

# PRICE STICKINESS: A POST KEYNESIAN MICROECONOMIC PERSPECTIVE

Paul Downward  
*Staffordshire University*

## INTRODUCTION

This paper presents a Post Keynesian micro-exposition of sluggish price adjustment. The basic proposition, supported by a survey of UK manufacturing firms, is that firms see sluggish price adjustment as normal. Furthermore, when firms do adjust prices in light of, say, demand and cost changes, typically it is the result of contingent rather than planned circumstances.

The importance of this paper rests in two related issues. Firstly, Post Keynesian economists have neglected empirical work in microeconomics [A. Dow, 1995; S.C. Dow, 1995; Hodgson, 1988; Earl, 1990/91]. Secondly, Alan Blinder and others [1998] have pre-empted Post Keynesians by asking firms about their pricing behavior. Notably, the theoretical explanations of price stickiness offered are based upon the optimizing behavior of agents [Blinder et al., 1998, 7], and are clearly neoclassical approaches.<sup>1</sup> Post Keynesian economists, however, often reject optimizing theories of behavior, particularly in the case of pricing [Lavoie, 1992]. This paper offers such an alternative Post Keynesian explanation of price stickiness. Debating the relative merits of Post Keynesian and neoclassical approaches to price stickiness is left for future research. Nonetheless, it is hoped that this paper is a step towards constructive dialogue.<sup>2</sup>

The next section briefly outlines some general themes characterizing the Post Keynesian methodological approach and logic of inference. Thus, the role of econometrics in Post Keynesian inference is discussed. Some context is offered by referring to Post Keynesian pricing theory. Classic pricing hypotheses are presented and extended. This is followed by discussion of a set of empirical issues connected with the previous methodological commentary. An outline of the sample and variables employed in the study are presented. Moreover, some descriptive statistics are presented to support the case for econometric work. The paper then presents supporting econometric evidence. The final section offers some conclusions.

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**Paul Downward:** Division of Economics, Staffordshire University Business School, Stoke on Trent, ST4 2DF, England. E-mail: p.m.downward@staffs.ac.uk

## PRICE STICKINESS: A POST KEYNESIAN APPROACH

*History and Methodology*

Downward [2000], Lee [1998] and Lavoie [1996] argue that R. Hall and C. J. Hitch, P.W.S. Andrews, G.C. Means, and M. Kalecki provide the pricing foundations of Post Keynesian economics. These contributions comprise theories that share the common perspective that prices are set in advance of trade and in the uncertain pursuit of some objective, which typically includes long-run profits. Firms follow a procedure of adding a markup to average direct costs to cover both overhead cost and profit as an organizational process of coping with uncertainty. Prices are also set with some uncertain attention being paid to pressure from competing groups of products, that is pressure from the environment which can, but need not automatically, cause prices to change. In particular, prices are more likely to change due to cost changes than demand changes.<sup>3</sup>

For the Post Keynesian, these shared ideas comprise inductive concepts that are combined to identify the actual determinants, or causal processes, of pricing. They differ from (effectively) full-information equilibrium or optimizing accounts of pricing and as such lack a determinate and deductive emphasis. In particular they differ from typical neoclassical explanations of pricing such as in the theories referred to by Blinder et al. [1998] and, indeed, some traditional Post Keynesian pricing theories [Downward, 2000].

Understanding why this is the case essentially rests on the underlying ontological (or metaphysical) presuppositions of the various theories. Consequently this explains why disentangling various accounts of the same phenomena is not straightforward even though they might appeal to the same evidence. (For a review of some of the previous debates on questionnaire studies of pricing see Downward [1994]). This paper maintains that the differences are philosophically based. Neoclassical economics postulates "closed-system" theories whereas Post Keynesian economics embraces "open-system" theories.

It can be argued that closed-systems modelling is underpinned by two key assumptions. The intrinsic condition of closure suggests that the structures of the phenomena under study are constant; for any intrinsic state only one outcome is possible. The extrinsic condition of closure suggests that the phenomena under study are isolated from other potential influences. When combined these closure conditions facilitate a determinate account of the social world through deduction. It is argued that optimizing accounts of behavior are closed-system explanations. The relevance of this approach hinges on mathematical predictions of "event-regularities." Consequently, an emphasis on econometric inference can be understood as adopting these assumptions as well. Generally speaking, under a number of philosophical banners, Post Keynesians reject this philosophical approach and embrace an open-system approach. (For a recent discussion of Post Keynesian methodology see the *Journal of Post Keynesian Economics*, Winter 1999.) Consistent with this aspiration, the particular philosophical approach adopted in this paper is critical realism.

Critical realism offers a theory of reality and social science that recognizes, among other things, the general openness of the social system. The implication of this "ontological commitment" is that one should proceed with caution both in developing theory and offering statistical inferences. Causal structures represented by theories and measured by statistical criteria may evolve and change and never operate in isolation. Consequently, developing a theory with an underlying mathematical emphasis and/or objective of predicting events that is empirically assessed by econometrics alone is considered fraught with difficulty.<sup>4</sup>

The implication of these methodological concerns, for Post Keynesians, is that providing an adequate explanation of events requires drawing on a variety of sources of evidence relating to some phenomenon. A justification for this logic of inference can be developed from Keynes's epistemology, which is consistent with an open-system ontology [Dow, 1996; Lawson, 1987]. Keynes [1973, 10] argues that rational belief in argument rather than knowledge forms the basis of decisions. Significantly, the degree of rational belief in a proposition – or its probability – is a logical relationship between sets of evidence.<sup>5</sup> Keynes stresses that such uncertain and ordinal probabilities are defined and held depending on the weight of evidence attached to propositions. Though they are related by appeals to evidence, weight, or the amount of relevant evidence, is different from probability, or rational belief. As Keynes writes,

The weight, to speak metaphorically, measures the *sum* of the favourable and unfavourable evidence, the probability measures the *difference*. [ibid., 84, italics in original]

Nonetheless, both the weight of evidence, and hence probability and rational belief, hinge on the relevance of evidence. Crucially for Keynes, relevant evidence is ascertained through a process of negative analogy. To avoid the problem of induction, Keynes argued that one should examine a particular phenomenon in different contexts. It follows that if a phenomenon, such as a proposition about behavior, appears to be common in various contexts then this indicates that it is relevant. Consequently, the weight of evidence in its favor, and hence its probability, increases. Thus,

An inductive argument affirms, not that a certain matter of fact *is* so, but that *relevant to certain evidence* there is probability in its favour. [ibid., 245, italics in original]

