

Brexit and game theory: A single-case analysis

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Abstract

The following essay was written in response to the task of researching one political issue, using one theory and one method. The issue chosen is Brexit negotiations, the method is single-case analysis and the theory is game theory. The essays thesis is that Britain will achieve less of its objectives during the negotiations given that Britain has more to lose and less leverage than Brussels. The essay goes on to predict that Britain will be forced to accept the condition of the free movement of peoples in exchange for remaining within the EU single market. This predication is supported through the creation of a pay-off matrix, which objectively seeks to measure the pros and cons of Britain's and Brussels' decisions regarding freedom of movement and free trade, *ceteris paribus*. Ultimately, given both actors are to be considered utility maximising agents, one can assume that Britain will receive a worse deal than Brussels following Brexit.

Introduction

This essay will argue that Britain will receive a worse deal than Brussels in negotiating 'Brexit'. This conclusion will be reached after considering the case of Brexit through the method of single-case analysis and by utilising game theory. Whilst it is predicted both Britain and Brussels will be worse

off from Britain's departure, Britain has less leverage and, ultimately, more to lose than Brussels, leading to the prediction that Britain will achieve less of its objectives during negotiations. There are obviously many issues to be agreed upon between the two parties, however, this essay will only consider the two most consequential: freedom of movement and free trade, *ceteris paribus*. After analysing the pay-off to each party in adopting or not adopting either of these conditions, it is concluded that Britain will be forced into a less desirable position by Brussels, and receive a worse deal.

Britain and Brussels have different objectives in negotiating Brexit. It is generally considered that Britain does not want freedom of movement and does want free trade. Britain's decision to leave the European Union (EU) was as much based on factual arguments as idealised visions of independence. Historically, this is typical of secessionist movements as a whole, that 'the right to secede flows naturally from principles of self-government such as those embodied in the American Declaration of Independence and the French Declaration of the Rights of Man and of the Citizen. This distinguished lineage affords secessionist claims an undeserved opportunity to stake out the moral high ground'.¹ The leave campaign prevailed not so much based on rational arguments, but on vague arguments of sovereignty, embodied in their slogan 'Take back control'. It is in Britain's best interests to remain within the EU single market. In the worst case, United Kingdom (UK) exports would face the EU external tariff, along with being excluded from the EU–United States free trade deal known as the Transatlantic Trade and Investment Partnership (TTIP). Further, the UK 'would lose our preferential access to 53 markets outside the EU with which the EU has Free Trade Agreements. This would take years to renegotiate, with no guarantee that the UK would obtain terms as good as those we enjoy today'.² In contrast, the UK generally does not want to remain within the EU freedom of movement policy. Many Britons' decision to vote 'leave' was in protest against the 'open borders' of the EU.³ As put by Matthew Goodwin of the University of Kent, 'The referendum is as much about immigration as it is about Britain's relationship with

1 Lea Brilmayer. 1991. 'Secession and self-determination: A territorial interpretation.' *Yale J. Int'l L.* 16: 177.

2 UK Government. 2016. *Alternatives to membership: possible models for the United Kingdom outside the European Union.* (March). London, UK: Williams Lea Group.

3 Nigel Farage. 2016. 'Why You Should Vote For Brexit This Thursday'. *Independent*, 20 June.

Europe'.⁴ Britain largely feels exploited by the EU's freedom of movement condition, considering that roughly 1.2 million British citizens live in Europe and 3.1 million Europeans live in Britain under the freedom of movement agreement.⁵ Thus, Britain's objectives in negotiating Brexit are to achieve free trade and no freedom of movement.

Brussels, on the other hand, wants Britain to keep freedom of movement and generally wants to keep the status quo of free trade. As put by European Commission President Jean Claude Juncker: 'There is a clear link between access to the single market and the basic principles of the internal market, especially the free movement of workers'.⁶ That '[t]he EU has made clear that full access to the Single Market can only come with the acceptance of the free movement of people'.⁷ The free movement of workers is proclaimed in Article 45 of the Treaty on the Functioning of the European Union.⁸ Under this treaty, European citizens have the right to work in another EU country without needing a work permit, reside there, stay there after employment has finished, enjoy equal treatment with nationals in access to working conditions and all other social and tax advantages. These two principles – freedom of movement and free trade – are mutually inclusive. For example, countries in the European Economic Area (EEA) such as Norway make large payments to the EU, observe all regulations without having a say in their creation and, critically, accept free movement of labour to gain access to Europe's single market.⁹ Thus, it would appear Britain will not achieve its objectives given historical precedent. This intuition is finalised through the application of game theory.

