Unit Autonomy and Cross-National Analysis

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INTRODUCTION

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Does the rise of complex governance upend traditional IPE research? A core assumption of many mainstream approaches (and their econometric counterparts) is that states act independently to reach key positions on issues ranging from trade to monetary policy. Given the explosion of research on diffusion, hierarchy, and interdependence, however, such methodological nationalism seems increasingly difficult to sustain. Instead, states find their decision-making autonomy increasingly restricted by international and transnational forces.

In his new research note, "European Union Member States in Cross-National Analyses: The Dangers of Neglecting Supranational Policymaking," Joe Weinberg reminds us of the pitfalls to neglecting these complex dynamics in large N analysis. In particular, he isolates the case of the European Union, in which member states have abdicated traditional domestic decision-making in many key sectors. This does not mean that member state interests do not matter but that they often cannot simply be modeled in the standard 2-level game analogy. This new reality becomes particularly problematic when states (like EU members) that are engaged in complex governance arrangements are included in data sets with states that are not. Weinberg, then, is part of a next generation of scholars grappling with the methodological and theoretical challenges of studying the political consequences of interdependence.

To further this discussion, we invited several experts to comment: Stephen Chaudoin, Manfred Elsig, Helen Milner, Thomas Oatley, and Xun Pang. These interventions underscore the importance of Weinberg's contribution, while also suggesting a number of next steps for researchers interested in studying IPE in an era of globalization. Oatley points to the limits of many standard solutions to these problems such as spatial econometrics and calls for greater attention to network methods. At the same time, he emphasizes the importance of matching theoretical assumptions with statistical approach. Elsig emphasizes that researchers need to understand the political process within such complex governance systems. While individual member states, for example, no longer negotiate trade deals, national governments or national interest groups still exert tremendous influence on EU trade position. A key challenge of integrating the EU and other complex governance regimes into large-N models, then, is to figure out how interests and institutions do or do not comport with the more general theoretical model used. Finally, Chaudoin, Milner, and Xun focus on alternative strategies to manage such interdependences and specifically advocate for greater use of multilevel models. All of the contributors agree that scholars of globalization could do more to integrate such interdependencies into their theoretical and methodological approaches. At the same time, the contributions demonstrate the significant work that still needs to be done to really address this thorny issue.

It's a System, not a Sample: Interdependence in the Global Political Economy

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Weinberg offers a particular illustration of a more general challenge that IPE scholars confront: many of the policy choices that we model and seek to explain are generated by interdependent processes, and yet the methods we employ most frequently depend upon the assumption that these outcomes are in fact independent. To see the general nature of the problem, consider how EU states produce outcomes in agriculture (the CAP), monetary policy and exchange rates (the ECB), and Competition Policy. Moreover, the challenge hardly limits itself to the EU. A growing body of research highlights the interdependencies present in a wide range of outcomes of interest to IPE scholars including tariff rates, BITS, foreign direct investment, and others. And such interdependencies are growing in frequency as the global economy becomes increasingly integrated.

In the last few years, IPE scholars have begun to use methods that manage these interdependent processes. The most common approach, at present, is to use spatial econometrics to capture some of the existing interdependencies (e.g, Gilardi 2014; Franzese and Hays 2007). Based on the central insight of Tobler's First Law of Geography (Tobler 1970, 236)--"everything is related to everything else, but near things are more related than distant things"--, spatial regression captures neighborhood effects by estimating models that include a spatial weight matrix. This approach has been applied to among other things, bilateral investment treaties, foreign aid, labor rights ISO 2000 standards, capital taxation, neo-liberalism, and financial supervisory governance (e.g., Neumayer and Plumper 2010; Barthel et al 2014; Prokosh and Protoski 2007; Simmons and Elkins 2004; Greenhill et al, 2009).

