Correlation in European Union Labor-Market Policies: Interdependence or Common Stimuli?*

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ABSTRACT: Even casual observation reveals obvious spatial patterns (i.e., correlation, not necessarily always positive) in labor-market outcomes, institutions, and policies across Europe, and in the European Union particularly. Labor-market policies entail significant cross-border spillovers, both positive and negative, political and economic, so the strategic interdependence of member countries might explain these patterns. However, European countries also faced common or at least very similar exogenous-external conditions, as well as common or very similar internal trends, which would also naturally suggest spatial patterns in the domestic responses thereto, even without any significant interdependence. Likewise, membership in the European Union itself presents both a series of common external stimuli and a set of strategic interdependencies in common and individual-country labor-market-relevant actions. We have discussed elsewhere the severe empirical-methodological challenges in distinguishing these possible sources of spatial correlation; this paper extends and applies those analyses in an attempt to disentangle the effects of general interdependence, correlated external and internal stimuli, and EU membership in shaping labor-market policies across Europe in recent years. To the extent that there is significant strategic policy interdependence among member states, greater EU-level coordination may be justified.

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In March, 2000, at the Lisbon Summit, the EU committed to becoming "the most competitive and dynamic knowledge-based economy in the world by 2010," (European Council 2000: 1). Active labor market (ALM) policies are a critical part of the plan designed to achieve this objective, the European Employment Strategy (EES). ALM programs are supposed to improve job seekers' prospects of finding employment and increase the productivity and earning potential of workers. They include spending on public employment, job search assistance, labor market training, and other policies intended to promote employment among the unemployed. While ALM policies—particularly training and education programs—seem almost inherently necessary to create the kind of workforce and economy EU leaders envisage, coordinating these policies through an EES system that relies heavily on the principle of subsidiarity, may be problematic. Subsidiarity in the EES implies that member states create their own programs and implement them on a mostly voluntary basis, yet individualistic voluntarism leaves policy susceptible to positive-externality induced underinvestment. Has this theoretically possible negative interdependence of European ALM policies actually arisen empirically? If so, are these spillovers and the detrimental interdependence they induce sufficiently sizable to warrant concern and redress?

Building on earlier work (Franzese and Hays 2006), we argue and present evidence that ALM policies do indeed entail significant externalities that spill across national boundaries and that, apparently, these spillovers are sufficiently sizable to generate appreciable political and economic incentives for European governments to free ride off the efforts of their neighbors. That is, we provide empirical evidence that the national best-response functions for ALM spending are statistically significantly and mostly substantively appreciably downward-sloping: an increase in expenditures in one country decreases equilibrium expenditures in most of its neighbors. This leads us to conclude that current levels of ALM expenditures may indeed be too low and that, apparently,

the limited (although increasing) coordination of the EES framework is insufficient to internalize positive ALM policy externalities noticeably. Stronger enforcement procedures would seem to be necessary if the European Union is to achieve its EES objectives.

The paper structures these explorations as follows. In the first section, we briefly review the history of the EES starting with the Luxembourg Jobs Summit. We cover the generic theory of strategic policy complementarity and substitutability (positive and negative externalities, respectively) in section two. Section three contains our empirical analysis, and sections four and five discuss the results and offer our conclusions, respectively.

Historical Overview of the European Employment Strategy

The key elements of the European Employment Strategy (EES), adopted by EU governments in November 1997 at the Luxembourg Jobs Summit, are contained within the Amsterdam Treaty's Title on Employment (see Goetschy, 1999). This section of the treaty, among other things, makes unemployment a common European concern, places job creation alongside macroeconomic stability as one of the EU's primary objectives, and creates an EU-level institutional mechanism for the oversight and evaluation of member states' employment policies. Since the Luxembourg Summit, the objectives and coordination procedures of the EES have been refined at several European Councils.

For our interests in subsidiarity and policy coordination, some of the most important changes came at the Berlin Council in 1999 where EU member states decided to use Structural Funds to finance EES programs aimed at developing human resources.[1] Regulation (EC) No 1260/1999, in

[1] The management of EU Structural Funds is guided by the principle of 'concentration' which holds that assistance should be focused on achieving a few core objectives. At Berlin the number of

addition to incorporating this change and setting new objectives, created a system of ex-ante, mid-term, and ex-post program evaluations combined with performance rewards and punishments (i.e. performance reserve-allocations). As a result of this new regulation, the EU budget and employment promotion processes became entwined under "Objective 3" (i.e. human resource development) funding. It also established a limited system of centralized enforcement with respect to employment policy coordination.

The (annual) coordination cycle of the EES follows four steps. Each year the European Council adopts a set of guidelines—developed by the European Commission—for EU member states' employment policies. These guidelines are intended to be instrumental in achieving full employment, improved quality and productivity at work, and labor market inclusiveness. National governments respond by writing action plans to describe how these guidelines are being (or will be) implemented domestically. The Commission and Council then review these plans and publish a joint economic report. If necessary, the Council makes country-specific recommendations.

In 2004, for example, the Council promulgated the following guidelines for national employment policies: they should increase the adaptability of workers to changing conditions, attract more people into the labor market, and promote investment in human capital. Community-wide and country-specific recommendations that stressed the importance of labor-market training-programs were issued (European Commission, 2004). In fact, the Council encouraged each of the original fifteen members to increase participation in such programs.

Since 1988 the Council has set a multi-annual EU budget in its 'Fiscal Perspectives' report. The previous budget agreement (the 'Agenda 2000' plan), which covered spending from 2000 to

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objectives was cut from seven to three: 1) support for the poorest regions, 2) conversion of regions facing structural difficulties, and 3) human resource development (European Commission, 1999).

2006, was the first governed by Regulation (EC) No 1260/1999. Midterm reviews, including reviews of programs financed under "Objective 3", were conducted by member states in 2003 and submitted to the Commission by 31 December. On the basis of these reviews, the Commission allocated the performance reserves on 23 March 2004.

Despite the ostensible strengthening of the EES framework over time, employment policies (ALM programs in particular) remain primarily the prerogative of national governments. The Council sets guidelines, but member countries choose their own response and, with the minor exceptions of country performance reports and performance reserve allocations, no enforcement mechanism is in place should they fail to follow through. Thus, the situation post-Luxembourg is not fundamentally different from the one existing prior to the 1997 Council meeting.

How have EU member governments fared in the provision of ALM policies? The evidence is somewhat mixed. From a longer historical perspective, the trends look positive. On average, aggregate active labor market expenditures have increased among the *EU* member states, and, at the same time, the standardized variance (i.e., the coefficient of variation) in spending across countries has decreased (see Figure 1). In 1980, the average total spending on ALM programs among *EU* member states was a little over $54 (2000, PPP$) per capita. By 2003, average spending was almost $253, an increase of roughly 370%.[2] The coefficient of variation (standard deviation) in spending on ALM programs dropped (rose) from .80 (43.5) to .47 (120.1) over the same period. One might see a "*race-to-the-top*" in these trends and be tempted to infer that *EU* employment policy coordination has been relatively successful. On the other hand, outside of Scandinavia, the consensus seems to be that EU member governments are behind in designing and implementing policies to upgrade the

[2] In the shorter, post-Lisbon period (1997-2003), average annual per capita ALM spending increased $30.44 (2000, PPP$).

skills of their workers.[3] According to this view, despite the trends in Figure 1, spending could and should be much higher. If ALM program spending among EU member states is, in fact, suboptimal, strategic interdependence in the making of active labor market policies could explain why. Two kinds of interactions in particular, *race-to-the-bottom* dynamics and *policy free-riding*, would induce suboptimal expenditures on employment policies.

