

SUPPLEMENTARY MATERIAL

CONSENT AND LEGITIMACY

A Revised Bellicose Theory of State Building
with Evidence from around the World, 1500–2000

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Appendix 1

Dependent variables

Most of our data for the government share of GDP came from Mitchell (various years). The prime sources for calculating the government share of GDP for the Ottoman empire were Shaw and Akar for government expenditure¹ and Cem Behar and Karpat² for population data; for the Soviet Union, we relied on Plotnikov and Svodnii otdel gosudarstvennogo byudzheta³ and for population data on Side and Kozlov.⁴ The Soviet budgets included basically the entire economy, given the nature of the Communism.⁵ To make these figures comparable to others, we excluded all expenses related to the production and distribution of goods from the provincial budgets, including those related to pensions, health care, and the like.

How does the government share of the economy relate to government revenue and government taxation—the most direct measurements of the extractive capacity of the state—traditionally at the center of the bellicose argument? Comprehensive historical data is unfortunately not available. The best source are the Global Financial Data (accessed through the Comparative Taxation Dataset⁶), which allows to calculate the percentage share of central government revenue to GDP for 21 Western countries from the 1870s onward, thus roughly corresponding to the time frame covered by the data on the government share of the economy. The correlation with the latter is high at .62 (roughly half of the observations are from before World War II). It is even higher if we use the GDP share of income and property taxes from the

¹ Shaw 1978; Akar 1999.

² Cem Behar 1996; Karpat 1985.

³ Plotnikov 1948/1954; Svodnii otdel gosudarstvennogo byudzheta Various years.

⁴ Side 1992; Kozlov 1988.

⁵ On Soviet budgets, see Hutchings 1983.

⁶ Anderson, Prasad, and Nickow, 2019.

same data source, though the number of observations drops sharply and only seven countries are covered. Much more precise and extensive data on revenues have been assembled by the IMF, but they are available from 1970 onward only. They again measure government revenues, excluding grants, as a percentage of GDP. The correlation with our measurement of the government share of the economy is again high at 0.58.

Equally encouraging, the government share of the economy is associated strongly with common measures of government effectiveness, the best proxies for administrative state capacity.⁷ The correlation with Transparency International's Corruption Index is .71, with the World Bank's Control of Corruption Index .68, with the government effectiveness and rule of law indexes also of the World Bank around .65, and with the International Country Risk Guide's Quality of Government Index at .5.

However, a high government share of the economy is not correlated with a high share of military expenditures in overall government expenditures (as measured by SIPRI from 1988 onward) or with the absolute size of the military budget (available for most years and countries from the Correlates of War Project). This mirrors the findings of Hanson and Sigman,⁸ whose composite latent index of state capacity is only weakly related to its coercive indicators, mostly because a large military can also be a sign that rulers are politically insecure and lack domestic legitimacy. Finally, we report that the correlation between this Hanson and Sigman's index, which is available for all countries from 1960 onward, and the government share of the economy is again high at around .58.

⁷ Hanson and Sigman 2019.

⁸ *ibid.*

Appendix 2

Independent variables

2.1 War count

Most of the entries in the war list of Brecke came from existing (published and unpublished) war compilations, which Brecke appended especially for the earlier periods, using military histories written in non-European languages and scripts as well.⁹ Despite Brecke's unparalleled efforts, there is likely to be some selection bias in the data because armed conflicts in countries without a tradition of literacy, without court historians, or with less accessible historical records are less likely to enter the catalogue.

It is impossible to evaluate how consequential this bias could be. An undercount of wars especially in sub-Saharan Africa outside of Ethiopia and the Western African kingdoms on the coast is quite possible. It is unclear how this affects our estimates of the consequences of war making for state building in these areas of the world: If we undercount wars and there is a high level of state centralization, the estimates will be biased downward. If we undercount wars and there is a very low level of state centralization, the estimates would be biased upward. Given that more centralized states keep better records, the first bias is less likely than the second. Our estimates for Africa and Asia therefore are likely to overemphasize the state building effects of war and a corresponding result should therefore be interpreted cautiously.

Brecke's list only contains the name of the war, its participants, and the duration. We therefore went through the entire list to code whether the conflict was a civil or international war (we only counted the latter in our war count variables), where the main battlefields were located, and what the contemporary successor states of earlier state entities are (more on this in Appendix

⁹ See Brecke 1999, Appendix A for a list of sources.

