

# Knowledge, Coordination, and Fiscal Federalism: An Organizational Perspective

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# **Knowledge, Coordination, and Fiscal Federalism: An Organizational Perspective**

## **Abstract**

This essay brings fiscal federalism theory into contact with the knowledge perspective to economic organization. The question addressed is: can a central government be justified in the context of fiscal federalism on grounds of economic organization? We point out that if one looks at the organizational problem of the vertical structure of the public sector from the standpoint of knowledge asymmetry the question of a central government in a federation becomes primarily a story of coordination of dispersed and specific knowledge.

## **Key Words**

Federalism, economic organization, information asymmetry, knowledge asymmetry, coordination, EU.

## **JEL Codes**

D20, D23, E61, E62, H11, L22.

## **1. Introduction.**

Much of public finance and public choice is concerned with the division of competences among and within different public institutions in the effort to render the machinery of state organization less wasteful (cf. e.g. Inman and Rubinfeld 1997a,b). So much has this organizational concern been central that the problem of fiscal federalism (Hayek 1948, Ch. 12; Tiebout 1956; Tullock 1969; Oates 1972) has been recently equated with the problem of the vertical structure of the public sector (Oates 1999).

Some scholars started to endogenize modern contributions on the economics of organization – such as principal-agent (e.g. Alchian and Demsetz 1972), transaction cost (Williamson, e.g., 1985), and property right (e.g. Grossman and Hart 1986) theories – into the theoretical framework of fiscal federalism (e.g. Weingast 1995; Crémer et al. 1996; Seabright 1996; Saiegh and Tommasi 2000; Iaryczower et al. 2001).<sup>1</sup> The distilled essence of these recent studies fusing federal and organizational theories is that the three putative roles of allocation, distribution, and stabilization ascribed to the state (Musgrave 1959) are not performed by a mysterious production function (Qian and Weingast 1997).

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<sup>1</sup> Related studies include: Persson and Tabellini (1996a,b) and Alesina and Perotti (1998).

The purpose of this essay is to introduce some of the insights of the knowledge-based approach to economic organization into the theoretical framework of federalism.<sup>2</sup> The question addressed is: can a central government be justified on grounds of economic organization in the context of federalism? We point out that if one looks at the organizational problem of the vertical structure of the public sector from the standpoint, not of information asymmetry, but of knowledge asymmetry, the question of a central government in a federation becomes primarily a story of coordination of dispersed and specific knowledge.

The essay seems particularly timely if one considers the tendency toward an increased European Union (EU) centralization. The recent enlargement of the EU that sees the inclusion of 10 additional countries by 2004 is in fact accompanied by strong intentions to have greater centralization.<sup>3</sup> Furthermore, in the draft of the EU Constitutional Treaty –

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<sup>2</sup> The knowledge-based theory of organization is also known as routine, competence or capability perspective (e.g. Nelson and Winter 1982; Langlois 1984; Dosi and Marengo 1994; Teece and Pisano 1994; and Langlois and Foss 1999).

<sup>3</sup> The Copenhagen European Council established that on 1 May 2004 the EU will be enlarged by the entry of ten new countries: the ones from the ex-communist bloc: Hungary, Slovenia, the Czech Republic, Slovakia, Lithuania, Estonia, Latvia and Poland; plus Malta and Cyprus.

recently made public by the President of the EU Convention, Valéry Giscard d'Estaing – this tendency toward centralization permeates plainly.

## **2. Information Asymmetry.**

For analytical purposes, we may partition the theoretical approaches to problems of economic organization into two broad categories: information asymmetry and knowledge asymmetry. Let us consider each in turn.

Information asymmetry entails that parties sharing an economic effort also ultimately share the same information set. The problem arises in trying to figure out which, of a series of possible events within the shared information set, will manifest; and the problem is usually solved by attaching a probability distribution, subjective or objective, to the likelihood of one event or another.

The clearest illustration of this is probably the principal-agent problem. Consider the case of moral hazard. The real problem in this case is that of the principal. The principal must in fact design a second-best incentive mechanism that induces the agent to pick the action (or effort) that maximizes the expected utilities of both. The solution to such problem is a contract for incentive alignment that is a function of observed output. The solution is possible because principal and agent share the random variable and the

density function associated with observable but stochastic production (e.g. Holmström and Tirole 1989, p. 89).

