7
Model predictions of policies and wars

7.1 Policies

The theoretical model predicted that the transfer after peace by player 1 (in the empirical exercise, the player initially in government) is given by $V^1(0) = \max\left\{\frac{c_2+(1-q^W)X}{(1-q^P)}, X-d\right\}$, while his transfer after war is $V^1(1) = X$. In other words, the model predicts that after peace, the government would implement a policy away from its ideal and closer to the opposition's ideal, while after war, the government would implement a policy closer to its own ideal and further from the opposition's ideal. That would serve as a punishment to an opposition movement that go into war and, given the commitment constraints faced by player 1, that is the optimal action to be done.

With that in hands, the model predicts that the difference of policy during times of peace and war is given by:

$$X - V^1(0) = \min\left\{\frac{-c_2 + (q^W - q^P)X}{(1-q^P)}, d\right\} \quad (1)$$

That gives a measure of how much the government (or, player 1) gets away from its ideal policy of having $V^1(W) = X$ in times of peace. Alternatively, since the model predicts that player 1 will implement his ideal policy in times of war, the expression above gives the difference between policies implemented under war and under peace by a government with a given ideology. I will call the term in (1) *predicted concessions*. To use the vocabulary from the theoretical section, when I evaluate equation (1) in the data and I obtain a value of d, I will say for simplicity that the country is restricted/bound by commitment, despite the fact that this is not completely correct, since I do not observe the full cost of war.

To obtain a measure of policy preferences, I use the Database of Political Institutions. This database provides a classification of governments into different ideologies concerning economic program (on a left-right scale), on degree of nationalism, on degree of religiosity, on how regional and how rural is the

government. While it is hard to use the data on how regional or rural the government is (they comprise 3% of the country-years in the database) and it is difficult to observe religious policy, it is easier to use data on economic and nationalistic preferences and to match it with policy variables.

More explicitly, it may be reasonable to assume that governments classified as the economic left wing (which comprise communist, socialist and social democratic countries) should prefer a higher ratio of government spending to GDP when compared to non-left wing parties[1]. In the same way, the nationalist parties (which comprise parties that advocate for a national identity and ethnicity) probably prefer less federalism and less local elections that non-nationalist parties.

Under these hypothesis that left wing governments prefer a higher share of government spending in GDP than non left wing governments and that nationalists prefer less federalism, I can look at whether left wing governments increase spending in times of war when compared to times of peace and if nationalist governments allow for less sub-national elections in times of war when compared to times of peace. Moreover, I should look at whether this type of behavior is more intense in country-years in which the predicted concessions in (1) is higher. Under my hypothesis on policy preferences, that would be the prediction from the theoretical model presented here.

However, war may have, by itself, an impact over government spending and local elections. For instance, spending might increase in times of war due to military spending. Local elections might be a less often event in times of war, for instance, because a war may make it harder for voters to vote. If this is true, non-left wing governments would also increase spending in times of war. Similarly, non-nationalist governments would also allow for less local elections. Consequently, in order to get rid of this potential bias that war might have a direct impact over government spending and local elections, I look at the following difference in differences:

$$\Delta = (g_i^W - g_i^P) - (g_{-i}^W - g_{-i}^P)$$

where g_i^W and g_i^P are, respectively, the policy implemented by a government of ideology i under war and under peace. The policy measures I use is government spending over GDP when looking at left wing vs. non left wing governments;

[1]The right-wing include both christian democratic - with social democratic economic principles - and liberal parties, and the center does not have a very clear definition in the database. For that, I focus on the left vs. non-left wing classification, which seems to be a cleaner comparison of more "pro-spending"ideologies vs. more "anti-spending"ideologies.

and the occurrence of elections for municipal government and state/province government when looking at nationalist vs. non-nationalist governments. As described in the database section, government spending over GDP comes from the Penn World Tables, and the local election variables are from the Database of Political Institutions. They were described in more detail in the data section.

