SELF-MANAGEMENT, WORKERS' MANAGEMENT, AND LABOUR MANAGEMENT IN THEORY AND PRACTICE: A COMPARATIVE STUDY

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I

We have now behind ourselves some 25 years of experience with selfmanagement of the Yugoslav economy. We have also almost as many years of the development of economic theory, by different authors and in different traditions, trying to describe and explain the experience of selfmanagement in Yugoslavia. Moreover, we have, even if comparatively younger, a set of econometric results bearing on the Yugoslav experience and derived from the wealth of data collected by the Yugoslav statisticians. Finally, there is a virtually unlimited number of studies on the development process in countries other than Yugoslavia, both comparative and individual, which make it possible for us to compare the Yugoslav experience with that of the rest of the world.

Without attempting to advance any one of these elements of analysis, our objective in the present paper is to base on them a synthesis — that is, putting these building blocks together. More specifically, we want to start unwinding — even in a very preliminary and unfinished manner — a more coherent story of self-management. Our principal question is how well does an economy based on a democratic organization of the enterprise perform? In terms of the Koopmans-Montias framework,[1]) is the systemic impact of self-management positive, nil or negative as compared with other economic systems, in particular with the capitalist market economy?

Because any such investigation implies an effort of mammoth proportions if it were to be complete, we present our work as preliminary and concern ourselves with the consideration of evidence bearing on a handful of aggregate variables. We also leave aside questions of inflation and relative values in general except where we use these as explanatory variables. Our main focus is on the real performance of the self-managed economy.

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[1]) Koopmans, T. C. and Montias, M. J., "On the Description and Comparison of Economic Systems," in *Comparison of Economic Systems*, A. Eckstein, Ed. Berkeley: University of California Press, 1971, 27—78.

Let us now turn to the plan of our study. First of all, it is necessary to present or at least review some definitions of self-management so as to be able to realize exactly what we are actually studying when examining the economy of Yugoslavia. This will be done in Section 2 together with some broader considerations of the definition of world economic systems and its historical background.

In Section 3, we summarize work done elsewhere on the aggregate performance of the Yugoslav economy as it emerges from an international cross-section analysis of some 70 countries. We rely in part on the methodology and results obtained by Singh[2]) and on the results obtained by Vahcic.[3])

In Section 4, we review some of the most standard indicators of performance used in inter-systemic comparisons, that is, estimates of total productivity changes (i. e., increases in productivity over time after those imputable to labour and capital are accounted for). As we will see presently, these results at first sight would seem to contradict those based on the international cross-section. And, in fact, it was the detectivelike effort to attempt to explain this contradiction that initiated and led us to use the results of the present paper.

In Section 5, we review briefly certain sections of the theory of the self-managed economy which are necessary in piecing together the various elements of empirical analysis. For the most part, the analysis is contained in the writings of Vanek[4]) and thus only a brief summary is called for.

In Section 6, we put together all our building blocks, here and there with some additional marginal insights, and present our synthesis. Finally, in Section 7, we state our principal conclusions.

II

Following a categorization and definitions proposed in the Penguin volume *Self-Management,*[5]) we can think of five economic systems, of which we will retain four for the purpose of the present study. We can interchangeably refer to them as system or economy and describe each by a qualification: 1. self-managed, 2. labour-managed, 3. worker-managed, 4. private-capitalist, and 5. etatist[6]) (sometimes referred to as state capitalist). It is the fifth by and large that we will leave out from our analysis in this paper but Vahcic deals with that category,

[2]) Singh, S. K., *Development Economics: Some Findings;* Heath and Lexington, 1975.

[3]) Vahčič, A., "An Econometric Analysis of Post War Performance of Yugoslav Economy," No. 13, *Series of Unpublished Studies,* Program on Participation and Labor-Managed Systems, Cornell University, Ithaca, New York, 1976. (Ph. D. Dissertation).

[4]) Vanek, J., *The General Theory of Labor-Managed Market Economies,* Cornell University Press, and "The Basic Theory of Financing of Labor-Managed Firms," *Self-Management: Economic Liberation of Man,* Penguin 1975.

[5]) *Self-Management, Op. Cit.,* Introductio, Section 1.

[6]) The categorization 1, 2 and 3 seems to be at variance with definitions used by Yugoslav economists who would call all three types *labor-managed* and distinguish, under that broad term 3 cases: a) full social ownership, b) partly social ownership and c) collective ownership, corresponding respectively to a) explicit pricing of capital, b) no explicit pricing of capital and c) producers' (workers') cooperatives.

in the context of our Section 2, in his doctoral dissertation *(op. cit.).* System No. 4 is, in a sense, our system of reference providing us with the sample of observations used in the international cross-section. Systems 1, 2, and 3, on the other hand, are our main focus in this study.

The distinction between Systems 1 through 3, on the one hand, and Systems 4 and 5 on the other can be thought of as the first order distinction between systems where productive organizations are self-determining democratic communities and systems where productive organizations are controlled from the outside, by virtue of, and primarily for the benefit of, capital ownership. The distinction between Systems 4 and 5, both to be classified as *dehumanized* on the first order criterion, can be thought of as a second order distinction — even if it is by far the most important in current economic thought and literature. As is only too well known, this distinction hinges on who actually is the owner, private individuals or the state.

Systems 1, 2 and 3 are related to each other in the sense that 2 and 3 are subsets of 1. All three have one fundamental thing in common: the productive organizations — of one worker or a million — are always managed exclusively by those who work in them on the basis of equality through a democratic organization. Also, these communities of associated producers have the exclusive right of appropriation of whatever they have produced.

The distinction between worker-managed and labor-managed systems is not of an equally fundamental nature, but it will be important for our analysis. The first is used with reference specifically to the economy of Yugoslavia and the second with reference to an ideal or optimal form of economic organization.