<Figure 1 About Here>

Race-to-the-Bottom Dynamics and Policy Free Riding

In theory, race-to-the-bottom (RTB) dynamics occur when policies are strategic complements across jurisdictions—that is, when policy changes adopted in one jurisdiction create incentives for other jurisdictions to adopt similar changes. The RTB argument has been applied *inter alia* to capital taxation, environment regulations, and labor standards. Cuts in taxes and the elimination of regulations and standards in one jurisdiction increase the costs to others of maintaining high taxes, regulations, and standards causing the effected jurisdictions to follow suit in their own policies. By contrast, free riding occurs when policies are strategic substitutes—that is, when policy changes in one jurisdiction create incentives for governments in others to adopt change in the opposite direction. For example, an increase in defense expenditures in one country might lower the marginal security benefit from defense spending in its military allies, creating an incentive for them to free ride (see

[3] The 2004 Joint Economic Report asked six of the original fifteen members to strengthen their ALM policies. Five of the six later received a C-grade for their response (partial and limited). One received a B (in progress). The Council asked every member country to improve its investment in human capital in one or more ways. The modal response of member governments to these recommendations was "partial and limited" (European Commission, 2005). See Murray and Wanlin (2005) for another disappointing report card.

Redoano, 2003).

More formally, consider a two-country world (i,j), each with homogenous populations and domestic welfare that, due to externalities, are a function of government policy in both countries:

$$W^i \equiv W^i(p_i, p_j) \quad ; \quad W^j \equiv W^j(p_j, p_i) \tag{1}.$$

When the government in country *i* chooses its policy, p_i, to maximize its own social welfare, this affects the optimal policy-choice in country *j*, and *vice versa*. We can express such *strategic interdependence* between countries *i* and *j* with a pair of *best-response functions*, giving optimal policies of *i*, p_i^*, as a function of the policy chosen in *j*, and *vice versa*:

$$p_i^* \equiv \text{Argmax}_{p_i} W^i(p_i, p_j) \equiv R(p_j) \quad ; \quad p_j^* \equiv \text{Argmax}_{p_j} W^j(p_j, p_i) \equiv R(p_i) \tag{2}.$$

Explicitly, country *i*'s optimum policy is obtained by maximizing $W^i(p_i, p_j)$ with respect to p_i, taking p_j as given (fixed); i.e. setting the first derivative of the welfare function with respect to p_i equal to zero and solving for p_i^* as a function of p_j (and then verifying that the second derivative is negative). Equation (2) expresses the result as the best-response function $p_i^* = R(p_j)$. The slopes of these best-response functions, the signs of which determine whether RTB or free-riding dynamics will occur, depend on the following ratios of second cross-partial derivatives:

$$\frac{\partial p_i^*}{\partial p_j} = -W^i{}_{p_i p_j} / W^i{}_{p_i p_i} \quad ; \quad \frac{\partial p_j^*}{\partial p_i} = -W^j{}_{p_j p_i} / W^j{}_{p_j p_j} \tag{3}.$$

If the government is welfare maximizing, the second order condition guarantees the denominator in (3) is negative. Therefore, the slopes will depend directly on the signs of the second cross-partial derivatives (i.e. the numerator). If $W^{i,j}_{p_i p_j} > 0$, i.e. if policies are strategic complements, we see from (3) that policy reaction-functions will slope upward. If $W^{i,j}_{p_i p_j} < 0$, policies are strategic substitutes, and the reaction functions slope downward. If the second cross-partial derivative is zero, strategic

interdependence does not materialize and the best-response functions are flat (Brueckner, 2003).

Notice that *positive* externalities induce strategic-*substitute* policy-interdependence and *negative* externalities induce strategic-*complement* policy-interdependence (and lack of externalities yields policy-independence). In the national-defense example discussed above, spending in one country induces free riding in others due to the positive security externalities (among allies) and diminishing returns of military expenditures. If ALM expenditures create positive employment externalities and exhibit diminishing returns, the same problem could arise in this context. In other words, if reducing unemployment requires increasing amounts of spending—$1000 per worker to reduce unemployment from 6% to 5%, $2000 to reduce from 5% to 4%, $4000 to reduce from 4% to 3%, etc.—and ALM spending in one country, *i*, helps reduce unemployment in another, *j*, an increase in expenditures in country *i* will reduce the marginal benefit to *j*'s of its (marginal increment of) spending, inducing lower equilibrium spending in *j*. Figure 1 illustrates this situation graphically. This strategic context also creates a first-mover disadvantage—the country that spends first will bear a larger portion of the cost of reducing unemployment—and the potential for war-of-attrition dynamics that would push the equilibrium ALM spending of both countries is even lower.

<Figure 2 About Here>

Do cross-border positive employment externalities of ALM policies exist among European countries; and if so are they sufficient to induce this kind of fiscal free-riding in ALM policy? On balance, the evidence suggests that ALM policies may have increased employment in Europe and other OECD countries (see, e.g., Martin, 2000; Martin and Grubb 2001; and European Commission, 2005). There seems to be a consensus, based on the micro-level research, that ALM program participants benefit from an increased probability of employment. Using the language of this literature, the average treatment effect among the treated is a positive increase in the probability of

employment (Heckman et al. 1999). The problem with the micro-level research is that it tells us nothing about the effects of ALM programs on non-participants, and so it is impossible to say anything based on these studies about the net employment consequences. Net effects can only be discerned from aggregate data, and there is much less agreement among scholars about the macro-level employment effects of ALM programs implemented on a large scale. Several studies find sizeable displacement rates, particularly for subsidized employment programs (e.g., Forslund and Krueger 1997, Calmfors et al., 2001, Dahlberg and Forslund 2005), while others find much more positive direct employment effects (Kraft 1998, Estevao 2003). Perhaps the strongest evidence in favor of ALM policies is found in the mediating influence these programs have on negative macroeconomic shocks. In their seminal paper on the interaction of shocks and institutions in determining employment outcomes, Blanchard and Wolfers (2000) estimate that a negative 1% employment shock at the mean sample level of ALM program expenditures reduces employment by just 0.2% at the maximum level of ALM spending.

That ALM spending would exhibit diminishing returns also seems reasonable. For instance, if labor-market training-programs increase employment by raising workers' marginal productivity, then, in any given macroeconomic conditions, some workers will just miss being employed because their marginal productivity was just below a threshold beyond which firms find hiring them profitable and some whose productivity was far below this threshold. In this case, a little spending might get the first group of workers hired, but much more spending per worker would be required to get members of the less-productive second group employed. If unemployed low- and high-productivity workers are spatially concentrated in regions that span national boundaries, this could create incentives for fiscal free riding. Below, we describe several other mechanisms by which such cross-border spillovers may arise.

