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COMPARATIVE PRODUCTIVITY AND UNEMPLOYMENT

*Robert DRAGO**

ABSTRACT

A recent study by Abram Bergson shows that socialism significantly reduces productivity. We replicate that study after including an unemployment variable to capture work discipline effects in capitalist countries. The results suggest that unemployment is a cause of greater productivity in capitalist countries.

The relative economic performance of capitalist and socialist economies has been the subject of debate and study since the controversy between Friederick von Hayek (1935) and Oscar Lange.[1] For various reasons, the debate continues more or less unresolved.[2] In what is perhaps the most careful study to date, Abram Bergson (1987) provides substantive evidence that socialist economies are less productive, even after controlling for resources and capital inputs. However, contrary to Bergson's claims, socialist economies might experience *greater* technical efficiency even if they are *less* productive.[3] The difference hinges on Marx's distinction between labor power (hours of work) and labor (work performed). Measured productivity, or output per labor hour, confounds the effects of divergent levels of concrete labor with technical input-output effects. For example, if we hold labor power or hours constant and increase labor or efforts, measured productivity will rise, while technical efficiency remains unchanged.

If for some reason efforts were lower in socialist countries, their measured productivity will be low irregardless of technical input-output

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* Assistant Professor of Economics, University of Wisconsin-Milwaukee and Research Associate, National Institute of Labour Studies, Flinders University of South Australia.

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[1] See Lange and Fred Taylor, 1952.

[2] See, e.g., Zimbalist and Sherman, 1984.

[3] Bergson states that, "The observed difference in performance between socialist and [Western Mixed Economy] countries regarding output per worker should reflect any difference in efficiency between the two sorts of economic systems represented." (1987, p. 355)

relationships. Such a finding would not only cast doubt on any claims that socialism is technically inefficient, it would also provide a reason for believing that economic welfare is lower under capitalism since high worker efforts in those countries are presumably a source of worker disutility.

Recent theoretical work suggests a plausible rationale for accepting the above arguments. Capitalist economies may use unemployment — driven by high or "efficiency" wages — to generate effort. In efficiency wage models, unemployment acts as a threat (or high wages as a gift) to prevent shirking and hence increase productivity (Shapiro and Stiglitz, 1984; Yellen, 1984). In Marxian terms, a "reserve army" of the unemployed is maintained as a threat to currently employed workers, who respond with high efforts in order to escape dismissal (Bowels, 1985). Further, at least one author attributes the productivity problems of socialist economies to their historical avoidance of the threat of dismissal as an incentive. (Marrese, 1982, 117).

We might test for efficiency wages by including real wages in Bergson's regressions. However, this strategy relies on dubious causality, since even if high wages cause high efforts, historic productivity levels surely influence the potential level of wages. Thus, we focus here on unemployment: to what extent is the capitalist/socialist productivity gap attributable to inefficient and unproductive socialist management, or instead due to capitalist unemployment which is irrelevant to technical efficiency? In answering this question we basically replicate Bergson's research and include an unemployment variable in the regressions.

International Labor Organization figures for unemployment rates in 1975 and 1974 were used here.[4] The ILO does not consider reported unemployment rates for France meaningful, and hence France is ommitted from the ILO figures and here as well. Moreover, since unemployment is not calculated similarly in all countries, the rate of change from 1974 to 1975 was used. To the extent that there existed blocks of individuals who were steadily unemployed (youth) or employed (military personnel) and counted in some countries but not others, a rate of change makes the figures consistent. Dynamic unemployment figures are also consonant with Marxian productivity models (which anticipated efficiency wage arguments), wherein not merely high, but rising unemployment generates worker fear, enhanced efforts, and hence higher measured productivity. (Crotty & Boddy, 1975) Socialist countries, excepting Yugoslavia, did not report unemployment and we assume that in fact the USSR, Poland, and Hungary had no unemployment at the time, in line with the notion that socialism delivers the jobs, if not the goods (see Adams, 1982).

Table 1 replicates six regressions from Bergson's Tables 4 and 5 (pp. 352—353). His other regressions are ignored here for brevity and to protect degrees of freedom (the other regressions include more variables). The first column is the number of the regression corresponding to Bergson's, with his various corrections and adjustments for

[4] ILO, 1976, pp. 445—448.

prices and labour quality.[5] The second column provides the corrected R^2 for each regression, the next four columns include coefficients for capital, land, unemployment, and the socialism dummy respectively (the labels A, B, and M are from Bergson).

In all of the regressions, the socialism and capital input coefficients are significant at the 1% level. The land coefficient is significant in the first three regressions at the 1% level, and at the 5% level thereafter. Regarding the unemployment variable, its coefficient consistently takes the expected positive sign, and is significant at the 5% level in the first three regressions, but not thereafter. Though not particularly strong, the unemployment results for this small data set are surely suggestive of a link between the threat of unemployment, effort, and productivity.[6]

Table 1 — *Alternative Regressions for Output per Worker As Dependent Variable, 1975**

Regression	Total R^2	Capital A	Land B	Unempl	Soc M
I—1	.990	.515	.068	.048	—.297
		(12.57)	(4.53)	(2.75)	(7.95)
I—2	.992	.515	.068	.048	—.348
		(12.58)	(4.53)	(2.75)	(8.79)
I—3	.992	.515	.068	.048	—.287
		(12.58)	(4.53)	(2.75)	(6.77)
II—1	.978	.525	.076	.027	—.267
		(9.22)	(3.64)	(1.19)	(5.85)
II—2	.983	.525	.076	.027	—.317
		(9.22)	(3.63)	(1.19)	(6.56)
II—3	.983	.525	.076	.027	—.255
		(9.22)	(3.64)	(1.19)	(4.91)

* T-statistics are shown in parentheses. For variables other than unemployment and adjustments for each regression, see Bergson (pp. 352—353).

