

# Electoral Linkages in Federal Systems: Barometer Voting and Economic Voting in the German Länder

LORI THORLAKSON  
University of Alberta

**Abstract:** *Federal systems create political competition at multiple territorial levels. While models of vertical bargaining conceptualise federal-subnational relations as occurring between parties with exogenously defined interests, federalism also structures forms of interdependence between the federal and subnational levels. Political competition in multi-level systems is marked by interdependence between the federal and subnational levels through barometer and second order voting effects. Findings of a more 'autonomous' form of political competition at the subnational level, through state-level economic voting, are less common. This article examines Germany, a highly interdependent federation, to assess the extent to which voting in Land elections responds to Land level economic performance and whether political and institutional factors affect this. I find evidence that in Land level elections, voting for the federally incumbent party is responsive to federal economic performance. Alongside this, there is evidence of 'uncoupled' electoral behaviour at the Land level, with Land level economic voting. This is enhanced by single party government.*

**KEYWORDS:** federalism, elections, accountability, Germany

## Introduction

Models of centre-periphery bargaining in federations or multi-level systems, especially those in which the interests of each level of government or the dependencies between centre and periphery are key explanatory variables (e.g. Siroky et al. 2016), provide us with powerful analytical tools for predicting pressures for adjustment to the vertical relationship between subnational and federal governments, including pressures for secession. Central to these models is an assumption that the centre and periphery are unitary actors with separate, identifiable and fixed preferences. Moreover, the centre-periphery bargaining framework suggests that separate constituencies generate the interests of the centre and periphery.

The literature on multi-level systems provides a very different picture of how the interests—and identities—of federal and subnational constituencies are expressed. In barometer and second order voting models voting decisions at the subnational level are often explained as linked to political conditions at the federal level. Similarly, research on electoral accountability mechanisms in multi-level systems has found that performance assessments and voting at the subnational and federal levels are more interdependent than independent. This linkage between the subnational and national arenas challenges the assumptions of the center-periphery bargaining model.

Various forms of interdependence in multilevel systems complicate vertical relations between levels of governments. Constitutional methods of the allocation of power can

affect the autonomy of levels of government in practice (Marks, Hooghe and Schakel, 2008; Bolleyer and Thorlakson, 2012). Political behaviour can also produce and sustain interdependencies between levels. This can occur through the organizational strategies of parties when integrated parties organize at more than one levels of government, creating incentives for shared goals and shared success (Filippov, Ordeshook and Shvetsova, 2004; Thorlakson, 2009). Interdependencies can be created by political behaviour, when voting decisions in subnational elections are affected by consideration of political and economic factors at the central level. Public responsiveness to federal government policies can even be affected by the policies adopted by subnational governments (Wlezien and Soroka, 2010). Considering these political sources of interdependence, and the factors that generate them, is important if models of bargaining are to be successfully applied to a range of cases, especially in multi-level systems with state-wide, integrated parties. In federations, governments at each level may possess separate and identifiable interests. If governments are responsive to their citizens (as we hope they are), scenarios of vertical bargaining are complicated by the possibility that the electorates do not draw such distinct divisions between federal and subnational parties or interests, for example, when voters use subnational elections to reward or punish the federally incumbent party.

The potential for a high degree of interdependence between levels of government through linked political competition is especially high in Germany, where federal institutions structure a high degree of interdependence between territorial levels, and where political competition is dominated by state-wide parties that maintain integrated organizations at both the federal and Land levels (with the exception of the CSU, the sister party of the CDU that competes in Bavaria). This institutional interdependence creates ideal conditions for linked politics, a situation in which the distinctiveness of the centre and region as separate constituencies expressing separate and distinct preferences is much more difficult to assume.

When are the assumptions of the centre-periphery bargaining model most likely to apply? To help answer this question, this article seeks to identify the degree to which and the conditions in which political behaviour at the Land and federal levels is linked through electoral behaviour. Specifically, it investigates how voting outcomes at the subnational level are related to political and policy factors at the federal level and the extent to which the institutional context affecting the clarity of responsibility (single party government versus coalition government) and the political contexts (the development of incongruous Land-level party systems in the post-unification period) affects economic voting.

### **Forms of electoral linkage in multi-level systems: barometer and economic voting effects**

In a multi-level system with highly autonomous territorial units, we might imagine a situation in which elections at each level provide efficient mechanisms for voters to cast their votes in response to their evaluations of the government at that level, thus serving as efficient channels for the expression of preferences shaped by and directed to that level of government. An electoral accountability mechanism, found in retrospective economic voting models, posits this form of responsiveness: voters reward or punish the incumbent governing party for their economic performance (Fiorina, 1981; Lewis-Beck, 1986, 1988). Multilevel contexts can complicate this mechanism however because the complexity of the federalism's allocation of powers can reduce the clarity of responsibility required for the accountability mechanism to function (Powell and Whitten, 1993, Anderson, 2000:151).

When the political context diffuses responsibility—through federalism, coalition government, low party cohesion, divided government and the diffusion of legislative power to upper houses or powerful legislative committees chaired by opposition parties—the linkage between governmental performance and vote choice weakens and voters are less likely to punish incumbents for poor economic performance (Powell and Whitten, 1993:410; Anderson 2000:151). While all types of federalism introduce some degree of overlap and cooperation between levels of government, some federal institutional designs blur the clarity of responsibility between the federal and sub-national governments more than others.

