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Comments please to kjc1@cam.ac.uk AND n.norman@unimelb.edu.au
Post Keynesian Approaches to Industrial Pricing:
A Survey and Critique♥
Ken Coutts and Neville Norman***

This is a critical guide and commentary concerning Post-Keynesian approaches towards the making, adjustment and implications of prices and price movements. We adopt the term ‘approaches’ to embrace models, theories, hypotheses, observations and speculations, all of which are encountered in this field. We focus mainly on product or industry prices, though these pricing approaches have significant implications for the behaviour of prices in an economy-wide sense and in many applications within theoretical and applied economics. Our field is a diverse range of contributions, many of which are in disagreement with each other, or even on what constitutes Post-Keynesianism. To provide some structure for this discussion, one of us has produced a note on how to recognize a good Post-Keynesian¹, which is found as an addendum to the editors’ introduction.

There are extensive book-length surveys devoted to PK pricing approaches, as in Lee (1998) and Downward (1999), which give detailed accounts of the origins of modern price-setting behaviour and biographical details of eminent economists writing on this subject. They also provide very comprehensive lists of references to which we refer here directly to shorten a potentially article-length bibliography. Our approach in this contribution is to: (a) provide a compact, contemporary insight into PK pricing approaches; (b) display clearly some of the properties and variety of these approaches; (c) articulate the manner in which the PK pricing approaches align with, or depart from, the flavour of Post Keynesian philosophy; (d) demonstrate the consequences of following PK rather than conventional pricing approaches; (e) focus on a global and not simply a closed-economy environment; and (f) survey and comment on the empirical verification of pricing, to demonstrate the explanatory power of PK pricing.

In ‘realistic’, circumstances, there is a complex structure of prices, discounts, rebates, options, add-ons, service and financing charges that make the proverbial “P” (price) extremely elusive. In general, “P” will be measured at a point in time and may be part of a series arranged in time, having both a history and a prospect. A distinguishing feature of Post-Keynesian (PK) economics is that any observation of the economy or of any part of it is a strict selection in historical time that undergoes evolving and evolutionary processes, to which the decisions about “P” (which we call “pricing”) are at least partially caused by, and then impact upon, these dynamic processes.

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* Faculty of Economics, University of Cambridge, UK.

** Faculty of Business and Economics, University of Melbourne, Australia; Official Visiting Scholar, Cambridge 2010.

¹ Throughout this chapter we use the acronym PK for Post Keynesian and NPK for non-Post Keynesian.

1. Post-Keynesian pricing approaches: the underlying story

PK economics has many variants and any attempt to describe an over-arching PK approach to anything is bound to cause strong reactions from some sections of the PK fraternity. We keep this caveat in mind throughout.

In the PK approach to pricing there is a comprehensive but grubby economy in the background: its legal system, regulations, spending, taxes, factor markets, foreign entities, governments and potential rival producers interact with our immediate domain of price-setting firms. Mistakes are commonly made, equilibrium conditions are seldom met, distortions and corrections abound and forward momentum and change is evident to all players. Decision makers that are part of our PK pricing story are conscious of the lessons of history, which they do not necessarily or fully heed, and of the future, for which they plan, if imperfectly. There is slackness most of the time, including unemployment and under-utilisation of capital.

The prices we are mainly concerned with are set by business firms, sometimes even an individual firm. The firms can be variously sole traders, companies or large conglomerates; they will frequently market many products, often subject to quality change and product changes. Product differentiation is almost universal, though the knowledge by firms and buyers of exact product characteristics can be deficient. On the production or provision side, costs and technology are subject to change, and firms need to be alive to their options. One of the features of PK pricing is the close connection between the pricing and investment decision, recalling that investment is the means of changing the capital base or embodying new technology. Firms in the PK environment are conscious of all these things, but most importantly they are conscious that their information base is deficient, especially in relation to possible shifts in demand conditions, or even in relation to demand aspects beyond the current price and rates of sales volumes that they observe.

Most pricing analyses in economics, and not just in the PK domain, have tended to neglect the retail or services sector, including the value-added stage beyond manufacturing or in the servicing of manufactured products, such as machinery and computers. This omission is often not noticed. However, Andrews sought to rectify it in his 1964 book cited in Lee (1998), but not with much force or acclaim. We are thus mostly involved with wholesale or industrial price formation in this survey.

This PK environment is already so different to the Non-Post-Keynesian (NPK) set-up that we need briefly to recall how the NPK pricing approach proceeds. In the NPK approach there is either (a) perfect competition, with price determined by supply and demand in an extreme form of market and individual firms choose how much to supply at the market price; or (b) imperfect competition, where the firms set prices to maximise immediate profits using full information about their revenue and cost conditions. In case (b) the business goal is almost always single-period profit maximisation. (Exceptions include (i) sales maximisation; future considerations embodied in limit pricing models; and (iii) risk-aversion approaches.) The price is set by the usual marginal condition, and is adjusted as demand and cost conditions change.

PK firms are either fledglings with limited start-up information, or experienced firms with good information about their costs and only partial information about what NPK economists call a firm's demand or "average revenue" curve. As existing operators they would know a starting price and volume of sales. They are uncertain where the demand schedule goes beyond the current trading range, or even if it might remain where it is for some time. They can form expectations of a reliable or normal range for their output volume and compute unit variable costs relevant to that normal range. This is the normal unit cost that is central to PK pricing explanations.

It is reasonable to assume that a concern for making profits stands firmly among the goals of PK firms, though not necessarily profit maximisation in a single period sense. The motivation of seeking some security about profits, rather than striving for their maxima without regard for risk fits well with most PK pricing approaches. Such an approach was clearly expressed in Rothschild (1947), as cited in Lee (1998). Firms that neglect profits are likely to fail or be taken over. PK firms have the power to set and adjust prices and are always conscious of making mistakes. The PK firms require the price to cover their operating unit costs and provide a margin for profit, overheads and internal financing of business investment. Such a price can be called the PK price and can be represented by a mark-up equation that in plain words simply states:

PK Price equals Normal unit cost plus a PK (costing²) margin.

