

Online appendix for "The Diffusion of Urban Medieval  
Representation: The Dominican Order as an Engine of Regime  
Change"

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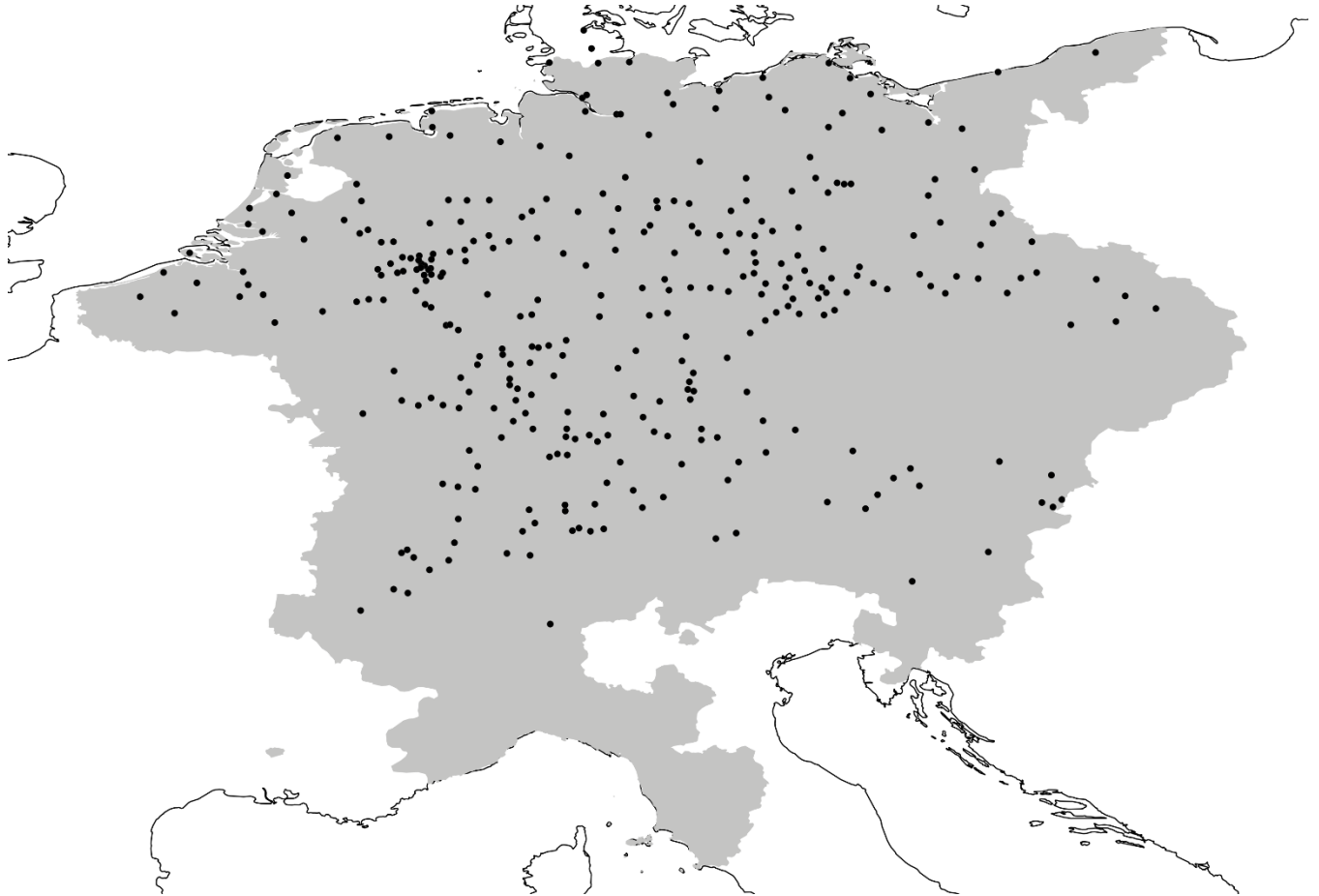
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## Data

Figure A1: Cities in the sample



Note: The grey area denotes the approximate territory of the Holy Roman Empire in 1500 AD (Nüssli and Nüssli 2008). Black dots represent cities covered by the Wahl (2016) dataset.