A large literature examines the regional patterns of unemployment in Europe (see, e.g., Elhorst, 2003; Puga, 2002; and Overman and Puga, 2002). This research shows that, in many cases, differences in employment between bordering regions are much smaller, even if the regions lie in different countries, than the differences between more distant regions within countries. In other words, geographic proximity is more important than nationality in understanding spatial patterns of unemployment in Europe. Labor-market performance in Languedoc-Roussillion in southern France on the Mediterranean, for example, is likely to resemble much more closely that in Cataluna in northeastern Spain than that in Paris. Similarly, employment outcomes in Nord-Pas-de-Calais on the French border with Belgium correlate highly with those in Region Wallonne across the border than with employment patterns in the center of France.[4]

Consider the implications of (effective) French ALM spending for Belgium, for example. Effective French ALM policies enhance Belgian workers' abilities to obtain training in France, and return, more employable, to work in Belgium. Effective French ALM policies also enhance Belgian workers' abilities to find work in France. Effective French ALM policies also enhance the pool of workers (quantity, quality, and diversity) available to employers along the Belgian border, thereby luring employers to both sides of the border. Finally, effective French ALM policies stimulate the French economy, which, through trade, has positive effects on Belgium's economy. These and other agglomeration effects all yield positive externalities of (effective) French ALM policies to Belgian

[4] Overman and Puga (2002) attribute the growing importance of spatial proximity to changes in the demand for labor. They identify, test, and find empirical support for three sources of demand change over the period 1986-1996: the regional concentration of skilled and unskilled labor, the spatial clustering of industries, and what they call agglomeration effects (all of which are illustrated in the examples given next in the text).

workers (and citizens more generally). Of course, Belgians cannot provide political support to French policymakers in response to these spillover effects, so French policymakers ignore these spillover benefits in determining French ALM spending. Accordingly, ALM spending by national policymakers will exhibit negative interdependence, reflecting the positive externalities.

Given what we know about spatial patterns of unemployment in Europe and the employment effects of ALM policies, fiscal free-riding seems plausible. In the next section, we examine the empirical record to gauge the evidence of its existence and magnitude.

Empirical Analysis

Our sample of data includes observations on both *EU* and non-*EU* countries so that we can separate the effects of spatial interdependence that are unique to *EU* member states from more general types of interdependence. More specifically, our sample includes annual data from 1980-2003 for 21 OECD countries among which there 14 *EU* member states: Australia, Austria, Belgium, Canada, Denmark, Germany, Greece, Finland, France, Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom, and United States.[5]

The OECD ALM program expenditures dataset is subdivided into five categories: public employment services and administration, labor market training, youth measures, subsidized employment, and measures for the disabled. Figure 3 plots the over time variation in average

[5] On the temporal dimension, our sample is mostly limited to the period before the Amsterdam Treaty entered into force. This should not affect our theoretical conclusions qualitatively since the lack of EES enforcement leaves the pre-Amsterdam strategic incentives largely unchanged. Empirically, the post-Amsterdam behavior of EU member states with respect to employment policy seems to have changed little.

spending on each program type by *OECD* countries. Subsidized employment and labor market training are the two largest components of ALM spending over the entire sample period, accounting for 26.9% and 26.7% total expenditures.

Table 1, which gives the programmatic breakdown in expenditures for each country in the sample, reveals significant variation across countries. The big spenders on ALM programs per capita were Sweden ($360.88) and Denmark ($287.20) while the United States ($43.72) and Greece ($34.97) spent the least. This variation is not random. Spatial clustering is evident in the Table 1 data. For example, all four Scandinavian countries spent significantly more than the OECD average. The difference between Portugal and Spain in per capita ALM program spending over the twenty-three year period was less than $1 (2000, PPP$). Both Australia and New Zealand and Canada and the United States spent well below the OECD average. What explains the spatial patterns we observe? Are they caused by strategic policy interdependence, common shocks, or spatially correlated domestic factors?

<Figures 3 and Table 1 About Here>

To answer these questions, we estimate a linear multiparametric spatio-temporal autoregressive (STAR) lag model.[6] The model, in matrix notation, is

$$\mathbf{y} = \left[\sum_{r=1}^{R} \rho_r \mathbf{W}_r \right] \mathbf{y} + \phi \mathbf{V}\mathbf{y} + \mathbf{X}\boldsymbol{\beta} + \boldsymbol{\varepsilon}, \tag{4}$$

where $\mathbf{y}$, the dependent variable, active labor market expenditures, is an $NT \times 1$ vector of cross

[6] Case et al. (1993), Brueckner and Saavedra (2001), Fredriksson and Millimet (2002), Redoano (2003), and Allers and Elhorst (2005) among others have used spatial lag models to evaluate hypotheses about strategic policy interdependence, but none of these models have multiple spatial lags.

sections stacked by periods (i.e., the N first-period observations, then the N second-period ones, and so on to the N in the last period, T).[7] The parameter ρ_r is the r^{th} spatial autoregressive coefficient and $\mathbf{W}_r$ is an $NT \times NT$ block-diagonal spatial-weighting matrix. We can express any $\mathbf{W}$ matrix as the Kronecker product of a $T \times T$ identity matrix and an $N \times N$ weights matrix $(\mathbf{I}_T \otimes \mathbf{W}_N)$. Each $\mathbf{W}_r$ contains a unique combination of elements w_{rij} that reflect a particular type of interdependence (e.g., geographic proximity, common membership in groups, and economic interdependence). $\mathbf{W}_r\mathbf{y}$ is thus the r^{th} spatial lag; i.e., for each observation y_{it}, $\mathbf{W}_r\mathbf{y}$ gives a weighted sum of the y_{jt}, with weights, w_{rij}, given by the relative connectivity from j to i. Notice how $\mathbf{Wy}$ thus directly and straightforwardly reflects the dependence of each unit i's policy dependence on unit j's policy, exactly as in the formal model and theoretical arguments reviewed above. The parameter ϕ is the temporal autoregressive coefficient, and $\mathbf{V}$ is an $NT \times NT$ matrix with ones on the minor diagonal, i.e., at coordinates $(N+1,1), (N+2,2), \ldots, (NT, NT-N)$, and zeros elsewhere, so $\mathbf{Vy}$ is the (first-order) temporal lag. The matrix $\mathbf{X}$ contains $NT \times k$ observations on k independent variables, and $\boldsymbol{\beta}$ is a $k \times 1$ vector of coefficients on them. The final term in equation (4), $\boldsymbol{\varepsilon}$, is an $NT \times 1$ vector of disturbances, assumed to be independent and identically distributed.[8]

The conditional likelihood for the multiparametric STAR lag model is a straightforward extension of this spatial-lag likelihood. Written in $(N \times 1)$ vector notation, the STAR-model

[7] With some work, nonrectangular panels and/or missing data are manageable, and in our empirical analysis we have missing data, but we assume rectangularity and completeness for simplicity of exposition.

[8] Alternative distributions of $\boldsymbol{\varepsilon}$ are possible but add complication without illumination.

conditional-likelihood is mostly conveniently separable into parts, as seen here:

$$\text{Log } f_{\mathbf{y}_t,\mathbf{y}_{t-1},\ldots,\mathbf{y}_2|\mathbf{y}_1} = -\frac{1}{2}N(T-1)\log\left(2\pi\sigma^2\right)+(T-1)\sum_{r=1}^{R}\log\left|\mathbf{I}-\rho_r\mathbf{W}_r\right|-\frac{1}{2\sigma^2}\sum_{t=2}^{T}\boldsymbol{\varepsilon}_t'\boldsymbol{\varepsilon}_t \qquad (5)$$

where $\boldsymbol{\varepsilon}_t = \mathbf{y}_t - \sum_{r=1}^{R}\rho_r\mathbf{W}_{rN}\mathbf{y}_t - \phi\mathbf{I}_N\mathbf{y}_{t-1} - \mathbf{X}_t\boldsymbol{\beta}$.

