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# Designing a Crystal Ball: Prediction Markets for a Politico-Economic Event

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## Executive Summary

Prediction Markets are speculative markets primarily created for the purpose of collecting and aggregating dispersed information and collective knowledge on topics of interest. Participating investors trade listed contracts associated with well-defined events in the future. From securities prices one can infer probability estimates in order to forecast the occurrence of future events.

The market for predicting the outcome of the constitutional ratification (MOCR) was designed on the occasion of the fiftieth anniversary of the signing of the Treaties of Rome. Globalization and significantly expanded competencies have raised the claim for considering a common basis under constitutional law in order for the community to act sovereign. Thus, both for critics and proponents it is significant to know whether the Constitution for Europe would enter into force or not. The superior aim behind MOCR was to eventually forecast the number of EU member states that would ratify the constitution before the end of 2008.

The experiment of designing a Prediction Market for a politico-economic event was supported by the *Swiss Banking Institute of the University of Zurich* and the NCCR FINRISK. This paper examines the extent to which MOCR could provide accurate forecasts of the probability of occurrence for the associated events and is organized as follows. The first chapter presents the potential effects of the Constitution for Europe when entering into force. Therefore the author provides insight into the status quo of the ratification procedure. In the second chapter the background and purposes of information aggregation mechanisms are presented illustrated by examples of previous implementations for a better understanding of how such markets can be designed. Further the author intuitively explains what makes Prediction Markets efficient predictors of future events and why market-generated forecasts are more accurate than traditional methods. Moreover sources of inefficiency are documented.

The centerpiece of this work was to put a tailor-made Prediction Market into practice. Since securities prices can be used to create probability estimates of future events, the aim of the experiment was to determine the probabilities of occurrence of each event specified and to learn first-hand about the operation of a financial market.

For this purpose the third chapter provides a detailed insight into how MOCR was designed. Participating investors were endowed with a cash amount instead of an initial portfolio as this introduced several incentives. Proposed as the market's trading platform the author set up a webpage where registered users could participate over a period of two weeks and inform themselves about the events to be forecasted. Additionally, the webpage provided the order form, where traders could enter their limit orders. As the number of daily-submitted orders was assumed not to be sufficiently large in order to guarantee immediate execution, the market maker provided an open limit order book such that traders could make informed decisions.

Indeed, preliminaries preserved the market to suffer from manipulation attempts. However, there were a few design issues indicating the market not to be perfectly efficient. Due to a lack of liquidity new information could not immediately be incorporated into securities prices. However, MOCR's forecasts implicitly were correct: Concluding results from the experiment show that the enactment of the constitution is predicted to be hardly probable, as security Sec-09 has ended with a probability of occurrence of only 1%. By contrast, the market forecasted the event that two more countries will ratify the constitution in time to be the most likely one. MOCR predicted a probability of occurrence of 19% for this event. In fact, the Constitution for Europe will not enter into force at its current configuration. In general MOCR allowed for very high returns. One investor managed to out-perform all other participants and obtained a net return of 173.25%.

As it would be extremely interesting to compare the results from MOCR with those from a succeeding market for predicting the outcome of the constitutional ratification, the author eventually provides the lessons learned in order to facilitate the set-up of a new market. As can be seen from MOCR, Prediction Markets can be efficient aggregators of information, but if the market suffers from any sources of inefficiency, validity of results is not warranted.