German federalism, with its functional allocation of powers, creates conditions that blur lines of accountability to a high degree. In the German model of ‘cooperative’, ‘interlocking’ or ‘joint’ federalism, responsibility for policy areas is generally assigned to both federal and state levels of government, with the federal level responsible for broad legislation and the state level responsible for its administration. In Germany, Land elections determine the composition of the federal upper house, which holds veto power over federal legislation that affects areas of concurrent Land jurisdiction. German parties are also vertically integrated, with organizational structures and career paths that link the Land and federal levels of competition (Jeffery, 1999:136; Thorlakson, 2009:167).

Second order and barometer or referenda voting models present an alternative explanation of electoral behaviour in multi-level systems. Rather than assuming, as a starting point, that the electoral arenas are distinct and operate independently, they assume that they interdependent. These models vary in their specifications, but in general terms, they posit that voters view sub-national contests as less important than (or ‘second-order’ to) national level contests, and so tend to use their vote in sub-national elections to express their views on the national governing party. Sub-national elections are therefore best viewed as ‘barometers’ or referendums of support for national governing parties (Reif and Schmidt, 1980; Anderson and Ward, 1996; van der Eijk and Franklin 1996; van der Eijk, Franklin and Marsh, 1996; Marsh, 1998). Whether due to an inability of voters to distinguish between responsibilities of levels of governments, or to take account of sub-national level performance, barometer models of voting see vote choice as largely driven by voters’ evaluations of *national* economic or political conditions (Anderson and Ward, 1996:448). This means that the party of the incumbent national government would be punished or rewarded at the state level for national economic performance. The barometer effect may not just be the result of voters’ unwillingness to evaluate sub-national economic conditions and government performance; voters may be unable to make these evaluations in the absence of a sub-nationally-focused media that creates awareness of these policy outcomes.

There is limited literature that directly tests the impact of economic voting at the sub-national level in federations. It yields weak and mixed evidence of state-level economic voting, even in the federations that preserve a relatively high degree of autonomy for subnational governments, hence also maximizing clarity of responsibility, such as in the Anglo-American models of dual federalism, which tend to allocate entire policy areas to one level of government. In Canada, provincial governments have been punished by the electorate for poor federal performance (Gélineau and Bélanger, 2005). There is mixed evidence of state-level economic voting in the United States. Research using individual level data has found evidence that voters can and do form distinct perceptions of state and national economic performance (Niemi, Bremer and Heel, 1999) and assign different responsibilities to governors and senators (Stein, 2000; Atkeson and Partin 2001). While

Stein finds that voting decisions for gubernatorial races tend not to be made on economic grounds (2000), other studies, while disagreeing over the impact of presidential approval ratings on state vote choice, have found evidence that state economic factors matter in gubernatorial elections, suggesting that the standard accountability mechanism may operate at state-level (Atkeson and Partin 1995; Carsey and Wright, 1998). State-level economic voting is also weakened by divided government at the state level (Leyden and Borelli, 1995) and by the structure of the state economy (such as heavy dependence on commodity prices) (Ebeid and Rodden, 2006). Research on Argentina confirms these general findings, where Remmer and Gélinau (2003) report that voting largely responds to federal presidential performance (national economic conditions). However, they find that subnational policy choices can affect the strength of this connection—state economic performance can weaken the economic voting link between national economic performance and voting decisions at the state level.

There is a broader literature that examines ‘second order’ effects. This literature looks for, and often finds, broad patterns of the ‘second-order election’ model: lower turnout levels at the state election, a tendency to punish the federal incumbent party, seen most strongly in lagged elections, and a tendency for small and protest parties to do well. In response to these findings, we should expect that national factors matter in sub-national elections. What is potentially more inconclusive is when sub-national factors also matter, and to what degree.

Research on German parties has often found evidence of a typical ‘barometer election’ pattern of losses for federally governing parties in Land level elections and of attempts to use Land elections to seek majorities for the federal opposition in the Bundesrat (Dinkel, 1978; Decker and von Blumenthal, 2002; Gaines and Crombez, 2004). In addition, Lohmann *et al* find evidence that voters treat Land elections as ‘moderating elections’, with the party of the senior coalition partner at the federal level suffering losses at the next Land election (1997:444). They also find evidence that electoral support for Land parties is responsive to economic conditions, but argue that the similarity of Land and national economic performance (measured as GDP growth) means that we cannot draw conclusions about the responsiveness of voters to Land or national effects (1997:431). Since the time of this research, we have witnessed the rise of distinctive patterns of government at the Land level through the breakdown of the two-and-a-half party model of CDU/CSU-SPD-FPD competition that had long characterized German party competition in the post-war period, and the rise of new parties such as the Greens and, since the 1990s, the PDS, which have both formed governments at the Land level. Hough and Jeffery (2006) argue that the post-unification period, with its diversity of Land-level party systems, have weakened Land-federal electoral linkages. They argue that ‘it has pulled the parties in the Lander into positions more mindful of regional interests and less respectful of statewide party calculations. ...Land-level politics has won a new scope for autonomy from the state-wide government-opposition logics. ...[and] claims to a simple subordination of Land to federal politics need to be treated with caution’ (2006:121). Similarly, Olsen (2012) argues that the results of the Land level elections in 2011’s *Superwahljahr* point to the increasing impact of regional factors in shaping Land election outcomes.

The notion of the rise of distinctive Land-level patterns of political competition in Germany, signalling the development of a new form of territorial politics, is similar to arguments made in the case of Switzerland by Selb (2011). He argues that regionally varying degrees of linkage (similarity in electoral behaviour at the cantonal and federal levels) may be due to variation in the degree of integration of regional politics into a single

national model. Gaines and Crombez (2004), while identifying the continued presence of a strong barometer effect in Land elections, they also note that evidence of Land-level economic voting has increased since the 1990s.

