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What Determines the Specificity of Subsidies?[1]

Jong Hee Park

Sogang University and the University of Chicago

As countries increasingly protect their domestic industries by government subsidies, specific subsidies—subsidies that target specific industries or firms—have received increasing international attention due to their negative externality in international trade. In this paper, I argue that variations in domestic institutional arrangements can explain the cross-national variation in subsidy specificity. First, I theorize that the size of specific subsidies has an inverted U-shaped relationship with the level of centralization of economic interests, while the size of general subsidies monotonically increases with the level of centralization of economic interests. Then, I expect the supply-side factors such as electoral institutions and government partisanship to interact with the effects of centralization in determining the amount of specific or general subsidies in a country. Using the state aid data set of the European Union between 1992 and 2004, I find that the amount of sectoral aid—state aid targeted at specific industries or firms—is larger in countries where labor and business interests are organized at the industry level than in countries with decentralized or highly centralized industrial relations. The size of state aid targeting a wide range of economic sectors increases as the centralization of labor and business interests increases.

Since the successful reduction and binding of tariffs under the General Agreement on Tariffs and Trade (GATT) and the World Trade Organization (WTO), countries around the world have replaced traditional tariffs with new protectionist measures like subsidies, antidumping countervailing duties, and safeguard measures (Kono 2006). Among the various types of nontariff barriers, specific subsidies—subsidies that target specific industries or firms—have received much international attention due to their ''beggar-thy-neighbor''-type externality in international trade: The use of specific subsidies by one country leads other countries to apply the same measures, driving them into a subsidy war as we see in the case of the Boeing-Airbus subsidy dispute (Carbaugh and Olienyk 2001).[2] Thus, the WTO stipulates that specific subsidies are ''subject to challenge, either through multilateral dispute settlement or through countervailing action, in the event that they cause adverse effects to the interests of another Member.''[3]

Despite the increasing importance of specific subsidies in international trade, there has been little academic research into subsidy specificity. Also, empirical investigations of subsidies are significantly hampered by a lack of reliable cross-national data on the provision of subsidies, let alone on the specificity.[4] The primary goal of this paper is to explain why some countries employ subsidies targeted at specific industries or enterprises to a greater extent than others using a new cross-national data set on subsidy specificity.

My theory consists of the demand and supply sides in the market for government subsidies. On the demand side, my theory focuses on the effect of the level of coordination among economic actors on the incentive and capacity to lobby for subsidies. Labor unions and employers at the firm level have strong incentives to lobby for specific subsidies; what they lack is the organizational capacity to coordinate actions for public-good type policies such as general subsidies. In contrast, broad labor and capital organizations with strong central leadership have the

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[2] This negative externality can be particularly severe in economic crisis. For this reason, the OECD warned its members not to resort to sectoral subsidies discriminating against other domestic sectors and foreign producers in response to the 2008 financial crisis. OECD, ''Keeping Markets Open At Times of Economic Crisis.'' Available at http://www.oecd.org/dataoecd/48/19/42459971.pdf

[3] The Agreement on Subsidies and Countervailing Measures. Available at http://www.wto.org/english/tratop_e/scm_e/subs_e.htm

[4] Previous theoretical work in international trade largely focuses on the substitution effect between tariffs and subsidies, treating all subsidies as if they are identical. As one example, in a paper that shows that import tariffs have welfare advantages over production subsidies since tariffs generate smaller rents, Rodrik assumes that ''a tariff has the nature of a public good from the perspective of individual firms'' while ''there is no public-good element in subsidy seeking behavior'' (Rodrik 1986: 286). That is, Rodrik's model is based on the assumption that all subsidies are specific by nature.

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greatest capacity to lobby for any type of subsides; what these organizations lack is the incentive to lobby for specific subsidies because of distributional concerns. Labor unions and employers organized at the industry level, however, have the incentive and the capacity to demand specific subsidies as well as general subsidies aggressively. The small number of sectoral organizations makes it easy to coordinate actions among them, and the lack of central leadership allows them to pursue individualistic lobbies for industry or firm-specific subsidies. To put the stories of general and specific subsidies together, I expect labor and capital organized at the industry level to be best positioned to obtain the maximum amount of subsidies from government.

However, the link between the centralization of economic interests and subsidy specificity should not be viewed as mechanical or deterministic. The provision of subsidies by political actors is conditional upon supply-side conditions given the level of demands from the private sector. I consider the size of electoral districts and government partisanship to play important roles in shaping politicians' willingness to respond to subsidy demands. Large electoral districts provide insulation from narrow interests when there is no severe intra-party competition in the ballot (Rogowski 1987; Carey and Shugart 1995; Bailey and Brady 1998). Also, governments have different political commitments with regard to addressing market failures. Specifically, left-leaning parties supported by well-organized labor and capital developed labor training and education instead of cutting taxes and social transfers (Boix 1998; Garrett 1998; Huber and Stephens 2001; Iversen and Stephens 2008). Thus, demands for general subsidies would be more successful in countries with large electoral districts and in the presence of left-leaning party governments supported by well-coordinated labor and capital than otherwise.

To test the theory, I analyze the state aid data of 13 European Union (EU) member states between 1992 and 2004. The EU state aid data set is a valuable cross-national source of subsidy provision because EU laws grant the European Commission (EC), which is the key authority concerning matters of state aid policies, the power to force member states to disclose all types of state aid.

Consistent with my expectation, I find that the size of general state aid—state aid excluding regional and sectoral state aid—relative to countries' gross domestic product tends to increase as the level of labor and capital coordination increases. Scandinavian countries strongly prefer general state aid to sectoral state aid, while the UK does not provide a large amount of general state aid. The amount of sectoral aid—state aid targeted at specific industries or firms—tends to increase as the level of coordination approaches to the mid-range, which corresponds to countries with industry-level labor and business organizations. In contrast, the amount of sectoral aid is small in countries at the extremes in the coordination continuum: the UK and Scandinavian countries.

Among supply-side factors, only government partisanship shows a statistically meaningful association with subsidy specificity. One-year rule of left party government increases the gross domestic product (GDP) share of general state aid by 0.04%. The effect size is substantively significant considering the average GDP share of general state aid (0.23%). Government partisanship does not have any effect on the size of sectoral state aid.

The Concept of Subsidy Specificity

The WTO's Agreement on Subsidies and Countervailing Measures (SCM) defines specific subsidies as subsidies meeting one of three conditions: (i) subsidies explicitly limiting access to certain enterprises; (ii) subsidies lacking objective criteria or conditions governing the eligibility for, and the amount of, the subsidy; and (iii) subsidies involving other factors such as limited or predominant use by certain enterprises, ''the granting of disproportionately large amounts to certain enterprises, and the manner in which discretion has been exercised by the granting authority in the decision to grant a subsidy'' (Article 2.1). Also, a subsidy limited to certain enterprises located within a designated geographical region is considered specific (Article 2.2). These specific subsidies are ''actionable,'' meaning that countries adversely affected by them can challenge them through either multilateral dispute settlement or countervailing action. Export subsidies and local content subsidies are specific subsidies, the use of which is strictly ''prohibited'' (Article 3).

However, the definition contains too much uncertainty about what exactly constitutes a specific subsidy. Taking a few examples, Article 2.2 implies that a regional subsidy ''granted to all enterprises in a certain region'' is not a specific subsidy while regional subsidies are at the center of the scholarly discussion of specific subsides. Also, agricultural subsidies, which should be considered ''specific'' because they target specific commodity groups or only the agricultural sector, are treated separately by the Agreement on Agriculture. In fact, there is a practical limitation in identifying specific subsidies, as the granting authority has an incentive to hide specificity given potential of challenges from other countries. Thus, subsidy data based on the WTO member states' reports, by the WTO's own admission, are a ''patchy and incomplete description of the subsidies landscape'' and hence should be interpreted with ''considerable caution'' (World Trade Organization 2006:157).[5]

Like WTO members, all member states of the EU are required to notify the EC with respect to any state aid they provide. However, unlike the WTO, the EC has the legal power to investigate all aid

[5] The OECD (1998) also collects information on member states' subsidy programs, which Verdier (1995) and Zahariadis (2001) made extensive use of. However, the report was also based on voluntary reporting by member states and hence problematic. Government fiscal accounts are another sources of cross-national subsidy provision, but government fiscal accounts classify only cash subsidies.

provided by member states without notification.[6] What makes the monitoring activity by the EC effective is the open complaint procedure; many investigations by the EC started as complaints filed by competing industries, firms, or individuals within and across borders.