Such arguments are central for defending a realist use of econometrics. Lawson [1997], for example, has argued that the open-system perspective of critical realism questions the general validity of econometric work. Statistical inferences will be misleading because the material examined is not homogenous, reflected in the lack of applicability of the closure assumptions discussed above. However, Post Keynesians have also provided a rationale for econometric work from a realist perspective [Dow, 1990; Downward, 1995; Gerrard, 1995; Downward, 1998; Mearman, 1998; Lee and Downward, 1999; Downward, Finch and Ramsay, forthcoming; Downward and Mearman, 2000]. A basic justification that can be put forward is that contrary to the pure open

system of philosophical discourse, economic agents, and the organizations and networks that they comprise, are part of a "quasi-closed" system. This is implied, for example, in the discussions of the next section concerned with decision-making structures and mechanisms. Careful consideration of the historical stability of the causal structures and mechanisms being investigated provides a role for statistical inference as part of a wider set of evidence.<sup>6</sup>

In total, the importance of this line of reasoning is that, given the methodological emphasis of Post Keynesian pricing theory, assessing pricing behavior in a different context and by different methods can be useful *per se*. Overlap or consistency of insights in different contexts adds weight to, and hence rational belief in, the realist account of the phenomenon under investigation. Consequently, the Post Keynesian nature of the firm is now reconsidered prior to offering some empirical results.

### *The Post Keynesian Nature of the Firm*

The discussion of Post Keynesian pricing theory above suggests that there has traditionally been an emphasis upon pricing as the key decision-making mechanism in firms. There has indeed been much debate about the consequences of alternative emphases in the formulae [Lee, 1994; Lavoie, 1996; Downward and Reynolds, 1996; Downward, Lavoie and Reynolds, 1996 and Lee, 1996]. This has also been the case in numerous questionnaire, interview and case-study investigations of pricing [Downward 1994; Lee, 1998]. However, consistent with the above logic, if Post Keynesians are to provide satisfactory microeconomic behavioral foundations to price stickiness then both the broader organizational influences on pricing and descriptive and inferential statistics need to be considered.

The former point has been forcibly made by Earl [1990/91, 278], who suggests that broader sets of variables need to be examined as part of the conceptual argument that pricing can be understood in terms of non-optimizing agents acting under conditions of uncertainty. The basic hypothesis raised is "Does the interpretation of Post Keynesian pricing given above, which relies on a consideration of the pricing formulae *per se*, lie embedded in a more general set of decision relationships in the firm?" Downward [1996] argues that this is the case and links Post Keynesian pricing theory with organizational decision making under conditions of uncertainty discussed in the Institutional Economics, Marketing, Management and Organizational literatures. Accepting these arguments, the paper turns to the second case, empirical investigation of Post Keynesian pricing theory. Key insights are tested with respect to findings from both descriptive and inferential statistics.

### *The Sample, Variables and Some Descriptive Results*

The sample frame for this study is the KOMPASS directory of UK companies, a widely-used directory in UK business research [Shiple, 1981].<sup>7</sup> The sample was drawn by selecting the first manufacturing company listed on each page of the directory. A questionnaire was then mailed to the Sales/Marketing Director. Consistent with the logic of inference discussed above, simply exploring pricing behavior in a new context

and cross-referencing it to other insights is the main aim of the realist approach to inference.<sup>8</sup> Thus no particular manufacturing sector or firm size was targeted.

The sample comprised 1459 companies, of which 283 provided usable responses—a 19 percent response rate. This was considered to be satisfactory given that the questionnaire asked over 100 questions. Adequate observations for the mechanics of the statistical calculations reported below were obtained.

Data were obtained on broad dimensions of firm behavior. Variables reflected a desire to capture information on organizations' goals, their environment, and key aspects of their organization such as the degree of centralization and formalization of pricing tasks. In addition, control variables were employed to allow for differences in product and market characteristics. Finally variables measuring the firms' pricing procedures and behavior were employed.

In general, elicited responses were on a five-point interval scale. Firms were asked to respond either in terms of their company being organized or behaving in a particular way, or the extent to which they agreed that their company is characterized in that way. A full descriptive analysis of the statistics is available in Downward [1999] together with all variable definitions. An indication of the nature of key variables is given in Tables 1-4. The data summarized in these tables support the idea that pricing is governed by a markup pricing formula, as part of a wider set of organizational decision-making rules, with explicit account taken of feedback from the environment (that is, competitive pressure). As such they can be identified as supporting the Post Keynesian view of pricing.

Tables 1 and 2 report firms' responses to questions regarding pricing behavior, organization and environment. The responses indicate that pricing tasks can be characterized as "programmable" in the sense that 48.3 percent of firms initially use budgets in setting prices often or very often. Moreover, 64.1 percent of firms and 63.7 percent of firms respectively use price lists and a markup rule on average costs to set prices often or very often.

From Table 2 we see that 72.5 percent of firms agree or strongly agree that their costs typically change with output. Also, 63.1 percent of firms disagree or strongly disagree that costs and output increase together. Coupled with the finding that 64.8 percent of firms strongly agree or agree that their costs decrease as output increases, and *vice-versa*, this makes sense in the context of the behavior of average-total cost hypothesized by Hall and Hitch [1939]. Collectively, these results are consistent with Post Keynesian pricing theory.<sup>9</sup>

However, it is clear that pricing decisions are not simply pre-planned. 53.2 percent of firms often or very often make pricing decisions with contingencies in mind. Only 25.7 percent of firms report that contact between pricing personnel is dictated by a pre-planned schedule. From a behavioral point of view one can see why this is the case. 74.3 percent of firms take into account the state of market demand when setting prices, 81.4 percent of firms set prices to maintain goodwill often or very often and 50.4 percent of firms follow their competitors in setting price often or very often. In addition, while 79.2 percent of firms strongly agree or agree that competition is strong, 72.5 percent of firms agree or strongly agree that price competition is stronger than non-price competition.