While past research has yielded strong evidence of barometer voting effects at the Land level in Germany, and some tentative evidence of Land-level economic voting, there are some questions that arise from the literature. First, barometer models of voting, in which voters use their Land election vote to punish or reward the federally incumbent governing party are not clear on whether voters might base their evaluation of performance on Land or federal level economic performance. In Land elections, do voters base their policy outcome evaluations on Land or federal outcomes? Do they punish or reward Land or federal incumbents?

Second, we can test the argument advanced by Hough and Jeffery that Land-federal voting linkages are weakening over time in Germany, especially as Land level party systems become more distinct, a development which they attribute to the rise of a new form of territorial politics (2006). Does the barometer model of punishing or rewarding the party of the federal incumbent still apply to the post-unification period as the German party system has become more diverse? Has the rise of a new territorial politics in Germany (Jeffery, 1999; Sturm, 1999) led to increased evidence of economic voting at the Land level? The literature suggests different possible impacts of increased party system diversity. The economic voting literature proposes that the identification of clear electoral alternatives, through a party system that clearly structures government and opposition political forces, facilitates economic voting, while a highly fragmented party system can hinder it, by impeding the identification of clear alternatives to the governing party (Anderson, 2000:155). The argument advanced by Hough and Jeffery, developed with the multi-level German context in mind, suggests a different path: the development of distinct party system patterns in subnational units could signal the development of regionally distinct politics, less likely to be viewed by voters through a lens of federal politics. As a result, voters may be more inclined to evaluate Land governments on the basis of Land level performance, making Land-level economic voting more likely.

Finally, when the political situation preserves clearer lines of responsibility, as a result of single party government at the Land level, does this lead to increased evidence of Land level economic voting?

This paper will test the following hypotheses:

*Hypothesis 1:* The change in vote share of the federally incumbent party in Land-level elections will decrease in response to poor federal economic performance.

*Hypothesis 2:* The change in the vote share of the federally incumbent party will decrease in response to poor Land level economic performance.

*Hypothesis 3:* The change in the vote share at the subnational level for the incumbent governing party at the Land level will decrease in response to poor Land economic performance.

*Hypothesis 4:* Evidence of Land-level economic voting will be stronger in cases of single-party government than in coalition government.

*Hypothesis 5:* Land level economic voting (indicated by a decrease in the vote share for the incumbent governing party at the Land level in response to poor Land economic performance) will be stronger in the post unification period than in the pre-unification period.

## Research Design and Analysis

To tests these hypotheses, I use aggregate electoral data from 1970–2014 from national and sub-national elections in the German Lander. I employ a pooled cross-sectional time series analysis to assess the responsiveness of changes in the vote share of the party of the federal incumbent or Land incumbent to Land or federal economic performance, previous party support and the political context. Studies of barometer voting and economic voting at the subnational level often use aggregate data due to the limited availability of individual level data at the subnational level (Samuels, 2004; Lohmann et al, 1997; Remmer and Gelineau, 2003; Anderson and Ward, 1996; Ebeid and Rodden, 2006; Rodden and Wibbels, 2011).<sup>1</sup>

The dependent variables in this research are the change in vote share for the federally incumbent party in sub-national elections (CVS Fed) and the change in vote share for the incumbent party at the Land level (CVS Land). The former is used to test for standard barometer election accounts of economic voting; the latter is used to detect a Land-level mechanism of economic accountability.

I use the following model to examine barometer voting:

$$\Delta \text{ federal incumbent vote share} = f \text{ federaleconomy} + \text{federal incumbent previous vote share} + \text{long term federal party support} + \text{distance to midpoint of the federal electoral cycle} + \text{coalition government.}$$

I also test an alternative model of barometer voting that in which voters use Land elections to punish or reward the federally incumbent party in response to Land level economic conditions:

$$\Delta \text{ federal incumbent vote share} = f \text{ Land economy} + \text{federal incumbent previous vote share} + \text{long term federal party support} + \text{distance to the midpoint of the federal electoral cycle} + \text{coalition government.}$$

I test the relative contributions of Land and federal economic factors to change in the federal incumbent vote share in a combined model:

$$\Delta \text{ federal incumbent vote share} = f \text{ Land economy} + \text{federal economy} + \text{federal incumbent previous vote share} + \text{long term federal party support} + \text{distance to the midpoint of the federal electoral cycle} + \text{coalition government.}$$

<sup>1</sup> Using aggregate data allows us (due to data availability) to investigate the relationship between the political and economic context and electoral outcomes over several decades. A cross sectional analysis of a single electoral period can be affected by the noise of specific campaign events. The tradeoff is that we must be cautious about making inferences about the individual level voter behavior that underpins these patterns.



I use the following model to examine economic voting at the state level.

$$\Delta \text{ Land incumbent vote share} = f \text{ Land economy} + \text{federal economy} + \text{long term} \\ \text{Land party support} + \text{coalition government} \\ + \text{distance to the midpoint of the federal electoral} \\ \text{cycle.}$$

To directly test hypothesis 4 on the impact on coalition government, I use a model that includes an interaction term between coalition government and Land economic performance (relative Land GDP growth):

$$\Delta \text{ Land incumbent vote share} = f \text{ Land economy} + \text{federal economy} + \text{long term} \\ \text{Land party support} + \text{coalition government} \\ + \text{distance to the midpoint of the federal electoral} \\ \text{cycle} + \text{Land economy} * \text{coalition.}$$

The model uses Land GDP growth and unemployment relative to national performance as the indicators of Land economic performance.

