6
N > R > D	2	2	2
N > D > R	29	25	20 (-5)
R > D > N	45	45	45
R > N > D	2	2	2
RESULT	NO DEAL	REMAIN	DEAL

It is perfectly possible that the required voter distribution for a No Deal victory is in fact the real voter distribution. But it might never be reflected in actual votes because some risk averse No Deal > Deal > Remain voters might choose to vote tactically with a view to reducing the likelihood of a remain victory. No one would know: and this a problem. A standard preferential voting system would encourage a sizeable chunk of the electorate to vote tactically. It would not yield an unambiguous outcome and would therefore fail on criterion 3.

Significantly, a remain victory under voter distribution 6 is the only Remain outcome that No Deal > Deal > Remain voters can vote tactically to prevent. The other three voter distributions under which Remain would win on a standard AV system are beyond their influence: on voter distributions 1 and 2, Remain wins curtesy of reallocated No deal votes, so switching their first choice to Deal makes no difference. Deal has already beaten it to third place. Similarly, under voter distribution 5, there is nothing No Deal > Deal > Remain voters can do – switching their first preference to Deal changes nothing as there would be enough No Deal voters preferring Remain to deal to see Remain over the line.

In theory, Deal > No deal > Remain voters face the same dilemma. The voter distributions 2 and 4 are extremely close – yet on voter distribution 2 Remain wins and on 4 Deal wins. But if

just a few percent switched their first preference to No Deal (as per voter distribution 7), then No Deal would win. However, this outcome is much less likely, so their dilemma is less acute. No Deal > Deal > Remain voters have to choose between a slim a chance of getting what they want and a good chance of avoiding what they most dislike. For Deal > No deal > Remain voters, these odds are reversed.

The second problem with a standard alternative voting system is that it allows for a remain victory despite its being less popular overall (i.e. across all preferences) than one or other leave alternative. This would arise under voter distribution 2, under which a No Deal Brexit would be preferred to Remain by a majority of voters, and voter distribution 6, under which Deal would be preferred to Remain by a majority of voters. A standard preferential voting system therefore fails criterion 5 as it could result in the overturning of the result of the June 2016 referendum despite a majority of the population preferring a leave option to remaining in the EU.

Table 7: Ranking of Options counting across all preferences: Outcome under standard AV

Voter distribution	1	2	3	4	5	6	7	8
Ranking of options across all three preferences	D > N R > D R > N	D > N R > D N > R	D > N D > R R > N	D > N D > R R > N	D > N R > D R > N	D > N D > R R > N	D > N R > D N > R	D > N D > R N > R
Outcome under standard AV	REMAIN	REMAIN	DEAL	DEAL	REMAIN	REMAIN	NO DEAL	NO DEAL

Option 2b: AV + Absolute Lock (Remain can only win if >50% first preferences)

Voter Pref	Voter Share 1		Voter Share 2		Voter Share 3		Voter Share 4		Voter Share 5		Voter Share 6		Voter Share 7		Voter Share 8	
D > N > R	20		27		19		25		20		20		24		20	
D > R > N	9		2		10		2		6		6		2		2	
N > R > D	4		4		2		2		4		2		4		2	
N > D > R	20	D	20	D	22	D	24	D	23	D	25	D	23	N	29	N
R > D > N	45		45		45		45		45		45		45		45	
R > N > D	2		2		2		2		2		2		2		2	

A preferential system with an absolute lock pays the greatest respect to the result of the original referendum (criterion 5). Remain could only win if it secured an absolute majority of first preferences. In the event of its failing to – as in all the scenarios contemplated in the table above – its votes are redistributed, resulting in victory for Deal except where No Deal would have won anyway (voter distributions 7 and 8). Under this system Remain is prevented from winning as it would have done under voter distributions 1, 2, 5 and 6 under a standard preferential voting system.

This is consistent with the criterion 5 that Remain should not be able to win if a leave option is preferred to it by a majority of voters counting across all preferences as it rules out a remain

victory under voter distributions 2 and 6, where a minority prefer it to No Deal and Deal respectively, counting across all preferences.

It also removes the dilemma for No Deal > Deal > Remain voters, as they are no longer incentivized to vote tactically to pre-empt a remain victory, so it is consistent with criterion 3.

