

5. Concluding Remarks

The objective of this paper is to »popularise« dynamic programming in an economic planning context. In seeking to achieve this objective, one runs the risk of under-selling the technique by making the exposition too simple and unrealistic. On balance, this risk appears justified when the opposite extreme is considered, that of building a firm mathematical foundation before applications are attempted. Bellman's papers are strongly mathematical in places, and the concentration is almost entirely on achieving recursion equations which, in many cases, cannot be solved.

One could, therefore, usefully spend one's time in trying to discover ways of overcoming difficult recursion equations, making use of ever more mathematics. Eventually the equations would yield to some all-powerful new approach, but what of the applications side in the meantime?

This author is convinced that planning situations must be sought in which the recursion equations may be simplified. Stocks of solved problems should then be built up, and, from such evidence, ways of extending the planning problems suggested. Hopefully, the recursion equations would also be extended, retaining their desirable properties from a planner's point of view. Those of us working in this direction should meet up with the mathematicians at some point in time. It remains to be seen whether or not a satisfactory approach rate can be maintained.

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THE STRUCTURE OF WAGES IN YUGOSLAVIA*

Decisions about the wages paid to labor are among the more difficult and delicate tasks faced by a worker managed enterprise. There has been substantial theoretical speculation about the nature of this decision and its impact on the economy but virtually no empirical examination of the issue. The purpose of this paper is to analyze the problem of wage determination, with particular attention devoted to the *wage differentials* that derive from the wage determination process under the Yugoslav system of workers' management.

Interskill Wage Structure. The Yugoslav worker receives his wage in two parts — a *fixed wage* which he periodically receives as compensation for his labor input and a *variable wage* which he receives at the end of an accounting period. The latter represents a supplementary wage payment out of the current surplus of the enterprise.¹⁾

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¹⁾ The way in which the fixed and variable wages are established in the enterprise is discussed in Howard M. Wachtel, »Workers' Management and Interindustry Wage Differentials in Yugoslavia«, (mimeographed, 1970). Some general questions concerning the nature of the wage decision are discussed in Howard M. Wachtel, »Wages in a Labor Managed Economy: The Yugoslav Case«, *Florida State University Slavic Papers* (forthcoming).

The variable wage »mark-up« over the fixed wage is a positive function of occupational status, as measured by the skill level for blue-collar workers and the education level for white-collar workers. These data are presented in Table 1.²⁾

Data for interskill wage differentials are presented in Table 2. Interskill differentials increased between 1956 and 1961, as measured by either the ratio of the extremes in interskill wage differentials or their relative variation. However, after 1961, interskill wage differentials began to narrow, reaching approximately the same level as in 1956. In 1956, the highest wage category — high school education or above — received a wage 2.64 times greater than the lowest wage category (unskilled blue-collar workers). By 1961 this ratio had risen to 3.30; by 1966 the ratio fell to 2.55, below the 1956 level. It is interesting to note that this narrowing of interskill wage differentials coincided with the inauguration of the Yugoslav economic reforms. During this period the enterprise was given increasing autonomy over its wage decision.

Interskill wage differentials are greater for the variable wage component than they are for the fixed wage component. Moreover, the greater differential in the variable wage appears to reflect conditions in the labor market for different skill and education groups. Data pertinent to these issues are contained in Table 3, where interskill wage differentials, broken down into fixed and variable components, are presented along with interskill unemployment differentials.³⁾ Unemployment rates are assumed to reflect differences in demand relative to supply for the various types of labor.

For all the years the unemployment rate differentials are greater than any of the wage differentials. However, the differentials in the variable wage are closer to unemployment rate differentials than are the differentials in the fixed wage. Moreover, differentials in the variable wage moved closer to unemployment rate differentials between 1956 and 1961, the last year for which variable wage data are available. To the extent that differentials in unemployment rates mirror labor market conditions, the evidence points to the conclusion that the variable wage performed the function of adjusting the fixed wage to prevailing labor market conditions.

To the extent that the variable wage was subjected to *less* government regulation than the fixed wage, the evidence indicates that the labor market in the 1956–1961 period was operating on the variable wage structure to bring the full wage structure closer to prevailing labor market conditions. This evidence, coupled with the decline in interskill wage differentials after 1961, suggests that labor mobility and the operations of the Yugoslav labor market were beginning to perform their equilibrating function.

Interrepublic Wage Structure: This trend in interskill wage differentials is repeated in the data for interrepublic wage differentials (Table 4). Differentials increased between 1956 and 1963, and then fell *slightly* thereafter, never reaching the level of 1956.

