

Game theory: six steps to playing strategic games in Formula 1 Racing strategy

Step 1

Identify the players. It is important to identify the potential as well as the actual players in any game. The three main players are listed in Case 5.1 But notice that there are other potential players in two areas: new F1 Racing teams wanting to take part and new racing circuits that want to host an event.

Step 2

Analyse their strengths and weaknesses. Include potential links to outside influencers and complementors – see Chapter 3. For Formula 1 Racing, some pointers are given in Case 5.1 but more detail would be needed in practice. Who really has the bargaining power? For example, can F1 Racing exist without Ferrari? If not, then Ferrari has immense strength.

Step 3

Establish the extent to which the game will be played with sequential or simultaneous moves. In practice, most games are played with both. The significance of this analysis lies in its consequences for the way that the game will develop:

- Sequential moves mean that one of the players acts and then another responds, e.g. a game of golf or serving in tennis.
- Simultaneous moves mean that the players act without knowing what action the others are taking at the same time, e.g. a swimming tournament.

In Formula 1 Racing, there were some simultaneous negotiations taking place – for example, between the various racing car companies in FOTA. But once a common stance had been agreed on the possibility of leaving the existing F1 scene, the negotiation between FOTA and the FIA then became sequential.

The next step depends on whether simultaneous or sequential moves represent the main way forward.

Step 4A: Sequential moves only

For sequential moves, plot out the consequences of each move – often called a game tree – and choose the best outcome. Then reason backwards from this on the best way to achieve this outcome.

At the time of writing on Formula 1 Racing, the immediate best outcome for the racing teams had been established. However, other participants were plotting their next moves – for example, News Corporation was interested in acquiring ownership of the Formula One Group in order to gain exclusive television global rights for its networks like Fox and Sky. However, at the time of writing, Bernie Ecclestone had dismissed this possibility. But perhaps Bernie was simply bargaining by making it harder to negotiate with F1 Racing? This is all part of game theory.

Step 4B: Simultaneous moves only

For simultaneous moves, plot out all the possible outcomes in the form of a table – often called a payoff table – and then undertake the following in order:

- 1 Identify any *dominant strategy*, i.e. one that is clearly better than the competition. If one can be found, play it.
- 2 If no dominant strategy can be found, identify any *dominated strategy*, i.e. one that is clearly worse than the competition. If it can be identified, eliminate it from further analysis.
- 3 If there is no dominant or dominated strategy, seek other outcomes – often called a *Nash Equilibrium* – that represent each player's best judgement of its own interests. Essentially, here, each player understands the strategies of the opponent but cannot improve on his or her own position by making an alternative choice.

In the case of F1 Racing, it might be thought that the dominant strategy was for FOTA to leave the existing organisation and set up on its own: F1 Racing could not exist without the teams. However, this had the disadvantage that it would take time and considerable resources. Moreover, such resources were outside the immediate core competencies of the F1 Racing teams who were stronger on racing car design than track management. Equally, most sports organisations need a professional and well-respected governing body like the FIA, so arguably this latter organisation has considerable power. This begins to explain why someone like Bernie Ecclestone was so important in bringing the various parties to the table. Given that a dominant strategy by one party was so difficult, this begins to shape the way that the game needed to be played in F1 Racing.

Step 5

Consider how to signal moves to the other players. The best play may not be an open bidding process against an opponent because this invites an aggressive direct response which may be expensive. Even in simultaneous games, a better outcome may be possible if players are not presented with simple stark choices – many supposedly impossible games can be solved by allowing the players to signal to each other.

In F1 Racing, many signals were being exchanged between the players about re-negotiating the Concorde Agreement and about new racing tracks being chosen. The three main players were beginning to set out their positions at the time of writing this case.

Step 6

Begin playing. It is vital to reassess the status of the game and its outcomes because the essence of the game is that it will alter as it progresses.

ⁱ References for GEC Marconi case: General Electric Company plc Annual Report and Accounts for 1998; *Financial Times*, 27 June 1998, p6, Weekend Money section; 24 July 1998, p21; 4 September 1998, p11; 5 December 1998, p21; 9 December 1998, p26; 10 December 1998, p15; 19 December 1998, p6 Weekend Money section; 14 January 1999, p31; 19 January 1999, pp1, 25, 27; 21 January 1999, p21; 23 January 1999, p2; 26 February 1999, p19.