3 below).¹⁰ Colonies were coded as participants in wars of the colonial empire if they sent troops to fight in the war (such was the case of British India in the two World Wars, for example). The war list is available upon request.

2.2 Control variables for Table 6

The government share of the economy is likely to be influenced by a range of other factors that need to be controlled for. To account for the temporary increase in government spending that accompanies most wars, we include a variable that records the number of wars fought by a state during the same year.

A variable counting the number of ongoing wars in neighboring territories is added because nearby wars might boost military expenditure due to an increased sense of threat. A dummy variable records if the territory is governed by a communist regime, which might increase the government's share in the economy. We also include a logged transformation of GDP per capita because the ratio between government expenditure and GDP varies by GDP itself because richer governments can afford larger investments in the public good than poor countries that struggle to meet basic infrastructural needs. Finally, we include natural cubic splines of year in order to capture nonlinear global historical trends that the other variables in the model might not represent effectively.

¹⁰ In line with Wimmer and Min 2009; Fearon and Laitin 2013, who also rely on Brecke.

Appendix 3

Units of observation

In how far is taking contemporary states as units of observation substantially justifiable, as we do in most of the analyses? First, the overwhelming majority of today's countries represent meaningful units of observation for earlier time periods since most of them emerged from imperial provinces or from pre-modern states with a similar geographic extension. If we count the average number of years since 1816 that a 2001 country existed within similar borders, either as an imperial province or as an independent polity, we arrive at 124. Thus, during almost 70% of the past two centuries contemporary borders were meaningful.

Second, imperial rule more often than not relied on previously existing states, integrating them into some sort of scheme of indirect rule, rather than destroying them (as demonstrated by Gerring and coauthors¹¹). The assumption of continuity that underlies our research design is therefore warranted even if the colonial period brought a rupture in the formal structures of the state. The same could be said in the (rare) cases where smaller states fused into larger ones, such as most famously in Italy and Germany: levels of state building achieved through previous wars fought by the smaller polities (Prussia or Piedmont) were often preserved and integrated into the newly enlarged polity.

Third and relatedly, the complete eradication of existing state infrastructures and their permanent replacement by an entirely different political system is rather rare in modern history. The exception of course is the Americas, but its history of colonization lies beyond the time horizon of this study. Using Fazal's list of 35 states that disappeared violently since 1816,¹² we

¹¹ Gerring et al. 2011.

¹² Fazal 2004.

find that 28 regained sovereignty more or less in their previous territorial shape (including the 12 states occupied by Nazi Germany). In other words, only 7 were permanent losses that affect our units of observation, and of these 5 relate to Italian or German unification. This should alleviate concerns that using contemporary states as units of observation introduces bias because states that did not survive differed in terms of their war history and/or state capacity.

Appendix Table A1. Summary of results of Table 7 using 1, 10, and 20 year lags on independent variables (bold=statistically significant at the 0.05 level or less)

	1-yr lag	10-yr lag	20-yr lag
Cumulative number of inter-state wars since 1860	+	+	+
Cumulative number of wars fought since 1860 as a democratic state	+	+	+
Cumulative number of wars fought since 1860 as a non-democratic state	-	-	-
Number of battle death per country size in km ²	+	+	+
Cumulative number of wars fought since 1860 as oil producing country	+	+	+
Cumulative number of wars fought since 1860 as non-oil producing country	+	+	+
Cumulative number of wars fought since 1960 as a recipient of foreign aid	+	-	-
Cumulative number of wars fought since 1960 as a non-recipient of foreign aid	+	+	+
Number of wars funded at least partly by taxation	+	+	+
Number of wars not funded by taxation	-	-	-
Number of wars not funded by sources from abroad	+	+	+
Number of wars funded at least partly by sources from abroad	+	-	-
Number of wars won since 1860	+	+	+
Number of wars lost since 1860	-	-	-
Number of wars fought since 1860 as nation-state	+	+	+
Number of wars fought since 1860 before nation-state	-	-	-

Appendix Table A2. Testing multiple interactions between independent variables, country fixed-effects regression of government expenditure/GDP (Driscoll-Kraay standard errors)