Following Lohmann et al (1997), I rely on two indicators of economic performance: unemployment and GDP growth. While the inflation rate is often used as economic indicators in economic voting studies, this is less suitable for the case of Germany because of the key role played by the highly independent central banks in managing inflation outcomes (by the Deutsche Bundesbank pre-EMU and the European Central Bank post-EMU). I measure federal and Land-level economic performance using the annual GDP growth rate and the annual rate of change in unemployment, as well as measures of Land GDP growth and unemployment performance *relative* to national performance. See the appendix for details on the operationalization of these indicators.

Research on barometer or referendum voting has found that the timing of the electoral cycle is an important predictor of a punishment effect for the party of the federally incumbent government. Previous research has found a curvilinear relationship: the closer the subnational election is to the midpoint of the federal electoral cycle, the stronger the predicted punishment effect for the incumbent party (Dinkel, 1981; Reif 1984; Norris, 1990; Marsh and Franklin, 1996; Anderson and Ward, 1996). Following these findings, I have included an electoral timing variable that is calculated as the distance, in months, of the Land election from the midpoint of the federal electoral cycle.

Research has found that the higher the level of the previous vote share of a party, the greater the decline in its subsequent electoral support (Anderson and Ward 1996). To control for this, I include a variable that captures the previous state-level vote share of the federally incumbent party at the federal level.<sup>2</sup> I also include a variable to control for the

<sup>2</sup> That is, the vote share of the federally incumbent party in the previous Land election. In the case of Germany, I use CSU support in Bavaria as a measure of federal incumbent support during periods of federal CDU incumbency, due to the deep institutionalisation of the CDU-CSU pact. The possible impacts of the maintenance of separate organisational entities are considered in the Land-level analyses.

Table 1: Effects on change in vote share of the federally incumbent party in German Land elections, 1971–2014.

	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	−.0151 (.0254)	−.0265 (.0270)	−.0105 (.0257)	−.0259 (.0270)	−.0095 (.0295)
Land unemployment rate annual change				−.0025 (.0044)	
Federal unemployment rate annual change		−.0037 (.0055)			.0011 (.0064)
Land GDP growth			.0027* (.0016)		
Federal GDP growth	.0044** (.0022)				.0056** (.0027)
Relative Land GDP growth					.0019 (.0028)
Relative Land unemployment					−.0031* (.0017)
Federal incumbent previous vote share	−.5861*** (.1280)	−.5771*** (.1441)	−.6094*** (.1243)	−.5735*** (.1439)	−.6150*** (.1383)
Electoral timing	.0003 (.0006)	−.0006 (.0007)	.0001 (.0006)	.0006 (.0007)	.0009 (.0007)
Long term vote share, party of federal incumbent	.4886*** (.1378)	.5076*** (.1491)	.5122*** (.1369)	.5028*** (.1490)	.4668*** (.1470)
Coalition dummy	.0109 (.0106)	.0116 (.0116)	.0111 (.0105)	.0118 (.0116)	.0165 (.0114)
R <sup>2</sup>	.2173	.1889	.2141	.1879	.2632
N	124	124	124	124	124

Unstandardized OLS coefficients presented, with heteroskedasticity-corrected standard errors in parentheses.

\*p < 0.10, \*\*p < 0.05, \*\*\*p < 0.01

effects of long-term partisanship. The historical vote share of the federally incumbent party uses the average vote share of the federally incumbent party over the previous three state-level elections.

I conduct OLS regression analysis using heteroskedasticity-consistent standard error estimators (Hayes and Cai, 2007). I test for effects of unemployment and GDP in separate models to avoid problems of multicollinearity in the analysis, as these variables are strongly correlated. For the same reason I include federal and Land level economic variables in separate models. The relative GDP and unemployment change variables are not affected by this problem and are therefore included in the same model. The analysis includes elections from the 11 Länder of the FRG from 1971 to 1989 and of all 16 Länder from 1990 to 2015. I conduct separate analyses of the pre-1990 and the post-1990 time periods to identify possible impacts of increased party system diversity post 1990. While the small number of cases in each group calls for caution in interpreting the relative strength of variables across time periods, the comparison nevertheless provides a useful general probe into the similarity of the relationships that drive aggregate electoral behaviour.



Table 2: Effects on change in vote share of the federally incumbent party in German Land elections, pre 1990.

	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	.0590 (.0400)	.0113 (.0491)	.0651* (.0376)	.0144 (.0513)	.0245 (.0572)
Land unemployment rate annual change				-.0023 (.0067)	
Federal unemployment rate annual change		-.0035 (.0073)			-.0015 (.0151)
Land GDP growth			.0025 (.0030)		
Federal GDP growth	.0046 (.0039)				.0029 (.0103)
Relative Land GDP growth					-.0015 (.0091)
Relative Land unemployment					-.0052 (.0055)
Federal incumbent previous vote share	-.6144* (.3114)	-.7020* (.4101)	-.6659** (.3210)	-.7207* (.4117)	-.6635 (.4246)
Electoral timing	.0006 (.0008)	.0010 (.0009)	.0006 (.0008)	.0010 (.0010)	.0011 (.0013)
Long term vote share, party of federal incumbent	.3937 (.3158)	.5945 (.3958)	.4392 (.3292)	.6046 (.3994)	.5038 (.4215)
Coalition dummy	.0031 (.0136)	-.0038 (.0164)	.0032 (.0140)	-.0035 (.0168)	.0059 (.0215)
R <sup>2</sup>	.2287	.1584	.2160	.1561	.2145
N	43	37	52	37	37

Unstandardized OLS coefficients presented, with heteroskedasticity-corrected standard errors in parentheses.

