Appendix 2 Methodology and approach

Introduction

The CSM offers a look ahead at what can be expected in the field of international relations and international security over the next five years. Giving such a preview is a difficult task. In some cases, predictions can be made with some certainty, for example, if sufficient information is available, the causal relationship between a limited number of variables is obvious, and if one is not looking too far ahead. In many cases, however, particularly in international relations, such conditions rarely apply. Reliable information is by no means always available and there is often a large number of variables that determine the future. What is more, some developments can be hard to quantify. The EU acknowledges this in its Global Strategy: 'Global trends are neither linear nor preordained, but often the product of shocks and human choices. This highlights the uncertainty that lies ahead (...).'[1]

Underlying the Clingendael Strategic Monitor 2017 is a new method: the Clingendael Structured Expert Approach. This was specifically developed for the CSM in the spring of 2016 and uses evidence-based forecasting principles to improve the reliability of estimates and to reduce the potential bias of experts. An extensive explanation is given below (the detailed methods are not publicly available, but are provided to the client and are open to peer review).

Forecasting methods, types and principles

Broadly speaking, there are two approaches to evidence-based forecasting: a statistical and an expert approach.[2] The statistical approach identifies trends on the basis of measurable and numerical data. In an expert approach, experts identify trends from qualitative and quantitative data. Both approaches have advantages and disadvantages. Figures are objective, but have the disadvantage that they often do not tell the whole story: some developments are hard to express in numbers. Take cyberespionage, for

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1   Missiroli, A. 2015. *Towards an EU Global Strategy: Background, Process, References*, European Union Institute for Security Studies, 128.

2   Armstrong, J.S. (ed.). 2001. *Principles of Forecasting: A Handbook for Researchers and Practitioners*, International Series in Operations Research & Management Science, 9.

example: experts suspect that this occurs on a large scale, but exact figures cannot be provided, because companies and governments are in most cases not even aware that they are being spied on. Experts, on the other hand, are often able to identify such developments, but are vulnerable to bias. Clingendael uses an expert approach for forecasting purposes, relying on its own very well-established experts who have access to a wide network.

The expert forecast is based on a trend and shock analysis, a common combination in forecasting studies.[3] For the trend analysis, the CSM focuses on more or less predictable time series (both qualitatively and quantitatively), using an important principle of forecasting: it looks back twice as far as it looks ahead.[4] In other words, the Monitor looks at the trend over the past ten years in order to say something about the next five years. The trend analysis thus forms the basis of the forecast. At the same time, it is clear that events can have a considerable influence on forecasts, and on trend developments in particular. For this reason, Clingendael also uses a shock analysis. This is used to encourage the experts to consider how confident they are about their trend forecast: what possible events could affect the trend?

To this end, the method uses five principles that have been shown to improve expert estimates, and above all to minimise expert bias:

1) <u>Carrying out a disaggregated analysis</u>: In other words, narrowing down the questions. Some questions seem almost impossible to resolve. Dividing bigger questions into smaller ones makes it easier to discern which elements may or may not be knowable. A commonly used example is the question: How many piano-tuners are there in Chicago? At first sight, this question seems very difficult to answer without the help of the Internet or a phone book. But dividing the question into smaller questions which can be answered with reasonable estimates enables an estimate to be made nevertheless. For example, by estimating how many pianos there are in Chicago (by determining how many people live in the city, how many of them have a piano and in how many other places there is a piano), how often pianos need tuning, how long it takes to tune a piano and how many hours per year a piano-tuner works, one can ultimately still succeed in making a fairly good estimate of the number of piano-tuners in Chicago.[5]

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3   World Economic Forum, The Global Risks Report 2016, http://www3.weforum.org/docs/Media/TheGlobalRisksReport2016.pdf.

4   For example Saffo, P. *Six Rules for Effective Forecasting*, 2007.

5   This example is taken from: Tetlock, P.E. and Gardner, D. 2016. *Superforecasting: The Art & Science of Prediction*, Random House Books, 110-114.

2) <u>Reasoning from a base rate</u>: As indicated above, the trend analysis of a threat starts from a major trend on the basis of the last ten years (e.g. there are, on average, two terrorist attacks per year in the EU, and this number is rising slightly). Factors that are related to the main trend are then considered (e.g. the number of foreign fighters), the question being to what extent the estimates need to be adjusted (see Figure 1). The trends are derived from the Clingendael Trend Database (this is explained in more detail below).

Figure 1   Forecasts: base rate and factors
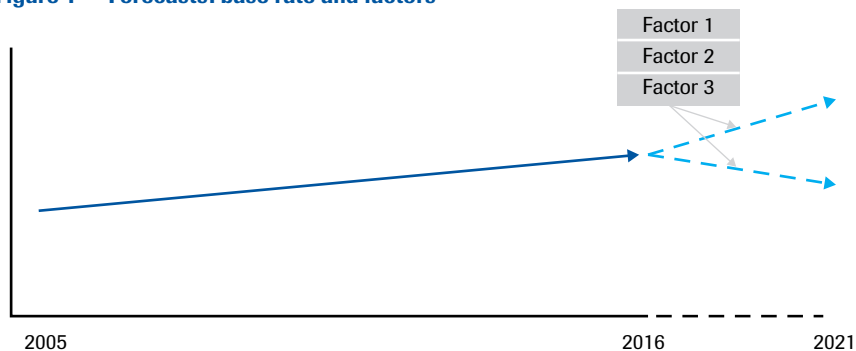
3) <u>The use of validated indicators and checklists</u>: A simple practice to avoid inconsistency and bias is the use of predefined and validated indicators and checklists. The use of indicators will prevent developments from being overlooked. In addition, the use of predefined indicators makes it possible to follow developments over the years and thus monitor them effectively.

