

This document describes the coding guidelines that we used to develop the constraints matrix used in the IRT-M package vignette.

In this example, we used data from the 94.3 Eurobarometer survey (European Commission 2023). For a theoretical framework, we looked to Kentmen-Cin and Erisen's review of factors underlying European attitudes towards immigration. In their review of the literature on anti-immigration attitudes in the European Union, we found three distinct dimensions. Specifically, the authors proposed that "there is a need to address how a diverse set of perceived economic, cultural, security, and religious threats from immigrants independently affects public opposition to the process of European integration, EU membership, or EU policy" (Kentmen-Cin and Erisen 2017). We dropped "security threat" because it was unclear how to operationalize "security" in a single coherent dimension, given the specific questions on the survey panel.

We added three additional dimensions. Two of these dimensions, "support of immigration" and "support of the EU," produce the outcome of interest. We added a "health threat" dimension after observing a series of questions in the data asking about concerns over health security. This is unsurprising, as the 94.3 survey wave was fielded one year into the global COVID-19 pandemic. We thus created a sixth dimension, "health threat," to highlight the ability of IRT-M to incorporate emergent themes.

Thus, we created an M-Matrix that coded four of the five theoretical concepts and a novel threat dimension salient at the time the survey was fielded. We dropped all responses coded as "Other" (996), "Refusal" (997), "None" (998), or "Don't Know" (999).

For the threat dimensions— Cultural, Economic, Health, and Religion— loadings of (+1) on the M-Matrix suggest that an affirmative response indicates a positive threat response and corresponds to a negative feeling about the subject. Conversely, for the outcome dimensions— support of immigration and support of the EU— positive values indicate a positive value of the underlying dimension and a support for the subject.

Below, we describe the considerations in coding each dimension and highlight sample questions that were included in the loadings. The full coding is documented in the M-Codes matrix in our replication materials.

- Cultural Threat: We coded the cultural threat as a latent dimension related to concerns about a possible degradation of a shared social and political identity on dimensions typically associated with national cultural heritage. We focused primarily on questions relating to trust in traditional centers of information and authority. Thus, responses that loaded positively on the cultural threat dimension indicated that the respondents distrusted government, media, military, or cultural leadership. Conversely, responses suggesting confidence in these institutions loaded negatively on the cultural threat dimension. Likewise, we coded questions

with strong responses to devolving political and economic delegation to the European Union as indicative of cultural threat, with preferences against delegating and for repatriating political and industrial power as loading positively on cultural threat (and the inverse). Finally, as robust social services are often associated with a European cultural identity, we also coded questions for whether respondents are worried about reductions in public services. Sample responses that loaded positively (+1) on this dimension were affirmative responses to QA1A1 “situation of [the country in general]” is “rather bad,” and negative responses to QA6A1, which asked “do you tend to trust [the written press] or tend not to trust it.”

- Economic Threat: The economic threat dimension captures whether survey takers reported negative feelings about their current or future economic conditions. Questions coded for this dimension were those eliciting views on the economy writ large or the respondents’ own current or predicted economic situations. Answers that suggested a positive view were coded as negatively loading on the threat dimension, while those suggestive of pessimism were coded positively on the threat dimension. Sample questions loading on this dimension included Q377, “How would you judge the current situation in each of the following” [...] Your personal job situation.” Answers of “very good” or “rather good” were coded as (-1) while answers of “rather bad” or “very bad” were coded as (+1).
- Health Threat: As we coded the M-Matrix, we observed an emergent theme of questions suggestive of medical anxiety. This was unsurprising as the survey was fielded in early 2021, during the height of the COVID-19 pandemic. We inductively added this dimension, coding for responses such as health being the “most important” national/EU issue at the time of the survey. A sample question is QA10, which asked, “In general, how satisfied are you with the measures taken to fight the Coronavirus pandemic by [the national government/ regional authorities/ the European Union].” Responses of “not very satisfied” or “not at all satisfied” loaded positively (+1) on the health threat dimension.
- Religious Threat: The religious threat dimension captures whether respondents reported feeling that the religious aspects of their cultural identity are under threat. As religiously motivated terrorism had been a dominant form of terrorist activity for many of the previous years, we also included questions asking whether respondents considered terrorism to be one of the two most important issues for themselves (QA4a.6), their country (QA3A.6), or the European Union

(QA5.6). Affirmative responses of “terrorism” for this question were loaded as (+1) on the religious threat dimension.

- Support of the European Union: The support of the European Union outcome dimension was coded based on questions that asked whether the respondent approved of the European Union, supported increasing the delegation of political and economic responsibilities to the EU, or supported expanding the European Union. This dimension aggregated responses to questions such as: “do you think that [country’s] membership of the EU would be ... a good thing.” Conversely, we coded responses indicating distrust in supranational political leadership, such as answers that the respondent “tend[s] not to trust” the European Union as negatively loading (-1) on the dimension. Other examples include (+1) for agreeing with QA9.3 that “more decisions should be taken at [the] EU level” and (-1) for disagreeing with the statement.
- Support of immigration: This outcome dimension collected responses indicating anxiety and opposition to immigration. Unlike many of the threat dimensions, a positive loading on this outcome dimension indicates a response suggestive of positive views of immigration. Thus, a response that “immigration” is the “most important issue facing” the EU (QA5.9)/ the respondent’s country (QA3a.9)— a response that we interpret as the respondent desiring a reduction in immigration— would be coded as loading negatively (-1) on the support of immigration dimension.

## References

European Commission (2023). Eurobarometer 94.3 (2021), GESIS, Köln. ZA7780 Datenfile Version 2.0.0.

Kentmen-Cin, C. and C. Erisen (2017). "Anti-immigration attitudes and the opposition to European integration: A critical assessment." European Union Politics **18**(1): 3-25.