Upon notification of state aid cases by member states, the EC classifies individual cases into one of two groups: horizontal objectives and sectoral objectives.[7] Horizontal state aid addresses well-defined objectives of common interest such as growth, cohesion, employment, the environment, and research and development. Horizontal objectives are largely justified on the ground of market failures. Among them, a well-known example is active labor market policy (ALMP) programs, which address labor market failures like skill deficiency and prolonged unemployment through placement services, re-training programs, and other policies designed to spur hiring. Benefits of ALMP programs are available for all firms and workers satisfying the objective conditions such as the unemployment spell. Other examples of horizontal state aids include aid to small and medium enterprises, aid for research and development, environmental aid, aid for deprived urban areas, and aid for rescuing and restructuring enterprises.

In contrast, sectoral state aids are generally considered to be incompatible with the common market approach espoused by the EU. Examples of sectoral state aid include export aid, and aid to manufacturing sectors, service sectors, coal mining sectors, transport, and other nonmanufacturing sectors. What makes sectoral aid less desirable is its selectivity. Article 87(1) of the EC Treaty requires an assessment of whether a state measure is intended to favor certain economic activities more than others (Ehlermann and Goyette 2006). EU member states have been required to redirect state aid classified as having sectoral objectives into state aid with horizontal objectives since the 2001 European Council meetings in Stockholm. One example of sectoral state aid is the subsidies to Air France by French government in 1994, which was worth FF 20,000 million ($3.77 billion). The EC approved the aid with the condition of a multiyear restructuring plan for Air France, but six European airlines brought the case to the General Court.[8] Likewise, the provision of sectoral state aids by member states is under intense scrutiny by not just the EC but also industrial competitors.

In this paper, I use the EU state aid regime as a laboratory to study the politics of subsidy specificity because of the thorough monitoring and the classification based on selectivity by the EC.

The Market for Subsidies

When do demanders and suppliers of industrial subsidies prefer general subsidies to specific subsidies? Previous studies on subsidy specificity, and on distributive politics more generally, have largely focused on political institutions, capturing only the supply side of the market for government subsidies.[9] However, a supply-side explanation may unduly understate the effects of demand side factors and fail to provide a satisfactory explanation on how the market for government subsidies works in its entirety (Nelson 1988). In the following, I present a simple theory of subsidy specificity focusing on both the demand and supply sides of the market for government subsidies.

The Demand for Subsidies

From a demander's perspective, general subsidies are public goods; once provided, the benefit of general subsidies is non-excludable. According to Olson (1965)'s theory of collective action, the incentive to contribute to the lobby for general subsidies should be weak when the individual's portion of the benefits is small. Following this logic, it has long been argued that peak confederations of labor and capital can internalize the collective cost of their actions, producing an incentive to adjust their actions in the direction of policies that benefit their members. One frequently quoted example is wage moderation by well-organized labor unions for low inflation and low unemployment (Esping-Andersen 1990; Iversen 1999; Estevez-Abe, Iversen, and Soskice 2001; Hall and Soskice 2001b; Huber and Stephens 2001). Likewise, in trade policy, Rodrik (1986) shows that an individual profit-maximizing firm should find it suboptimal to lobby for a trade policy with a public-good nature such as tariffs.

However, Olson's free-ride argument is not robust to the assumption of rational behavior, as Palfrey and Rosenthal (1984) note. Assume that a general subsidy is provided if at least one actor contributes.[10]

[6] "Where negative decisions are taken in cases of unlawful aid, Commission shall decide that the Member State concerned shall take all necessary measures to recover the aid from the beneficiary (Article 14)" (European Commission 2006).

[7] State aid for agriculture and fisheries is separately classified because of the Common Agriculture Program at the union level. It is not clear how much discretion each member state has over the distribution of this aid. When the EC compares and calculates the size of sectoral aid relative to horizontal aid across member states, it excludes agriculture and fishery aid partly for this reason.

[8] "Air France Aid Opposed," *New York Times*, October 5, 1994.

[9] For example, Verdier (1995) argues that the subsidy's scope is determined by the intensity of electoral competition, which "raises parties' interest in the median voter and calls for the substitution of general policies for rents [specific subsidies]. . . However, weak electoral constraint encourages rent seeking, which fragments markets and makes profits dependent on sectoral or regional monopolies" (Verdier 1995:6). Similarly, Zahariadis (2005) argues that close elections lead to less regional or sector-specific subsidies. However, Persson and Tabellini (1999, 2002) argue the opposite: Competitive elections encourage politicians to target resources to specific groups in specific regions, reducing public good spending that benefits broad interests: "more competition always brings about a lower supply of public goods as the benefits of fewer voters are internalized" (Persson and Tabellini 1999:722). In their theory, a local pork project is the archetype of a specific distribution. The political economy literature on the provision of public goods versus private goods is vast. See Cox and McCubbins (2001) and Persson and Tabellini (2002) for a survey.

[10] Assuming k number of required contributors out of n persons, where $n > k$, makes the computation of mixed strategy equilibria complicated. But the general result does not change much from the case of $k = 1$. See McCarty and Meirowitz (2007:140–145).

Then, there are N pure strategy Nash equilibria in which an actor contributes and all the others benefit from a general subsidy. These are equilibria since all firms strictly prefer a provision of a general subsidy to no provision, and the individual cost of contribution is smaller than the individual benefit from a general subsidy (by assumption), regardless of the number of free riders.

However, a troubling consequence of these multiple equilibria is that coordinating any single equilibrium is not always straightforward. Strategic uncertainty might lead to an outcome that is suboptimal to all firms. Strategic uncertainty plays a bigger role if we consider a more realistic description of individual behavior in which each firm makes a decision based on a probabilistic assessment of others' actions.[11]

Centralization is one effective institutional condition for coordination of economic actors' demands for subsidies. It is clear that there is no coordination problem for a monopoly demander. Large, centralized organizations of labor and capital also find it desirable to increase demands for general subsidies. Peak confederations of labor unions and employers are based on a coalition of conflicting interests covering a variety of sectors and occupations. Consequently, increasing demands for specific subsidies by individual members lead to complex coordination problems within these organizations. Thus, centrally organized labor and business organizations find it more beneficial for their organizations to transform competitive claims for government assistance into general policy demands than to translate them into demands for specific subsidies. A similar argument has been employed to explain the smaller inter-industry wage differentials in centralized wage-bargaining institutions because centralized organizations of labor unions are likely to have an egalitarian wage structure among their members (Wallerstein 1999). In addition, these organizations are large enough to absorb the aggregate social benefits from general subsidies such as increases in employment. Finally, subsidy programs that target a broad range of interests are more easily justifiable based on the logic of market failures.

However, centralization is hardly necessary for coordination. There are other institutional conditions that facilitate coordination. For example, a small number of large labor unions or a small number of large firms can play a leading role in wage bargaining and public policy negotiation with government (Golden 1993). Also, various non-market institutions ''providing capacities for the exchange of information, monitoring, and the sanctioning of defections'' (Hall and Soskice 2001a:10) among labor unions and employers can help firms and workers solve collective action problems. Thus, if we consider the level of centralization as a continuum, where the industry-level centralization is in the middle, the incentive and capacity to coordinate demands for general subsidies increases as the level of centralization increases. However, the marginal effect of centralization decreases as coordination among sectoral organizations and non-market institutions can facilitate demands for general subsidies.

Hypothesis 1: *The demands for general subsidies increase as the level of centralization in labor and capital increases. The marginal effect of the centralization decreases as the level of centralization increases.*

Unlike the case of general subsidies, specific subsidies are private goods. In the case of specific subsidies, the link between the incentive and capacity of the lobby for specific subsidies is not linear. To clarify the relationship between the incentive to lobby for specific subsidies and the capacity to aggregate these individual efforts into collective pressure, I will divide the discussion into three cases: cross-industry centralization, industry-level centralization, and decentralization.

First, when firms and labor unions are organized at the national level, central organizations of labor unions and employers do not have a strong incentive to lobby for specific subsidies despite their considerable organizational capacity. The lack of incentive trumps all other considerations such as organizational capacity in this case. In other words, centrally organized labor and capital organizations, which have the greatest capacity to lobby for specific subsidies due to the lack of the intra-sectoral and inter-sectoral competition, have the weakest incentive to lobby for specific subsidies. As mentioned above, among many concerns, specific subsidies may cause distributional conflicts among associates as specific subsidies transfer incomes from unsubsidized sectors to subsidized sectors via taxation.

