

VERTICAL INTEGRATION AND DECENTRALIZATION
IN YUGOSLAV ENTERPRISES¹

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Two major components of present Yugoslav economic policy are (1) joint planning by economic units at successive stages of production (whether or not they are part of the same enterprise), and (2) extensive autonomy for subunits of enterprises. The question to be examined in this paper is whether these policies are incompatible, that is, whether it is practical to require economic units to cooperate while at the same time giving them authority to make decisions independently. Beyond the question of whether it is possible to implement such policies simultaneously, there is the question of whether granting autonomy to small subunits in some way interferes with the advantages which could be gained from more unified control of successive stages of production.

Autonomy of the basic organization of associated labour (BOAL)

The Yugoslav Constitution of 1974 and the Law on Associated Labour of 1976 both state a fundamental principle which underlies the philosophy of the entire Yugoslav economic system: wherever possible sub-units of enterprises are to be organized as separate independent entities. Specifically, the rule states that if the performance of a sub-unit of an enterprise "can be expressed in terms of value within the work organization or on the market... the workers... shall have the right and duty to organize... (that unit) as a basic organization of associated labour"²) (or BOAL, as the separate divisions are referred to in western literature).

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²) Constitution (1974), article 36 and repeated verbatim in Basic Law on Associated Labour, article 14.

According to Yugoslav law the BOAL, not the enterprise, is the basic economic unit. The independence of these divisions within the enterprise has gradually been strengthened over the years, first by the reform of 1965 and then by the constitutional amendments of 1971 (later embodied in the Constitution of 1974) and the Law on Associated Labour of 1976. Legally, BOALs are the holders of all social sector assets and have final authority in all decision making. Major decisions which affect all BOALs must be voted on by all of them. Furthermore, every BOAL has the right to withdraw from the enterprise. Even without leaving, each BOAL has the right to buy or sell outside the enterprise.

In practice the independence of these subunits is not quite as complete as the legal principles suggest and the relationship among the BOALs in an enterprise is not quite the pure market relation sometimes claimed. But they do in fact have very extensive autonomy.

The extent of this divisional autonomy is perhaps best demonstrated by the fact that in some cases BOALs actually do buy or sell outside the enterprise, even though a seller or buyer could be found inside the enterprise. That is, when considerations of quality or price make it more advantageous for a BOAL to deal outside, it not only in principle has the right to do so but in practice one can find examples of this happening. Of course, in the typical situation a BOAL will deal with a sister BOAL whenever possible, but an occasional counterexample forcefully demonstrates the possibility and thus creates competitive pressure which tends to drive internal transfer prices close to prices on external markets. It can be shown that equating transfer prices on transactions within the enterprise to comparable prices on outside markets is important for efficient allocation of resource within the firm.³⁾

Structure of the Yugoslav enterprise

In order to put subunit autonomy into perspective, we need to consider the structure of the enterprise. At the very outset we must recognize the difficulty of defining the enterprise in the Yugoslav context. We cannot, as in the capitalist case, identify a particular group of assets over which ownership is packaged as a coherent unit nor a group of activities which is controlled by a single command hierarchy. In fact, Arrow points out that identifying the firm is a problem under capitalism as well:

Up to this point... the line which separates... a corporation from its customers and suppliers has been implicitly taken as well defined. But in fact we really have a nesting of organizations inside larger organizations... Drawing any boundary lines for an organization has a somewhat arbitrary element.⁴⁾

³⁾ See Stephen R. Sacks, "Transfer Prices in Decentralized Self-Managed Enterprises", *Journal of Comparative Economics*, June 1977.

⁴⁾ Kenneth Arrow, "Control in Large Organizations", *Management Science*, April 1964, p. 403.