The central issue and the dividing line between Systems 2 and 3 is the treatment given to income of capital. Of course, in both 2 and 3 capital has already lost its prerogatives of control, management and appropriation but the question remains as to whether capital is entitled to or should be paid a return, or a price of service, reflecting its intrinsic scarcity within the labour-managed economy. Although we do not find any very precise statements on this subject, we find it perfectly fair to say that by and large the Yugoslavs, especially ideologists, consider capital as something not productive and hence they assign all net value of output (not income) to the labour factor, that is, to the community of associated producers. We are aware that there are many Yugoslav economists who would dispute this notion[7]) and, what is more important, that the Yugoslav practice increasingly tends to abandon this interpretation and thus becomes much closer to System 2. System No. 2 managed economy explicitly assigns to capital and capital ownership a scarcity reflecting price (rental) equal for all users of capital under conditions of a perfect capital market.

[7]) See for example, Maksimović, I., *Teorijske osnove društvene svojine,* Beograd: Centar za ekonomska istraživanja, Institut društvenih nauka, 1974; Lipovac, F., *Mere uspešnosti in gospodarski razvoj,* Ljubljana: Cankarjeva založba, 1970; Lavrač, I., "Prilog proučavanju političkoekonomskih osnova privrednog sistema samoupravnog socijalizma," Raziskovalni center Ekonomske fakultete v Ljubljani, 1974.

A historical definitional note may be useful at this point as a clarification. It is possible to think of a maximal list of property rights consisting of a. the right to manage and control, b. the right to appropriate product, c. the right to receive income from productive capital, all the way to the right y. to burn property or throw it into the sea, stopping short only of the right, z. to completely enslave those who work with productive property. We may refer to the collection a. through y. as the maximal definition and say that capitalist systems, our Systems 4 and 5 above, adhere to this maximal definition. Historically, this is not surprising because from the beginning of the world the customs, statutes, laws and so on, defining property were always determined by those possessing property as well as power, and never by the working people without property.

By contrast, the Yugoslav economic system accomplished a major historical step. It is the completing of a socialist revolution through its humanization by virtue of the *splitting* (and not transfer of) of the maximal definition into an a., b. and c. on the one hand, and all the residual rights on the other, and the assigning of the first three irrevocably, as a matter of a basic right, to the communities of producers. The residual rights, an anaemic collection indeed, is then assigned to either the state or the working communities or to other individuals or institutions.

The distinction between our systems above, 2 and 3, then hinges on whether right, c. *does* or *does not* belong to the working community. It is also the comparative behaviour and performance of Systems 2 and 3 that constitutes one of the principal subjects of this study. We are convinced, and we will try to substantiate it through this paper, that the definition assigning, c. to owners other than the collective of producers is the more desirable one on all the criteria that we can think of. In the historical context also — and we offer this as our private conviction — we feel that the revolutionary process of liberation of the working people will proceed in this direction as long as we live in a world of scarcity. If economic scarcity ever disappears, of course, then the distinction between Systems 2 and 3 will become empty and meanigless.

III

Singh and Vahcic hypothesize that the macro-economic performance of each of the world market economies, other than Yugoslavia, conforms to a simple explanatory model relating the rate of growth of output to inputs of capital, labour and imports through a set of corresponding elasticities of output. The output elasticities, in turn, are subject to variation imputable to the effects of exogenous factors, some of which are controllable by economic policy. Two such controllable factors are found through empirical observation to be the degree of imperfection in 1., the capital market and 2., the foreign exchange market. The first imperfection is measured by the discrepancy between an actual real interest rate and the actual estimated

marginal productivity of capital. The second, described as overevaluation of currency, is approximated by the discrepancy between official and black-market exchange rates.

A cross-sectional regression analysis incorporating these hypotheses and based on 70 countries yields very satisfactory results. Using 5-year averages as basic observations, the standard error of the estimate is no more than 1/2 percentage points. This implies a far greater predictive power than that obtained by other writers.

Using independent estimates of the two market imperfections for Yugoslavia, as well as other Yugoslav data, Vahcic establishes that:

1. Basically the Yugoslav growth performance does not depart significantly from the world sample of 70 market economies, and

2. The loss in growth performance imputable to the (very significant) two market imperfections is quite considerable, among the highest in the world, amounting to some four to five percentage points.

Singh uses another international cross-section, also for the 70 countres, to explain savings and investment rates, relying on per capita income, rate of growth of output, tax rates, and others. Vahcic again applies data for Yugoslavia and finds this time a significantly higher capacity of some ten per cent of the G.N.P. above the world prediction model, indicating a considerably greater accumulation power of the Yugoslav economy.

A third regression analysis, proceeding along similar lines as that used for aggregate growth of national product, was conducted by Vahcic regarding the share of the labour force employed in the modern development (industrial and service) sectors. By contrast to the second analysis (concerning accumulation), here Yugoslavia tends to underperform (statistically) significantly by between 0.6 and 2 million *jobs* (for the different periods studied) in an economy of some 20 million of total *population*, as compared to the world norm. These results are also confirmed by H. Thomas.[8])

IV

In this section we want to present briefly some key estimates of the total productivity for Yugoslavia, on the one hand, and a sample of other countries or geographical areas on the other. Our principal purpose here is to show not only the absolute level of rate of growth of total productivity in the worker-managed economy of Yugoslavia but also to compare it as much as we can to the performance of other countries. These other countries for the most part belong to the sample of private capitalist economies, that is, System No. 4 of Section 2.

Most of the relevant information is contained in Table 1 below. At the head of the table is stated the assumed aggregate production function reflecting total output at a given point in time equal to a product of two functions, A and x respectively. A is also a function

[8]) Thomas, Drs. H., Joegoslavie: een ontwikkelingland! *Economisch Statistische Berichten*, April 1973.

of time and can be thought of as a shift parameter reflecting a movement over time of isoquants drawn in the input plane towards the origin. It is this shift parameter A, or more precisely, its relative rate of change (A / A) that is our focus in this section. On the other hand, the asumption almost invariably made about the function x is that it is homogenous of the first degree.

In the top part of the table we present a set of estimates for Yugoslavia, and at the bottom, estimates for other parts of the world or for other countries. On the left of the table we state the country and author of a particular estimate, and on the right hand side of the table we state the numerical value of the estimate. In the wide middle column, we try to describe each estimate as precisely as we can within the limited space specifying the method of construction, the period for which the estimate was obtained, and the sector or portion of the economy studied to which the estimate pertains.