²⁾ The availability of these data evaporated after 1961 when the distinction between fixed and variable wages was in principle eliminated from Yugoslav wage theory and national accounting.

³⁾ Data for skill categories are collapsed into three groups to conform to the availability of unemployment data. The unemployment data represent unemployment rates for the *registered unemployed* or the entire economy, while age data are for the manufacturing and mining sector. However, this inconsistency may be more apparent than real since enterprises in the manufacturing and mining sector use general labor market for the whole economy when they attempt to employ workers.

There is a surprising amount of variation in the relative ranking of the different republics for each of the years. Slovenia had the highest wage in every year, and Macedonia had the lowest wage every year. However, these were the only republics with the same relative ranking for each of the year.

It is possible to disaggregate these data on interrepublic wage differentials by industry. The data in Table 5 show the ratio of wages for the highest and lowest wage republics for each industry in the manufacturing and mining sector of the Yugoslav economy. Six industries depart from the overall trend of a rising differential between 1956 and 1963 and a falling differential between 1963 and 1966. These industries are: crude petroleum, non-ferrous metallurgy, building materials, paper and paper products, textiles, and leather products.

Interindustry Wage Structure: The trend in the interindustry wage structure departs from the trend in both the interskill and interrepublic wage structures. The data presented in Table 6 indicate that interindustry wage differentials have *increased* between 1956 and 1966 in Yugoslavia. To explain this, least squares regression analysis was applied to a model of interindustry wage structures.

For each year of the 1954–1966 period cross-sectional multiple regression analysis was used on a model of the interindustry wage structure, where the interindustry wage structure was specified first as a function of differentials in labor demand (as measured by average productivity) and industrial concentration.⁴⁾ Wages are measured by the average hourly earnings per employee; average productivity represents real gross national product originating in an industry per manhour. Industrial concentration is represented in some years by the percentage of employment accounted for by the ten largest enterprises in an industry and in other years by the percentage of value added originating in the four largest enterprises in an industry.⁵⁾

The results obtained by applying this model of interindustry wage differentials to the Yugoslav economy suggest several implications:⁶⁾ Table 7)

1. Over time the model is an increasingly accurate representation of the process of the formation of interindustry wage differentials.
2. A model based on neoclassical wage theory, but adapted to the unique Yugoslav institutions of wage payments, can satisfactorily explain interindustry wage differentials in Yugoslavia.
3. The principle variable explaining the increase in interindustry wage differentials is the increase in interindustry labor productivity differentials. The latter, in turn, is related to the differential propensities among industries

⁴⁾ Theoretically, labor demand should be measured by marginal productivity rather than average productivity. Marginal and average productivity are equal or proportional to each other if the enterprise's production process is represented by a Cobb-Douglas production function with fixed relative factor prices.

⁵⁾ For each year of the 1954–1961 period, data compiled by Izak Drutner were used. Izak Drutner, »Tržišni Aspekti Koncentracije« (»Market Aspects of Concentration«), *Ekonomске Studije*, 3 (Economic Studies, 3) (Zagreb, Ekonomski Institut, Zagreb, 1965), p. 56). Data for 1956 and 1958 are not available. In the 1956 and 1958 regressions, the 1959 values for industrial concentration were used. Drutner's measure of industrial concentration is based on the proportion of value added in an industry originating in the four largest enterprises. For each year of the 1962–1966 period, data compiled from published Bulletins of the Federal Statistical Institute were used. This measure is based on the proportion of employment accounted for by the ten largest enterprises in an industry.

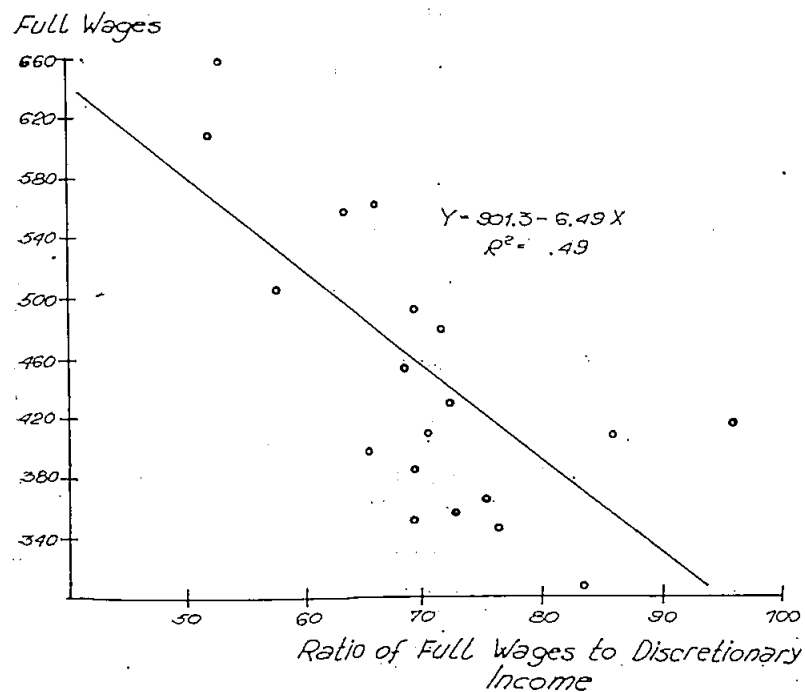
⁶⁾ A more detailed discussion of the model and its implications appears in Howard M. Wachtel, »Workers' Management and Interindustry Wage Differentials in Yugoslavia«.