In order to find an operational definition of the firm, Arrow suggests that we focus on "price-mediated transactions"; "the boundary of an organization then can be taken as the line across which only such transaction take place".⁵⁾ In a similar definition Coase suggests that a firm is an "island of conscious power" which is distinguished by "the suppression of the price mechanism".⁶⁾

However useful Arrow's and Coase's approach might be in a capitalist economy, it is not appropriate for Yugoslavia because of the Yugoslav practice of using explicit transfer prices in transactions between BOALs. If we were to adopt Arrow's approach in defining the Yugoslav firm, we would have to consider each BOAL to be in itself an enterprise. But in fact this would in most cases be quite misleading. A collection of BOALs is often viewed, quite rightly, as an enterprise, a unit which does have some meaning. In particular, the relationship between two BOALs which are in the same enterprise is different from the relationship between two BOALs which are in separate enterprises. That difference is not the contrast between on the one hand common interest and on the other hand conflict. In any system the relationship between a producer and his customers or suppliers is a combination of mutual and opposing interests. What does vary, according to whether two BOALs are part of the same enterprise or not, is the relative proportion of mutual and opposing interests.

I would argue that whether a particular group of BOALs does constitute an enterprise depends on the closeness of the ties among them. Some groups of BOALs are more closely tied together than others in terms of sharing facilities and services, joint investment, the degree of detail of their planning, and income distribution. These groups can rightly be called enterprises, but only someone familiar with a particular working relationship can say whether a group of BOALs should be considered an enterprise, that is, a meaningful economic unit. If two "enterprises" commence to engage in reasonably tight coordination of facilities, investment, planning, and income sharing then I would say the entire group of BOALs becomes an enterprise.

Perhaps the most important bond tying together the BOALs in an enterprise is the enterprise plan. Annually representatives of every BOAL jointly work out detailed plans for the coming year. Agreements are made specifying exactly who is to produce various goods and services, delivery dates and quantities are set, and transfer prices are settled. Once approved by all the constituent BOALs, the enterprise plan becomes a set of legally binding contracts. A BOAL's right to withdraw from the enterprise, or to buy or sell outside, is conditional on its fulfilling its obligations to the other BOALs as specified in the enterprise plan.

This joint planning by a number of BOALs is the key distinguishing characteristic of the enterprise. Unfortunately, it is difficult to make this distinction operational because there may also be inter-en-

⁵⁾ *ibid.*

⁶⁾ R. H. Coase, "The Nature of the Firm", *Economica*, November 1937, p. 322.

enterprise planning. All of the enterprises in an industry (as well as their suppliers and customers) are expected to formulate "self-management agreements" concerning future production plans. This is analogous to the problem Arrow recognized in his own definition: even under capitalism in some cases prices are used for intra-firm transactions. However, some plans are more specific than others and we must define the enterprise in terms of which groups of BOALs make detailed, extensive, and specific joint plans.

It is interesting to note that the word "enterprise" (poduzeće) is no longer officially used in Yugoslavia. The term "organization of associated labour" (OAL), which refers to a group of BOALs which have joined together, is often translated as "enterprise" and informally Yugoslavs often refer to an OAL as an enterprise. But there is a third term, "composite organization of associated labour" or COAL, which refers to two or more OALs which have joined together. The question which is so difficult to answer is which term corresponds to the western notion of "enterprise"?

Keeping in mind the conceptual and practical difficulties of identifying the enterprise in Yugoslavia, let us proceed to consider the effect on enterprise structure of the Yugoslav policy of encouraging joint planning by economic units at successive stages of production.

Effects of joint planning

When government policy encourages joint planning among economic units it is essentially encouraging integration (both horizontal and vertical). Of course, joint planning amounts to merger only in those cases where formerly separate enterprises commence to engage in very detailed and extensive planning. Now in the capitalist case combining successive stages of production or distribution into a vertically integrated firm means by-passing a market, i. e. putting under administrative control a coordination task which otherwise would be handled by a market mechanism. However, in the Yugoslav case the situation is different. Since the subunits of the enterprise have considerable autonomy and since to a large extent there is a market relationship among them, a merger with a customer or supplier does not mean the substitution of administrative control for market coordination. What it does mean is more detailed, more extensive, and more intensive joint planning. That is, the relationship between BOALs which perform adjacent vertical stages of production is modified in the direction of relatively more cooperation and relatively less market conflict.

We turn now to a fundamental question: what are the potential benefits to be gained from the Yugoslav policy of encouraging joint planning by successive stages of production?

In his classic article Coase asks why it is that a firm draws into itself some transactions and leaves others to be arranged by the marketplace. Why doesn't the firm take on one more or less task? His answer is that there are costs to both methods of coordinating economic activities and that "a firm will tend to expand until the costs of orga-

nizing an extra transaction within the firm become equal to the costs of carrying out this same transaction by means of an exchange on the open market..."⁷) That is, each firm weighs the costs of administrative control against the costs of using the market in deciding whether to take on an additional task.

