Supplementary Material:
War Did Make States: Testing Tilly's Thesis

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A Overview

This appendix is structured in two main parts: First, we discuss our main data sources and the construction of our analysis datasets. Second, we present additional analyses and robustness tests that are not shown in the main text.

B Data

B1 Data on borders

Our main analyses rely on Abramson's spatial data on state borders, which cover the period from 1100 to 1790 in 5-year intervals.[1] We focus on a subset of this dataset that ranges from 1490 to 1790, although some of our sensitivity analyses start in 1400. A preview of the data at four points in time is shown in Figure A1. Abramson manually geocoded country borders using maps taken from the Centennia dataset[2] and Euratlas.[3] Although

[1] Abramson 2017.
[2] Reed 2008.
[3] Nussli 2010.

we found the Euratlas dataset to be somewhat more accurate than Centennia,[4] the former is only available in 100-year intervals and is therefore not suitable for our analysis. In contrast, Centennia maps state borders in 5.2 week intervals. Both Abramson and Centennia rely on a "de facto" definition of statehood that focuses on effective territorial control rather than legal definitions of sovereignty. More precisely, Abramson defines states as those units that are not occupied by a foreign power, have a capacity to tax and share a common executive. Similarly, Centennia defines states as entities that hold the best claim to de facto power over a given territory.[5]

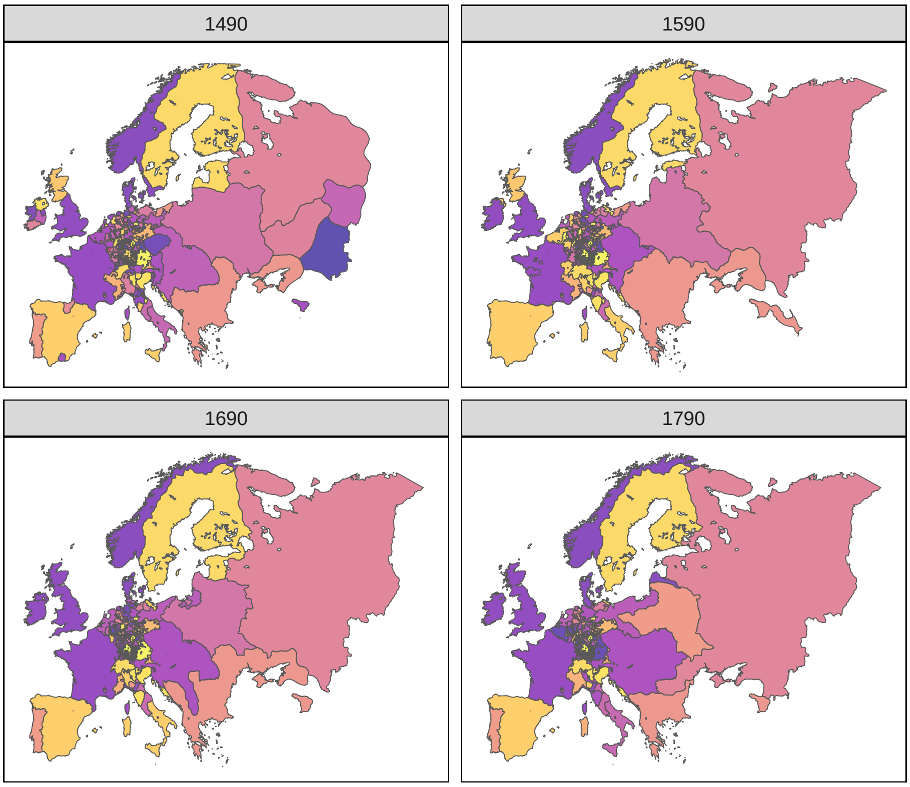


Figure A1: Snapshots from the Abramson dataset, 1490-1790

Despite these very similar definitions, Abramson records a much larger number of states than the Centennia dataset. This is shown in Figure A2, which plots the number of units over time in both datasets. Most discrepancies between the two datasets are due to differences in their coverage of small principalities, duchies, cities and republics that belonged to the Holy Roman Empire (HRE) and similar loose confederations. For example, while Centennia treats most states that were part of the HRE as part of a single unit (coded as the HRE or

[4]We judged the accuracy of each dataset by comparing a subset of maps with the historical record and other contemporary datasets of country borders and coastlines.

[5]Schönholzer and Weese 2018.

“Lesser imperial states”, Abramson codes them as separate entities, with just a few minor exceptions.[6]

Figure A2: Number of states in the Abramson and Centennia datasets

This latter approach is much more in line with de facto notions of statehood and the historical record. Throughout most of the history of the HRE, its constituent territories were administered by local rulers that enjoyed considerable autonomy, collected taxes and often fought each other over territory.[7] Using a de facto definition of statehood, these units should therefore be treated as separate states. For this reason, we rely primarily on Abramson’s dataset, but use the Centennia data in our robustness tests. It should be noted that because the Abramson data provides extensive coverage of tiny states, this biases our analyses against finding support for Tilly’s theory, which emphasizes the survival of large states versus smaller ones in a war-driven selection process.

Although Abramson’s dataset offers clear improvements compared to Centennia, its georeferencing is sometimes less accurate, as it often places state boundaries in different locations than the Centennia or Euratlas datasets it was based on. To address this, we rasterized the Abramson data and georeferenced this raster using the CShapes dataset[8] as a reference map. We manually assigned ground control points across the entire raster layer, which we used to re-project the entire Abramson dataset to ensure that its coordinate system matches that of other spatial datasets.

[6]Similarly, Centennia codes a group of small units in present-day Italy as part of a residual unit named “Lesser Italian States”, while Abramson codes them separately.

[7]Cantoni, Mohr and Weigand 2019.

[8]Schvitz et al. 2021.

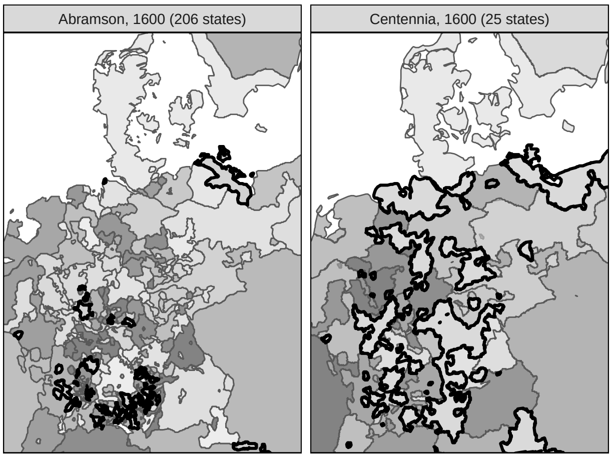


Figure A3: Small states in central Europe, 1600 AD in Abramson and Centennia (Holy Roman Empire in black)

B2 Conflict matching

Using the Abramson and Centennia datasets, we generated two lists of states. We then matched both state lists to the Brecke war dataset,[9] using the list of actors this dataset lists for every war. We only matched wars to a state if the state was independent during the war according to either Abramson or Centennia. In cases where actors did not exist as independent entities at the time of the conflict, we matched the conflict with the name of its occupier, unless the war was fought between the state and the occupier itself. In the latter case, we treated the war as an internal conflict, which we excluded from our analysis.

It should be noted that the Abramson and Centennia datasets do not always use consistent names for states across time. For example, Centennia renames "Holland" to the "Netherlands" after 1649. Such name changes often coincided with large territorial expansions (e.g. "England" turned into "Britain"), or changes in the ruling dynasty (e.g. "Spain" turning into the "Spanish Habsburgs"), but sometimes the reasons for name changes are less clear. Therefore, while in some cases a name change indicates that a state ceases to exist, this does not appear to be the case in all instances.

To avoid incorrectly coding "state deaths" as a result of name changes, we assigned a common name to all state units over time. We only overrule name changes in the Abramson and Centennia data where we could establish that name changes were unrelated to conquest, or other losses of "de facto" control, such as dynastic unions.