4 M. Goodwin and C. Milazzo. 2015. *Ukip: Inside the Campaign to Redraw British Politics*. Oxford: Oxford University Press.

5 Sergio Carrera. 2005. 'What does free movement mean in theory and practice in an enlarged EU?' *European Law Journal* 11(6): 699–721.

6 Financial Times. 2016. 'Donald Tusk Says UK Set To Begin Brexit Early In 2017.' *Financial Times*, 17 September.

7 UK Government, *Alternatives to membership: possible models for the United Kingdom outside the European Union*.

8 Treaty on the Functioning of the European Union (2007).

9 UK Government, *Alternatives to membership: possible models for the United Kingdom outside the European Union*.

Creating the pay-off matrix

Once one defines the objectives of Britain and Brussels, it is possible to assign values to their success or failure. For Brussels, one can assign 1 utl (utility) for achieving free trade and another for freedom of movement respectively, and negative 1 utl for no free trade and no freedom of movement. For Britain, one can assign 1 utl for achieving free trade and no freedom of movement, and negative 1 utl for achieving no free trade and freedom of movement. This simple artificial value system results in the following pay-off matrix:

Matrix 1		Brussels	
		No Free Trade	Free Trade
Britain	No Freedom of movement	-2,0	0,2
	Freedom of movement	0,-2	2,0

In this pay-off matrix, the dominant strategy for Britain is to pursue no freedom of movement, as it has the potential to result in the highest potential pay-offs of 0 or 2 utls, compared to the alternative of negative 2 or 0. Brussels has the dominant strategy of pursuing free trade as it results in the higher pay-off of 0 or 2 utls compared to negative 2 or 0. When one applies an even value system of 1 utl to each successful outcome as above, Brexit negotiations resemble the ‘chicken game’.

It is noted of the chicken game that ‘if both parties in marital conflict choose escalation to full conflict in order to get their way (mutual defection) [no freedom of movement/no free trade], this may be very harmful to both, so trying to reach a compromise (mutual cooperation) [freedom of movement/free trade] is usually preferable over mutual defection’.¹⁰ Under ‘the chicken game’ approach, Britain would pursue the strategy of no freedom of movement in the hope that Brussels will ‘swerve’ and offer free trade, whilst Brussels pursues the strategy of no free trade in the hope that Britain will ‘swerve’ and accept freedom of movement in return for free trade. This game is particularly applicable as a strict time frame has been set to complete negotiations.

¹⁰ Peter De Heus, Niek Hoogervorst and Eric Van Dijk. 2010. ‘Framing prisoners and chickens: Valence effects in the prisoner’s dilemma and the chicken game.’ *Journal of Experimental Social Psychology* 46(5): 736742.

Under article 50, Britain has two years to negotiate a deal. Two years, however, is considered not nearly enough time to complete negotiations, that '[i]t would take up to a decade or more to negotiate a new agreement with the EU and to replace our existing trade deals with other countries' means that the chicken game of Brexit negotiations would likely end in disaster.¹¹ This would most likely lead to a stalemate whereby Britain refuses freedom of movement and Brussels refuses free trade. That, 'if we [the UK] could not reach agreement with the EU on a new arrangement, our trading arrangements would revert to WTO rules. This would provide the most complete break with the EU. It does not entail accepting free movement, budgetary contributions or implementing EU rules. But it would cause a major economic shock to the UK'.¹² In terms of the model, it would result in negative 2 utls for Brussels and 0 utls for Britain.