The normal unit costs (NUC) do not vary as the firm's own output changes and shift only when factor prices like wage rates, materials prices or technology move them. We can also count indirect taxes as a cost. Some of the forces generating these factor price and technology changes are longer-term and can be assumed constant in short periods; some may reflect movements in economic policy, such as taxes, tariffs and regulation. Short-term movements in the rate of demand for product in the domain considered here do not by definition affect NUC. Nor do they affect the costing margin, which is arrived at through experience, and if a stable relationship, perhaps in percentage terms, reflects the competitive situation and market power of the enterprises involved. In our view a central feature of PK pricing approaches, implies that fluctuations in demand reflected in sales volumes of the PK firms do not require the need for price revisions.

Cost movements, meaning shifts in NUC, always lead to price adjustment in the same direction. In the most rigid form of PK pricing models, the percentage mark-up model, the percentage change in the PK price equals the percentage change in NUC, preserving proportionality between the two at all times.

Customer-oriented firms will wish to keep stable prices for their customers to maintain goodwill and encourage repeat sales. If rivals change their prices, this will not necessarily cause firms to match the price change. However, if unit costs themselves shift, the implicit understanding among rivals is that all have similar cost conditions and little risk is attached to moving prices when costs move. This can be

² This term was used first by renowned PK pricing economist PWS Andrews, prominently in his book cited as Andrews (1948), *Manufacturing Business* in Lee (1998). We use Lee (1998) as a means of shortening our reference list by connecting directly and not separately to any reference in his lengthy list.

called ‘implicit collusion’ or ‘conscious parallelism’; each captures the essence of PK pricing. There is a degree of asymmetrical information here, not in the usual sense, but because PK economists suppose, with good evidence, that firms have good information about their costs and cost relationships with output volumes, but poor information about demand relationships. In the global pricing domain, the same PK explanations for pricing responses prevail: home firms gear their prices to their own NUCs which are unaffected by tariff and exchange rate changes impacting on rival products; however, tariff and exchange rate changes can affect NUCs, in which case, consistently, prices *do* move, in proportion to the cost shift. This approach has been developed in Norman (1996).

One version of the PK pricing approach is the *normal price hypothesis* (NPH).³ In his 1959 paper, Godley (1959) used national accounts data on costs, profits and the value of output to show that the price to unit cost ratio was pro-cyclical, but when unit costs were adjusted using normal rather than actual output, the price cost ratio was invariant to the business cycle. The NPH gave a clear explanation as to why profits are a strongly pro-cyclical component of national income as shown in Godley (1959) and Coutts (1978). The essential behavioural elements of the NPH can be illustrated by the following two diagrams.