to reinvest »discretionary funds.« Data pertinent to this finding are presented in Table 8 and Figure 1. *Low-wage* industries tend to have a low investment share out of discretionary funds — i.e., a high ratio of full wages to discretionary income. On the other hand, *high wage* industries tend to have a *high* investment share — i.e., a low ratio of full wages to discretionary funds.⁷⁾

This tendency for high-wage industries to reinvest relatively more of their discretionary funds than low-wage industries increases the technological disparity between high- and low-wage industries over time, resulting in a trend towards increasing labor productivity and wage disparity among industries.

Figure 1.

FULL WAGES AND RATIO OF FULL WAGE FUND TO DISCRETIONARY INCOME, 1966.



Source: Table 8.

Conclusions: This study of the structure of wages in Yugoslavia yields several conclusions:

1. Interskill and interrepublic wage differentials narrowed after the Yugoslav reforms were inaugurated in 1961. These movements in wages are

⁷⁾ This analysis is treated more fully in *Ibid.*

consistent with the trend toward wage equality which a smoothly functioning labor market should produce. Additionally, one could infer from this result that greater educational opportunity in Yugoslavia is producing occupational mobility (both within and between generations) that has led to the observed reduction in interskill wage differentials. The smaller decline in interrepublic wage differentials indicates that there is less mobility among republics, reflecting traditional obstacles to movement among Yugoslav republics.

2. The increase in interindustry wage differentials is associated with the differential reinvestment propensities among industries. These reinvestment propensities, in turn, are related *positively* to the average wage in the industry. The effect of this process of reinvestment of internal funds is to increase interindustry productivity and wage differentials over time.

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Table 1.

Ratio of Variable Wage to Fixed Wage, Manufacturing and Mining, 1956, 1959, and 1961 (percent)

Category of Worker	1956	1959	1961
All Workers	7.7	13.9	9.7
<i>White-Collar Workers:</i>			
High school education or above	14.4	18.1	12.7
Secondary school education	14.0	20.6	14.1
Primary school education	10.6	16.6	11.8
Less than primary school education	8.6	14.0	10.2
<i>Blue-Collar Workers:</i>			
Highly skilled	7.9	11.7	8.2
Skilled	7.0	13.2	9.4
Semi-skilled	9.1	16.7	11.8
Unskilled	7.1	13.3	8.6
	6.9	13.1	8.2
	5.4	9.1	6.7

Sources: SG, 1958, p. 235, Table 2-247; SG, 1960, p. 256, Table 2-302; SG, 1962, p. 252, Table 220-5; Savezni Zavod za Statistiku, *Lični Dohoci u Privredi u 1960 (Personal Incomes in the Economy in 1960)*, Statistički Bilten 207 (Beograd: Savezni Zavod za Statistiku, 1961), p. 27, Table 2-2; and Savezni Zavod za Statistiku, *Lični Dohoci u Privredi u 1961 (Personal Incomes in the Economy in 1961)*, Statistički Bilten 238 (Beograd: Savezni Zavod za Statistiku, 1962), p. 27, Table 2-2.

[Abbreviations will be used for several frequently cited data sources. SG (with the appropriate year) will be used to refer to Savezni Zavod za Statistiku, *Statistički Godišnjak, SFRJ (Statistical Yearbook of the Socialist Federal Republic of Yugoslavia)* (Beograd: Savezni Zavod za Statistiku). I will be used to refer to *Jugoslavija, 1945-1964, Statistički Pregled (Yugoslavia, 1945-1964, Statistical Review)* (Beograd: Savezni Zavod za Statistiku, 1965).]

Table 2.