Western economic literature contains a number of theories of the firm and of vertical integration which can be viewed as extensions of Coase's theory. They provide a convenient framework for analyzing the benefits of vertical integration in Yugoslavia as well as in capitalist countries. For the purposes of this paper, these western theories can be put into four groups: (1) those which focus on economies of scale within the vertically integrated firm; (2) those which focus on the availability of outside supply; (3) those which deal with information, both its distribution and the costs of transmission; and (4) those which focus on problems of incentives and control. Taking one example from each of these groups, we can show that these theories help to explain current Yugoslav policy.

In *The Structure of Competitive Industry* E.A.G. Robinson presents a detailed discussion of the specific advantages of large size and of the limits to those advantages.⁸ The five categories of advantages which he discusses are technical, buying and selling, managerial, financial, and risk reduction through diversification. Only the first four apply to vertical as well as horizontal growth. The first category, technical economies, can be significant in the case of vertical integration: the classic example is that of the blast furnace and rolling mill operations in steel production, where vertical merger can reduce heat loss and hence coal consumption. Combining successive stages of production may also yield real economies by allowing longer production runs, and may provide opportunities for greater division of labour in production. Perhaps most important in the Yugoslav context is fuller utilization of capital equipment. Indeed, official justification for joint planning often focuses on the importance of avoiding unnecessary duplication of investment.

Robinson's second category deals with buying and selling. If certain inputs are used by more than one stage of production, then vertical integration may provide greater negotiating power or expertise in buying. Also, the consequent reduction in total inventories are important. Advantages in terms of selling are especially significant for export sales.

Third, vertical integration allows increasing specialization of management tasks. Just as in the area of physical production, output can be increased or costs reduced by assigning individuals to specialized tasks in which they can develop expertise; also, in management as well as in physical production, specialization eliminates the loss of time incurred when one person has to switch from one task to another. Particular talents are fully utilized in the area where they are most

⁷) *ibid.*, p. 395.

⁸) E. A. G. Robinson, *The Structure of Competitive Industry* (Cambridge: Cambridge University Press, 1931).

appropriate. Further, such costs as sales forecasting, hiring and training employees, and outside consultants grow less than in proportion to the size of the firm.

Robinson's fourth category deals with financial economies of scale. In Yugoslavia, as well as in capitalist countries, large firms do have easier access to capital.⁹⁾ But insofar as financial economies of scale are merely pecuniary economies which give one firm a competitive advantage over other firms, they do not provide a reason for policy makers to encourage integration. However, insofar as this enables Yugoslav firms to more effectively attract foreign loans and foreign investors the whole country does benefit.

A second area dealt with by western literature concerns the availability of outside supply. For example, Stigler¹⁰⁾ argues that the number of tasks undertaken by the firm (i. e. the extent of vertical integration) depends in part on the level of development of external markets: the more developed are the markets for various goods, the less necessary it is for a firm to make its own inputs and to further fabricate its own output. An example he uses is the textile industry in England. Early in its history it consisted of firms which built their own machinery and distributed their own output. Gradually, as machine building firms and distributors developed, textile firms increasingly specialized, i. e., vertically *disintegrated*. Conversely, since for many products Yugoslav markets are still insufficiently developed, vertical integration is deemed necessary to insure reliable supplies of inputs.

The importance of information in determining the optimum extent of vertical integration is discussed by Malmgren¹¹⁾ and carried considerably further by Arrow.¹²⁾ It is well known that one of the advantages of a decentralized system is that information available at the periphery (specifically, input coefficients) need not be transmitted to the center. However, both Malmgren and Arrow show that in certain situations where information is available to some individuals but not to others and/or transmission of information is costly, the efficiency balance between an administrative hierarchy and a price system is shifted in favor of the former. Hence such circumstances tend to favor vertical integration if future prices and availabilities are not generally known. In the particular circumstances considered by Arrow, vertical integration is not to insure adequate supply, but to gain information about prices, information which the buyer of the intermediate good needs in order to choose optimal input proportions. Arrow points out¹³⁾ that if the seller of the intermediate good cannot know in advance

⁹⁾ See Stephen R. Sacks, "Corporate Giants Under Market Socialism", *Studies in Comparative Communism*, Winter 1976.