Though increased use of spatial econometrics constitutes a welcome and often fully appropriate response to interdependence, the approach is not a universal panacea. Spatial regressions face two important limitations in particular. First, diffusion from proximate units is not the only type of interdependence present in the global political economy. Indeed, the problem Weinberg highlights is not diffusion but collective decision making within an intergovernmental organization. The underlying data generating process here includes characteristics of EU institutions and the system-wide distribution of power through which distinct national ideal points are transformed into a single policy outcome. We can't model these in the familiar country-year design. To make the point sharply, no one would model EU monetary policy today by treating the nineteen Eurozone members as independent observations. The underlying issue is that the unit of analysis is no long the country-year, but is now the "EU-year" and spatial interdependence all but disappears. And though the EU poses this challenge most sharply, an increasing number of national economic policies are generated through collective decision making at the global level.

Second, spatial econometrics omits the higher-order dependencies present in network structures. Consider the phenomena of triadic closure. Suppose that in a three node

network, A is tied to B and to C. Given their ties to A, B and C are now more likely to become tied to each other than they would be if one or both were not tied to A. A simple friendship network offers a concrete example: if Sue is friends with John and Pat, John and Pat are more likely to become friends with each other than they would be if one or both are not friends with Sue. One might suppose that triadic closure is increasingly common in the global economy. Deepening economic interdependence is generating global production networks, wherein various components of final goods are produced in different locations, before being assembled and shipped to their final market. In this context, if Japanese firms invest heavily in Taiwan and South Korea to produce components of consumer electronics, we might expect firms in Taiwan to invest in South Korea and *vice versa* at a rate higher than we would observe if one or both had no investment ties to Japan. As a result, the amount of investment Taiwan and South Korea each attract from each other isn't solely a consequence of country level attributes, dyadic characteristics, or regional proximity, but is influenced also by the investment and trade relationships they have with Japan. And because trade and FDI are highly correlated, triadic closure likely also characterizes the structure of trade flows. As such dynamics become increasingly common, the unit of analysis changes from the country-year to the network year and our empirical approach must change accordingly (e.g., Cao 2010; Cao and Ward 2014; Saban et al, 2010).

In conclusion, the fundamental challenge that Weinberg raises for IPE scholars is that the world we study is a deeply interdependent system, not a sample of independent observations. This recognition creates theoretical challenges as well as empirical challenges. The theoretical challenge resides in the fact that mainstream American IPE has placed little value on theorizing about systemic processes in the last fifteen years. As a result, our understanding of systemic processes has advanced little since the insights generated by neoliberal institutionalism. I believe that further theoretical progress requires us to move away from the ontology of neoclassical economics toward theories informed by complexity science and evolutionary biology. The empirical challenge resides in the fact that the world we study fails to satisfy the assumptions of the methods we most commonly apply to it. Thus, testing new theories will require innovative empirical methods as well.

Comments on Weinberg

Manfred Elsig
University of Bern

Weinberg (2016) stresses the need to think carefully about how to deal with the EU both in conceptual terms and when implementing empirical strategies. To illustrate his argument, he has focuses on trade policy, an important policy field in which the EU has been one of the key actors in world politics. This is reflected for instance in its leadership negotiating preferential trade agreements (PTAs) around the globe. The EU has the highest number of PTAs in force (Dür et al. 2014) and its PTAs serve as "templates" for other international trade arrangements. Dropping the EU from an analysis focusing on the role and effects of PTAs would certainly lead to equivocal results.

How autonomous is Brussels?

While I am generally in agreement with Weinberg, in my opinion, he overstates the degree to which the EU's institutions (in particular the Commission) are independent from national governments. He pictures Member States as lacking influence on the decision-making process. The distinction between policy areas which are in the hands of EU Member States and areas where the EU institutions enjoy "exclusive competence" is in reality fuzzier than is assumed here. The notion of "exclusive competence" in this regard is potentially misleading. I would argue that Member States are still quite engaged when it comes to trade policy, as the extensive literature on EU trade has shown. Contrary to what Weinberg argues, Member States are not "removed from the process of policy formulation". A good example is the launching of the Transatlantic Trade and Investment Partnership (TTIP) negotiations. In the run-up to the start of these negotiations, states were trying to influence what's included in and excluded from the mandate; in particular France's insistence on excluding cultural services from the agenda paid off. More importantly, while the Commission officially holds the agenda-setting power, in this case the initiative was pushed by Member States; the Commission was originally rather reluctant to start the negotiations. Member States are also prominently present during negotiations and at the ratification stage.

