Not by the Pen Alone:
Producing State Sovereignty through Soft *and* Hard Power in the Context of Regional Instability

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Abstract

Recent studies of civil war onset emphasize the need to differentiate between hard and soft power as measures of state capacity. To better discriminate between these concepts, Warren proposes a measure for soft power (the "Media Density Index"), which he shows enhances state ability to produce substantial barriers to domestic militarized challenges. In this paper, we build on Warren's findings. We provide one possible measure of hard power—the "M Score"—to contrast with MDI. We find that this measure is insignificant but argue that better measures for hard power must be found. Second, we test an important part of Warren's theory that he neglected—the idea that there are increasing returns on the negative effect of the Media Density Index on the probability of civil war outbreak. We find that this part of his theory does not hold; there is little to no evidence of this type of relationship between MDI and civil war onset. We also provide a measure of civil wars in neighboring states. We find that this variable proves to be a strong predictor for civil wars, indicating that there is reason to doubt the assumption of between-country independence made by Warren and many other scholars of civil war onset.

I. Introduction

What is the role of soft and hard power in producing state sovereignty and preventing civil war onset? Scholars of civil war have established the importance of state power in suppressing insurgencies (Fearon and Laitin, 2003). According to Warren (2014), however, such studies fail to differentiate between soft and hard power by opting to use GDP per capita as a proxy for general state capacity. To better discriminate between soft and hard power, he proposes a new measure for soft power (the "Media Density Index" or MDI), which he shows enhances state ability to produce substantial barriers to domestic militarized challenges. However, there are three weaknesses in his argument. First, while arguing that generic power measures ought to be supplemented with more specific metrics such as MDI, Warren fails to extend the same logic to the measurement of hard power. Second, Warren's theory implies the existence of a non-linear relationship between MDI and civil war onset, suggesting that there are increasing returns to the effect of MDI; however, this proposition is never examined empirically. Third, Warren takes into account problems with the independence of within-country observations by clustering standard errors on country and testing country fixed effects; however, we argue that problems with *between-country* independence are also likely in this context and need to be tested for. In this paper, we address each of these concerns. We further clarify Warren's central distinction between soft and hard power by including a variable for military capabilities to better measure the concept of hard power. We find that, when controlling for mass media, military capability is not significant in predicting civil war onset in accordance with Warren's findings, but is nonetheless important as an improved measure of hard power. In addition, we show that although MDI is associated with significant decreases in the probability of civil war onset, it does not have increasing returns to scale. Finally, we argue that civil wars do not happen independently from each other and that the onset of civil wars in

surrounding countries is positively associated with the probability of civil war onset within a state.

II. Review of Warren

The need to disaggregate state power into its component parts is the central motivation for Warren's study as well as this study, and we naturally agree with his claim that GDP per capita, as an aggregated measure of economic development, is inevitably a proxy for numerous dimensions of state capacity (2014, p. 135). In order to better describe state power, Warren separates material and normative influence using a Cobb-Douglas production function:

$$I = M^{\alpha} * N^{\beta}, \tag{1}$$

where I represents state capacity, which is determined by material influence M and normative influence N. The returns to scale of M and N are determined by a function of constants α and β. When $\alpha + \beta = 1$, there are constant returns to scale. When $\alpha + \beta > 1$, there are increasing returns to scale, and when $\alpha + \beta < 1$, there are decreasing returns to scale. Furthermore, the state faces a budget constraint of the form:

$$E = C_M * M + C_N * N, \tag{2}$$

such that the state faces a trade-off between investing effort E between M and N, where C_M is the relative cost of an additional unit of M versus N and where C_N is the relative cost of an additional unit of N versus M. According to Warren, because mass media affects the state's influence through *both* the production function *and* the budget constraint, mass media should have increasing marginal returns. As mass media grows, Warren posits that C_N will decline and that

each additional recipient of mass media will compound the effect of mass media, meaning $\beta > 1$. In other words, Warren expects that the communicative nature of mass media will allow the political, normative messages of the state to travel faster and more broadly with each additional person included the network. In his own words, "mass media technologies make it possible for each additional unit of effort devoted to normative influence to generate greater output than the previous unit, to a degree that increases with the density of mass media reception" (2014, p. 121).