Obviously, differences in coverage, method, and authorship make the various estimates not fully comparable. It would be futile to conclude anything from precise differentials of ten or so per cent.

Table 1

Estimates of total productivity growth in Yugoslavia and other countries. Assumed production function: X(t) = A(t) X[K(t), L(t)]

Country/Area Author	Description and Reference	Estimate (A/A)
Yugoslavia		
Balassa-Bertrand	Manufacturing, *Am. Ec. Review*, May 1970, share of labor 45% in manufacturing	4.5
Horvat	*AER* 1954—1967 manufacturing, mining, construction and crafts	4.4
Singh	Calculation based on data from 1972 *Yug. Statistical Year Book*, 20 years sample; industry	4.6
W. Europe		
Balassa-Bertrand	Same as above, Greece, Ireland, Norway, Spain average	2.5
United States		
Solow	*Rev. Ec. Statistics* 1957, industry, incl. mining, 1925—1950.	2.0
J. Schmookler	*Rev. Ec. Stat.* Aug 1952 "The Changing Efficiency of the American Economy, 1869—1938", total productivity in industry	1.5

But the differences appear to be quite a bit higher than that; in fact, as a crude approximation, it can be said that the rate of change of total productivity is somewhere in the order of magnitude twice as high for Yugoslavia than for the various observations stemming from the capitalist system, or perhaps somewhat below this 200 per cent mark.

This implies that for the Yugoslav non-agricultural — that is, non-traditional — sector of the economy, overall improvements in

organization, skill and education, intensity of work and all factors other than increases in capital and employment of labour are twice as satisfactory, or at least considerably better, than in System No. 4, the private capitalist. This, as we have noted already, would at first sight not seem to square with the findings presented in Section 3. But we have to wait for Sections 5 and 6 before we can explain this apparent contradiction.

V

In Section 2 we have presented our key definitions. In Sections 3 and 4 we presented the main pieces of our empirical evidence. In this section, our objective is to introduce and discuss the portions of economic theory of self-management which are necessary in analyzing the aggregate empirical data. As we have already noted, we will proceed by way of a summary referring the reader interested in more detail to other writings.

Because our empirical data bear on aggregate phenomena, we also want to deal with an aggregate economic theory. Basically, all that we have spoken about in Sections 3 and 4 pertains to production, its cross-sectional and dynamic efficiency and to the allocation of resources in production. Consequently, we want to deal with a highly streamlined and, if we want, also higly idealized, aggregate production function for the economy or for its non-traditional sector.

We can think of such a production function as the one indicated in the heading of Table 1 relating capital, K, and labour, L, to the aggregate output x. For the moment let us consider time, t, to be a constant so that also the shift parameter A is a constant. It may be useful to visualize this aggregate function as a loose and approximate addition of all individual production functions, assuming that capital and labour are measurable and comparable among firms and also postulating some price vector which allows us to add together the various outputs. But beyond this point, let us restrict ourselves now only to the aggregate national production function.

In Figure 1 we show the capital-labour input plane and some characteristic contours to which we will turn presently. The production function we postulate to be one subject to increasing returns to scale at lower levels of output and constant returns to scale thereafter along locus EE. Beyond locus EE, the production function may be either subject to diminishing returns to scale, or to constant returns to scale, both alternatives being consistent with our analysis. The locus EE as indicated in the diagram is a locus where, by definition, the Euler's theorem holds and which is also, in a sense, precisely explained in my *General Theory of Labor-Managed Market Economies* (Op. Cit.) a locus of maximum physical efficiency. We have drawn the EE locus in what may be termed its most likely position and slope, reflecting the fact that optimum sizes of firms by and large increase with an increasing capital-labour ratio.

Besides the EE locus we find another significant contour to the left of it, referred to as aa. As is also indicated in the diagram, it is the locus of maximal average productivity of labour for alternative levels of fixed amounts of capital and, along which, as is well known, the average product of labour equals the marginal product. As long as both marginal products are positive, the aa. locus will lie to the left of the EE locus and the two will intersect in some imaginary zone of very high capital-labour ratios where the marginal productivity of captal drops to zero. Of course, this intersection is of little relevance for us here.

Then there are two other loci, equally conventional in economic analysis, each reflecting a prescribed constant level of the marginal productivity of capital. The one to the left and above corresponds to what we may think of as a scarcity reflecting market rate of interest or shadow price of capital for the economy, r, whereas the lower locus is defined by that same rate r, augmented by a constant, or parameter, D. We will explain the exact meaning of D below.

There are three significant solutions or sets of equilibria that can be identified in Figure 1, describing various types of participatory solutions.[9]) First, there is the solution or equilibria denoted by e_{em}. It is the solution of a perfectly functioning labour-managed market economy where capital is paid its marginal product which is also the scarcity coefficient of capital, and where labour also receives its marginal product. This is an optimal solution for the idealized economy provided that it is also postulated that full employment of resources prevails. But of course this postulate may be satisfied through the requirement that r is an efficient scarcity-reflecting price of capital.