4) <u>Requiring authors to make precise and traceable estimates</u>: Estimates should not only be traceable (via the base rate method, see point 2), but should also be formulated in precise terms. What does it mean if an author is almost certain of the occurrence of a threat? Numerous probability indications are therefore clearly defined in the CSM. This not only helps to create clarity, but ensures that a prediction can be evaluated better in the future.[6]

5) <u>Using the wisdom-of-the-crowd</u>: Making good forecasts is related to collecting as much information as possible. Obviously, one expert cannot possibly have access to all information. A larger group of experts is therefore used in order to improve the estimates. An example of this is the use of the Clingendael Expert Survey.

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6   Seven options were given for the probability indications, each clearly defined: certainly (100%), almost certainly (93%), probably (75%), as likely as not (50%), probably not (30%), almost certainly not (7%) and impossible (0%).

Methods

The above principles are systematically incorporated into four mutually reinforcing and complementary methods.

1.   Clingendael Trend Database

For the threat assessment, use is made of the Clingendael Trend Database, a validated set of quantitative and, where necessary, qualitative indicators (as not everything can be expressed in figures). This dataset ensures that the estimate is reproducible. The main indicators are shown schematically in a table for each of the ten threat assessments (see the underlying theme studies).

The validation of the Clingendael Trend Database took place in three phases. First, a summary was made of all indicators used in the past five years in previous editions of the Clingendael Strategic Monitor and other publications. In the second phase, each expert was interviewed: what are the determining factors? The set of indicators was then further adjusted. In the third phase, while writing the contributions, the authors had the opportunity to indicate whether any further additions were needed.

2.   Clingendael Expert Survey

Two types of uncertainty may be distinguished: there are things we know that we do not know (known unknowns), but there are also things of which we do not know that we do not know them (unknown unknowns). This latter type is particularly characterised by fundamental uncertainty: for some things, there is simply no way to predict whether they will occur or not. A famous example of this is the statement made by J.M. Keynes immediately after the First World War: he said that it was impossible for him to predict whether there would be another European war, or who the US president would be in 1964.[7] More recently, literature has appeared about 'black swans': unexpected events with major consequences, which confirm Keynes' ideas.[8] It is sometimes claimed that international relations are particularly plagued by these unknown unknowns: commonly cited examples include the fall of the Berlin Wall and the 9/11 attacks in the US.[9] The situation is different with the known unknowns, however: analysts have some insight into what might happen, without being able to say exactly how things will turn out. One example is that it is known that large groups of unemployed young people without opportunities for development (a so-called 'youth bulge') increase the likelihood

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7   Keynes, J.M. 1936. *The General Theory of Employment, Interest, and Money*, Palgrave Macmillan, 214.

8   Taleb, N.N. 2007. *The Black Swan*, Random House.

9   Paté-Cornell, M-E.L. 2012. 'On "Black Swans" and "Perfect Storms": Risk Analysis and Management When Statistics Are Not Enough', *Risk Analysis*, 32(11).

of civil conflict. Analysts can predict such 'youth bulges' and thus assess whether there is any chance of a civil conflict.

The CSM focuses on the known unknowns, but a trend estimate can be affected by a shock such as a global financial meltdown or the total disintegration of the European Union. To identify and assign a score to such shocks, the CSM uses the Clingendael Expert Survey, a questionnaire administered worldwide to 2,500 scientists in all areas under consideration (trade, energy, climate, etc.). The Expert Survey is a wisdom-of-the-crowd technique which above all identifies possible shocks and subsequently assigns probability and impact scores to them. In addition, the survey is a horizon-scanning tool for identifying new security challenges.

3.   Structured Focused Comparison

The qualitative Structured Focused Comparison method provides the basis for the international order analysis, in which five qualitative indicators are used. This method is 'structured' because for each regime, exactly the same questions were asked and the same method had to be used. Authors were asked by means of a checklist to name the three most important norms and the three most important rules within the regime they were observing. They were then asked to identify the main formal and informal debates over the past ten years. They were also asked to name the most important meetings of the last ten years (and their outcomes). Finally, they were asked about the main concrete actions within the regime in the past ten years. The analysis is also described as 'focused' because only important elements are assessed (degree of institutionalisation, development of and compliance with norms and rules).

4.   Clingendael Assessment Tool

Finally, the Clingendael Assessment Tool has been designed, consisting of two controllable scoring mechanisms to support accurate assessments of the threat situation and the international order. For each theme, experts were asked to estimate the impact (see Appendix 3 Risk Assessment) of the threat and the probability of its occurrence. They were also asked to position certain information on the quadrant chart: who are the main actors and where does the regime stand on the cooperation/non-cooperation axis?

Together, this set of methods ensures transparent, evidence-based estimates and an opportunity to evaluate and elaborate further on the Structured Expert Approach.