The unconditional (exact) likelihood function, the one that retains the first time-period observations as non-predetermined, is more complicated (Elhorst 2001, 2003, 2005; Franzese and Hays 2007b). When T is small, the first observation contributes greatly to the overall likelihood, and the unconditional likelihood should be used to estimate the model. In our case, however, T is large enough that the more compact conditional likelihood is acceptable for estimation purposes.

In our regression analysis we focus on aggregate ALM program expenditures and the two largest components of ALM spending, labor market-training (LMT) expenditures and subsidized employment (SEMP) expenditures. Our dependent variables are measured per capita (2000, PPP$), and the key independent variables, which allow us to evaluate the nature of the spatial interdependence among the countries in our sample, are the *spatial lags* of ALM spending.

We calculated our spatial lags, $\mathbf{Wy}$, using three different weights matrices (R = 3). The first is a standardized *binary contiguity-weights matrix* which begins by coding w_{ij}=1 for countries i and j that share a border and w_{ij}=0 for countries that do not border. As exceptions, we code France, Belgium, and the Netherlands as contiguous with Britain, Denmark as contiguous with Sweden, and New Zealand as contiguous with Australia. The second **W** is a common *EU* membership weights matrix where w_{ij}=1 if both country i and country j are members of the *EU* and w_{ij}=0 otherwise. The final **W** has weights that reflect the historical trade (imports plus exports) shares between sample countries. More specifically, w_{ij} is the historical value (1980-2003) of trade between countries i and j as a proportion of the total value of country i's trade over the same period. For estimation, we *row*-

standardize (as commonly done in spatial-econometrics research) all three matrices by dividing each cell in a row by that row's sum.

We also include a number of domestic-level variables in the analysis. We control for a country's macroeconomic performance by adding real GDP growth and the unemployment rate to the regressions. As their economies grow, governments might provide more public goods and services (Wagner's Law of Increasing State Activity). If so, we would expect a positive coefficient estimate for the GDP per capita variable. Some alternative theories, such as Baumol's Disease, which refers to an argued decreasing relative productivity in service sectors rendering financing of public services increasingly difficult as economies develop and shift toward heavier service-sector employment, would suggest a negative relationship between GDP per capita and ALM expenditures. We would expect a positive coefficient on the unemployment rate, if rising unemployment increases the political demand for ALM expenditures.

Next we control for a number of structural features of a country's economy related to its labor markets and exposure to external shocks. The labor-market variables are union density and Iversen and Cusak's (2000) measure of deindustrialization. Because higher union density increases the influence of organized labor, we would expect it to go hand in hand with greater ALM spending. With respect to deindustrialization, Iversen and Cusak (2000) argued that workers cross significant skill barriers when they move out of manufacturing and agricultural and into services. Thus, we would expect deindustrialization to induce higher levels of LMT expenditures also. Many scholars have argued that exposure to the international economy leads to increased government spending, especially on programs that help workers adjust to external shocks (e.g. Ruggie, 1982; Cameron, 1978; Katzenstein, 1985; Rodrik, 1997; Hays et al., 2005). Others argue that increased international exposure produces competitive pressures that lead to smaller governments. We use trade openness

as our measures of exposure.

We also consider several political variables: the working age population as a percentage of the total population, the percentage of cabinet seats held by left and Christian Democratic parties, the percentage of general-election votes won by left-libertarian parties. Working-age voters are the natural constituency for ALM programs. For retired voters, the benefits are indirect at best. Therefore, the political pressure for ALM programs should be higher when the percentage of working age individuals is high. Social Democratic, Christian Democratic, and Left-Libertarian parties have all been identified as key supporters of active social-policies, albeit of different precise natures (see, e.g., Garrett, 1998; Swank, 2002; and Kitschelt, 1994). It is also possible that the more traditional left- right ideological dimension is important when it comes to ALM programs.

Table 2 presents our results. We estimate two regressions, one spatial and the other non-spatial, for each of the three dependent variables in our dataset. The first and second columns of results provide estimates for our non-spatial and spatial ALM models respectively, which include time-lags of the dependent variable plus country and year dummies to account for temporal dependence and unit- and period-heterogeneity. The period dummies provide a flexible way to model common OECD-wide trends and/or common (random) shocks in ALM expenditures. As we show elsewhere (Franzese and Hays, 2005), by far the most important issue methodologically in obtaining good estimates of the strength of interdependence, i.e. of ρ, is to model well any alternative mechanisms by which the outcomes might correlate spatially, such as common exogenous shocks (e.g., global economic conditions) or correlated domestic factors. From that perspective, the country and year dummies serve as a powerfully conservative way to account for almost any sort of outside shock or spatially correlated domestic factor. Failure to account for such alternative mechanisms will bias spatial-lag coefficient estimates, usually in a positive direction

(Franzese and Hays, 2007a).

<Table 2 About Here>

The first two columns of estimates suggest very different explanations for the spatio-temporal patterns in total ALM program expenditures. The non-spatial model points to domestic labor market structures, union density and deindustrialization, while the spatial model indicates that domestic macroeconomic conditions, exposure to international trade, and percentage of the population between ages 15-64 are important factors. From the two likelihoods it is clear that there is significant spatial interdependence in the ALM data, and, consequently, the coefficient estimates in the non-spatial model almost certainly suffer from omitted variable bias (Franzese and Hays 2007a). Therefore, we focus on the spatial regression. In this model, the estimated GDP coefficient is positive and statistically significant, favoring Wagner over Baumol. The unemployment-rate coefficient is also positively signed and statistically significant supporting the demand-spurring more than the cost-constraint argument. The coefficient on trade is negative, which supports the argument that competitive pressures lead to less government spending. The coefficient on working age population is positive as expected. With respect to the interdependence variables, each of the coefficients on the spatial lags is statistically significant. The coefficient on the borders lag is positive while the coefficients on the *EU* membership and trade shares lags are negative. While it is difficult to interpret the nature of the interdependence implied by these estimates without calculating the multipliers, which we do below, these results seem to support the externalities argument—economies that are highly interdependent through trade exhibit more negative spatial interdependence in ALM program expenditures—and the negative coefficient on the EU spatial lag is likely inconsistent with the idea that the EU is facilitating employment policy coordination.

The coefficients on the domestic-level variables in the LMT and SEMP models are much

more stable across the spatial and non-spatial specifications than is the case for the ALM model, although the variables that matter most for LMT expenditures are very different from the variables that matter for SEMP expenditures. This suggests that it may be inappropriate to use the highly aggregated total ALM program expenditures as a dependent variable. The causal relationships may differ too much across subcategories for the pooled analysis to be very illuminating. With respect to LMT expenditures the demand spurring arguments about high unemployment and working age populations seem to be true. Partisan politics seems to matter in the more traditional way. Left governments spend more on LMT expenditures while more centrist or center-right Christian Democratic governments spend less. As for SEMP spending, union density is the single most important domestic factor. Higher union density leads to higher levels of subsidized employment. With respect to the interdependence variables, in both the LMT and SEMP models, all three coefficients on the spatial lags are statistically significant and have the same signs as previously.