Interskill Wage Differentials, Selected Years 1956—1966a (percent)

	1956	1959	1961	1963	1966
All Employees	100.0	100.0	100.0	100.0	100.0
White-Collar Workers	123.3	132.1	134.8	130.9	115.0
High School education or above	190.6	202.6	206.8	198.5	181.0
Secondary school education	114.4	119.2	118.0	n.a. ^b	115.6
Primary school education	85.3	84.6	83.8	105.0	84.8
Blue-Collar Workers	96.5	94.9	93.8	94.9	85.2
Highly skilled	151.0	155.8	154.6	148.0	136.1
Skilled	104.0	101.9	99.4	110.0	95.8
Semi-Skilled	85.0	80.1	77.0	85.0	80.0
Unskilled	72.2	64.1	62.1	76.0	70.9
Ration of Extremes ^c	264.0	316.1	330.1	261.1	255.3
Relative Variation ^d	35.0	41.1	43.3	34.6	33.4

^a Average monthly full wage per employee in the manufacturing and mining sector.

^b Data not available.

^c Highest-wage skill category divided by lowest-wage skill category.

^d Standard deviation divided by the mean.

Sources: SG 1958, p. 235, Table 2—247; SG 1960, p. 256, Table 2—302; SG 1962, p. 252, Table 220—51; SG 1965, p. 300, Table 121—1; SG 1967, p. 97, Table 104—5; SG 1968, p. 278, Table 122—7; Savezni Zavod za Statistiku, *Lični Dohoci u Privredi u 1960 (Personal Incomes in the Economy in 1960)*, Statistički Bilten 207 (Beograd: Savezni Zavod za Statistiku, *Lični Dohoci u Privredi u 1961 (Personal Incomes in the Economy in 1961)*, Statistički Bilten 238 (Beograd: Savezni Zavod za Statistiku, 1962), p. 27, Table 2—2.

Table 3.

Interskill Wage Differentials and Unemployment Rates, Selected Years, 1956—1961 (percent)

	1956	1959	1961
Full Wage	100.0	100.0	100.0
White-collar workers	123.3	132.1	135.0
More-skilled bluecollar workers ^a	111.5	112.2	108.0
Less-skilled bluecollar workers ^b	78.9	72.9	67.7
Fixed Wage ^c	100.0	100.0	100.0
White-collar workers	119.2	127.4	131.0
More-skilled bluecollar workers	111.7	112.0	108.1
Less-skilled bluecollar workers	80.0	74.5	69.1
Variable Wage	100.0	100.0	100.0
White-collar workers	176.9	165.4	177.8
More-skilled bluecollar workers	108.8	114.0	107.7
Less-skilled bluecollar workers	64.7	61.4	52.6
Unemployment Rate ^d	100.0	100.0	100.0
White-collar workers	31.8	22.0	18.5
More-skilled bluecollar workers	59.1	38.3	47.7
Less-skilled bluecollar workers	163.6	200.0	186.2

^a »Highly skilled« and »Skilled.«

^b »Semi-skilled« and »Unskilled.«

^c Data for Fixed and Variable Wage are not available after 1961.

^d Unemployment rates for the »registered« unemployed — i.e., individuals who are registered with local representatives of the Labor Secretariat.

Sources: SG, 1957, p. 114, Table 6—7; SG, 1960, p. 92, Table 2—49; SG, 1963, p. 86, Table 103—7; SG, 1965, p. 99, Table 104—3; SG, 1966, p. 108, Table 104—13; and SG, 1967, p. 97, Table 104—5, p. 103; Table 104—13; J, p. 65, Table 4—12; SG, 1968, p. 278, Table 122—7; Savezni Zavod za Statistiku, *Plata u Privredi, 1956 (Wages in the Economy, 1956)* Statistički Bilten 112 (Beograd: Savezni Zavod za Statistiku, 1958), p. 29, Table 2—6; Savezni Zavod za Statistiku, *Plata u Privredi u IV Tromesečju, 1959 (Wages in the Economy for the Fourth Quarter, 1959)* Statistički Bilten 197 (Beograd: Savezni Zavod za Statistiku, 1961), p. 25, Table 2—6; and Savezni Zavod za Statistiku, *Lični Dohoci u Privredi u 1961 (Personal Incomes in the Economy in 1961)* Statistički Bilten 238 (Beograd: Savezni Zavod za Statistiku, 1962), p. 17, Table 1—8.

Table 4.

