All Economics Is Local: Spatial Aggregations of Economic Information

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W Matrix Descriptions

Here, we provide a more thorough description of our candidate weighting matrices for the aggregation of localized economic information to model Americans' evaluations of the state of the national economy. Our guiding principle is that certain local economies will be more salient than others in coloring evaluation in a particular state as a function of their prevalence in economic discourse. In other words, we believe that, in a given state, say, Texas, the economic fortunes of some states will enter popular discourse more frequently than others, and, as a result, the performance of those states will bear more weight in the national economic evaluations of Texans. Our task here is to identify different mechanisms through which states could be connected and then develop a numerical representation of this connectivity to specify $\mathbf{W}$. We begin with the simplest vision of connectivity and move toward more theoretically satisfying mechanisms, lingering on the two that we discussed above.

Contiguity

One of the simplest specifications of $\mathbf{W}$, and likely the most common specification in political research (particularly international relations, e.g., Garcia and Wimpy 2015), is one based upon contiguity. In determining economic evaluations, this specification presumes that the performance of neighboring states will be more widely discussed than the performance of non-neighboring states, and, as such, neighboring state performance will bear more weight in economic evaluations. The intuition is simply that neighboring states' performances are more readily observable than non-neighboring states. This observability is likely a function of several factors, including, but not limited to: increased likelihood of direct observations as a result of increased cross-border traffic by residents; increased likelihood of similarity in the structure of the state economy; shared media markets (i.e., the Mobile, Alabama/Pensacola, Florida media market which divides its attention between Alabama and Florida state and municipal news coverage), the benchmarking of economic performance by political elites; etc. In effect, we believe that contiguity is a crude approximation of several of the connectivity mechanisms we describe below. In practice the contiguity $\mathbf{W}$ assigns a value of 1 to the cell of each neighboring state and a 0 to all other states, therefore assuming that all neighboring states have equal influence and all non-neighboring have no influence.

Cross-border Employment

Direct observability of performance in another state should make for a greater weighting of that performance into national evaluations. To capture direct observability in a more granular manner than contiguity, we construct a $\mathbf{W}$ utilizing the proportion of cross-border employment, or, the percentage of residents of some State A that work in some State B. These values are from the annual Current Population Survey (CPS). One benefit of this specification is that it relaxes the rather coarse assumption described above that all neighboring states are equally informative and all non-contiguous states have no influence at all.

Political-economic Preferences

One of the most likely manifestations of connectivity is in the expressed preferences of political actors at the national level. Congressional representatives are elected to serve the interests of their constituents — interests which tend to be economic in nature, regarding the collection and allocation of federal revenues, labor policy, the direct or indirect regulation of commerce, etc. — and it is therefore natural that legislators representing constituencies that have similar political-economic preferences will exhibit similar behaviors in congress. Further, the shared legislative behaviors of representatives from two states may serve to *drive* connectivity (rather than merely reflect it) by formalizing shared interests and promoting policies that will jointly benefit those states, or fighting to block policies that may injure those states.

We construct the shared political-economic interest $\mathbf{W}$ using U.S. House bill co-sponsorship data compiled by Victor (2013). Our cell values represent the probability that any bill sponsored by a member of a House contingent from State A is cosponsored by a member of State B's contingent. Higher probabilities between states reflect greater shared policy interests. These probabilities are then weighted according to informativeness — that is, bills with more cosponsors are given less weight than bills with fewer cosponsors following (Fowler 2006) — and are purged of partisan effects via iterated regression.[1] We build $\mathbf{W}$ with co-sponsorship data rather than, say, ideal point estimates derived from roll call votes, because co-sponsorship is comparatively free of agenda-setting effects. That is, there may be a great number of bills that would allow representatives from different states to demonstrate their shared interests that never reach the floor for a vote, due the negative agenda control of majority leadership (i.e., Cox and McCubbins 2005). Co-sponsorship, however, is not controlled by House leadership and is therefore likely to be a more

[1]For each state A we compute the cosponsorship rate for each House member from state A with all House members from all states not A, resulting in a vector of cosponsorship rates of length $\#reps_{\text{state A}} \times \#reps_{\text{state not A}}$. These cosponsorship rates are then regressed on an indicator of co-partisanship between the two members and a vector of fixed effects for states. We then use the model outputs to predict the mean cosponsorship rate between state contingents holding co-partisanship constant at 0.5. This process is iterated for each state in each Congressional session.

accurate summary of shared political-economic preferences across state lines.

Economic Production

Perhaps the most direct measurement of economic connectivity is similarity in the distribution of economic production. States that are similarly dependent on particular economic sectors for their well-being will experience similar ebbs and flows in production. It is therefore reasonable to expect residents of states with agriculturally-dominant economies will weight the performance of other agriculturally-dominant economies more heavily in their economic evaluations, just as it is similarly natural for residents of states with finance-dominant economies to factor in the performance of other finance-dominant economies more heavily — recall the above discussion on the weighting scheme implied by Ebeid and Rodden (2006).

To calculate these similarities we rely on state gross product data organized and made available by the Bureau of Economic Analysis. We break each state's gross product (GSP) into twenty sectors and calculate the proportion of total production coming from each sector.[2] We then calculate the inverse of the root squared mean error for each state dyad to build $\mathbf{W}$. Thus, larger values indicate a greater similarity, whereas values that approach 0 indicate that the states' economies have nearly nothing in common. In 2010, for example, the states with the most similar distributions of economic production were Maine and Vermont $\left(\frac{1}{RMSE} = 139.1\right)$, whose economies are both heavily reliant on government and real estate, while the states with the least similar distributions were Delaware and Wyoming $\left(\frac{1}{RMSE} = 9.6\right)$, whose economies are dominated by finance and insurance and mining, respectively.

