6 Chapter 9 Appendix

6.1 Conflict, Institutions & Borders

As a starting point, we'd like to investigate if conflicts alone can help to explain differences in institutional quality. Or if ethnic, religious or linguistic fractionalizations come to bear on institutional features as well even when one accounts for the role of the long-term history of conflicts on institutions. To that end, we shall estimate a simple Ordinary Least Squares (OLS) regression that is very similar to the one we utilized in Chapter 8. In particular,

$$\begin{aligned} \textit{Polity Score}_i \quad = \quad & \lambda_0 \; + \; \lambda_1 \textit{Muslim-Christian Conflicts}_i \\ & \lambda_2 \textit{Muslim-Muslim Conflicts}_i + \; \lambda_3 \textit{Christian-Christian Conflicts}_i \qquad \text{(A.9.1)} \\ & + \lambda_4 \textit{Other Controls}_i \; + \; \varepsilon_i, \end{aligned}$$

where *Polity Score*$_i$ is a country i's political quality score based on the Polity IV dataset and *Muslim-Christian Conflicts*$_i$, *Muslim-Muslim Conflicts*$_i$, *Christian-Christian Conflicts*$_i$, respectively, are the counts of violent confrontations between the labeled parties that took place in country i over the years between 1400 and 1900 CE. The other controls in our baseline regressions include many of the standard variables we utilized in Chapter 8.

Table A.9.1 reports our findings based on the regression in equation (9.1) above, with countries' polity scores as the dependent variable, regressed on our set of standard explanatory variables. As shown, we pick up a strong impact of the history of conflicts over the period between 1400 to 1900 CE on the quality of polities in 1994. Whereas the incidence of Muslim versus Christian conflicts and intra-Islam confrontations had a dampening effect on religious fractionalization, they are shown to have had positive and, in five of the six specifications, statistically significant effects on polities. As was the case with religious fractionalization, the incidence of intra-Christianity conflicts had no meaningful bearing on polity scores.

Table A.9.1: Impact of Conflicts on Polity Scores (1400 – 1900 CE)

Dependent Variable:	Polity Score					
	(1)	(2)	(3)	(4)	(5)	(6)
Muslim-Christian Conf.	0.113*	0.399**	0.311***	0.268**	0.259*	0.282*
	(0.0477)	(0.126)	(0.0440)	(0.0735)	(0.116)	(0.102)
Muslim-Muslim Conf.	0.161***	0.150*	0.183*	0.244*	0.248	0.0699
	(0.0169)	(0.0655)	(0.0817)	(0.0956)	(0.134)	(0.0546)
Christian-Christian Conf.	-0.0275*	0.0271	0.0199	0.0225	0.00736	-0.0617**
	(0.0101)	(0.0234)	(0.0185)	(0.0287)	(0.0406)	(0.0170)
Middle East Dummy	1.874***	0.766	0.434	1.207	2.122	9.039*
	(0.103)	(0.658)	(1.171)	(1.098)	(3.604)	(3.729)
Balkans Dummy	6.563***	2.263	0.192	2.629	3.219	6.644***
	(0.390)	(2.669)	(3.410)	(3.598)	(4.794)	(0.388)
Island Dummy	14.21***	10.99**	7.126	8.709	12.00**	19.65***
	(0.317)	(2.455)	(4.579)	(4.511)	(3.584)	(2.145)
Population Density		13.80	11.31*	14.17*	14.12*	
		(7.200)	(4.173)	(5.323)	(5.995)	
Muslim Majority			-1.730	-1.630	-1.660	
			(2.962)	(3.119)	(2.737)	
Christian Majority			2.811	3.311	2.851	
			(3.939)	(3.904)	(2.386)	
Obs.	53	53	53	52	52	52
R-squared	0.678	0.765	0.786	0.799	0.819	0.747

Standard errors clustered regionally (in parentheses)
*** p < 0.01, ** p < 0.05, * p < 0.1

Note: Dependent variable: religious fractionalization in 2001; source: Alesina et al. (2003). Source of conflict data: Brecke (1999). Source of population data: McEvedy and Jones (1978). Geographic dummy variables for Western Europe, Eastern Europe, Central Europe, Asia and Africa included in all regressions but now shown. Distance to equator, land areas, an indicator of land-locked countries included in columns (2) through (6) but not shown. Population densities in 1000 CE and 1500 CE included in columns (3) through (6) but not shown. Distance to Mecca, Jerusalem and Rome included in the final two regressions but not shown.

The existing literature on the subject has long established a generally robust adverse impact of fractionalization on measures of institutional quality. And though for the sake of brevity we have chosen not to present them here, estimating the analogs of the regressions in Table A.9.1, but replacing our conflict measures with the three fractionalization measures, we too were able to verify the statistically significant, detrimental effects of ethnic and linguistic

fractionalization on polity scores.

Along with what we documented in Table A.9.1, these findings raise an intriguing question: If fractionalization is influenced in part by violent conflicts and religious confrontations, which, together with fractionalization, then have a bearing on the cross-country differences of polity strength, do violence and religious confrontations have a *direct* long-term impact on polity scores or do they impact on polities only *indirectly* through fractionalization?

