Impact of the Hungarian parliament on Law-Making (1994-2018)

Text mining and model building support for the development of the Hungarian Comparative Agendas Project

Within the capstone project we examined the legislative function of the Hungarian parliament between 1994 and 2018. It is closely linked to an ongoing research titled "The Stability of Policy-Making" conducted at the Institute for Political Science, Hungarian Academy of Sciences (HAS), Centre for Social Sciences (partner institution). The research itself is the part of a large-scale and long-term project, the Hungarian Comparative Agendas Project (CAP) whose ultimate purpose is to reveal the dynamics of Hungarian public policy by investigating the various public policy and political agendas using quantitative methods. Research focus of "The Stability of Policy-Making" project is on the formal-institutional aspects of policy-making through the creation and amendment of legal norms, where stability is defined in the narrow sense by the textual stability of legal norms that codify policy decisions. Therefore, policy dynamics is assessed by the stability and changes of the texts of legal norms.

The basic element of our analysis is the text. Investigating textual stability of legal norms establishes the possibility of using text mining tools for analytical purposes. We capture amendment activities of the Hungarian parliament by comparing the text of bills entering the parliamentary stage (input text) to that of proposals eventually adopted by the parliament (output text). This allows us to quantitatively assess the extent to which the Hungarian parliament amends draft legislation. In addition, by exploring the determinants of bills' changes mostly done by the members of parliament (MPs) during the parliamentary phase, we are able to unveil the conditions and circumstances under which parliamentary actors exercise one of their main mandate.

While law-making is a core competence of parliaments, there is only limited evidence provided about the extent to which and why parliaments amend bills. To the best of our knowledge, no study exists that systematically explores the role of the Hungarian parliament in shaping content of bills by drawing primarily on quantitative methods. Earlier studies, mostly of a qualitative nature, provide only a partial analysis of parliaments' legislative function drawing on some basic indicators measuring the influence of parliament on legislative process.

There are challenges to process and analyze text of bills at their different parliamentary stage. First, first drafts of bills submitted to parliament often either not

available at all or accessible but have poor quality. Second, it is not evident how to measure textual stability, that is, how to compare a text of introduced bill to that of the adopted one, particularly when it has been extensively modified. Third, finding adequate explanatory variables that capture the bills' characteristics or the socio-political configurations (party and coalition politics, legislative autonomy, etc.) across different legislative terms to account for important features determining the degree of change of bills in the parliamentary legislative process, can also be problematic.

First, within the text reuse approach, texts were turned into data for analysis by applying natural language processing (NLP) methods to compile dependent variables which measure dissimilarity of text of bills and respective adopted laws. This was done by web scraping the text pairs of adopted and draft bills, preprocessing of these raw texts and applying various text representation models to be able to compare them. Dissimilarity indices were constructed using different distance metrics and text representation models. We validated computer generated measures of dissimilarity by confronting it with human-coded categorization on a small random subsample of bills. It turned out that there is a considerably strong correlation between the dissimilarity indices and human-coded values. Based on the strength of correlation and practices of related empirical literature and recommendations, we chose dissimilarity index based on the intuitively interpretable Jaccard distance metric calculated over trigram text representation of input-output text pairs.

Our main objective is to conduct an exploratory analysis to uncover the determinants of bill change. In line with the empirical literature we formulated many hypotheses to be tested on the Hungarian data between 1994 and 2018 (six legislative cycles) on almost all the introduced 3690 bills which were eventually adopted. We used a newly built database of the Hungarian CAP which was supplemented by two new variables implemented within the capstone project: number of articles and number of amendments for each adopted bill.

Although the Hungarian parliament is classified as a weaker legislative body based on the classic institutional framework of law-making and amending rules, surprisingly we find that it amends a very high share of bills, more than 90 percent. The dissimilarity measures show that the rate of change of the considered bills amounts to 17 percent, on average. The median value is only 10 percent, much lower than the mean, which indicates that a considerable share of bills is only modified marginally. Assuming that a considerable part of the bills amended only marginally, in fact implements wording or legal technical corrections, the ratio of "truly" amended bills still exhibits a high value. Our dissimilarity index can be interpreted as the rate (percentage) of change between the input and output texts of a bills.

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Taking into account specific features of the distribution of our dissimilarity index, we opted for a flexible and data-driven regression model, the zero-inflated beta regression model, to shed light on the determinants of which and to what extent bills are modified.

Based on the CAP database, dissimilarity index was regressed on two types of the predictors, besides control variables. MPs strategic behavior and bill characteristics. Investigating the effect of the MPs' strategic behavior on the parliament amendment activity yielded mixed results. A clear finding is that when government introduce bills, they tend to be modified to a lesser extent than those introduced by parliament actors. While prioritizing issues, MPs are likely to put more effort and spend their limited resources on the issues and policies that are salient or more important to them for either vote-seeking or policy-seeking reasons. Estimation results partly support the hypothesis that MPs' tend to modify bills to a greater extent if bills belong to issues (policy areas) that MPs prioritize more. It turns out that dissimilarity measure varies significantly across legislative cycles, thus cycles are associated with considerable variations in legislative autonomy. Regression results do not support the effect of electoral year, coalition or partisan politics on the amendment activity.

Examining the effect of bills' characteristics on the degree of bills' change it can be concluded that MPs' amendment activities are lower when the bill is implementing international treaties or can be regarded as Europeanized law than when the ones not of these types. This is expected as international agreements are mostly binding and cannot be modified unilaterally and Europeanized laws create domestic codification obligations. Furthermore, importance of bills, measured by the number of amendments - either adopted or not - does matter: less important draft bills tend to be less amended than more important ones.

In this project, the applied text mining methods offer a novel way of thinking about the decision-making process in the parliament. One of the main contributions of the capstone project is that it supplements CAP database with cleaned and preprocessed law and bill text corpuses. Results of the regression analysis within which several significant effects have been identified help to understand why and to which degree MPs modify bills. Experience accumulated in this project can be utilized to extend the scope of analysis to other field of policy making. The capstone project in the form of a draft paper (Project Technical Discussion) can serve as a solid basis for publishing a paper in a field journal of political science after further improvement. This includes introducing new predictors measuring importance of bills or the bills' maturity of preparedness drafted by the government. As these would bring information on bill's characteristics external to the parliament, we expect that it would lead to a more robust model and stronger conclusions.

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