The Distribution of Power in Dáil Éireann

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Abstract: How powerful is the current government relative to its recent predecessors? We compute Shapley values for the recent Dáileanna, and show that the current government is much stronger than the minority administrations of 1981 and 1982, and would remain so even if it lost a number of TDs. This effect occurs because of the fragmentation of opposition parties. In fact Fine Gael is now no more powerful than the Workers' Party.

I INTRODUCTION

After the February 1987 elections Fianna Fáil formed a minority government. Fine Gael immediately offered to ensure a government majority for policies that it favoured on Northern Ireland and the economy.

Ever since, there has been intense speculation about the prospects of an early election. It is widely asserted that Fianna Fáil would not survive in office if it lost TDs through by-elections. Proponents of this view have pointed to parallels with the short-lived minority governments of 1981 and February 1982, each of which started with a similar number of TDs to Fianna Fáil's current representation.

According to this conventional argument a government's durability can be predicted by its Dáil representation. This is obviously a simplification: even a majority government may serve less than its full term, either because of unforeseen events or because it expects to win an early election. On the other hand, it is obvious that there are important links between a government's

Dáil representation and its power, and between a government's power and its expected durability. This paper is concerned with the nature of these two links. We will argue that the proportion of government TDs is a poor guide to its power in a hung Dáil, and that expected durability depends on the distribution of power across parties, rather than just the government's strength. Our alternative account of power suggests that the current Dáil is quite dissimilar to its hung predecessors. The current government is much stronger and, unlike its predecessors, does not rely on small party support. This position would not substantially change if the government lost a plausible number of TDs. The major opposition parties are relatively weak, and are unlikely to be able to dictate government policy. This is partly due to fragmentation of the Fine Gael-Labour group and the emergence of the Progressive Democrats. However, even if these parties were to form a single group,[1] they would still be competing on effectively equal terms with the Workers' Party.

We differ most fundamentally from the conventional argument on its supposition that power can be measured by the proportion of Dáil seats. The difference can be brought out by considering the 1982-87 Dáil. The government surely held all of the power, since any coalition of groups could win a Dáil vote if and only if the government participated. On the other hand, Fianna Fáil and the Independents were surely equally powerless, despite the disparity in their representation.

This example illustrates an important rule. A group is only powerful relative to a coalition if it provides valuable votes: that is, when the coalition wins if and only if the group participates. We then say that the group is "marginal" in that coalition.

Our next step determines the coalitions that might form. In common with much of the related literature we suppose that a group receives a payoff if and only if it is marginal. This assumption suppresses any payoff directly resulting from Dáil decisions,[2] and allows a coalition to transfer its joint return to a single member.[3] A number of power indices are consistent with this postulate, differing in the weight they attach to each coalition. We use the simplest and most popular such measure, known as the Shapley value.[4] This has the following interpretation. Imagine that groups "arrive" at an

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1. A "group" means either a single party or a number of parties which agree to always vote together and share any return in fixed proportions. A "coalition" is a collection of groups. The 1982-87 government was run by a coalition which always included the group composed of the Fine Gael and Labour parties.

2. See Barry (1980).

3. See, for example, Schofield (1978) on majority-rule decision-making with non-transferable utility.

4. It turns out that related measures, such as the Banzhaf-Coleman index, yield essentially equivalent results when analysing the Dáileanna of this decade.

agreed location in any order, with each order being equi-probable. Each group's expected return is then equal to its Shapley value. In addition, the Shapley value uniquely satisfies a number of intuitively desirable properties. [5] Like other sensible measures, the Shapley values of two groups may be more or less than the value of a group jointly formed by them.[6] As we will see, this has important ramifications for understanding the operations of recent Dáileanna.

In Section II we define and present Shapley values for the Dáileanna of 1981, 1982 and 1987. Section III summarises our conclusions.

II RESULTS

Sections II.1 and II.2 respectively define the Shapley value and tabulate the distribution of seats in each Dáil this decade. Sections II.3 and II.4 respectively analyse the 1987 and preceding Dáileanna.

II.1 *Shapley Value*

Consider a majority-rule parliament composed of n groups, indexed by i. We will suppose that parties obtain a (fixed) payoff if and only if they are elements of a winning coalition in the current parliament. We can then normalise payoffs so that a winning coalition shares a payoff of 1 and a losing coalition receives 0, without loss of generality.