In Table A.9.2 we explore this issue. As seen, when we include the three measures of fractionalization along with the standard list of conflict variables we relied upon in the previous table, we find that neither religious nor linguistic fractionalization impacts cross-country differences in institutional quality, as proxied by polity scores. By contrast, ethnic fractionalization is a strong negative predictor of institutional quality across countries. Interestingly, Christian versus Muslim conflicts and Muslim against Muslim confrontations continue to show significant and positive effects on institutional quality. For instance, the frequency of Muslim versus Christian violent conflicts has positive coefficients in five of the six specifications and it is statistically significant at the 5 percent or higher level in all of those five regressions.

As a side note, to see if violent conflicts impacted a narrower measure of polity, we ran regressions similar to the one we discuss here, using the democracy index score as the dependent variable instead. Doing so we generally found conflicts to have insignificant effects on democracy.

Table A.9.2: Impact of Conflicts versus Fractionalization on Polity Scores (1400 – 1900 CE)

Dependent Variable:	Polity Score					
	(1)	(2)	(3)	(4)	(5)	(6)
Muslim-Christian Conf.	0.113	0.356**	0.267***	0.238***	0.208**	0.213**
	(0.0534)	(0.114)	(0.0542)	(0.0449)	(0.0509)	(0.0748)
Muslim-Muslim Conf.	0.209***	0.158***	0.204***	0.263***	0.258*	0.123**
	(0.0364)	(0.0284)	(0.0209)	(0.0391)	(0.110)	(0.0416)
Christian-Christian Conf.	-0.0431**	0.00676	-0.00419	-0.00524	-0.00381	-0.0553***
	(0.0119)	(0.0253)	(0.0164)	(0.0210)	(0.0355)	(0.00621)
Religious Fractionalization	2.500	0.578	0.969	1.379	-0.201	0.699
	(2.966)	(3.091)	(3.219)	(3.384)	(2.368)	(1.699)
Ethnic Fractionalization	-9.079**	-6.547*	-6.863	-6.387	-5.560*	-7.077***
	(1.985)	(2.388)	(3.291)	(3.392)	(2.409)	(1.452)
Linguistic *Fractionalization*	0.784	0.870	0.636	-0.489	-0.177	0.961
	(1.411)	(0.926)	(1.461)	(1.947)	(1.607)	(2.559)
Population Density		9.355	5.901	8.084	9.521	
		(7.637)	(3.970)	(4.902)	(7.692)	
Muslim Majority			-2.668	-2.832	-2.512	
			(2.521)	(2.593)	(1.970)	
Christian Majority			2.332	2.494	2.219	
			(3.432)	(3.519)	(2.614)	
Obs.	52	52	52	51	51	51
R-squared	0.741	0.793	0.818	0.830	0.845	0.788

Standard errors clustered regionally (in parentheses)
*** p < 0.01, ** p < 0.05, * p < 0.1

Note: Dependent variable: religious fractionalization in 2001; source: Alesina et al. (2003). Source of conflict data: Brecke (1999). Source of population data: McEvedy and Jones (1978). Geographic dummy variables for Western Europe, Eastern Europe, Central Europe, Asia and Africa included in all regressions but now shown. Distance to equator, land areas, an indicator of land-locked countries included in columns (2) through (6) but not shown. Population densities in 1000 CE and 1500 CE included in columns (3) through (6) but not shown. Distance to Mecca, Jerusalem and Rome included in the final two regressions but not shown.

A potential shortcoming of the analyses thus far in this chapter stems from the fact that our units of observation are based on countrywide data, although country size and border formations are obviously endogenous. This would be most relevant for our findings to the extent that causality runs from violent confrontations to country size and formation, to measures of fractionalization. To account for such effects and channels of causality, we typically controlled for land area and dates of independence. Neither of these controls had significant

effects on fractionalization, although the role of violent conflicts remained robust to the inclusion of the controls. We find this indicative of the fact that the history of conflicts had independent effects on fractionalization which went beyond any role it brought to bear on country size and formation.

In what follows, we can in fact explore the determinants of conflict and state formation based on the same underlying data we employ here. Based on data from Iyigun, Nunn and Qian (in progress), our cross-section units of observation are now 50-by-50 cells covering Europe, Middle East, North Africa. Moreover, conflict and state borders data are organized as a panel covering seven time periods at the top of each century from 1400 CE to 2000 CE.

We can use these data primarily to test the determinants of conflict as well as state formation and consolidation geographically over time. To that end, we have at our disposal three alternative polity size measures. One of them, which we shall define as $\textit{Within Border}_{it}$, is a dummy for whether or not cell i fell strictly within the domain of a politically independent unit at time t. Next, we have a measure of the land area of the political unit cell i was associated with at time t, $\textit{Polity Size}_{it}$. Third, we can use the number of political units that appear in cell i at time t, which we shall label as $\textit{Number of Polities}_{it}$.