Second, when firms and labor unions are not organized above the firm level, they lack the capacity to coordinate their strong demands within and between industries. If the benefit of a specific subsidy involves a specific firm, the individual lobby for a specific subsidy takes a form of an N-person competition where N is the total number of firms in the economy. In this case, each firm's lobby generates negative externalities on others by decreasing the influence of each other's lobbying, increasing the price of a specific subsidy, and decreasing the probability of anyone's success. If the benefit of a specific subsidy involves an industry as a whole, individual firms face a J-person coordination problem, where J is the number of firms in the beneficiary industry, and I-1 person competition over subsidies where I is the number of industries in the economy. In this case, the lack of intra-industry coordination makes it difficult to induce individual member contributions. As a result, in both cases, the aggregate effects of decentralized lobbying efforts are always smaller than the sum of individual lobbying efforts.

Last, when labor unions and employers are organized at the industry level, the resulting organizations

[11] If we assume that all firms act identically, a firm i chooses the probability of contribution at which the utility from contribution is same to that of no contribution.

have both the incentive to actively lobby for specific subsidies and the capacity to coordinate negative externalities stemming from decentralized lobbying. Generally speaking, sectoral organizations of labor unions and employers prefer a specific subsidy benefiting an entire industry to a specific subsidy benefiting a subset of firms in an industry for the same reason as the centralized organized labor unions and employers prefer general subsidies. However, even when a specific subsidy benefits a small number of firms in an industry, it is easier for sectoral organizations of labor unions and employers to resolve distributional concerns than for national organizations of labor unions and employers to do so. Two factors lessen distributional concerns.

First, the burden of specific subsidies falls to the entire economy not just to the unsubsidized firms in the industry. Second, the small number of firms within an industry (often including a few large firms) helps find ways to mitigate distributional concerns. This line of argument is hardly new to the political economy literature. The harmful effect of medium-sized interest groups on the economy has also been argued by Olson (1982), Becker (1983), and Calmfors and Driffill (1988).

Hypothesis 2: *The lobby for specific subsidies has an inverted U-shaped relationship with the level of centralization.*

The Supply of Subsidies

The above discussion focusing on the demand side factors assumes that all political actors are responsive to demands from economic actors in an identical manner. However, holding the pressure from demanders constant, the incentive for politicians to provide specific subsidies varies depending on supply-side conditions. In particular, political institutions that govern the election and policy-making processes fundamentally shape politicians' responsiveness to demands. Thus, the link between the centralization of economic interests and subsidy specificity should be viewed as conditional upon supply-side conditions.

First, Rogowski (1987) argues that countries with large electoral districts tend to maintain a higher level of trade openness because large and heterogeneous constituencies insulate politicians from particularistic interests. Similarly, Bailey and Brady (1998) show that large constituencies afford representatives greater autonomy in policymaking. However, one important condition for large districts to encourage public-good provision is the lack of intra-party competition in the ballot.

When voters can choose candidates in multiple districts as in open-list proportional representation systems, the incentive to cultivate personal reputation as opposed to party reputation increases and the size of districts does not matter much in insulating politicians from particularistic demands (Carey and Shugart 1995). Thus, I expect the effects of demands for subsidies to vary depending on the size of electoral districts as measured by the number of legislators elected from a district.

Hypothesis 3: *As the size of electoral districts increases in the absence of intra-party competition in the ballot, politicians are more responsive to demands for general subsidies than demands for specific subsidies.*

Governments have different political commitments with regard to addressing market failures. Scholars of comparative political economy have long argued that partisan differences in economic strategies still persist in spite of increasing economic integration and financial globalization. Specifically, these studies find that left-leaning parties supported by well-organized labor and capital developed distinct supply-side economic strategies in response to the economic slowdown in the 1970s by increasing public investment in labor training and education instead of cutting taxes and social transfers (Boix 1998; Garrett 1998; Huber and Stephens 2001; Iversen and Stephens 2008). By contrast, right-leaning political parties or left-leaning parties without the support of organized labor and capital, ''the New Left,'' resorted to balanced budgets, price stability, and lower taxes to address the economic problems during the 1970s and the 1980s. These partisan strategies by right parties and new left parties were the products of adversarial industrial relations between decentralized labor unions and uncoordinated employers. Decentralization in labor organizations encourages sectoral or enterprise-level competition, which makes it difficult for governments to take credit for the provision of policies benefiting labor as a whole. Similarly, firms in uncoordinated organizational contexts are less likely to appreciate public-good type policies toward business interests as a whole as compared to product-specific subsidies. For example, King and Wickham-Jones (1998) show that the Labor party in the UK chose a market-led training policy instead of the ALMP because the market-led training policy could curry the favor of decentralized employers better than the ALMP. Thus, I hypothesize that the effects of demands for subsidies to be conditional upon the type of the party in government partisanship.

Hypothesis 4: *Demands for general [specific] subsidies would be more [less] effective under left-leaning party governments supported by well-coordinated labor and capital than otherwise.*

Data and Methods

The Dependent Variable

Using the state aid scoreboard[12], I measure specific subsidy sizes across EU countries as the share of sectoral aid out of each country's GDP, which is denoted

[12] The state aid scoreboard is available at http://ec.europa.eu/competition/state_aid/studies_reports/studies_reports.html.

by y_{sectoral}. Similarly, general subsidies (y_{general}) are operationalized by the share of horizontal state aid of GDP, excluding regional aid. Although the state aid scoreboard classifies regional aid as having horizontal objectives, it is difficult to consider regional aid to be general as the benefits of regional aid are limited geographically. However, it is also difficult to consider regional state aid in the EU as specific because the criteria of regional state aid have been specifically codified by the EC and hence national governments do not have much discretion in the distribution of regional state aid. Thus, I exclude the regional state aid in the analysis.

Measuring Centralization, Government Partisanship, and District Magnitude

It is difficult to measure the level of centralization in labor and capital across countries because the associational centralization of labor and capital involves multiple dimensions. The level of wage-bargaining institutions is the most frequently used dimension, but government aid is a non-wage issue.[13] Also, the level of de jure associational centralization needs to be distinguished from de facto power of the associations over members. Regarding these multiple dimensions of associational centralization, Traxler, Blaschke, and Kittel (2001) provide useful data on associational centralization of labor unions and employers for advanced economies, including the 13 EU member states. In particular, the following three measures are available for labor and capital organizations of 13 EU member states.

1. Peak control over lower hierarchical levels
2. Associational participation in state regulation of non-wage issues
3. The role of the largest labor peak in negotiations and bargaining

Based on the three measures of associational centralization, I generate a new measure of the associational centralization in labor and capital using principal component analysis.[14] As Traxler et al. (2001)'s measures are available only for three periods (1970–1979, 1980–1990, and 1991–1996), I use the most recent period (1991–1996) for the analysis. I rescale the scores to set the score of the UK to be 0 and that of Sweden to be 1 for easy interpretation. Table 1 reports the associational centralization scores for 13 EU member states. The nonlinear effects of associational centralization will be accounted for through a quadratic term.

Table 1. Associational Centralization Index

Country	*Score*
Sweden	1.00
Austria	0.94
Finland	0.80
Netherlands	0.69
Denmark	0.59
Ireland	0.51
France	0.47
Portugal	0.44
Germany	0.41
Belgium	0.39
Spain	0.21
Italy	0.19
UK	0.00

(*Notes*. The associational centralization scores are generated by doing principal component analysis over three dimensions of centralization provided by Traxler et al. (2001). The analysis is done by a singular value decomposition using stats package in R. The first dimension explains 91.3% of the total variation in six associational factors of labor and capital. The three dimensions of associational centralization for labor and capital organizations are (i) peak control over lower hierarchical levels, (ii) associational participation in state regulation of non-wage issues, and (ii) the role of the largest labor peak in negotiations and bargaining. Traxler et al.'s measures are available only for three periods (1970–1979, 1980–1990, and 1991–1996), and I use the most recent period (1991–1996).)

Since many of the EU member states have coalition governments, the proportion of left-leaning party members in the cabinet captures the power of the left-leaning party in policymaking better than a dichotomous variable of government partisanship. Government partisanship is measured by the proportion of total cabinet posts occupied by left-leaning party members. The cabinet proportion of left-leaning party members are obtained from Armingeon, Weisstanner, Engler, Potolidis, Gerber, and Leimgruber (2006).

The size of district is measured as the log-transformed average district magnitude using Golder (2005)'s data.

Control Variables

Negative economic shocks increase government budgeting for subsidies (general and specific), hence affecting their size as a share of GDP. Unemployment is an important economic barometer of a country's general economic condition, and high unemployment, often dubbed ''Eurosclerosis,'' is one of the continent's most serious economic problems. Thus, I include the previous year's unemployment rate, obtained from the International Labor Organization. Apart from unemployment shocks, demands for subsidies and political responsiveness to them are likely to increase during economic downturns. I include the previous year's growth rate to control for the effects of business cycles on subsidy provision.[15]

Open economies are more likely to experience domestic disturbances caused by external shocks.