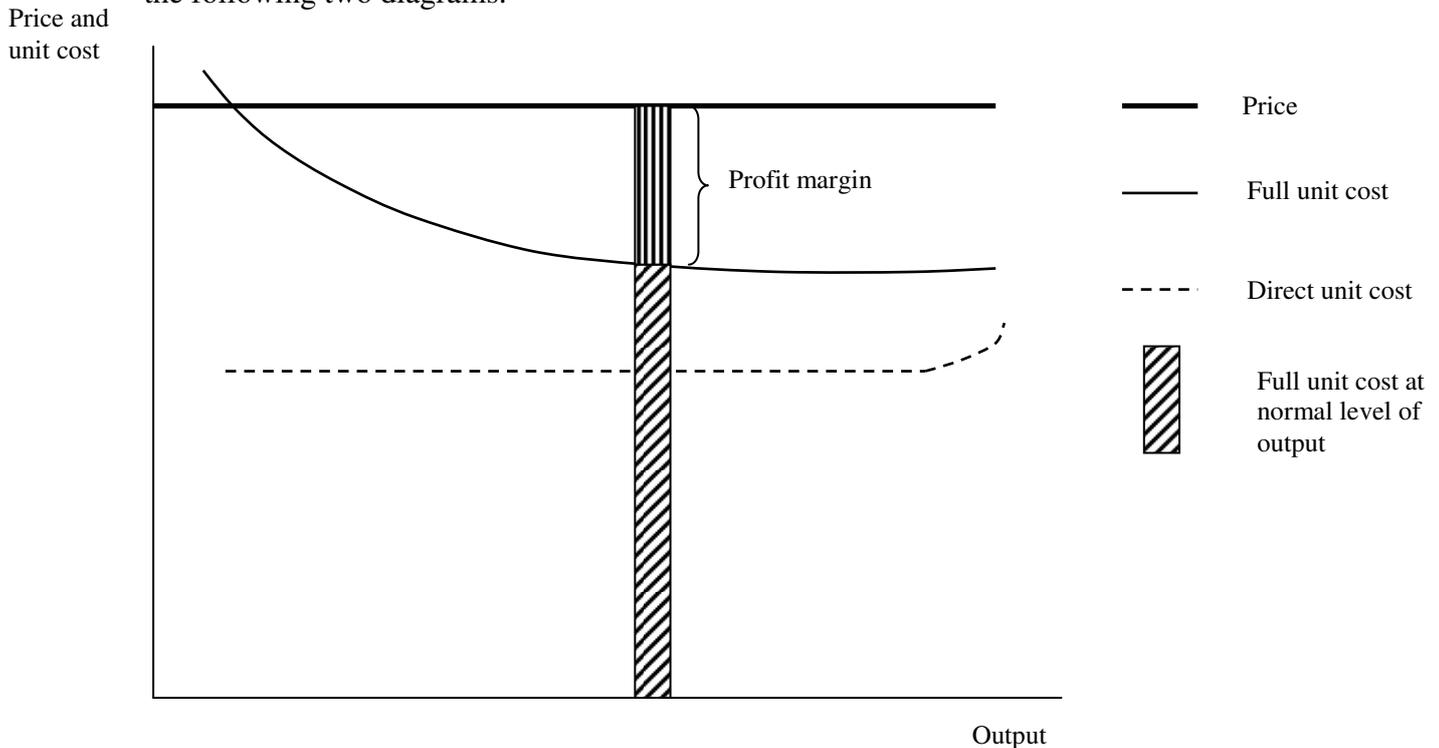


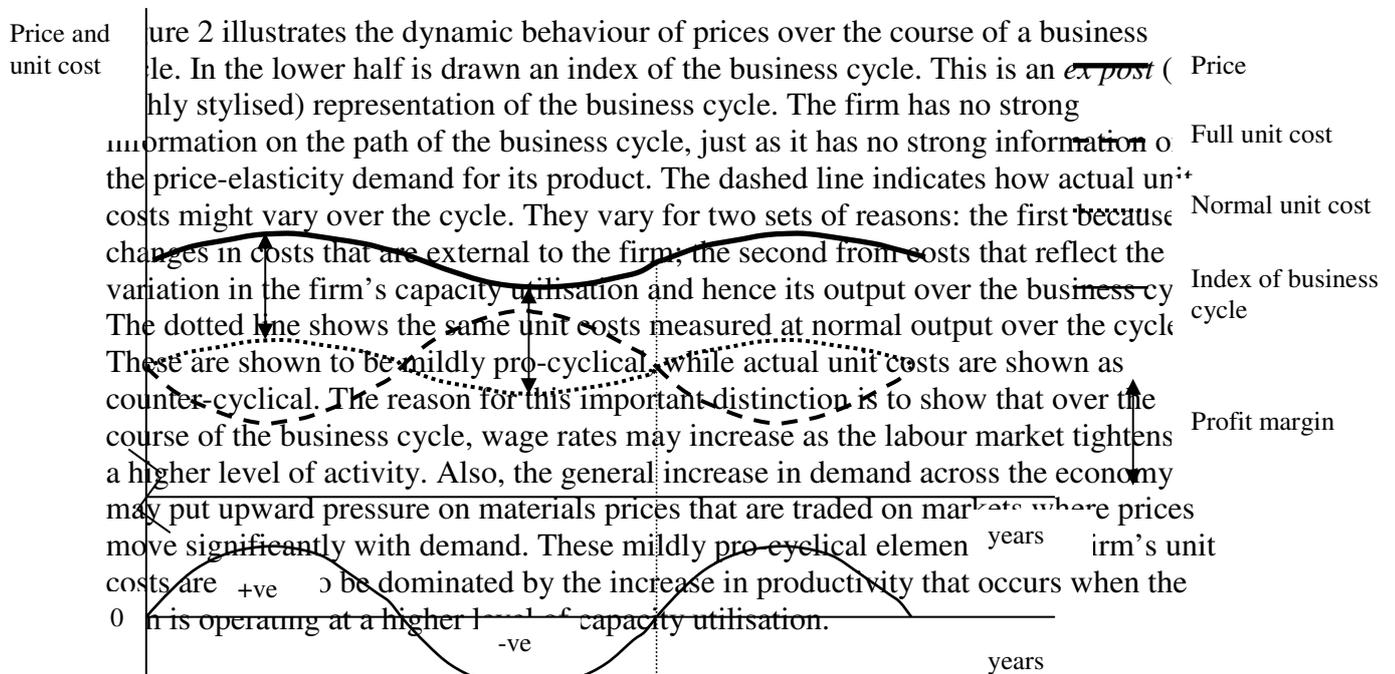
Fig 1

In figure 1, a static description only of price-setting, direct average costs are approximately constant for most of the variation in the firm’s output range consistent with existing installed capacity. Indirect costs per unit of output are added to direct costs to give full unit cost of production. Many of the indirect costs are of the nature of overheads and are not likely to vary much with output, so unit costs will fall with increased output. The shape of this curve is largely determined by variation in costs associated with overtime and bonus payments for labour and with the variation of

³ (Godley (1959); Godley and Nordhaus (1972); Coutts, Godley and Nordhaus (1978)).

productivity at varying levels of capacity utilisation. Productivity is likely to be pro-cyclical and dominate any pro-cyclical variation in labour costs.

The NPH firm calculates its unit costs when operating at a conventional or normal level of output. These costs depend on the one hand on existing rates of pay for its labour, including overtime rates and bonuses, on current contracts for material purchases, energy etc. and on the other, the degree of capacity utilisation chosen for the costing. This normal level of unit cost is shown as the striped rectangle. The firm adds a profit mark-up to normal unit cost to arrive at the price. As the firm's short-run demand varies, it will attempt to meet the sales by varying its production, using its inventories, or lengthening order books at the current price. The vertical gap between price and full unit cost indicates the profit per unit of output achieved as output varies. This clearly shows that profit per unit of output increases with increased output.



The NPH states that the profit mark-up that firms add to normal unit costs does not vary significantly over the business cycle. If normal unit costs are pro-cyclical then the NPH predicts that prices will also be pro-cyclical. Econometric tests of industrial prices and demand would show that prices vary positively with demand, but the NPH says that it would vary only to the extent that normal unit costs varied with demand. The diagram also illustrates the implied cyclical behaviour of profits over the business cycle.

In section 3 we sketch some of the many important variants of PK pricing approaches, where the various authors attribute importance to key concepts such as full-cost, normal-cost, mark-up and other variants of PK pricing. We have ignored these differences in this section, in the interest of focussing on the central unifying features of PK pricing.

2. How and in what respects do PK pricing approaches differ from conventional approaches?

We provide here some specific comparisons between Post-Keynesian pricing models and those from the neo-classical school that aim to explain pricing under conditions of imperfect competition. We summarise the central features and differences in tabular form.

In the following table we assemble our summary of the main distinctions and differences between PK and NPK approaches to pricing.

Characteristic⁴	Non Post-Keynesian Approach to pricing	Post-Keynesian Approach to Pricing
1. Purpose of the pricing hypothesis.	Explain price determination and the causes and effects of price movements.	Explain price determination and the causes and effects of price movements.
2. Treatment of time.	Usually one-period models; some advanced approaches use dynamic optimisation techniques.	Historical time with past and future consciousness of decision-makers; any single period is a selection from explicit history.
3. Supposed business motivation goal.	Single-period profit maximisation, mostly. Can be sales maximisation. In advanced models, the present-value of a profit stream will be commonly assumed.	Can include profit maximisation, always with past learning and future consciousness; risk consciousness is paramount, especially in relation to uncertainties surrounding demand factors.
4. Information base for pricing decisions, as presumed by the price-setting firms involved.	Full and complete information about all relevant causative factors (usually demand and cost functions) and their connections to the business goal.	Imperfect knowledge, especially about demand function positions and shifts, competitive strategies and their consequences for own-firm demand conditions; good knowledge about costs at the normal rate of output, which thus becomes a reliable base for pricing decisions.
5. Economy-wide	No explicit connection to	Inherent potential macro-

⁴ These characteristics are those found in the cited addendum, with specific additions that are relevant only to pricing hypotheses.