Is there a median (voter) state in the EU?

The literature on EU trade policy also suggests that the influence of individual EU Member States varies considerably as a function of their size, economic interests, coalitions and voting power. Furthermore, it is not conceivable that key trade decisions would be taken that go against the interests of large and pivotal Member States, in particular, Germany. If the interests of the German car industry are at stake, for instance, the German Chancellor will directly interact with the Brussels trade policy machinery. This begs the question of how to treat single EU members in their pursuit of trade policy objectives. Should we disregard some states and focus on the key players to analyse their domestic politics more thoroughly?

What can EU trade policy realistically do?

Bearing the above initial comments in mind, one could attempt a second look at the articles' results that Weinberg has chosen to replicate and ask whether the examples are all about EU-level-dominated trade policy? The article by Dutt and Mitra (2010) comes closest to Weinberg's search for policy decisions taken at the EU level (agricultural subsidies), although

the dependence on agricultural subsidies varies significantly across EU states which leads to different country-level politics whereby individual EU members spend considerable time and resources on preserving their existing levels of subsidies. I would also place Rickard (2012), who focuses on subsidies to support domestic economic sectors, close to EU-level decisions; however, government expenditures are far from uniformly decided by EU rules and allow considerable wiggle room domestically. In the other two studies where the main models are replicated, dominance of EU-level trade is less obvious. The measure used by Hankla (2006), which focuses on the total value of a country's trade divided by its GDP, is a weak proxy for protectionism, which is supposed to be orchestrated at the EU level. Similarly, in Chang et al. (2008), it is less clear how much the dependent variable "prices" (purchasing power parity divided by the exchange rate) is really a function of centralized trade or monetary policy, as power parity is influenced by politics beyond the control of Brussels and Frankfurt.

Is the issue only relevant to the EU?

If we further contrast the above considerations with evidence from the Canada–EU trade agreement negotiations, in which Canadian provinces got a seat at the negotiation table for a number of important topics (such as public procurement), we might question the level of analysis in respect to other actors as well. In some instances it might be more straightforward to compare the influence of a large Canadian province (sub-state level) with the influence of a large EU Member State (state level). This generally reflects the important differences across countries in the ways that the sub-state levels influence policy aggregation, stressing the importance of taking into account differences between states with more or less sub-federal structures.

The moving target

The EU poses additional challenges for large-n research as enlargement inflates the number of actors (and observations) over time and as periodic updating and changing of institutional rules affects interest aggregation. Since the Lisbon Treaty, the European Parliament has enjoyed similar powers to those of the Member States in influencing EU trade policy. In addition, the coordination of investment policy has been delegated to the European level, an area that in the past was clearly located at the national level with EU Member States managing their own bilateral agreements. This dynamism (membership growth, changing institutional rules and new policy areas) adds an additional layer of complexity to designing conceptual and empirical strategies in large-n studies.

National Policy Autonomy and the Moderating Effects of Supranational Organizations

Stephen Chaudoin, Helen V. Milner, and Xun Pang
University of Illinois at Urbana-Champaign | Princeton University | Tsinghua University

Joseph Weinberg's piece highlights an important substantive and methodological question: how to analyze, theoretically and methodologically, differences in national policy autonomy among countries and across policy areas in the era of globalization or regional integration. EU membership constrains the policy autonomy of member states, which can change the relationship between the explanatory variables of interest and the outcome variable. As Weinberg argues, "While a particular set of independent variables may explain outcomes in sovereign countries, those same variables would have little explanatory power where decisions are made by a supranational body" (5). We agree wholeheartedly that, if membership in a supranational institution constrains certain policy outcomes, then researchers should account for that in their theoretical and empirical models. We disagree, however, on the solution. In particular, we show how multi-level models have important advantages in modelling this phenomenon, compared to the split-sample regressions in his piece.