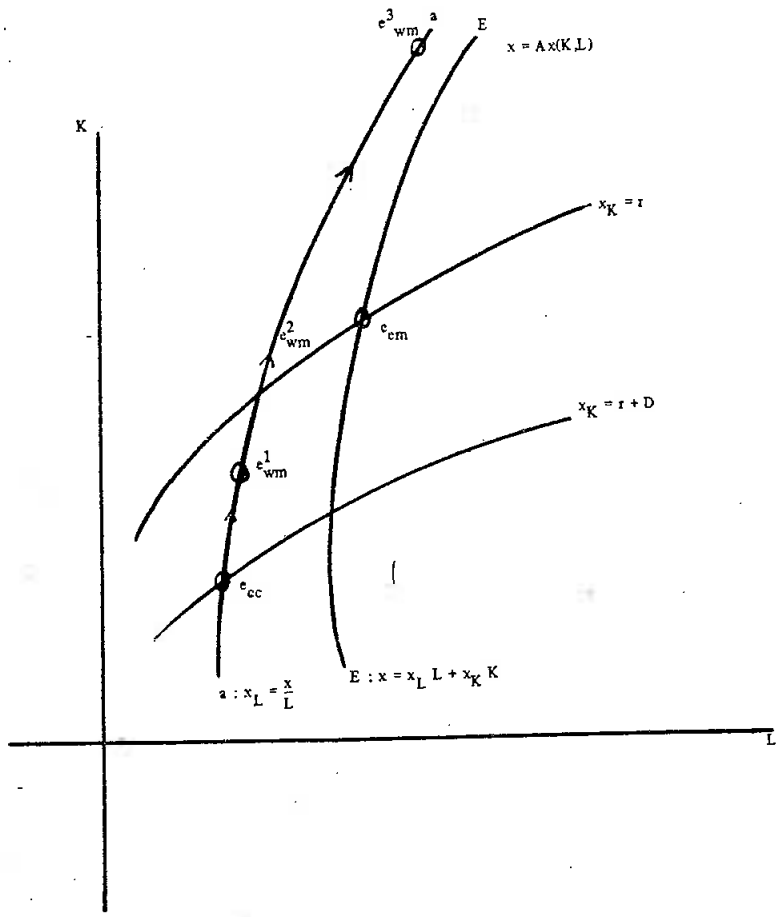
Then there is an equilibrium described by e_{cc} corresponding to a collectively-owned workers' cooperative funded exclusively from retained earnings. Beacuse there is no fixed capital charge, the members of the cooperative maximize average income. But they use a considerably lower capital-labour ratio than they ought to because of a disincentive to accumulate imputable to the inability, or at least imperfection, of recuperation of the principal of their (collective) savings. This disincentive described quantitatively by D in the diagram depends on many factors but above all on the expected number of years of work to be spent in the enterprise by an average worker. If, for example, all members of the workers' cooperative 64 years old had one year until retirement and could not recoup their principal, then the required productivity of capital in the last year would have to be well over 100% if everyone were to vote for the corresponding collective saving and investment.

Thus, the collectively-financed workers' cooperative will, by and large, be small and under-capitalized and, at least on account of its scale, will not operate most efficiently. This indeed is what we observe for this type of enterprise.[10])

[9]) See Vanek, "The Basic Theory of Financing..." op.cit.

[10]) Jones, D., *The Economics of British Producer Co-operatives*, Cornell University Ph. D. Dissertation, 1974, (unpublished).

Figure 1



We now turn to the worker-managed economy of the Yugoslav type. The two general forces leading to the inefficient solution e_{cc}, by and large, even if not absolutely exactly, are present in the worker-managed economy. On the one hand, the members of the working collective do not recoup at retirement (or before) their share of collective accumulations and on the other no scarcity-reflecting return is paid on all capital assets used by the worker-managed enterprises. Some smaller sums are paid as a financial interest on funds borrowed and as capital taxes but especially in view of inflation these amount

to hardly more than a drop in the bucket when compared to the totality of national capital stock. And thus again, as a first approximation it can be said that indeed the Yugoslav representative firm or the Yugoslav economy as a whole is restricted to operation on the aa locus in the inefficient zone of increasing returns to scale. However, a Yugoslav firm and the Yugoslav economy does not remain at the point e_{cc} but rather keeps moving over time along aa in the northeast direction with a considerable accumulation by the national economy, performed primarily by existing firms without too much entry.[11]) Of course, in addition to this, the whole production function also keeps changing with increasing A but we have not recorded this phenomenon in the diagram so as not to make it overly complicated. And thus, with rapid accumulation by existing firms, the modern non-agricultural sector of the Yugoslav economy is characterized by a relatively small number of relatively large firms, highly capitalized and using relatively little labour per unit of capital. But the firms do not attain the efficient size corresponding to their capital stocks, the locus EE always remaining to the right of the locus aa.

This is not the place to discuss in any detail the forces that make the difference between the equilibrium e_{cc} and the various equilibria e_{wm} (wm standing for worker-managed) but we may indicate the principal ones. They are moral and political persuasion coming from outside of the enterprise, less selfishness and a greater social consciousness of those in the firms and especially in recent years the social contracts aiming at the equalization of take-home incomes and accumulation of residual income.[12])

With the analysis of Sections 2, 3, 4 and 5 we can now turn to the heart of our analysis and piece together a coherent logical story from all these building blocks.

VI

We may begin by recalling the principal findings from the cross-sectional analysis presented in Section 3. First of all, the worker-managed economy of Yugoslavia on the test of overall performance is comparable to and not fundamentally different from the world sample of market economies. Of course, it has performed poorly given its rate of accumulation because of the two significant levels of market imperfection, but this is consistent with the hypotheses underlying the cross-sectional approach. The third major result of Section 3, namely, the comparatively and significantly lesser capacity to create employment in the non-traditional sectors is perfectly matched by the theoretical expectation of Section 5. It is precisely the movement along and operation on the locus aa brought about by the conditions

[11]) On market structures, entry and size of firms, see Sacks, Stephen R., "Changes in Industrial Structure in Yugoslavia," 1959—68, *Journal of Political Economy*, 1972. May/June, and *Entry of New Competitors in Yugoslav Market Socialism*, Institute of International Studies, Berkeley, 1973.

[12]) On this see also Vanek, J., "The Yugoslav Economy Seen Through the Theory of Labor Management," *World Development*, Vol. 1 No. 9, September 1973.

of the capital market peculiar to Yugoslavia and to workers' management (System 3) that predicts such an unemployment situation.

These two results, »normal« behaviour in terms of growth and »abnormally« unfavourable behaviour in terms of employment, suggest an offsetting or compensating effect: with a greater distortion in employment the worker-managed economy of Yugoslavia appears normal because on another account, *the systemic effect of a democratic non-dominating organization*, significant offsetting, or compensating forces are present. This hypothesis is further strongly supported by the results of Section 4, indicating that Yugoslavia has been doing very well in terms of growth of total productivity in the modern non-agricultural sector.