[13] Iversen also provides an index of centralization of wage bargaining, which is available at http://www.people.fas.harvard.edu/~iversen/centralization.htm. However, the measure is based on labor union centralization and no measure of centralization is available for employers. Also, the data set ends in 1993, and three countries in my sample, Ireland, Portugal, and Spain, are not included in his data set.

[14] I implemented an exploratory factor analysis to find the common factor(s). The first common actor explains 91.3% of the total variation in six associational factors of labor and capital.

[15] The source of data is World Development Indicator (World Bank 2007).

Also, in the long term, labor unions and employers in tradable sectors of open economies may play an important role in developing institutions that coordinate conflicting interests between winners and losers from international trade (Cameron 1978). Thus, I include the level of trade openness, measured by the share of imports and exports as a percentage of GDP, to capture social preferences for general subsidies generated independently from the associational centralization.[16]

EU member states heavily dependent on trade with other EU members are likely to be more sensitive to the use of subsidies by other member states. This is most acute in the case of state aid that targets strategic sectors or firms. To control for this strategic interaction between member states, I include each state's trade with the other EU-27 member states as compared to its trade with the world market.[17]

Foreign direct investment can affect the demand and supply of specific subsidies. One possibility is that central or local governments commit to subsidizing certain industries in order to induce foreign direct investment (Mariniello 2006). Thus, the current level of specific subsidies may simply reflect a previous commitment to foreign direct investment. Another possibility is that countries with a high level of incoming foreign direct investment are more likely to invest in supply-side public policies. FDI is measured as a percentage of GDP.[18]

Last, I control for the effects of the EU initiative toward horizontal state aid by including a linear time trend. ''Member States should demonstrate a downward trend in State aid in relation to GDP by 2003, taking into account the need to redirect aid toward horizontal objectives of common interest, including cohesion objectives.''[19] If the pressure by the EC toward the use of horizontal aid were effective, there should be a downward trend across member states, which should be controlled for in the regression analysis.

Method

One major challenge in fitting a regression model with EU data is that two explanatory variables, the associational centralization index and district magnitude, are mostly invariant over the time period under consideration of this paper. The analysis of time series cross-sectional data using the fixed-effects method becomes problematic when some covariates are either time invariant or rarely move over time. To address this problem, I employ Plumper and Troeger (2007)'s two-step estimation method for the fixed-effects model with time-invariant variables. The key idea is to decompose estimated unit-specific effects into two components, one correlated with time-invariant covariates and the other uncorrelated with them.[20] I use the heteroscedasticity and autocorrelation consistent (HAC) covariance estimate (Andrews 1991).

A government budget for specific subsidies is not completely independent from its budget for general subsidies. Any government faces a spending limit, and accordingly, the budget for subsidies is constrained to a certain level. Thus, it is reasonable to think that the data-generating processes of sectoral state aid and general state aid are correlated, and accordingly, a bivariate regression model such as a seemingly unrelated regression model would be necessary to control for the unobserved correlation in the error. However, I have identical predictors for y_{general} and y_{sectoral}, and Greene (2000:617) shows that ordinary least squares estimates are equivalent to generalized least squares estimates when we have identical predictors. Thus, a seemingly unrelated regression analysis would be unnecessary in this paper.

My theory expects the effects of the supply-side factors to be conditional on the level of coordination at the demand side. Thus, I interact district magnitude and government partisanship with the level of associational centralization.

Results

Before I show the results of the regression analysis, I visualize the multivariate patterns in the EU state aid data to check whether the relationship between the centralization and the dependent variables is similar to the theoretical predictions. Figure 1 shows the three-way relationship between the level of centralization, the GDP shares of general and sectoral state aid, and district magnitude. District size is drawn together because of its theoretical proximity to and its empirical correlation ($\rho = 0.51$) with associational centralization. Associational centralization (along the vertical axis) and district magnitude (along the horizontal axis) are indicated by solid dots, and the size of state aid as a share of a country's GDP is scaled using gray circles around the dots.

The left panel of Figure 1 shows that countries with intermediate coordination scores such as France, Portugal, Germany, and Spain tend to have larger amount of sectoral aid, while countries at either end of the range tend to have very small amount of sectoral aid, which is consistent with the

[16] The source of data is World Development Indicator (World Bank 2007).

[17] The source of data is eurostat, available at. http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/.

[18] The source of data is World Development Indicator (World Bank, 2007).

[19] Presidency Conclusion, Stockholm European Council, March 23 and 24, 2001.

[20] In the first step, we find the estimated country-specific factors ($\hat{u}$) using the following formula:

$$\hat{u}_i = \bar{y}_i - \bar{X}_i\hat{\beta}_{\text{FE}} - \bar{e}_i \quad (1)$$

where upper bars indicate country means, and $\hat{\beta}_{\text{FE}}$ denotes the fixed-effects estimate of regression coefficients. The second step is to obtain the orthogonal country-specific factors (h_i) from the residuals of the regression of the estimated country-specific factors by (country-mean) time-invariant covariates (Z_i).

$$h_i = \hat{u}_i - \bar{Z}_i\hat{\alpha} \quad (2)$$

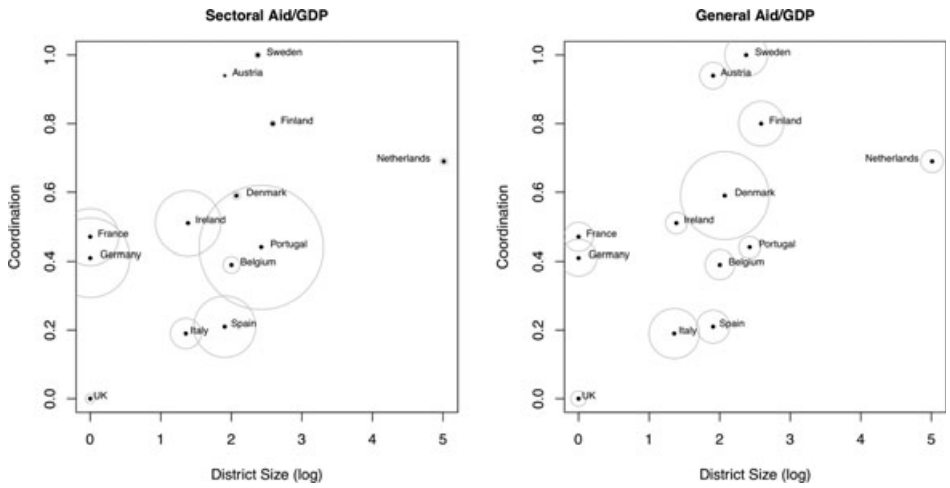

Fig 1. The Specificity of Subsidy, Centralization, and District Magnitude: Country Means are Used for Display. The Size of the Circle Represents the Share of Subsidy in Each Country's Gross Domestic Product

Hypothesis 2. In contrast, the right panel in Figure 1 shows that the size of general aid tends to be larger in countries with moderate-to-high level of associational centralization. If we overlap the two plots, it is clear that the overall size of state aid as a share of each country's GDP has a peak at the mid-range of centralization. Although more robust checks should be done after controlling for the effects of confounders, the overall patterns in Figure 1 are generally supportive for my predictions except some cases such as Italy and Belgium.

Table 2 reports the regression results from the fixed-effects model based on Plumper and Troeger (2007)'s correction for the time-invariant variables. Before interpreting the coefficients of key independent variables, I check the validity of the statistical control by examining the signs of the control variables. First, as I expected, the sign of EU trade is positive for the size of general state aid, which means that EU countries heavily involved in trade with other EU countries provide larger amounts of general state aid than EU countries with low levels of intra-EU trade.

Second, the negative signs of Trend in Models 1, 2, and 3 and the positive signs of Trend in Models 4, 5, and 6 show that the EC initiative toward the use of horizontal state aid seems to be working as EU countries use less (more) sectoral (general) state aid over time within the sample period (1992–2004). This is also an indication of sound statistical control.

