Literature Review and Concept Selection

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My thesis will attempt to investigate the democratic deficit in the European Union by correlating citizen preferences at the regional level with their elected official’s voting behavior. If I can show some degree of negative (positive) correlation, then I would be able to conclude that there is (not) a democratic deficit. Further, I am interested in applying Bayesian Modeling and Multi-level Regression and Poststratification (MRP) methods in novel settings, particularly using survey data from European countries and analyzing representation at the European Union.

I am also interested in deploying a Bayesian framework of analysis and using the Stan programming language in order to do so. As its name implies, MRP revolves around multilevel (or hierarchical) regression, and its performance can be improved with the inclusion of priors in the modeling phase[[1]](#footnote-1) - not to mention the added benefit of working with a full posterior distribution of estimated preferences, as opposed to point estimates yielded by Frequentist estimations.

MRP is a method that can be used to estimate subnational (or regional) preferences using nationally representative survey data, using partial pooling (random/mixed effects) to increase the accuracy of the model fit, and then using census data to poststratify the estimates using the actual demographic compositions of the subnational units under study[[2]](#footnote-2). In the first stage, a multilevel regression is fit on a survey response – for instance support for a certain policy such as abortion restriction or environment regulation, using

As such, my thesis will attempt to fill substantive, geographical and methodological gaps in the literature. First, while MRP has been extensively used to analyze and understand voter preferences[[3]](#footnote-3) and then compare those preferences to the voting behavior of elected officials[[4]](#footnote-4) or by the patterns of rulings given by federal judges[[5]](#footnote-5), the brunt of the research has been applied to the U.S. – where a common language (which simplifies polling and surveying), streamlined political representation across states and congressional districts, as well as census taking, make implementing MRP relatively straightforward. In Europe, MRP has been used to predict political outcomes such as the Brexit vote[[6]](#footnote-6) but has not been used to: 1) model European preferences using a Bayesian framework and 2) correlate the findings with the voting behavior of Members of the European Parliament (MEPs).

Research has so far focused on assessing the quality of predictions produced by MRP by comparing these sub-national level estimates with “true” values produced by the few surveys that do measure sub-national opinions. For instance, using Eurobarometer polling data, Todshov finds that MRP usually performs well in replicating “true” preferences, but that “the approach is less capable of reconstructing the relative rankings of the country means and hitting the range of plausible values of the individual state means”[[7]](#footnote-7). He also highlights the importance of including country level predictors in the multilevel models. Lipp and Schraff conduct a similar study, this time comparing the performance of different methods and algorithms, including disaggregation, “classical” MRP, synthetic MRP (as developed by Leemann and Westfallen)[[8]](#footnote-8), and Bayesian Additive Regression Trees (BART). They conclude that synthetic MRP and BART perform best[[9]](#footnote-9). However, their analysis relies on Frequentist point estimation, while I am interested in deriving the full posterior distribution of the estimated preferences, for instance by using the Stan programming language[[10]](#footnote-10).

After conducting the preference estimation using MRP

There are two main ways that countries can send elected representatives to the E.U. Parliament: by electing national or regional representatives[[11]](#footnote-11). In the former, citizens cast their votes for delegates representing a political party and the nationwide results are aggregated and tallied using proportional representation. In the latter, votes are split between electoral constituencies - voters cast ballots for political parties represented at the regional level. My work will focus on the latter case because regional representatives are officially outlined

First, I will assess the subnational preferences of E.U. citizens in 3 countries that have regional constituencies at the E.U. Parliament: France (before 2019), the United Kingdom (before Brexit in 2016) and Italy.

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10. Gelman, A., Lee, D., & Guo, J. (2015). Stan: A Probabilistic Programming Language for Bayesian Inference and Optimization. *Journal of Educational and Behavioral Statistics,* *40*(5), 530-543. Retrieved October 7, 2020, from http://www.jstor.org/stable/43966398 [↑](#footnote-ref-10)
11. Christofides, Tasos, et al. "The 2009 European Parliament elections: From votes to seats in 27 ways." *European Electoral Studies* 5.2 (2010): 148-182. [↑](#footnote-ref-11)