In order to measure soft power, Warren creates the Media Density Index (MDI), through which a state extends its normative influence. He sums the number of television receivers in use for broadcasts (TV_{it}), radio receivers in use for broadcasts ($Radio_{it}$) , and circulation of daily newspapers ($Newspaper_{it}$) within each country-year, and divides by the log-transformed population $Population_{it}$:

$$MDI_{it} = \frac{TV_{it} + Radio_{it} + Newspaper_{it}}{Population_{it}}. \tag{3}$$

This paper builds on Warren's model by delving further into both material influence M and normative influence N. First, regarding material influence, we posit that GDP per capita, which remains in his model as a measure of state capacity, lacks utility as a measure of hard power. Consequently, there is a clear need for a more narrowly construed empirical indicator for hard power, similar to Warren's use of MDI as a measure of soft power. Warren himself admits the need for such a measure (2014, p. 135). The paper addresses this gap in the literature by including a measure of hard power which focuses on military capabilities using the Composite Index of National Capability (CINC) dataset in a manner analogous to Warren's construction of MDI. Second, in regards to normative influence N, this paper tests whether MDI has a non-linear effect as Warren claims. We concur that his more narrowly construed measure of soft power allows us to isolate the effect of soft power, but the size and significance of MDI's increasing marginal

returns remains unexplored. Despite the clear non-linear relationship that his theory predicts, Warren models a linear relationship between MDI and civil war onset in his actual regressions. We modify his model specifications to better reflect his theory. Third, Warren's model assumes independence of country-years in predicting civil war onset. Because civil wars tend to occur in clusters and because a civil war in one country could spark civil wars in neighboring countries, we include a measure to take into account the effect of regional civil wars in the previous five years.

III. Methods

I. Measuring Hard Power

Our measure of hard power, which we refer to as the military capabilities score (MScore), is constructed using the most recent version of the CINC dataset in a manner analogous to Warren's formulation of MDI. The traditional CINC score is inappropriate for our purposes, as it largely captures states' abilities to fight *interstate* wars. As we are focussed on the effect of state capacity in relation to *intrastate* conflict, we respecify the measure to reflect the level of state military resources in relation to state size. In doing so, we ensure that our measure for hard power is directly comparable to Warren's measurement of soft power. Accordingly, our new measure for hard power sums the relevant component parts of the CINC Score including military expenditures $Milex_{it}$, military personnel $Milper_{it}$, energy consumption $Energy_{it}$, and iron & steel production $Irst_{it}$, and divides by the log-transformed population $Population_{it}$. Again, this measure is essentially a modified version of the CINC Score for intrastate war fighting capabilities derived using the same logic behind Warren's MDI.

However, a key modification is necessary to both Warren's MDI and our modified CINC Score. Because each component part is on a different scale, the component parts should be standardized

to range between zero and one before summing together. This is an evident shortcoming in Warren's MDI since radio receivers vastly outnumber TV receivers and newspapers, and there is no theoretical justification for implicitly weighing radio receivers higher than TV receivers and newspapers. The following is the final formulations and distributions of the standardized MDI and MScore:

$$st(MDI_{it}) = \frac{st(TV_{it}) + st(Radio_{it}) + st(Newspaper_{it})}{Population_{it}}, \tag{4}$$

$$MScore_{it} = \frac{st(Milper_{it}) + st(Milex_{it}) + st(Energy_{it}) + st(Irst_{it})}{Population_{it}}. \tag{5}$$