**Interrepublic Wage Differentials, Manufacturing and Mining,
Selected Years, 1956—1966a (percent)**

Republic	1956	1959	1963	1966
All Republics	100.0	100.0	100.0	100.0
Bosnia-Hercegovina	94.5	100.3	97.1	93.9
Montenegro	94.5	82.6	87.9	87.2
Croatia	103.7	102.6	102.1	105.6
Macedonia	84.4	78.8	83.2	84.0
Slovenia	109.2	115.5	124.3	119.3
Serbia	95.4	105.0	90.0	95.5
Ratio of the Extremes ^b	115.6	146.6	149.4	142.0
Relative Variation ^c	8.2	13.2	14.0	10.8

^a Average monthly full wage. Data not available for 1961.

^b Ratio of highest-wage republic to lowest wage republic.

^c Standard deviation divided by the mean.

Sources: SG, 1957, p. 238, Table 22—4; SG, 1960, p. 435, Table 3—151, p. 437, Table 3—153; SG, 1964, p. 492, Table 217—2; SG, 1967, p. 464, Table 219—1.

Table 5.

**Ratio of Highest to Lowest Wage Republic by Industry,
1956, 1963, and 1966a (percent)**

Industry	1956 ^a	1963	1966
Manufacturing and Mining			
Electric energy	129.4	153.0	130.0
Coal and coke	140.6	246.2	166.4
Crude petroleum	130.1	119.4	136.5
Ferrous metallurgy	132.0	195.5	132.0
Non-metallic mineral products	154.6	137.5	132.5
Metal products	140.8	142.3	133.6
Shipbuilding	138.2	153.6	148.9
Electrical products	117.1	141.4	124.5
Chemicals and chemical products	149.0	147.2	138.0
Building materials	141.9	171.0	193.5
Wood products	120.5	159.4	145.3
Paper and paper products	125.4	164.0	164.3
Textiles	121.0	157.6	164.7
Leather products	115.8	146.1	159.4
Rubber products	121.9	224.0	138.7
Food products	125.5	167.6	147.4

Industry	1956 ^a	1963	1966
Printing, publishing and allied industries	164.8	174.0	148.9
Tobacco manufacturing	122.8	154.8	150.8

^a Data are for blue-collar workers. In 1956, blue-collar workers accounted for 86 percent of total employment in the manufacturing and mining sector.

Sources: Savezni Zavod za Statistiku, *Plate u Privredi, 1956 (Wages in the Economy, 1956)*, Statistički Bilten 112 (Beograd: Savezni Zavod za Statistiku, 1956), p. 13, Table 1—6; SG, 1964, p. 492, Table 217—2; and SG, 1967, p. 464, Table 219—1.

Table 6.

Interindustry Wage Differentials, Selected Years, 1956—1966^a (percent)

Industry	1956	1959	1961	1963	1966
Manufacturing and Mining,					
Total	100.0	100.0	100.0	100.0	100.0
Electric energy	121.2	118.0	134.8	132.2	143.3
Coal and coke	112.5	111.3	103.8	103.5	97.2
Crude petroleum	113.5	117.3	131.0	130.8	147.5
Ferrous metallurgy	113.5	123.3	124.8	112.8	119.8
Non-ferrous metallurgy	114.4	112.7	108.6	108.0	128.9
Non-metallic mineral products	100.0	100.0	101.4	87.5	92.1
Metal products	107.7	114.0	114.8	107.3	103.2
Shipbuilding	124.0	124.7	122.9	128.4	133.8
Electrical products	111.5	114.7	120.5	102.8	98.7
Chemicals and chemical products	105.8	115.3	114.8	112.5	117.9
Building materials	79.8	76.7	75.2	81.0	84.7
Wood products	87.5	81.3	77.6	76.8	76.4
Paper and paper products	115.5	116.0	118.6	109.0	99.3
Textiles	86.5	84.7	84.8	79.0	85.6
Leather products	96.1	92.0	93.3	87.2	88.5
Rubber products	87.5	102.7	100.5	100.3	103.1
Food products	94.2	94.7	98.1	87.9	98.3
Printing, publishing and allied industries	117.3	100.7	118.1	115.9	120.1
Tobacco manufacturing	83.7	82.0	84.3	82.7	85.3
Ratio of the Extremes ^b	151.9	162.6	179.2	172.1	193.1
Relative Variation ^c	11.8	13.3	14.8	16.0	21.6

^a Index of average monthly wages per employee.

^b Ratio of highest-wage industry to lowest-wage industry.

^c Standard deviation divided by the mean.

Sources: J, p. 64, Table 4—11 and SG, 1969, p. 276, Table 122—5.

Table 7.