\*p < 0.10, \*\*p < 0.05, \*\*\*p < 0.01

## Results of regression analysis

I first test the models on the data from the period 1971–2014. In my test of hypothesis one, the presence of a barometer or referendum voting effect in which the party of the federally incumbent government is punished/rewarded for positive/negative economic performance, I find evidence of electoral responsiveness to federal GDP growth. Positive GDP growth is associated with positive change in the vote share of the federally incumbent party. Both the long-term party support variable and the previous vote share are significant predictors of the change in vote share of the federally incumbent party across all models. Previous vote share has a negative coefficient, which means that a stronger performance in the previous election predicts a decrease in the change in the vote share in the current election. This is in line with findings of earlier research on barometer voting in Germany (Anderson and Ward, 1996:453). Long term party support has a positive coefficient: higher levels of party electoral support over the previous three elections predict an increase in the change in vote share of the federally incumbent party.

Neither the timing of the Land election relative to the midpoint of the federal election cycle nor the coalition status of the government is a significant predictor of the change in

Table 3: Effects on change in vote share of the federally incumbent party in German Land elections, post 1990

	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	-.0338 (.0300)	-.0285 (.0304)	-.0271 (.0309)	-.0292 (.0307)	.0024 (.0369)
Land unemployment rate annual change				-.0077 (.0068)	
Federal unemployment rate annual change		-.0089 (.0085)			-.0095 (.0100)
Land GDP growth			.0036* (.0019)		
Federal GDP growth	.0057** (.0024)				.0047* (.0026)
Relative Land GDP growth					.0039 (.0034)
Relative Land unemployment					-.0036* (.0020)
Federal incumbent previous vote share	-.6701*** (.1587)	-.6411*** (.1634)	-.6981*** (.1537)	-.6291*** (.1600)	-.7065*** (.1644)
Electoral timing	.0011 (.0009)	.0010 (.0009)	.0007 (.0010)	.0009 (.0009)	.0013 (.0010)
Long term vote share, party of federal incumbent	.5305*** (.1653)	.5200*** (.1665)	.5625*** (.1654)	.5113*** (.1650)	.4775*** (.1716)
Coalition dummy	.0223 (.0148)	.0222 (.0156)	.0229 (.0147)	.0223 (.0155)	.0250 (.0156)
R <sup>2</sup>	.3091	.2600	.30993	.2600	.3567
N	87	87	87	87	87

Unstandardized OLS coefficients presented, with heteroskedasticity-corrected standard errors in parentheses.

\*p < 0.10, \*\*p < 0.05, \*\*\*p < 0.01

federal vote share. I find limited support for hypothesis 2, which posited that the change in vote share of the federally incumbent party will decrease in response to poor Land level economic performance (Tables 1–3). While an increase in Land GDP growth predicted an increase in the change in vote share of the federally incumbent party (Tables 1 and 3), this variable is not significant in the model that tests both federal and Land level economic performance (model 5).<sup>3</sup> Here, federal GDP growth emerges as a significant predictor of change in the vote share of the federally incumbent party. In the combined model of federal and Land economic performance, the unemployment rate of the Land relative to the national average is a significant predictor of a change in vote share of the federally incumbent party, in the expected direction.

In the separate analyses of the pre and post unification periods, we find that the previous vote share is a strong predictor of the change in the vote share of the federally incumbent party. The relationships between the change in vote share of the federally incumbent party and Land and federal economic indicators are significant in analysis of

<sup>3</sup> Model 5 includes the federal GDP annual growth, federal unemployment and *relative* measures of Land GDP growth and unemployment. It is not possible to combine Land and federal GDP growth in the same model due to problems of multicollinearity.

Table 4: Effects on change in vote share of the party of the incumbent Land government in German Land elections, 1971–2014.

	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	.1379** (.0696)	.0889 (.0636)	.1252* (.0690)	.1340* (.0755)	.1394* (.0712)
Federal GDP growth				.0017 (.0036)	.0021 (.0038)
Federal unemployment rate annual change				.0101 (.0087)	.0101 (.0085)
Land unemployment rate annual change					
Land GDP growth		.0030 (.0020)			
Relative Land GDP growth	.0058* (.0029)			.0056* (.0031)	.0160** (.0068)
Relative Land unemployment	-.0037* (.0019)		-.0033* (.0019)	-.0035* (.0019)	-.0038** (.0019)
Electoral timing	-.0010 (.0008)	-.0013* (.0008)	-.0006 (.0008)	-.0011 (.0008)	-.0011 (.0008)
Coalition dummy	-.0262* (.0155)	-.0255* (.0151)	-.0276* (.0157)	-.0235 (.0166)	-.0183 (.0161)
Land incumbent historical vote share	-.2811** (.1285)	-.1821 (.1146)	-.2626** (.1280)	.2840** (.1396)	-.3072** (.1320)
Relative Land GDP*coalition					-.0153** (.0072)
R <sup>2</sup>	.1354	.0917	.0870	.1430	.2093
N	124	124	124	124	124

Unstandardized OLS coefficients presented, with heteroskedasticity-corrected standard errors in parentheses.

\*\*\*p < .01; \*\*p < .05; \*p < .10

data from the 1971–2014 period and in the 1990–2014 period. None of the economic variables reached statistical significance in the analysis of the 1971–1989 period.<sup>4</sup>

Hypothesis 3 posits the presence of Land-level economic voting. I find that voters are responsive to both unemployment and economic growth performance at the Land level. The only significant economic predictors in the model of Land-level economic voting were relative economic performance and Land GDP growth (Tables 4–6). The relative measures of economic performance include the unemployment rate of the Land relative to the federal unemployment rate (calculated as annual averages) and the GDP growth of the Land relative to the federal GDP growth rate. As expected, higher relative GDP growth is associated with a positive change in the vote share of the incumbent Land governing party, while higher relative unemployment rates are negatively related to the change in vote share. To assess the relative strength of the federal and Land level economic conditions on Land level economic voting, I include both federal and Land economic performance indicators in model 4. Only the Land level economic indicators are

<sup>4</sup> Multicollinearity diagnostics run on all models reveal no problems (VIF statistic less than 2).