Figure 1: Distribution of Standardized MDI

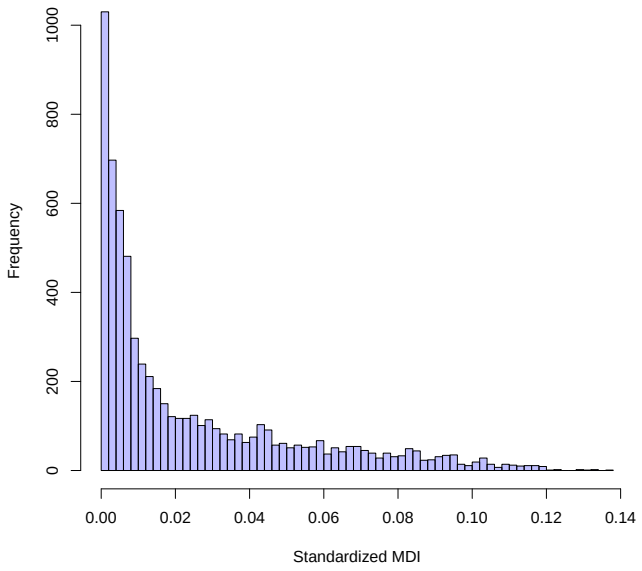
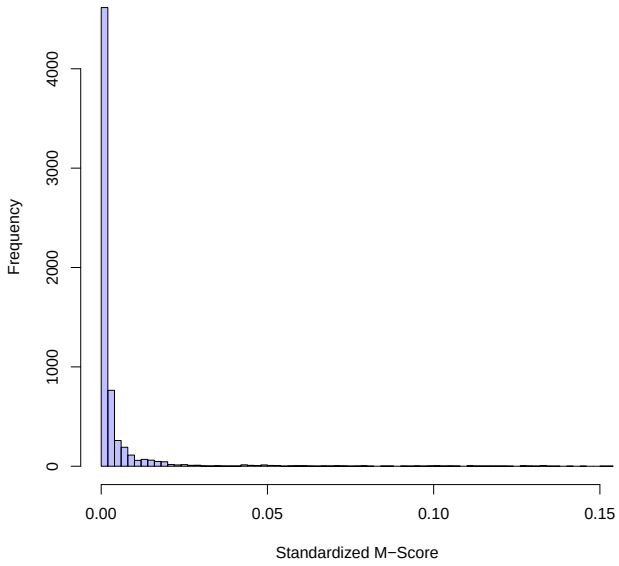


Figure 2: Distribution of Standardized M-Score



II. Testing for Increasing Marginal Returns of MDI

In order to test for increasing marginal returns of MDI outlined in Warren's theory, we include a polynomial term for MDI. Specifically, we include a squared term for MDI with the expectation that the effect of MDI squared will be negative and statistically significant in predicting the probability of civil war onset. A more intuitive interpretation of the hypothesized negative coefficient on the squared term is that the effect of MDI on the probability of civil war onset is negative and growing with each additional unit of MDI.

III. Accounting for Civil Wars in the Region

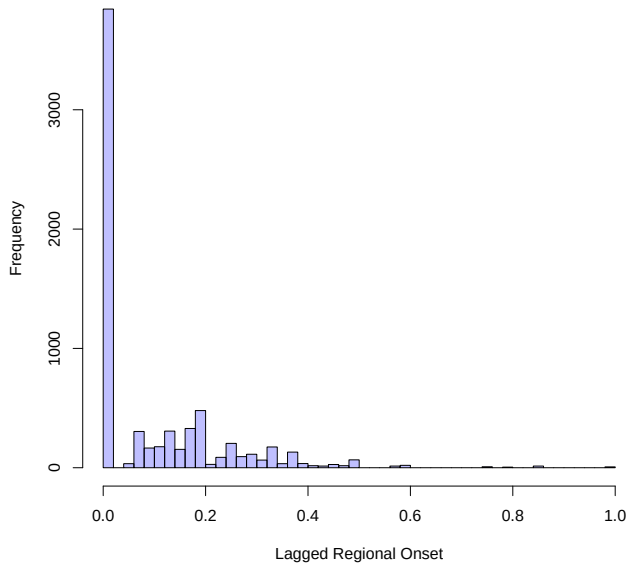
Finally, civil wars do not occur in a political vacuum, and throughout history, civil wars have tended to erupt in regional clusters. Therefore, we argue that the onset of civil war in one state may spark civil wars in neighboring states. Most studies on civil wars including Warren's, however,

assume independence of civil wars and do not take into account the possibility of one state's internal instability affecting the region. Recognizing this oversight, we include a measure for the number of civil wars in the region as a whole. The number of civil wars C during the past five years in the region r, as defined by Correlates of War (COW) region designations, are added together for each state in the region. The total number of civil wars are then weighted by the number of countries in the region N_{rt} since the effect of any single state's descent into civil war should be proportional to the number of states in the region:

$$RegionOnset_{rt} = \frac{C_{r,t-1} + C_{r,t-2} + C_{r,t-3} + C_{r,t-4} + C_{r,t-5}}{N_{rt}}. \tag{6}$$