The issues Weinberg raises are examples of moderation. In Baron and Kinney's words, "moderator variables specify when certain effects will hold… [They] partition a focal independent variable into subgroups that establish its domains of maximal effectiveness in regard to a given dependent variable" (1986: 1174). EU membership is a moderating variable. It changes the relationship between an explanatory variable, e.g. type of electoral institution, and an outcome variable, e.g. trade policy. Since EU membership constrains national trade policy, we might expect to see a different (potentially muted) relationship between electoral institutions and trade policy among EU members, compared to that relationship among non-members. Moderators can change the strength, direction, and existence of a stable relationship between the explanatory and dependent variable. Weinberg referred to the third type of moderated effect (from existence to nonexistence or vice versa) as "replacement."

Chaudoin, Milner, and Pang (2015) demonstrate how multi-level modelling (MLM) can facilitate making inference regarding theories explaining moderation. Here, we use Weinberg's replications of arguments from Dutt and Mitra (2010) to demonstrate how MLM has three advantages for modelling the relationships made by Weinberg.

1) MLM affords flexibility in matching the empirical model to the theoretical argument.

2) MLM can be more efficient than split-sample or interaction term modelling.

3) MLM facilitates model comparison for the types of theoretical issues raised by Weinberg.

Briefly, Dutt and Mitra argue that having a rural party in power (coded with a binary variable, *rural*) and the degree of executive constraints (from Polity, *xconst*) affect a country's

degree of agricultural protectionism (measured by an outcome variable, *RRA*). They expect, and find, positive effects for both variables. Weinberg argues that, since agriculture policy is set at the supranational level by the EU, these domestic variables should have little effect on policy for EU members.

To demonstrate (1) and (2), we first compare the models from Weinberg's Table 2 (here, Models 1-3) with a MLM that allows the effect of the main variables of interest, *rural* and *xcons*, to vary by a country's EU membership (here, Model 4).

This model is similar to Dutt and Mitra's model in that it includes country- and year-specific intercepts (αi and δt) and similar to Weinberg's model in that the effect of *rural* and *xcons* can be moderated by an EU membership indicator variable (*EU*). However, unlike the split sample regressions in Weinberg, this model affords the researcher greater flexibility. For example, this model does not assume that EU membership moderates *all* of the explanatory variables. The researcher can pick and choose, based on theoretical knowledge, what factor moderates what. In our Model 4,we have allowed EU membership to moderate two variables that Weinberg argued were likely, theoretically, to be moderated. But we have not been forced to make stronger assumptions about EU membership moderating all the variables.

