A Macro-Distributive Theory Dispelling the Econometric Fog

For some time now, and in scattered writings, I have been using a linear model of the private market sector of the economy that is closer in spirit to Keynes, not least in its inclusion of an aggregate supply function, than the Hansen-Samuelson 45-degree approach or J.R. Hicks' IS-LM apparatus. It also borrows from some ideas of Kalecki and has an immediate opening to the theory of income shares while possessing obvious links to econometrics. Not least it strips much of the mystery from econometric models and demonstrates the circumstances in which they are likely to perform well or badly. These are tall claims, but I think the argument can withstand critical scrutiny. Too, there is a singular benefit in that the critical ideas can be stated succinctly. The supply function attaches readily to the theory of the firm although the exercise will not be performed here.[1]

The essential equations are:

(1) Aggregate Supply: $Z = kwN = W$

(2) Aggregate Demand:[2] $D = D' + D''$

(3) Employment Equilibrium: $D = Z$ and $N = (D' + D'')/kw$

Z = income (Gross Business Product, specifically)

w = the average money wage

N = employment

k = the reciprocal of the wage share (Z/wN) or the average markup of prices over unit labor costs

W = wN = the wage bill

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[1] Cf. my *Approach to the Theory of Income Distribution* (Greenwood Press reprint, 1958 edition). I regard this article as some simplification of the general argument developed at that time.

[2] As I work in nominal units I use D' and D'' instead of the more usual C and I notation which connotes "real consumption" and "real investment," respectively.

D = aggregate nominal demand

D' = consumption nominal demand

D'' = nonconsumption outlays including current capital investment, government expenditures on private sector GBP output, and the net export-import trade balance.

So far the model is straightforward and without any surprises. The next step consists of borrowing Kalecki's profound simplifying hypothesis, namely, that "wage earners spend all their income while nonwage earners — 'capitalists' — save all their income." Manifestly this is not strictly true in the western world (and Kalecki himself qualified it) but using it in its stark form is particularly insightful. As Kaldor and Joan Robinson have used the hypothesis in several writings I have taken to refer to it as the K-K-R hypothesis. Too, I have taken a minor liberty with the assumption by way of generalization.[3] Thus:

(4) K-K-R Hypothesis: $D' = wN$

(5) Generalized K-K-R: $D' = \alpha wN$

Relation (5) obviously covers the K-K-R simplification when $\alpha = 1$. But it also extends to the case where wage earner savings (and tax payments) are *exactly* offset by nonwage earner consumption or when $\alpha \neq 1$ but is 'reasonably' constant. Making use of (5) we can substitute so $D' = \alpha wN$. This leads to an interesting formulation of the employment equation in (3) and spotlights the major determinants of the theory of employment which remains the vital center of macrotheory. Thus:

(3') $N = [D''/w(k - \alpha)]$.

Subsequent focus will be on (3'). As written, it is a disguised form of the *average* (not marginal) employment multiplier which is usually written as:

(3'') $N = \Theta D''/ws$, where Θ = the wage share = $1/k$

s = the average propensity to save (including the tax bite)

[3] Cf. my article on "Generalizing Kalecki and Simplifying Macroeconomics," *Journal of Post Keynesian Economics* (Spring 1979). For some estimates of α by countries see M. HESKIL, R. PINKHAM, D. ROBINSON, "The Consumption-Wage Bill Ratio: Some Empirical Estimates," *Ibid.* (Fall 1982).

The argument of this present paper is a more general extension of the ideas presented in "Generalizing Kalecki, etc.".

Equation (3'), however, is more interesting (I think), and more insightful for it leads, as we shall see, to some major understanding of the market economy. For example, it discloses that the employment catalyst, as most Keynesians have affirmed, consists in the magnitude of *non*consumption outlays embodied in D''. Secondly, if D'' is expressed in nominal terms, the average money wage will determine the job numbers. But (3') also discloses that the influence of the average money wage (w) will be enhanced, or diminished, by the $(k - \alpha)$ relation.

The term k, as remarked, and as will be seen more clearly shortly, refers to the price markup on unit labor costs. In the United States business accounts this takes on a value, in recent years, of about 1.85 while α approaches 1.05, for a difference of about 0.8. Thus the influence of the money wage on employment is about 0.8 w in equation (3'). If $k = 2$, as it did in the some earlier years of about half-century back, and $\alpha = 1$, as on a strict K-K-R hypothesis, then the full influence of the money wage would enter as an employment determinant.