Table 5: Effects on change in vote share of the incumbent Land party in German Land elections, 1971–1989.

	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	.1133 (.1081)	.1838* (.0937)	.0034 (.1352)	–.0953 (.1619)	–.0930 (.2142)
Federal GDP growth				.0161 (.0106)	.0161 (.0108)
Federal unemployment rate annual change				.0319** (.0122)	.0319** (.0131)
Land unemployment rate annual change			.0124 (.0081)		
Land GDP growth		–.0006 (.0044)			
Relative Land GDP growth	–.0055 (.0066)			.0014 (.0098)	.0020 (.0127)
Relative Land unemployment	–.0024 (.0046)			–.0005 (.0045)	–.0006 (.0048)
Electoral timing	.0001 (.0012)	–.0006 (.0011)	.0000 (.0012)	.0007 (.0014)	.0007 (.0015)
Coalition dummy	–.0122 (.0190)	–.0163 (.0167)	–.0053 (.0226)	.0148 (.0274)	.0146 (.0297)
Land incumbent historical vote share	–.2501 (.2131)	–.3618* (.1838)	–.0443 (.2575)	.0330 (.2744)	.0282 (.3820)
Relative Land GDP*coalition					–.0007 (.0186)
R <sup>2</sup>	.0689	.0897	.0872	.1581	.1581
N	43	37	52	37	37

Unstandardized OLS coefficients presented, with heteroskedasticity-corrected standard errors in parentheses.

\*\*\*p < .01; \*\*p < .05; \*p < .10

significant. The relationship is in the expected direction. These outcomes are found in the analysis of the 1971–2014 and the 1990–2014 time periods. A separate analysis of the 1971–1989 time period does not find significant relationships between these economic variables and the change in the vote share of the party of the Land incumbent. Instead, unexpectedly, we find a positive relationship between federal unemployment and the change in the vote share of the party of the Land incumbent—in the opposite direction that we would predict.

Hypothesis 4 predicts that clarity of responsibility, through the presence of single party government, will increase Land level economic voting. Model 5 in Tables 4–6 includes an interaction term of relative Land GDP growth and coalition government. In models run on the 1971–2014 and the 1990–2014 datasets, this interaction term is significant and has a negative coefficient. This tells us that coalition government decreases the effect of relative GDP growth on change in the vote share of the Land incumbent government. In other words, single party government strengthens economic voting effects. Finally, the historical vote share of the party of the Land incumbent government is a significant predictor in the model, although the direction of the relationship in this model is negative. The historic vote share of the party of the incumbent Land government comes close to significance in model 3.

Table 6: Effects on change in vote share of the incumbent Land party in German Land elections, 1990–2014.

	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	.2068** (.0833)	.1268 (.0811)	.1288 (.0795)	.2059** (.0861)	.2017 (.0832)
Federal GDP growth				-.0005 (.0039)	-.0001 (.0041)
Federal unemployment rate annual change				-.0044 (.0108)	-.0029 (.0105)
Land unemployment rate annual change			-.0025 (.0077)		
Land GDP growth		.0045** (.0020)			
Relative Land GDP growth	.0087*** (.0029)			.0091*** (.0030)	.0182** (.0073)
Relative Land unemployment	-.0047** (.0021)			-.0048** (.0021)	-.0049** (.0021)
Electoral timing	-.0014 (.0009)	-.0010 (.0011)	-.0006 (.0012)	-.0014 (.0009)	-.0014 (.0010)
Coalition dummy	-.0404* (.0226)	-.0387* (.0228)	-.0419* (.0227)	-.0410* (.0221)	-.0324 (.0223)
Land incumbent historical vote share	-.4175*** (.1542)	-.2834* (.1503)	-.2731* (.1510)	-.4138** (.1616)	-.4205*** (.1572)
Relative Land GDP*coalition					-.0140* (.0076)
R <sup>2</sup>	.2416	.1503	.0965	.2430	.3041
N	87	87	87	87	87

Unstandardized OLS coefficients presented, with heteroskedasticity-corrected standard errors in parentheses.

\*\*\*p < .01; \*\*p < .05; \*p < .10

## Conclusions

The form of vertical electoral linkages in multi-level systems is theoretically important to the development of models of multi-level and intergovernmental bargaining in federations because of its implications for the degree to which state and federal level policy can be assessed and preferences communicated by voters. Federations with strong electoral linkages between the state and federal levels are constrained in the way in which they can develop autonomous interests and policies vis a vis the other level of government as long as voter assessments at the state level are tied to the performance of the federal level of government. One way that we can empirically assess these linkages is through examining the responsiveness of electoral support for incumbent parties at the Land level to Land level economic performance. Conversely, evidence that voters use Land elections to reward or punish the federally incumbent party in response to federal economic conditions suggests the presence of vertical electoral linkage.

This research sought to identify the forms and extent to which electoral behaviour at the Land and federal levels in Germany is linked in order to address a broader question: identifying the extent to which distinct Land and federal interests are electorally expressed,

a process that lies at the core of assumptions of centre-periphery bargaining theories. Specifically, it investigated both barometer and economic voting effects in German Land elections between 1972 and 2014. The results deliver a picture of highly linked electoral arenas where we can also see evidence of the evolution of more ‘independent’ electoral arenas since unification, where voting for Land election reflects Land level economic performance.