We expect the coefficient for the variable $RegionOnset_{rt}$ to be positive and statistically significant in predicting civil war onset.

Figure 3: Distribution of Regional Onset



IV. Results

Table 1 summarizes the findings from the main models. Model 1 is the baseline model with identical independent variables as Warren's main model. The only difference between Warren's model and model 1 is that MDI has been standardized for aforementioned reasons. Standardizing MDI does not result in significantly different findings from Warren's main model, as we may have suspected. Model 2 includes MScore, the measure for hard power. In accordance with Warren's theory that emphasizes the role of soft power through MDI over material influence, MScore is not significant. Although this null result may be due to measurement problems for hard power, we believe its value-added is twofold. First, it is a more carefully construed measure of hard power than simply GDP per capita, and second, it serves as another validation of Warren's findings regarding the importance of mass media.

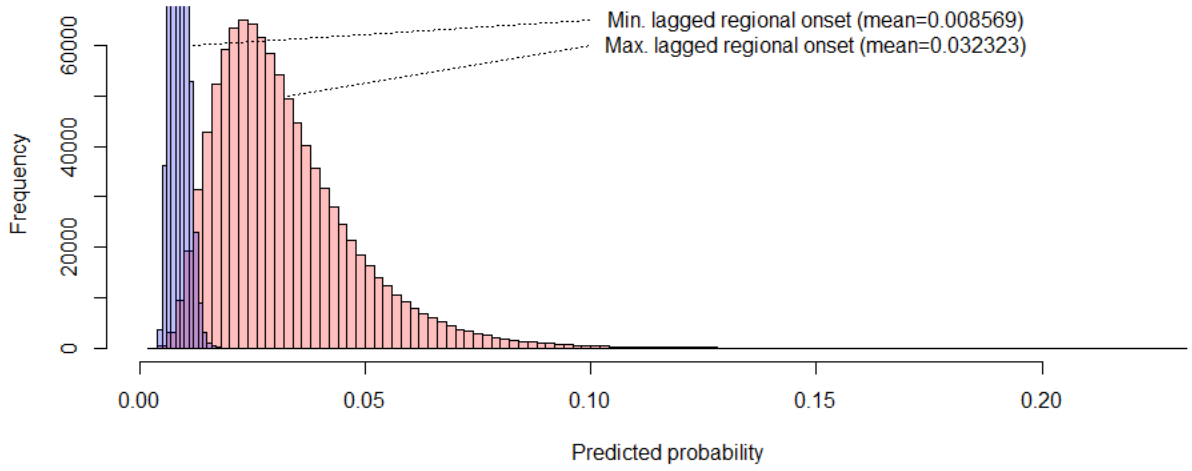
Model 3 adds a squared term for MDI to test Warren's claim of increasing marginal returns. Contrary to Warren's theory, the squared term for MDI is not significant and also in the wrong direction. The positive coefficient on the squared term implies that while the probability of civil war onset decreases with increases in MDI, this effect is mitigated at higher levels of the MDI variable. In other words, MDI appears, in this specification, to be subject to *decreasing* marginal returns, rather than the increasing returns implied by Warren's theory.

