Appendix B: Other Speech Complexity Indexes

Our primary econometric specifications use the Flesch-Kincaid grade level index as discussed in section 2.2.1. However, Table 4 includes results using four alternative readability indices. The formulas for these weighting schemes are as follows.

Coleman-Liau index

$$CLI = 0.0588L - 0.296S - 15.8$$

where L is the average number of letters per 100 words and S is the average number of sentences per 100 words.

Flesch Reading Ease Score

$$FRE = 206.835 - 1.015ASL - 84.6ASW$$

where ASL is average sentence length (number of words divided by number of sentences) and ASW is average word length in syllables (number of syllables divided by number of words).

Automated readability index

$$\text{ARI} = 4.71\left(\frac{\text{characters}}{\text{words}}\right) + 0.5\left(\frac{\text{words}}{\text{sentences}}\right) - 21.43$$

where characters is the number of letters and numbers, words is the number of spaces, and sentences is the number of sentences.

SMOG index

$$\text{SMOG} = 1.043 * \sqrt{Number\ of\ Polysyllables * \frac{30}{Number\ of\ Sentences}} - 3.1291$$

Polysyllables are words with three or more syllables. The standard SMOG index only uses texts with 30 or more sentences, a restriction that would yield zero observations in our dataset.