¹⁰⁾ George Stigler, "The Division of Labour is Limited by the Extent of the Market", *Journal of Political Economy*, June 1951.

¹¹⁾ H. B. Malmgren, "Information, Expectations and the Theory of the Firm", *Quarterly Journal of Economics*, May 1961.

¹²⁾ Kenneth Arrow, *The Limits of Organization* (New York: Norton, 1974); "Vertical Integration and Communication", *Bell Journal of Economics*, Spring 1975; and "The Organization of Economic Activity..." in *The Analysis and Evaluation of Public Expenditures...* (Washington: Joint Economic Committee, 1969).

¹³⁾ "Vertical Integration and Communication", p. 1174.

what his future output level will be or if the buyer does not need to choose input proportions in advance, then this incentive for vertical integration disappears.

It is easy to miss the distinction between the Stigler and Arrow arguments. Both deal with input availabilities, but whereas Stigler is talking about whether a certain necessary input will be available at all, Arrow is concerned with choosing among several alternative inputs which are relatively more or less easily available. This distinction is less clear in an environment where prices do not accurately measure true scarcity. However, even in Yugoslavia decision makers are concerned with what prices should represent, i. e., relative scarcities of alternative inputs. Thus vertical integration serves the same function described by Arrow, viz., enabling the user of intermediate goods to better choose input proportions. Consider, for example, the shoe industry: by integrating with a tannery, a shoemaking enterprise is better able to plan its own output in relation to expected relative availabilities of various grades of leather.

Williamson¹⁴⁾ and Alchian and Demsetz¹⁵⁾ focus their discussions of the integrated firm on its incentive and control properties. The essence of Williamson's "contractual incompleteness" argument is that on the one hand it may be prohibitively costly to specify the full range of contingencies in contracts between firms, and on the other hand, in the absence of complete specification firms locked into a contractual relationship may have divergent interests which lead them to behavior which is inefficient from the point of view of society. Therefore, administrative control (i. e. vertical integration) is necessary. Although in the Yugoslav case vertical integration does not mean administrative control, clearly one of the major purposes of the Yugoslav policy of joint planning has been to reconcile the divergent interests of the supplier and user of intermediate goods while ensuring that suppliers precisely meet users' needs.

The Alchian and Demsetz analysis is similar in that it, too, deals with the control of inputs and with incentives for factors of production to act in the best interests of the organization as a whole. They argue that when total production is greater than the sum of individual outputs, efficiency requires team production. The firm, then, comes into existence when it is impossible (or very costly) to measure the outputs of cooperating inputs. Further, they suggest¹⁶⁾ that vertical integration might occur when it is difficult to "meter" output for any reason, e. g. when there is no inexpensive way to measure the productivity of the producer of an intermediate good. Again, the essential function of the firm is the "monitoring" of the activities of the inputs. For example, in order to insure high quality in the production of transistors it might be more efficient to supervise production (i. e. moni-

¹⁴⁾ Oliver Williamson, "The Vertical Integration of Production: Market Failure Considerations", *American Economic Review*, May 1971.

¹⁵⁾ A. Alchian and H. Demsetz, "Production, Information Costs, and Economic Organization", in Furubotn and Pejovich, eds., *The Economics of Property Rights* (Cambridge, Mass.: Ballinger, 1974).

¹⁶⁾ *ibid.*, p. 313.

for input behavior) than to test the output. Hence it would be desirable to merge transistor production with radio assembling.

Alchian and Demsetz conclude that an integrated firm is better able to allocate inputs. That is, the nature of a firm is such that "information about the productive characteristics of a large set of specific inputs is ... more cheaply available". Thus, "better recombinations or new uses of resources can be more efficiently ascertained..."¹⁷⁾ in the vertically integrated organization of associated labour than in separate basic organizations of associated labour.

Disadvantages and limitations of vertical integration

Up to this point I have been concerned with justifications for vertical integration, that is, with the benefits to be gained by combining successive stages of economic activity. At this point it seems reasonable to ask why, given the various benefits derived from vertical integration, Yugoslav policy makers have chosen to implement simultaneously further extensions in the autonomy of the subunits of the firm. Should vertically integrated units be given autonomy or does that defeat the purpose of vertical integration?