One may question that EU effort to decrease the use of sectoral state aids may have discontinuous effects, which cannot be fully captured by a linear trend. To check whether there was an EU-wide change in the provision of state aid during the sample period (1992–2004), I employed the CUSUM test with OLS residuals (Andrews and Ploberger 1994).[21] Figures 2 and 3 report the CUSUM test results of GDP shares of the sectoral state aid (solid lines) and the general state aid (dotted lines). The horizontal lines at the top and bottom of the curves indicate the critical values for the statistical significance based on the test statistic of *expF* suggested by Andrews and Ploberger (1994). When residuals move beyond the critical values, we reject the null hypothesis of no structural break. If the EU initiative toward horizontal objectives had a discontinuous effect on the specificity of state aid, we should observe breaks in most EU member states. The structural break test results show that there is no strong evidence to show that there was an EU-wide change in the provision of state aid.[22] In fact, it was not until 2005 that the EC took a concrete action to encourage the use of horizontal state aids by adopting a new rule to notify state aid, called block exemptions (later General Block Exemption regulation).[23]

Lastly, to check the validity of the statistical estimation, I check the correlation between errors from the two regression models using y_{general} and y_{sectoral} as dependent variables, respectively. The correlation is 0.05, which means that the errors in two models are almost independent. Also, the correlations between the adjusted unit effects (h_i in Equation 2) and country means of centralization and their

[21] The break test is done using the strucchange package in R. I appreciate an anonymous review for suggesting a break test.

[22] Figures 2 and 3 show that the GDP shares of the sectoral and general state aid have a structural break only in four countries: Belgium, Denmark, Germany, and Italy. The timings of the structural breaks vary significantly across countries. Even in the same country, for example Germany, the breaks for the sectoral aid (solid lines) and for the general aid (dotted lines) do not coincide. Moreover, if the EU initiative worked as intended, reducing sectoral aid and increasing general aid, we should observe changes in GDP shares of the sectoral aid and those of the general aid move in the opposite directions. However, the GDP shares of sectoral aid do not always move in the opposite direction to the GDP shares of general aid as shown in the case of Denmark, France, Netherlands, and Spain.

[23] Block exemptions make certain categories of state aid exempt from the requirement of prior notification laid down in Article 88(3) of the EC Treaty. European Commission, ''State aid: Commission adopts Regulation automatically approving aid for jobs and growth,'' July 7, 2008.

Table 2. Fixed-Effects Regression Adjusted for Time-Invariant Covariates

	GDP share of sectoral state aid			*GDP share of general state aid*		
Dependent variables	*Model 1*	*Model 2*	*Model 3*	*Model 4*	*Model 5*	*Model 6*
Constant	0.763 (0.290)*	0.634 (0.279)	0.852 (0.300)*	−0.272 (0.156)*	−0.232 (0.156)	−0.137 (0.143)
Unemployment	0.001 (0.006)	0.002 (0.006)	−0.002 (0.008)	0.004 (0.002)	0.003 (0.002)	0.002 (0.003)
Openness	0.028 (0.069)	0.006 (0.070)	0.024 (0.068)	−0.000 (0.030)	0.003 (0.028)	−0.004 (0.031)
FDI	0.001 (0.001)	0.000 (0.001)	0.001 (0.001)	−0.000 (0.001)	−0.000 (0.001)	−0.000 (0.001)
Growth	0.017 (0.012)	0.017 (0.011)	0.016 (0.012)	−0.005 (0.005)	−0.005 (0.004)	−0.006 (0.004)
EU trade	−0.008 (0.004)	−0.007 (0.004)	−0.009 (0.004)	0.005 (0.002)*	0.005 (0.002)*	0.003 (0.002)
Coalition	0.039 (0.071)	0.027 (0.075)	0.051 (0.073)	0.003 (0.035)	0.006 (0.026)	0.019 (0.029)
Election	−0.021 (0.018)	−0.018 (0.018)	−0.020 (0.018)	−0.003 (0.006)	−0.004 (0.006)	−0.003 (0.006)
Trend	−0.023 (0.007)*	−0.024 (0.007)*	−0.024 (0.008)*	0.010 (0.003)*	0.010 (0.003)*	0.009 (0.002)*
Left	−0.099 (0.058)	0.088 (0.077)	−0.095 (0.057)	0.041 (0.021)*	−0.011 (0.029)	0.046 (0.022)*
District	−0.009 (0.026)	−0.011 (0.028)	0.046 (0.101)	−0.029 (0.011)*	−0.028 (0.012)*	0.026 (0.035)
Centralization	1.499 (0.477)*	1.991 (0.572)*	1.486 (0.565)*	0.465 (0.114)*	0.340 (0.122)*	0.422 (0.144)*
Centralization^2	−1.631 (0.396)*	−1.981 (0.482)*	−1.586 (0.646)*	−0.283 (0.084)*	−0.200 (0.107)	−0.193 (0.195)
District × centralization			−0.125 (0.434)			−0.095 (0.165)
District × centralization^2			0.061 (0.458)			0.023 (0.183)
Left × centralization		−0.822 (0.555)			0.220 (0.177)	
Left × centralization^2		0.608 (0.578)			−0.156 (0.210)	
Time invariance–adjusted fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	149	149	149	150	150	150
R-squared (adjusted)	0.585 (0.545)	0.591 (0.545)	0.586 (0.539)	0.754 (0.730)	0.756 (0.729)	0.759 (0.732)
Residuals *SD*	0.250	0.250	0.252	0.084	0.084	0.084

(*Notes.* GDP = gross domestic product.
The estimation of the model is the two-step OLS method based on the study of Plumper and Troeger (2007). Standard errors in parentheses are heteroscedasticity and autocorrelation consistent estimates of the covariance matrix of the coefficient estimates (Andrews 1991). The dependent variables are the share of sectoral (general) aid out of GDP. Left indicates the proportion of left-leaning party members in the cabinet and ranges from 0 to 1.
*Indicates $p < .05$ (two-tailed tests).)

squares are very small: −0.03 for y_{general} and −0.02 for y_{sectoral}.

The coefficients of Centralization and its squared terms (Centralization^2) in Table 2 are consistent with my theoretical predictions. To assess the effect size of these coefficients, I visualize the predicted effects of the level of centralization on the size of sectoral and general state aid in Figure 4. The size of centralization in the simulation ranges from the UK (0) to Sweden (1). The left panel of Figure 4 supports my conjecture on the inverted U-shaped relationship between the size of specific subsidies and the level of coordination. Strikingly, the size of sectoral aid peaks in the middle of coordination. The precise position is Centralization = 0.46, which is between Portugal (0.44) and France (0.47).

The right panel of Figure 4 draws predicted sizes of general state aid when the associational centralization moves from minimum to maximum. As I expected, the effect of associational centralization on the size of general state aid is positive and statistically significant. Also, the marginal effect of associational centralization decreases as the level of centralization increases, which is consistent with my expectation that labor unions and employers organized at the industry level may coordinate demands for general subsidies due to the small number of effective decision makers—sectoral organizations of labor unions and employers—and non-market institutions facilitating coordination in these countries. Specifically, once the coordination score exceeds approximately 0.6, which is near the level of centralization of Denmark (0.59), the size of general state aid does not increase further.

The next question is whether the effect of associational centralization interacts with the effects of supply-side factors. Contrary to my expectation, Table 2 reports that the level of associational centralization does not have statistically significant interaction effects with left-leaning party government or with district magnitude. As the lack of statistical significance neither supports nor rejects the existence of a substantively significant association, I leave the test of the interaction hypothesis to future research.

Models 4 and 6 in Table 2 show a marginal effect of government partisanship on the size of general state aid; a government fully consisting of left-leaning party members increases the GDP share of general subsidies by 0.04% per year. This number is not small, considering that the average GDP share of general state aid is 0.23% with a standard deviation of 0.16. However, government partisanship and its interaction with associational centralization do not show any significant pattern with the size of sectoral state aid.