**TABLE 1**  
Firms' Pricing Behavior, Organization and Environment Response

When setting prices firms... (VARIABLE)	Very Often	Often	Sometimes	Rarely	Very Rarely If At all
Mark up average costs	29.9%	33.8%	17.3%	7%	8.1%
Separate overhead/profit markups	25	37.3	17.3	10.9	6
Add a target return on capital to mark ups	8.8	27.8	21.1	26.8	10.6
Allocate overhead to individual products	27.1	25	13.4	20.1	11.3
Allocate overhead according to actual output	16.5	23.9	20.1	27.5	9.2
Cost on a replacement not historic basis	19	34.5	18.7	16.9	7.4
Use a price list for planned prices	33.5	30.6	14.4	11.6	7.7
Employ formal budget procedures in planning	20.1	28.2	21.5	18.7	8.8
Include discounts in planned prices	16.2	21.5	19.7	20.1	20.1
Adjust planned prices by standard procedure	13.7	25.4	35.6	18.7	6.3
Seek to encourage stability	17.3	48.2	21.8	8.5	3.5
Follow competitors	15.5	34.9	27.1	18	4.2
Account for demand	28.2	46.1	18.7	5.6	1.1
Seek to promote goodwill	39.1	42.3	15.1	3.5	0
Price reviews reflect contingencies	19.7	33.5	26.4	15.8	4.2
Change prices planned by discounts	5.6	13.7	26.8	25	27.1
Change prices planned through the cost base	11.3	19	29.2	23.6	14.8
Change prices planned through price lists	18.3	25	24.6	16.9	13
Change prices planned through mark ups	13	29.2	33.8	15.8	6.3
Increase prices when costs increase (ICIP)	15.8	35.9	42.6	4.2	0.7
Decrease prices when costs increase (ICDP)	0	0.4	4.2	34.9	56.3
Increase prices when costs decrease (DCIP)	1.1	1.4	20.1	38.4	34.5
Decrease prices when costs decrease (DCDP)	5.3	7.4	33.5	34.5	17.3
Increase prices when demand increases (IDIP)	3.2	16.2	44.4	26.1	9.9
Decrease prices when demand increases (IDDP)	0.7	3.2	17.6	46.8	29.6
Increase prices when demand decreases (DDIP)	0	4.2	20.1	43.7	28.9
Decrease prices when demand decreases (DDDP)	1.8	14.1	47.5	25.4	10.6
Increase prices when competitors increase prices (CIPIP)	8.1	23.6	46.1	15.5	6.3
Decrease prices when competitors increase prices (CIPDP)	0	1.1	16.2	43.3	37
Increase prices when competitors decrease prices (CDPIP)	0	0.4	12.3	41.9	41.5
Decrease prices when competitors decrease prices (CDPDP)	6.3	16.9	49.6	19.4	6.7
Increase prices with declining market share (DMSIP)	0.7	2.5	20.8	42.6	29.6
Decrease prices with declining market share (DMSDP)	3.9	17.3	51.1	18.7	7

This is a result confirmed in Table 3, which shows that 88.4 percent of firms believe that price competition is strong or very strong in their industry. Moreover, while 63.4 percent of firms suggest that product competition is strong or very strong, only 42.2 percent and 26.8 percent of firms suggest that this is the case for distribu-

**TABLE 2**  
Firms' Pricing Behavior, Organization and Environment Response

The extent to which firms accept that...	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
There is scheduled contact between pricing personnel	7%	18.7%	32%	27.8%	14.1%
Price competition is strongest	19.7	52.8	13.7	11.3	2.5
In general competition is strong	28.5	50.7	10.6	7.7	2.1
Costs change with output	16.5	56	14.8	11.3	1.1
Output and costs increase together	2.1	16.9	16.2	42.3	20.8
When output increases costs decrease	17.3	47.5	18.7	13	2.1

tional and promotional competition respectively. Once again, these results are consistent with Post Keynesian pricing theory.

Finally, the strategic importance of pricing evidenced by these results is also indicated in Table 4, which implies that the firms typically compete with 5 to 9 actual and potential competitors. It appears that the dominant nature of competition facing firms is "known rivalry". This is, of course, in accord with, for example, Andrews' [1949a; 1949b; 1964] notion of competition embraced by Post Keynesians.<sup>10</sup>

Further support for the core Post Keynesian perspective on pricing is derived from a consideration of the firms' pricing formula. It is clear from Table 1, as noted above, that companies typically price by setting a markup on average costs. In addition, 62.3 percent of firms employ separate markups for profit and overhead often or very often. There appears to be less evidence that markups are set with a target rate of return in mind; 36.6 percent of firms do so often or very often. In addition, firms do not necessarily allocate overhead to specific products (52.1 percent of firms do so often or very often), nor do they necessarily allocate overhead on the basis of current, actual output (59.6 percent of firms do so sometimes, rarely or very rarely). The responses do suggest that firms try to calculate current costs rather than rely on historic costs when pricing (53.5 percent of firms calculate costs on a replacement basis often or very often). Interestingly these responses collectively confirm the problematic, and indeed rather futile, nature of distinguishing versions of "open-system" (Post Keynesian) pricing theories once one begins to move away from individual firms' descriptions of the pricing process.<sup>11</sup> This is, of course, implied above in presenting the core elements of Post Keynesian pricing theory. That firms have separate markups for overhead and profits is, for example, implied by Hall and Hitch [1939] but not particularly discussed by Kalecki [1954]. But it is clear that current costs, not historic costs, matter more for pricing. In contrast, Kalecki, but not Hall and Hitch (or at least some interpretations of their work), implies this cost behavior.

The survey also indicates that prices are typically set with a price list in mind though discount structures are less pre-planned. Table 1 shows that 64.1 percent of

TABLE 3

## The Degree of Competition Facing Firms from Marketing Variables Response

	Very Strong	Strong	Not Particularly Strong	Weak	Negligible
Price competition is...	41.2%	47.2%	8.8%	1.4%	1.1%
Product competition is...	16.9	46.5	25.4	8.1	2.1
Competition by distribution/ Service is...	9.5	32.7	34.5	15.8	7
Competition by advertizing/ Promotion is...	8.8	18	32	22.9	18

firms set initial prices according to a price list often or very often and only 37.7 percent set prices according to a discount structure often or very often. This would seem to suggest that price lists do not simply disguise true discounted prices as a general rule.

Table 1 also suggests that once competition is accounted for, firms reluctantly change their prices from those initially set. 65.5 percent of firms set prices to encourage price stability and only 39.1 percent of firms change prices from those initially planned often or very often. Coupled with the finding that firms actively pursue goodwill, setting prices with long-term stability in mind is thus a characteristic of the survey and is consistent with the work of Hall and Hitch [1939]. Consequently, the results are consistent with the core of Post Keynesian pricing theory. Interestingly, Table 1 also suggests firms are more likely to change their markups than to change their discount structures, costing bases and price lists. Moreover, firms are more likely to change prices through their price lists rather than their costing bases or discount structure. While markups may be "flexible", therefore, this is defined more in connection to longer-term price adjustment than rapid reactive price adjustment.