We are satisfied, then, that EU members' ALM policymaking exhibits statistically significant interdependence, but what do these statistically significant results tell us of the sign and substantive magnitude of this interdependence, i.e. of the effects individual EU countries' ALM policies have on their neighbors' policymakers? To answer this question we need to calculate the so-called spatial multiplier, which is given in the following reduced form of equation (4):

$$\begin{aligned} &\mathbf{y_t} = \sum_{r=1}^{R} \rho_r \mathbf{W}_r \mathbf{y_t} + \phi \mathbf{y_{t-1}} + \mathbf{X_t}\boldsymbol{\beta} + \boldsymbol{\varepsilon_t} \Rightarrow \\ &\mathbf{y_t}\left(\mathbf{I_N} - \rho_1 \mathbf{W_1} \ldots - \rho_R \mathbf{W_R}\right) = \phi \mathbf{y_{t-1}} + \mathbf{X_t}\boldsymbol{\beta} + \boldsymbol{\varepsilon_t} \Rightarrow \\ &\mathbf{y_t} = \left(\mathbf{I_N} - \rho_1 \mathbf{W_1} \ldots - \rho_R \mathbf{W_R}\right)^{-1}\left(\phi \mathbf{y_{t-1}} + \mathbf{X_t}\boldsymbol{\beta} + \boldsymbol{\varepsilon_t}\right) \end{aligned} \tag{6}$$

The spatial multiplier, $\left(\mathbf{I_N} - \rho_1 \mathbf{W_1} \ldots - \rho_R \mathbf{W_R}\right)^{-1}$, captures the feedback from, say, Belgium on France and other countries, and back from France and those others on Belgium, and so on recursively. The

immediate time-*t* effect on the vector of policy-outcomes in the 21 countries, $\mathbf{y_t}$, including that recursive feedback, can now be calculated with this spatial multiplier by considering certain counter-factual shocks to the rest of the right-hand side of (6). To find the long-run, steady-state, equilibrium (cumulative) level of $\mathbf{y}$, simply set $\mathbf{y}_{t-1}$ equal to $\mathbf{y}_t$ in (6) and solve. This gives the steady-state effect, assuming stationarity and that the exogenous RHS terms, $\mathbf{X}$ and $\boldsymbol{\varepsilon}$, remain permanently fixed to their counterfactual levels:

$$\begin{aligned}\mathbf{y_t} &= \left(\mathbf{I_N} - \rho_1\mathbf{W_1} \ldots - \rho_R\mathbf{W_R} - \phi\mathbf{I_N}\right)^{-1}\left(\mathbf{X_t}\boldsymbol{\beta} + \boldsymbol{\varepsilon_t}\right) \\ &= \mathbf{S} \times \left(\mathbf{X_t}\boldsymbol{\beta} + \boldsymbol{\varepsilon_t}\right)\end{aligned} \tag{7}$$

To get standard-error estimates for these steady-state estimates, we use the delta method. I.e., give a first-order Taylor-series linear-approximation to nonlinear (7) around the estimated parameter-values and determine the asymptotic variance of that linear approximation. To do this, begin by denoting the i^{th} column of $\mathbf{S}$ as $\mathbf{s}_i$ and its estimate as $\hat{\mathbf{s}}_i$. The steady-state spatial effects of a one-unit increase in explanatory variable *k* in country *i* are then $\mathbf{s}_i\beta_k$ giving delta-method standard-errors of

$$\mathbf{V}\left(\hat{\mathbf{s}}_i\hat{\beta}_k\right) = \left[\frac{\partial \hat{\mathbf{s}}_i\hat{\beta}_k}{\partial \hat{\boldsymbol{\theta}}}\right]\mathbf{V}\left(\hat{\boldsymbol{\theta}}\right)\left[\frac{\partial \hat{\mathbf{s}}_i\hat{\beta}_k}{\partial \hat{\boldsymbol{\theta}}}\right]' \tag{8},$$

where $\hat{\boldsymbol{\theta}} = \left[\hat{\rho}_1 \cdots \hat{\rho}_R \quad \hat{\phi} \quad \hat{\beta}_k\right]$, $\left[\frac{\partial \hat{\mathbf{s}}_i\hat{\beta}_k}{\partial \hat{\boldsymbol{\theta}}}\right] \equiv \left[\frac{\partial \hat{\mathbf{s}}_i\hat{\beta}_k}{\partial \hat{\rho}_1} \cdots \frac{\partial \hat{\mathbf{s}}_i\hat{\beta}_k}{\partial \hat{\rho}_R} \quad \frac{\partial \hat{\mathbf{s}}_i\hat{\beta}_k}{\partial \hat{\phi}} \quad \hat{\mathbf{s}}_i\right]$, and the vectors $\left[\frac{\partial \hat{\mathbf{s}}_i\hat{\beta}_k}{\partial \hat{\rho}_r}\right]$ and $\left[\frac{\partial \hat{\mathbf{s}}_i\hat{\beta}_k}{\partial \hat{\phi}}\right]$ are the i^{th} columns of $\hat{\beta}_k\hat{\mathbf{S}}\mathbf{W}_r\hat{\mathbf{S}}$ and $\hat{\beta}_k\hat{\mathbf{S}}\hat{\mathbf{S}}$ respectively.

Table 3 illustrates calculations of (7) and (8) for the *EU* member countries in our sample using the column (4) estimates from Table 2. The first number in each cell is the steady-steady effect of a one percent increase in the column country's unemployment rate on the row country's logged

LMT expenditures $(\times 100)$. The number in parentheses is the standard error of this spatial-effect. So, for example, a permanent 1% increase in the German unemployment rate increases German per capita spending on LMT by an estimate 23.8% in the long run, and a permanent increase in Germany's unemployment rate reduces per capita LMT expenditures in Austria by 5.2% and increases LMT expenditures in Denmark by 1.4%. Again, this effect assumes a *permanent* increase in the German unemployment rate and would take many years to materialize. In this sense, the calculation likely represents an upper bound for our spatial effects.

<Table 3 About Here>

Discussion

In Franzese and Hays (2006), we estimated single lag STAR models using binary contiguity (borders) weights matrices and a sample of European countries over the period 1987-1998. Our estimated coefficients on the spatial lags in those regressions were negatively signed and statistically significant, and we argued that these results suggested that there was ALM policy free-riding in the European Union. At first glance, those results might seem inconsistent with the empirical analysis in this paper, given that our estimated coefficients on the borders spatial lags in Table 2 are positive. However, in the earlier research, territorial contiguity was a proxy, a particularly good one given our sample of European countries, for the kinds of economic interdependence—labor and capital mobility and trade in goods and services—that generate ALM policy externalities. In this paper, we measure this interdependence much more directly and accurately using trade-shares and *EU*-weighted spatial lags, and with our new expanded sample, territorial contiguity is not as good a proxy for the types of economic interdependence that matter for policy externalities. The positive relationship between ALM expenditures and the borders spatial lag probably reflect regional shocks,

but it could be explained by policy learning or emulation (Simmons and Elkins 2004). In the end, our conclusion is largely the same as before: there is evidence of policy free-riding, and, as a result, the *EU* is likely underspending on ALM programs.