We also coded a number of variables that help inform our matching decisions. First, we coded a variable that indicates whether a state is occupied or not, which we used to match wars involving non-independent units. Similarly, we coded a second variable that indicates whether the state is fighting its occupant or not. Additional variables distinguish between interstate wars, internal wars and internal wars with external involvement, based on the information coded in Brecke. As noted earlier, our analyses focus exclusively on

[9] Brecke 1999.

interstate wars. Finally, we coded a variable that identifies the initiator and target states in each conflict and coded another variable that identifies external interveners.

Computing cumulative gain areas

The cumulative territorial gains described in our state-level descriptive analysis (see e.g. Figures 4 and 5-8 in the main text) are computed as follows. Essentially, the task is to decompose the growth of the state from the historical starting point at $t = 0$ into three different types of growth: namely war-related and peaceful gains from other states, as well as gains from unclaimed areas or terra nullius. State size at time t, S_t, can be computed as the union of the core area C_0, the cumulative war gains W_t, the cumulative peace gains P_t, and the cumulative terra nullius gains N_t:

$$S_t = C_0 \cup W_t \cup P_t \cup N_t$$

The contribution through warfare W_t can be computed based on all war-related dyadic gains. Δw_{jt} with state j in time period t:

$$W_t = W_{t-1} \cup (\cup_j \Delta w_{jt}) \cap S_t \setminus C_0$$

The corresponding cumulative peaceful gains P_t can be computed based on all peaceful dyadic gains Δp_{jt} with state j in time period t:

$$P_t = P_{t-1} \cup (\cup_j \Delta p_{jt}) \cap S_t \setminus C_0$$

Finally, the cumulative contributions from terra nullius N_t can be computed based on all such dyadic gains Δn_t in time period t:

$$N_t = N_{t-1} \cup \Delta n_t \cap S_t \setminus C_0$$

The intersection with S_t assures that the gain areas are "handed back" in case of territorial losses, which are removed from the respective, mutually exclusive gain categories. If a territory that was first gained trough peaceful means was lost and later regained through war, it is added to the latter category and vice versa. The mode of the most recent incorporation is what counts in the lasting categorization of gain areas.

B3 Peace agreements

In the following, we provide more details on our analysis of peace agreements. Our main analysis links territorial gains to warfare if they occurred either during or after a war in which the gaining and losing party fought on opposite sides. Although this approach establishes a relatively close connection between war and state expansion, it does not guarantee that all territorial transfers were in fact war outcomes. To close this gap, we gathered data on related peace agreements, since most wars in early modern Europe ended by formal treaties.[10] Studying these agreements also helps address concerns of reverse causation, as they enable us to show that states expanded as a result of war, rather than the other way around.

For feasibility reasons, we focus exclusively on territorial transfers larger than 100 × 100 kilometers. We first assembled a list of all such war-related territorial gains. This list includes the names of the two states in the dyad, the year in which a territorial gain is recorded in our data, and the conflict that occurred in the preceding 5-year period. We then coded a binary variable that indicates whether territorial gains were formalized in a peace treaty that ended the conflict. We do not link territorial transfers to peace treaties if the transfer was reversed during the war (and not mentioned in the peace treaty),[11] if they coincided with the "birth" of new states or if we could not find any evidence of peace treaties that were signed. We code a separate variable that flags cases where peace treaties restored the pre-war status quo.

We rely mainly on data from Jörg Fisch for the peace agreements.[12] Figure A4 visualizes our data, showing the link between war-adjacent territorial transfers and peace agreements from 1490 through 1790. The vast majority of transfers were linked to peace treaties that either confirmed (67%) or reversed (12%) wartime gains. In the remaining 20% we did not find evidence of peace treaties.[13] The share of transfers linked to treaties also increased over time, which coincided with an increasing formalization of international politics.[14]

Most of the gains we identify in our historical analysis of state trajectories are confirmed by peace treaties. For instance, the Peace of Oliva (1660) allowed Prussia to annex the Duchy of Prussia from Polish rule. A century later, the Treaty of Saint Petersburg returned the territory to Prussia after its occupation by Muscovy. Various treaties between the Ottomans and the Russians, like the Treaty of Constantinople (1700) and the Treaty of Küçük Kaynarca (1774) helped to establish Russian hegemony in its southern theater, while the Treaty of Nystad (1721) confirmed its gains in the western theater following the Great Northern War against Sweden. The Ottomans also signed treaties with the Habsburgs, such as the Treaty of Constantinople (1533) and the Peace of Zsitvatorok (1606), which provided the Habsburgs with important sections of Hungary. Lastly, peace agreements like the Treaty of Munster (1648), the Peace of Pyrenees (1649),[15] and the Treaty of Utrecht (1714)[16] established France's borders close to the Rhine, the Pyrenees and the Alps. Many of the treaties tend to confirm multiple territorial transfers at once. For example, the Treaty of Nystad (1721) confirmed various successive gains attained by Muscovy in the Great Northern War,

[10] Fazal 2013.

[11] We found only one case of such a temporary gain, namely France's incursions into Venice (1510) during the Italian Wars.

[12] Fisch 1979.

[13] Most cases without peace treaties were still linked to wars. Some of these were fought between states and non-sovereign groups, resulted in state death or were settled by alternative means (e.g. royal edicts, truces). See e.g. Duchhardt 2004; Fisch 1979.

[14] Lesaffer 2004, 2018; Duchhardt 2004; Fazal 2013.

[15] Both associated to the Thirty Year's War.

[16] Ending the War of Spanish Succession.

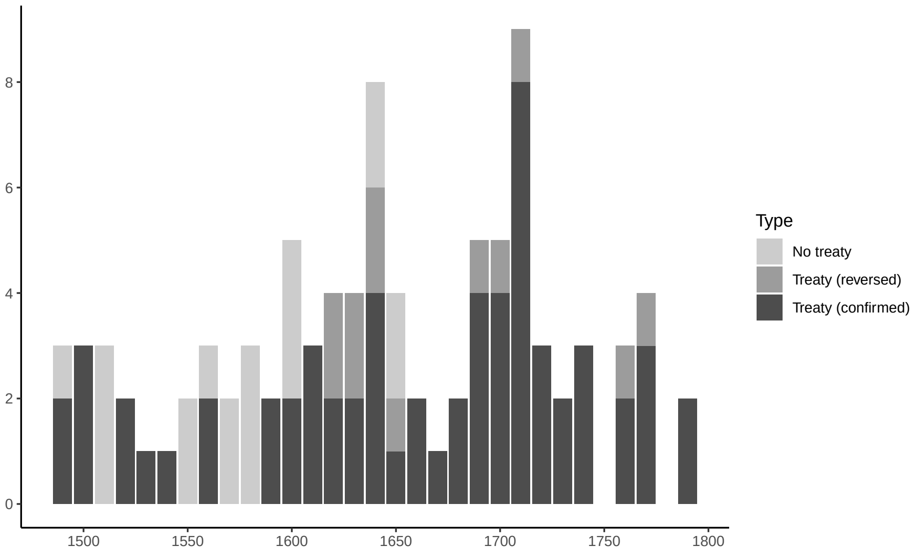


Figure A4: Linking war-adjacent territorial transfers to peace agreement.

while the Treaty of Rastatt (1714) costed the Habsburgs the Upper Palatinate to Bavaria yet confirmed its gains taken from France in the East.

In sum, our examination of peace agreements further confirms the close relationship between warfare and territorial expansion. Most of the territorial transfers we previously coded as war gains were indeed confirmed in peace treaties, while many remaining cases were linked to war through state death or alternative conflict resolution mechanisms.