This offsetting force which places the *worker-managed* economy — at least roughly — on par in terms of performance with other market economies is what we may call the inherent systemic comparative strength, or advantage, of self-management; that is, of both worker-managed and labour-managed economies. However, continuing our thesis, in labour management which in the traditional context of efficiency of resource allocation behaves optimally — recall the equilibrium e_{em} occurring at an efficient point on the EE locus in Figure 1 — *the labour-managed economy appears as a superior performer to the other two market systems* considered, that is, the worker-managed and the private capitalistic.

Of course the second significant result of Section 3 ought not to be forgotten. The Yugoslav economy has shown a capacity to save and accumulate from its national income far superior to that of other market economies, comparable — not in its causes but in its effects — to the capacaty of the centrally-planned socialist economies. And it is this advantage which primarily yielded the high growth performance of the Yugoslav economy, especially in the first of its operation under workers' management.

In concluding this section, a very important observation ought to be made. We find that the labour-managed economy as defined in Section 2 is a superior economic organization to the other two systems in terms of physical output performance and, of course, also in terms of its employment capacity. But this is really only one of two sources of gratification and satisfaction to those who believe in economic democracy and self-determination. The physical performance in terms of output is not everything; it is only one of the inputs or component parts of the ultimate social welfare function. At least two other equally important inputs are present which unambiguously give the edge to labour management. First, it is the superior capacity to generate a more equitable distribution of income within the enterprise (born out both in practice and in theory) and second, the incomparably greater freedom and independence of human beings in production, allowing them to choose better than in other systems optimal levels of dozens of specific production variables.[13])

[13]) In this connection, see Vanek, J., *The General Theory of Labor-Managed Market Economics*, Op. Cit., Part III, and Vanek, J. and Espinosa, J. G., in *Self-Management: Economic Liberation of Man*, op. cit.

VII

We may now conclude by summarizing very briefly our principal findings. First we have defined five major economic systems using criteria related to the position of the working people rather than the criteria based on ownership of capital. We have then collected and summarized economic results permitting the comparative evaluation of all the systems with the exception of state capitalist planned economies. Having utilized some relevant portions of the theory of self-managed systems, we were able to 1. verify the consistency of the theory with empirical evidence and 2. arrive at significant practical results. Foremost among these is the very likely hypothesis — or very strong presumption — that in terms of physical performance (and hence even more so in terms of aggregate welfare) self-management is a superior system, and that this superiority is inherent in its democratic or liberating attributes, but is somewhat damaged by the particular condition of workers' management in Yugoslavia and especially by those of capital allocation.

APPENDIX*)

A. GROWTH RATES

Singh measures the growth rate as follows:

$$\frac{dQ}{Q} = MPK\ (dk/Q) + E_{Q\cdot L}\ (dL/L) + E_{Q\cdot IM}\ (dIM/IM)$$

where Q : Aggregate Output
MPK : Marginal Product of Capital,
dk/Q : Gross Investment Rate,
$E_{Q\cdot L}$: Partial elasticity of output with respect to labour,
$E_{Q\cdot IM}$: Partial elasticity of output with respect to import,
dL/L, dM/M : Growth rates of labour and import respectively.

He concentrates on the causal forces explaining the variation in marginal products and output elasticities rather than on the growth of inputs. This distinguishing approach enables him to explain why countries with the same rate of growth of inputs have different growth rates.

The MPK is modeled as follows:

$$MPK = f(PCI,\ Q,\ Q/IM,\ IP/IT,\ D_1,\ D_2)$$

where PCI : Per Capita Income
IP : Public Investment
IT : Total Investment
D_1 : The Exchange Rate Disequilibrium Index
D_2 : Capital Price Disequilibrium Index.

Assumptions for the Model:

*) This appendix is prepared by Mehmet Uca, based on Aleš Vahčič's thesis and S. K. Singh's model as cited in Vahčič's work. More detailed analysis can be found in either of the references.

MPK will decline as per capita income rises. There will be a positive shift with the size of market measured by Q, and negative shifts with the reduced share of imports in output, with the increased share of public investment, and with the increased distortions in factor pricing measured by D_1, D_2. D_1, and D_2 are assumed to be under the policy control.

Definitions and Other Relations

$$D_1 = 1 - \frac{\text{Official Exchange Rate}}{\text{Black Market Exchange Rate}}$$

D_2 = Potential Marginal Product of Capital — Nominal Interest Rates + Rate of Inflation

$$E_{Q\cdot L} = MPL\ (L/Q) = g_1\ (PCI)\ (1/PCI) = g_2\ (PCI)$$

and

$$E_{Q\cdot IM} = MPIM\ (IM/Q) = h(IM/Q,\ Q)\ (IM/Q)$$

where *MPL* : Marginal Product of Labor
MPIM : Marginal Product of Import.

Table 1 summarizes the regression equation that is found by Singh.

Vahcic, using the equation found by Singh, estimates the growth rate for the years 1952—1971 (the graph shows seven years moving averages). He compares the actual with the potential growth rate, which is defined as the absence of distortions in the capital and foreign exchange markets, i. e., D_2 and D_1 equal to zero.

B. EMPLOYMENT PERFORMANCE OF YUGOSLAVIA 1953—1970.

The comparison of actual job creation with the predictions obtained from crosscountry data shows that over the period considered Yugoslavia was creating about 35,000 non-agricultural jobs less than an average country in similar circumstances.

The comparison with the potential (potential here again implies that $D_1 = 0$ and $D_2 = 0$) job creation shows that the average annual loss of non-agricultural jobs was about 57,000. This means that there was an 8.5 to 13 percent higher employment potential for Yugoslavia for the period analyzed.