Finally, model 4 adds the measure for the number of regional civil wars in the previous five years. The coefficient is statistically significant $(p < 0.001)$ indicating that recent regional civil wars are generally associated with higher probabilities of civil war onset. In addition to being statistically significant, the measure is substantively significant. Holding all other variables at their means, a shift from the lowest lagged regional civil onset to the maximum lagged regional civil war onset results in a nearly fourfold increase that a country will experience a civil war, moving

from 0.8569 percent to 3.2323 percent for a difference of 2.3754 percentage points. Figure 4 depicts the distributions of the predicted probabilities of civil war onset for the minimum number of regional civil wars and the maximum number of regional civil wars with all other covariates held at their means.[1]

It should be noted that adding an independent variable in each subsequent model does not change the statistical significance of existing independent variables in any of the models. Warren's main finding regarding MDI is significant and robust to all model specifications. Also, at first glance, it may seem that MScore's lack of statistical significance may be an artifact of multicollinearity with GDP per capita and/or MDI. Under Warren's logic for assessing multicollinearity, however, there are several signs that help ease concerns of multicollinearity. The main sign is that there is little expansion in the standard errors for GDP per capita and for MDI when MScore is added into the model, contrary to what one would expect if multicollinearity was driving the result.

Figure 4: Predicted Probability of Onset



[1]The predicted probabilities of civil war onset across the entire range of five-year lagged regional onset are included in the appendix (Figure 6).

Table 1: Main Results

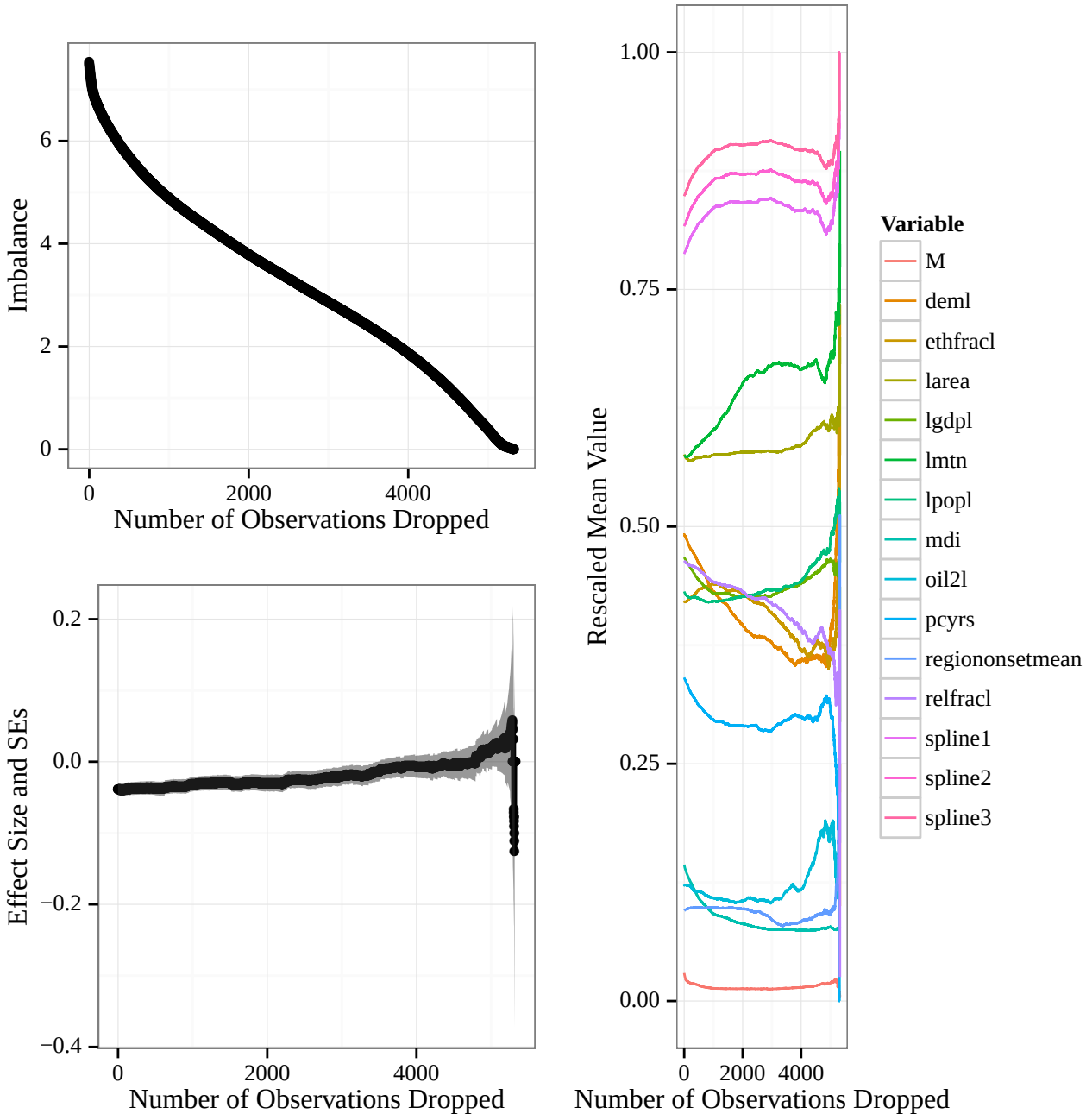
	Dependent variable:			
	onset			
	(1)	(2)	(3)	(4)
MDI	−53.812***	−55.498***	−78.444***	−75.146***
	(16.658)	(17.540)	(24.034)	(23.647)
MScore		8.232	5.864	7.339
		(11.707)	(11.577)	(11.043)
MDI^2			357.793*	327.878
			(216.228)	(215.211)
RegionOnset				1.250***
				(0.443)
GDP	−0.011	−0.043	0.026	0.073
	(0.198)	(0.209)	(0.214)	(0.204)
Area	−0.098	−0.126	−0.126	−0.123
	(0.089)	(0.096)	(0.097)	(0.096)
Mountains	0.109**	0.132***	0.131***	0.126***
	(0.048)	(0.050)	(0.049)	(0.048)
Population	0.264***	0.254***	0.266***	0.251***
	(0.071)	(0.082)	(0.084)	(0.084)
Oil	0.728***	0.733***	0.724***	0.624**
	(0.233)	(0.238)	(0.238)	(0.247)
Democracy	0.173**	0.158*	0.164**	0.140*
	(0.080)	(0.081)	(0.081)	(0.081)
$Democracy^2$	−0.007**	−0.006*	−0.006*	−0.005
	(0.003)	(0.003)	(0.003)	(0.003)
EthFrac	0.172	0.266	0.213	0.203
	(0.354)	(0.366)	(0.372)	(0.376)
RelFrac	1.351**	1.296**	1.315**	1.227**
	(0.550)	(0.577)	(0.572)	(0.577)
PeaceYears	−0.056	−0.017	−0.020	0.012
	(0.081)	(0.083)	(0.083)	(0.086)
Constant	−8.160***	−7.872***	−7.964***	−7.882***
	(1.087)	(1.346)	(1.355)	(1.356)
Splines	✓	✓	✓	✓
Observations	5,899	5,671	5,671	5,671
Log Likelihood	−527.129	−500.441	−499.752	−497.444
Akaike Inf. Crit.	1,084.258	1,032.883	1,033.504	1,030.889
Note:				*p<0.1; **p<0.05; ***p<0.01