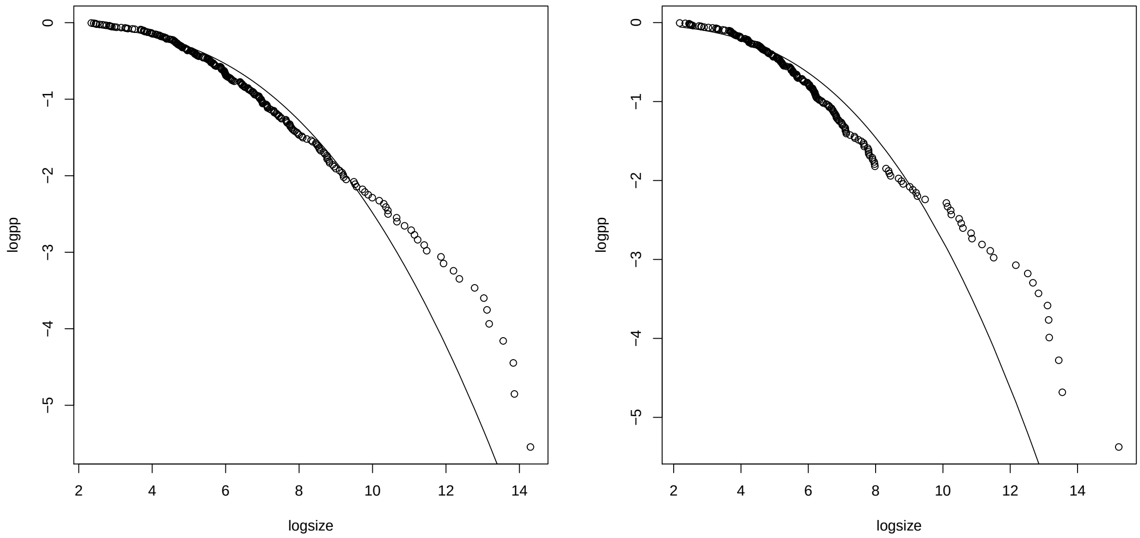
C Analysis

C1 Additional analyses: distributional tests

In this subsection, we consider Abramson's distributional analysis that he uses to cast doubt on bellicist theory.[17] Abramson argues that territorial state size follows a log-normal distribution. In an effort to validate this conclusion, we find that his state size data deviate significantly from a log-normal distribution. Figures A5a and A5b illustrate the empirical distributions in log-log space together with a fitted log-normal complementary CDF. At no point between 1500 through 1790 do the data approximate log-normality according to a Shapiro-Wilks test, as shown in Figure A6. However, log-normality does appear to apply to other datasets on state sizes in different and time periods, especially after the French Revolution.[18] Yet, as argued in the main text, the principal reason to rely our own measure of territorial concentration rather than any average is that a unit-based measure tends to overemphasize the numerous, small principalities in Germany in a way that potentially biases that test against bellicist theorizing.

[17] Abramson 2017.
[18] See e.g. Cederman 2004.

Finally, Figure A7 shows the size distribution of peaceful and war-related territorial gains between 1500 and 1790. Overall, territorial transfers through war involved much larger territories than peaceful transfers, which again highlights the key role of warfare in the territorial expansion of European states.



(a) 1500 **(b)** 1790

Figure A5: Log-normal fit of Abramson's state sizes

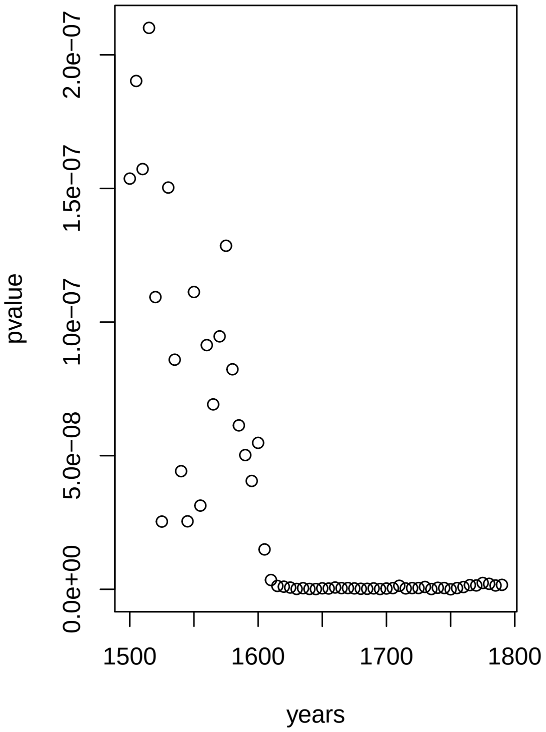


Figure A6: Log-normal fit of Abramson's state sizes, 1500-1790. In all years, the null-hypothesis of log-normality is rejected.

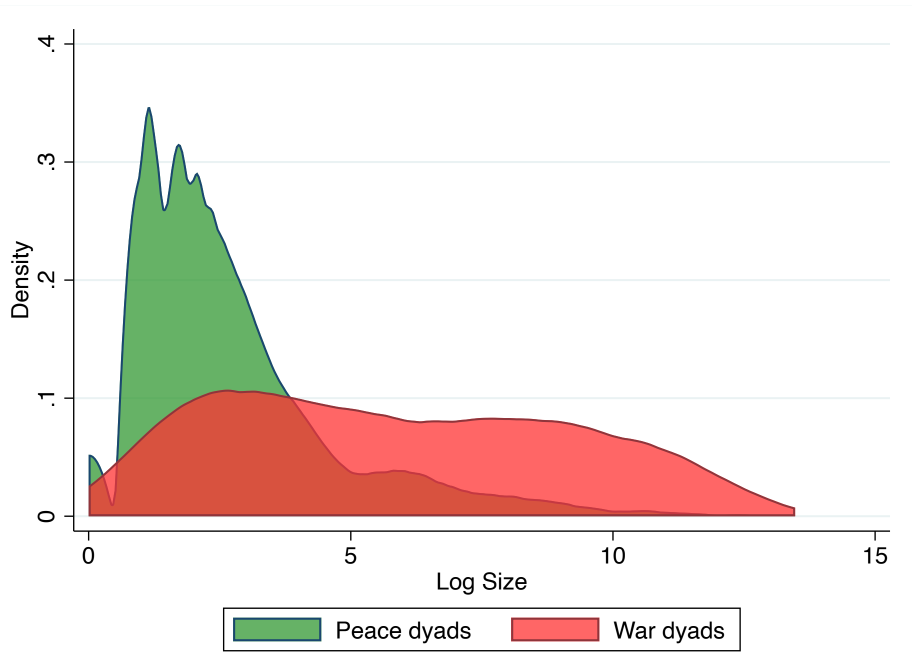


Figure A7: Size distribution of peace vs. war gains

C2 Robustness analysis

This section presents a series of additional tests to evaluate the robustness of our findings. We first present robustness tests of the state-level survival models presented in the main text and then move to the dyadic analyses.

State-level analyses

Table A1 extends the survival models shown in Table 2, adding two controls for each state's urban population share and a dummy variable for whether the state belongs to Europe's core or the periphery. The former constitutes a simple test of economic explanations that expect city growth to drive state formation, while the latter allows us to account for differences in the logic of state formation between the central European "city belt" and the sparsely populated periphery. We compute urban population shares based on the HYDE gridded population database.[19] The core-periphery dummy is coded based on each state's logged distance to Europe's centroid. States with a centroid distance below the median are considered part of the core, while all others belong to the periphery. Adding these two variables does not affect our main findings. In addition, we do not find evidence of a relationship between urban population and state survival, but find an increased likelihood of state death in Europe's core, a region that was dominated by small principalities and city-states.

Dyadic models

We move to our dyadic analyses with an alternative specification that uses a binary measure of territorial gains as the outcome variable. The results, shown in Table A2 again support our main findings. However, our estimate for cumulative war gains misses the significance threshold in the most conservative specification that includes fixed effects for each year and dyad.

The next test controls for the urban population shares and core-periphery status of States A and B. Table A3 adds the corresponding variables to each of the four models in A13. While our main results hold, the urban share of State A is consistently negative and marginally significant in Model 3. The coefficient of the urban share of State B's population fails to reach statistical significance in any of the models. In Models 1-3, we also find that states that belong to Europe's core are more likely to expand than those in the periphery.

To remove potential endogeneity, we also provide analysis of models that contain no war variables at all. Table A4 shows that the main growth effect is very much robust, both in the static version and with respect to cumulative growth in the past. This is hardly surprising since both war-related and peaceful growth exhibit strong effects. However, the negative effect of cumulative territorial losses of State B cannot be separated from zero because this effect appears to be associated with war-related territorial decline only.