My prediction of the effect of district size on the size of subsidies is not supported by the data. Instead, counterintuitively, district magnitude shows a negative and significant sign with the size of general state aid as shown in Models 4 and 5. The negative

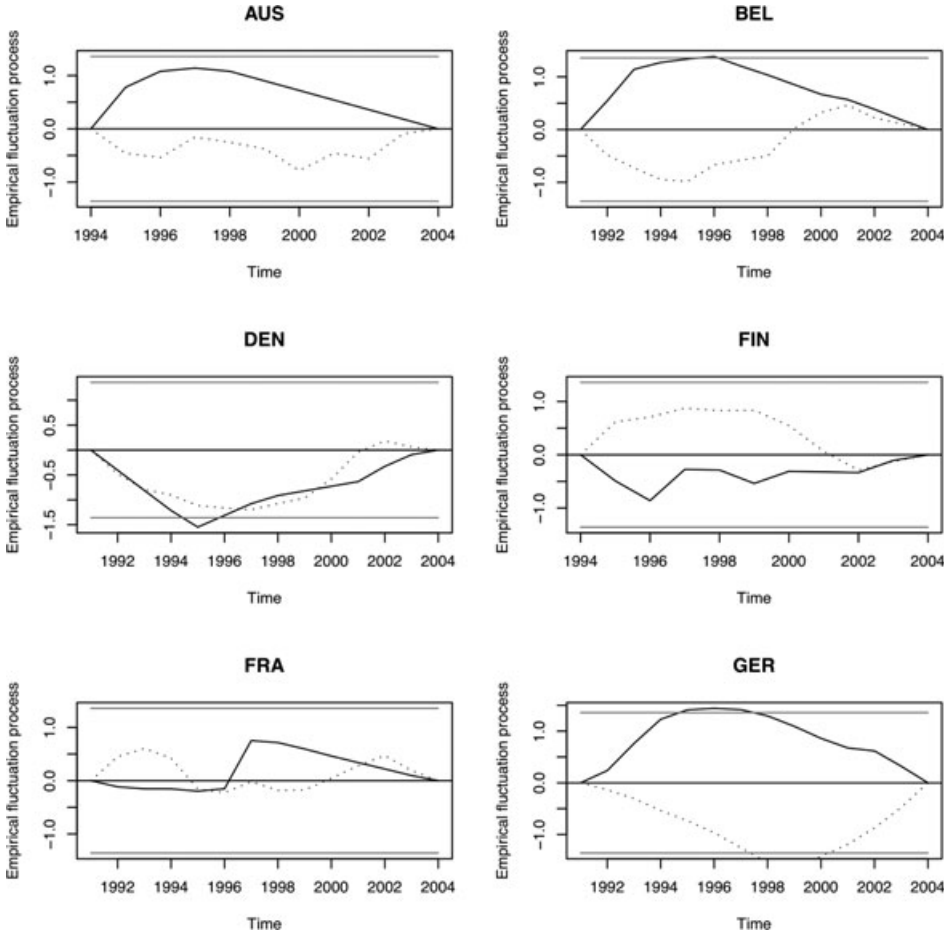

Fig 2. The CUSUM Test with OLS Residuals: the solid lines are gross domestic product (GDP) shares of the sectoral state aid, and the dotted lines are GDP shares of the general state aid. The horizontal lines at the top and bottom of the curves indicate the critical values for the statistical significance based on the test statistic of *expF* suggested by Andrews and Ploberger (1994). When residuals move beyond the critical values, we reject the null hypothesis of no structural break. If the EU initiative toward horizontal objectives had a discontinuous effect on the specificity of state aid, we should observe breaks in most EU member states

association between district magnitude and the size of general state aid is inconsistent with my theory and conventional wisdom in the international political economy literature. However, the result might be unduly driven by the small size of general state aid in the Netherlands, which has a single nationwide district. The strange negative sign becomes insignificant when I drop the Netherlands from the sample as shown in Table 3.

One can argue that given the small number of countries in the EU sample, it is possible that one or two non-representative countries drive the results. One such candidate country could be Portugal, which is thought to use sectoral aid in order to entice investments to the Free Trade Zone of Madeira. To check the possibility, I fit the same model after dropping Portugal from the sample. As shown in Table 4, the conclusions do not change; there is a parabolic relationship in the sectoral state aid case and a positive monotonic relationship in the general state aid case, a positive marginal effect of left-leaning party government on the size of general state aid, and the negative linear trend in the size of sectoral state aid. The patterns observed from Table 2 are consistently found in different model specifications. The findings are robust to the exclusion of politics-related control variables, dropping of the fixed-effects terms, or the time.[24]

One potential concern regarding the external validity of the findings is that EU member states' decisions on who gets what might be affected by factors related with the EU, and hence the results from the paper are not generalizable to non-EU countries. It should be stressed that, despite the close monitoring of the provision of state aids by the EC, the EC does not interfere in member states' decisions on who gets what as long as decisions are consistent with the treaty and the guidelines. In fact, the EC approves almost all aid requests submitted by member states. For example, in 1997, negative decisions by the EC occurred in only 1.8% of cases, and conditional decisions in 1% out of 502 applications (Besley, Seabright, Rockette, and Birch Sorensen 1999).

[24] The results can be found from the author's Web site.

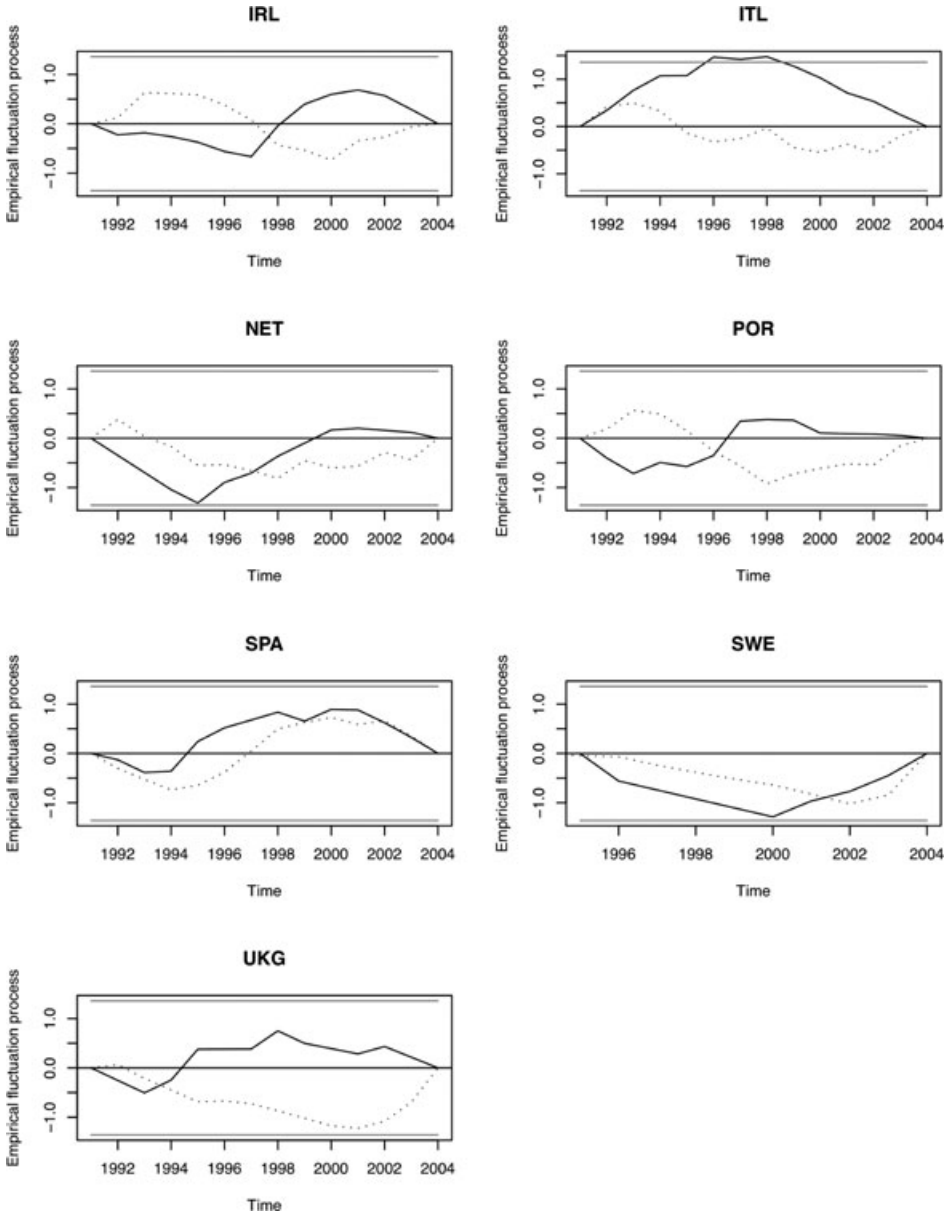

Fig 3. The CUSUM Test with OLS Residuals: the solid lines are Gross Domestic Product (GDP) shares of the sectoral state aid, and the dotted lines are GDP shares of the general state aid. The horizontal lines at the top and bottom of the curves indicate the critical values for the statistical significance based on the test statistic of *expF* suggested by Andrews and Ploberger (1994). When residuals move beyond the critical values, we reject the null hypothesis of no structural break. If the EU initiative toward horizontal objectives had a discontinuous effect on the specificity of state aid, we should observe breaks in most EU member states

Another concern is that the fiscal and monetary constraints upon EU member states such as the Stability and Growth Pact is so strict that there would be no discernible cross-national or partisan difference in the provision of state aid. However, according to a Deputy Head of the State Aid Unit in the EC, ''after the gradual abolition of other barriers, the granting of state aid is one of the few remaining tools for national governments to protect their national industry'' (Sinnaeve 1999:14). Thus, there is every reason to believe that the integration encourages the use of state aid.