Collectively, then, these descriptive statistics reveal elements of consistency with the process of pricing in the core of Post Keynesian pricing theory. The weight of evidence in favor of this interpretation of pricing can be seen to have increased. Significantly, these results also suggest the presence of stable causal structures and mechanisms upon which some econometric insights can be based. Thus, it is argued here that statistical work will have some validity and could be usefully employed to further assess the Post Keynesian argument.<sup>12</sup>

## ECONOMETRIC RESULTS

The rationale for econometric investigation, of course, also lies in the central issue of this paper, which concerns the actual behavior of prices rather than the pricing process *per se*. Table 1 indicates that sluggish price adjustment is the norm for firms in the sample as indicated by firms' reactions to changes in costs and demand generally. However, 51.7 percent of firms indicate that they would increase prices if their costs increased. This suggests that firms see cost increases as a more justifiable rea-

TABLE 4

## Numbers of Firms' Actual and Potential Competitors Response

Number of firms	Actual Competitors	Potential Competitors
Don't Know	0.4%	0.7%
> 30	9.2	13.4
25 to 30	1.8	3.9
20 to 24	2.5	2.1
15 to 19	3.9	7.4
10 to 14	18.7	20.1
5 to 9	38.7	29.9
1 to 4	23.6	19.4
0	NOT APPLICABLE	1.4

son for changing prices. Presumably this reflects the cost-based nature of markup pricing and the need to ensure that costs are covered. In general, however, it is clear that firms do not seek to change prices and that as a result, sluggish price adjustment is normal behavior for firms. As noted earlier this result is entirely consistent with the Post Keynesian perspective.

To further assess these claims, however, variables measuring the price responses of firms to changes in their environment were regressed upon the other variables describing the firms' objectives, their organization and their environment. The objective of the exercise was to try to link the firms' responses to changes in the environment to causes residing in their objectives, price setting procedures, organization and environment. Consequently, some explanatory variables could be seen as "decomposed" elements of the firms' response. This is particularly the case with the price-setting and cost variables. This would be reflected in a strong association between changes in markup rules and firms' pricing responses to changes in costs or demand. Other variables, however, could indicate conceptually separate constraints on behavior. This is particularly the case with the other organizational and environmental variables. Thus a wide product range could act as a constraint on firms' pricing responses to such things as changes in costs and demand, because strategic interest was at stake. The former scenario suggests that some element of simultaneity is likely in the regressions. However, in static cross-sections based on single samples there is little possibility of making any correction. Consequently, justification for the procedure must lie in theoretical priors and the notion that the price setting procedure drives the price behavior and not *vice-versa*.<sup>13</sup>

Since there will be behavioral interaction between the explanatory variables, however, they were first put through a principal components (factor) analysis to remove the likely multicollinearity and to produce underlying dimensions of firms' pricing objectives, organization and environment.<sup>14</sup> The recognition of the essentially ontological feature of the data is of course consistent with realist philosophy. The factor analysis was carried out on SPSS (8.0).<sup>15</sup>

The factor analysis extracted 25 factors from 80 variables. The adequacy of the factor analysis is perhaps somewhat questionable. The analysis passed Bartlett's test of sphericity with a chi-square statistic of 8518.085. With 3160 degrees of freedom the

test implied that one could effectively reject the null hypothesis that the correlation matrix came from a set of independent variables with a significance level of zero at three decimal places. This test, however, tends to give somewhat favorable results. In contrast, the Kaiser-Meyer-Olkin Measure of Sampling Adequacy was 0.645. On the tabulated scales used to assess this statistic the factor analysis would be described as mediocre or middling. It is conventional to ascribe factor loads on variables as "significant" if they are 0.3 or above. With this in mind Table 5 lists the named factors, their relative importance and their description. The description of each factor reflects the set of variables that they represent.<sup>16</sup> Their relative importance is indicated by the percentage share of the variance of the data set accounted for by each factor. The small shares detailed in Table 5 suggest that it is not easy to summarize firms' pricing objectives, organization and environment. If it were, the variance would be clustered around a smaller number of factors. This result suggests that the microeconomics or organization of firms' pricing decisions needs further exploration.

Nonetheless, in total, these factors accounted for 67 percent of the total variance in the variables. Such a finding would be common in social-science work. It was encouraging to note that many of the factors were readily interpretable. Clear examples of these are the factors, *LONGRUN*, *SHORTRUN*, *PRICOMP*, *NONPMKTG*, *AVCOST*, *CONTING*, and *SIZE*. The first two of these factors suggested that the time horizon only was a distinguishing feature of firms' objectives. In general, either in the short run or the long run firms pursued multiple goals. *PRICOMP* suggests that price is a distinguishing feature of competition. In contrast, *NONPMKTG* suggests that non-price marketing variables are not distinguishable as sources of competition. *AVCOST* summarized cost behavior which, as noted above, conforms to the behavior identified by Hall and Hitch [1939]. *CONTING* identified variables that suggest that price reviews are driven by contingencies. Finally the turnover and number of employees of firms naturally constituted the factor *SIZE*. In general, therefore, the factor names reflect the variables that loaded most significantly on the factors.

The results of regressing firms' pricing responses to changes in costs, demand and competitors' prices upon these factors are presented in Tables 6 and 7. (The dependent variables being defined and described in Table 1.) The regressions were run on the regression package *LIMDEP* (7.0). In each case, the  $R^2$ , adjusted  $R^2$  and F-statistics are presented. The F-statistics all have [25, 258] degrees of freedom. These statistics suggest that the regressions are significant but that they generally explain between 15 and 30 percent of the relevant dependent variable. These statistics are, of course, expected to be low with cross-section data. However, this also suggests that price adjustment may often reflect unsystematic influences. Where necessary the results were corrected for heteroscedasticity according to White's transformation. The Breusch-Pagan statistic is reported in each case. There were 25 degrees of freedom associated with the test. Starred statistics indicate significance at the 5 percent level.