The answer to this question lies in the fact that integration has costs as well as benefits. The most obvious is the possible weakening of the competitive pressures which are necessary for efficient operation of a market economy. Although Yugoslav law does include antitrust statutes designed to protect competition, there has been virtually no enforcement of them. On the contrary, official statements by leading politicians always seem to encourage mergers (both horizontal and vertical).¹⁸⁾

An important benefit of divisionalizing enterprise in Yugoslavia is that it appears to have stimulated markets in intermediate goods. For example, a manufacturer of light bulbs in Zagreb is expanding its capacity to produce the glass balloons in which the filament is placed and will soon be selling them to a bulb manufacturer in Pančewo. Similarly, a drug firm in Belgrade for a while purchased plastic bottles from a Slovenian firm rather than from its own container division. In the electronics industry most firms buy some of their components from other Yugoslav firms. All of this would be possible even without divisionalized firms, but the independence of the BOALs increases the likelihood that a BOAL will expand beyond the needs of its own enterprise and offer its product for sale outside the firm. Perhaps the most amusing example of this took place at the Yugoslav National Bank: the BOAL which prints money hired additional workers and bought additional printing equipment and began to print labels and forms for outside firms.

¹⁷⁾ *ibid.*, p. 325.

¹⁸⁾ See Werner Sichel, "The Threat to Market Socialism: The Case of Yugoslavia", *Antitrust Bulletin*, Summer 1971, pp. 389-414. In the new Constitution (1974) article 255 resembles the Sherman Act in U. S. law. Article 21 of the Law on Associated Labour is similar.

Furthermore, even the apparent advantages of vertical integration are not unlimited. For each of the four arguments presented above there is a point beyond which all advantages are exhausted. Indeed, in some situations going much beyond that point causes diseconomies of scale. For example, in Robinson's managerial category as specialization increases, individual managers have a progressively narrower point of view. It becomes necessary to have another level of management to coordinate specialists.¹⁹⁾ As the size of the firm increases, more formal information and communications systems must be established, thus slowing decision making. In terms of the Alchian and Demsetz analysis, vertical growth is limited by the ability of the central agent to monitor the inputs of team members.

If the various motivations for vertical integration indicate different optimal sizes for each of the stages of production, then it may be necessary to have one size for raw materials acquisition, another size for production, and yet other sizes for marketing, finance, etc. Therefore the firm must be designed such that each stage consists of an integral number of efficient units. For example, suppose iron ore is most efficiently acquired by firms producing 20 million tons of steel annually, while production is most efficiently handled by plants producing two to four million tons annually. Then a Yugoslav firm formed to integrate the vertical stages of the steel industry would have to have between five and ten plants. Further, if there are financial advantages of large scale up to a firm size of 40 million tons annually, the firm should have two divisions, each of which buys enough ore for 20 million tons of output and each of which has between five and ten plants.

It is worth noting that the function most likely to remain centralized, even in an otherwise totally divisionalized firm, is the acquisition of capital. Since there are often substantial economies of scale in this function (lower interest rate and/or greater amount of funds available), even a firm which allows its divisions complete autonomy otherwise is likely to rely on a central office for the task of raising new capital.²⁰⁾

There are several reasons for using a decentralized structure within the firm. Perhaps most important is the need to have decisions made by people close to a particular problem. Top management personnel in a large firm are often not sufficiently familiar with the detailed considerations which heavily influence correct decisions. At the same time, delegation of authority to subdivisions leaves top management free to concentrate on enterprise-wide problems. Furthermore, decentralization allows a large firm to achieve the flexibility which is often thought possible only in small firms which have short lines of communication, ability to make on-the-spot decisions and commit-

¹⁹⁾ This is part of the concept of "bounded rationality". For a more complete discussion see H. A. Simon, "Theories of Bounded Rationality", in C. McGuire and R. Radner, eds., *Decision and Organization* (Amsterdam: North Holland, 1972).

²⁰⁾ One might argue that a principal reason for the existence of some capitalist conglomerates is to take advantage of such economies of scale. For a discussion of this argument see F. M. Scherer, *Industrial Market Structure and Economic Performance* (Chicago: Rand McNally, 1970).

ments, and the less specialized production facilities which are more adaptable to changing circumstances.