However, an absolute lock also rules out a “minority” Remain victory under voter distributions 1 and 5, under which Remain is still preferred to *both* leave options counting across all preferences, on account of “enough” No deal voters preferring remain to No deal (more than three percent, if Remain secures 47% of first preferences). Such an outcome would be inconsistent with voter preferences expressed and would therefore fail the criterion of fairness.

Table 7: Ranking of Options across all preferences: Outcome under AV + Absolute Lock

Voter distribution	1	2	3	4	5	6	7	8
Ranking of options across all three preferences	D > N R > D R > N	D > N R > D N > R	D > N D > R R > N	D > N D > R R > N	D > N R > D R > N	D > N D > R R > N	D > N R > D N > R	D > N D > R N > R
Outcome under standard AV	DEAL	DEAL	DEAL	DEAL	DEAL	DEAL	NO DEAL	NO DEAL

Option 2c: AV + qualified lock (Remain can only win if >50% prefer it to both leave options)

Voter Pref	Voter Share 1		Voter Share 2		Voter Share 3		Voter Share 4		Voter Share 5		Voter Share 6		Voter Share 7		Voter Share 8	
D > N > R	20		27		19		25		20		20		24		20	
D > R > N	9		2		10		2		6		6		2		2	
N > R > D	4	R	4	D	2	D	2	D	4	R	2	D	4	N	2	N
N > D > R	20		20		22		24		23		25		23		29	
R > D > N	45		45		45		45		45		45		45		45	
R > N > D	2		2		2		2		2		2		2		2	

Under a qualified lock, a “minority” remain can still win so long as majorities prefer it to both remain options. This would “correct” for the outcomes under voter distributions 1 and 5 under an absolute lock (highlighted columns in table 7), which would deliver a win for Deal despite Remain being preferred to both leave alternatives counting across all preferences, resulting in the following outcomes.

Table 7: Ranking of Options across all preferences: Outcome under AV + Qualified Lock

Voter distribution	1	2	3	4	5	6	7	8
Ranking of options across all three preferences	D > N R > D R > N	D > N R > D N > R	D > N D > R R > N	D > N D > R R > N	D > N R > D R > N	D > N D > R R > N	D > N R > D N > R	D > N D > R N > R
Outcome under standard AV	REMAIN	DEAL	DEAL	DEAL	REMAIN	DEAL	NO DEAL	NO DEAL

While allowing remain to win under these circumstances, a qualified lock still removes the dilemma faced by No Deal > Deal > Remain voters that would encourage tactical voting as it removes the possibility of a Remain outcome under voter distribution 6, where Remain would win under a normal AV system, on account of the reallocation of deal voter's second preferences being sufficient to push remain over the line, but where Deal would win if enough (relatively few) No Deal > Deal > Remain voters switched the order of their first and second preferences. With a qualified lock, whether or not remain could win with a minority of first preferences, would depend on majorities preferring it to both Deal and No Deal counting across all preferences: so it would make no difference which way round No Deal > Deal > Remain voters placed their first and second preferences, because remain would win (or lose) regardless whether Deal was eliminated first or No Deal.

It is not the simplest voter system, but it is not so complex as to defy comprehension. A system any simpler would offend against the criterion of fairness.

A preferential voting system with a qualified lock is the only system that satisfies all five criteria.

Conclusion

A further referendum should:

Be a three-way referendum between Deal – No deal – and Remain, in order to

- establish whether a majority of the voting public now wishes to remain in the EU in light of the available options (or not); and
- Avoid an inconclusive outcome, the securing of which would be hostage to further political debate or conditional on the agreement of the EU.

Use a “Preferential Vote + Qualified Lock” voting system, in order to

- remove incentives for tactical voting;
- ensure that No Deal has a shot at winning;
- prevent Remain winning if a majority of voters prefer either leave option to Remain counting across all preferences;
- allow Remain to win even if it secures a minority of first preferences, if majorities prefer it to both leave alternatives counting across all preferences.

Both sequential voting options are problematic as they almost certainly preclude a No Deal victory. This is likely to generate considerable resentment amongst those who want it. No referendum should exclude the possibility of victory of an option on the ballot that could conceivably win under another reasonable voting system.