Table 6 reports the results for usual economic predictions such as: an increase in costs leads to an increase in price (*ICIP*). Table 7 presents the results for predictions not readily made from a traditional economic perspective, such as: an increase in costs leads to a decrease in prices (*ICDP*).<sup>17</sup> Only coefficients with t-ratios significant at the 5 percent level are reported.<sup>18</sup> In each case discussion is confined to "consistent

TABLE 5  
Factor Analysis

Factor Name	Percent of Variance	Factor Description (Based on significant variables in each factor)
<i>PPORTFOL</i>	7.35	Price coordinates sales between products
<i>PPROCED</i>	5.684	Procedural aspects of pricing, such as budgeting
<i>LONGRUN</i>	5.082	Long-run pricing objectives such as profits market share and growth
<i>SHORTRUN</i>	4.253	Short-run pricing objectives such as profits, market share and growth
<i>PRICOMP</i>	3.903	Competition through prices
<i>FORMAL</i>	3.329	Formalization aspects of pricing
<i>UNXCHGE</i>	3.004	Unexpected changes in price and non price variables
<i>WSALEDIS</i>	2.816	Wholesale and discounted products
<i>CONCFIRM</i>	2.726	Geographical concentration of firm activities
<i>NONPMKTG</i>	2.506	Non-price marketing variables
<i>NUMBCOMP</i>	2.286	Numbers of actual and potential competitors
<i>WIDEGROUP</i>	2.245	Aspects of wide product ranges for pricing decisions
<i>FOLCOMP</i>	2.139	Pricing to account for competitors and demand
<i>SIZE</i>	2.039	The firm's size by turnover and employees
<i>STRATDEC</i>	1.984	Executive and hierarchical aspects of price decision making
<i>WHOLEPLIST</i>	1.908	Wholesale price list variables
<i>GOODWILL</i>	1.829	Goodwill and potential competition
<i>ROUTINE</i>	1.745	Routine batch production
<i>PRICEIND</i>	1.676	Pricing independently of holding firm interests
<i>COMPSPEC</i>	1.567	Company product specification
<i>AVCOST</i>	1.512	Aspects of cost behavior
<i>CHNGPFOR</i>	1.450	Changes to costing bases and markups
<i>DIFDEPT</i>	1.397	Non-executive and departmental influences on price
<i>CONTING</i>	1.341	Pricing according to contingency
<i>INTEG</i>	1.279	Integrated production and distribution

tendencies" in behavior which have been highlighted for each pricing response. Consistency here simply implies that the variable was significant for, say, both cost increases and decreases. The assumption is that what is left is idiosyncratic behavior.

The highlighted results in Table 6 suggest that firms are more likely to increase or decrease their prices following an increase or decrease in costs if they modify their markup pricing formula. This is because *CHNGPFOR* is a significant regressor in both the cases of *ICIP* and *DCDP*. This behavior is consistent with the Post Keynesian approach to pricing identified above. The other significant regressor in both of these cases, *CONTING*, indicates that changes in price following cost changes are associated with contingent circumstances. The implication of these results is that the consistent "economic" factors associated with changes in price following changes in costs reflect the markup formula and contingent circumstances.

In the equations for *IDIP* and *DDDP*, that seek to identify factors associated with firms increasing or decreasing their prices in response to increases or decreases in demand respectively, the significant regressors are *PRICOMP* and *WSALEDIS*. These results suggest respectively that the degree of price competition facing firms, and their discounting behavior in wholesale markets are important factors contributing to the adjustment of prices to demand conditions. Finally, the regressions of vari-

**TABLE 6**  
**"Economic" Effects on Price**

Dep. Variable	Cost		Demand		Competitor Behavior		
	ICIP	DCDP	IDIP	DDDP	CIPIP	CDPDP	DMSDP
<i>PPORTFOL</i>							
<i>PPROCED</i>					-0.135 (-2.666)		
<i>LONGRUN</i>			-0.116 (-2.092)		-0.144 (-2.607)		
<i>SHORTRUN</i>							
<i>PRICOMP</i>			<b>0.145</b> (2.688)	<b>0.11</b> (2.07)	<b>0.17</b> (2.919)	<b>0.228</b> (4.068)	<b>0.218</b> (3.856)
<i>FORMAL</i>							
<i>UNXCHGE</i>					-0.14 (-2.269)		
<i>WSALEDIS</i>			<b>0.126</b> (2.405)	<b>0.13</b> (2.432)			
<i>CONCFIRM</i>							
<i>NONPMKTG</i>						0.156 (2.536)	
<i>NUMBCOMP</i>							
<i>WIDEGROUP</i>	0.129 (2.801)						
<i>FOLCOMP</i>	-0.149 (-2.511)				<b>0.224</b> (4.241)	<b>0.217</b> (3.914)	<b>0.122</b> (2.122)
<i>SIZE</i>	0.108 (2.558)		0.108 (2.65)		0.119 (2.777)		
<i>STRATDEC</i>							
<i>WHOLEPLIST</i>							
<i>GOODWILL</i>							
<i>ROUTINE</i>			-0.1414 (-2.893)			0.167 (3.046)	
<i>PRICEIND</i>				0.126 (2.682)	0.157 (3.125)		
<i>COMPSPEC</i>	-0.157 (-2.698)				-0.166 (-3.461)		
<i>AVCOST</i>	0.175 (3.299)					0.111 (2.078)	
<i>CHNGPFOR</i>	<b>0.136</b> (2.595)	<b>0.197</b> (3.455)				0.189 (3.002)	
<i>DIFDEPT</i>							
<i>CONTING</i>	<b>0.194</b> (3.905)	<b>0.246</b> (3.588)	0.127 (2.4)		<b>0.237</b> (4.118)	<b>0.237</b> (3.762)	<b>1.058</b> (2.354)
<i>INTEG</i>			-0.121 (-2.456)				
Breusch-Pagan	94.3009*	53.35*	36.0798	32.8805	53.696*	43.806*	63.5*
R <sup>2</sup>	0.148	0.196	0.194	0.131	0.247	0.293	0.173
Adjusted R <sup>2</sup>	0.065	0.118	0.116	0.046	0.174	0.225	0.093
F[25, 258]	1.79	2.52	2.48	1.55	3.4	4.28	2.16
P(F)	0.0136	0.00015	0.0002	0.049	0.000	0.000	0.002

The constant in the regressions is not presented. Bold face refers to the results discussed in the text as systematic tendencies.

ables, *CIPIP*, *CDPDP* and *DMSDP*, examine factors associated with firms' increasing or decreasing their prices as a result of competitors' increasing or decreasing their prices, or firms' responding to losses in market share by decreasing their prices. Significant factors are *PRICOMP*, *FOLCOMP* and *CONTING*. These suggest respectively that price competition, a policy of following competitors and contingent circumstances contribute to such price adjustment.