The analysis suggests that the emergence of more distinctive or incongruent patterns of politics at the Land level since unification have affected the forms and strengths of linkage between the Land and federal electoral arenas. One form of linkage that we find throughout all time periods in the analysis is that voters use Land elections to punish or reward federally incumbent parties for federal economic conditions. The analysis found evidence of a barometer effect operating in Germany, where a higher vote share in the previous Land election has a negative impact on the electoral fortunes of the federally incumbent party. There is also evidence that voters use Land elections to respond to federal economic conditions.

This traditional form of barometer voting in response to federal economic conditions is coupled with the emergence of a different form of barometer behaviour, in which the change in the vote share of the federally incumbent party responds to Land level relative unemployment rates. While this relationship still represents interdependence between Land and federal electoral arenas, it also represents a potentially important evolution because it suggests that voters are engaging in assessments of Land level performance, rather than federal level performance. This is consistent with the development of Land level politics that is driven to an increasing degree by local political conditions. The small *n* of the pre 1990 data set makes it difficult to draw firm conclusions about the comparative strength of these relationships in the pre and post-unification periods.

Second, there is evidence to support a hypothesis of Land level economic voting. The change in vote share for the incumbent Land party was found to be more responsive to Land level economic performance than federal level economic performance. Third, there is evidence that institutional clarity of responsibility affects the Land level economic voting mechanism. Coalition government dampens the impact of Land economic performance on the change in vote share of the incumbent senior coalition party at the Land level.

The analysis overall suggests that while forms of electoral linkage through barometer voting exist, these are accompanied by Land-level accountability mechanisms that appear to be distinct from evaluations of federal economic performance. We find evidence of the emergence of Land-level economic voting effects, where the change in vote share for the incumbent party at the Land level is affected by Land level economic performance. It is interesting that this finding holds using measures of relative Land economic performance. These are not correlated with federal level economic performance. The correlation of Land and federal level economic performance indicators has hampered previous attempts to identify Land level economic voting effects (Lohmann et al, 1997).

Somewhat surprisingly, given the predictions of the barometer and second order voting literature, which finds that the timing of the subnational election relative to the federal electoral cycle is an important predictor of a punishment effect for the federally incumbent party, this analysis yields no evidence of an impact of electoral timing on the vote share of the federally incumbent party.

This research provides empirical support for the ongoing presence of barometer voting effects. It also identifies the emergence of electoral patterns that may suggest a shifting voter orientation toward evaluations of Land parties based on Land performance. The



temporal dynamics of these changes warrant further investigation. These findings also point to the importance of understanding how distinctive patterns of competition emerge in sub-national electoral systems, and how this may facilitate the expression of distinct territorial interest and the formation of subnational cognitive orientations for voters and parties alike. This points toward a need to incorporate party systems distinctiveness into empirical investigations (through the inclusion of party system congruence variables) and in our theoretical models of party system linkage.

## References

- Anderson, C. and D. Ward (1996). Barometer Elections in Comparative Perspective. *Electoral Studies* 15(4): 447–460.
- Anderson, C. (2000). Economic voting and political context: a comparative perspective. *Electoral Studies* 19(2–3): 151–170.
- Atkeson, L. and R. Partin (1995). Economic and Referendum Voting: A Comparison of Gubernatorial and Senatorial Elections. *American Political Science Review* 89(March): 99–107.
- (2001). Candidate Advertisements, Media Coverage, and Citizen Attitudes: The Agendas and Roles of Senators and Governors in a Federal System. *Political Research Quarterly* 54(4): 795–813.
- Bolleyer, N. and L. Thorlakson (2012). Beyond Decentralization: the Comparative Study of Interdependence in Federal Systems. *Publius* 42(4): 566–591.
- Decker, F. and J. von Blumenthal (2002). Die bundespolitische Durchdringung der Landtagswahlen. Eine empirische Analyse von 1970 bis 2001. *Zeitschrift für Parlamentsfragen* 33(1):144–164.
- Dinkel, R. (1978). The Relationship between Federal and State Elections in West Germany. In Kaase, M. and K. von Beyme (eds.), *Elections and Parties*. London: Sage.
- (1981). Zur Gesetzmässigkeit der Trendverschiebungen zwischen Landtags- und Bundestagswahlen. *Zeitschrift für Parlamentsfragen* 12(1): 135–139.
- Ebeid, M. and J. Rodden (2006). Economic Geography and Economic Voting: Evidence from the U.S. States. *British Journal of Political Science* 36(3): 527–547.
- Filippov, M., P. Ordeshook and O. Shvetsova (2004). *Designing Federalism: A Theory of Self-sustainable Federal Institutions*. Cambridge: Cambridge University Press.
- Fiorina, M. (1981). *Retrospective Voting in American National Elections*. New Haven, CT: Yale University Press.
- Gaines, B. and C. Crombez (2004). Another Look at Connections Across German Elections. *Journal of Theoretical Politics* 16(3): 289–319.
- Gélineau, F. and E. Bélanger (2005). Electoral Accountability in a Federal System: National and Provincial Economic Voting in Canada. *Publius* 35(3): 407–424.
- Gélineau, F. and K. Remmer (2006). Political Decentralization and Electoral Accountability: The Argentine Experience, 1983–2001. *British Journal of Political Science* 36(1): 133–157.
- Hayes, A. and L. Cai (2007). Using heteroskedasticity-consistent standard error estimators in OLS regression: An introduction and software implementation. *Behavior Research Methods* 39(4): 709–722.
- Hough, D. and C. Jeffery (2006). Germany: an erosion of federal-Länder linkages? In Hough, D. and C. Jeffery (eds.), *Devolution and Electoral Politics*. Manchester: Manchester University Press.
- Jeffery, C. (1999). Party Politics and Territorial Representation in the Federal Republic of Germany. *West European Politics* 22(2): 130–166.
- Jeffery, C. and D. Hough (2001). The Electoral Cycle and Multi-Level Voting in Germany. *German Politics* 10(2): 73–98.