Our empirical model is not equipped to estimate the extent to which EU member states are misallocating resources when it comes to ALM program expenditures, but we believe a counterfactual comparison can highlight the potential significance of the problem. Based on the estimates from column (4), in a counterfactual autarkic world, the long-run response to a permanent 1% increase in the unemployment rate is to increase per capita LMT expenditures by about 22.6% $\left(\frac{.072}{1-.681}\right) = .226 \approx 22.6\%$. This is the effect of unemployment net of any spatial feedback. Looking at the numbers along the diagonal of Table 3, which are calculated using the spatio-temporal multiplier in (7), one sees that the country responses, under interdependence, to the same shock are not much higher than that.

Take Germany, for example. Under interdependence, the German response to a permanent 1% increase in the unemployment rate is to increase per capita LMT expenditures by about 23.8%, which is only 1.2% higher than what we estimate Germany would do under autarky. In response to Germany's increase in LMT expenditures, however, most of the *EU* member states decrease theirs (see the 6th column, marked DEU, of Table 3), which is quite different from what *they* would do in isolation (i.e., they would not respond). For example, France, Italy, Spain, and the UK decrease their expenditures by 1.7%, 4.5%, 2.8%, and 2.3% respectively. A small increase in German LMT expenditures seems to generate large benefits around the *EU*, which, in turn, leads other member states to cut their expenditures. From an *EU* perspective, the optimal German response to a 1% increase in Germany's unemployment rate would be to increase LMT expenditures to the point where the marginal benefit to all *EU* member states is equal to the marginal cost. Without making

very strong assumptions about the optimality of policymaking at the country-level, we cannot say anything definite about the aggregate welfare consequences of these responses, but it seems unlikely that the modest increase in German LMT expenditures under interdependence compared with autarky, especially given the relatively large reactions of the other *EU* member states, equates the marginal costs of these programs with the marginal benefit to the *EU* as a whole.

What are the policy implications? We believe the EU may have to play a stronger role enforcing the coordination of its member states' employment policies if it is to achieve its EES objectives. Offering precise and definitive recommendations about what should be done is beyond this paper's scope, but the results here do demand one option receive serious consideration: strengthening the performance-review system. What most clearly distinguishes EU efforts to coordinate on policies affecting macroeconomic stability (The Stability and Growth Pact) from those affecting employment (The European Employment Strategy) is that the latter efforts lack an effective enforcement mechanism to encourage governments to implement the policies they commit to in their National Action Plans. We suspect this contributes to the under-provision of ALM policies.

Under the Performance Reserve System adopted in Regulation (EC) No 1260/1999, 4% of the structural funds allocated to member states are kept in reserve. The Commission monitors program implementation and performance and then disperses the reserves after a successful midterm review. While the enforcement-mechanism design seems reasonable, its magnitude, the proportion of funds, is far too small to alter significantly the behavior of member states. One obvious reform to strengthen the system would be to increase both the percentages held in reserve and the number of installments paid to recipient countries, say, annual reviews and payments. This would make the mechanism more similar to the IMF system of credit tranches based on conditionality and phasing.

Additionally, the allocation of performance reserves, which are currently project specific,

could be linked to general compliance with EES commitments. In other words, the Commission could withhold reserve funds from successful EES/Structural Fund projects for the failure of other EES programs or commitments that are not financed with EU Structural Funds. These changes might be politically unpopular and would undoubtedly make Commission evaluations and decisions much more controversial than they are today, but they would increase the incentives countries have to follow through on their action plans.

Conclusion

A large and growing literature on regional patterns of unemployment in Europe suggests labor-market outcomes are spatially clustered across the continent without tremendous regard for national borders. The unemployment rate in one region affects unemployment rates in its (regional) neighbors, and whether these regions are separated by national boundaries does not matter much for the degree to which these labor-market experiences are shared. Moreover, on balance, the available evidence shows that ALM programs are effective at lowering unemployment or, at least, reducing the employment effects of negative macroeconomic shocks. In theory, these conditions create strategic incentives for national governments to free ride on the ALM policies of neighboring states. We provide evidence via estimation of multiparametric STAR lag models that such strategic interaction among European governments in ALM policymaking does in fact exist, that these national best-response functions are mostly downward sloping, and that these effects are of substantively appreciable magnitude. Thus, we conclude that the EU should play a more active role in enforcing the policy commitments governments make throughout the EES process.

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Table 1. Disaggregated Active Labor Market Expenditures per Capita (2000 PPP$)

	AUS	AUT	BEL	CAN	DEN	FIN	FRA	DEU	GRE	IRE	ITA
Employment service and administration	28.85 (37.54)	33.06 (29.68)	41.35 (15.69)	38.44 (39.1)	20.48 (7.13)	22.47 (10.46)	25.98 (14.39)	46.59 (19.12)	10.77 (30.8)	32.36 (15.19)	0 (0)
Labour market training	10.05 (13.08)	41.58 (37.32)	43.99 (16.69)	46.18 (46.98)	117.32 (40.85)	67 (31.19)	49.74 (27.56)	71.61 (29.38)	7.84 (22.41)	43.26 (20.3)	7.14 (8.02)
Youth measures	8.36 (10.88)	4.63 (4.16)	3.41 (1.29)	3.92 (3.99)	24.57 (8.55)	17.65 (8.22)	42.47 (23.53)	12.83 (5.26)	6.8 (19.45)	37.11 (17.42)	31.47 (35.38)
Subsidized employment	21.51 (27.98)	18.62 (16.71)	146.9 (55.73)	7.07 (7.19)	69.26 (24.12)	87.79 (40.87)	49.75 (27.56)	65.7 (26.96)	8.28 (23.67)	87.35 (41)	24.68 (27.74)
Employment measures for disabled	8.08 (10.52)	13.51 (12.13)	27.94 (10.6)	2.7 (2.75)	55.58 (19.35)	19.12 (8.9)	12.56 (6.96)	46.95 (19.27)	1.28 (3.67)	13 (6.1)	0 (0)
Total ALMP	76.87	111.41	263.61	98.3	287.2	214.81	180.51	243.72	34.97	213.08	88.97

	JPN	NTH	NWZ	NOR	PRT	ESP	SWE	CHE	GBR	USA	OECD
Employment service and administration	47.65 (68.44)	24.48 (11.58)	17.46 (15.85)	33.36 (15.91)	14.93 (17.04)	12.97 (14.69)	44.98 (12.46)	20.81 (22.57)	36.4 (37.71)	12.1 (27.67)	26.76 (17.34)
Labour market training	7.48 (10.75)	48.72 (23.04)	39.62 (35.96)	36.28 (17.31)	26.47 (30.22)	19.23 (21.78)	101.86 (28.22)	17.01 (18.45)	15.5 (16.06)	13.48 (30.82)	41.12 (26.65)
Youth measures	0.24 (0.34)	11.01 (5.21)	10.44 (9.48)	11.53 (5.5)	26.48 (30.23)	7.73 (8.76)	14.32 (3.97)	0.55 (0.59)	28.34 (29.36)	6.68 (15.29)	14.84 (9.61)
Subsidized employment	12.73 (18.28)	16.69 (7.89)	34.73 (31.53)	23.87 (11.39)	14.77 (16.86)	45.7 (51.77)	91.75 (25.42)	20.05 (21.74)	11.68 (12.1)	2.24 (5.13)	41.44 (26.86)
Employment measures for disabled	1.53 (2.19)	110.57 (52.28)	7.91 (7.18)	104.59 (49.89)	4.95 (5.65)	2.64 (2.99)	107.98 (29.92)	33.79 (36.65)	4.61 (4.77)	9.22 (21.09)	29.29 (18.98)
Total ALMP	69.62	211.47	110.15	209.63	87.59	88.28	360.88	92.22	96.52	43.72	154.3

Note: Parentheses contain spending as a percentage of total spending on active labor market programs.