[19] Klein Goldewijk et al. 2011.

Furthermore, we explore heterogeneity in the relationship between war and territorial expansion by re-estimating the dyadic models shown in the main text in four subsamples of the data that cover the periods 1400-1490, 1495-1590, 1595-1690 and 1695-1790. The models shown in Table **??** include all controls and year fixed effects. In each century, the interaction term between war and previous cumulative war gains is positive, with effect sizes increasing over time (see Hypothesis 2a). However, the estimated effect for 1595-1690 is comparatively small and fails to reach conventional significance levels. There is also support for Hypothesis 2b from the 16th and 18th centuries. Along similar lines, the models in Table A6 test the influence of military technology by dividing the sample into two periods (1490-1645 and 1650-1790) since military technology arguably boosted expansion in the second period.[20] Again, we do not detect any noticeable differences between these time periods.

As additional robustness tests, Table A7 and A8 reanalyze the four main models reported in Table **??** without the two most typical cases of coercive growth, Russia and Prussia, and without the Russian, Habsburg and Ottoman empires respectively. This exercise does not affect the results noticeably.

To get a firmer grip on the mechanisms driving the main results, we analyze the initiators' decisions to go to war in the first place as well as the distribution of wartime gains (see Table A9). The initiating state is identified by Brecke's conflict data, which yields a dichotomous variable. We present four models to assess the decision making process. We use the same set of geographic control variables. Model 1 is a standard logit model with years fixed effects and clustering on the dyad. The dependent variable records war initiation by state A against B. In agreement with the bellicist model, the relative logged size of A compared to B is positively associated with the decision to trigger a war. Keeping the logit specification, Model 2 tests if the same effect holds for the cumulative gain and loss variables. In line with our previous findings, we find that states that have previously expanded through war are more likely to initiate wars. Based on linear probability, Models 3 and 4 confirm this picture, and in case of Model 4, which includes dyad- and year fixed effects exposes the bellicist model to a tough test. Since the onset analysis focuses on the initiator, however, it is not suitable for testing the relationship between past war losses and new attacks.

We now turn to what happens once a war has broken out. Model 1 in Table **??** restricts the sample to wartime dyads. This allows us to check whether the bellicist expectation that large initiating states are particularly prone to make territorial gains holds, which is very much the case (see the interaction between initiating state and state size). Shifting the focus back to the full sample, including all peacetime dyads, we repeat the interaction between war initiation and relative state size, which again turns out to be very powerful. Furthermore, adding the dummy for initiation to Models 3 and 4 in Table **??** shows that this variable has a very strong effect and is highly significant without changing the cumulative effects. The fact that the initiator gaining considerably more than other states confirms the positive feedback effect of stronger states getting strong enough to continue their campaign of expansion (see Hypothesis 2a).

[20] See Gennaioli and Voth 2015.

As our last set of dyadic analyses, we re-estimate the main dyadic models using the Centennia Atlas[21] instead of Abramson as our data source for state boundaries. A first set of models covers the entire period from 1490 to 1915.[22] The results, shown in Table A12 again support our main findings, as shown by the positive and significant estimates for both war and cumulative war gains. Centennia also enables us to go beyond our main analyses, to see whether our findings for the period from 1490 to 1790 also apply to the post-1790 period. Broken up into centuries, the results shown in Table **??** show that our findings hold up well, as we again find a positive and significant effect of cumulative war gains on territorial gains for the period after 1790 thus confirming H2a. We also find a positive association between cumulative war losses and state expansion, but this estimate again fails to reach conventional significance except in the 18th century.

Finally, to check whether the size effect is different for large and small states, Table A14 presents the findings of a modified country-level analysis that partitions Models 1 and 2 in Table 1 into samples based on those states that are larger than the annual median (Models 1a and 2a) and those that are smaller than the annual median (Models 1b and 2b). The results indicate that the size effect is similar for both subsamples, and not limited to either of them.

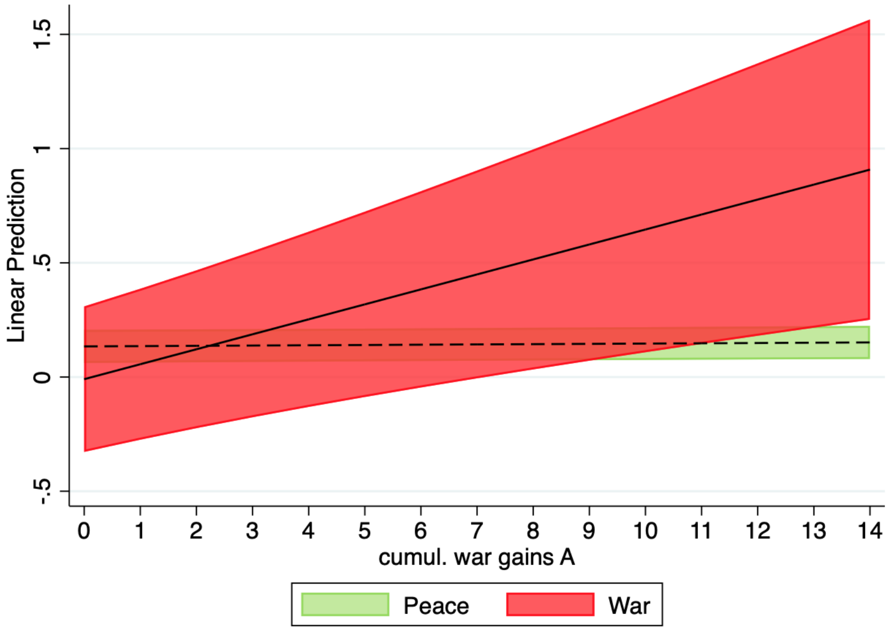
[21] Reed 2008.

[22] As mentioned in the main text, we expect Tilly's theory to apply only until the early 20th century, after which nationalism fundamentally changed the logic of state formation.

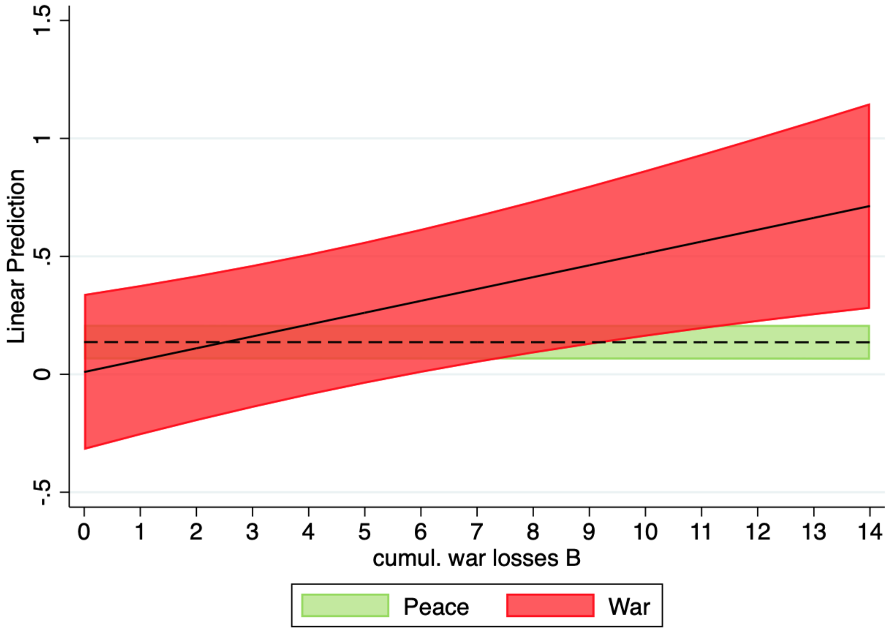
Table A1: Cox proportional hazard models of state death

	(1)	(2)	(3)
war	-0.0843	4.7875***	2.9579**
	(0.3721)	(1.0309)	(1.0786)
log state size	0.1688*	0.2590***	0.4551***
	(0.0710)	(0.0674)	(0.0865)
war X state size		-0.4440***	-0.1811+
		(0.0916)	(0.1058)
cumul. war gains			-0.2921***
			(0.0774)
cumul. peace gains			-0.1022*
			(0.0412)
log cumul. war losses			0.0427
			(0.0610)
log cumul. peace losses			-0.0366
			(0.0414)
core	0.5271***	0.5068***	0.5681***
	(0.1277)	(0.1276)	(0.1308)
urbanization	0.2069	-0.1865	0.1008
	(0.3746)	(0.4480)	(0.4323)
Pseudo R^2	0.008	0.014	0.025
Geo. Controls	Yes	Yes	Yes
Observations	12672	12672	12672

Standard errors clustered on states in parentheses.
$^{+}p < 0.1$; $^{*}p < 0.05$; $^{**}p < 0.01$.; $^{***}p < 0.001$.