Simple correlations are also consistent with this link, and warrant examination here because of severe multicollinearity in the system. The simple R^2 between unemployment and productivity varies between .715

[5] Though only a brief explanation of his corrections can be provided here, the extreme care with which Bergson approached this data is notable. I—1 is his base regression. To account for possible overvaluation of socialist currencies, I—2 adjusts both output and capital in socialist countries downward by 10% each, while in I—3 socialist output is cut 10% and measured capital by 20%. II—1 uses I—1 data after adjusting for labor quality, and II—2 and II—3 follow I—2 and I—3 respectively after the same labor quality correction.

[6] Note that unemployment also increases the capital/labor ratio and for that reason might improve productivity. The regressions control for this effect by directly including measures of capital.

and .674 for the different measures of productivity employed in the regressions, and is consistently significant in a T-test at the 1% level.

Finally, magnitude calculations are shown in Table 2 for predicted productivities from regression I—1 figures. The first column of numbers presents actual productivity indices (from Bergson's Table 1, p. 346), while the second provides predicted values. In seven of ten cases, the predicted value is within 2% of the actual value and in no case is the actual value more than 4% away from that predicted, suggesting a very good fit. In the third column, predicted values are provided under the assumption that all countries have land and capital per worker as in the U.S. This calculation suggests that, for example, about one-third of the differential between the USA and the USSR is due to more abundant land and capital in the USA. Continuing, the final column suggests what productivities would have been under the assumptions of equal capital, land, and efforts as in the USA (assuming that the change in unemployment serves as a proxy for effort). Comparing results in the third and fourth columns, we see that about one-fifth of the USA/USSR gap is due to higher efforts in the USA, while approximately one-tenth of the USA/Yugoslavia gap is due to divergent efforts. Additionally, in this column, we see the basic productivity differential between capitalism and socialism of approximately 24%, which accounts for almost one-half of the USA/USSR difference, and approximately one-third of the USA/Yugoslavia gap.

Table 2 — *Actual and Predicted Output per Worker*

Country	Actual	Predicted	Controlled for Cap & Land	Controlled for Cap, Land, & Effort
USA	100.0	101.0	101.0	101.0
FGR	94.1	90.3	97.2	101.0
Italy	71.0	69.2	89.6	101.0
UK	68.6	71.6	92.3	101.0
Japan	56.9	57.8	90.1	101.0
Spain	56.0	55.9	91.4	101.0
USSR	47.4	50.0	67.2	77.2
Hungary	43.4	44.6	67.2	77.2
Poland	36.2	35.8	67.2	77.2
Yugoslavia	33.9	35.4	71.2	77.2

Readers of this journal might wonder why Yugoslavia is lumped together with the Soviet Union, Poland, and Hungary, given self-management in the prior economy. The socialism coefficient used here assumes that private ownership of the means of production is the only relevant criterion for determining whether or not a country is socialist. Some might argue that if a different criterion were employed to define socialism, such as democratic control over the means of production,

then the effect of socialism on productivity might be positive. Using this definition, Yugoslavia could be viewed as the only 'socialist' country in the data set and, indeed, Bergson finds evidence that Yugoslavia may not experience reduced productivity due to its form of socialism (1987, 353—354).[7] On the other hand, we might predict that capitalist countries with social democratic policies will be less subject to the unemployment-effort linkage. Consistent with this argument, separate studies of self-reported efforts from a relatively pure capitalist economy, the US, and a social democracy, Australia, showed US employees as more likely to respond to perceived high unemployment by working harder.[8] All of this suggests that the simple terms of the capitalist-socialist debate handed down from the days of Hayek and Lange are inadequate for discerning the effects of socialism on economic outcomes. By implication, we might view the results here as mainly confirming a productivity distinction between relatively pure capitalist economies and those of the Soviet bloc.

Given the above discussion, Bergson's claim that technical efficiency is likely greater under pure capitalism as opposed to Soviet-style socialism stands up even when the issue of work effort is considered. A 24% productivity advantage for capitalist countries per se is not to be taken lightly. Nonetheless, if effort differences due to unemployment can cause macroeconomic productivity to vary by 10% or more, then surely the issue of work effort is also serious. More importantly, as mentioned earlier, it seems likely that worker fear and extra efforts induced by unemployment result in a loss of economic welfare.[9] Some socialist governments may currently and correctly perceive that permitting unemployment will result in increased productivity; it is not clear that the strategy will improve economic welfare.

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[7] In the present work we have insufficient degrees of freedom to make such a distinction. Bergson's regression I—1 has 7 degrees of freedom, given 11 observations on countries and 3 independent variables. Because we add the unemployment variable and exclude France, regressions reported here have only 5 degrees of freedom. Inclusion of dummy variables for each socialist country would permit only 2 degrees of freedom.

[8] See Drago, 1989, and Drago and Heywood, 1989.

[9] Bowles and Gintis, 1988, and Shapiro and Stiglitz using a different method, demonstrate that unemployment caused by efficiency wages is inefficient in the Pareto sense.

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UPOREDNA ANALIZA PRODUKTIVNOSTI I NEZAPOSLENOSTI

Robert DRAGO

Rezime

Nedavno objavljena studija Abrama Bergsona pokazuje da u socijalizmu dolazi do značajnog pada produktivnosti. Mi razmatramo ovu studiju nakon uključivanja varijable nezaposlenosti da bismo obuhvatili efekte radne discipline u kapitalističkim zemljama. Rezultati pokazuju da nezaposlenost utiče na veću produktivnost u kapitalističkim zemljama.