[2]These sectors are: agriculture, forestry, fishing, and hunting; mining; utilities; construction; manufacturing; wholesale trade; retail trade; transportation and warehousing; information; finance and insurance; real estate and rental and leasing; professional, scientific, and technical services; management of companies and enterprises; administrative and waste management services; educational services; health care and social assistance; arts, entertainment, and recreation; accommodation and food services; other services, excluding government; government.

Media Contextualization

As discussed above, Kayser and Peress (2012) argue that the news media contextualizes localized economic productivity by comparing it to the performance of other economies. This suggests that the distribution of economic messages voters are exposed to is guided by media benchmarking. Of course, the propensity of the media to reference one state more often than others when describing local growth may be a function of one or many of the mechanisms we have described above or other undiscussed mechanisms. While we discuss this in a bit more detail below, our focus is constructing a $\mathbf{W}$ that describes this propensity, not explains it.

To construct this $\mathbf{W}$ we conduct an automated content analysis of state-level economic news articles obtained from Lexis-Nexis for 2000 to 2015. Articles that referenced the state's governor in the headline and any economic keywords in the headline or body of the text were collected for each state. In total 11,578 articles were collected and analyzed for mentions of potential economic comparisons. Each cell in the $\mathbf{W}$ matrix represents the portion of economic news articles regarding the focal state that reference the comparison state, so the higher the cell value, the greater the role of that state in media contextualization.

Robustness Checks

This section provides some additional empirical models discussed—though not presented—in the manuscript.

Unemployment Change

In the manuscript we discussed a counter-intuitive finding where worsening national unemployment actually improved economic evaluations. We argued that this finding was a function of the

extremely unique configuration of national economic conditions in 2009 and 2010 where recovery in the national economy (in terms of productivity) occurred prior to the recovery in employment. As a result, these unique years where the national economy is improving coincided with worsening employment.

In Table 1 we exclude 2009 and 2010 from the two models presented in the manuscript. As expected, excluding these years flips the coefficient for *national unemployment change* so that the finding is consistent with our original expectations.

[Table 1 about here]

Temporal Effects

One research question that was not explored in the manuscript due to limited space has an important temporal dimension. Do voters evaluate the economy based on current economic conditions, or those from the previous year? To assess this possibility, we lagged the state-level economic conditions (and spatial lag) by one-year. We expect our results to be robust to this change. Indeed, Table 2 shows that the results are consistent with those in our manuscript, though it should be noted that the magnitude of the coefficients is smaller and the goodness of fit statistic (AIC) implies a worse fit.

[Table 2 about here]

References

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Tables & Figures

Table 1: Ordered Logit Estimates of National Economic Evaluations using Media Mentions and Economic Similarity $\mathbf{W}$ specifications: Excluding 2009-2010

	Media		**Similarity**	
	β	$S.E.$	β	$S.E.$
Δ GSP pc	-0.055	0.004	-0.013	0.004
Δ GSP pc $\times \mathbf{W}$	-0.639	0.009	-1.007	0.013
In-Party	-0.853	0.021	-0.858	0.021
Out-Party	0.353	0.021	0.374	0.021
Presidential Approval	-2.437	0.020	-2.457	0.020
Age	0.006	< 0.001	0.006	< 0.001
Male	-0.425	0.013	-0.433	0.013
Non-white	0.079	0.016	0.091	0.016
Union Member	0.056	0.018	0.032	0.018
College Educated	-0.329	0.014	-0.346	0.014
Married	-0.015	0.014	-0.007	0.014
Unemployed	0.551	0.027	0.529	0.027
Homeowner	-0.123	0.016	-0.094	0.016
ΔNational Unemployment	0.733	0.023	0.154	0.028
National Inflation	0.163	0.016	0.485	0.017
τ_1	-5.517	0.058	-5.573	0.059
τ_2	-3.758	0.057	-3.797	0.057
AIC	177,786		176,664	
N	137,556		203,808	

Note: DV = *economic evaluations* (1=Better, 2=Same, 3=Worse).

Table 2: Ordered Logit Estimates of National Economic Evaluations using Media Mentions and Economic Similarity $\mathbf{W}$ specifications: Lagging State-Level Conditions

	Media		**Similarity**	
	β	$S.E.$	β	$S.E.$
Δ GSP pc_{t-1}	-0.004	0.002	-0.014	0.002
Δ GSP $\text{pc}_{t-1} \times \mathbf{W}$	-0.186	0.003	-0.183	0.003
In-Party	-0.638	0.016	-0.636	0.016
Out-Party	0.259	0.016	0.257	0.016
Presidential Approval	-1.819	0.014	-1.811	0.014
Age	0.006	< 0.001	0.007	< 0.001
Male	-0.325	0.010	-0.325	0.010
Non-white	0.061	0.012	0.067	0.012
Union Member	0.048	0.013	0.052	0.013
College Educated	-0.196	0.010	-0.190	0.010
Married	-0.039	0.011	-0.039	0.011
Unemployed	0.487	0.019	0.493	0.019
Homeowner	-0.178	0.012	-0.182	0.012
ΔNational Unemployment	0.462	0.005	0.435	0.005
National Inflation	1.086	0.007	1.033	0.007
τ_1	-0.347	0.027	-0.488	0.027
τ_2	1.120	0.027	0.972	0.027
AIC	318,213		319,180	
N	203,808		203,808	

Note: DV = *economic evaluations* (1=Better, 2=Same, 3=Worse).