If we translate this logic to the organization of fiscal federalism, the conclusion is straightforward. One could justify centralized government on organizational grounds merely on the basis that it serves the same purpose of a principal in a principal-agent scenario. That is, the central government may be interpreted as a principal that keeps the incentives of federated states (agents) aligned through some incentive mechanism.

For concreteness, think for example about the Stability and Growth Pact (SGP) of the EU. The SGP is mostly in the nature of a fiscal constitution. As such, we may surely liken it to an incentive contract. The primary motivation for the SGP is in fact to guarantee stability in prices as well as budgetary discipline after the introduction of the common currency. To such end, it establishes that the members of the Monetary Union keep the deficit-GDP ratio below 3 percent and the public debt-GDP below 60 percent. The responsibility to keep these figures aligned rests on the member states. If the states fail to do so they will face sanction on behalf of the EU Council.

### **3. Knowledge Asymmetry.**

What would happen, however, if the parties were *not* involved in a known-and-agreed-upon optimization problem? Or, to phrase the question more

specifically, is information asymmetry a necessary and sufficient condition to explain a centralized government from an economics of organization perspective?

It is in attempting to answer these questions that the insights of the knowledge asymmetry approach to organization can be of some aid. In this less-known literature comparative-institutional analysis is fundamental for issues of coordination of different, specific knowledge.<sup>4</sup> Different governance structures, public or private, exist primarily to internalize externalities concerning production and exchange; or, in short, problems of economic organization or knowledge. More precisely, different governance structures are seen to exist not only for the internalization of physical externalities, such as nuisance or pollution, but also, to put it in transaction-cost terms, for the internalization of informational or public-good externalities.<sup>5</sup> Moreover, different structures not only differ in their ability to internalize externalities, but also differ in their ability to create externalities in the form of productive

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<sup>4</sup> This literature sees not only Coase (1937) as seminal, but also, *inter alia*, Hayek (1948, Chs. 2, 4, and 5), Penrose (1959), and Richardson (1972).

<sup>5</sup> See among others: Coase (1960); Dahlman (1979); Nelson and Winter (1982); Langlois (1984); Dosi and Marengo (1994); Teece and Pisano (1994); and Langlois and Foss (1999). Relatedly, cf. also Jensen and Meckling (1992) and Ghoshal et al. (1995).

contexts not otherwise achievable (cf. e.g. Egidi 1992; Ghoshal et al. 1995, esp. pp. 756-8).

The difference between the different organizational approaches (i.e., information versus knowledge) can be easily shown by again making reference to our principal-agent illustration. The principal-agent scenario, we hinted, allows the categorization of possible states of nature: fire/no fire, win/loss, shirking/no shirking, respect of the SGP parameters/no respect of the SGP parameters, etc.

For instance, even though there may be asymmetric information regarding the effort in input, one assumes that all concerned parties know that output could be a function of only, for simplicity, two states: maximum ( $a_1$ ) or minimum ( $a_2$ ) effort. Even if the relationship  $a_1 > a_2$  may in an immediate post-contractual phase be fully known only to the agent, under information asymmetry the principal can always attach, as noted, some probability to the likelihood of each action.

Under knowledge asymmetry we are conversely not able to classify, e.g., a performance according to probability distributions, for we are uncertain not only about, e.g., which action will be exercised, but also about which actions are even possible. To wit, one does not know about the relationships among the actions  $\{a_i\} \in A, i = 1, \dots, n$ ; and one does not even know about the set  $A$ .

To illustrate, consider once more the principal-agent scenario. Assume that the agent has at disposal the just-mentioned  $A$  as his set of actions. Additionally assume that the principal has imperfect information over  $A$ , that is,  $A$  is the improper superset of the information set  $P = \{p_1, p_2, \dots, p_j, \dots\}$  of the principal ( $A \supseteq P$ ). When agent and principal share some information by assuming  $P$  to be a partition of  $A$ , we have problems that are solved by increasing the cardinality of  $P$  (viz., increasing the elements of  $P$ ) by, say, observing a vast number of actions  $a \in A$ . In this case interacting parties are able to achieve equal information structures through equal cardinality because they share the same set of possible future events.

