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correlations: a comment on papers by
Simo Mohun and Anwar Shaikh**

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ABSTRACT

This paper is the first published critique of the indeterminacy of price-value correlations and their inadequacy as empirical evidence for the determination of prices by values. It comments on the approach developed by Shaikh, Petrovic, Parys, Ochoa and others, according to which prices, as asserted by Ricardo, are empirically ‘97%’ determined by values.

This method calculates measures of distance (according to some or other measure such as Mean Absolute Distance, or correlation) between a vector of empirically-observed average price of a set of industrial sectors, and a vector of aggregate values calculated as the vertically-integrated labour coefficients of the same set of industrial sectors.

The present paper suggests, and establishes using a Monte Carlo method, that the observed correlations are most likely to ‘spurious’ since they can be entirely accounted for by variations in the size of the industrial sectors concerned.

The paper was published in the same volume as the paper from Anwar Shaikh to which it responds, as well as another by Simon Mohun on which the paper also comments. (Bellofiore, R (ed) *Marxian Economics: a Reappraisal*, Volume 2, pp139-162. Basingstoke: McMillan)

The controversy was subsequently developed in a number of exchanges including, in particular, papers in the Cambridge Journal of Economics between Andrew Kliman, Paul Cockshott and Allin Cottrell. It has further been discussed in papers by Ruben Osuna and Emilio Diaz which are at the time of submission unpublished, and in papers by Tsoulfidis and Maniatis also in the Cambridge Journal of Economics.

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These two papers are in themselves testimony to the pioneering work of Anwar Shaikh and his co-workers, who have in my view established two key points.

First, beginning from published data one can recover underlying value magnitudes and hence empirically measure Marx's main categories. This directly contradicts a once-prevalent view that value magnitudes are an inaccessible 'essence' under the surface appearances of prices. Second, value magnitudes, though accessible, cannot be derived directly or trivially from the data. A systematic procedure is required to get at them. Two such are extant, both owing a great deal to Anwar.

One can start from aggregate price data – principally the National Income Accounts – and correct this for intersectoral and interclass transfers of value. Or one can start from input-output matrices and, provided there is data either giving labour hours or some proxy for them, calculate values and other Marxian magnitudes such as prices of production, on a disaggregated basis. In brief Simon's paper does the first, and Anwar's paper the second.

Both raise distinct theoretical issues. In relation to Simon's paper I shall ask: what is the right procedure for estimating values? In relation to Anwar's I want to ask: how should we *test* the results?

The core of Simon's procedure is a correction for the impact of unproductive labour. We should perhaps find an alternative for this archaic phrase, which implies that domestic labour, for example, is in some sense not useful. Unproductive labour is frequently immensely useful – for example the labour of state health workers. Under socialism all labour would be 'unproductive'. It is work which does not produce exchange value; which does not result in a commodity that can be appropriated for subsequent sale by a capitalist. Its importance is illustrated by its effect on the interpretation of the national accounts. If national aggregate profits are corrected to allow for it, the resulting rate tells a completely different story.¹

It includes the labour of servants, labour supplied by the state or household; and labour of circulation, for example that of bank workers, and it is the latter which I think Simon – and all writers using this methodology – should consider more carefully.

All bank receipts come from profits earned elsewhere. They are a 'faux frais', a cost of circulation which does not produce value. This relates directly to some very practical modern disputes: a country with nothing but banks would create no new value – although of course it could make a handsome living from profits produced elsewhere. To recover

¹ See for example Moseley 1990, Freeman 1992, Shaikh and Tonak 1994

the ‘real’ profits appropriated in a nation the ‘factor income due to profits’ must be corrected by adding on the moneys spent in circulation, including all the costs of the banking system. In national income terms, this expenditure should be treated as a component of final demand, like a tax on value production levied by the banking sector.

Simon tends to assess labour as unproductive by looking at the nature of the work done. But it is also important to know *for whom* it is done. The workers who decked the European Bank for Reconstruction and Development in marble are just as unproductive as the clerks who now walk across it. Indeed national accountants are greatly confused by this; because interest receipts are not derived from commodity sale in the strict sense, they report bank profits as negative in many systems.² Others apply a correction for financial services in which interest payments become an inter-firm transaction which disappears from the net accounts. This apologetic construction effectively treats payments to the banking sector as a necessary cost of production. In reality they are a transfer, a payment out of corporate profits.

With this in mind I shall turn to an apparent contradiction between Anwar’s paper and that from Paul Cockshott and Allin Cottrell in this volume, which suggests that profit rates are not empirically equal. The importance of this is as follows. If, as Marx clearly believed, the motor of economic movement is the pursuit of surplus profit, and hence the *deviation* of market prices from production prices, can market prices actually be *equal* in general either to neoclassical or Sraffian equal profit rate prices? The growing debate on this question has enormous practical and theoretical implications.