Regression Results: Interindustry Wage Structures ^a								
	Years	Constant (+)	Average ^b Productivity (+)	Industrial ^c Concentration (+)	Regional ^d Concentration (+)	Labor Quality ^e (+)	Net/Profits (+)	R ²
1	2	3	4	5	6	7	8	9
1.	1956	48.4	.019 (1.89) [.24]	.028 (0.42) [.01]				.24
2.	1956	46.1	0.18 (1.87) [.24]	.021 (0.30) [.01]	.052 (0.56) [.01]			.26
3.	1956	39.9	.017 (1.86) [.24]	.006 (0.09) [.01]		.219 (1.55) [.10]		.35
4.	1958	54.8	.018 (2.35) [.30]	.201 (2.76) [.22]				.53
5.	1958	49.8	.017 (2.24) [.31]	.187 (2.60) [.22]	.131 (1.25) [.04]			.58
6.	1958	45.5	.014 (1.90) [.31]	.178 (2.48) [.22]		.256 (1.44) [.06]		.59
7.	1962	103.8	.033 (4.55) [.67]	.127 (1.07) [.02]				.69
8.	1962	98.9	.033 (4.35) [.67]	.101 (0.80) [.02]	.145 (0.64) [.01]			.70
9.	1962	72.9	.023 (2.93) [.67]	.113 (1.10) [.02]		.909 (2.51) [.09]		.78
10.	1965	207.7	.073 (6.38) [.80]	.299 (1.18) [.02]				.81
11.	1965	205.2	.073 (5.89) [.80]	.286 (1.05) [.01]	.088 (0.18) [.00]			.81
12.	1965	158.3	.056 (4.87) [.80]	.323 (1.53) [.02]		1.723 (2.82) [.06]		.87

1	2	3	4	5	6	7	8	9
13.	1962	90.5	.023 (2.87) [.67]	.337 (2.36) [.02]			1.658 (2.21) [.08]	.77
14.	1962	84.0	.022 (2.69) [.67]	.313 (2.13) [.02]	.179 (0.88) [.01]		1.707 (2.25) [.07]	.78
15.	1962	69.7	.017 (2.19) [.67]	.269 (2.00) [.02]		.720 (1.99) [.05]	1.206 (1.67) [.08]	.82

^a Wages are measured in dinars per hour per employee. Numbers in parentheses represent *t* values. Numbers in brackets represent partial R²'s. Other numbers represent the regression coefficients.

^b Real social product originating in an industry per man hour. Real social product as derived by deflating current dinar values by a producer price index for each industry.

^c 1956 and 1958: Percentage of value added accounted for by four largest enterprises in an industry in 1959. and 1965: Percentage of employment in ten largest enterprises in an industry.

^d Percentage of employment in Croatia and Slovenia.

^e Percentage of employment accounted for by white-collar workers with secondary education and above and «skilled» and «highly skilled» blue-collar workers.

^f Measured in billions of dinars.

Table 8.

Ratio of Full Wage Fund to Discretionary Income, and Full Wages in Manufacturing and Mining, 1961, 1963, and 1966

	1961		1963		1966	
	Ratio of Full Wage Fund to Discretionary Income (percent)	Full Wages ^a (dinars)	Ratio of Full Wage Fund to Discretionary Income (percent)	Full Wages ^a (dinars)	Ratio of Full Wage Fund to Discretionary Income (percent)	Full Wages ^a (dinars)
1	2	3	4	5	6	7
Manufacturing and mining, total	75.2	120.0	80.9	162.3	69.8	413.3
Electric energy	60.6	153.8	60.1	203.1	52.0	606.8
Coal and coke	91.4	126.7	89.9	167.9	85.4	409.2
Crude petroleum	48.4	147.0	62.8	205.4	52.8	652.9
Ferrous metallurgy	72.4	144.7	83.3	182.1	69.8	492.2
Non-metallic mineral products	73.6	118.9	82.7	140.5	69.3	387.7
Non-ferrous metallurgy	68.5	131.0	75.4	177.2	63.5	556.0

1	2	3	4	5	6	7
Metal products	74.5	139.3	81.9 ^b	174.1	72.5	429.1
Shipbuilding	82.7	142.5	n.a.	206.1	65.2	563.2
Electrical products	71.1	140.5	77.2	167.7	70.2	412.8
Chemicals and chemical products	64.5	136.1	72.3	180.5	57.1	505.6
Building materials	79.5	92.9	87.6	132.2	75.2	341.8
Wood products	84.3	94.2	86.7	125.4	83.2	304.6
Paper and paper products	66.8	136.8	74.1	175.0	95.1	407.8
Textiles	76.9	103.4	84.7	130.2	69.9	353.6
Leather products	81.7	110.7	92.4	143.1	75.3	359.2
Rubber products	72.0	121.9	75.5	163.8	68.1	453.2
Food products	77.3	115.0	80.1	138.7	65.9	396.5
Printing, publishing and allied industries	76.8	142.5	80.9	184.0	71.3	481.9
Tobacco manufacturing	68.7	102.9	64.3	135.0	72.3	352.4

^a Average hourly earnings per employee.