When looking at, for example, left wing vs. non-left wing governments, if Δ increases with the model's predicted concessions in equation (1), then the left wing governments are decreasing the share of government spending over GDP in times of peace (relative to times of war) more than non-left wing governments. This would be consistent with the idea that a left wing government, in times of peace, is getting away from its preferred policy of more spending and/or the non-left wing is getting away from its preferred policy of less spending in times of peace, and is doing more so the higher are the predicted concessions from equation. That would be the prediction of the theoretical model. Analogously, if Δ decreases for nationalist governments, it is consistent with the predictions of the model and my hypothesis on policy preferences. Implicitly, I am supposing that whichever is the direct effect of war over government spending (or over local election), the effect is the same independent of the ideology of the government.

It is noteworthy that I depend on having estimated correctly X, c_2 and d to correctly compute my measure of predicted concession. Since the full model from table 10.7, column (5), separates between X, c_2 and d with too much uncertainty, I do the exercises for the measures of X, c_2 and d coming out of the models estimated in column (4) and (5) from table 10.7[2]. For this and for the next subsection, I will consider only countries with estimated $X > 0$ and $d > 0$.

Table 10.9 look at how the concessions simulated by (1) predicts policy, using the model in column (4) of table 10.7. The first panel looks at how leftist governments increase their expenditures during war vs. during peace when compared to non-leftist countries. Surprisingly, table 10.9 predicts, if anything, the reverse of this result: the higher the simulated concessions, the less leftist governments increase the size of government in response to wars. That is the result whether we look at the difference between expenditures during conflict and peace only for leftist governments, or whether we compare these leftist governments to non-leftist governments.

In the same way, table 10.9 looks, in the second and third panels, at how nationalist governments change the level of federalism in a country in

[2]I do not do the same exercise for columns (2) and (3) from table 10.7 because they do not provide enough variation in the parameters of the model.

response to a conflict when compared to non-nationalist governments. While this seems to be the case for municipal elections, this does not seem to be the case of states/province autonomy. Even more, we would expect the decrease in federalism in response to conflicts to be higher when the simulated concessions were higher. The evidence from table 10.9 does not provide strong support for that.

In contrast to the results from table 10.9, table 10.10 makes the same exercise as table 10.9, but it uses the model in column (5) of table 10.7. Here, the results seem to be more coherent with our ex-ante expectation: when responding to conflicts, the leftist governments increase the government share of GDP per capita more than non-leftist governments, and that increase in government spending during war is higher when the simulated concessions are higher. Nationalist governments decrease state autonomy in response to conflict more than non-nationalist governments when simulated concessions are higher.

The Roy-model in column (5) of table 10.7 is more complete and has more explanatory power. Even more, the Roy-model in column (5) of table 10.7 has predictions that are more coherent with what one would expect from concessions. Still, the fact that model (5) does not separate very well between X, c_2 and d makes the result on the match between the model presented here and simulated policies weaker.

Table 10.11 presents some descriptive statistics on the model's predicted concessions and some counter-factuals of what would happen to concessions if the parameters q^P, q^W and d changed. Out of 3626 observations that have $X > 0$ and $d > 0$ predicted by the model (4) in table 10.7, only 481 seem to have commitment constraints binding concessions. Some examples of countries showing up with a binding commitment constraint are Colombia, Guatemala, Peru and the Phillipines. These countries have faced persistent wars during the period analyzed.

Similarly, out of the 3438 observations with $X > 0$ and $d > 0$ according to model (5) in table 10.7, only 298 have binding commitment constraints. Again, Colombia, Guatemala, Peru and the Philippines are good examples of countries with binding commitment constraint. For the countries without a binding commitment constraint, the numbers from the concessions implied by both models (4) and (5) of table 10.7 are not sensitive to changing q^P from 0 (complete autocracy) to 0.12 (the predicted q^P for the most democratic countries in my sample). On the other hand, these numbers seem to be more sensitive to increases in q^W and to decreases in d.

