measure in this context than the ratio of investment to the enterprise's net income, which Wachtel uses. The rates of investment so defined are substantially lower than Wachtel's in capital intensive industries and higher in labor-intensive industries. The positive correlation betwen rates of investment and personal incomes by industry, which Wachtel stresses in his argumentation, would probably disappear in this case. Branko Horvat has shown that rates of profit in Yugoslav industries are substantially lower in capital intensive than in labor intensive industries (6).

Institute of Economic Studies,
Belgrade

Sofija POPOV

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INTERINDUSTRY WAGE DIFFERENTIALS IN YUGOSLAVIA: A FURTHER COMMENT

Having stepped on comparatively unknown ground when I initially did my research on wages in Yugoslavia, I did not expect my empirical analysis of the determination of wages and wage differentials to go unchallenged. Sofija Popov's addition to the literature on this subject is most welcomed for this reason.

Let me try to summarize Mrs. Popov's major points and at the same time offer a response.

1. Her analysis combines cross-section and time series, covering the period 1960—1969, while my analysis was limited to cross sectional analysis. As I indicate in my book which contains the full content of my research on wages and workers' management in Yugoslavia,[1]) the cross sectional mo-

[1]) Howard M. Wachtel, *Workers' Management and Workers' Wages in Yugoslavia: The Theory and Practice of Participatory Socialism,* Ithaca: Cornell, University Press 1973. p. 170.

del I used did not perform as well when I attempted to use it to explain a cross section of annual changes in wages among industries.

2. Popov's dependent variable — the »unskilled worker equivalent« — is different from mine (unadjusted hourly earnings). Her variable attempts to take account of the skill composition of the labor force in each industry by adjusting the dependent variable. I handled this problem by introducing directly an independent variable which measured the skill composition in each industry. I do not know whether or how these specification differences in our dependent variable affect our respective results.

3. In Popov's model, the »rate of utilization« (used synonymously as a measure of »capital intensity« per worker) is a dominant variable in explaining wage differentials for the 1960—1969 period, while I found labor productivity to be dominant in an annual cross section analysis and did not use a capital intensity variable.

Several points are worth noting here:

a. Our conclusions are very similar along one dimension. She says: »capital intensive industries were able to pay higher personal incomes for they had higher enterprise net income per employee, from which personal incomes are directly derived.« And later: »These differences in technology appear to be one of the main causes of interindustry differences in personal incomes... since capital intensive industries have... greater possibilities of using part of the investment funds for payment of personal incomes.« My analysis runs along the same lines, namely that high-wage industries are high-wage precisely because they have substantial surpluses out of which they can reinvest relatively large proportions and thereby increase their labor productivity by gaining a technological advantage over lower wage industries which do not have as substantial reinvestment funds. Thus, over time differentials in labor productivity become wider, and wages, which are demonstrated to be heavily dependent upon labor productivity, become increasingly unequal among industries. In the original paper (p. 558), I said: »The *higher* the average wage in an industry, the *larger* the share of enterprise funds reinvested in the enterprise and the *smaller* the share of enterprise funds distributed to labor... Differential reinvestment propensities have widened the technological gap between high- and low-wage industries, thereby increasing interindustry labor productivity differentials over time. This increase in interindustry productivity differentials is the principal cause of increasing interindustry wage differentials over time.« (emphasis in original).

b. From these quotations it is apparent that Popov and I do not reach different conclusions. Rather the difference is in our analysis of the principal variable motivating the system. She opts for capital per worker as a proxy for the technological change that is causing wage differentials to widen. I have used labor producitivity to measure the same phenomenon. Both of our statistical results are satisfactory.

The question is which variable most approximates *theoretically* the concept of differential technologies among industries. There are several problems with using the variable capital per worker (Popov's variable) which I think are avoided with the use of my variable, labor productivity. First there are the notorious problems associated with the measurement of capi-

tal, revolving around the problem of aggregation which has most recently surfaced in the Cambridge critique of neoclassical economic theory. Second, what is technology other than the ability to produce more output per worker than one would do otherwise with a less productive vintage of capital? Put differently, output per manhour (my measure of labor productivity) is, in my judgement, superior *theoretically* as a proxy for technological differentials than is Popov's capital intensity variable. Third, the capital intensity variable, at best, is a proxy for productivity only if all industries are working with the same level of utilization of capital.[2]) If one industry is using only 75% of its capital in a year while another is using 100% then the capital intensity variable would not be an accurate reflection of the capital actually used in that year. To account for this, one should introduce a variable into the analysis which measures the degree of capital utilization, something Popov neglects to do in her analysis. I suspect that there may be some functional relationship between output per manhour and capital per worker which, perhaps, was not revealed in Popov's simple correlations precisely because the degree of utilization of capital was not considered.

The same specification problem arises with Popov's measure of labor productivity, output per *employee*. The capacity utilization of workers can cause *manhours* worked per year to vary while the number of employees remains constant. My specification of labor productivity — output per manhour — does not fall into this trap. This is especially important for Popov's analysis because her base year (1960) is a period of relatively full employment while her end-year (1969) is one of relatively low levels of utilization of capital and labor.

In sum, it seems preferable to use a more direct measure of a phenomenon instead of a less direct one whenever possible.

4. Finally, there is the issue of whether internal or external funds comprise a larger proportion of total investment. The data I have used come from the *Statistički Godišnjak* and show that the trend has been toward a rising proportion of internal funds in total investment and that high-wage industries reinvest relatively larger proportions of their discretionary funds than do low-wage industries. Beyond this questions is the fact that enterprises with large amounts of internal funds for investment are better credit risks and find it easier to parlay their internal funds into very large external credits on the money market.

5. All this does not diminish Popov's cotribution to the mystery of wage determination and wage differentials in worker-managed economies. However, in reviewing her note, I would conclude that the results of my analysis still stand without necessarily invalidating Popov's analysis.

American University,
Washington, D. C.

Howard M. WACHTEL

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[2]) This point only becomes relevant if Popov did not, in fact, adjust capital for the degree of utilization. Unfortunately, she does not give the reader enough information to know how she specified this variable.