Examining the effects of "non-economic" predictions in Table 7 suggests that price decreases or increases following cost increases or decreases can follow in large firms where price setting tasks cut across departments. This is because the regressors *SIZE* and *DIFDEPT* are the respectively significant factors in the *ICDP* and *DCIP* regressions. These results suggest that organizational influences can dampen "typically" expected economic pricing responses to changes in the environment.

No systematic patterns appear to underly decreases or increases in price following increases or decreases in demand as indicated by the *IDDP* and *DDIP* regressions. In the former case the overall regression is insignificant as well. Combined with the results from Table 6, this is perhaps a comforting result for traditional economic theory. It suggests that, to the extent that they occur, demand-side effects on pricing appear to conform to the tenets of neoclassical behavior. Price competition and discounting appear to be the driving features of demand-driven price changes. In contrast, cost-based reasons for changing price reflect more complex organizational factors.

It is worth noting evidence that price competition and the presence of on-site firm activities can dampen "perverse" responses to competitors' price changes or responses to losses in market share. Thus the regressions (of variables *CIPDP*, *CDPIP* and *DMSIP*), which seek to explain firms' decreasing or increasing their prices as a result of competitors' increasing or decreasing their prices, or firms' responding to losses in market share by increasing their prices, reveals that *CONCFIRM* is a negatively signed significant variable. This factor measures aspects of firms' geographically concentrated activities. Presumably this concentration of location contributes to effective organizational decision making. Likewise the extent of price competition appears to constrain perverse responses to competitors' decreasing their prices or firms' increasing their prices in response to a fall in market share. Thus the factor *PRICOMP*, which measures aspects of price competitiveness, is negatively significant in the *CDPIP* and *DMSIP* regressions respectively. However, in the *CIPDP* and *CDPIP* regressions, which measure the effects of firms' increasing their prices in response to competitors' cutting prices and vice-versa, a significant effect of the factor *FORMAL*, which measures the formalization of pricing decisions, is identified. These results suggest that bureaucratic behavior can produce influences on price responses to the environment contrary to those typically associated with behavior in economics. Likewise, the importance of prices in coordinating sales between product ranges, measured by the factor *PPORTFOL*, is significant in the *CDPIP* and *DMSIP* regressions. These results suggest that as part of a wider portfolio of products, prices need not track particular competitors. Under such circumstances firms can decrease prices when competitors increase prices, and increase prices even though facing a falling market share.

**TABLE 7**  
**"Non-Economic" Effects on Price**

Dep. Variable	Cost		Demand		Competitor Behavior		
	ICDP	DCIP	IDDP	DDIP	CIPDP	CDPIP	DMSIP
<b>Ind. Variable</b>							
PPORTFOL					<b>0.106</b>	<b>0.135</b>	
PPROCED					<b>(2.291)</b>	<b>(2.491)</b>	
LONGRUN							
SHORTRUN							
					0.104		
					(2.334)		
PRICOMP	-0.102		-0.173		<b>-0.121</b>	<b>-0.145</b>	
	<b>(-2.377)</b>		<b>(-2.111)</b>		<b>(-3.03)</b>	<b>(-3.202)</b>	
FORMAL					<b>0.111</b>	<b>0.109</b>	
					<b>(2.139)</b>	<b>(2.197)</b>	
UNXCHGE	0.108				0.136		
	<b>(2.642)</b>				<b>(3.093)</b>		
WSALEDIS					0.109		
					<b>(2.202)</b>		
CONCFIRM	-0.137				<b>-0.139</b>	<b>-0.117</b>	<b>-0.151</b>
	<b>(-2.773)</b>				<b>(-3.059)</b>	<b>(-2.611)</b>	<b>(-2.945)</b>
NONPMKTG							-0.153
NUMBCOMP							<b>(-2.745)</b>
WIDEGROUP							0.16
							<b>(2.754)</b>
FOLCOMP							
SIZE	<b>0.872</b>	<b>0.133</b>					
	<b>(3.148)</b>	<b>(2.684)</b>					
STRATDEC		-0.143					
		<b>(-2.891)</b>					
WHOLEPLIST							
GOODWILL							
ROUTINE							
PRICEIND			-0.108				
			<b>(-2.101)</b>				
COMPSPEC							
AVCOST					0.126		
CHNGPFOR					<b>(2.301)</b>		
DIFDEPT	<b>0.966</b>	<b>0.159</b>		0.22		0.137	
	<b>(2.517)</b>	<b>(2.698)</b>		<b>(2.481)</b>		<b>(2.946)</b>	
CONTING	0.116		0.159		0.105		0.143
	<b>(2.771)</b>		<b>(3.082)</b>		<b>(2.047)</b>		<b>(2.788)</b>
INTEG							
Breusch-Pagan	32.0913	42.3574*	38.315*	619.784*	29.53	17.034	57.682*
R <sup>2</sup>	0.147	0.147	0.121	0.08	0.162	0.173	0.191
Adjusted R <sup>2</sup>	0.064	0.064	0.036	-0.009	0.081	0.092	0.113
F[25, 258]	1.78	1.78	1.42	0.9	1.99	2.15	2.44
P(F)	0.015	0.015	0.093	0.605	0.0042	0.0016	0.003

The constant in the regressions is not presented. Bold face refers to the results discussed in the text as systematic tendencies.

In short it is argued that to the *limited* extent that firms change their prices in line with changes to their environments, a strong element of contingency exists. Moreover, the systematic tendencies that might underpin such price changes have a strong Post Keynesian emphasis. Central features include changes to the markup formulae and adjusting prices in line with competitors' prices. Moreover, the broader organizational features of pricing decisions (of which, for example, markup formulae are one aspect) can affect pricing responses, for example, to dampen the expected pricing responses of firms to changes in their environment usually predicted in economics. Consequently, both the process of price-setting and the behavior of prices that follows can be understood in Post Keynesian terms. In this sense the traditional Post Keynesian emphasis on markup models to understand the macro-consequences of pricing has some legitimacy. However, the microeconomic structures of decision making in firms need further elaboration.

## CONCLUSION

This paper argued that more Post Keynesian interest and empirical work in microeconomic issues has value. The paper explores price stickiness from a Post Keynesian perspective. A particular realist interpretation of Post Keynesian pricing theory was put forward. This view presents a case that markup pricing rules reflect non-optimizing decision making under conditions of uncertainty. Locating markup pricing within a broader view of decision making in the firm, these propositions were then explored empirically by looking at the questionnaire responses of a sample of UK manufacturing firms.

Consistent with an open-system epistemology the data were analyzed both descriptively and inferentially. It is argued that the results offer support for the Post Keynesian perspective that price stickiness is a *normal* feature of business activity.