If empirical profit rates are dispersed, it is hard to see how prices of production can predict observed market prices. Yet Anwar’s results seem to show a near-perfect identity between observed market prices and equal-profit-rate prices of production. He sees this as a manifestation of the structural features of a market economy, which I take to mean that medium-term average price aggregates depend – in essence – on the structure of production. I hope this simplified statement does not distort his intention.

There is little doubt in my mind that the correspondences he has established are neither trivial nor dismissable. My question is whether they prove what he thinks they prove, and whether his view may be better proved by different means.

My problem, in a word, is that his results are *too* good. Let us return to the banking sector. We *know* that the ‘prices’ of the banking sector reported in the input-output data are theoretically incorrect and do not represent ‘prices of production’ in Marx’s sense. We know that bank profits are governed, not by structural features of production, but by movements in the sphere of circulation – interest rates, exchange rates, and so on. How can we therefore predict a phenomenon of circulation from the structure of production?

Further, the results contradict things we know about production itself. Everyday experience informs us that sectoral profit rates in key parts of the economy systematically exceed or fall below the average. Bill Gates, CEO of a twenty-year-old company, is now the richest man in America. His wealth did not come from his high wages; it consists of retained profits. Nor is this an isolated case; profits in computing are many times higher than elsewhere, as everyone who works the sector knows. Why doesn’t this show up?

I want to reconsider the use of *aggregate* price and value data for comparing observed and predicted results. To simplify matters I will look at the relation between values and

² *United Kingdom National Accounts: Sources and Methods* 1985, p88 Sections 7.8-7.11

market prices, as do Ochoa [1985] and, in another article, Cockshott, Cottrell and Michaelson [1995]. The argument applies *mutatis mutandis* to prices of production.

The difficulty in comparing *unit* prices, values and prices of production arise from the construction of input-output tables in which the unit of measurement is effectively the dollar (or pound, etc). Thus if unit values were actually equal to unit market prices, they would all be £1 in this system of measurement. It is then impossible to ascertain how the variation of unit values affects unit prices, since there *is* no variation in unit values.

This leads Ochoa to the following conclusion:

The question reduces itself to which is the appropriate population: unit prices or sectoral outputs. The only unambiguously defined elements with common characteristics are sectoral outputs, so their two properties (market price and computed price) can be legitimately compared. [Ochoa 1985:130]

although earlier he identifies the following potential problem:

In connection with cross-sectional series, the error of ‘spurious correlation’ is known to be a problem. Clearly, if we are trying to establish a relationship between a and b, and if we define $x = az$ and $y = bz$, the correlation coefficient between x and y will overestimate the correlation between a and b...it is clear that we can increase or decrease the extent of common variation of P and M by judicious manipulation of the physical units.[Ochoa 1985:129]

But if we compare aggregates with aggregates, the danger is that the output of each sector serves as just such a variable z, which concerns me – especially since I suspect that the values predicted by these types of equation are independent of the scale of output. A similar but perhaps lesser problem attends the use of a weighted mean deviation, if the magnitude of output is used as the weight. What does a weighted mean deviation tell us about an economy in which the bulk of market prices are close to values, but in small but very dynamic sectors (such as the information sector) this does not hold?

A possible approach is indicated by Figure 1, calculated for the UK economy using Ochoa’s method. The first chart, sorted in order of unit value. shows how much labour, measured in £, is used to produce a commodity which sells for £1. The second gives the reciprocal of this, that is the market price in £ of commodities whose unit value is £1.