A standard preferential voting system is also unsatisfactory as it would encourage tactical voting on the part of No Deal voters and would allow Remain to win even if there were leave options that a majority preferred to it counting across all preferences. This would not provide an adequate mandate to overturn the result of the June 2016 referendum.

In short, a sequential or standard alternative vote referendum would not be unambiguous or fair: the outcomes would be disputed.

This leaves the two kinds of preferential voting system with a leave-favouring “lock”. There are compelling arguments for both. They pit two criteria against each other: the fairness / accuracy of the outcome, on the one hand, and the need to take the result of the 2016 referendum into account, on the other.

An “absolute lock” pays the greatest respect to the original referendum, as it would require an absolute majority of first choices for Remain for the result of the original referendum to be overturned. However, it could also result in a situation in which the UK leaves the EU with a deal, despite a majority of voters preferring to remain in the EU to *both* leave options counting across all preferences.

A “qualified lock” would satisfy the requirement that Remain should not be able to win in the event of an overall majority preferring one or other leave option to Remain counting across all preferences. But it would allow for a “minority” Remain victory if it beat both leave options after taking all voters’ complete preferences into account.

Under a qualified lock, Remain is already handicapped relative to both leave options. It faces an additional hurdle that the other two options do not. This is justified – indeed necessary – on account of the result of the 2016 referendum. However, the additional requirement of an outright majority of first preferences for Remain to overturn to the original result could result in an outcome that was clearly inconsistent with actual voter preferences and would be irreconcilable with the criterion of fairness.²

² A three-way referendum does not allow for an absolute measure of preference applicable under all circumstances. Obviously, it allows for a clear outcome where one option secures a majority of first preferences. In this case, it is clear what the public prefers. However, an outcome in which no option secures an outright majority, and each option is preferred to one of the others counting across all preferences is also possible: i.e. A could be preferred to B, B to C and C to A. Which is the “preferred outcome” in this scenario? It depends on how you count. However, where an option is preferred to both of the others counting across all preferences, it *is* possible to say that that this is the “preferred” option.

Addendum: A Borda count referendum?

Some have advocated a three-way referendum using a Borda count. This system allocates points to each preference: 2 for the first, 1 for the second, and 0 for the third. The option with the most points wins. Supporters of this system believe it to be an advantage that it favours the “compromise” option of a deal. However, it is so favourable to Deal as to all but guarantee its victory.

Borda count results across all 8 voter distributions

Voter Pref	Voter Share 1		Voter Share 2		Voter Share 3		Voter Share 4		Voter Share 5		Voter Share 6		Voter Share 7		Voter Share 8	
D > N > R	20		27		19		25		20		20		24		20	
D > R > N	9		2		10		2		6		6		2		2	
N > R > D	4	D123	4	D123	2	D125	2	D123	4	D120	2	D120	4	D120	2	D118
N > D > R	20	N 70 R107	20	N 77 R100	22	N 65 R110	24	N 79 R 98	23	N 76 R104	25	N 76 R104	23	N 80 R100	29	N 84 R 98
R > D > N	45		45		45		45		45		45		45		45	
R > N > D	2		2		2		2		2		2		2		2	

A Borda count renders both a remain and no deal victory virtually impossible. Indeed, it could also rule out a remain victory even if it secures a majority of first preferences: This is far from satisfactory.

Voter Pref	Voter Share	RESULT
D > N > R	20	D = 122 N = 67 R = 111
D > R > N	5	
N > R > D	2	
N > D > R	21	
R > D > N	51	
R > N > D	1	

A Borda count also encourages tactical voting on the part of remain voters. Under this system most Remain voters are strongly incentivised to shuffle their second and third preferences: placing no deal second and deal third. In this way they do not award points to the outcome that defeats their preference. They can, for instance, convert voter distribution 5 from victory for Deal into a victory for Remain by switching in this manner.

Voter Preference	Actual Voter Preference	RESULT	Tactical Voting Preference	RESULT
D > N > R	20	D = 122 N = 67 R = 111	20	R = 106 D = 105 N = 91
D > R > N	6		6	
N > R > D	4		4	
N > D > R	23		23	
R > D > N	45		30	
R > N > D	2		17	

Far from being a virtue, defining the least disliked option as the preferred option is a major defect with a Borda count voting system.