Discussion

In this paper, I explained how the specificity of subsidies is determined in the market for government subsidies. I constructed a simple theory by examining the demand and supply-side factors. On the demand side, I highlighted the effect of centralization among economic interests on the incentive and capacity to contribute to the lobby for general and specific subsidies. I argued that as the number of individual firms and labor unions increases, both the incentive to contribute to the lobby for general

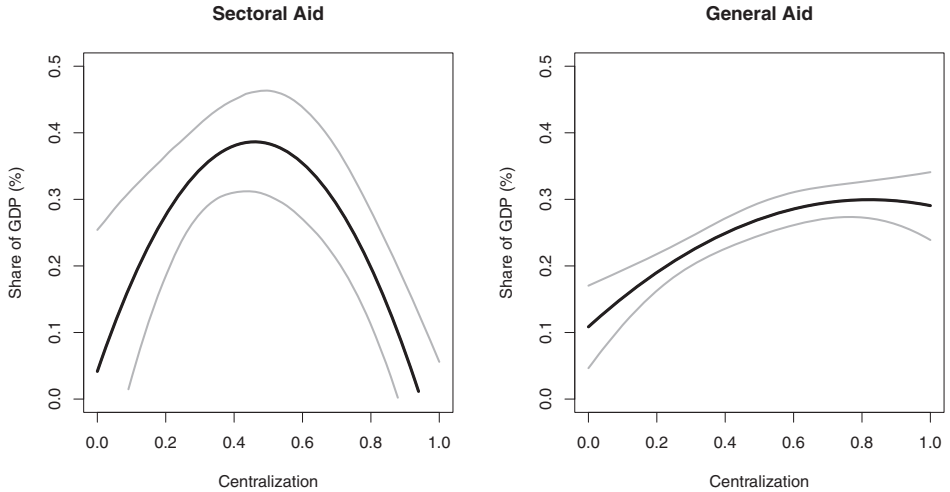

Fig 4. The Predicted Sizes of State Aid Across Varying Levels of Centralization: thick solid lines in the middle indicate expected values, and gray lines are 95% confidence intervals. All other covariates are set at their global means in the prediction

Table 3. Dropping the Netherlands: Fixed-Effects Regression Adjusted for Time-Invariant Covariates

	GDP share of general state aid		
Dependent variable	*Model 7*	*Model 8*	*Model 9*
Constant	−0.236 (0.166)	−0.193 (0.177)	−0.064 (0.124)
Unemployment	0.003 (0.003)	0.002 (0.003)	−0.002 (0.003)
Openness	−0.001 (0.033)	0.002 (0.031)	−0.003 (0.032)
FDI	−0.000 (0.001)	−0.000 (0.001)	0.000 (0.001)
Growth	−0.006 (0.005)	−0.006 (0.004)	−0.007 (0.004)
EU trade	0.004 (0.003)*	0.004 (0.003)	0.001 (0.002)
Left	0.039 (0.022)	−0.012 (0.030)	0.046 (0.023)*
Coalition	0.012 (0.044)	0.014 (0.035)	0.005 (0.033)
Election	−0.004 (0.006)	−0.005 (0.006)	−0.003 (0.006)
Trend	0.010 (0.003)*	0.010 (0.003)*	0.010 (0.003)*
District	−0.020 (0.020)	−0.019 (0.020)	0.029 (0.034)
Centralization	0.436 (0.134)*	0.308 (0.145)*	0.423 (0.146)*
Centralization^2	−0.274 (0.091)*	−0.187 (0.115)	−0.093 (0.208)
District × centralization			−0.063 (0.161)
District × centralization^2			−0.057 (0.187)
Left × centralization		0.226 (0.188)	
Left × centralization		−0.164 (0.220)	
Time invariance–adjusted fixed effects	Yes	Yes	Yes
N	138	138	138
R-squared (adjusted)	0.748 (0.722)	0.751 (0.720)	0.753 (0.723)
Residuals *SD*	0.087	0.088	0.087

(*Notes.* GDP = gross domestic product.
The estimation of the model is the two-step OLS method based on the study of Plumper and Troeger (2007). Standard errors in parentheses are heteroscedasticity and autocorrelation consistent estimates of the covariance matrix of the coefficient estimates (Andrews 1991). The dependent variables are the share of sectoral (general) aid out of GDP. Left indicates the proportion of left-leaning party members in the cabinet and ranges from 0 to 1.
*Indicates $p < .05$ (two-tailed tests).)

subsidies and the capacity to coordinate collective actions for general subsidy demands decrease because of the public-good character of general subsidies. In contrast, I argued that the relationship between the size of specific subsidies and the level of centralization is non-monotonic with a peak in the middle of the centralization continuum. I explained that the nonlinear relationship is likely to be caused by the gap between the micro-incentive to lobby for specific subsidies and the macro-capacity to aggregate these individual efforts into collective pressure. The findings of the paper strongly support my predictions on the nonlinear effects of the level of centralization on the size of specific subsidies. The size of sectoral state aid shows an inverted U-shaped relationship along the level of centralization among economic actors. Also, the size of general state aid increases as the level of centralization increases with

Table 4. Excluding Portugal: Fixed-effects Regression Adjusted for Time-Invariant Covariates

	GDP share of sectoral state aid		*GDP share of general state aid*	
Dependent variable	*Model 10*	*Model 11*	*Model 12*	*Model 13*
Constant	0.888 (0.305)*	0.623 (0.286)	−0.302 (0.162)*	−0.278 (0.156)
Unemployment	−0.002 (0.007)	0.001 (0.007)	0.004 (0.002)	0.004 (0.003)
Openness	0.026 (0.069)	−0.006 (0.071)	−0.001 (0.033)	0.000 (0.031)
FDI	0.001 (0.001)	0.001 (0.001)	−0.000 (0.000)	−0.000 (0.000)
Growth	0.015 (0.013)	0.015 (0.012)	−0.004 (0.005)	−0.003 (0.005)
EU trade	−0.009 (0.004)	−0.007 (0.004)	0.005 (0.003)*	0.005 (0.002)*
Coalition	0.031 (0.085)	0.043 (0.084)	0.018 (0.044)	0.025 (0.039)
Election	−0.027 (0.019)	−0.024 (0.019)	−0.004 (0.006)	−0.005 (0.006)
Trend	0.024 (0.008)*	−0.025 (0.008)*	0.011 (0.003)*	0.011 (0.003)*
District	−0.006 (0.027)	−0.012 (0.028)	−0.028 (0.012)*	−0.028 (0.012)*
Left	−0.133 (0.054)*	0.106 (0.079)	0.046 (0.022)*	−0.012 (0.029)
Centralization	1.541 (0.528)*	2.139 (0.627)*	0.403 (0.159)*	0.254 (0.161)
Centralization	−1.678 (0.449)*	−2.155 (0.533)*	−0.228 (0.128)	−0.140 (0.138)
Left × centralization		−1.226 (0.491)*		0.236 (0.201)
Left × centralization		1.046 (0.495)*		−0.146 (0.235)
Time invariance–adjusted fixed effects	Yes	Yes	Yes	Yes
N	137	137	138	138
R-squared (adjusted)	0.488 (0.434)	0.504 (0.443)	0.750 (0.723)	0.753 (0.723)
Residuals *SD*	0.234	0.232	0.087	0.087

(*Notes*. GDP = gross domestic product.
The estimation of the model is the two-step OLS method based on the study of Plumper and Troeger (2007). Standard errors in parentheses are heteroscedasticity and autocorrelation consistent estimates of the covariance matrix of the coefficient estimates (Andrews 1991). The dependent variables are the share of sectoral (general) aid out of GDP. Left indicates the proportion of left-leaning party members in the cabinet and ranges from 0 to 1.
*Indicates $p < .05$ (two-tailed tests).)

diminishing marginal effects because the well-coordinated sectoral organizations of labor unions and employers can coordinate demands for general subsidies as effectively as the centrally organized labor and capital.

I expected the effects of associational centralization to be conditional upon the two supply-side conditions: district magnitude and government partisanship. Large electoral districts provide insulation from narrow interests when there is no severe intraparty competition in the ballot. Also, left-leaning parties supported by well-organized labor and capital prefer general subsidies to specific subsidies given their commitments on the supply-side policies in response to structural problems in the economy. The findings of the paper show that government partisanship as measured by the cabinet portion of left-leaning party members does matter in explaining the size of general state aid, which is consistent with findings from the comparative political economy literature (Boix 1998; Garrett 1998; Huber and Stephens 2001; Iversen and Stephens 2008). However, there is no statistical evidence for the interaction effect of government partisanship with associational centralization. The paper does not find any significant effect of district size on the size of the general or sectoral state aid, either.