(a) State A's gains as a function of its cumulative war gains (dyad FE).



(b) State B's losses as a function of its cumulative war losses (dyad FE).

Figure A8: The consequences of cumulative gains and losses

Table A2: Dyadic analysis of gains of State A and losses of State B (binary Dv)

	(1)	(2)	(3)	(4)
war AB	0.1457***	0.0208	0.0609*	-0.0273
	(0.0257)	(0.0165)	(0.0302)	(0.0282)
rel. log size A/AB	0.0174***	0.0174***		
	(0.0031)	(0.0031)		
war X rel. log size		0.1391**		
		(0.0462)		
war X war gains A			0.0084*	0.0053+
			(0.0042)	(0.0032)
peace X war gains A			-0.0004*	-0.0001
			(0.0002)	(0.0002)
war X peace gains A			-0.0039	0.0015
			(0.0045)	(0.0042)
peace X peace gains A			0.0009***	0.0008***
			(0.0002)	(0.0002)
war X war losses B			0.0088*	0.0034+
			(0.0044)	(0.0018)
peace X war losses B			-0.0006**	-0.0003
			(0.0002)	(0.0003)
war X peace losses B			0.0056	0.0052**
			(0.0048)	(0.0017)
peace X peace losses B			0.0004**	0.0001
			(0.0002)	(0.0001)
log size A			0.0002	-0.0028**
			(0.0002)	(0.0009)
log size B	0.0017***	0.0017***	0.0008***	-0.0001
	(0.0003)	(0.0003)	(0.0002)	(0.0007)
Pseudo R^2				
Geo. Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Dyad FE	No	No	No	Yes
Observations	3308669	3308669	3308669	3293989

Standard errors clustered on states and dyads in parentheses.
$^{+}p < 0.1$; $^{*}p < 0.05$; $^{**}p < 0.01$.; $^{***}p < 0.001$.

Table A3: Dyadic analysis of gains of State A and losses of State B

	(1)	(2)	(3)	(4)
war AB	1.1434***	-0.4404*	0.2168	-0.1374
	(0.2121)	(0.1796)	(0.2151)	(0.1914)
rel. log size A/AB	0.0833***	0.0826***		
	(0.0184)	(0.0183)		
war X rel. log size		1.7636***		
		(0.4403)		
war X war gains A			0.0977***	0.0642***
			(0.0273)	(0.0177)
peace X war gains A			-0.0002	0.0007
			(0.0006)	(0.0008)
war X peace gains A			-0.0185	0.0026
			(0.0313)	(0.0252)
peace X peace gains A			0.0022***	0.0021***
			(0.0004)	(0.0006)
war X war losses B			0.0891*	0.0469**
			(0.0384)	(0.0162)
peace X war losses B			-0.0013+	-0.0006
			(0.0007)	(0.0007)
war X peace losses B			0.0078	0.0110
			(0.0418)	(0.0176)
peace X peace losses B			0.0007	-0.0002
			(0.0004)	(0.0005)
log size A			0.0016+	-0.0080*
			(0.0009)	(0.0034)
log size B	0.0082***	0.0082***	0.0040***	0.0043
	(0.0017)	(0.0017)	(0.0011)	(0.0029)
urban share A	-0.0055+	-0.0052+	-0.0052*	-0.0015
	(0.0031)	(0.0031)	(0.0024)	(0.0061)
urban share B	-0.0035	-0.0036	-0.0034	0.0013
	(0.0025)	(0.0026)	(0.0025)	(0.0059)
core (A)	0.0033**	0.0032**	0.0019	0.0009
	(0.0010)	(0.0011)	(0.0012)	(0.0009)
core (B)	0.0010	0.0010	0.0009	0.0007
	(0.0014)	(0.0016)	(0.0014)	(0.0011)
Pseudo R^2				
Geo. Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Dyad FE	No	No	No	Yes
Observations	2832133	2832133	2832133	2817686

Standard errors clustered on states and dyads in parentheses.
$^{+}p < 0.1$; $^{*}p < 0.05$; $^{**}p < 0.01$.; $^{***}p < 0.001$.

Table A4: Dyadic analysis of gains of State A and losses of State B without war variables

	(1)	(2)	(3)
rel. log size A/AB	0.0793^{***}		
	(0.0184)		
log size A		0.0012	-0.0079^{*}
		(0.0008)	(0.0035)
log size B	0.0082^{***}	0.0032^{***}	0.0035
	(0.0017)	(0.0009)	(0.0028)
cumul. gains A		0.0021^{***}	0.0024^{***}
		(0.0004)	(0.0005)
cumul. losses B		0.0006	-0.0001
		(0.0005)	(0.0004)
Pseudo R^2			
Geo. Controls	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Dyad FE	No	No	Yes
Observations	3308669	3308669	3293989

Standard errors clustered on states and dyads in parentheses.
$^{+}p < 0.1$; $^{*}p < 0.05$; $^{**}p < 0.01$.; $^{***}p < 0.001$.

Table A5: Dyadic analysis of gains and losses by century

	(1)	(2)	(3)	(4)
war AB	0.4374*	0.1047	0.3106	-1.3234**
	(0.1785)	(0.1049)	(0.2905)	(0.4705)
war X war gains A	0.0824*	0.0841*	0.0945	0.1104**
	(0.0358)	(0.0425)	(0.0583)	(0.0341)
peace X war gains A	0.0008+	0.0004	0.0007	0.0004
	(0.0004)	(0.0008)	(0.0009)	(0.0005)
war X peace gains A	-0.0097	0.0422	0.0167	0.1033
	(0.0383)	(0.0503)	(0.0790)	(0.0651)
peace X peace gains A	0.0003+	0.0023**	0.0024***	0.0017***
	(0.0002)	(0.0008)	(0.0007)	(0.0005)
war X war losses B	0.0304	0.0948*	0.0381	0.0812**
	(0.0320)	(0.0415)	(0.0274)	(0.0246)
peace X war losses B	-0.0003	-0.0002	-0.0022*	-0.0013*
	(0.0003)	(0.0005)	(0.0010)	(0.0006)
war X peace losses B	-0.0074	-0.0454	-0.0246	0.0426
	(0.0225)	(0.0328)	(0.0378)	(0.0596)
peace X peace losses B	0.0004	0.0002	0.0003	0.0000
	(0.0003)	(0.0004)	(0.0005)	(0.0004)
log size A	0.0008*	0.0007	0.0010	-0.0006
	(0.0004)	(0.0009)	(0.0013)	(0.0010)
log size B	0.0013***	0.0034***	0.0047***	0.0024**
	(0.0004)	(0.0008)	(0.0013)	(0.0008)
Pseudo R^2				
Period	1400-1490	1495-1590	1595-1690	1695-1790
Geo. Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Dyad FE	No	No	No	No
Observations	1216821	1212667	1095908	1000094

Standard errors clustered on states and dyads in parentheses.
$^+p < 0.1$; $^*p < 0.05$; $^{**}p < 0.01$.; $^{***}p < 0.001$.