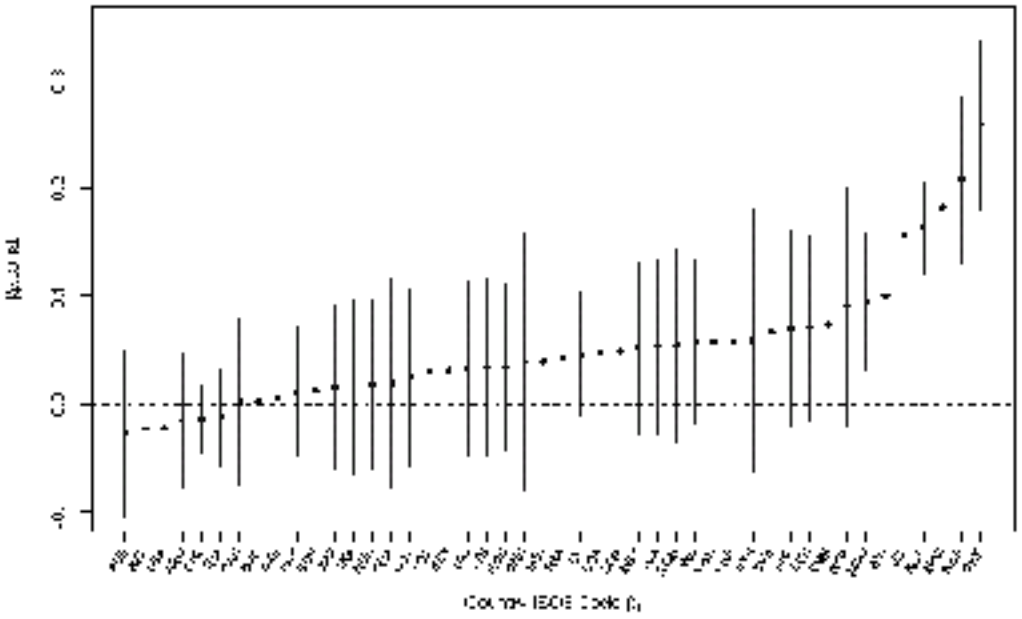
Table 1: Baseline, Split Sample, and Multilevel Model Replications of Dutt and Mitra

	Model 1 Full Sample	Model 2 Non-EU	Model 3 EU Only	Model 4 Full Sample
Ideo.	0.24	0.26	-0.82	0.11
	0.24	0.25	0.65	0.14
Ideo.*GDP	-0.03	-0.03	0.08	-0.01
	0.03	0.03**	0.06	0.01
L.GDP	0.38**	0.40	0.02	0.35
	0.14	0.14	0.22	0.05
Exec. Constraints	0.00	0.00	0.09	
	0.00	0.00	0.11	
Pres. System	0.10	0.06	.	0.05
	0.07	0.07	.	0.03
Rural Party	0.45***	0.44***	0.05	
	0.11	0.12	0.09	
Exec. Constraints				-0.13**
(EU)				0.05
Exec. Constraints				0.04***
(Non-EU)				0.01
Rural Party				-0.07
(EU)				0.19
Rural Party				0.5***
(Non-EU)				0.03
Intercept				-1.96***
(EU)				0.38
Intercept				-3.13***
(Non-EU)				0.06

Table 1 displays the results. As in Weinberg's split sample replications, EU membership does appear to moderate the effect of *xcons* and *rural* on the outcome variable. *Rural* has a positive and significant effect for non-EU members and a negative, insignificant effect for EU members. Unlike the split sample regressions, however, greater executive constraints have a positive effect for non-EU members and a negative effect for EU members, with both being significant. The MLM also uses the data efficiently. The standard errors on the control variables, like ideology, are often half as large as those in the split sample regressions.

To demonstrate (1) and (3), we compare two more complicated models. Model 5 estimates a country-specific coefficient for the *rural* and *xcons* variables. Model 6 is similar to Model 4, but it allows the coefficient on *every* variable, not just *rural* and *xcons*, to vary by EU membership. Model 6 is thus most similar to the split sample regression advocated for by Weinberg in his Models 2-3.

Figure 1: Country-specific Coefficients on *xconst*, Non-EU Countries, from Model 5



Figures 1 and 2 show the country-specific coefficients for the estimated effect of *xconst* on the outcome variable, from Model 5, with Figure 1 showing coefficients for Non-EU countries and Figure 2 showing EU countries. Figures 3 and 4 repeat this for the *rural* variable.

For the most part, the effect of the two variables for EU countries is small and generally insignificant. However, there is a large degree of heterogeneity in the effects of the two variables for non-EU countries. The effect of the *rural* variable is positive and negative for some non-EU countries. Although the variation of the effects of the two variables is smaller within the EU country group, it is clear that the importance of domestic variables on agricultural protectionism varies among EU countries, especially when we look at the

effect of the *rural* variable. This heterogeneity is potentially of great interest to researchers, and it is uncovered only with the MLM.