V. Missing data and balance

The datasets used in Warren's study and our study have a significant proportion of missing data, a concern that pervades throughout civil war literature. Rather than addressing the problem, Warren follows previous scholarship by excluding all country-years with missing data from his analyses. Fixing this missing data problem is non-trivial, but the standard practice of list wise deletion of numerous country-years may bias findings, and certainly changes the quantity of interest. One approach to overcoming this problem would be to employ an imputation strategy, but multiple imputation for time-series cross-sectional data in this setting is problematic because some countries have missing observations for important covariates (such as GDP) *across the entire time-series*. Imputing these values would rely on making some strong assumptions about the imputation model, and is unlikely to lead to plausible estimates. A more promising strategy to be pursued in later work would be to collect missing data where possible, and to more directly address the implications of list wise deletion.

An additional concern is that the results presented by Warren are highly model dependent, with little common support of the covariates of high and low MDI countries. To address this concern, we estimate the balance-sample size frontier for matching analysis. As Figure 5 indicates, imbalance in the total dataset is large, and decreases only slowly as observations are pruned. Most problematic is the fact that the effect of MDI seems to go away as the sample becomes more balanced, although the sample never achieves good balance until all of the observations have been deleted. These findings imply deeper concerns about the comparability of treated (high MDI) and control (low MDI) units, and suggests that we ought to be reserved in the causal claims made from the preceding analyses.