Table A6: Dyadic analysis of gains and losses before and after 1650

	(1)	(2)
war AB	0.5291**	-0.6622
	(0.1913)	(0.5571)
war X war gains A	0.1094**	0.1296**
	(0.0348)	(0.0442)
peace X war gains A	0.0019+	-0.0004
	(0.0010)	(0.0006)
war X peace gains A	0.0062	-0.0172
	(0.0473)	(0.0427)
peace X peace gains A	0.0012***	0.0022***
	(0.0004)	(0.0005)
war X war losses B	0.0486	0.1116***
	(0.0452)	(0.0294)
peace X war losses B	-0.0003	-0.0018*
	(0.0005)	(0.0008)
war X peace losses B	-0.0449	0.0644
	(0.0453)	(0.0515)
peace X peace losses B	0.0005	0.0003
	(0.0003)	(0.0006)
log size A	0.0018*	0.0001
	(0.0009)	(0.0011)
log size B	0.0036***	0.0035**
	(0.0010)	(0.0012)
Pseudo R^2		
Geo. Controls	Yes	Yes
Year FE	Yes	Yes
Dyad FE	No	No
Observations	1802569	1506100

Standard errors clustered on states and dyads in parentheses.
$^{+}p < 0.1$; $^{*}p < 0.05$; $^{**}p < 0.01$.; $^{***}p < 0.001$.

Table A7: Dyadic analysis of gains and losses without Russia and Prussia

	(1)	(2)	(3)	(4)
war AB	1.0805***	-0.1085	0.3777*	0.0051
	(0.1941)	(0.2177)	(0.1867)	(0.1407)
rel. log size A/AB	0.0612***	0.0608***		
	(0.0133)	(0.0132)		
war X rel. log size		1.3293**		
		(0.4076)		
war X war gains A			0.0918**	0.0707***
			(0.0283)	(0.0177)
peace X war gains A			-0.0001	0.0007
			(0.0006)	(0.0008)
war X peace gains A			-0.0311	-0.0181
			(0.0297)	(0.0140)
peace X peace gains A			0.0021***	0.0022***
			(0.0004)	(0.0006)
war X war losses B			0.0787*	0.0428**
			(0.0386)	(0.0164)
peace X war losses B			-0.0010	-0.0006
			(0.0006)	(0.0007)
war X peace losses B			0.0041	0.0080
			(0.0387)	(0.0159)
peace X peace losses B			0.0006	-0.0002
			(0.0004)	(0.0004)
log size A			0.0012	-0.0085**
			(0.0007)	(0.0032)
log size B	0.0064***	0.0064***	0.0032***	0.0026
	(0.0013)	(0.0013)	(0.0009)	(0.0024)
Pseudo R^2				
Geo. Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Dyad FE	No	No	No	Yes
Observations	3294702	3294702	3294702	3280050

Standard errors clustered on states and dyads in parentheses.
$^{+}p < 0.1$; $^{*}p < 0.05$; $^{**}p < 0.01$.; $^{***}p < 0.001$.

Table A8: Dyadic analysis of gains and losses without empires

	(1)	(2)	(3)	(4)
war AB	0.9524***	-0.1432	0.3926*	0.0511
	(0.2101)	(0.4699)	(0.1846)	(0.0996)
rel. log size A/AB	0.0471***	0.0469***		
	(0.0096)	(0.0095)		
war X rel. log size		1.2269+		
		(0.6620)		
war X war gains A			0.1054***	0.0742**
			(0.0305)	(0.0227)
peace X war gains A			-0.0000	0.0008
			(0.0007)	(0.0007)
war X peace gains A			-0.0641**	-0.0319
			(0.0214)	(0.0196)
peace X peace gains A			0.0019***	0.0020***
			(0.0004)	(0.0005)
war X war losses B			0.1042***	0.0505***
			(0.0301)	(0.0149)
peace X war losses B			-0.0007	-0.0001
			(0.0006)	(0.0005)
war X peace losses B			-0.0074	0.0075
			(0.0320)	(0.0153)
peace X peace losses B			0.0007+	0.0002
			(0.0004)	(0.0004)
log size A			0.0009+	-0.0095**
			(0.0005)	(0.0029)
log size B	0.0052***	0.0052***	0.0025***	0.0016
	(0.0010)	(0.0010)	(0.0007)	(0.0021)
Pseudo R^2				R^2
Geo. Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Dyad FE	No	No	No	Yes
Observations	3229799	3229799	3229799	3215280

Standard errors clustered on states and dyads in parentheses.
$^{+}p < 0.1$; $^{*}p < 0.05$; $^{**}p < 0.01$.; $^{***}p < 0.001$.

Table A9: Dyadic onset

	(1)	(2)	(3)	(4)
rel. log size A/AB	6.6508***		0.3927**	0.6114*
	(1.1426)		(0.1315)	(0.2573)
cumul. war gains A		0.0656***	0.0184***	0.0099*
		(0.0167)	(0.0054)	(0.0046)
cumul. peace gains A		-0.0860***	0.0026+	-0.0015
		(0.0255)	(0.0014)	(0.0022)
cumul. war losses B		0.0174	0.0077*	-0.0022
		(0.0196)	(0.0031)	(0.0031)
cumul. peace losses B		-0.0251	-0.0014	0.0003
		(0.0220)	(0.0015)	(0.0016)
log size A		0.4480***	-0.0150**	-0.0186+
		(0.0457)	(0.0057)	(0.0109)
log size B	0.5129***	0.3785***	0.0312**	0.0445*
	(0.0625)	(0.0391)	(0.0097)	(0.0203)
Pseudo R^2	0.594	0.481		
Esimation	Logit	Logit	OLS	OLS
Geo. Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Dyad FE	No	No	No	Yes
Observations	3069860	3069860	3317336	3302632

Standard errors clustered on states and dyads in parentheses.
$^+p < 0.1$; $^*p < 0.05$; $^{**}p < 0.01$.; $^{***}p < 0.001$.

Table A10: Dyadic gains

	(1)	(2)	(3)	(4)
war AB		0.7756***	-0.0394	-0.2542
		(0.1895)	(0.2138)	(0.1896)
A initiator	-4.0002*	-2.5602**	1.1030***	0.5489***
	(1.5887)	(0.9794)	(0.1226)	(0.0916)
rel. log size A/AB	1.3061	0.0657***		
	(1.1254)	(0.0148)		
A init. X rel. size	4.8207**	4.0960***		
	(1.7409)	(0.8264)		
war X war gains A			0.0751**	0.0532**
			(0.0287)	(0.0172)
peace X war gains A			-0.0001	0.0007
			(0.0005)	(0.0007)
war X peace gains A			-0.0069	0.0086
			(0.0327)	(0.0260)
peace X peace gains A			0.0021***	0.0022***
			(0.0004)	(0.0005)
war X war losses B			0.0859*	0.0461**
			(0.0367)	(0.0165)
peace X war losses B			-0.0011+	-0.0006
			(0.0006)	(0.0007)
war X peace losses B			0.0101	0.0109
			(0.0403)	(0.0177)
peace X peace losses B			0.0007+	-0.0002
			(0.0004)	(0.0004)
log size A			0.0013	-0.0084**
			(0.0008)	(0.0032)
log size B	0.2693***	0.0070***	0.0036***	0.0032
	(0.0661)	(0.0014)	(0.0010)	(0.0027)
Pseudo R^2				
Sample	War	All	All	All
Geo. Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Dyad FE	No	No	Yes	Yes
Observations	1839	3308669	3308669	3293989

Standard errors clustered on states and dyads in parentheses.
$^{+}p < 0.1$; $^{*}p < 0.05$; $^{**}p < 0.01$.; $^{***}p < 0.001$.

Table A11: Dyadic analysis of gains of State A and losses of State B, 1400-1790

	(1)	(2)	(3)	(4)
war AB	1.0601***	-0.4978	0.1685*	-0.1587
	(0.1705)	(0.3521)	(0.0725)	(0.1517)
rel. log size A/AB	0.0506***	0.0501***		
	(0.0116)	(0.0115)		
war X rel. log size		1.7289***		
		(0.5081)		
war X war gains A			0.0915***	0.0666*
			(0.0265)	(0.0286)
peace X war gains A			0.0005	0.0015*
			(0.0005)	(0.0006)
war X peace gains A			0.0221	0.0235
			(0.0363)	(0.0408)
peace X peace gains A			0.0019***	0.0010*
			(0.0004)	(0.0004)
war X war losses B			0.0608***	0.0518***
			(0.0099)	(0.0151)
peace X war losses B			-0.0008+	-0.0004
			(0.0005)	(0.0008)
war X peace losses B			-0.0197	-0.0091
			(0.0237)	(0.0215)
peace X peace losses B			0.0006+	-0.0000
			(0.0003)	(0.0004)
log size A			0.0006	-0.0048*
			(0.0005)	(0.0024)
log size B	0.0053***	0.0054***	0.0027***	0.0054*
	(0.0011)	(0.0011)	(0.0007)	(0.0026)
Pseudo R^2				
Geo. Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Dyad FE	No	No	No	No
Observations	4525490	4525490	4525490	4512492

Standard errors clustered on states and dyads in parentheses.
$^{+}p < 0.1$; $^{*}p < 0.05$; $^{**}p < 0.01$.; $^{***}p < 0.001$.