To determine whether Yugoslavia maintained a relatively low proportion of non-agricultural labor force throughout the period 1952—70. the shares of non-agricultural labor force, i. e., manufacturing (ML/TL) and services (SL/TL) were estimated by Vahcic, from crosscountry data. The shares were hypothesized to be functions of per capita income,

Table 1

The estimated regression equation explaining long run intercountry variations in the rates of growth of gross domestic product

Statistic	Dependent Variable	Independent Variables Marginal Product of Capital							
	1	2	3	4	5	6	7	8
	$\frac{dQ}{Q}$ =	Constant	$\frac{dK}{Q}$	$PCI^{1/4}\frac{dK}{Q}$	$\frac{IP}{I}.\frac{1}{\ln PCI}.\frac{dK}{Q}$	$\frac{Q}{IM}.\frac{dK}{Q}$	$D_1.\frac{dK}{Q}$	$D_2.\frac{dK}{Q}$
b		—0.007	+0.580	—0.080	+0.015	—0.280	—0.0043	—0.130	—0.130
t			(9.0)	(—11.3)	(4.2)	(—2.0)	(—4.5)	(—4.4)	(—3.9)
β			(2.0)	(2.4)	(0.65)	(0.09)	(0.12)	(0.25)	(0.36)
	9	10		11	12	13			
	$\frac{IM}{Q}.\frac{dIM}{IM}$	$\ln Q.\frac{IM}{Q}.\frac{dIM}{IM}$		$\frac{Q}{IM}.\frac{dIM}{IM}$	$PCI^{1/4}\frac{dL}{L}$	$dU.\frac{TR}{Q}$	R^2	SEE	
b	+0.380	—0.0435		+0.013	+0.144	+0.320	0.95	0.0052	
t	(1.78)	(—1.5)		(4.5)	(8.0)	(2.3)			
β	(0.43)	(0.35)		(0.13)	(0.36)	(0.10)			

Sample period: 1960—65; Number of observations: 70
Source: Singh, op. cit., p. 199—200.

size of the country measured by population and the previously discussed disequilibrium indices D_1 and D_2. The estimating forms of the two shares are given below:

$$ML/TLT=(e_1+e_2\ (PCI)+e_3\ (PCI)^2...)+e_4\ (enPOP)+e_5D_1+e_6D_2$$
$$SL/TLT=(e_1+e_2\ (PCI)+e_3\ (PCI)^2...)+e_4\ (enPOP)+e_5D_1+e_6D_2$$

where
- ML : Manufacturing Sector Labor
- TLT : Total Labor Force
- SL : Services Sector Labor
- PCI : Per Capita Income
- POP : Population
- D_1 : Disequilibrium index for foreign exhange rates
- D_2 : Disequilibrium index for the interest rates
- $e_1, e_2 \ldots e_n$: Parameters

It is hypothesized that both D_1 and D_2 affect rate of growth of non-agricultural employment. The overevaluation of the dinar would raise the relative price of local goods relative to foreign goods, more

Table 2

— Equations predicting the shares of labor force in manufacturing, services and agriculture

Equation Number			Estimated Equations									R^2	SEE
1.	ML/TLD2	=	—26.3	+	7.18(LPCI) (7.99)	+	0.841(LPOP) (2.21)	—	4.38(D2) (—0.42)			0.78	4.42
2.	ML/TL	=	—28.9	+	7.49(LPCI) (14.96)	+	0.82(LPOP) (2.19)					0.78	4.39
3.	SL/TLD2	=	61	—	12 000($LPCI^{-1}$) (1.98)	+	501(D_2) (1.82)	—	200(D_2 × LPCI) (1.69)			0.75	8.28
				+	17.5(D_2 × $LPCI^2$)	+	0.05(D_1 × LPCI) (1.93) (1.75)						
4.	SL/TL	=	55.6	—	14 173($LPCI^{-1}$) (—10.6)							0.64	9.73
5.	AL/TLD2	=	147	—	18.3(LPCI) (—9.39)	+	23.9(D2) (1.05)					0.84	9.59
6.	AL/TL	=	161	—	20.0(LPCI) (—18.35)							0.84	9.60

Figures in parentheses are t-ratios.
Number of observations: 66.

foreign goods would be bought and less local goods would be sold to foreigners, and this would reduce employment. The underevaluation of the interest rate would result in lower employment rates, this idea being well-analyzed in Vanek's previously-mentioned books.

In Table 2, below, the best estimating equations of ML/TLT, SL/TLT and AL/TLT are given and the actual, predicted and optimal values of sectoral shares of Yugoslavia appear in Graphs No. 2 and No. 3. The total values are plotted in Graph No. 4.

Two types of predictions were made: one from the equations including D_1 and D_2 (equations 1, 3 and 5 in the table) and the other from the equations excluding them (equations 2, 4 and 6). The predictions with the disequilibrium indices D-s included approximate the actual labor shares for Yugoslavia more closely than the predictions without them. Both the signs and the size of the coefficients associated with D_2 indicate that a severe underpricing of capital (high D_2) will lead to a lower share of labor force in manufacturing and to a higher share in agriculture, *ceteris paribus*. Thus if one accepts the equations with D_2, then the *optimal shares* of labor in the three sectors can be computed.