^b Not available.

Sources: *J*, p. 64, Table 4—11; *SG*, 1962, pp. 162 and 245, Tables 109—2 and 220—9; *SG*, 1963, p. 111, Table 105—4; *SG*, 1964, p. 106, Table 104—5; *SG*, 1965, pp. 122 & 174; Tables 105—5 & 109—2; *SG*, 1967, p. 99, Table 104—7; and *SG*, 1968, pp. 159 & 276, Tables 109—2 & 122—5.

CIJENA PROIZVODNJE U JUGOSLAVIJI

U br. 1—2/1970. *Ekonomске analize* objavljen je članak pod istim naslovom. Naknadnim istraživanjem utvrdio sam da se rezultati iz tog članka mogu i dalje poboljšati. U ovoj komunikaciji rezimiran je pozitivni dio tih istraživanja.*

Da bismo realističnije mogli izvesti komparativnu analizu formiranja cijene proizvodnje u SAD i Jugoslaviji, potrebno je nazivnik u izrazu za stopu dobiti definirati tako da bude uporediv u obje privrede. Može se uzeti da sa stanovišta ponašanja poduzeća fondovi u jugoslavenskoj privredi imaju sličnu funkciju kao akcionarska imovina u američkoj. Ukoliko je ova institucionalna hipoteza tačna, onda koeficijenti devijacije (δ) na bazi fondova moraju biti manji od svih ostalih dosada izračunatih.

U fondove uključujem poslovni fond, rezervni fond, fond zajedničke potrošnje i eventualne ostale fondove poduzeća.

Kao neto dobit za 1962. i 1963. godinu definiram zbir doprinosa rezervnom fondu (obavezni i neobavezni dio), poslovnom fondu, fondu zajedničke

* Potrebne obračune i testiranja izvršili su asistenti Instituta mr Milena Jovičić, Časlav Očić i Nikola Zelić i ja im zahvaljujem na pomoći.

potrošnje i ostalim fondovima. Za 1966—1969. godinu dodajem još izdvajanja za stambenu izgradnju i za otplaćivanje kredita za pokriće gubitaka.

Bruto dobit dobijamo ako se neto dobit u 1962. i 1963. uveća za kamate na poslovni fond, vodni doprinos, članarine i doprinose za zajedničke rezerve privrednih organizacija, a u 1966—1969. još i za doprinos za korišćenje gradskog zemljišta i doprinos Skoplju.

Stavljanjem u odnos neto odnosno bruto dobiti i fondova dobivamo šestu i sedmu varijantu stope dobiti. Rezultati su prikazani na narednoj tabeli.

Tabela 2a

Stope dobiti i koeficijenti devijacija na bazi angažovanih sredstava¹⁾ i fondova²⁾ u industriji i rudarstvu

	1962		1963		1966		1967		1968	
	F	S	F	S	F	S	F	S	F	S
Stope neto dobiti	7,6	4,8	9,6	5,2	14,5	11,7	9,9	8,2	9,8	6,6
Koeficijent devijacije	34,3	50,7	31,5	53,6	33,9	38,6	36,0	54,5	34,7	44,3
Stope bruto dobiti	11,7	17,1	14,7	19,4	26,5	18,1	13,1	14,6	13,0	11,9
Koeficijent devijacije	30,5	36,9	25,2	33,9	34,1	29,3	29,7	37,0	28,9	29,8
Stope bruto dobiti bez 2 grane ³⁾	11,9	—	14,9	—	27,9	19,3	13,7	15,6	13,5	12,9
Koeficijent devijacije	29,7	—	23,2	—	31,3	23,2	29,9	32,8	26,5	26,3

1) S = sadašnja vrijednost osnovnih sredstava + obrtna sredstva

2) F = fondovi

3) Isključene su elektroprivreda i industrija papira

Izvori: Tabela 2.

