- From the introduction to *Capitalism: Competition, Conflict, Crises* -

Chapter 9 focuses on the classical theory of relative prices and on a wealth of supporting evidence. Prices of production are competitive relative prices generated by three essential processes: selling prices equalized across sellers, labor incomes equalized across workers, and profit rate equalized across regulating capitals, all equalizations being turbulent. The classical tradition approaches the final outcome in several analytical steps because this helps identify the underlying structure of relative prices. Section II begins with self-employed producers who purchase their inputs and sell their product in competitive markets and move from one occupation to another in search of higher incomes (incomes not being wages yet since producers work for themselves). Then the mobility of producers across occupations will equalize hourly incomes and the corresponding prices will be proportional to the integrated labor time required to produce the commodities. Integrated labor time refers here to the labor required to produce the given commodity plus that required to produce its inputs and the inputs to its inputs, and so on. Now suppose that the producers have to share their proceeds with capitalists in such a way that each class gets a fraction of the value added, these fractions being the same across all industries (so that wage rates are equalized). Then there is no reason for relative prices to deviate from relative integrated labor times. Hence, neither capitalist relations nor positive profits need cause any such deviations. Furthermore, if capital–labor ratios happen to be the same in each industry, equal profit shares also imply equal profit rates at prices proportional to integrated labor times. This establishes that production price–labor time deviations do not arise per se from competition, private property in the means of production, equalization of labor incomes, capitalist relations of production, positive profits, or even from the equalization of profit rates: they arise solely from differences among industry capital– labor ratios. Then we are led to ask how the variation among capital–labor ratios is mapped into the price–labor time dispersion.

Section III follows on the last point by first demonstrating that the relevant dispersion of capital–labor ratios is not of the ones directly observed in each industry, but rather of the integrated ratios each of which is a weighted average of the capital–labor ratio of a given industry and that of its inputs and of the inputs of the inputs, and so on. Each industry's production price is shown to be the product of two structural factors: its integrated unit labor time that links the industry to the production network in which it is situated; and its integrated capital–labor ratio. Since the latter is a weighted average of the industry's direct ratio and the direct ratios of all the industries that enter directly or indirectly into its means of production, the dispersion of integrated ratios is necessarily much smaller than that of direct ratios. This alerts us to the possibility that their contribution to the distance between relative prices of production and relative integrated labor times may be small (as it is shown to be in section IX). Section IV takes up the question of unit-independent and scale-free measure of such (vector) distances and shows that in addition to traditional unweighted root-mean-square type distance measures such as the coefficient of variation and the Euclidean distance, it is possible to develop a weighted distance measure based on the absolute values of deviations. The latter has the simple interpretation of representing the average absolute percentage deviation between any two sets of variables.

Sections V–VI present a great deal of evidence on the distance between market prices, direct prices (prices proportional to integrated labor times), and prices of production from 1947 to 1998. All three measures give roughly the same results. In terms of the weighted distance measure, the distance between market prices and direct prices is about 15%, that between prices of production at the observed rate of profit and integrated labor times is about 13%, and that between market prices and production prices at the observed rate of profit is once again about 15% (table 9.14). The fact that market prices are just as close to direct prices as they are to prices of production seems to be a puzzle given that market prices supposedly fluctuate around prices of production while the latter deviate systematically from direct prices. However, I show that even when market prices fluctuate randomly around production prices as the latter vary with the profit rate (and hence deviate systematically from direct prices) there are many points at which the distance between market prices and direct prices can be as great as, or even lower than, the distance between production price and direct price (figure 9.17). Temporal changes in normalized market, production and direct prices are similarly close. We can use statistical regressions in this case if we work with percentage deviations between sets of prices, because units and scaling factors then cancel out. The highest correlation and lowest distances occur over the smallest available time interval, which is four to five years, although the relations remain robust up to the (next available) interval of nine years: for instance, even over a nine-year interval the relation between changes in market prices and changes in direct prices yields R^2 = 0.82–0.87 and weighted distance measures of 4%–6% (table 9.10). Comparisons of changes in prices of production at observed rates of profit and direct prices yield similar results: even over a nine-year interval R^2 = 0.89–0.90 and the weighted deviations are 2%–5% (table 9.14). Finally, following a procedure developed by the eminent US mathematician Jacob Schwartz to address Ricardo's famous estimate of the sensitivity of relative prices to changes in distribution, Claudio Puty shows that the change in market prices in going from peaks to troughs of successive business cycles averages 7%–8% (tables 9.11–9.12). This is exactly Ricardo's estimate!

