


Testing the Effectiveness of Scenario Generating Techniques: Forecasting Outcomes of the Refugee Crisis

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Overview

- Forecasting scenarios in intelligence analysis
 - Scenario generation analytic techniques
 - Cone of plausibility
 - Simple scenarios
 - Individual brainstorming
 - Present study aims
 - Method
 - Proposed analysis
 - Potential implications
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Forecasting Scenarios in Intelligence Analysis

- ▶ Intelligence analysis includes forecasting potentially important future developments in areas of interest to decision-making stakeholders
- ▶ This requires analysts to generate scenarios about the future, e.g.,
 - What will happen if the UK decides to leave the EU?
 - What will be the consequences of UK airstrikes in Syria?
 - What will happen if oil prices remain low?

Scenario Generating Analytic Techniques

- ▶ Analysts are provided with training in specific scenario generating analytic techniques

(Marrin, 2008)

- ▶ These aim to encourage ‘good’ practice in order to avoid errors and biases in thinking

(Heuer & Pherson, 2014)

- ▶ However, the efficacy of these techniques has not been empirically tested

(Dhami, Belton, & Careless, 2015)



Present Study Aims

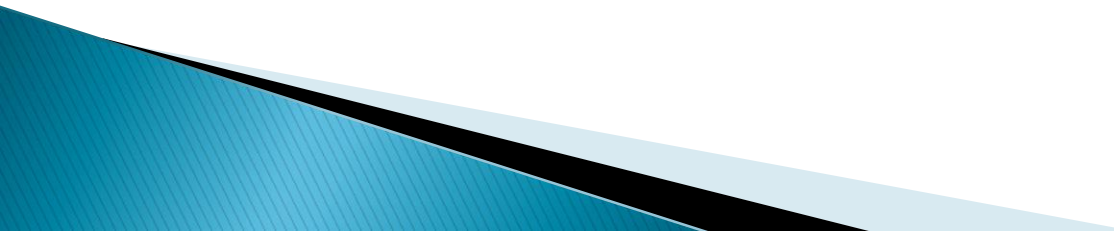
- ▶ The main aim of the present study is to measure and compare the effectiveness of three scenario generating techniques:
 - Cone of plausibility
 - Simple scenarios
 - Individual brainstorming
- ▶ According to Dhimi et al. (2015) all of these techniques have limitations e.g.,
 - relying on analysts' to have expertise across domains, to think laterally, and objectively

Cone of Plausibility

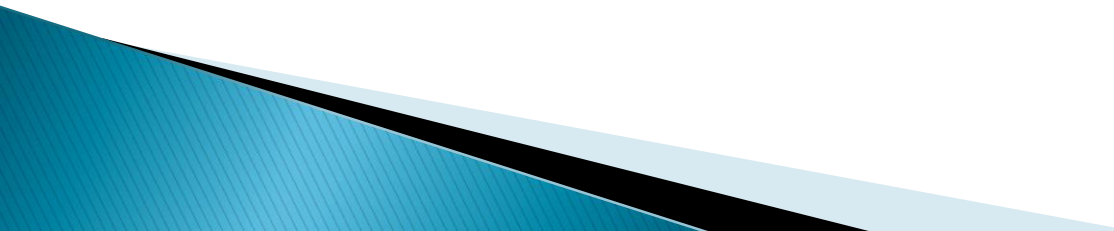


Step 1: Define the question to be answered

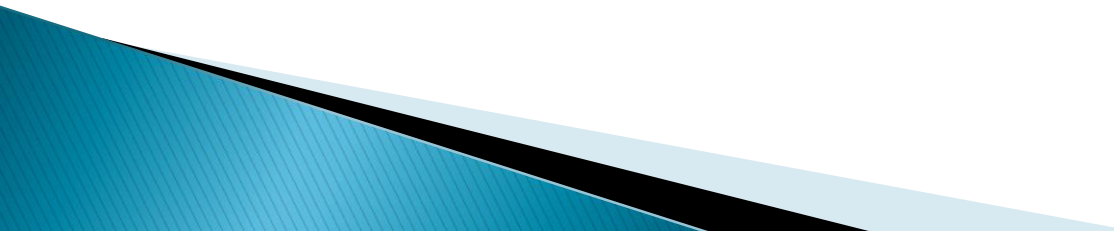
“What are the implications for the UK by 2020 if it leaves the EU in 2017 following a “leave” vote in the 2016 referendum?”



Step 2: Identify key drivers of the issue and make assumptions about how they are likely to develop

- ▶ Trade with the EU
 - ▶ Trade with other countries
 - ▶ Immigration
 - ▶ UK world influence
 - ▶ UK sovereignty
- 

Step 3: Generate a “baseline” future scenario by extrapolating the assumptions made in Step 2, along with 1–3 alternative scenarios based on changing one or more of the assumptions. Include at least one optimistic “opportunities” scenario.



Drivers

Assumptions

Trade with EU	Will decrease & cost more
Trade with other countries	Will gradually increase
Immigration	Will decrease significantly
UK world influence	Will decrease significantly
Economic regulation	Will be reduced

Scenario 1

Free trade deal with EU and stronger ties elsewhere create a respected, prosperous UK. Less immigration frees pressure on public services and wages.