	Regression outcome		Pair-wise comparison of coefficients from regression							
			1 Democratic countries vs. non-democratic countries		2 Nation-states vs. non-nation states		3 Oil producing countries vs. countries not producing oil		4 Democratic nation-states vs. non-democratic non-nation-states	
	b	beta	Δb	Δbeta	Δb	Δbeta	Δb	Δbeta	Δb	Δbeta
1: # of wars fought since 1860 by a non-democratic non-nation-state with no oil	-.003* (.001)	-.074	Compare coeff. 5 and 2: .002*	.117	Compare coeff. 2 and 1: .003*	.091	Compare coeff. 3 and 2 -.001	-.029	Compare coeff. 5 and 1 .005***	.21
2: # of wars fought since 1860 by a non-democratic nation-state with no oil	.0004 (.0007)	.017	Compare coeff. 6 and 3: .005**	.144	Compare coeff. 3 and 4: -.005	-.041	Compare coeff. 4 and 1 .007	.006		
3: # of wars fought since 1860 by a non-democratic nation-state with oil	-.001 (.001)	-.017								
4: # of wars fought since 1860 by a non-democratic non-nation-state with oil	.004 (.008)	.024					Compare coeff. 6 and 5 .002	-.076		
5: # of wars fought since 1860 by a Democratic nation-state with no oil	.003*** (.006)	.134								
6: # of wars fought since 1860 by a Democratic nation-state with oil Controls for ongoing wars, regime, communism, GDP, oil production, population size, and time	.004*** (.001) Yes	.127								
N	8742									
F-test	78***									
Within-country R-sq	.211									
BIC	-18489									

*** p<.001, ** p<.01, * p<.05

Appendix Table A3. Effects of years of war; country fixed-effects regression of government expenditure/GDP from 1860 onward (Driscoll-Kraay standard errors in parentheses)

	1	2	3	4	5	6	7
				Years since 1960			
Cumulative number of inter-state war years since 1860	.001*** (.0001)						
Cumulative number of war years fought since 1860 as a democratic state	.001*** (.0001)						
Cumulative number of war years fought since 1860 as a non-democratic state	.0002 (.0003)						
Cumulative number of war years fought since 1860 as oil producing country	.001*** (.0001)						
Cumulative number of war years fought since 1860 as non-oil producing country	.001*** (.0002)						
Cumulative number of war years fought since 1960 as a recipient of foreign aid	-.002* (.001)						
Cumulative number of war years fought since 1960 as a non-recipient of foreign aid	.002* (.001)						
Number of war years funded at least partly by taxation	.008*** (.002)						
Number of war years not funded by taxation	-.006 (.004)						
Number of war years not funded by sources from abroad	.011*** (.002)						
Number of war years funded at least partly by sources from abroad	.003* (.001)						
Number of war years fought since 1860 as nation-state	.001*** (.0001)						
Number of war years fought since 1860 before nation-state	-.0003 (.0004)						
Controls for ongoing wars, ongoing wars in neighboring territory, regime type, Communism, GDP, oil, population size, and time	.001*** (.0001)						
	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	8742	8742	8742	3910	2972	2972	8742
F-test	83***	76***	74***	530**	34***	35***	80***
Within-country R-sq	.206	.209	.206	.148	.288	.292	.207
BIC	-18483	-18506	-18475	-9205	-6407	-6421	-18486

*** p<.001, ** p<.01, * p<.05

Appendix Table A4. Continuous moderators; country fixed-effects regression of government expenditure/GDP from 1860 onward (Driscoll-Kraay standard errors in parentheses)

	1	2	3
Sum of interactions between war onset and democracy score	.0004*** (.00004)		
Number of wars onsets while not a democracy	.0005 (.0008)		
Sum of yearly interactions between war onsets and oil production per capita (in metric tons)		.003* (.001)	
Number of war onsets while not producing any oil		.002*** (.0004)	
Sum of yearly interactions between war onsets and foreign aid (in constant USD)			-.00001*** (.000002)
Number of war onsets while not receiving any foreign aid			.010* (.004)
Controls for ongoing wars, ongoing wars in neighboring territory, regime type, Communism, GDP, oil, population size, and time	Yes	Yes	Yes
N	6604	8742	3910
F-test	49***	64***	165***
Within-country R-sq	.264	.202	.149
BIC	-13800	-18429	-9212

Appendix Table A5. Estimating the effect of cumulative number of war deaths per population size on government expenditure/GDP from 1860 onward (Driscoll-Kraay standard errors in parentheses)

Cumulative number of battle deaths per 1000 people	.0006 (.0003)
Controls for ongoing wars, ongoing wars in neighboring territory, regime type, Communism, GDP, oil, and time	Yes
N	7718
F-test	43***
Within-country R-sq	.187
BIC	-16430

*** p<.001, ** p<.01, * p<.05

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