The Econometric Link

Equation (3') provides an immediate clue to econometric models and why they work as well, or as badly, as they do. Obviously the models have to gauge the future of nonconsumption outlays, mainly of investment and government demand, and the trade balance, with the combined aggregate mainly an "exogenous" phenomenon though there are many instances where future events cast some earlier shadows. For example, there are surveys of business investment intentions, and business construction permits; also, government budgets are written in advance of the expenditure facts; the trade balance is often a more obstreperous nut to crack in advance though in the United States, at least, it is of trifling importance by far.

Predictions of the average wage are made easier by the fact that most wage contracts have been written in the past, to extend into the future, so that it is only in a period where new contracts covering a large segment of the economy fall due, and are to be rewritten, that formidable forecasting clouds arise, though even in this respect much of the die is already cast by knowledge of contracts sealed in the recent past. For the usual quarterly forecast, in any event, the prospect for *big* mistakes seem to be minimized.

It is with respect to k, or its reciprocal Θ, that the hurdles are knocked down well before the projection date. On other occasions I have referred to k as nearly constant, and that it is not apt to change very much year-to-year; it also possesses strong constancy over long stretches of time, being nearest to an empirical law in this respect.[4] Annual variations of 1 percent constitute an almost remarkable change. The constancy of k is about the best known and least explored fact in all of economics yet its behavior is a forecaster's delight.[5] Its good rigidity renders the forecasting chore of the econometrician as practically mechanical.

On α the probing job is only a little more complex. Under the K-K-R hypothesis its value of unity eliminates any need for estimation. Even when $\alpha \neq 1$ its movements appear to be consistent and regular; econometric projections can work confidently on the assumption that either any trend or cyclical variation will cause it to fluctuate only within narrow bounds.

Turning to the income forecast (for GBP), equation (3') reduces to:

$$(4) \qquad \text{GBP:} \quad Y = kD''/(k - \alpha) \quad \text{or} \quad Y = D''/(1 - \alpha\Theta)$$
$$\text{from the truism } Y = kwN$$

Either form of (4) suggests that the forecasting game is designed mainly for children — or serious young adults. With k (or Θ) practically plucked from the past, and α moving within small and slow bounds over time, the only element requiring broader factual information, and some intuitive feel and judgement, is D'' representing the total of nonconsumption outlays.

Econometric forecasts tend to concentrate on income predictions. Formula (4) is thus a venture in "econometrics made easy," and "in one easy lesson." The mystery is demystified; forecasting models will work well whenever Θ and α hold firm, as they will tend to do over the short period, and whenever they stay within narrow bounds over longer stretches of time. Actually, operating to narrow the range of error is the fact that it is the *difference* of $(k - \alpha)$ that needs to be estimated, rather than exactitude in surmising the individual component.

Of course, to warrant fancy fees, econometricians preparing their forecasts for market sale will provide more detail, breaking up the nonconsumption components and then engage in all sorts of mind boggling and confusing contortions in deriving D', and in performing always updated versions of the consumption function with an apparent aim of making the obvious obscure in evading the Generalized K-K-R. Thus the simplifying aspect of α eludes them, and any careful but non-knowledgeable reader. Thus the mystery of econometric income forecasting is perpetuated. Running the computer, and spilling out reams of paper, constitutes a magician's sleight-of-hand to render the obvious, by hocus pocus, inaccessible to any but those fraternally initiated.

Econometric models render forecasts not only of nominal income, as in (4), but also of 'real' income, which involves price level corrections to specify the aggregates in terms of some base year value. This is an elementary statistical feat. The more difficult issues emanate in the theory of the price level which involves a study of its determinants.

The Price Level

The price level equation shakes out rather directly from (1) and attest to the versatility of the relation. Thus:

$$(5) \qquad Z = PQ = kwN \;\therefore\; P = kwN/Q \quad \text{or} \quad [P = kw/A]$$

where P = the price level of GBP output
Q = physical output volume of GBP
A = average labor productivity = (Q/N).