Baseline scenario

Costs of trading with EU rise. Improved trade with other countries compensates but overall economy weakens a little. Less economic regulation boosts business but world influence drops. Less immigration broadly neutral.

Scenario 2

Less trade with EU & too little power to make good deals with others: economy suffers. Fewer immigrants create an aging population.

Wildcard

Scotland leaves with oil and rejoins EU; UK fractures and economy slows.

Simple Scenarios



Step 1: Define the focal issue and make a list of forces/factors/events that are likely to influence that issue

Focal issue

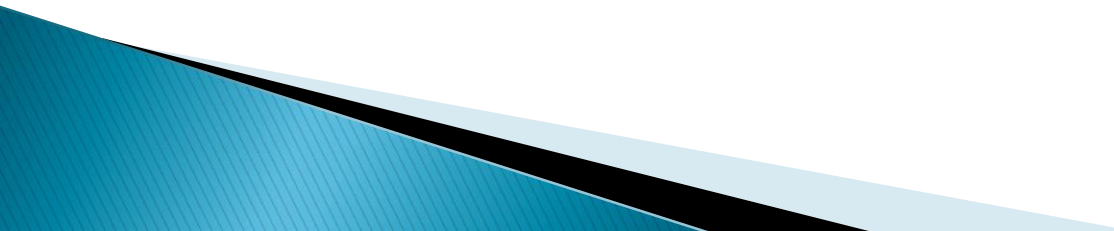
“What are the implications for the UK by 2020 if it leaves the EU in 2017 following a “leave” vote in the 2016 referendum?”



Influential forces/factors/events

- Overall damage done to UK economy
- Loss of free trade – EU is UK's biggest market
- Businesses (and jobs) might leave the UK
- Investors might leave the UK
- Reduced immigration could be good or bad for the economy
- Freedom from unelected Brussels bureaucrats
- UK regains its sovereignty
- Risk to UK security?
- Avoid EU's goal of increasing integration/control
- Loss of common agricultural policy (good or bad?)
- Less economic regulation (good or bad?)
- Improved trade with Commonwealth etc.
- Loss of EU-coordinated anti-terror activities
- Can't make good deals abroad without power of EU bloc
- Big loss of UK world influence – implications?
- UK saves 0.5% GDP in EU payments
- Closer social/political relations with non-EU countries e.g. China, India, Brazil

Step 2: Organize items into 5–10 “affinity groups” (i.e. groups of related/similar items) that represent key drivers of how the focal issue will develop; label and describe each driver

- ▶ Trade with the EU
 - ▶ Trade with other countries
 - ▶ UK world influence
 - ▶ Immigration
 - ▶ Security
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Step 3: Generate a matrix with drivers down the left side and possible scenarios across the top. Each scenario is given a value for each driver (where + = strong/positive, - = weak/negative, and blank = neutral/no change)

	Best case	Worst case	Baseline scenario	Extra scenario (Scotland leaves; UK fractures)
Trade with EU		-	-	-
Trade with other countries	+	-	+	+
UK world influence		-	-	-
Immigration	+	-		
Security	+	-		-

Step 4: Review the matrix and if any drivers do not discriminate between scenarios, they should be deleted or amended

The driver “immigration” did not discriminate and so it was amended to read “Effect of low immigration”

	Best case	Worst case	Baseline scenario	Extra scenario (Scotland leaves; UK fractures)
Trade with EU		-	-	-
Trade with other countries	+	-	+	+
UK world influence		-	-	-
Effect of low immigration	+	-		
Security	+	-		-

Step 5: Write a 1–page story for each scenario describing how that future looks and how it might come about

For ex: the story for the baseline scenario might start as follows:

“Immediately upon exit, the UK is forced to negotiate a free trade agreement with the EU. The UK is an important EU customer and so secures an acceptable deal, but the costs of selling to EU consumers rise somewhat and trade decreases as a result. New trade deals with other countries, especially the Commonwealth and developing economies such as China and Brazil, compensate to some extent but overall the UK economy weakens a little, with income falling by perhaps 2–3% of GDP. No longer part of the power EU bloc, the UK’s world influence drops, especially in the eyes of the USA and China. Immigration levels drop sharply, reducing pressure on UK housing and public services but leaving the country with reduced tax revenues and an increasingly aging population...”

Step 6: Generate a list of indicators or “observables” for each scenario and monitor the indicators on a regular basis

In this worked example, the same data could be monitored over time to determine which of the scenarios is most likely to develop e.g., trade figures, GDP, school capacity levels ...

Individual Brainstorming

Step 1: Choose a comfortable place to think and minimize distractions



Step 2: Clearly define the focal question

“What are the implications for the UK by 2020 if it leaves the EU in 2017 following a “leave” vote in the 2016 referendum?”

Step 3: Write down as many thoughts as possible in response to that question, however odd they may sound. Do not self-censor.