### Alternative dependent variables

In the results presented in Table A1 the dependent variable,  $transition_{it}$ , is equal to one if city  $i$  switches either from non-representative government to any of the three types of representative government in century  $t$ , or if it switches from one type of representative city government to another. Thus, a city does not drop out of the sample when it transitions to one type of representative city government. In Table A2 the dependent variable,  $representative_{it}$ , is equal to one if city  $i$  has representative government in century  $t$ , and zero otherwise. The city is not dropped after it transitions to representative government. In Table A3 the dependent variable,  $sum\_of\_representatives_{it}$ , is equal to 1 if city  $i$  has one type of representatives in century  $t$ , it is equal to 2 if the city has two different types of representatives, and equal to 3 if it has three types. The city is not dropped after it transitions to representative government.

Table A1: All transitions - Difference-in-Difference

	(1)	(2)	(3)	(4)	(5)	(6)
Dominican ( $\delta$ )	0.351	0.208	0.204	0.208	0.206	0.170
	(0.047)***	(0.053)***	(0.053)***	(0.062)***	(0.064)**	(0.069)*
	[0.053]***	[0.051]***	[0.051]***	[0.056]***	[0.056]***	[0.058]**
City and Century FE	No	Yes	Yes	Yes	Yes	Yes
Time variant controls	No	No	Yes	Yes	Yes	Yes
Controls $\times$ Century FE	No	No	No	Yes	Yes	Yes
Modern country $\times$ Century FE	No	No	No	No	Yes	No
Duchy in 1200 $\times$ Century FE	No	No	No	No	No	Yes
Observations	3250	3250	3250	3250	3250	3250

Estimated using OLS. 325 cities. Standard errors clustered by city in parentheses. Conley standard errors in brackets. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Table A2: Having representative government - Difference-in-Difference

	(1)	(2)	(3)	(4)	(5)	(6)
Dominican ( $\delta$ )	0.277	0.238	0.234	0.229	0.219	0.202
	(0.057)***	(0.057)***	(0.057)***	(0.060)***	(0.060)***	(0.062)**
	[0.062]***	[0.048]***	[0.047]***	[0.052]***	[0.052]***	[0.052]***
City and Century FE	No	Yes	Yes	Yes	Yes	Yes
Time variant controls	No	No	Yes	Yes	Yes	Yes
Controls $\times$ Century FE	No	No	No	Yes	Yes	Yes
Modern country $\times$ Century FE	No	No	No	No	Yes	No
Duchy in 1200 $\times$ Century FE	No	No	No	No	No	Yes
Observations	3250	3250	3250	3250	3250	3250

Estimated using OLS. 325 cities. Standard errors clustered by city in parentheses. Conley standard errors in brackets. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Table A3: Sum of Representatives in the Government - Difference-in-Difference

	(1)	(2)	(3)	(4)	(5)	(6)
Dominican ( $\delta$ )	0.413	0.335	0.328	0.294	0.281	0.256
	(0.094)***	(0.088)***	(0.087)***	(0.087)***	(0.087)**	(0.093)**
	[0.094]***	[0.070]***	[0.070]***	[0.077]***	[0.076]***	[0.080]**
City and Century FE	No	Yes	Yes	Yes	Yes	Yes
Time variant controls	No	No	Yes	Yes	Yes	Yes
Controls $\times$ Century FE	No	No	No	Yes	Yes	Yes
Modern country $\times$ Century FE	No	No	No	No	Yes	No
Duchy in 1200 $\times$ Century FE	No	No	No	No	No	Yes
Observations	3250	3250	3250	3250	3250	3250

Estimated using OLS. 325 cities. Standard errors clustered by city in parentheses. Conley standard errors in brackets. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

## Alternative estimator

Model (4)-(6) did not converge.

Table A4: Logit - Difference-in-Difference

	(1)	(2)	(3)
Dominican	1.634	1.470	1.245
	(0.239)***	(0.450)**	(0.477)**
Century and City FE	No	Yes	Yes
Time-variant controls	No	No	Yes
Observations	1642	898	898

Estimated using logit and conditional logit. Standard errors clustered by city in parentheses \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

## Disaggregated outcome

Table A5: Institutionalized burgher representation

	(1)	(2)	(3)	(4)	(5)	(6)
Dominican ( $\delta$ )	0.139 (0.040)*** [0.045]**	0.113 (0.042)* [0.038]**	0.105 (0.042)* [0.039]*	0.109 (0.048)* [0.044]*	0.094 (0.047)* [0.043]*	0.084 (0.051) [0.044]
City and Century FE	No	Yes	Yes	Yes	Yes	Yes
Time variant controls	No	No	Yes	Yes	Yes	Yes
Controls $\times$ Century FE	No	No	No	Yes	Yes	Yes
Modern country $\times$ Century FE	No	No	No	No	Yes	No
Duchy in 1200 $\times$ Century FE	No	No	No	No	No	Yes
Observations	2570	2570	2570	2570	2570	2570