Table A12: Dyadic analysis of gains of State A and losses of State B (Centennia data)

	(1)	(2)	(3)	(4)
war AB	0.7914***	-0.5786	0.1148	0.0333
	(0.1176)	(0.3690)	(0.1373)	(0.1165)
rel. log size A/AB	0.0691+	0.0609+		
	(0.0351)	(0.0344)		
war X rel. log size		1.5021**		
		(0.4953)		
war X war gains A			0.0694***	0.0603***
			(0.0174)	(0.0157)
peace X war gains A			0.0018*	0.0005
			(0.0009)	(0.0019)
war X peace gains A			-0.0020	0.0050
			(0.0148)	(0.0112)
peace X peace gains A			0.0002	-0.0026+
			(0.0008)	(0.0015)
war X war losses B			0.0371*	0.0292
			(0.0182)	(0.0207)
peace X war losses B			0.0012	-0.0000
			(0.0012)	(0.0020)
war X peace losses B			0.0171	0.0090
			(0.0201)	(0.0240)
peace X peace losses B			0.0021*	-0.0015
			(0.0009)	(0.0016)
log size A			0.0025	-0.0043
			(0.0021)	(0.0084)
log size B	0.0097***	0.0096***	0.0048*	0.0190*
	(0.0028)	(0.0028)	(0.0021)	(0.0082)
log distance AB	-0.0052+	-0.0053+	-0.0062+	-0.0317*
Pseudo R^2				
Geo. Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Dyad FE	No	No	No	Yes
Observations	170045	170045	170045	167767

Standard errors clustered on states and dyads in parentheses.
$^{+}p < 0.1$; $^{*}p < 0.05$; $^{**}p < 0.01$.; $^{***}p < 0.001$.

Table A13: Dyadic analysis of gains and losses by century (Centennia data)

	(1)	(2)	(3)	(4)
war AB	0.3927^{+}	0.8299*	-0.7857*	-0.2389
	(0.2317)	(0.3900)	(0.3517)	(0.1807)
war X war gains A	0.0502^{+}	0.0613	0.0653*	0.1052***
	(0.0253)	(0.0380)	(0.0262)	(0.0293)
peace X war gains A	0.0013	0.0002	0.0021^{+}	0.0045*
	(0.0019)	(0.0018)	(0.0012)	(0.0017)
war X peace gains A	0.0034	-0.0710^{+}	0.0622*	0.0174
	(0.0308)	(0.0371)	(0.0255)	(0.0300)
peace X peace gains A	-0.0001	-0.0031*	-0.0012	0.0035*
	(0.0014)	(0.0015)	(0.0015)	(0.0016)
war X war losses B	-0.0135	0.0326	0.0799**	0.0203
	(0.0307)	(0.0369)	(0.0282)	(0.0533)
peace X war losses B	0.0038*	-0.0003	-0.0006	0.0015
	(0.0016)	(0.0016)	(0.0015)	(0.0021)
war X peace losses B	0.0110	-0.0056	0.0231	0.0697*
	(0.0402)	(0.0199)	(0.0295)	(0.0347)
peace X peace losses B	0.0027^{+}	0.0017	0.0023^{+}	0.0021
	(0.0015)	(0.0016)	(0.0013)	(0.0015)
log size A	0.0057**	0.0085*	0.0048	-0.0076
	(0.0021)	(0.0039)	(0.0043)	(0.0056)
log size B	0.0025	0.0061	0.0074*	0.0031
	(0.0020)	(0.0038)	(0.0032)	(0.0030)
Pseudo R^2				
Period	1490-1590	1595-1690	1695-1790	1795-1915
Geo. Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Dyad FE	No	No	No	No
Observations	44345	33372	50441	41887

Standard errors clustered on states and dyads in parentheses.
$^{+}p < 0.1$; $^{*}p < 0.05$; $^{**}p < 0.01$.; $^{***}p < 0.001$.

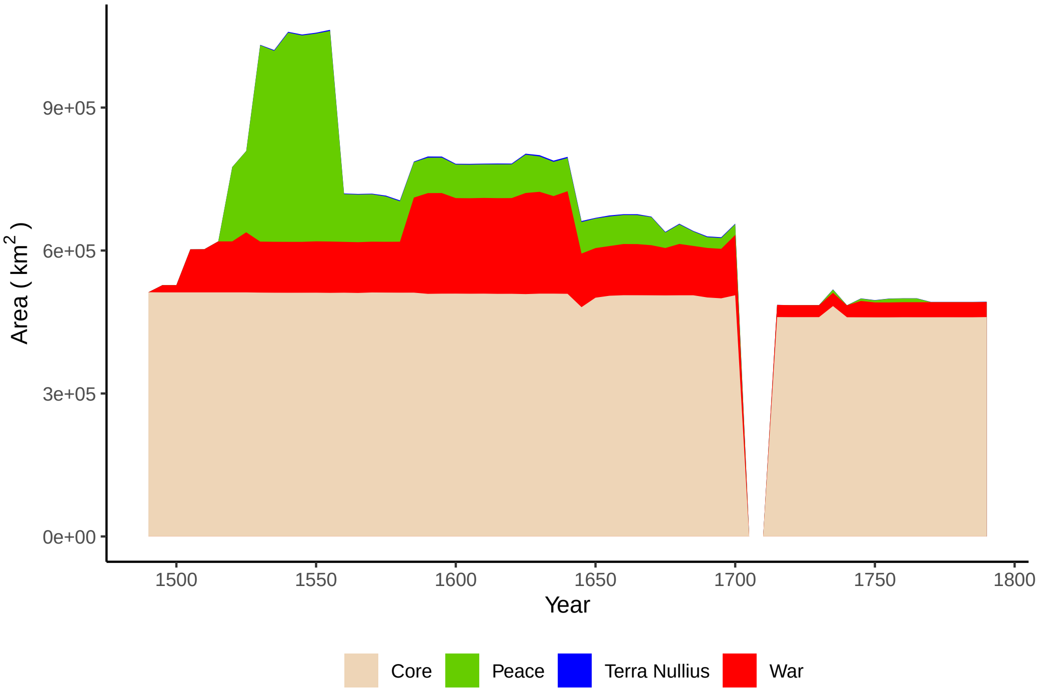
Table A14: Territorial change with samples above and below median state size

	(1) log gain	(2) log gain	(3) log gain	(4) log gain
war	-1.4195^{+}	-1.7291***	0.8744***	0.0254
	(0.7467)	(0.1222)	(0.2574)	(0.1121)
war X state size	0.2354***	0.4036***		
	(0.0692)	(0.0283)		
log state size	0.2517***	0.0377***	0.2455***	0.0334***
	(0.0293)	(0.0085)	(0.0353)	(0.0080)
war X cumul. war gains			0.1417**	0.7041***
			(0.0431)	(0.1546)
peace X cumul. war gains			-0.0206	0.0521
			(0.0203)	(0.0627)
war X cumul. peace gains			-0.0441	0.0000
			(0.0479)	(.)
peace X cumul. peace gains			0.0293^{+}	0.0288^{+}
			(0.0150)	(0.0172)
Pseudo R^2				
Geo. Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
State FE	No	No	No	No
Subsample	Above Median	Below Median	Above Median	Below Median
Observations	6824	6881	6824	6881