- Overall damage done to UK economy
- Loss of free trade – EU is UK's biggest market
- Businesses (and jobs) might leave the UK
- Investors might leave the UK
- Scotland might secede and UK will fracture (Chinese/Mid-East investment in Scotland = security risk for rest of UK)
- Reduced immigration could be good or bad for the economy
- What happens to cheap EU flights/holidays?
- Political tensions with EU? Implications?
- Freedom from unelected Brussels bureaucrats
- UK regains its sovereignty
- Risk to UK security?
- Avoid EU's goal of increasing integration/control
- Loss of common agricultural policy (good or bad?)
- Less economic regulation (good or bad?)
- Improved trade with Commonwealth etc.
- Schools teach Mandarin instead of French/German
- Lose opportunities to work/study abroad
- No reciprocal free health care when in EU
- E.g. chorizo and BMWs may cost more
- Loss of coordinated anti-terror activities
- Can't make good deals abroad without power of EU bloc
- Big loss of UK world influence – implications?
- Collapse of EU eventually results in WWII across Europe or invasion from Russia?
- UK saves 0.5% GDP in EU payments
- Closer social/political relations with non-EU countries e.g. China, India, Brazil

Step 4: Arrange responses into appropriate categories in order of importance to the issue of interest. Consider using a mind map to arrange and develop ideas.

See the example mind map next, with responses arranged numerically according to their importance

Political

1. UK regains its sovereignty.
2. Closer social/political relations with non-EU countries e.g. China, India, Brazil.
3. Big loss of UK world influence – implications?
4. Political tensions with EU? Implications?
5. Risk to UK security? E.g. no Europol.
6. Loss of coordinated anti-terror activities.
7. Freedom from unelected Brussels bureaucrats.
8. Avoid EU's goal of increasing integration/control.
9. Scotland might secede and UK will fracture (Chinese/Mid-East investment in Scotland = security risk for rest of UK).
10. Collapse of EU eventually results in WWII across Europe or invasion from Russia?

Economic


1. Overall damage done to UK economy.
2. Loss of free trade – EU is UK's biggest market.
3. UK saves 0.5% GDP in EU payments.
4. Businesses (and jobs) might leave the UK.
5. Investors might leave the UK.
6. Reduced immigration could be good or bad for the economy.
7. Less economic regulation (good or bad?)
8. Loss of common agricultural policy (good or bad?)
9. Can't make good deals abroad without power of EU bloc.

UK leaves EU

Social/other

1. Lose opportunities to work/study abroad
2. No reciprocal free health care when in EU
3. Schools teach Mandarin instead of French/German
4. What happens to cheap EU flights/holidays?
5. E.g. chorizo and BMWs may cost more

Method

- ▶ Between-subjects design with technique as the independent variable with three levels (i.e., Cone of plausibility, simple scenarios, individual brainstorming)
 - ▶ Participants were final year UG students at Bilkent Uni
 - ▶ Participants underwent a 25min training module
 - ▶ Participants then performed a 75min scenario generating task
 - ▶ We will measure both the quantity and quality of the scenarios
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We want you to imagine that the Turkish government decides to ban all Syrian refugees from entering Turkey, effective immediately.

Using the scenario generation technique you have been taught, we would like you to think about the scenarios (as many as you can) that might occur as a consequence of this policy decision within the next 6 months. Please use your own knowledge, and, if you want, you can also read some of the background information on the Syrian refugee crisis that follows.

WRITE DOWN EACH SCENARIO IN AS MUCH DETAIL AS YOU CAN IN ENGLISH.


USE A SEPARATE PAGE FOR EACH SCENARIO.

NUMBER YOUR SCENARIOS IN THE ORDER THAT YOU GENERATED THEM.



Proposed Analysis

- ▶ The data will be independently double-blind coded by two trained raters
- ▶ We will measure:
 - The *number* of scenarios generated by each participant
 - The *order* in which scenarios were generated

- The *quality* of the scenarios generated (as per criteria identified by four analyst trainers working in the defence and security areas) will be scored on 5-point scales labelled at each point (i.e., very high, high, medium, low, very low):
 - *Detail* (i.e., description of drivers, outcomes, assumptions, and provision of relevant background information)
 - *Redundancy* of information (i.e., repetition)
 - *Plausibility* (i.e., link between drivers and outcomes, and assumptions)
 - *Validity* (i.e., accurate in current socio, economic, legal, political context, as well as past history)
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- Internal *coherence*/logical flow (i.e., no inconsistency/contradictions)
- *Completeness* (i.e., considered outcomes for all identified drivers, along with assumptions)
- Identification of *2nd order* and *3rd order* effects
- Identification of '*turning points*' (i.e., where decisions can effect events in the scenario)
- Distinguishing between expected v. *unexpected* outcomes

The *range* of the scenarios will be scored on a 3–point scale (from 'all very similar, through 'some similar/some different', to 'all very different')

Potential Implications

- ▶ Decision scientists have called for an evidence-based approach to intelligence analysis

(Dhami, Mandel, Mellers & Tetlock, 2015)

- ▶ Our research can inform
 - Future analytic training, and
 - Performance assessment of analysts, as well as
 - Development of new scenario generating techniques