But if, for instance,  $A \supset P$  (partial knowledge) or, more exceptionally,  $A \cap P = \emptyset$  (complete ignorance), then observation of action does not automatically lead to an increase in the elements of the repertoire of the principal: there's a knowledge gap not easily overcome by just monitoring. The principal's  $A$  is not, at worse, a partition of  $P$ ; nor is it, at best, isomorphic to  $P$ . We have a more general case where equal cardinality of sets does not imply equal sets.

When sets differ in their structural properties, we face issues of *knowledge* asymmetry.<sup>6</sup> It is in fact when the nonhomogenous character of

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<sup>6</sup> To our knowledge, Minkler (1993) is the only formalization of knowledge asymmetry in the context of organization.

knowledge is taken into account that the familiar task of selecting among alternative organizational forms to attempt to maximize collective quasi-rents has added value. Otherwise, marginal benefits from integration would have the same magnitude of those from standard market contracts. In the case of the EU, for example, there would not be any *rational* reason to bear the additional costs of complete integration through the creation of supranational government. Likewise, there would be no reason to devise complex, specific contracts, such as the SGP (or, vice versa, of thinking about what activities to spin-off from central government organization onto the national jurisdictions).

Organizational choice becomes a matter of indifference when endowments that allow for the internalization of externalities are – *and are known to be* – equal. Langlois encapsulates the point well in a germane context.

If the only imperfections in knowledge at stake were those [of information asymmetry] then decentralized contracting would always be a cheap organizational alternative. This sort of imperfect information is precisely what state-contingent contracting, including the form practiced on organized futures markets, is all about. If all participants to a transaction really are aware of and certain about all the facts of the situation, and are in complete and detailed accord as to all possible contingencies, then decentralized market-contract arrangements should not be at a significant transaction-cost disadvantage (Langlois 1984, p. 30).

Similarly, Teece and Pisano (1994, p. 540) more recently write that “the distinctive elements of internal organization simply cannot be replicated in the market.” In his discussion of supranational federalism Hayek (1948, Ch. 12, esp. pp. 268-9) too makes this point, if obliquely.<sup>7</sup>

The presence of a central government in a federal system may be justified on the basis of problems of knowledge asymmetry. Insofar as knowledge is asymmetric there arises the need of a coordinative entity that attempts to reduce knowledge asymmetry. When knowledge asymmetry approximates information asymmetry by, say, learning effects, the purpose of a central government withers away, *ceteris paribus*.<sup>8</sup>

The role of a decentralized system (such as a market or a local jurisdiction in a federal system) is, in other words, that of coordinating “common” knowledge, such as price and quantity. The role of a central government is, conversely, to attempt to coordinate knowledge that is more specific in nature. The latter task is often accomplished through gradual standard-setting procedures. The case of the EU is the first that comes to

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<sup>7</sup> It has in fact been up to contemporary scholars to make this point explicit in Hayek’s work. Cf. for instance Jensen and Meckling (1992); Ghoshal et al. (1995); and Langlois and Foss (1999).

<sup>8</sup> Those familiar with Knight’s (1946[1921], III.ix.8, p. 268) “cephalization” argument will readily note the parallel.

mind in this respect. A current EU example of a standard-setting problem that is in the domain of a centralized government is software: should the EU bureaucratic apparatus move away from proprietary software and adopt free/open source software?<sup>9</sup>

Let us recast matters somewhat differently. If one concedes that we live in a world of change, the point is that a decentralized system may more readily adapt to change that is of a routine type. When, however, change is nonroutine – when it doesn't involve just price and quantity but also the qualitatively new, such as technological or public policy changes – centralized organization (think of the firm as a parallel) may be more appropriate (cf. e.g. Langlois 1984; Silver 1984; Langlois and Foss 1999).