SDK, Periodični obračuni

Prije svega postavljena hipoteza pokazuje se opravdanom: zakonitost uprosječivanja stope dobiti dolazi nedvosmisleno više do izražaja na bazi fondova nego na bazi angažovanih sredstava. Koeficijent devijacije samo je u jednoj od promatranih godina — u 1966. godini, kad su pod utjecajem reforme izvršeni arbitrarni zahvati u području cijena — nepovoljniji na bazi fondova. Izuzmemo li tu godinu i isključimo li elektroprivredu i industriju papira zbog ranije navedenih razloga, koeficijent devijacije (posljednji red tabele) kreće se između 23,2% i 29,9% što se još više približava američkom intervalu 13,1% — 27,5%. Ostale zakonitosti ostaju sačuvane i stopa dobiti se

povečava a devijacije se smanjuju kad se rast ubrzava i obrnuto kod usporavanja.

Prema tome na osnovu empirijskih podataka možemo zaključiti da u jugoslavenskoj privredi vlada zakonitost uprosječavanja bruto stopa dobiti u odnosu na fondove poduzeća. Kad jednom organi ekonomske politike nauče kontrolirati monopoloidne situacije, ta će zakonitost doći još više do izražaja.

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ANALIZA PROIZVODNEGA PROGRAMA V JEKLOVLEKU V ŽELEZARNI JESENICE¹⁾

Namen analize proizvodnega programa v jeklovleku je bil določiti letne količine proizvodov tako, da bo v danih razmerah v čim večji meri dosežen cilj proizvodnje.

Jeklovlek je obrat, ki izdeluje samo izdelke za prodajo. Materialni vložek predstavlja jeklo v palicah, delno pa v kolobarjih. Dobi ga iz predhodnih obratov: profilnih valjarn, žične valjarne in žičarne, pa tudi z nakupom. Ta vložek v jeklovleku vlečejo, luščijo ali brusijo. Del proizvodnje samo toplotno obdelajo. Poleg teh osnovnih obdelav pa vse proizvode tudi čistijo, ravnaajo, toplotno obdelujejo in podobno. Po zaključeni proizvodnji gredo proizvodi v prodajo.

I. OPREDELITEV PROIZVODOV²⁾

Osnovna razdelitev proizvodov je na vlečeno, luščeno, brušeno in samo toplotno obdelano jeklo. Naslednji znak, po katerem se ločijo posamezni proizvodi, je kvaliteta proizvodov po JUS-u. Proizvodi se razlikujejo še po stanju obdelave: svetlo, žarjeno ali normalizirano ali fosfatirano in oplemeniteno. Medtem ko pri luščenem in brušenem jeklu prihaja v poštev samo okroglo jeklo, pa je vlečeno jeklo lahko tudi šesterokotno, ploščato, kvadratno ali s posebnimi profili. Zadnja razdelitev proizvodov je glede na dimenzijo. Dolžina palic ne igra posebne vloge, pač pa se premer palic giblje vse od 5 — 80 mm. To območje je razdeljeno v tri razrede: fino, tanko in srednje jeklo. Medtem ko se lastne cene nanašajo na ta območja, pa je za prodajne cene, norme in podobno potrebno poznati točno debelino. Le-ta pa praktično zavzame katerokoli celo, pa tudi decimalno število v že omenjenih mejah. Vse vrednosti je nemogoče, pa tudi nesmiselno zajemati, saj se na pr. tržne omejitve nanašajo le na grupe proizvodov. Nastaja vprašanje: katere in koliko debelin v eni grupi je treba vzeti kot reprezentančne proizvode? Ali vzeti sredino grupe, kvartalne vrednosti modus ali moduse, ali najugodnejšo debelino ali poiskati kakšno drugo rešitev.

Da bi bila naša odločitev lažja, smo najprej preštudirali odvisnost prodajne cene, lastne cene in norm od debeline za nekaj proizvodov. Dobili smo za vse proizvode podobno sliko:

Z rastočo debelino prodajna cena, lastna cena in norma padajo, kar je povsem logično. Prodajna cena pri večjih debelinah spet prične rasti, medtem ko za lastne cene poznamo le vrednosti za grupe.

Vzemimo kot prvo možnost, da bi upoštevali tisto debelino, pri kateri je razlika med prodajno in lastno ceno največja. Lahko bi tvorili tudi

¹⁾ Pri nalogi je s strokovnimi nasveti sodeloval profesor Ekonomske fakultete v Ljubljani dr. Alojzij Vadnal, ki se mu za pomoč tudi ob tej priliki zahvaljujemo.

²⁾ Opredelitev proizvodov navajamo precej podrobno zato, ker v črni metalurgiji predstavlja, kot bomo videli, poseben problem.