6. Regression Models for Addressing Questions in European Contract Law

The binary logistic regression models presented in this section form the main part of the empirical research addressed in this book. The models are used to estimate the main parameters of the Cycle of European Contract Law model with a view to predicting and describing the effects that introducing an optional European contract law would have on contracting behaviour in the European Internal Market. The binary logistic regression models help to do this by providing data that can be taken as a basis for characterising the supporters of a European contract law, the supporters of a European civil justice system and the users of the existing optional contract laws and to explain the motivations and interests of these businesses. In the final part of this book these results are used to evaluate the arguments for and against a possible optional European contract law and the different options for its implementation in European contract law.

6.1 Introduction to Binary Logistic Regression Analysis

This section provides an introduction to binary logistic regression analysis to allow the reader to gain an understanding of the rationale behind the presented models before the three binary logistic regression models are addressed in the next section. First, a brief overview of the statistical foundations of the binary logistic regression model is given. This is followed by an explanation of how the response variables of the regression models were computed and how these models treat ordinal explanatory variables. The assumption of the binary logistic regression models that the explana-
tory variables are not highly correlated with each other and the violation of this assumption, i.e. the problem of multicollinearity, are then discussed. This is followed by an explanation of how the problem of multicollinearity is handled by the statistical methods employed. Finally, the goodness of fit measures used to assess how well the regression models fit the data are introduced.

6.1.1 The Binary Logistic Regression Model

The logistic regression model models the probability of the occurrence of a binary event \( P(Y=1) \) using the following formula:\(^{426}\)

**Formula 3: The Logistic Regression Model**

\[
P(Y = 1) = \frac{1}{1 + \exp[-(\alpha + \beta_1 X_{1} + \ldots + \beta_k X_{k})]},
\]

where the probabilities are guaranteed to lie between 0 and 1.

For this model the exponential of the coefficient \( e^{\beta} \) can be interpreted as the proportional change in the odds of the event’s occurring per unit change in the corresponding independent variable \( X_i \), where the odds are given as:

\[^{426}\text{Agresti and Finlay, 1997: 583; I decided to present the simplified formula according to Kuha, 2007: 112.}\]