SAMOUPRAVLJANJE U TEORIJI I PRAKSI: UPOREDNA STUDIJA

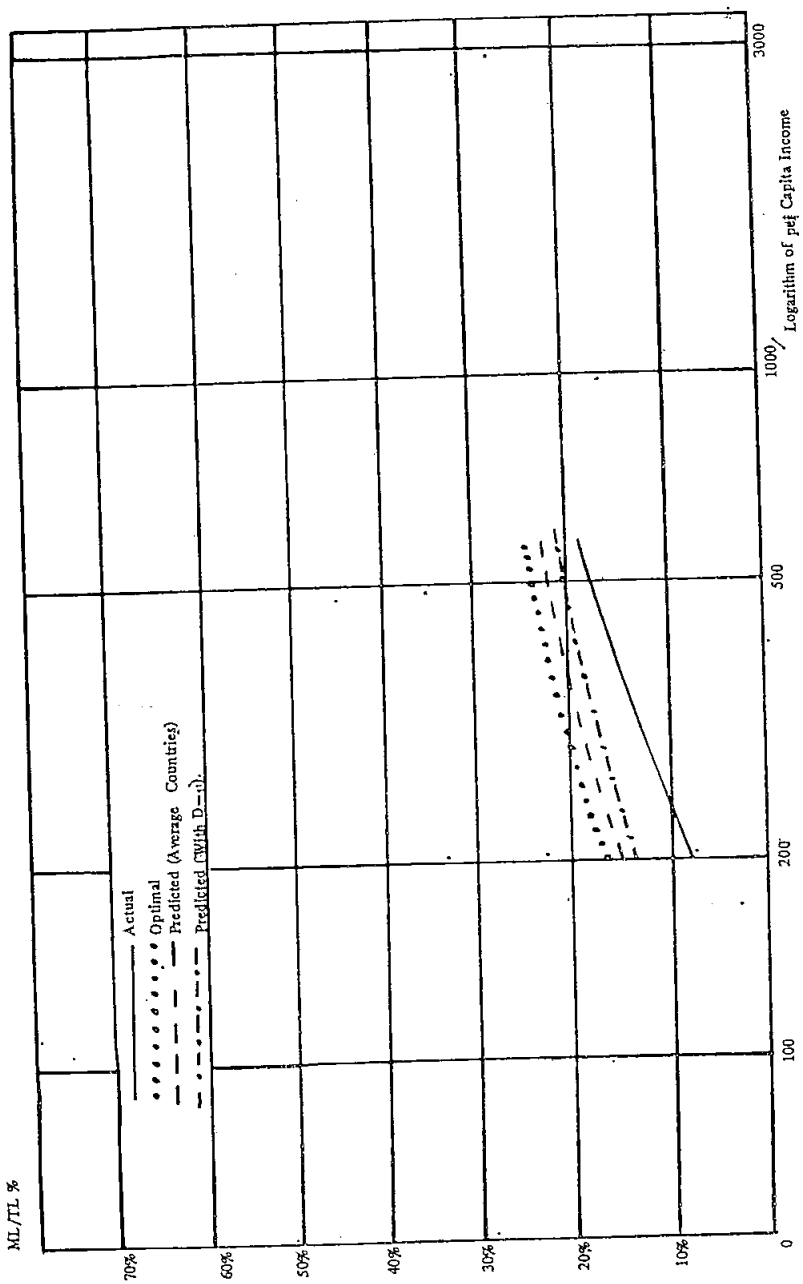
Jaroslav VANEK

R e z i m e

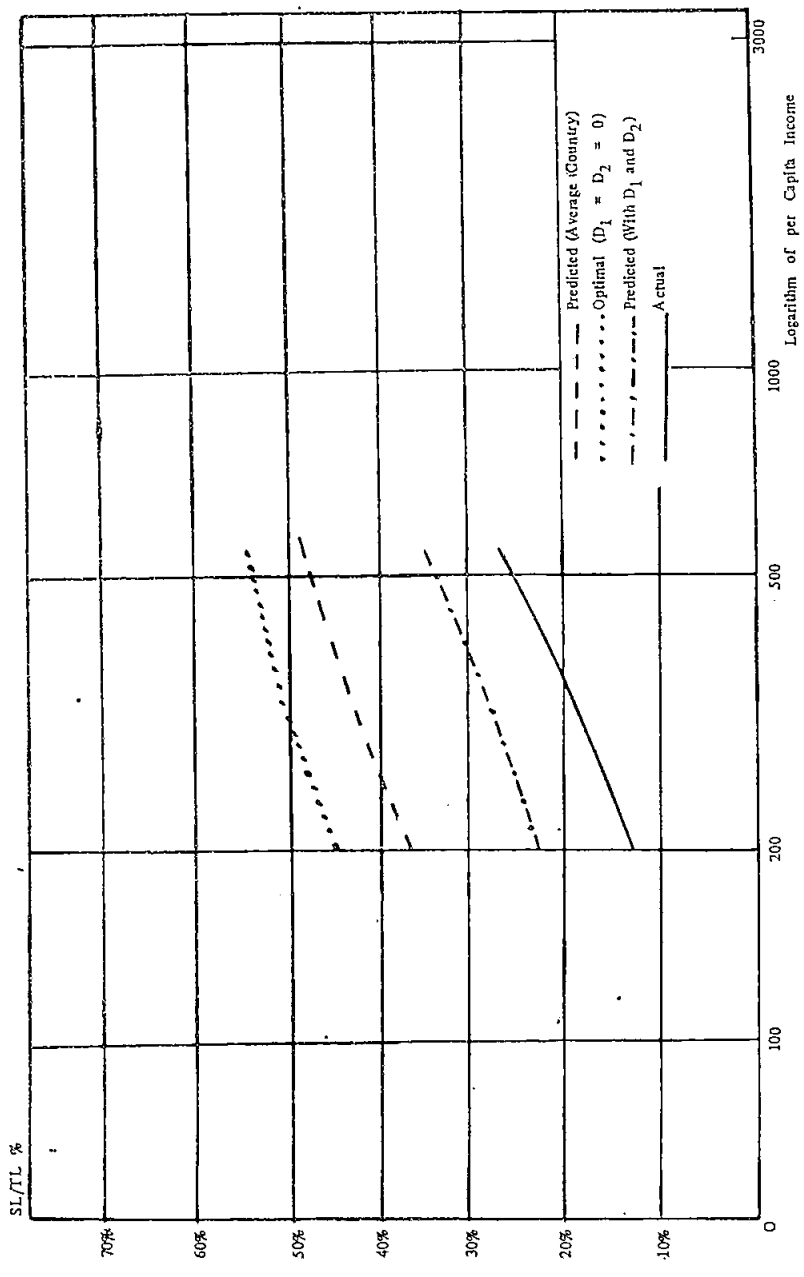
U radu se definiše 5 ekonomskih sistema sa stanovišta položaja radnika u upravljanju. Zatim se sumiraju ekonomski rezultati raznih autora koji omogućuju da se uporede i ocene ti sistemi. Kombinujući teorijski i empirijski pristup autor ima za cilj da a) verifikuje konzistentnost svoje teorije sa empirijskim podacima i b) dođe do značajnih praktičnih rezultata.