Table 2. Active Labor Market Program Expenditures in OECD Countries, 1981-2002

	Total ALM		LMT		SEMP	
	(1)	(2)	(3)	(4)	(5)	(6)
Temporal Lag	0.796***	0.717***	0.701***	0.681***	0.799***	0.753***
	(.030)	(.027)	(.030)	(.030)	(.035)	(.031)
Year	0.016**	0.114***	0.025**	0.043***	-.020	0.056***
	(.008)	(.007)	(.011)	(.011)	(.013)	(.011)
Real GDP Growth Rate	0.008	0.021**	0.008	0.012	0.007	0.018
	(.01)	(.009)	(.014)	(.014)	(.018)	(.016)
Standardized Unem. Rate	-0.000	0.022**	0.071***	0.072***	-0.001	-0.001
	(.011)	(.010)	(.015)	(.014)	(.019)	(.010)
Union Density	0.007*	0.005	0.000	0.006	0.014**	0.019***
	(.004)	(.003)	(.005)	(.005)	(.007)	(.006)
Deindustrialization	0.019*	0.006	-0.019	-0.024*	0.028	0.016
	(.011)	(.010)	(.015)	(.014)	(.011)	(.017)
Trade Openness	-0.001	-0.007***	-0.005	-0.006*	-0.001	-0.007
	(.003)	(.003)	(.004)	(.004)	(.005)	(.004)
Working Age Population	0.003	0.080***	0.174***	0.190***	0.014	0.049
	(.022)	(.020)	(.032)	(.028)	(.022)	(.033)
Left Cabinet Seats	-0.000	0.000	0.002**	0.002**	0.001	0.001
	(.001)	(.000)	(.001)	(.001)	(.001)	(.001)
Christian Dem. Cabinet Seats	-0.000	-0.003	-0.007***	-0.007***	0.000	-0.002
	(.001)	(.001)	(.002)	(.002)	(.002)	(.002)
Left Libertarian Vote	-0.009	-0.000	0.002	0.007	0.010	0.012
	(.009)	(.008)	(.012)	(.011)	(.015)	(.013)
Spatial Weights:						
Borders		0.010***		0.0132***		0.179***
		(.000)		(.008)		(.008)
European Union Membership		-0.03***		-0.046***		-0.075***
		(.000)		(.001)		(.014)
Trade Shares		-0.743***		-0.223***		-0.908***
		(.000)		(.022)		(.003)
σ	0.281	0.249	0.391	0.352	0.486	0.425
		(0.009)		(0.013)		(0.016)
Log-Likelihood	-28.612	-10.016	-150.396	-139.986	-230.819	-210.954

Note: The dependent variable is expenditures per capita measured in constant 2000 PPP$. All regressions include fixed period and unit effects; those coefficient estimates suppressed to conserve space. All the spatial weights matrices are row-standardized. The parentheses contain standard errors. *** Significant at the .01 level; ** Significant at the .05 level; * Significant at the .10 level.

Table 3. Steady-State Spatio-Temporal Effects of Unemployment on Logged Training Expenditures per Capita in the EU (2000, PPP$)

	AUT	BEL	DEN	FIN	FRA	DEU	GRE	IRE	ITA	NTH	PRT	ESP	SWE	GBR
AUT	23.1	-0.8	-0.6	-0.3	-0.7	-5.2	-0.2	-0.2	2	-0.7	-0.3	-0.5	-0.5	-0.6
	(4.46)	(0.2)	(0.18)	(0.07)	(0.13)	(1.56)	(0.05)	(0.05)	(0.57)	(0.18)	(0.07)	(0.12)	(0.11)	(0.15)
BEL	-0.5	23	-0.4	-0.4	-0.7	-0.7	-0.2	-0.4	-0.9	-0.4	-0.4	-0.7	-0.6	0.8
	(0.12)	(4.42)	(0.09)	(0.09)	(0.31)	(0.27)	(0.06)	(0.1)	(0.22)	(0.3)	(0.11)	(0.18)	(0.15)	(0.27)
DEN	-0.4	-0.8	23.2	-0.7	-1.2	1.4	-0.3	-0.5	-0.8	-1.2	-0.4	-0.5	2.3	-2
	(0.11)	(0.2)	(4.47)	(0.19)	(0.28)	(0.5)	(0.06)	(0.12)	(0.2)	(0.29)	(0.09)	(0.13)	(0.64)	(0.52)
FIN	-0.6	-1	-0.9	24.1	-1.3	-3.1	-0.2	-0.4	-0.6	-1.3	-0.3	-0.5	2.9	-2.7
	(0.15)	(0.28)	(0.26)	(4.71)	(0.33)	(0.79)	(0.05)	(0.12)	(0.12)	(0.34)	(0.08)	(0.11)	(0.89)	(0.76)
FRA	-0.4	-0.3	-0.4	-0.4	23.2	-1.7	-0.3	-0.4	-0.4	-1.1	-0.4	0.1	-0.5	-0.1
	(0.09)	(0.17)	(0.11)	(0.09)	(4.47)	(0.46)	(0.06)	(0.08)	(0.19)	(0.26)	(0.09)	(0.12)	(0.13)	(0.11)
DEU	0.3	0.1	1.1	-0.5	-1	23.8	-0.3	-0.5	-1.6	-0.2	-0.5	-0.9	-0.6	-1.6
	(0.15)	(0.12)	(0.29)	(0.14)	(0.31)	(4.65)	(0.07)	(0.12)	(0.41)	(0.16)	(0.13)	(0.23)	(0.14)	(0.41)
GRE	-0.8	-0.7	-0.5	-0.2	-1.5	-2.7	22.9	-0.2	-2.9	-1	-0.2	-0.5	-0.3	-1
	(0.22)	(0.16)	(0.11)	(0.05)	(0.36)	(0.62)	(4.41)	(0.04)	(0.74)	(0.23)	(0.04)	(0.09)	(0.07)	(0.21)
IRE	-0.4	-0.7	-0.5	-0.4	-1	-1.6	-0.2	23.1	-0.6	-0.6	-0.4	-0.6	-0.6	4.3
	(0.11)	(0.18)	(0.13)	(0.11)	(0.23)	(0.38)	(0.06)	(4.45)	(0.14)	(0.16)	(0.1)	(0.16)	(0.16)	(1.29)
ITA	2.7	-1.2	-0.6	-0.3	0.4	-4.5	-0.4	-0.3	23.8	-1.1	-0.5	-1.1	-0.4	-1.3
	(0.72)	(0.31)	(0.17)	(0.06)	(0.28)	(1.24)	(0.1)	(0.08)	(4.64)	(0.28)	(0.13)	(0.28)	(0.1)	(0.32)
NTH	-0.6	0.8	-0.5	-0.5	-1.7	-1.2	-0.3	-0.2	-0.9	23.2	-0.4	-0.7	-0.7	1.7
	(0.15)	(0.36)	(0.13)	(0.12)	(0.43)	(0.48)	(0.06)	(0.05)	(0.23)	(4.47)	(0.11)	(0.18)	(0.19)	(0.49)
PRT	-0.6	-1.1	-0.5	-0.3	-2	-3	-0.2	-0.4	-1.5	-1.1	23.9	6.5	-0.5	-2
	(0.18)	(0.3)	(0.14)	(0.08)	(0.53)	(0.74)	(0.04)	(0.09)	(0.4)	(0.28)	(4.67)	(1.75)	(0.13)	(0.52)
ESP	-0.7	-1	-0.5	-0.3	0.9	-2.8	-0.3	-0.4	-2	-1	3.8	24.1	-0.5	-1.8
	(0.21)	(0.26)	(0.12)	(0.08)	(0.42)	(0.68)	(0.06)	(0.11)	(0.52)	(0.26)	(1)	(4.72)	(0.11)	(0.47)
SWE	-0.6	-1.2	1.5	2.4	-1.2	-2.6	-0.2	-0.5	-0.6	-1.4	-0.3	-0.5	23.7	-2.5
	(0.15)	(0.32)	(0.41)	(0.7)	(0.31)	(0.65)	(0.05)	(0.12)	(0.12)	(0.37)	(0.08)	(0.11)	(4.6)	(0.68)
GBR	-0.6	1.4	-0.7	-0.6	0.4	-2.3	-0.3	1.3	-1	0.9	-0.5	-0.9	-0.9	23.9
	(0.16)	(0.39)	(0.17)	(0.17)	(0.19)	(0.56)	(0.06)	(0.36)	(0.23)	(0.3)	(0.14)	(0.23)	(0.24)	(4.66)