Let T_i denote any winning coalition such that $T_i - \{i\}$ loses. Group i's "marginal product" in each T_i is 1; and is zero in every other coalition. Let t_i be the number of groups in T_i. Then group i's Shapley value is defined as:

$$S_i = (1/n!) \Sigma (t_i - 1)!(n - t_i)!,$$

where the summation is taken over every coalition T_i. It is easy to confirm that $\Sigma_i S_i = 1$; so the n-vector of Shapley values represents a division of the winning spoils of a coalition of all n groups. Any group with a majority of deputies would have a Shapley value of 1 and all other groups would have zero values.

The Shapley value has a natural interpretation. Imagine that the groups in any coalition arrive in some order, and suppose that the marginally positioned group can extract all of the coalition's return. A group's Shapley value is its expected return when every order of a coalition is equi-probable and every coalition is equi-probable.

5. The properties are known as symmetry, efficiency and aggregation. See Owen (1980) for details. The Shapley value was first applied to collective decision-making by Shapley and Shubik (1954).
6. See, for example, Brams (1975).

By contrast, group i's "counting measure" (C_i) depends directly on the number of its TDs (m_i). Comparisons between C_i and S_i require that $\Sigma_i C_i$ ñ 1 and that C_i (like S_i) be continuous almost everywhere in m_i. These conditions are met by setting:

$$C_i = m_i / \Sigma m_j.$$

Comparisons between C_i and S_i remain only suggestive. We tabulate counting measures together with Shapley values, but delay comparisons till Section III.

II.2 *Recent Election Results*

We will use Shapley values to explain the brief lives of the 1981 Fine Gael-Labour government and the 1982 Fianna Fáil government. We will also analyse the current government's prospects. Results of the general elections are presented in Table 1 below.

Table 1:

	1981	February 1982	November 1982	1987
Fianna Fáil (FF)	78	81+	75	81+
Fine Gael (FG)	65	63	70* }	51
Labour Party (LP)	15 +	15	16 } +	12
Workers' Party (WP)	1	3	2	4
Progressive Democrats (PD)	0	0	0	14
H-Block	2	0	0	0
Independents (I)	5*	4*	3	4*

In Table 1 we indicate the party affiliation of the Ceann Comhairle by a star. He is selected before the Dáil conducts any other business and, by tradition, uses his casting vote in the government's favour. (We indicate the government by a + sign in Table 1.) While the choice of Ceann Comhairle is itself strategic, we will compute Shapley values after the Ceann Comhairle and government have been selected. This is purely a matter of convenience. Our analysis would be essentially unaffected if we computed Shapley values immediately after the general election.

II.3 *The 1987 Dáil*

How powerful is the FF government relative to other parties? We provide Shapley values and counting measures for the 1987 Dáil in Table 2 below:

Notice the striking disparity between the Shapley values of FF and any

Table 2:

	FF	FG	LP	WP	PD	I (each)
Shapley value	0.643	0.071	0.071	0.071	0.071	0.024
Counting measure	0.491	0.309	0.073	0.024	0.085	0.001

other party. This immediately suggests that a FF government which did not lose TDs over time, and that wished to remain in office, would hardly have to compromise to do so. The reason for the disparity noted above is that competition between the other parties to provide the extra 2 TDs drives all of their Shapley values down. Despite the difference in their Dáil representation, on current figures FG and WP are marginal in the same number of winning coalitions of the same size; and therefore have the same Shapley value.[7] This suggests that a WP offer to support policies that they approved of would carry equal weight with the offer made by FG after the election.

Fianna Fáil's relative strength results from competition between groups which are marginal in the same number of coalitions of the same size. It is important to understand that WP is included in this category. In other words, FF's strength is not simply the result of the FG-LP group breaking up and the emergence of PD. This point is best brought out by imagining that FG, LP and PD were to form a group. The WP would be marginal in the same number of coalitions of the same size as the group. This explains the surprising profile in Table 3 below:

Table 3:

	FF	FG+LP+PD	WP	I (each)
Shapley value	0.467	0.167	0.167	0.067
Counting measure	0.491	0.467	0.024	0.001

Notice that WP and I gain from the formation of this group, FF lose, and the group's value is less than the sum of its constituents' values when operating independently. Finally, comparison with the profiles for the 1981 and 1982 hung Dáileanna suggests that this hypothetical Dáil would not last long. (See Section II.4 below.)

The formation of a FG-LP-PD group is presumably unlikely. The distribution of seats is more likely to be affected by the outcomes of by-elections.

7. For the same reason they share the same value using any index that bases a group's power on its being marginal in winning coalitions.

This suggests that we ask whether FF's prospects would be seriously affected by the loss of TDs?