relevance.	the macro economy; the broader economy is presumed to be irrelevant or neutral in relation to business pricing decisions.	economic instability; distorted determination of prices and wages through the economy. Decision makers are conscious that their knowledge of prospective future demand movements in the overall economy and their own product sectors are difficult to predict.
6. Industry conditions and link to competitors/rivals.	Neo-classical imperfect competition models presume the firms are aware of their own market power and have explicit consciousness of any rivals and the risks of entry (where permitted) in setting prices. Capital equipment is fine-tuned to its uses and fully utilised.	Imperfect competition and information is clearly recognized by price-making firms; as are distortions about product and factor markets; there is significant rival consciousness. Demand uncertainty causes all firms deliberately to create significant excess capacity to avoid the penalties of not being able to meet unexpected surges in demand.
7. Sensitivity of price to demand shifts.	Positive and significant link from any demand movements to price adjustments is typical of neo-classical models.	Mark-up models imply zero response of prices in relation to movements in industry and macro demand pressure. More general PK approaches have a very limited and insignificant connection to at least short-term movements in demand volumes.
8. Sensitivity of price to (foreign) rival prices as affected by exchange rates, tariffs and world price movements	Home producers match duty/exchange corrected rival import prices and price movements; the law of "one price" or (the inverse form of) purchasing-power parity prevails everywhere.	Domestic producers set prices according to costs with little or no reference to rival (imperfectly-substitutable) import prices. Cost changing working through import prices will be reflected in (finished-goods or more fully-processed) product prices.
9. Sensitivity of price in relation to sustained unit	Partial positive shifting of indirect taxes (costs) into	Full (100%) shifting of any and all (normal) cost

cost shifts.	prices. In linear demand models with constant marginal cost, the pass-through coefficient is less than 50%.	changes into prices in mark-up models, and close to 100% in more general PK pricing approaches.
10. Sensitivity of prices in relation to indirect tax shifts.	Partial positive shifting of indirect taxes (costs) into prices: never anywhere near 100% shifting of taxes.	Full (100%) shifting of indirect taxes (seen as costs) into product prices in mark-up models. ⁵

Close study of this table reveals significant differences in these variants of pricing hypothesis.

3. Some specific PK pricing approaches

3 (a) *Hall, Hitch and the Oxford Research Group*

The first and clearest statement of the normal-cost-pricing doctrine is found in the work arising from Hall, Hitch and the Oxford Research group in the 1930s, which was carried on and elaborated by Philip Andrews. Hall & Hitch's only easily-found documentation is in Wilson and Andrews's book *Oxford Studies in the Price Mechanism* (W&A) cited in Lee (1998). It reports the interviews with 38 firms, mainly manufacturing (2 retailers, 2 builders) around Oxford and the midlands of the UK.

We cannot do better than to cite Hall and Hitch's main findings (in italics from Wilson & Andrews as listed in Lee (1998), pp. 114-6. We add our commentary from a PK pricing perspective.

“(i) Producers cannot know their demand or marginal revenue curves (because): (a) they do not know consumers’ preferences; (b) most producers are oligopolists, and do not know what the reactions of their competitors would be to a change in price. This is perhaps the clearest statement of pure PK pricing in the literature. Hall and Hitch, however, later descend into marginalist territory by seeking to explain their results with a kinked demand curve (at pp. 117 & 118 in Wilson and Andrews), the use of which contradicts this powerful main finding.

(ii) Although producers do not know what their competitors would do if they cut prices, they fear that they would also cut.

(iii) Although they do not know what their competitors would do if they raised prices, they fear that they would not raise them much at all or as much. We would in recent

⁵ Much work associated with Douglas Mair gives a PK approach to the incidence of taxation, as in his joint chapter with Damania in Arestis and Chick (1992) cited in Lee (1998), though the emphasis is on distribution and macro-economic policy rather than price effects.

years describe points (ii) and (iii), together, as the pessimistic psychology of the kinked demand curve approach.

(iv) Prices are not lowered by actual or tacit agreement among producers because of the conviction that the elasticity of demand for the group of products is insufficient to make this course pay. This point strays into the marginalism that Hall and Hitch otherwise believe is not consistent with the pricing behaviour they observed.

(v) If prices are in the neighbourhood of full cost, they are not raised (because of the likelihood of) new entrants in the long run. In modern parlance, this is an early description of strategic ‘limit-pricing’ behaviour developed by Sylos-Labini (1962) as cited in Lee (1998).

(vi) Changes in price are frequently very costly, a nuisance to salesmen, and are disliked by merchants and consumers...” We would describe this observation as a transactions-cost argument for relative price stability and it reinforces the reluctance of firms to depart from a fairly rigid cost-price relationship.

Hall and Hitch’s finding that “pure competition, pure oligopoly and pure monopoly are rarely found in the real business world” (p. 122 in W&A) is probably even truer today than it was in the 1930s. Their attempt to explain why many of their respondents are structurally but not operationally like Chamberlin’s monopolistic competition (W&A, p. 124) is open territory for Machlup’s assault on cost-based pricing (that ignorance by firms of their marginal revenue curve does not stop them behaving “as if” they knew it!)

The specific pages on which Hall and Hitch report their findings at pp. 125-138 in Wilson and Andrews repay the time for making a close reading. There is a wide range of responses and limited support for some demand influences in the depth of the 1930s depression and when specific competitive factors arose.

In many ways, Hall and Hitch’s findings and interpretation of the pricing forces at work are closer to a pure form of Post-Keynesian pricing than almost any other writers in the Post-Keynesian tradition.

Fuller details of the set-up of the Oxford Research Group, the interviews with business firms and records and meetings from 1934 to 1939 are found in Lee (1998). It is worth recalling Shackle’s observations noted in Lee (1998, 87) that “businessmen were describing how they set prices in the face of constant and unforeknowable shifts in market conditions, changes in technological knowledge, financial conditions, and politics (in contrast to theories where full knowledge of all market conditions was presumed).” Lee attributed this to misunderstanding within the group and with respondents on the terms used. It is surprising to find in Lee (1998, p. 89) that all but two members of the Group came initially to the project as “confirmed marginalists” who surprisingly then “failed to uncover any evidence that the businessmen paid any attention to marginal revenue or (derivatives like) price elasticities of demand. The Oxford economists were shocked, to say the least.” It is intriguing that Hall and Hitch developed the kinked-demand curve explanation without noticing that it presumed the same degree of commitment by the expositing economists to marginalism, of a different form, as in the imperfect competition theory they chose to repudiate. (See Lee (1998), pp .89-99).