Many of the large familiar econometric models do use equation (5) for forecasting purposes, or some minor variant of it. Entailed are nearly the same terms encountered earlier; there is both k and w once more. The new term is A which is a numerical derivation from Q and N, and a ratio which is actually one that is easier to project for, as a rule, say, in the United States A trended to grow by about 2.5 percent per annum. In the past decade A occasionally was slightly negative, in the 1 to 2 percent range, while for the full 1970s it was at about + 1 percent. So once again the variations year-to-year occur within a narrow band, preventing the forecasting guess from getting too badly out of line. The far greater variations are in w which can show greater volatility, from almost nil levels in year-to-year percentage change to the double-digit jumps of over 10 percent in the United States in the 1970s to the about 25 percent escalation in the United Kingdom and Australia in 1974.

[4] Cf. my *Capitalism's Inflation and Unemployment Crisis* (Addison-Wesley, 1978), Chapter 3 and the references to the literature. My own work on k, in Gross Business Product, dates back to *A General Theory of the Price Level* (Chilton, 1959).

[5] See my recent "An Eclectic Theory of Income Shares," *Journal of Post Keynesian Economics* (Fall 1981) for a specification of the likely important determinants.

From (5), with k nearly constant year-to-year, and taking causation as running from right to left, from unit labor costs (w/A) to prices, the price level emerges as a race between money wages and average productivity gains.[6]

The Consumer Price Level

Somewhat less familiar is the formulation of the theory of the consumer price level. This is readily elicited from the Generalized K-K-R. Thus:

(6) $D' = P_cQ_c = \alpha wN \therefore P_c = \alpha wN/Q_c = (\alpha w/A_c)\ (N/N_c)$

the c-subscript denotes the consumer sector.

Once more, familiar terms obtrude, with the need for estimates of C-sector productivity and the employment allocation to the consumer sector. A rise in α, which would convey a consumption demand increase, is also capable, as simple theory would tell us, of raising P_c. A really substantial increase in the C-sector price level is almost certain to be identified with an outsized jump in the wage-productivity ratio.

The Open Economy

Omitted so far is a concern with the price level in the open economy. Going beyond the closed national circuit requires only a small modification of (5).[7] Thus:

(7) $P_{d+f} = [(kw)/(nA)](Q_d/Q_{d+f})$

where P_{d+f} = price level of goods which includes domestic and imported content

n = domestic value content

Q_{d+f} = combined domestic and imported physical content of output sold domestically.

[6] For a more extended discussion see my *Capitalism's Crisis,* Chapters 3 and 4. The formulation began in *A General Theory of the Price Level.*

[7] Cf. *Capitalism's Crisis*, Chapter 3 where estimates for some of the terms for several countries are made.

The new terms are easy enough to comprehend, and they are subject to easy measurement. The Q_{d+f} modifier, for example, refers to the domestic roasting, grinding, and packing and shipping costs, in a tin of coffee sold in the United States, an item, which contains the cost of the imported coffee and the tin used in making the container. On the other hand, about 90 cents of each dollar's sales in the United States covers domestic production costs; with only about 10 cents going for imports. Thus, for the United States n = 0.9. In Italy the value of n is probably closer to about 0.8 of every 1,000 lire.

Econometric estimates for each of the terms in (6) or (7) do not present any formidable or insurmountable problems; the necessary data for (7) lie close at hand in the available IMF statistical series.

Predicting Consumption

Econometricians are likely to make heavy weather in having to make a consumer expenditure forecast, peering closely over their recondite formulations of the consumption function, and hedging their answer to cover liquidity aspects and wealth accumulations. The Generalized K-K-R, however, makes the derivation an innocent and facile exercise. Thus, in a formulation most amenable for application in a time context we have:

(8) From $D' = \alpha wN$

then $(\Delta D'/D') = (\Delta\alpha/\alpha) + (\Delta w/w) + (\Delta N/N)$

Ordinarily it is likely that $(\Delta\alpha/\alpha)$ will approximate 1 percent (or less) per annum, and in either direction: big surges in consumer outlay are unlikely to emanate from this quarter. Similarly, through labor force growth in the 1.2 percent plus range per annum, and with an occasional absorption of unemployment of 2 or 3 percent, the jump in the $(\Delta N/N)$ term will be about 3 percent, a bit more or a bit less. On the other hand the escalation of money wages in recent years has, in most western countries, been rarely less than 5 percent and generally in the double-digit range of 10 percent or more.

It is thus from the leap in money wages that we must look for important fluctuations in retail sales. This insight gets buried in the arcane probes of the consumption function and in the annoyed expressions of surprise of Wall Street stock market analysts who expect, from the textbook particular market equilibrium teachings inherited from

Marshall, with their own interpretive mischief imparted, that "higher costs and higher prices will reduce demand and sales revenue because of demand elasticity."