Although there is much work to be done to fully understand the political market for subsidies, this paper makes a small but important contribution by showing how domestic institutions and political institutions can resolve sources of international conflicts in international trade. Specifically, the findings of the paper show that countries with centrally organized labor and capital organizations and decentralized labor and capital are less likely to adopt subsidies generating a beggar-thy-neighbor-type externality in international trade than countries with strong sectoral organizations of labor and capital.

References

Andrews, Donald W. K. (1991) Heteroskedasticity and Autocorrelation Consistent (HAC) Estimation of the Covariance Matrix of the Coefficient Estimates in a (Generalized) Linear Regression Model. *Econometrica* 59 (3): 817–858.

Andrews, Donald W. K., and Werner Ploberger. (1994) Optimal Tests When a Nuisance Parameter Is Present Only under the Alternative. *Econometrica* 62 (6): 1383–1414.

Armingeon, Klaus, David Weisstanner, Sarah Engler, Panajotis Potolidis, Marlène Gerber, and Philipp Leimgruber. (2011) *Comparative Political Data Set 1960–2009*. Institute of Political Science, University of Berne.

Bailey, Michael, and David W. Brady. (1998) Heterogeneity and Representation: The Senate and Free Trade. *American Journal of Political Science* 42 (2): 524–544.

Becker, Gary S. (1983) A Theory of Competition Among Pressure Groups for Political Influence. *Quarterly Journal of Economics* 98 (3): 371–400.

Besley, Timothy, Paul Seabright, Katharine Rockette, and Peter Birch Sorensen. (1999) The Effects and Policy Implications of State Aids to Industry: An Economic Analysis. *Economic Policy* 14 (28): 13–53.

Boix, Carles. (1998) *Political Parties, Growth and Equality*. New York, NY: Cambridge University Press.

Calmfors, Lars, and John Driffill. (1988) Bargaining Structure, Corporatism and Macroeconomic Performance. *Economic Policy* 6: 12–61.

Cameron, David. (1978) The Expansion of the Public Economy: A Comparative Analysis. *American Political Science Review* 72 (4): 1243–1261.

Carbaugh, Robert J., and John Olienyk. (2001) Boeing-Airbus Subsidy Dispute: An Economic and Trade Perspective. *Global Economy Quarterly* 4 (2): 1–9.

Carey, John M, and Matthew Soberg Shugart. (1995) Incentives to Cultivate a Personal Vote: A Rank Ordering of Electoral Formulas. *Electoral Studies* 14 (4): 355–480.

Cox, Gary, and Matthew McCubbins. (2001) The Institutional Determinants of Economic Policy Outcomes. In *Presidents and Parliaments*, edited by Stephen Haggard, and Matthew McCubbins. Cambridge, UK: Cambridge University Press.

Ehlermann, Calus-Dieter, and Martin Goyette. (2006) The Interface between EU State Aid Control and the WTO Discipline on Subsidies. *European State Aid Law Quarterly* 4: 695–718.

Esping-Andersen, Gøsta. (1990) *The Three Worlds of Welfare Capitalism*. Princeton, NJ: Princeton University Press.

Estevez-Abe, Margarita, Torben Iversen, and David Soskice. (2001) Social Protection and the Formation of Skills: A Reinterpretation of the Welfare State. *In Varieties of Capitalism: The Institutional Foundations of Comparative Advantage,* edited by Peter Hall and David Soskice. Oxford: Oxford University Press.

European Commission. (2006) *Study on the Enforcement of State Aid Law at National Level*. Brussels: European Commission.

Garrett, Geoffrey. (1998) *Partisan Politics in the Global Economy*. New York: Cambridge University Press.

Golden, Miriam. (1993) The Dynamics of Trade Unionism and National Economic Performance. *American Political Science Review* 87 (2): 437–454.

Golder, Matt. (2005) Democratic Electoral Systems Around the World, 1946–2000. *Electoral Studies* 24: 103–121.

Greene, William H. (2000) *Econometric Analysis*, 4th edn. Upper Saddle River, NJ: Prentice Hall.

Hall, Peter, and David Soskice. (2001a) An Introduction to Varieties of Capitalism. In *Varieties of Capitalism: The Institutional Foundations of Comparative Advantage*, edited by Peter Hall, and David Soskice. Oxford: Oxford University Press.

Hall, Peter A., and David Soskice. (2001b) *Varieties of Capitalism: The Institutional Foundations of Comparative Advantage*. Oxford: Oxford University Press.

Huber, Evelyne, and John D. Stephens. (2001) *Development and Crisis of the Welfare State: Parties and Policies in Global Markets*. Chicago: University of Chicago Press.

Iversen, Torben. (1999) *Contested Economic Institutions: The Politics of Macroeconomics and Wage Bargaining in Advanced Democracies*. Cambridge: Cambridge University Press.

Iversen, Torben, and John D. Stephens. (2008) Partisan Politics, the Welfare State, and Three Worlds of Human Capital Formation. *Comparative Political Studies* 41: 600–637.

King, Desmond, and Mark Wickham-Jones. (1998) Training Without the State? New Labour and Labour Markets. *Policy & Politics* 26 (4): 439–455.

Kono, Daniel Y. (2006) Optimal Obfuscation: Democracy and Trade Policy Transparency. *American Political Science Review* 100 (3): 369–384.

Mariniello, Mario. (2006) State Aid to Attract FDI and the European Competition Policy: Should Variable Cost Aid Be Banned? Economics Working Paper No. 2006/41, European University Institute.

McCarty, Nolan, and Adam Meirowitz. (2007) *Political Game Theory: An Introduction*. Cambridge, UK: Cambridge University Press.

Nelson, Douglas. (1988) Endogenous Tariff Theory: A Critical Survey. *American Journal of Political Science* 21: 285–300.

OECD. (1998) *Spotlight on Public Support to Industry*. Paris: Organization for Economic Cooperation and Development (OECD).

Olson, Mancur. (1965) *The Logic of Collective Action: Public Goods and the Theory of Groups*. Cambridge, MA: Harvard University Press.

Olson, Mancur. (1982) *The Rise and Decline of Nations: Economic Growth, Stagflation, and Social Rigidities*. New Haven, CT: Yale University Press.

Palfrey, Thomas R., and Howard Rosenthal. (1984) Participation and the Provision of Discrete Public Goods: A Strategic Analysis. *Journal of Public Economics* 24 (2): 171–193.

Persson, Torsten, and Guido Tabellini. (1999) The Size and Scope of Government: Comparative Politics with Rational Politicians. *European Economic Review* 43: 699–735.

Persson, Torsten, and Guido Tabellini. (2002) *Political Economics: Explaining Economic Policy*. Cambridge, MA: The MIT Press.

Plumper, Thomas, and Vera E. Troeger. (2007) Efficient Estimation of Time-Invariant and Rarely Changing Variables in Finite Sample Panel Analyses with Unit Fixed Effects. *Political Analysis* 15 (2): 124–139.

Rodrik, Dani. (1986) Tariffs, Subsidies, and Welfare with endogenous Policy. *Journal of International Economics* 21 (3–4): 285–299.

Rogowski, Ronald. (1987) Trade and the Variety of Democratic Institutions. *International Organization* 41 (2): 203–223.

Sinnaeve, Adinda. (1999) State Aid Control: Objectives and Procedures. In *Understanding State Aid Policy in the European Community: Perspectives on Rules and Practice*, edited by Sanoussi Bilal, and Phedon Nicolaides. Cambridge: Kluwer Law International.

Traxler, Franz, Sabine Blaschke, and Bernard Kittel. (2001) *National Labor Relations in Internationalized Markets*. Oxford: Oxford University Press.

Verdier, Daniel. (1995) The Politics of Public Aid to Private Industry. *Comparative Political Studies* 28 (1): 3–42.

Wallerstein, Michael. (1999) Wage-Setting Institutions and Pay Inequality in Advanced Industrial Societies. *American Journal of Political Science* 43 (3): 649–680.

World Bank. (2007) *World Development Indicators 2007*. Washington, DC: World Bank.

World Trade Organization. (2006) *World Trade Report 2006*. Geneva: World Trade Organization.

Zahariadis, Nikolaos. (2001) Asset Specificity and State Subsidies in Industrialized Countries. *International Studies Quarterly* 45: 603–616.

Zahariadis, Nikolaos. (2005) Policy Networks, Elections, and State Subsidies. *Review of Policy Research* 22: 115–131.