Figure 2: Country-specific Coefficients on *xconst*, EU Countries, from Model 5

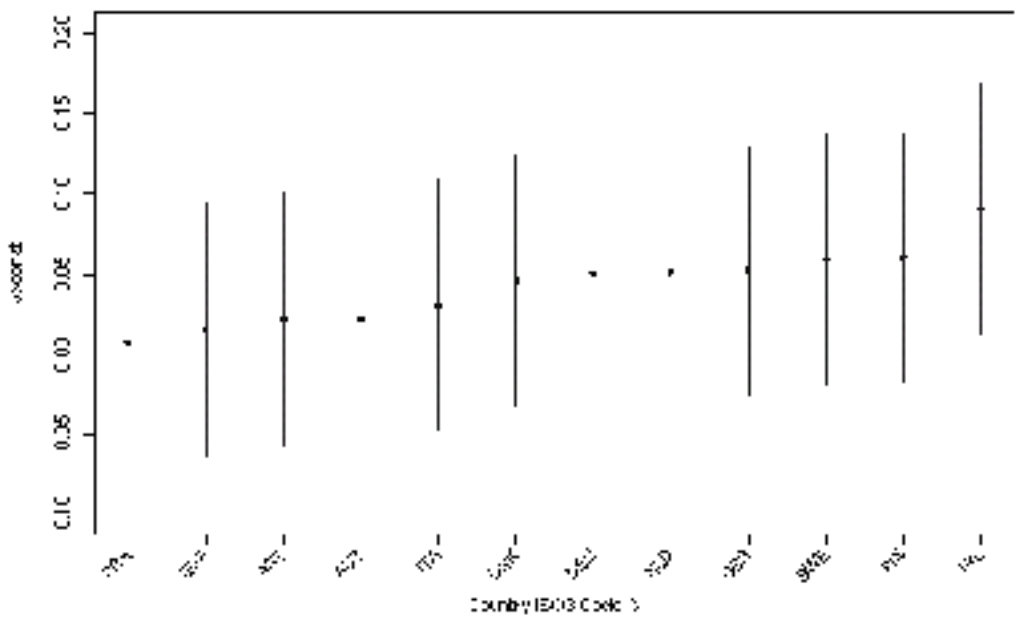
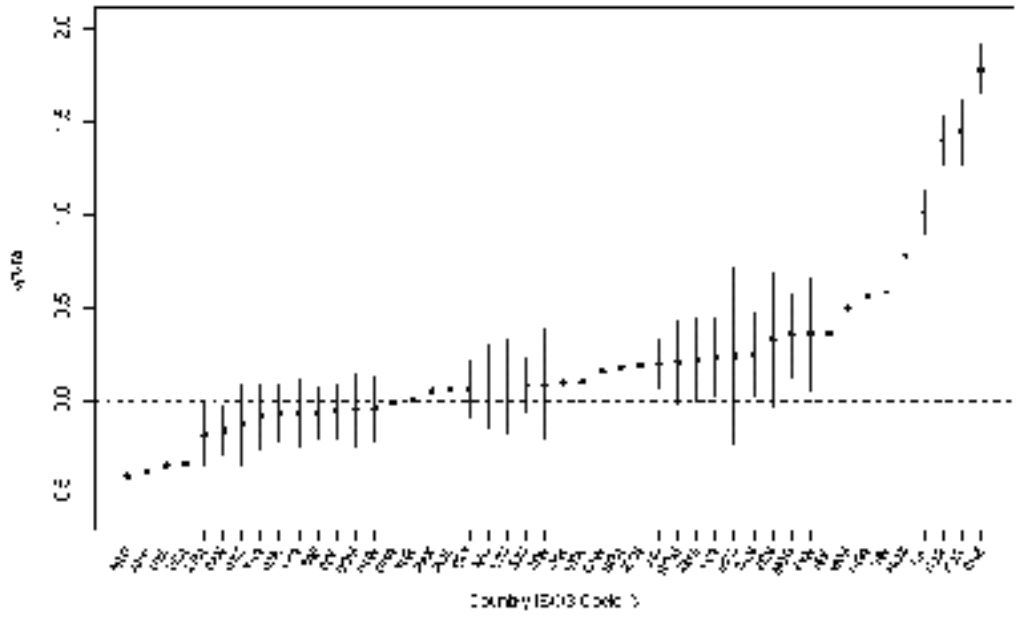