Sections VII–X examine the empirical properties of individual Sraffa standard prices, which turn out to be mildly curvilinear within a circulating capital model but entirely linear within a fixed capital one. In both cases, the corresponding wage–profit curves are near-linear (figures 9.8 and 9.12). Sraffa links the potential complexity of individual production prices to possibly complicated movements of industry output–capital ratios, but at an empirical level in the US data these ratios are near-linear—which is precisely why standard prices and wage–profit curves are near-linear. For all practical purposes, Sraffa's standard prices are integrated versions of Marx's transformed values. If standard prices were linear throughout, the elasticity of distance between production and direct prices with respect to changes in the profit rate would be 1. At the empirical level, the elasticities are on the order of 1.10, that is, about 10% different from the linear case, at observed rates of profit (figure 9.14). This too is essentially what Ricardo hypothesized. Not surprisingly, empirical wage– profit curves turn out to be near-linear (figure 9.19). The overall results provide strong support for the classical theory of relative prices. The near-linearity of standard production prices greatly simplifies the analysis of the effects of changes in distribution and in technology, and their empirical strength gives them considerable practical value. They are consistent with the (slightly) curvilinear wage–profit curves we observe, so they do not exclude the logical possibility of re-switching or capital-reversals (although they do imply that such occurrences will be rare).

Section XI closes out chapter 9 with a history of the origins and development of the classical theory of relative prices: Smith, Ricardo, Marx, Sraffa, and the subsequent debates on re-switching and the possibility of aggregate production functions. The evidence in this chapter makes it clear that differences between various price forms are relatively small so that they wash out at the aggregate level and aggregate ratios are essentially the same whether we use market prices, prices of production, or integrated labor times (Marx's labor values)—as Sraffa himself says.[1] Linear standard prices and wage–profit curves imply two apparently contradictory things: that Marx's transformation procedure is essentially correct if recast in terms of integrated rather than direct "organic compositions of capital"; and that Samuelson's aggregate pseudoproduction function is basically correct because wage–profit curves are essentially linear. Hence, prices of production arising from the redistribution of surplus value give rise to an aggregate pseudo-marginal product of the capital (in money terms) which is equal to the profit rate at each switch point. This does not imply that the money value of capital determines the profit rate. Indeed, the classical causation is from individual wage struggles on the shop floor to the general rate of profit (r) and the corresponding money values of capital K(r) and output Y(r). Similarly, movement along a Samuelsonian wage–profit frontier does not reinstate the neoclassical theory of full employment. The neoclassical claim is that flexible real wages automatically lead to full employment, whereas Marx and Goodwin argue that flexible real wages serve to create and maintains a persistent pool of unemployed labor (chapter 14). There remains the fascinating issue of the properties of input–output tables that may account for the observed linearity of standard prices. Schefold has shown that exactly linear standard prices obtain if the subdominant eigenvalues of the integrated capital-coefficients matrix are all zero, and one possible explanation for this the hypothesis being that the subdominant eigenvalues of random matrices approach zero as the matrix size approaches infinity (appendix 9.1). This would, of course, constitute an advanced mathematical proof of what might be called "Marx's Last Theorem."

Endnotes:

1. In his notes, Sraffa says that the "the ratio between their aggregates (rate of surplus value, rate of profit) is approximately the same whether measured at 'values' or at the prices of production corresponding to any rate of surplus value. . . . This is obviously true" (Bellofiore 2001, 369).