Estimated using OLS. 325 cities. Standard errors clustered by city in parentheses. Conley standard errors in brackets. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Table A6: Electoral representation

	(1)	(2)	(3)	(4)	(5)	(6)
Dominican ( $\delta$ )	0.100 (0.034)** [0.028]***	0.031 (0.037) [0.030]	0.034 (0.036) [0.030]	0.035 (0.042) [0.033]	0.039 (0.043) [0.032]	0.024 (0.049) [0.038]
City and Century FE	No	Yes	Yes	Yes	Yes	Yes
Time variant controls	No	No	Yes	Yes	Yes	Yes
Controls $\times$ Century FE	No	No	No	Yes	Yes	Yes
Modern country $\times$ Century FE	No	No	No	No	Yes	No
Duchy in 1200 $\times$ Century FE	No	No	No	No	No	Yes
Observations	2648	2648	2648	2648	2648	2648

Estimated using OLS. 325 cities. Standard errors clustered by city in parentheses. Conley standard errors in brackets. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Table A7: Guild representation

	(1)	(2)	(3)	(4)	(5)	(6)
Dominican ( $\delta$ )	0.219 (0.046)*** [0.048]***	0.158 (0.050)** [0.043]***	0.153 (0.050)** [0.042]***	0.136 (0.054)* [0.047]**	0.142 (0.055)* [0.047]**	0.108 (0.059) [0.049]*
City and Century FE	No	Yes	Yes	Yes	Yes	Yes
Time variant controls	No	No	Yes	Yes	Yes	Yes
Controls $\times$ Century FE	No	No	No	Yes	Yes	Yes
Modern country $\times$ Century FE	No	No	No	No	Yes	No
Duchy in 1200 $\times$ Century FE	No	No	No	No	No	Yes
Observations	2680	2680	2680	2680	2680	2680

Estimated using OLS. 325 cities. Standard errors clustered by city in parentheses. Conley standard errors in brackets. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

### Assessing the external validity of the findings

A possible objection to my findings, is that they are specific for the German lands. To mitigate this concern I test my relationship using a second dataset on the type of government in medieval cities. More particularly, I measure local inclusive government using the commune variable from Bosker et al. (2013). This variable is not used as my primary outcome measure for two reasons. First, it does not capture representativeness per say, as it measures whether a governing body contains citizens and not if those citizens act as representatives. Second, a number of cities have been coded using rough proxies for citizen government, such as the building of town halls or the granting of city rights (Bosker et al. 2013). However, when looking at cities that appear in both datasets, transitioning to inclusive government has a strong correlation with the Wahl (2016) measure for transitioning to representative city government (a Pearson's R of 0.49). Thus, it seems to be a fairly good proxy for representative city government. I duplicate my specifications from Table 1 with the following time variant controls from the Bosker et al. (2013) dataset: logged population size, being the seat of a bishop or archbishop, having national parliamentary assemblies, being attacked, and having a university. I also include the following time-invariant controls: latitude, longitude, river and sea access, logged distance to nearest inclusive government in 1200, logged distance to nearest university in 1200, and being a former Roman city. The results are presented in Table A7 below. I find that the presence of the Dominican order seems to increase the likelihood that a city instituted inclusive government. Specifically, cities are approximately 7-13 percentage points more likely to transition to inclusive government when the Dominican order is present. This alleviates worries of a region specific impact of the order.



Table A8: Dominican houses and inclusive government using (Bosker et al. 2013)

	(1)	(2)	(3)	(4)	(5)	(6)
Dominican ( $\delta$ )	0.252	0.128	0.108	0.070	0.107	0.109
	(0.037)***	(0.040)***	(0.039)**	(0.042)	(0.040)**	(0.043)*
	[0.044]***	[0.035]***	[0.035]**	[0.035]*	[0.034]**	[0.036]*
City and Century FE	No	Yes	Yes	Yes	Yes	Yes
Time variant controls	No	No	Yes	Yes	Yes	Yes
Controls $\times$ Century FE	No	No	No	Yes	Yes	Yes
Modern country $\times$ Century FE	No	No	No	No	Yes	No
Realm in 1200 $\times$ Century FE	No	No	No	No	No	Yes
Observations	5330	5330	5330	5330	5330	5330

Estimated using OLS. 695 cities. Standard errors clustered by city in parentheses. Conley standard errors in brackets. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

## Narrow sample

The inclusion of centuries before the appearance of representative city government and the inclusion of centuries after autocratization of the Dominican order may risk artificially depressing the standard errors by not taking the effective sample size into account (Bertrand et al. 2004). To check if this could be driving my findings, I rerun all the models from Table 2 with a limited sample. Specifically, I only include centuries where representative city government first appeared and the Dominican order had representative government (1200-1400). Table A9 presents these models. Across all six specifications, I find a significant and positive impact of the Dominican order on the emergence of representative city government.