Note: The cells report the steady-state spatio-temporal effects of a 1% increase in the column country's rate of unemployment on its own labor training expenditures (logged $\times$ 100) and the expenditures of its EU counterparts (identified by the rows) based on the model (4) estimates. Parentheses contain standard errors.

Figure 1. Aggregate Active Labor Market Expenditures in the *EU*, 1980-2003

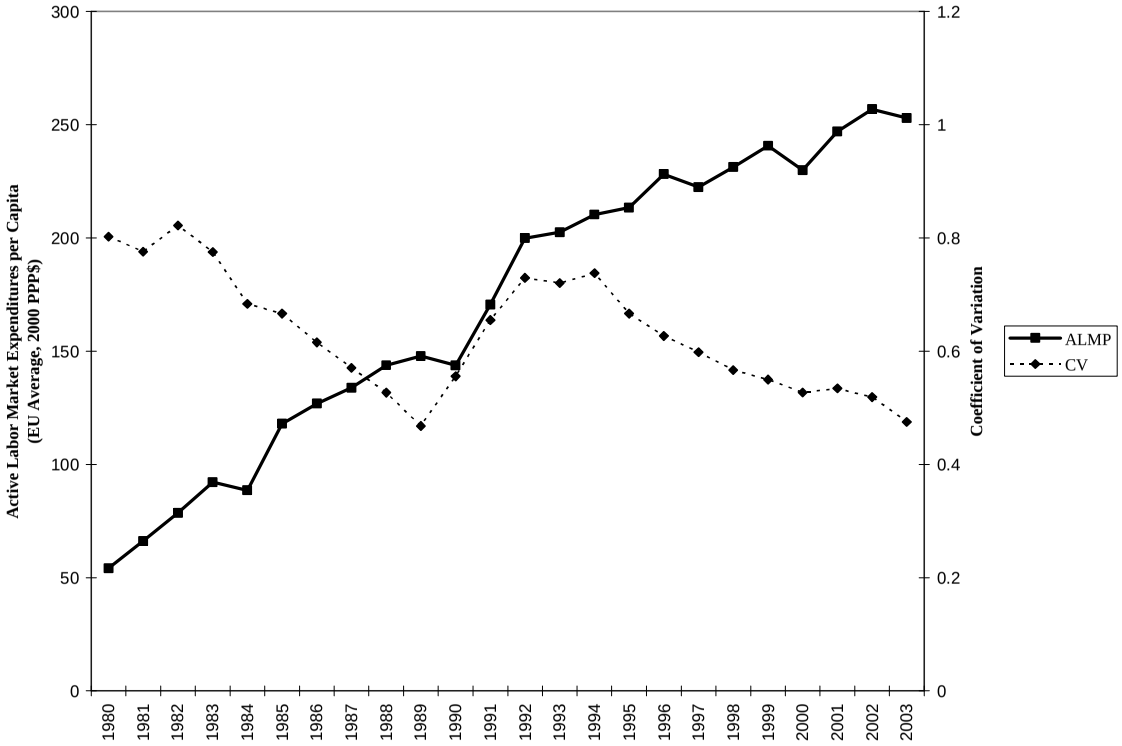

Figure 2. Best Response Functions: Strategic Substitutes

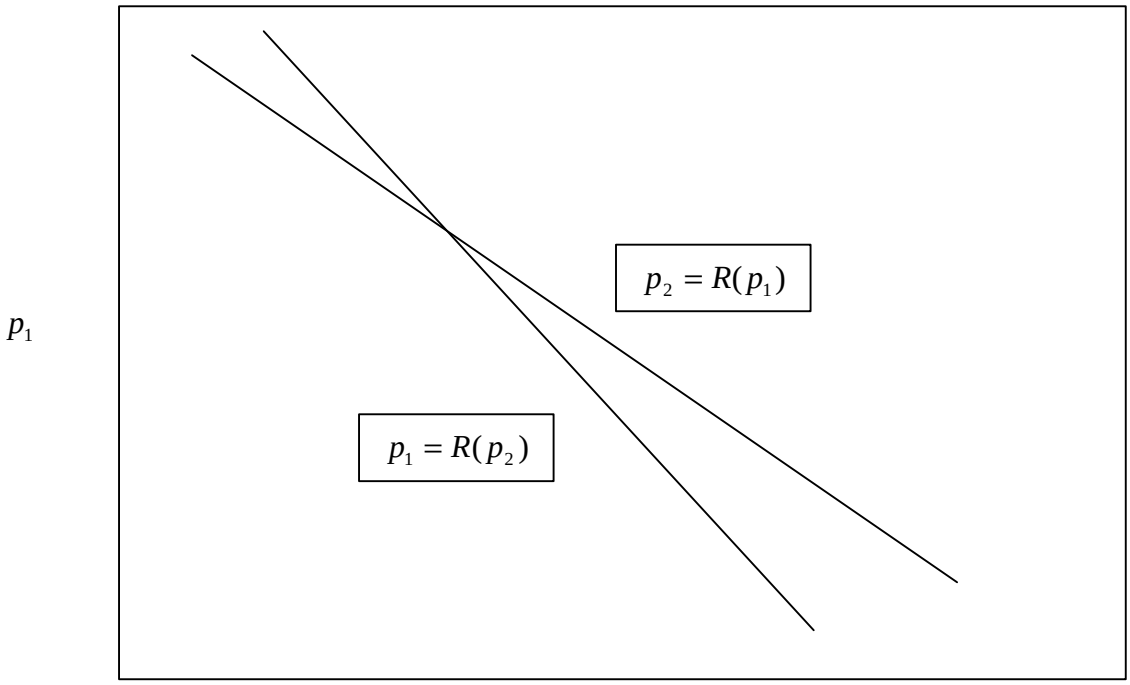

Figure 3. Disaggregated Active Labor Market Expenditures in the *OECD*, 1980-2003