The results show that pricing stability is actively sought, that firms are interested in the long-run pursuit of objectives including goodwill, and that firms set prices with reference to their competitors by following markup pricing mechanisms. Importantly, to the extent that firms do change their prices in response to changes in their environment, in addition to this being understood as a contingency, the key features of the Post Keynesian accounts are important: markup pricing methods, with markups set to take account of competitors' prices. It follows that support for the Post Keynesian perspective suggests a different form of rationality than is implied in optimizing accounts of prices.

## NOTES

This is a revised version of a paper presented at the Eastern Economic Association Meetings held at the Boston Park Plaza Hotel, Boston, U.S.A. March 12-14 1999. At that event I was particularly grateful for comments from Steve Pressman, Marc Lavoie and Anwar Shaikh. Nick Adnett of my own institution made invaluable comments on the paper. Finally, anonymous referees and the editors of this *Journal* made many detailed comments upon a later draft of the paper that immensely improved its exposition. Remaining deficiencies are mine.



1. The definition of neoclassical economics in this paper is methodological. Drawing on Hodgson [1988], it is maintained that neoclassical economics comprises theoretical accounts that invoke optimizing behavior under conditions of effectively full information. This implies a theoretical focus on equilibrium. In methodological terms this can be described as a deductive or closed-system epistemology [see Lawson, 1997]. This paper adopts a critical realist perspective in rejecting this approach to theorizing in favor of an open-system approach. These issues are discussed further in the paper.
2. For a full review of Blinder et al. [1998], see Downward and Lee [forthcoming].
3. This means that Hall and Hitch's [1939] work is not associated with simply adding a fixed and unchanging mark up to average costs as implied in Blinder et al. [1998] and indeed many other studies.
4. This is not to imply that, for example, neoclassical economists do not share these concerns *per se*. A huge literature on the problems of identification in econometrics is indicative of explicit concern with these matters. However, the purpose of this paper is to show that a Post Keynesian approach makes these concerns an integral part of the published output. However, it should also be noted that the methodological differences alluded to are not trivial. An explicit focus in published work on closed-system arguments versus explicit acknowledgement of the problems of closed-systems analysis can be understood as reflecting quite fundamentally different world views. The interested reader is referred to Lawson [1997] for an excellent and balanced discussion of these matters.
5. Direct knowledge is thus neither fully *a priori* - independent of experience - or empiricist implying unproblematic interpretation of sense data.
6. There is, however, another aspect of statistical work worth noting at this juncture. In the language of the critical-realist philosophical underpinnings of this paper it follows that econometric work is more "event" oriented than "process" oriented [see Downward, 1999]. This suggests that the results are more important in terms of describing the "demi-regularities" or implications of pricing [Lawson, 1997] than elaborating on the processes *per se*. The descriptive and prior theoretical and conceptual discussion has this latter (retroductive) task. In this sense the "triangulation" of the empirical results has an ontological dimension.
7. The sample was collected in stages over 1994 and 1995. Further descriptive exploration of the data can be found in Downward [1999].
8. Guidelines for improving the response rate to a mailed industrial survey were taken from Jobber [1985, 1986].
9. While the precise nature of costs is not defined, in the pilot work preceding the questionnaire study the executives typically talked about average total costs. Blinder et al. [1998] also discusses this issue.
10. This emphasis on competition, derived from questionnaire work, might suggest support for neoclassical economics. In a manner analogous to the "marginalist controversy" literature, one might argue that markup pricing taking account of competition is indicative of neoclassical precepts such as profit maximization. Two arguments mitigate against this claim. As implied above, Downward [1994, 1999] argues that it is methodologically inadmissible to test optimizing theories by assessing their descriptive relevance. In contrast the Post Keynesian methodological approach legitimizes reference to such insights because of its more inductive character.
11. For a contrasting perspective see Lee [1998].
12. The enduring empirical support for the Post Keynesian account of pricing of both an econometric and case-study nature would also support this claim [Downward, 1994, 1995].
13. It is worth noting that Blinder et al.'s [1998] ordered-probit regressions, which looked to explain firms' adherence to a theory, on the basis of their characteristics, suffer from the same problems. For example, in the case of nominal contracting, Blinder's dependent variable is the opinion of executives as to the importance of nominal contracts in constraining price adjustment. This is then regressed upon aspects of the firm's contractual environment. One result is that nominal contracts are identified as less important in environments dominated by implicit contracts. These are clearly mutually determined variables.
14. A factor analysis is concerned with identifying the linear combination of variables that accounts for most of the variance in the data. In this respect "factor loadings" are assigned to the variables partitioned into factors. Factor loadings are the correlation between the original variables and the factors. A rotation of the factor analysis is usually performed to obtain a more "meaningful" interpretation of the results. A rotation is simply an adjustment of the factor axes that helps to pick out more point-

- edly apparent combinations of variables. This is usually performed because the initial factor loadings tend to generate one factor with almost every variable loading significantly and using up most of the variance in the data [Hair et al, 1990]. The rotation redistributes some of this variance to other factors to allow for a more pointed description of the data. The factors that are extracted can be seen as sets of variables best summarizing the data. They sequentially account for the variance in the data and hence they can be seen to represent the data in declining order of importance. A factor analysis should preferably involve more than fifty observations and ideally involve a ratio of observations to variables of 4 or 5:1. An orthogonal rotation was employed to remove any multicollinearity.
15. Both the factor analysis and the regression results essentially treat the questionnaire data as interval measures. This implies that the intervals on the scales are consistent for respondents if not their origins. This raises a whole set of methodological issues that cannot be explored here. On the one hand, ethnomethodologists and qualitative researchers might be deeply suspicious of the questionnaire method. To employ the questionnaire then, this paper is guilty of assuming that the firms' respondents have the same interpretations of the questions posed. One can only argue that the variables are drawn from the massive prior literature of case-study investigations into firms that underpins the view of pricing put forward in the paper and that they were piloted. This paper argues, therefore, that such inductive propositions are likely to be more robust than purely deductive entities. On the other hand, one can argue that the data is essentially ordinal. There are econometric techniques to deal with such data, such as LOGIT and PROBIT models and their ordered counterparts which take account of ordinal rankings in the data. An ordered probit model was employed by Blinder et al [1998]. This paper argues that the factor analysis was of particular importance given the behavioral interpretation placed on the data. As such these other techniques were not employed and consistency implied that OLS estimators were adequate.
  16. Details of the precise statistics for each procedure, and the full list of variables, are available from the author on request. They are omitted here purely for expositional ease.
  17. Though apparently unusual to those schooled in neoclassical economics, such responses have been detected in previous surveys of pricing behavior [Shipley 1983]. For example, decreasing prices as a response to increased costs could reflect firms' reactions to falling demand and rising average total costs.
  18. As the units in the regressions are interval rankings, or combinations of them in the factor analysis, the results should be interpreted qualitatively.