These findings are *not* consistent with Machlup's retort and apparent reconciliation with marginalism, that business firms setting prices might still act "as if" they knew and understood the marginalist concepts. The great advantage of the Oxford studies is that the matter was pursued very fully and directly with the respondents. Not only did they *not know* the marginal curves, *they did not act consistently with them*. This can be shown in the two ways which are described in the previous section: (1) cost-based firms do not move prices in response to short-term reversible changes in product demand; imperfect competition firms always do; (2) cost-based pricing firms shift sustained (normal) cost changes fully into prices (that is, 100 per cent shifting occurs), whereas marginalist imperfect competition firms never do.⁶

3 (b) The contribution of P.W.S. Andrews to PK pricing

Andrews's contribution has been documented most closely and impressively by Fred Lee (1998) and in Lee and Irving-Lessmann (LIL)(1992), as cited in Lee (1998). Andrews was a member of the Oxford research group whose work arose from the detailed study of pricing practices and responses among British industrial firms in the 1930s. He sought to explain his approach in *Manufacturing Business* (Andrews (1949). This approach was strongly criticised by Machlup and others. Andrews gave no effective reply for academic and personal reasons, at least until Andrews (1964). There is mention of Andrews's time treatment as "the current planning period" (p.47); Downward notes that Andrews is far from clear about the business motives of the firms (p.49) and attributes to Andrews "a perfectly-elastic long-run demand curve" (p.49). Carefully and consistently with strict PK principles, Lee (1998) draws cost but not demand diagrams, when explaining Andrews and other PK pricing (e.g. pp. 110).

Andrews complicated his message by emphasising distinctions between full-cost and normal-cost pricing that were not apparently or clearly different from each other. (LIL, 1992, p. 289). An example can be cited by LIL's otherwise careful exposition of whether specific elements of the pricing structure are normalised (meaning corrected for movements in general or firm-specific demand). At p. 288, LIL(1992) describes Andrews's pricing explanation as being based on normalised indirect (overheads) but uncorrected (actual) direct or variable costs. Such an inference can reasonably be gleaned from Andrews (1949) p.157. However, in two earlier references in his 1949 book, Andrews makes it plain that (a) average direct costs are "constant" over large ranges of output" (p. 103), but in any event, for "pricing, then, it is the *normal* level of average direct costs that will be the important thing." (p. 110) Read in context, the earlier references are clearer and that on p. 157 is deficient and needs to be replaced by the earlier, clearer descriptions.

Andrews understood the importance of internal financing, but he 'never made a formal connection between the financing of investment and the costing margin' (Lee (1998), p. 124). Andrews is thus rightly criticised for failing to see and postulate

⁶ Indeed with constant marginal costs against output and linear marginal revenues curves, the profit-maximising firms will never shift more than 50% of such a cost change into prices.

theoretical links between the pricing and investment decision⁷ (Lee, 124), but he understood clearly the motivation of creating deliberate excess capacity, or ‘reserves’ as a contingency against unforeseen surges in business demand. Andrews writes that demand uncertainty, machine failure risks and the threat of losing the reputation to supply “simply make for reserve capacity” (p. 93), especially the need to cover “peak levels of capacity” (p. 97). Reserves are thus ‘deliberate and planned for’ (p. 117). This clear vision of the connection between excess capacity, capacity creation and pricing has won much support in later years and was the inspiration for Wood, Harcourt and Kenyon, and Eichner (as cited in Downward (1999), p.49, for their own pricing approach connecting pricing to investment (that is, capacity-creation) behaviour.

Andrews is at his best and fully consistent with the PK pricing approach by proposing the notion of extraordinary costs, being driven by unforeseen movements in demand and which are ignored when setting prices (pp. 109-110, also p. 174). Short-term demand movements are thus not manifested in price movements, as firms have a notion of a ‘right’ price that can only be disturbed when (normal) unit costs change. (pp. 157-8.)

Andrews makes persistent reference to business firms being conscious that they can and will make ‘mistakes’ which captures exactly the PK environment for decision making (e.g. pp. 167-9). Like Kalecki, Andrews agrees that in markets for *primary* product sales, demand impacts significantly on prices (pp. 207- 215). These are all strong pro-PK pricing features emphasized in Andrews’s work.

Andrews then in many places departs radically from any consistent notion of PK pricing. The most prominent departure comes with diagrams III and IV on pp. 255-6 which show revenue functions yielding break-even rates of output, where profits are at zero. It does seem that Andrews failed to clarify that such demonstrations were inconsistent with the central tenets of the pricing hypothesis he was seeking to advance, which was based on the contrary premise of unknown demand conditions. In the places where Andrews does seek to make some connection with mainstream economics he implicitly slips into a static, one-period framework, which at the end of his book he seems to realise is unacceptably ‘static’ (p. 282). Lee (1998) correctly states that Andrews did not effectively offer an alternative theory to mainstream pricing theory, even though he sketched vestiges of such a theory, including the role of entry-deterrence in determining the mark-up factor. (See Lee (1998) pp. 109-116).

Philip Andrews arguably missed the chance to develop a fully consistent Post Keynesian pricing approach, either because (a) he could not remain consistent to a demand-uncertain dynamic world; or (b) he did not see that the many attempts to reconcile his approach with marginalist approaches were untenable. He leaves a valuable legacy that has had a great influence on PK pricing theory, not least through the enduring influence of his student, Wynne Godley.

3(c) Kalecki’s pricing approach

⁷ Note that Andrews did not join the group until 1938 and seems to have come with an open mind.

A comprehensive account of Michal Kalecki's pricing approach is given in Kriesler's 1987 work cited in Lee (1998). The advantage of this careful exposition is that it illustrates Kalecki's struggle to handle the relationship between firms within a group in the way in which they set and adjust prices, and how Kalecki changed his mind on this central subject over time. It is easy to cite Kalecki's renowned pricing equation (below) as a piece of simple algebra, without seeing the background and the dynamics in Kalecki's thought⁸.

First, Kalecki used pricing more as an adjunct to his concerns about business cycles and income distribution than as an end in itself. Secondly, Kalecki swung between an apparent sympathy with marginalist reasoning and a clear rejection of the approach, as documented in Kriesler's (1987) account, cited in Lee (1998), in which the core chapters are divided into three epochs in the development of his thought.