But the knowledge asymmetry approach immediately poses a new question: what are we to make of incomplete contracts? The answer may be given starkly: an incomplete contract may be interpreted not just as an instrument that exists to solve incentive conflicts, but also as a useful instrument that affords organizational versatility writ large. An incomplete contract may therefore be principally interpreted as an instrument for adaptation to change: as a means to (efficiently?) pursue plan coordination through time. Indeed, incompleteness of contracts *is* probably the primary

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<sup>9</sup> For a discussion of free/open source software, see Garzarelli (forthcoming).

factor facilitating the maximization of joint rents (e.g., Egidi 1992, p. 168; Foss 1996). “Longer, incomplete contracts provide much more flexibility because they eliminate haggling and communication costs and allow those who possess superior knowledge to direct less-informed others” (Langlois and Foss 1999, p. 204). Or, to put it more generally, incompleteness of contracts leaves leeway for the correction of “coordination failures.”<sup>10</sup>

Consider again the SGP for illustration, an incentive contract that is clearly also incomplete. The SGP rests on the perspective of constitutional economics, which does not completely rule out the possibility of consciously designing some abstract systems of rules. The rationale is quite simple. It is believed that there are times when parties involved in transactions have a possibility to increase their welfare, as well as possibly that of others, by not only making the rules of the game explicit but also by credibly following them. We have an instance, in other words, where there’s conviction that there are gains from trade through intentionally limiting or constraining one’s choice set (Buchanan 1999[1990], esp. pp. 380-1). This is in effect a means to

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<sup>10</sup> Leijonhufvud (1981, Ch. 7). Aggregate coordination failures à la Leijonhufvud are most often the result of public institutional rigidities that do not allow for rapid contract adjustment. Think, as clear and current examples, of the strong labor unions in Italy which often oppose structural reforms such as the development of part time labor contracts or the possibility of direct hiring (and firing) in the public sector; and that for instance attempt to fix through legislation the weekly full-time employment contract to 35 hours (as in France).

obtain predictability by creating inflexibility in action through the creation of common standards. It is a means to promote specialization as allowing for too much flexibility in action can be tantamount to limiting the ability of others to plan their own purposive action (cf. Heiner, e.g., 1983; Langlois, e.g., 1998).

The perspective of knowledge asymmetry, however, places equal importance on the flexibility aspect of incomplete contracts. In general we need not concern ourselves with the details of this remark here, but an additional point should be made. Specialization entails that there is less flexibility to solve problems that are unique, such as those mostly tied to knowledge asymmetry. That is to say that one is less apt to adapt to contingencies that do not involve just static or predictable problems typical of information asymmetry.<sup>11</sup> As noted earlier, in fact, contractual incompleteness does not just regard the coordination of parametric changes (information), but also that of structural changes (knowledge). As currently conceived the SGP seems to leave little room for coordination of structural changes. There seems to be little incentive for national-level experimentation.<sup>12</sup>

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<sup>11</sup> For extensions, see Langlois (e.g., 1998).

<sup>12</sup> This is akin to the asymmetry critique to the SGP, namely, to the belief that the SGP focuses only on correcting negative incentives and not on stimulating the creation of new ones (see Brunila et al. 2001 *passim*). But our point is couched in organizational terms. From a

#### **4. Conclusion.**

The primary motivation of this essay is to bring fiscal federalism theory into contact with a body of economic organization theory: it is the first attempt, to our knowledge, to endogenize some of the insights of the knowledge-based organizational literature into the federalism framework. We try to be suggestive and to point to new directions and to useful ideas from outside the areas of traditional interest to public economics students.

Notwithstanding the explorative nature of the essay, we can draw a reasonably general conclusion. It seems that from an economics of organization perspective centralization may be justified with less ambiguity on the basis of knowledge, as opposed to information, asymmetry.

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comparative-institutional viewpoint the highest level of flexibility would arguably be achieved through Coase Theorem interactions. Drawing on the experience of environmental markets Casella (1999) proposes one such solution: member states are allowed to trade budget deficit permits. The feasibility of such proposal remains an open question in the immediate run, however. As Brunila et al. (2001, Ch. 1) point out in the introduction to their edited volume, in fact, there may be empty core problems because of the relative immaturity of the SGP at this time. This may cause a higher level of uncertainty; hence greater knowledge asymmetry. See also Casella's chapter in Brunila et al. (2001, Ch. 16).

Knowledge asymmetry in fact encompasses information asymmetry as a special case.

A possible implication, to explore in detail in future work, is that one should consider the organizational problem of centralization versus decentralization of the public sector not so much from the point of view of the magnitude of the externality involved as from the point of view of the type of externality involved.

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