## REFERENCES

- Andrews, P. W. S. A Reconsideration of the Theory of the Individual Business. *Oxford Economic Papers*, 1949a, 54-89.
- \_\_\_\_\_. *Manufacturing Business*. London: Macmillan, 1949b.
- \_\_\_\_\_. *On Competition in Economic Theory*. London: Macmillan, 1964.
- Blinder, A. S. et al. *Asking about Prices: A New Approach To Understanding Price Stickiness*. New York: Russell Sage Foundation, 1998.
- Dow, A. The Future of Post Keynesianism. *Post Keynesian Study Group Newsletter*, Issue no. 2, 1995.
- Dow, S. C. Post Keynesianism as Political Economy: A Methodological Discussion, *Review of Political Economy*, 1990, 345-58.
- \_\_\_\_\_. *Conversations with Post Keynesians*, edited by J.E. King, London: Macmillan Press Ltd., 1995.
- \_\_\_\_\_. The Appeal of Neoclassical Economics: Some Insights from Keynes' Epistemology. *Cambridge Journal of Economics*, 1996, 715-33.
- Downward, P. M. A Reappraisal of Case Study Evidence on Business Pricing: Neoclassical and Post Keynesian Perspectives. *British Review of Economic Issues*, 1994, 23-43.
- \_\_\_\_\_. A Post Keynesian Perspective of U.K. Manufacturing Pricing. *Journal of Post Keynesian Economics*, Spring 1995, 403-26.
- \_\_\_\_\_. A Behavioural Perspective on Business Pricing, in *Management, Marketing and the Competitive Process*, edited by P. Earl. Aldershot: Edward Elgar, 1996.
- \_\_\_\_\_. Risk, Uncertainty and Inference: A Realist Commentary, presented at the INEM-ROPE Conference, University of New Hampshire, 15-17 June 1998.
- \_\_\_\_\_. *Post Keynesian Pricing Theory: A Realist Approach*. Aldershot: Edward Elgar, 1999.

- \_\_\_\_\_. A Realist Appraisal of Post Keynesian Pricing Theory. *Cambridge Journal of Economics*, 2000, 211-24.
- Downward, P. M., Finch, J., and Ramsay, J.** Critical Realism, Empirical Methods and Inference: A Critical Discussion. *Cambridge Journal of Economics*, forthcoming.
- Downward, P. M., Lavoie, M. and Reynolds, P. J.** Realism, Simulations and Post Keynesian Pricing Models. *Review of Political Economy*, 1996, 427-32.
- Downward, P. M. and Lee, F. S.** Post Keynesian Pricing Theory Reconfirmed (?). A Critical Review of "Asking about Prices." *Journal of Post Keynesian Economics*, forthcoming.
- Downward, P. M. and Mearman, A.** Critical Realism and Econometrics: Constructive Dialogue with Post Keynesian Economics, presented at the Cambridge Realist Workshop Conference, Sidgwick Site, 5-7 May 2000.
- Downward, P. M. and Reynolds, P. J.** Alternative Perspectives on Post Keynesian Price Theory. *Review of Political Economy*, 1996, 101-12.
- Earl, P.** Normal Cost versus Marginalist Models of Pricing: A Behavioural Perspective. *Journal of Post Keynesian Economics*, Winter 1990/91.
- \_\_\_\_\_. ed, *Management, Marketing and The Competitive Process*. Aldershot: Edward Elgar, 1996.
- Gerrard, B.** The Scientific Basis of Economics: A Review of the Methodological Debates in Economics and Econometrics. *Scottish Journal of Political Economy*, Vol.2, No.2, 1995.
- Hair, J. F., Anderson, R. E., and Tatham, R. L.** *Multivariate Data Analysis*. New York: Maxwell MacMillan, 1990.
- Hall, R. F. and Hitch, C. J.** Price Theory and Business Behaviour, *Oxford Economic Papers*, Vol. 2, 1939, 13-33.
- Hodgson, G. C.** *Economics and Institution: A Manifesto for a Modern Institutional Economics*. Cambridge: Polity Press, 1988.
- Jobber, D.** Questionnaire Factors and Mail Survey Response Rates. *European Research*, 1985, 24-129.
- \_\_\_\_\_. Improving Response Rates in Industrial Mail Surveys. *Industrial Marketing Management*, 1986, 183-95.
- Kalecki, M.** *Theory of Economic Dynamics*. London: Allen and Unwin, 1954.
- Keynes, J. M.** *Treatise on Probability, Volume VIII The Collected Writings of John Maynard Keynes*. London: Macmillan, 1973.
- Lavoie, M.** *Foundations of Post Keynesian Economic Analysis*. Aldershot: Edward Elgar, 1992.
- \_\_\_\_\_. Markup Pricing versus Normal-Cost Pricing in Post Keynesian Models. *Review of Political Economy*, 1996, 91-100.
- Lawson, T.** The Relative/Absolute Nature of Knowledge and Economic Analysis. *Economic Journal*, 1987, 951-70.
- \_\_\_\_\_. *Economics and Reality*. London: Routledge, 1997.
- Lee, F. S.** From Post Keynesian to Historical Price Theory, part 1: Facts, Theory and Empirically Grounded Pricing Model. *Review of Political Economy*, 1994, 303-336.
- \_\_\_\_\_. Pricing, the Pricing Model and Post Keynesian Price Theory. *Review of Political Economy*, 1996, 87-99.
- \_\_\_\_\_. *Post Keynesian Price Theory*. Cambridge: Cambridge University Press, 1998.
- Lee, F. S. and Downward, P. M.** Re-testing Gardiner Means' Theory of Administered Prices. *Journal of Economic Issues*, 2000, 861-86.
- Mearman, A.** Keynes, Realism and Econometrics, presented at the Third Annual Post Graduate Conference, University of Leeds, November 1998.
- Shipley, D. D.** Pricing Objectives in British Manufacturing Industry. *The Journal of Industrial Economics*, June 1981, 429-43.
- \_\_\_\_\_. Determinants of Adjustment in Price and Non-price Marketing Intensities. *Mid-South Business Journal*, 1983, 3-9.