With the rider that Kalecki left materials and primary-product pricing in the market-determined area, industrial prices were set according to a formula:

$p = \mu + np^*$ ⁹. Here, p is the price chosen by price-making firms, μ is their unit costs, akin to average variable costs and p^* is an average of prices of other firms in the group. Kalecki made no use of normalised cost concepts on which the Oxford group, Andrews and later Godley and his team were so attached.

Conveniently, there are some neat special cases found by limiting the important parameters m and n : (a) with $m=0$ and $n=1$, we have $p=p^*$, the price-to-market perfect competition case where firms have no market power to practise pricing independence from their rivals; while (b) with $m>0$, $n=0$, we have the strict mark-up case, $p=\mu$ with which many PK economists can identify. However, many PK adherents, and almost certainly Andrews and the Oxford group would not say it needs the extreme monopoly case to justify case (b): it would be enough for firms with any market power to be fearful of the consequences of relying on signals from market demand to work closely to a relationships like $p=\mu$ with prices proportional to unit costs.

In the general Kaleckian case of both m and n greater than zero, the greater the ratio of m/n , the greater the market power, a point that Kalecki needed to establish to link back to his concerns with factor income distribution and macro-economic effects of market power.

The computable mark-up needs an explanation in terms of the size of both m and n , which when questioned, led Kalecki to resort to marginalist terms that if applicable and understood by the firms would have played right into neo-classical hands and obviated the need for Kalecki's equation. This point is identified in Lee (1998)¹⁰.

⁸ A succinct account of the phases in Kalecki's thinking is given by Osiatynski in Arestis and Chick (1992) as cited in Lee (1998).

⁹ We have adhered to Kalecki's notation with all lower case letters and which makes p^* the mean value of prices of other firms in the 'group'

¹⁰ Chapter 9 especially which proceeds from Kalecki to investment-linked pricing approaches of Wood, Harcourt and Eichner. The relationship between these approaches is explored in Harcourt (2006).

Kalecki's pricing hypotheses evolved and changed over a long period from about 1926 to after 1960. They extended further into the economics of business cycles and income distribution than most of the other PK approaches surveyed here. By contrast, Kalecki gave less attention than the others to the factors determining the mark-up, to business surveys and to resolving formal difficulties without resort to marginalist explanations. This left his pricing equation open to contrary interpretations by marginalist and heterodox economists alike, as clearly observed in Lee (1998), pp. 172-8. While Kalecki achieved so much by taking pricing into economy-wide and distributional applications, it would be harsh but not inaccurate to say these are best seen as adopting a simple $p = \mu$ version of mark-up pricing without any of the additional insights that Kalecki sought, with difficulty, to add through his additional and controversial term np^* .

3(d) Alfred Eichner and Pricing in the Megacorp

The notion that the business mark-up so simplified by Kalecki may be associated with the expanding capital-equipment needs of the enterprise was taken up in the 1970s by a number of post-Keynesian economists, led especially by Harcourt (1972), Harcourt and Kenyon (1976), Wood (1975) and Eichner (1973 and 1976), as cited in Lee (1998). The broad idea is that business firms see expansion through real investment and pricing decisions as closely related, and in a world of imperfect capital markets, pricing assists in providing internal finance, subject to constraints recognised by the firms in attracting reaction from potential entrants, customers and regulators, if prices are adjusted too far upwards.

The most explicit approach is in Eichner (1973). Firms have known investment needs, which can be depicted on an investment-demand schedule similar to Keynes's marginal-efficiency of capital construction¹¹. The Eichner firms can finance their investment demands at a known external (exogenous) interest rate or by using internal funds available from their business margins. There is no explicit mention of the option to raise funds by issuing equity capital. Higher interest rates force the financing mix more towards internal funds and lead to higher than otherwise unit margins, and prices. The great advantage of this construction by Eichner is that, based on his observations from industry directly and his independence from conventional approaches, Eichner establishes a link between business investment activity, prices and the business mark-up. Cost changes dominate demand effects in explaining price changes, making Eichner's pricing in the Megacorp model a genuine if different member of PK pricing school.

We have thus a wide range of PK pricing approaches to use, which have differences and conflicts with each other. Our view is that all post-Keynesian pricing approaches contain important elements that depart far more substantially from textbook-conventional marginalist approaches than they do from each other.

¹¹ The limitations of so relying on Keynes's m.e.c. construction are already noted in Harcourt (2006). The most important is that many post-Keynesians are explicitly focussed on historical time, unlike Keynes in relation to his investment function which is not.

4. Global Pricing and links to International Economic Policy

Prices are influenced by, and influence, many cross-border features of modern economies, such as tariffs, exchange rates, international economic conditions, exports, imports and capital flows. PK economists have made many significant contributions in this area, especially in relation to balance-of-payments-constrained models of economic development. However, in the absence of much attention by PK economists to pricing at the firm and industry level associated with global events and policies, conventional, marginalist approaches dominate the teaching and policy discussions of tariffs, exchange rates and trade policy. For example, there is very little that is ‘micro, international and price-based’ in the significant *Journal of Post Keynesian Economics*, published continuously since 1978. Again, in Fred Lee’s otherwise comprehensive and masterful survey and extension of PK pricing, there is but one brief mention of international aspects, on his penultimate page (Lee (1998, p. 230)). Similarly, international aspects are almost totally absent in Downward’s book-length survey (Downward (1999)).

It is understandable that the Oxford Research Group and Andrews gave no specific attention to international factors in their study of British industrial firms of the 1930s and 1940s; the neglect of more recent PK economists is more difficult to explain. We emphasize that we are here concerned with pricing at the industry or firm level, not economy-wide or balance-of-payments approaches in PK economics. A central issue in the minds of those more conscious of the foreign dimension centres on the flexibility of the mark-up in the face of foreign completion. Here we can identify three approaches.

The first, which is dominant in mainstream economics, is to suppose that any domestic firms are totally constrained in their pricing by the (import-duty-corrected) prices of rival imported products, or by foreign firms operating abroad, in relation to export markets. The underlying premises are normally perfect substitutability (homogenous products) between items produced either at ‘home’ or abroad and to assume further that home production takes place always in markets characterised by perfect competition. The consequences are that there is effectively no pricing decision to be made by home producers/suppliers in any active sense: home producers slavishly follow import prices, meaning that exchange rate and tariff changes are fully reflected in the domestic prices of both home and foreign goods. We will examine this extreme proposition in our empirical section to follow.