In the scenario of an even pay-off for each achieved objective as illustrated, neither party has an advantage in negotiations, as there is an incentive to hold off forfeiting either freedom of movement or free trade before the other party. Thus, if this were reality, it is unlikely that either country would gain an optimal outcome in negotiations.

Complicating the pay-off matrix

To represent Britain's real power, we must reassign the number of utls to the success or failure to different outcomes. For Britain, a more accurate picture would be to assign negative 5 utls to no free trade, given how it would cripple the UK's economy and given that HM Treasury predicted that British gross domestic profit (GDP) would grow by 7 per cent less than if Britain remained in the EU.¹³ Two utls will be awarded to Britain for gaining free trade as it is comparatively not much of a success given it already occurs: 'The UK Government believes that no existing model outside the EU comes close to providing the same balance of advantages and influence that we get from the UK's current status inside the EU'.¹⁴ In terms of freedom of movement,

11 UK Government, *Alternatives to membership: possible models for the United Kingdom outside the European Union*.

12 Ibid.

13 UK Government. 2016. *HM Treasury analysis: the immediate economic impact of leaving the EU*. (May). London, UK: Williams Lea Group.

14 UK Government, *Alternatives to membership: possible models for the United Kingdom outside the European Union*.

whilst it is a policy that has met with passionate disapproval by the British public, it is less consequential than free trade. Thus, 1 utl will be given to Britain for no freedom of movement and negative 1 utl will be awarded for freedom of movement.

Vice versa, Brussels has significantly more leverage over Britain in negotiations than depicted in Matrix 1. Two utls will be awarded for achieving free trade and freedom of movement respectively, with negative 1 utl being awarded for either of these not being employed. This allocation of negative 1 utl is justified on the grounds that ‘if Britain got such a deal, it would have to be offered to other EEA countries’ and losing Britain from the single market would not benefit Brussels.¹⁵ The revised pay-off matrix looks as follows:

Matrix 2		Brussels	
		No Free Trade	Free Trade
Britain	No Freedom of movement	-2,-4	1,3
	Freedom of movement	1,-6	4,1

The updated matrix illustrates the significant advantage Brussels holds over Britain in negotiations. Ultimately, as Brussels holds the ability to grant or not grant free trade, and considering Britain’s reliance on it, Brussels is able to manipulate Britain.

Playing the game

A key aspect of negotiations is freedom of information. That is, ‘in a two-person game of perfect information, the players move one at a time, and when choosing a move each player knows the move(s) that have preceded it’.¹⁶ As each party can openly make threats before the deal is struck, the more powerful party would be able to coerce the weaker party. In practice, this would see Brussels threaten Britain with no free trade unless freedom of movement is guaranteed. If Brussels’ threat was not called and Britain accepted no free trade for no freedom of movement, the pay-off of negative 2 utls (Brussels),

15 The Economist. 2016. ‘Article 50 Ways To Leave Your Lover’. *The Economist*, 2 July.

16 Andrew M. Colman. 2013. *Game theory and its applications: In the social and biological sciences*. Boston: Psychology Press.

negative 4 utls (Britain) would be achieved. Whilst this is a possibility, we can assume that each party is a utility maximising, rational agent. That players 'are assumed to think carefully about their choices and the possible choices of other players'.¹⁷ As such, Britain would prefer 1 utl to negative 4, as 1 utl is gained from achieving freedom of movement and free trade whilst negative 4 is gained from no free trade and freedom of movement. Thus, as negotiations unfold, it can be assumed that Britain and Brussels will keep the status quo of free trade and freedom of movement, *ceteris paribus*.

Conclusion

This essay has argued that Britain will achieve less of its objectives than Brussels during Brexit negotiations. This essay has only considered the two most pressing issues regarding Brexit, that of freedom of movement and free trade. By assigning values to each condition for each party, it is possible to create a pay-off depicting each outcome. Thus, through game theory, this essay has attempted to prove that Britain will receive a worse deal than Brussels. This conclusion is affirmed in a report presented to parliament, that 'in return for full access to the EU's free-trade Single Market in key UK industries, we would have to accept the free movement of people'.¹⁸

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18 UK Government, *Alternatives to membership: possible models for the United Kingdom outside the European Union*.

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