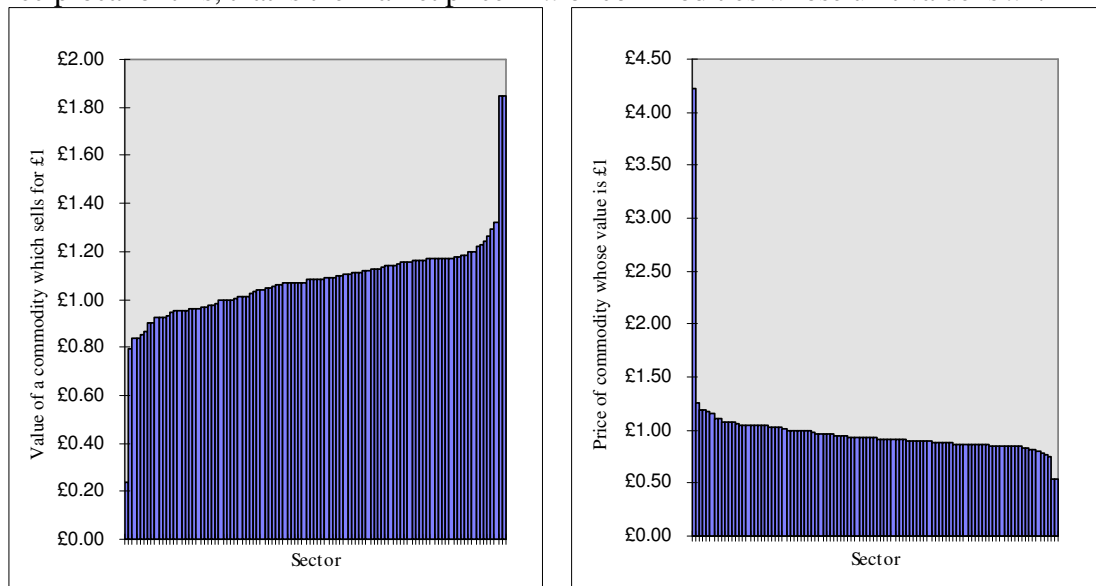


Figure 1: dispersion of unit values about a unit market price of £1 (UK 1984)

Figure 2 shows the aggregate values and prices of the same sectors, displayed as a scatter diagram. The two figures tell a rather different story. The question is whether the impressive correlation shown in figure 2 owes more to the effect of variations in output than to the prediction of prices by values.

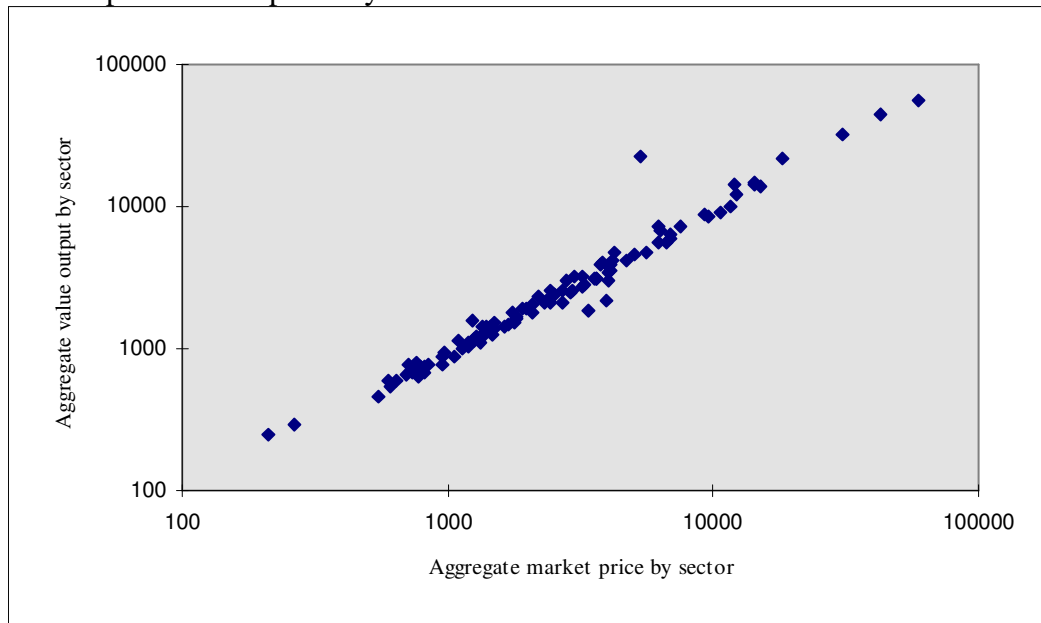


Figure 2: aggregate values versus aggregate prices (UK 1984)

The basic problem is this: if values predicted prices accurately, there should be no variation in unit values at all. A commodity whose value is £1 should sell for £1 and Figure 1 should be flat. If, therefore, any unit value differs from £1, we should not accept the blanket conclusion that values by and large do not diverge from prices. As can be seen from Figure 1, there is a general spread of at least 20 per cent and outliers whose values are 300 per cent lower, and 50 percent higher, than unit prices. We require a statistic which conveys this dispersion abstracting from variations in output. At the same time, there is clearly a problem in treating all sectors on an equal footing when some have a much greater weight in the economy than others

Nevertheless figure 1 *does* show a considerable correspondence between prices and values and, I would suggest, sheds real light on the structure of the economy. I think it would be a valuable extension of Anwar's study to construct a similar representation of the relation between market prices and prices of production; and to consider possible alternative statistical indicators to test this relation.

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