A second approach is widely embraced by some PK economists, especially in the spirit of Michal Kalecki. The approach takes the mark-up as flexible and dependent on foreign influences. In this approach both unit production costs and rival prices are relevant in explaining prices, just as in Kalecki’s most prominent pricing equation where these variables are the only explanatory variables. An exploration of this middle course is given in Blecker (1999), pp. 124-6. One problem here is that the theory connecting the mark-up to competitor reactions cannot normally be specified without reverting to marginalist analysis potentially in conflict with PK principles. Blecker writes that “Kalecki himself never explicitly considered international competition as a factor influencing mark-ups” [p.124]. Blecker justifies this by

mentioning insulated economies at Kalecki's time, a not unreasonable observation. He then sketches a general account of how opening domestic markets to foreign competition might lower the mark-up, consistent with this second approach, but there is nothing specific or testable in this account.

An extreme third approach makes the mark-up fixed in the face of foreign competition and in the face of changes in world product prices, tariffs and exchange rates. This approach is most fully developed in Norman (1996). This approach is at the opposite extreme end of the spectrum to the assumption that all international trade is conducted under perfect competition. This third approach is arguably completely faithful to the Oxford-research group approach in its rigidity of the mark-up in the face of product demand variations observed by price-setting firms¹². In this sense the third approach is most closely aligned to strict PK pricing approaches in the context of global competition. That point is affirmed by Brinkman (1999, pp. 96-104) who cites it as the classic means of analysing the effects of tariff policy in a manner that follows strict PK principles.

In most PK pricing approaches there is no explicit or conscious recognition of the world economy, foreign competitors, tariffs, exchange rates and any of the standard components of open-economy economics. Yet we have the beginnings of a genuine PK pricing approach in a global setting with both the flexible mark-up (mainly neo-Kaleckian) variants, documented as the second approach above, and the rigid-mark-up (Andrewsian) variants, identified as the third approach above. The choice between the three approaches is significant for the prediction of price effects arising from trade policy, exchange rate changes and foreign price variations. Suppose, for example, that the domestic prices of imported products were sustainably to rise by 10%. The conventional models that dominate the literature would predict a similar 10% price response from domestically-produced competitive products. The Norman-Oxonian fixed mark-up approach will steadfastly predict a zero or close to zero domestic product price response. The flex-price, neo-Kaleckian approaches will have something in between these extremes as a domestic-product price response. We think it important to keep these predicted outcomes firmly in mind as a prelude to our empirical surveys and results provided here. The results are very encouraging to the further development of PK pricing approaches in a global setting and cast considerable doubt on the value and credibility of the conventional models in policy advice and prediction.

We thus identify the further development of PK pricing models in a global setting as one of the real and pressing opportunities for economists in the years ahead.

5. The Validation and Testing of Pricing Approaches

5.(a) The Survey Evidence

¹² This proposition is close to the standard PK pricing description given in Brinkman (1999) at p. 36: "Firms use the concept of normal costs and a mark-up rule of thumb. They ... prefer stability in the face of uncertainty about rivals' behaviour ... oligopolists like to avoid price wars and keep prices constant." This implied business goal directly accords with Rothschild (1947) as cited in Lee (1998).

A large part of what we know about the way prices are set in many manufacturing and service firms comes from the evidence of surveys, such as those detailed in section B. of our references. The methodology of the surveys varies greatly from direct interviews with managers, to questionnaires, telephone surveys, etc. Some of the survey information is from the business management literature. Other surveys are regularly carried out by central banks. Our “meta-analysis” of the survey evidence summarises a number of common features of the findings over the past 70 years across many industrialised economies to the present day. There is a survey of costing approaches and price behaviour in chapter 11 of Lee (1998). This is a collection of 25 accounting/costing studies and 71 empirical pricing studies all cited at sections A and B of Lee (1998) at pp. 232-240. Lee finds a predominance of sticky or administered prices and close attention to unit cost computations at a normal or budgeted output, just as Andrews and the Oxford Group found decades earlier. While the degree of competition influences the extent to which firms take account of competitors’ prices, mark up pricing is still prevalent in most industrial markets.

In both industrial and service activities, firms have to set prices and do so in the majority of cases, by setting a mark-up on some basis of unit cost. It is important to note that fixed or overhead costs are included, either as part of “full cost” or as part of the mark-up above unit direct costs. The inclusion of overhead costs in the price would be irrelevant in the marginalist theory. Prices are revised at infrequent intervals in conditions of low inflation, and typically they occur after a review of cost movements since the last price change, taking market conditions and rivals’ activities into account. When inflation is at modest rates, the frequency of price changes may be of the order of a year or more. Price changes are more frequent for consumer products and reflect marketing initiatives such as sales and special offers on individual products.

Manufacturing firms typically plan a production capacity that enables them to operate with spare capacity. As a consequence, unit direct costs for levels of production below full capacity are typically falling or fairly constant, except possibly when working at full capacity. Competition between firms does not lead to the elimination of spare capacity.

Firms typically meet changes in demand within the business cycle by some combination of increasing production levels from existing capacity, inventory changes and lengthening or shortening of order books – price changes are relatively unimportant. Increases in the cost of wages, materials, energy etc. appear to be more important in causing price increases than short-run demand fluctuations. Some surveys find evidence for asymmetry in price increases compared with price reductions, with demand factors tending to influence price reductions more than price increases.

The degree of competition does appear to influence the extent to which firms take into account the prices of rivals, but even in markets with a high degree of competition, mark-up price setting appears to be a common practice.

Although the details of the operational measures used to set prices differ across industries and time periods are varied, the prevalence of mark-up pricing on costs is high in both service and manufacturing firms. This leads to important differences

between PK pricing theory and the marginalist theory derived from standard imperfect competition analysis, where the (profit-maximising) price is a mark-up on marginal cost, the size of which is directly related to the price elasticity of the firm's demand curve. PK theory implies that costs of production, including overhead costs, indirect taxes, tariffs etc. are passed on in to price changes, directly in proportion to their contribution to unit cost. The degree to which such costs are passed on in the marginalist theory varies from zero (in the case of overheads) to a fractional proportion (only to the extent that such costs alter marginal cost and in general a 1% increase in marginal cost leads to less than 1% increase in price). Similarly, PK theory implies that demand changes have a much smaller influence on price than cost changes, in the short run. The marginalist theory always implies that demand has some significant effect (otherwise firms would not be profit-maximising). These different predictions from the PK and conventional theory are testable hypotheses.