Decentralization refers to delegation of authority to make decisions. Obviously, some degree of such delegation is necessary in any but the smallest firms. The question faced by Yugoslav policy makers is how much decentralization? It is useful to distinguish between decentralization and divisionalization.²¹⁾ Divisionalization adds to decentralization the concept of delegated profit responsibility; that is, subdivisions are given wide latitude to operate as they see fit, and they are judged almost entirely on the profit they earn. Thus divisionalization implies delegation of authority to make more important decisions and a greater degree of autonomy.

Let us consider why a firm might go beyond decentralization and in fact establish autonomous divisions. The major additional advantage this offers is the creation of incentives which lead middle management to base their decisions on a broader range of relevant considerations. An argument traditionally applied to the enterprises in an economic system is also appropriate to the subunits within an enterprise: while central management cannot make all of the decisions for a complex set of activities, if subunits seek to minimize or to maximize particular variables such as cost, output, or the value of output, then various distortions and inefficiencies arise. Only a unit which is unrestricted and judged by the profit it earns will, in weighing alternatives, make choices which are economically efficient.²²⁾

A final advantage to divisionalization is that it allows appraisal of subunits' performance. Without the profit indicator for each BOAL, evaluation of a division and decisions about expansion or abandonment of that division would be much more difficult.

Summary

This paper begins with a brief description of the autonomy of the subdivisions of the Yugoslav enterprise. This is followed by a discussion of enterprise structure in which the problem of defining the enterprise is considered. The next section examines the probable effects of the Yugoslav policy of encouraging joint planning by economic units at successive stages of production. This joint planning essentially amounts to vertical integration, and several western theories prove useful in explaining the effects of integration. The final section of the paper considers some disadvantages and limitations of vertical integration. The conclusion is that the Yugoslav policy of granting extensive autonomy to subdivisions of the enterprise, far from conflicting with joint planning, is necessary to avoid the disadvantages of excessive integration.

²¹⁾ See David Solomons, *Divisional Performance: Measurement and Control* (Homewood: Irwin, 1965), p. 3.

²²⁾ Of course, the decisions will not be "correct" if prices are not true measures of relative scarcity.

VERTIKALNA INTEGRACIJA I DECENTRALIZACIJA U JUGOSLOVENSKIM PREDUZECIMA

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Rezime

Dve glavne komponente sadašnje jugoslovenske ekonomske politike su: 1. udruženo planiranje privrednih jedinica u sukcesivnim fazama proizvodnje (bez obzira da li te jedinice čine deo istog preduzeća ili ne), i, 2. široka autonomija sastavnih delova preduzeća. U članku se ispituje problem kompatibilnosti ovih dveju komponenti ekonomske politike, tj. da li je praktično zahtevati od ekonomskih jedinica da kooperišu i istovremeno im davati moć da nezavisno odlučuju. Ne ulazeći u to da li je MOGUĆE primeniti istovremeno ovakve mere ekonomske politike, ostaje pitanje da li se garantovanje nezavisnosti malim proizvodnim jedinicama (OOUR-ima) na neki način suprotstavlja prednostima koje je moguće ostvariti integracijom kontrolom sukcesivnih faza proizvodnje.

Članak počinje opisom autonomije osnovnih delova od kojih se sastoje jugoslovenska preduzeća. Posle toga sledi rasprava o strukturi preduzeća u kojoj se razmatra problem definisanja preduzeća. U sledećem odeljku ispituju se mogući efekti jugoslovenske politike podsticanja udruženog planiranja ekonomskih jedinica u sukcesivnim stadijima proizvodnje. Ovo udruženo planiranje u suštini je isto što i vertikalna integracija, a nekoliko zapadnih teorija pokazalo se korisnim u objašnjavanju efekata integracije. U završnom delu članka razmatraju se neki nedostaci i ograničenja vertikalne integracije. Autor zaključuje da je jugoslovenska politika pružanja široke autonomije jedinicama od kojih se sastoji preduzeće (OOUR) daleko od toga da bude u sukobu sa udruženim planiranjem; ona je nužna da bi se izbegli nedostaci prekomerne integracije.