It is long overdue that students were taught not to be shocked that nominal sales receipts will grow positively, and about proportionately, as higher money wages become the rule. Henry Ford understood this years ago; too many economists resist the obvious connection.

The Average Propensity to Consume

A more esoteric conception is that of the average propensity to consume which, from Keynes' simple construction, has been made complicated enough to become a specialized study in itself. Nonetheless, from the Generalized K-K-R the concept is reduced to a low grade sophomoric tool. Thus:

(9) Given $D' = \alpha wn$. Divide by Y (or Z) then: $c = \alpha\Theta$,
where c = the average propensity to consume (C/Y) or (D'/Y)

It follows immediately that α and the size of the wage share (Θ) between them determine the magnitude of the average propensity to consume. With $\Theta = \bar{\Theta}$ it is not a very arduous econometric feat to compute or project c; it entails only some estimate of α which is not beyond the ken of elementary statistical study.

To be sure, econometric discourse on c has often been so obscurantist as to tax brilliant minds in intense and dedicated study.

Real Consumption

Most often the tedious discussion and the home spun econometrician's forecasts rally around 'real consumption' in some ambivalence to money or nominal consumption outlay which is apparently regarded as some sort of 'fake' phenomenon. Again, invoking the same play on K-K-R we have:

(10) $D' = P_c Q_c \therefore Q_c = \alpha N(w/P)$

Q_c is, of course, 'real' consumption. It is seen to depend on: (1) the volume of employment and (2) the real wage, and to give no mind to the endless stream of variables that have tended to find a niche in "the" consumption function.

Little more remains to be said on this; the idea should come easy to economists though their colleagues have striven mightily to make its

comprehension somewhat beyond the powers of more mortal economists.

Distributive Implications

Turning to the distributive implications of the model we consider first the 'real-wage'.

The Real Wage

To ascertain the real-wage it is only necessary to switch the price level formula of (5) around a bit. It follows:

(11) $(w/P) = \Theta A$ for $P = kw/A = w/\Theta A$

The 'real-wage' is peculiarly in a veritable bind with average productivity (A) and the wage share (Θ). Given a rise in the wage share, productivity constant, the real-wage will go up. Or given a productivity increase, with shares constant, will accomplish the same real wage improvement. For a more explosive move in the real-wage, a combination involving a productivity improvement and a wage share uplift, will do the trick.

For those who prefer to emphasize the real-wage in terms of consumer goods — or 'wage goods' — we can invoke the relation implicit in (6). Then:

(12) $(w/P_c) = (A_c/\alpha)\ (N_c/N)$

Evident in (12) is that labor productivity, in the consumer sector, is modified by α, so that the real-wage *falls* with an *ascent* in α. The real-wage is also acted upon by the allocation of labor between the D' and D" sectors so that a shift to nonconsumption outputs will work to reduce the real wage — a not unexpected theorem.

Between (11) and (12) some focal ideas on real-wages are gathered into a small funnel. Literally a tome can be written on the determinants of the several terms, and the ramifications of them which extend into the political and sociological, as well as the economic universe. Ricardian and Marxian discussions revolve about real-wage aspects, and their implications for mechanisation or capital formation, and for growth, economic evolution, and social tensions in the private market economy. Marginal productivity aspects are conspicuous by their absence from the 'real-wage' equations of (11-12).

Profits

Classical and neoclassical economists spoke learnedly of 'normal' profits, while evading any quantification of the concept.[8] Economists since the early days felt secure in the concept, and yet somewhat uneasay about its vagueness. Modern neoclassical economists seldom even bother with the concept, being content to invoke Walras' candid statement that he assumed 'neither profits nor losses' in his system. Parroting Walras the modern general equilibrium army is prepared to do battle about interpreting capitalism without even the foresight of arming itself with a profit weapon. Its temerity has made it irrelevant in conveying understanding.

It is a virtue of the techniques related to the K-K-R formulae that quantitative dimension can be assigned to the profit magnitude. This is the great accomplishment of the K-K-R triumvirate.

The Wage Share

In a two-part division of income into wages and 'profits,' or nonwages, where the latter is taken as a gross total to include *all* interest, rent, depreciation charges, and is understood as a pretax concept, we have:

(13) $Y = W+R$ and $1 = (W/Y) + (R/Y) = \Theta + \pi$,
where π = the profit share.