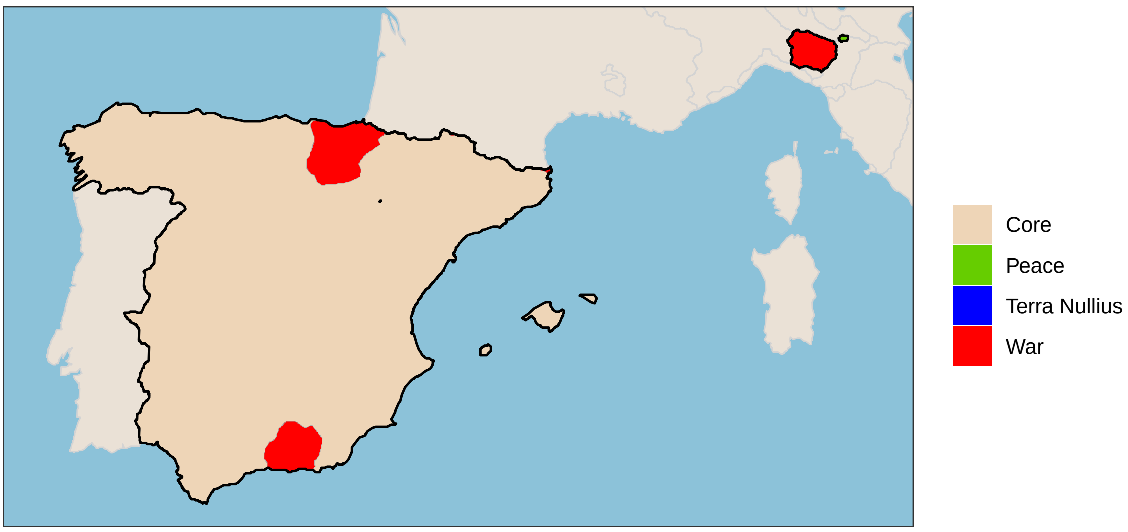
Standard errors clustered on states in parentheses.
$^{+}p < 0.1$; $^{*}p < 0.05$; $^{**}p < 0.01$.; $^{***}p < 0.001$.

C3 Additional great-power trajectories

Whereas the historical trajectories of Prussia, France, the Habsburg Empire and Russia all confirm the bellicist expectation that warfare drove territorial expansion, of course not all states were equally successful. To illustrate this, Figures A9a, A9b, A10a and A10b illustrate the trajectories of Spain and Sweden. While both states made initial territorial gains through both peaceful and war-related transfers, these were followed by significant territorial losses. Admittedly, this comparison gives us an incomplete picture, as Spain made substantial territorial gains overseas even as it lost territory in Europe. Still, the two examples show that within the continent, not all states managed to achieve lasting gains through war.

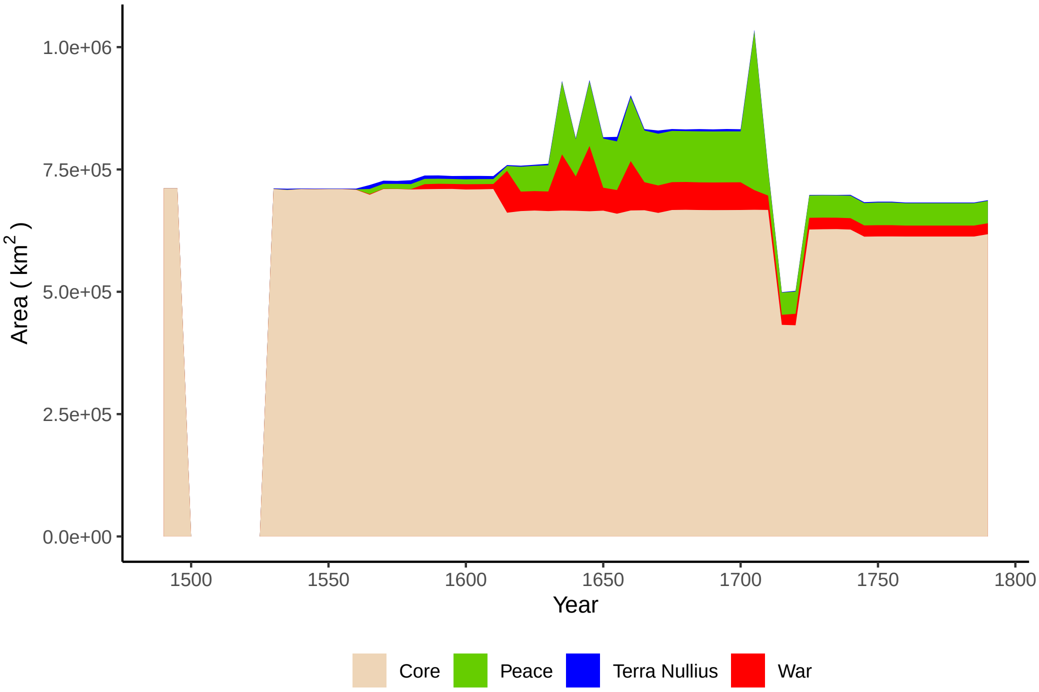


(a) Territorial growth of Spain

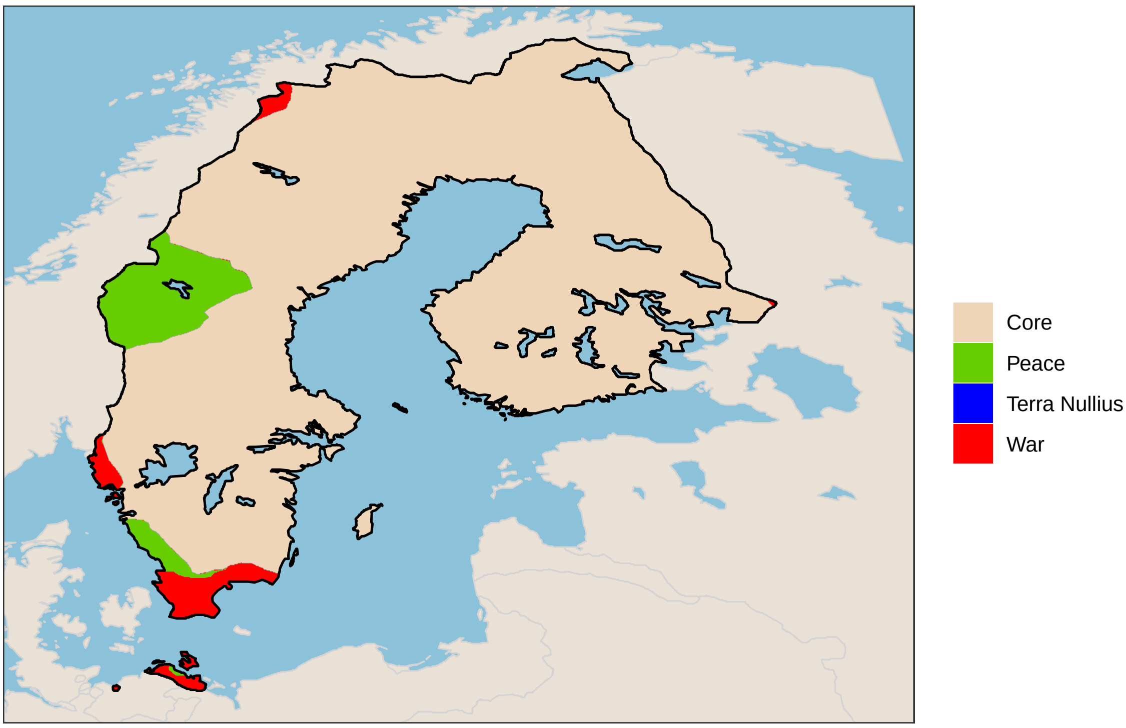


(b) Spain in 1790

Figure A9: War-related and peaceful territorial growth of Spain, 1490-1790
Data Sources: Abramson 2017 and Brecke 1999



(a) Territorial growth of Sweden



(b) Sweden in 1790

Figure A10: War-related and peaceful territorial growth of Sweden, 1490-1790
Data Sources: Abramson 2017 and Brecke 1999

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