Table A9: Difference-in-Difference Estimates for 1200-1400 sample

	(1)	(2)	(3)	(4)	(5)	(6)
Dominican ( $\delta$ )	0.352 (0.058)*** [0.059]***	0.210 (0.068)** [0.054]***	0.218 (0.067)** [0.050]***	0.203 (0.073)** [0.054]***	0.203 (0.074)** [0.055]**	0.163 (0.080)* [0.059]**
City and Century FE	No	Yes	Yes	Yes	Yes	Yes
Time variant controls	No	No	Yes	Yes	Yes	Yes
Controls $\times$ Century FE	No	No	No	Yes	Yes	Yes
Modern country $\times$ Century FE	No	No	No	No	Yes	No
Duchy in 1200 $\times$ Century FE	No	No	No	No	No	Yes
Observations	939	939	939	939	939	939

Estimated using OLS. 325 cities. Standard errors clustered by city in parentheses. Conley standard errors in brackets. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

## Alternative independent variable

Table A10: Difference-in-Difference Estimates using the proportion of a century the Dominicans have been present

	(1)	(2)	(3)	(4)	(5)	(6)
Dominican proportion ( $\delta$ )	0.377	0.251	0.242	0.229	0.216	0.182
	(0.064)****	(0.075)***	(0.073)**	(0.081)**	(0.081)**	(0.086)*
	[0.066]***	[0.062]***	[0.059]***	[0.067]**	[0.067]**	[0.068]**
City and Century FE	No	Yes	Yes	Yes	Yes	Yes
Time variant controls	No	No	Yes	Yes	Yes	Yes
Controls $\times$ Century FE	No	No	No	Yes	Yes	Yes
Modern country $\times$ Century	No	No	No	No	Yes	No
Duchy in 1200 $\times$ Century	No	No	No	No	No	Yes
Observations	1642	1642	1642	1642	1642	1642

Estimated using OLS. 325 cities. Standard errors clustered by city in parentheses. Conley standard errors in brackets. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

### Inclusion of North-Italian cities

Wahl (2016) does not code city government for the North-Italian cities that also belonged to the Holy Roman Empire. However, as some of the first cities that established self-government were located in this area, their exclusion may bias my results. Unfortunately, no data is available on the use of representatives in Italian cities. As a second best, I rerun my main models using a supplemented sample. Specifically, I include all North-Italian cities from Belloc et al. (2016), and use their measure of communal government as a rough proxy for representative city government. Table A11 confirm that the Dominicans had a positive effect on urban representation.

Table A11: Dominican houses and representation adding (Belloc et al. 2016)

	(1)	(2)	(3)	(4)	(5)	(6)
Dominican ( $\delta$ )	0.339	0.240	0.240	0.211	0.203	0.157
	(0.057)***	(0.064)***	(0.063)***	(0.064)**	(0.065)**	(0.069)*
	[0.060]***	[0.053]***	[0.055]***	[0.055]***	[0.054]***	[0.056]*
City and Century FE	No	Yes	Yes	Yes	Yes	Yes
Time variant controls	No	No	Yes	Yes	Yes	Yes
Controls $\times$ Century FE	No	No	No	Yes	Yes	Yes
Modern country $\times$ Century FE	No	No	No	No	Yes	No
Realm in 1200 $\times$ Century FE	No	No	No	No	No	Yes
Observations	2229	2229	2229	2229	2229	2229

Estimated using OLS. 417 cities. Standard errors clustered by city in parentheses. Conley standard errors in brackets. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

## References

Belloc, Marianna, Francesco Drago, and Roberto Galbiati (2016) “Earthquakes, Religion, and Transition to Self-Government in Italian Cities.” *The Quarterly Journal of Economics* 131(4): 1875–1926.

Bertrand, Marianne, Esther Duflo, and Sendhil Mullainathan (2014) “How Much Should We Trust Difference-in-Difference Estimates?.” *The Quarterly Journal of Economics* 119(1): 249-275.

Bosker, Maarten, Eltjo Buringh, and Jan Luiten van Zanden (2013) “From Baghdad to London: unravelling urban development in Europe and the Arab world 800-1800.” *Review of Economics and Statistics* 95(4): 1418–1437.

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