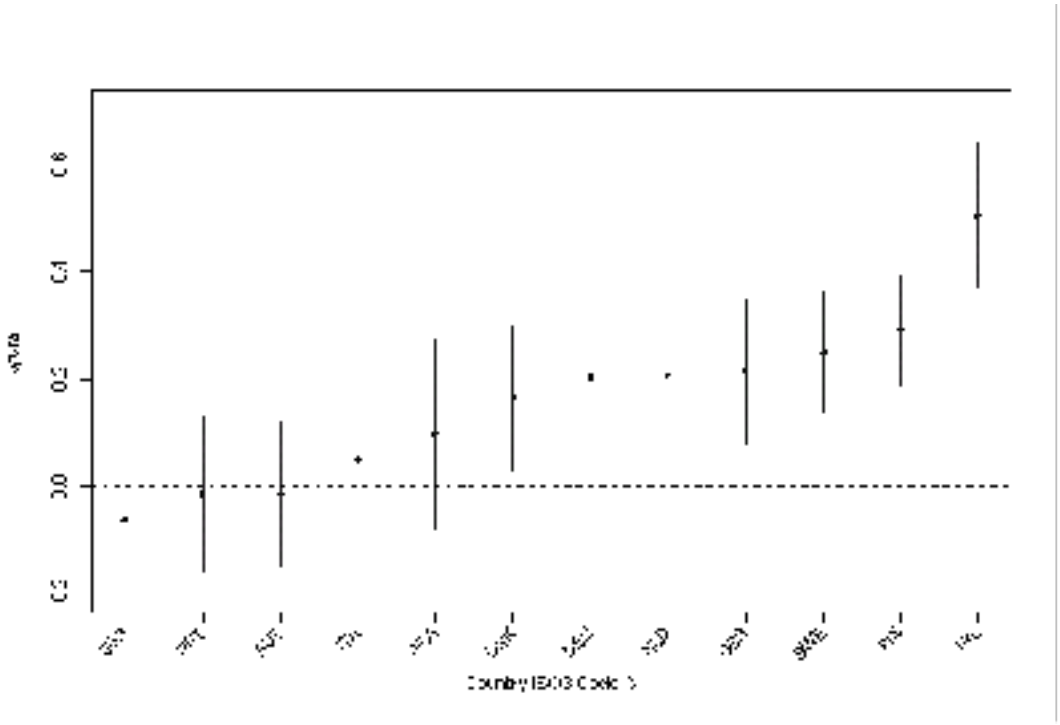
Figure 3: Country-specific Coefficients on *rural*, Non-EU Countries, from Model 5



We can also compare these models using statistics such as their AIC. Model 6, which most closely resembles the split sample regressions in Weinberg's replication, has the worst AIC. The best model, based on AIC comparisons, is Model 5. This implies that the heterogeneity of policy autonomy among EU countries is salient---EU-level decision-making does not "replace" national decision making, though the former changes (moderates) national policy autonomy in different EU countries to varying degree.

To conclude, we agree with the majority of Weinberg's arguments. Our main point of departure is to argue that multilevel models are a powerful tool for modeling the empirical relationships implied by Weinberg's theoretical arguments. These models afford researchers a great deal of flexibility and efficiency for modeling national-level policies in a globalized world.