Figure 5: Matching frontier for the effect size of the Media Density Index



VI. Conclusion

In closing, this study highlights three paths forward rather than drawing definitive conclusions. First, this study develops a measure for hard power analogous to Warren's measure for soft power. Although our measure for hard power is not significant in the models discussed, it validates Warren's findings and further motivates the need for better measures of hard power. Second, the study makes evident the need to more carefully theorize marginal returns of mass media in securing state sovereignty. Contrary to Warren's theory, a squared term for mass media is not significant and in the wrong direction. Third, the study emphasizes the need to include an effect for civil wars in the region when predicting civil war onset within a country. Because civil wars tend to erupt in clusters and a civil war in one state has the potential to spark insurrections in a neighboring state, the measure for regional civil wars is statistically and substantively significant in predicting civil war onset. What is left unclear is the exact mechanism through which civil wars spread to neighboring states, which if made clear, would allow for a more accurate measure for the effect of regional civil wars. Thus, while armed conflicts are not prevented by the power of the sword alone, this study concludes that the power of the pen does not have increasing marginal returns and must be considered in the context of regional instability.

References

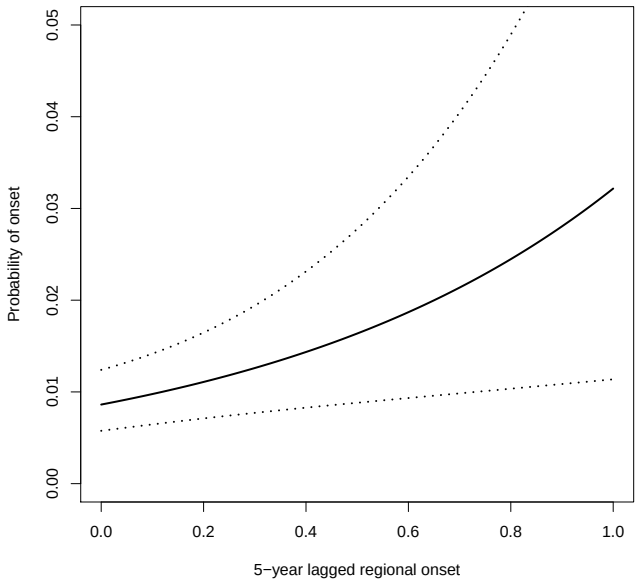
Fearon, James D. and David D. Laitin. 2003. "Ethnicity, insurgency, and civil war." *American Political Science Review* 97(1):75–90.

Warren, T. Camber. 2014. "Not by the sword alone: Soft power, mass media, and the production of state sovereignty." *International Organization* 68(1):111–141.

A. Appendix

The following figure shows predicted probabilities of civil war onset across the entire range of five-year lagged regional onset. The figure makes evident that the estimates are less certain near the top of the range but consistently above no effect.

Figure 6: Predicted Probability of Onset by 5-year Lagged Regional Onset



The measure of lagged regional civil war onset may seem questionable on several grounds. We would like to address two of them. First, it is possible that civil wars that occur further in

the past should have less influence than civil wars in more recent years. This suggests that we should weigh each year based on a decay function such as the geometric series so that each year is given half the weight of the previous year. Doing so does in fact cause the modified measure to be no longer statistically significant. However, the rate parameter of the decay function is still up for debate, and more theoretically, it could very well be that regional civil wars in the more distant past should be weighed the same as relatively recent civil wars because the spark may take several years to transfer. An aggrieved party in the state may wait to see whether the resolution of a neighboring civil war is favorable for the rebel group before initiating their own insurrection. Second, it may seem arbitrary that we settle on five previous years rather than the previous year, two previous years, or even ten previous years. We concede that the five year cutoff may be arbitrary, but we believe it is as reasonable as another other alternative cutoff. Overall, this discussion simply motivates further study into the clustering of civil wars and the mechanisms through which domestic instability spreads to neighboring states.