Among the countries with binding commitment constraints, concessions

are not very sensitive to q^P nor to q^W. This means that, for these countries, commitment issues are, on average, so strong that even changes in q^P and q^W, which change the amount of concessions necessary to sustain peace, do not change concessions. When d increases by 25%, average concessions increase by 19.96% (column (4)'s model) to 21.08% (column (5)'s model). Since this increase is less than 25%, this indicates that some countries are becoming unrestricted by commitment. Still, the relatively large increase in concessions when compared to the increase in d indicates that there are not too many countries becoming unrestricted by commitment when d increases by 25%.

7.2 Wars

Table 10.12 shows the model's prediction of the average probability of war and their sensibility to changes in q^P, q^W and d. Overall, the model predicts that the average country-year faces a probability of war is 8.01%-8.08% among the countries with predicted $X > 0$ and $d > 0$. However, there is considerable variation in the probability of wars: countries without binding commitment constraints have an average probability of war of around 2.40%. On the other hand, countries with binding commitment constraints have an average probability of wars of 80.17-80.46%. Remember that the model predicts that countries with binding commitment constraints have a probability of 1 of having a war, while countries without binding commitment constraints have a zero probability of war. However, I cannot fully capture how binding commitment constraints are because I do not observe some shocks to the costs of war. Still, this result seems to be close to what the theoretical model predicted, and binding commitment constraints are explaining a considerable amount of variation in the probability of wars.

Both countries with and without a binding commitment constraint have probabilities of war that have little sensitivity to q^P: while changing q^P from 0 to 0.12, the probability of wars in countries without a commitment constraint vary between 2.17 and 2.43% across the models. Among countries with a binding commitment constraint, the probability of war vary between 77.11% to 82.70% when changing q^P from 0 to 0.12. Remembering that, in the theoretical model, wars happened if $c_2 < (q^W - q^P)X - (1 - q^P)d$, note that the probability of wars is insensitive to q^P only if X is similar in magnitude to d.

Countries without a binding commitment constraint have high increases in the probability of war when d decreases by 25%, and countries with binding commitment constraints face large decreases in the probability of war when d increases by 25%. This is due to the way concessions react to d, as shown

in table 10.11. Table 10.12 also indicates that commitment is more than counteracting the effect of X for the country-years bound by commitment: when I change d to be equal to X (to reach the full commitment benchmark), the probability of war goes from 80.17%-80.46% to 85.28%-98.94%. These results indicate that countries with a binding commitment constraint seem to face problems to make concessions due to estimated low costs of war, instead of having problems to neutralize"the dispute for X. Again, this is inconsistent with a theory of war occurring due to a limit on Coasian bargaining, with such a bargain being able to avoid the inefficiency of conflict.

Probabilities of war are sensitive to q^W only in countries not bound by commitment: when q^W increases to 0.22 for the whole sample, the probability of war for the countries without commitment restrictions goes from 2.25%-2.40% to 29.25%-40.47%. The probability of wars for countries bound by commitment does not respond as much to q^W: that is consistent with the fact that, for these countries, q^W does not change concessions/promises very much, as shown in table 10.11.

The data seem to suggest that countries not bound by commitment have low probabilities of war, while countries bound by commitment have high probability of war. This is consistent with the theoretical model. However, the countries bound by commitment seem to have high estimated d and moving to a full commitment benchmark (that would allow for any feasible transfer $V^i(W) \in [0, X]$) actually increases the probability of war. In this way, the point estimate of the structural model presented raises doubts on whether one should think of war as occurring due to limits on Coasian bargaining: after all, moving to a situation of no limit to Coasian bargaining (the full commitment case) actually increases the occurrence of war. Moreover, since the estimated cost of war is negative, it is not clear that players actually would want to negotiate their way out of war.