We shall use these definitional relations in a moment. Going back to (9), which contains the average propensity to consume, we already have an embryonic theory of the wage share and thus the profit share:

(14) $c = \alpha\Theta \therefore \Theta = c/\alpha$ and $\pi = 1 - c/\alpha$.

This would be satisfactory if c never altered with N. Insofar as c is a function of N, we would have to look for the employment determinants in a complete wage share statement.[9]

The Profits Magnitude

Most significant is the clear illumination thrown by the foregoing set of ideas on the numerical magnitude of 'gross profits' or the total

[8] For some discussion see MARK OBRINSKY, "The Profit Prophets", *Journal of Post Keynesian Economics* (1981).

[9] See my "Eclectic Theory", *op. cit.*

nonwage incomes. The development requires recourse to a few definitional relations stemming from the K-K-R work and my own modest generalization.

(15a) Value of Output: $Z = D = D' + D''$ (or $Y = C + I$)

(15b) Income Distribution: $Z = W + R$

(15c) As $D = Z$ then $D' + D'' = W + R$

$\therefore \alpha W + D'' = W + R \quad \therefore R = D'' + W(\alpha - 1)$

From (15c) it follows that when $\alpha = 1$, $R = D''$, signifying that profits are *wholly* contingent on nonconsumption outlays with causation attributed to the investment, i.e., the nonconsumption outlay disbursement actions in the economy. When $\alpha > 1$, the C-outlay in excess of the wage bill enhances the profit magnitude. In (15) all of the terms are amenable to measurement, as against the vapid remarks on 'normal' profits which usually turn out to be abnormal either up or down. The moral in the relationships adduced is that if an economy succeds in keeping its nonconsumption outlays high it will reveal an exciting industrial performance. The reminder is not amiss for open economies that the D'' entity includes the net export balance.

Profits in the C-Sector

Last only in the telling is the relation made prominent by Mrs. Robinson about C-Sector profits (also of the gross variety).

(16a) C-Sector Output and Income Distribution: $D' = W_c + R_c$

(16b) C-Sector Sales: $D' = \alpha W$

(16c) C-Sector Profit Aggregate: $R_c = \alpha W - W_c = W_c(\alpha - 1) + \alpha W_{igx}$
where W_{igx} = wage bill in the nonconsumption sector

When $\alpha = 1$ then the Robinson proposition emerges, to wit, that C-sector profits are *wholly* contingent on the wage bill in the nonconsumption sector. Only when $\alpha > 1$ will there be some (limited) influence from the C-sector outlays but these are sure to be swamped by the disbursements of the non C-sector. With $\alpha < 1$ the latter forces are dammed.

Some Concluding Remarks

The foregoing macromodel, built out of the main blocks of Keynes with some pieces furnished by Kalecki, Kaldor, and Robinson, seems rich in promise by virtue of its scope. The consistent relations offer hospitable shelter for the theory of income, employment, price level, and income shares in a succinct design. Pedagogically the elemental ideas are capable of transmission at an early stage in economic studies.

Not least the elements are amenable to direct econometric quantification, demystifying the packaged esoteric econometric models which have labored overtime to make the presentation recondite and accessible only to a cloistered sect of refugees hidden away from the main corpus of economic theory. The macromodel sketched out should persuade economists that the legerdemain has suffered to an addiction to the 'black art' of making the obvious obscure, as Keynes feared long ago in his skeptical review of Tinbergen's work which, by modern standards, was candid and straightforward.[10]

The linearity of the equations outlined here are, of course, vulnerable to criticism — but not from econometric model builders whose regression equations are also generally linear. Non-linearity can be injected into the $Z = kwN$ equation by writing $Z = k(N)wN$, making k a function of N. But this would be a spurious compromise, considering the empirical behavior of k. Fidding with k would entail a fluctuating (Z/W) ratio, which does not seem to be in fidelity to the facts.

The price of operating on the hypothesis of $k = \bar{k}$, and that $\alpha = \bar{\alpha}$, seems to be most affordable for it makes feasible an enormous consumers' surplus from economic study. Clearly the relations can be extended in other directions; the theory of growth is a prominent candidate. 'Experience teaches' that the penchant of economists for qualification on secondary matters can generally undermine their vitality.

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[10] MICHAEL G. PHELPS, "Keynes On Mathematical and Econometric Methodology", *Journal of Post Keynesian Economics* (Summer 1980).