We suggest that, in the worst plausible scenario from FF's standpoint they lose 5 TDs to FG. The Dáil would then be constituted as follows (after excluding the Ceann Comhairle): FF 76, FG 56, LP 12, WP 4, PD 14, I 3. Shapley values for the revised Dáil are presented in Table 4 below:

Table 4:

	FF	FG	LP	WP	PD	I (each)
Shapley value	0.507	0.155	0.155	0.007	0.155	0.007
Counting measure	0.461	0.339	0.073	0.024	0.085	0.001

Naturally, FF lose power relative to the current Dáil, with neither WP nor I gaining. The government would therefore have to rely increasingly on the major opposition parties, who again compete down their respective Shapley values. A weak FF government would rely on small-party support if, implausibly, it lost TDs to I. On the other hand, WP would hardly gain from an accession of FF TDs.

We conclude that even the worst plausible circumstances from FF's standpoint hardly impair its ability to function as a government. This situation is radically different from the short-lived Dáileanna of 1981 and 1982, to which we now turn.

II.4 *The 1981 and 1982 Dáileanna*

In this sub-section we show how our approach to measuring power would suggest the downfall of the two short-lived governments. In contrast to the previous sub-section, we will treat FG and LP as a single group.

The 1981 Dáil had an additional distinguishing feature. Two H-Block candidates who promised not to take up their seats were elected, and duly fulfilled their promise. (One was in prison at the time.) We will treat the 1981 Dáil as if there were 164 elected TDs. This is appropriate if everyone believed that neither H-Block TD would take his seat, even if the government lasted its full term.

In sum we will consider the 1981 Dáil (after excluding the Ceann Comhairle) as if its profile were FF 78, FG + LP 80, WP 1, I 4. We present Shapley values in Table 5.

Table 5:

	FF	FG+LP	WP	I (each)
Shapley value	0.143	0.476	0.076	0.076
Counting measure	0.479	0.491	0.001	0.001

We delay comments on these figures in order to compare them with Shapley values in the February 1982 Dáil.

Although FF was elected with 81 seats in February 1982, it had lost 2 TDs by the time of the no-confidence vote which overthrew the government. (One TD had died, and another was hospitalised during the vote.) Since we are primarily interested in the fall of this government, we will delete these two TDs, leaving a Dáil of 164 in which FF had 79 votes. We present Shapley values in Table 6 below:

Table 6:

	FF	FG+LP	WP	I (each)
Shapley value	0.367	0.267	0.267	0.033
Counting measure	0.485	0.479	0.018	0.001

Why did these two governments fall? One answer would point at the size of the governing group's Shapley value. We suspect that this is not the whole story. The striking feature of both Dáileanna was the remarkable power of WP and the Independents. In the 1981 Dáil the sum of their Shapley values was 0.38 as compared to the government strength of 0.476. In the February 1982 Dáil the sum of their Shapley values was 0.367, which coincided with that of FF.[8] We suggest that this feature primarily explains the government's downfall.

III DISCUSSION

This paper has used Shapley values to explore the prospective duration of the 1987 Dáil, and to explain why the 1981 and February 1982 governments fell so quickly. Many commentators have argued that the precedent set by these hung Dáileanna bodes ill for the current government. We disagree. Our

8. Notice that it was WP, rather than I, which was disproportionately powerful. In contrast to 1981, it was the loss of support from WP that accompanied the government's fall.

results suggest that Fianna Fáil now has greater power than either of these previous governments; and would still have even if it lost 5 TDs to Fine Gael. However, in our view, this is not the whole story. In both of the short-lived Dáileanna Independents and the Workers' Party had a share of power which drastically exceeded their support among the electorate. By contrast, there is no reasonable prospect of these groups enjoying similar power in the current Dáil. These observations suggest that Fianna Fáil could comfortably remain in office should they so wish.

The important feature of the 1987 Dáil is the fragmentation of the opposition, with Fine Gael, Labour, the Progressive Democrats and the Workers' Party all vying to form a majority with Fianna Fáil. This competition drives each of their Shapley values down, as well as diminishing the power of the Independents. Fine Gael's conditions for supporting the government therefore seem to be implausibly strong. It is important to emphasize that this is not simply a consequence of the emergence of the Progressive Democrats and the break-up of the Fine Gael-Labour group. We have demonstrated that the Workers' Party and Independents would be sole beneficiaries from the formation of a Fine Gael-Labour-Progressive Democrat group.

Comparisons between Shapley values and counting measures have to be treated with caution. Nevertheless, the sample of computations suggests that the counting measure is mostly deficient in attributing low power to small groups in hung Dáileanna. It is this feature which underlies the misleading analogy between the current Dáil and its minority predecessors.

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