Figure 4: Country-specific Coefficients on *rural* EU Countries, from Model 5



In Response and Looking Ahead

Joseph Weinberg
University of Souther Mississippi

I am grateful to the editorial staff of ISQ for facilitating this discussion and thankful for the participation of such a talented group of scholars. The purpose of my original article was to draw attention to the unique methodological problems posed by European Union (EU) member state observations in larger, cross-national data sets. At its face, this is a methodological issue reminiscent of many earlier arguments about the "poolability" of cross-national data. (International Organization (55) "Dirty Pool" Issue 2001) However, this methodological issue has a wide range of theoretical and substantive implications—particularly for those who study International Political Economy (IPE). The contributors to this symposium have done an excellent job of highlighting many of these implications and provide much needed guidance for avenues of future inquiry.

Chaudoin, Milner and Pang's contribution is optimistic about the possibility of incorporating EU observations into future models through the use of multi level models. Although we largely agree, they take issue with two points. Their first issue, concerning the use of split sample regressions, reflects a slight misunderstanding. I did not mean to suggest split samples as a *solution* to any problem. They were meant merely as a demonstration of the problem. Some sort of MLM is necessary to model the complex interdependence in most of the literature we have discussed. Multi Level Models—those that allow for variation in slope as well as intercept for each country/level—are far superior to a simple dummy variable. They would also allow researchers to be more selective about which independent variables are "moderated by EU membership".

Their second issue concerns the terminology of EU membership as a moderating variable. I agree that EU membership is a moderating variable—insofar as it is not a *mediating* variable (Baron and Kenny, 1986). However, I am hesitant to compare EU membership with other variables of moderation—such as a preferential trade agreement. Using trade as an example, one could imagine a trade agreement constraining the process of domestic politics—perhaps by pacing an upper or lower limit on the level of applied tariffs that can be selected by legislators. In the EU, domestic legislators are effectively removed from the process of tariff formation.

Although I support multi level modeling to account for interdependence among a subset of units, I would caution against MLM's as a panacea to this complex problem. Any modeling strategy presupposes that we want to and should include the EU countries. As I pointed out in the article, my starting point was a domestic politics model of trade policy formation. In that context, it seems as though the best course of action is to omit EU observations. This is not to say that different data generating processes cannot be subsumed into one multi-level model. Nor is it to say that all EU observations should be omitted from every analysis. Instead, I argue only that the inclusion or exclusion of these observations must be theoretically justifiable. I consider this justification to be a precondition for any model specification or estimation strategy.

Manfred Elsig makes several important points. Elsig is absolutely correct that member states can and do influence the Commission—even with trade policy. Likewise, the policy-making prerogative of each EU member state is not irrevocably usurped by the Commission's powers. Very few countries (if any) could be said to have 100% policy autonomy, but such autonomy is not a precondition for combined analysis, nor is it the only consideration for omission. If I overstated the autonomy of Brussels, it was directed at the specific example of trade policy using a domestic electoral model. In this policy area, the role of the Commission creates country-level dependent variable values obtained by fundamentally different data-generating process than observations outside of the EU.

Oatley takes a broader view of systemic interdependence in his own work (Oatley, 2011) and in this critique of mine. Thankfully, he is able to more succinctly and eloquently restate my core concerns. Most scholars would agree with his sentiments that "no one would model EU monetary policy today by treating the nineteen Eurozone members as independent observations." and "The world we study is a deeply interdependent system, not a sample of independent observations."

What he and I (from slightly different vantage points) are trying to convey to our colleagues is that most empirical models do not yet reflect our understanding of an interdependent world or the complexity of interactions within the system. Oatley's recommendation to eschew antiquated notions of theorizing the global system in favor of new strategies and ideas is as welcome as it is necessary—if our work is to remain relevant. The issues I have raised about the EU cast doubt on the ability of current theoretical frameworks to accommodate the rise of next generation trade agreements, supranational politics, and public-private partnerships. Acknowledging unit heterogeneity is just the tip of the iceberg until we can better understand the processes at work inside and outside of the EU. A simple "fix" for these complex issues is unlikely, but a more careful consideration of the theories and practices underlying this work is long overdue.

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