Note that $\textit{Within Border}_{it}$, as well as $\textit{Polity Size}_{it}$ would be alternative but positive measures of political consolidation, whereas $\textit{Number of Polities}_{it}$ ought to be associated positively with political fragmentation. Also, $\textit{Within Border}_{it}$ and $\textit{Number of Polities}_{it}$ are more localized measures of political unity, whereas $\textit{Polity Size}_{it}$ captures the extent to which any given cell is politically associated with neighboring cells and beyond.

With these definitions and data in hand, we are now in position to examine the extent to which our ecclesiastical conflict measures affect the three alternative political fragmentation measures using their panel. In particular, we can estimate

$$\begin{aligned} \textit{State Formation}_{it} \quad = \quad & \lambda_0 \; + \; \lambda_1 \textit{State Formation}_{it-1} + \lambda_2 \textit{Muslim-Christian Conflicts}_{it-1} \\ & + \lambda_2 \textit{Christian-Christian Conflicts}_{it-1} + \; \lambda_3 \textit{Muslim-Muslim Conflicts}_{it-1} \\ & + \sum_c \gamma_c \textit{Cell Dummy}_i^c \; + \; \sum_{j=1400}^{2000} \rho_j \textit{Time-period Dummy}_t^j + \; \varepsilon_i, \end{aligned} \tag{A.9.2}$$

where *State Formation*$_{it}$ is one of three alternative political fragmentation variables we just defined; and *Muslim-Christian Conflicts*$_{it-1}$, *Christian-Christian Conflicts*$_{it-1}$, *Muslim-Muslim Conflicts*$_{it-1}$ are the analogs of our standard conflict measures constructed at the cell and time period disaggregation level and lagged one century.

For our baseline results, we observe our political fragmentation variable, *State Formation*$_{it}$, at the top of each century between 1500 and 2000 CE and we aggregate our explanatory variables over the periods of 1400-1499, 1500-1599, 1600-1699, 1700-1799 and 1800-1899.

Our findings are reported in Table A.9.3. As shown in column (1), neither Christian versus Muslim conflicts nor intra-religious feuds averaged over a given century impacted whether or not a given cell fell strictly within the borders of a polity in the subsequent century. In contrast, more intra-Christian conflicts within a cell did make it more likely that it was politically fragmented later on, given the results in column (2). And *Muslim-Christian Conflicts* had a similar fragmentary effect according the estimates shown in our final column of Table A.9.3.

We interpret this to be evidence consistent with our earlier findings: Christian versus Muslim conflicts and Muslim versus Muslim confrontations not only produced more religious homogeneity within country borders, but they also reshaped them. By producing more political fragmentation, ecclesiastical conflicts might have had an influence on cross-country measures of fractionalization too.

Recall that the history of conflicts by the religious identity of the parties involved have less statistical power in explaining the extent to which countries were religiously fragmented in 1900.

In culmination, we have established since Chapter 5 that religious identities and their differences affected patterns of conflict and political rivalries in the Old World. Based on data from 1400 CE to the late-20th century, we were able to validate and quantify this claim. In our last two chapters, we also saw how those conflicts left observable and measurable sociopolitical imprints, ranging from the extent to which modern-day countries in Europe, Middle East, Near East and North Africa are religiously or ethnically homogenous to the quality of polities. Equally if not more importantly, we found that the patterns of religiously-motivated conflicts over the very long term came to bear on political borders, country sizes and their fragmentation as well.

Table A.9.3: Impact of Conflicts on Political Fragmentation (1400 – 1900 CE)

Dependent Variable:	*Within Border*	*Number of Polities*	*Polity Size*
	(1)	(2)	(3)
Muslim-Christian Conflicts	0.00136	0.0559	-2.966e+11***
	(0.0334)	(0.0806)	(1.121e+11)
Muslim-Muslim Conflicts	-0.0109	0.139	9.316e+10
	(0.0567)	(0.137)	(1.983e+11)
Christian-Christian Conflicts	-0.0154	0.212***	-7.704e+10
	(0.0209)	(0.0504)	(6.985e+10)
Lagged Dependent Variable	0.0762***	0.192***	0.0254
	(0.0135)	(0.0134)	(0.0172)
Year 1500 Dummy	-0.180***	-0.0231	-7.539e+11***
	(0.00984)	(0.0236)	(4.710e+10)
Year 1600 Dummy	-0.136***	-0.0480**	4.880e+11***
	(0.00987)	(0.0236)	(4.708e+10)
Year 1700 Dummy	-0.111***	0.828***	5.512e+11***
	(0.00980)	(0.0215)	(4.030e+10)
Year 1800 Dummy	-0.0748***	-0.0369	1.386e+12***
	(0.00977)	(0.0236)	(4.415e+10)
Year 1900 Dummy	0.312***	-0.0282	9.147e+11***
	(0.00774)	(0.0236)	(4.024e+10)
Obs.	7730	7730	5167
R-squared	0.664	0.731	0.700

Robust standard errors in parentheses
*** p < 0.01, ** p < 0.05, * p < 0.1

Note: Cell fixed effects included in all specifications but not shown.