- Lewis-Beck, M. (1986). Comparative Economic Voting: Britain, France, Germany, Italy. *American Journal of Political Science* 30(2): 315–346.
- (1988). *Economics and Elections: The Major Western Democracies*. Ann Arbor: University of Michigan Press.
- Leyden, K. and S. Borelli (1995). The Effect of State Economic Conditions on Gubernatorial Elections: Does Unified Government Make a Difference? *Political Research Quarterly* 48(2): 275–300.
- Lohmann, S., D. Brady and D. Rivers (1997). Party Identification, Retrospective Voting and Moderating Elections in a Federal System: West Germany, 1961–1989. *Comparative Political Studies* 30(4): 420–449.
- Marks, G., L. Hooghe and A. Schakel (2008). Measuring Regional Authority. *Regional and Federal Studies* 18(2–3): 111–121.
- Marsh, M. and M. Franklin (1996). Understanding European Elections. In van der Eijk, C. and M. Franklin (eds.), *Choosing Europe? The European Electorate and National Politics in the Face of Union*. Ann Arbor: University of Michigan Press (1979–1994).
- Niemi, R., J. Bremer and M. Heel (1999). Determinants of State Economic Perceptions. *Political Behaviour* 21(2): 175–193.
- Norris, P. (1990). *British By-elections*. New York: Oxford University Press.
- Powell, G. and G. Whitten (1993). A cross-national analysis of economic voting: taking account of political context. *American Journal of Political Science* 37(2): 391–414.
- Reif, K. (1984). National Electoral Cycles and European Elections. *Electoral Studies* 3(3): 244–255.
- Remmer, K. and F. Gélinau (2003). Subnational Electoral Choice: Economic and Referendum Voting in Argentina, 1983–1999. *Comparative Political Studies* 36(7): 801–821.
- Rodden, J. and E. Wibbels (2011). Dual Accountability and the Nationalization of Party Competition: Evidence From Four Federations. *Party Politics* 17(5): 629–653.
- Samuels, D. (2004). Presidentialism and Accountability for the Economy in Comparative Perspective. *American Political Science Review*. 98(3): 425–436.
- Selb, P. (2011). Multi-Level Elections in Switzerland. *Swiss Political Science Review* 12(4): 49–75.
- Siroky, D., S. Mueller and M. Hechter (Forthcoming). Introduction: Center-Periphery Bargaining in the Age of Democracy. *Swiss Political Science Review*.
- Stein, R. (1990). Economic Voting for Governor and U.S. Senator: The Electoral Consequences of Federalism. *The Journal of Politics* 52(1): 29–53.
- Sturm, R. (2009). Party Competition and the Federal System: The Lehmbruch Hypothesis Revisited. In Jeffery, C. (ed.), *Recasting German Federalism: the Legacies of Unification*. London: Pinter.
- Thorlakson, L. (2009). Patterns of party integration, influence and autonomy in seven federations. *Party Politics* 15(2): 157–177.
- Wlezien, C. and S. Soroka (2010). Federalism and Public Responsiveness to Policy. *Publius* 41(1): 31–52.

## Appendix

### Dependent variables:

These dependent variables measure changes in electoral support for parties in Land level elections.

*Change in the federal incumbent vote share* = Vote share of the federally incumbent governing party in the Land level election at  $T_0$  – vote share of the same party in the Land election at  $T_{-1}$ .

*Change in the Land incumbent vote share* = Vote share of the Land incumbent governing party in the Land level election at  $T_0$  – vote share of the same party in the Land election at  $T_{-1}$ .

Where there are two votes, second (list) votes are used. In the case of a coalition, the governing party is defined as the senior coalition partner: the party holding the post of minister-president following the election.

### **Predictor variables:**

*Federal unemployment rate annual change* = annual FRG unemployment rate in the current year – annual FRG unemployment rate in the previous year.

*Land unemployment rate annual change*: annual unemployment rate in the Land in the current year – annual unemployment rate in the Land in the previous year.

*Federal GDP growth*: annual GDP growth rate, FRG.

*Land GDP growth*: annual GDP growth rate by Land.

*Relative Land GDP growth* = annual Land GDP growth rate – annual FRG GDP growth rate.

*Relative Land unemployment* = average annual Land unemployment – average annual federal unemployment. A positive value indicates that the Land unemployment rate is higher than the national unemployment rate.

*Electoral timing*: The absolute value of the distance, in months, of the Land election from the midpoint of the federal election cycle.

*Coalition dummy*: dummy variable coded 0 if the Land government is a single party government, 1 if the Land government is a coalition.

*Federal incumbent previous vote share*: the percentage of the vote won in the previous Land election by the federal governing party.

*Land incumbent historical vote share*: The average vote share of the Land incumbent party in the previous three Land level elections.

*Historical vote share, party of federal incumbent* = the average vote share of the federally incumbent party in the previous three Land level elections.

All unemployment figures use the measure of the percent of the dependent Civilian Labour Force.

Unemployment and GDP figures are from the Federal Statistical Office of Germany.

---

Lori Thorlakson is Associate Professor in the Department of Political Science at the University of Alberta. Her work on federalism and party competition has been published in the *European Journal of Political Research*, *Party Politics*, *West European Politics*, *Journal of European Public Policy*, *Publius* and *Regional and Federal Studies*. Address for correspondence: Department of Political Science, University of Alberta 10-16 HM Tory Building, Edmonton, Alberta, Canada, T6G 2H4. Tel. +1 780 492 2282; Email: thorlaks@ualberta.ca.