Jedan od najvažnijih rezultata je zaključak da samoupravljanje kao ekonomski sistem predstavlja veoma efikasan oblik ekonomske organizacije, nesumnjivo superiorniji u odnosu na sisteme u kojima ne postoje nikakvi oblici učešća radnika u upravljanju. To se odnosi pre svega na optimalne proizvodne rezultate. a još više na pravedniju raspodelu i veću slobodu i nezavisnost radnih ljudi u proizvodnji.

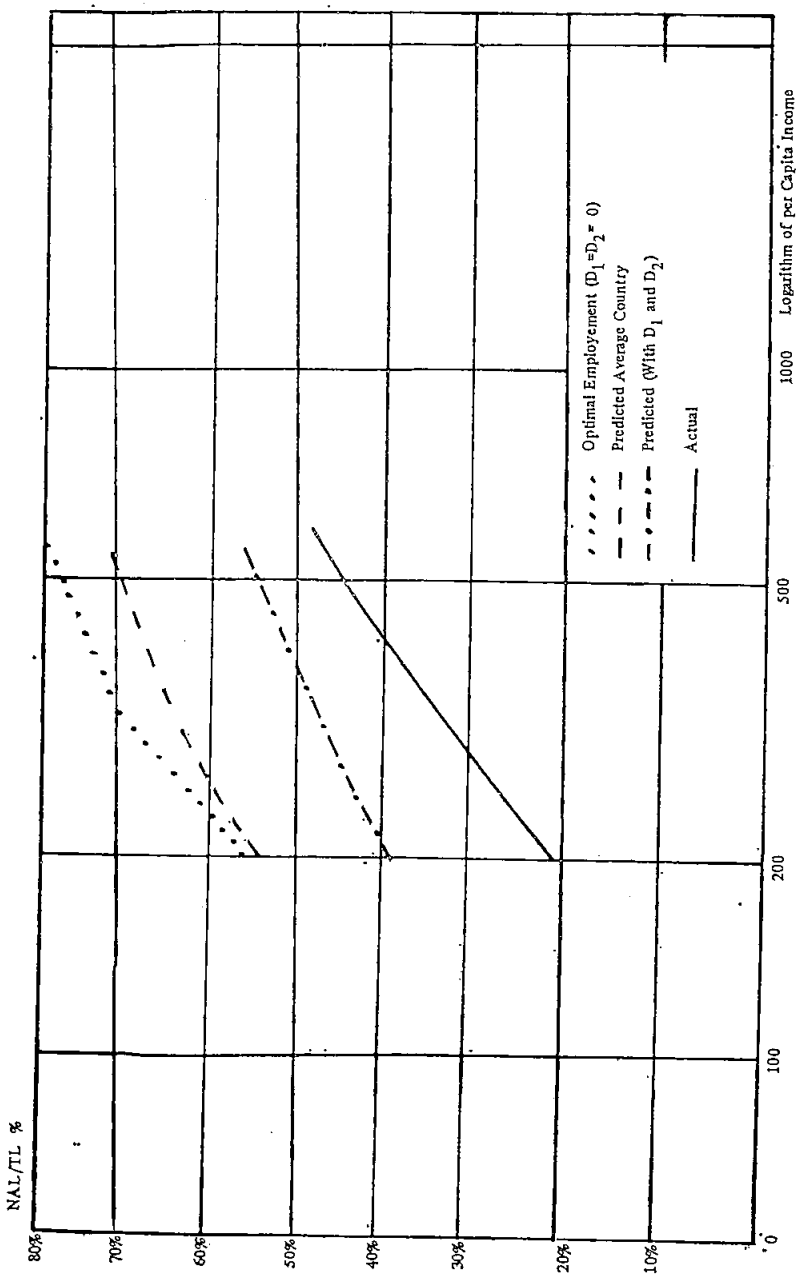
Komparativnom analizom privrednih rezultata Jugoslavije i 70 drugih zemalja u svetu ustanovljena je znatno veća akumulaciona sposobnost jugoslovenske privrede. Zaključak je, međutim, da mogućnosti samoupravljanja nisu potpuno iskorišćene u Jugoslaviji, posebno usled dejstva određenih strukturnih poremećaja jugoslovenske privrede i alokacije ostvarene akumulacije.



Graph–2. – Actual, Predicted and Potential Shares of Labor Force in Manufacturing for Yugoslavia for the Period 1952–71.



Graph–3. – Actual, Predicted and Potential Shares of Labor Force in Services for Yugoslavia for the Period 1952–71.



Graph–4. – Actual, Predicted and Potential Shares of Non–Agricultural Labor Force For Yugoslavia For The Period 1952–71.

THE SYSTEM OF COMMUNICATION IN ASSOCIATED LABOUR THE YUGOSLAV CASE

Firdus DŽINIĆ)*

a) The structure of the system and relations of the elements

The Constitution of the SFR Yugoslavia, the constitutions of the socialist republics and provinces passed in 1974, and the Associated labour Act (1976) have marked the beginning of a higher phase of organization of self-government in Yugoslavia. The central role in this phase is played by associated labour, because all the rights and duties of man and the determination of his social position are obtained from labour (not from property). We consider that only on this basis is it possible to bring the working class to a dominant position in order to realize its historic interests — which are, under contemporary conditions, the only way to self-governing socialism and communism. On this basis, in Yugoslavia different forms of associated labour are established which develop appropriate communication systems and connect themselves with the milieu.

The whole system of associated labour is founded on the basic organization of associated labour (BOAL), which is one of the two fundamental elements of the whole socio-economic and political system (another such element is the local community).

Communication within the BOAL is primarily developed interpersonally. Self-managing in principle tends to be direct, and this also refers to the operative management. In this sense, the BOAL represents a theoreticaly optimal framework from the point of view of social intergration. One of the constitutional and legislative conditions for establishing a BOAL is the number and distribution of people in the space which provides the realization of the role and competence of the basic self-managing cell. It is obvious, then, that on this level of associated labour, a direct interpersonal and intergroup communication must be predominant. Its information basis should also be founded on direct oral information and explanation, with the application of written communications only when numerical indicators are involved or in exceptionally significant and complex matters — but even then in a very brief form. The BOAL is generally to deal with

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