5(b) Econometric evidence on the prevalence of mark-up pricing

Over the last sixty or more years, economists have used a very large body of econometric evidence to test various hypotheses about the behaviour of prices. We shall focus on the evidence for manufacturing industries in relation to three main factors: the cyclical properties of the price to cost mark-up; the degree to which price changes move in proportion to cost changes (including the incidence of taxes such as corporate taxes; and the influence of international competition on the pricing behaviour of firms in domestic markets.

Summarising the evidence up to the end of the 1970s, Okun notes: "The empirical evidence for the United States suggests that cost-oriented pricing is the dominant mode of behaviour. Econometrically, demand is found to have little, if any, influence on prices outside the auction market for materials." Okun (1981) page 165. In similar vein, Nordhaus notes: "Considerable evidence has accumulated that industrial firms tend to set prices as a markup on *normal* unit costs (his emphasis) ... Faced with temporary changes in demand, firms generally alter production and employment rather than price." Nordhaus (1974). (For a summary of empirical studies in this period, see the extensive references cited in Lee (1998)). Coutts, Godley and Nordhaus (1978) summarised their study of the normal price hypothesis which looked at a number of industries, specifications of the test and lag structures by saying that "the response to increases in demand are predominantly quantity responses, that is the fraction of the increased demand which ends up in prices is somewhere between 22 per cent and minus 32 per cent, with a mean unconstrained estimate of 0 per cent." It is impossible to summarise in detail the very large number of econometric tests of pricing across various countries, industries and time periods using many different types of data set, hypotheses and methodologies. In what follows we give some examples of empirical work published since the 1990s that reports on price behaviour.

Two studies of the Indian manufacturing sector over the period from the 1940s to 1980 show the prevalence of mark-up pricing. Chatterji (1989) found that demand effects were relatively unimportant in manufacturing sectors, but showed that manufacturing prices responded strongly to supply effects in the agricultural sector. A later study by Balakrishnan (1992) found evidence for counter-cyclical movements of

mark-ups. Surveying a sample of about 1200 German firms, Stahl (2005) reported that mark-up pricing and price stickiness is a common finding. For Romania, another survey by Copaciu *et al* (2010) found that small firms tended to adopt the market price, while medium and large firms used mark-up pricing. In USA manufacturing at industry level, Nekarda *et al* (2010) showed that mark-ups were acyclical in response to demand changes. An OECD study by Oliveira *et al* (1996) for the manufacturing sectors of 14 countries again found evidence for counter, rather than pro cyclical mark-ups. Using data for manufacturing in the Netherlands, van Dalen *et al* (1998) investigated the extent to which firms deviated from short run profit maximisation. They found that firms apply pricing rules consistent with mark-up pricing. Fedderke (1992) and Fedderke *et al* (1997) provide evidence for South African manufacturing industry. The evidence is more consistent with mark-up pricing than the excess demand model.

Concentration affects the size of mark-up as do foreign competition and the mark-up tends to be counter-cyclical. For the UK, Downward (2001) found that mark-up pricing was prevalent in manufacturing sectors and that price stickiness is a normal feature of business activity. He argued that the price setting behaviour is consistent with firms pursuing long-term objectives. Coutts and Norman (2007) found similar results for a study of aggregate and two digit disaggregation of manufacturing for the period 1970-2000 (a period which overlaps with the earlier study by Coutts *et al* (1978). From their econometric evidence, Coutts and Norman concluded that “demand pressure effects had relatively little quantitative influence on domestic manufacturing pricing”.

This synoptic review of recent work, combined with the earlier studies reported in Lee(1998), gives strong evidence that manufacturing prices tend to be relatively stable in relation to unit costs, and that the main response of demand changes in the business cycles is to change output with demand playing a minor role. The controversy is not so much about the evidence as about its interpretation.

For Post Keynesians, the evidence strongly supports the theory that firms base their pricing decisions on a mark-up of unit costs. Mainstream economists accept that (apart from a few cases) the evidence does not support competitive pricing in the sense that firms take the market price and produce until price equals marginal cost. They interpret the results as consistent with imperfect competition in which price is a mark-up on marginal cost, where the mark-up depends on the price elasticity of the demand curve. Many New Keynesian models are formulated in this way. This leads to two difficulties. The first is that mainstream economists often wish to maintain that marginal costs, if they could be estimated, would be increasing with increasing output and that average variable costs are U-shaped. The evidence tends to show that average direct or variable costs are relatively constant or fall with increasing output as firms work closer to the full utilisation efficiency of their factory output. The second difficulty is that the assumption of rising marginal cost, combined with the sticky behaviour of observed prices, implies that the mark-up should *decline* as firms move from the recession to the boom phase of the business cycle. This implies that the price elasticity of demand increases; one would expect that as market demand strengthens, profit maximising firms would face a reduction in the demand elasticity. Various arguments (such as Bills (1989)) have to be employed to reverse the normal expectation about the shape of the demand curve.

Brinkman (1999) performs some econometric tests in relation to industrial pricing in Japan and Korea as being potentially influenced by many variables, including significant changes in trade barriers. Brinkman finds, consistently with the Norman-Oxonian hypothesis of price rigidity in the face of tariff changes, “tariffs and non-tariff barriers were mostly insignificant and appeared with positive as well as negative signs.. These results challenge the conventional emphasis on policy-induced trade barriers as an explanation for high price levels and its corollary trade liberalization as the solution to high price levels.” [Brinkman (1999), p. 162.]

The authors of this chapter have provided a more contemporary survey of interview and econometric tests of pricing in the face of international competition in Coutts and Norman (2007) and conducted detailed tests for the U.K. for the period 1974-2000. The main results are:

Considerable heterogeneity in price responses to global competition between sectors, within manufacturing was found. We identified three broad categories of price adjustment for the later 1990s and early 2000s:

- a) Sectors that produce mainly homogeneous products traded at international prices. The chemicals and base metals sectors largely belong to this group. In both sectors, the sterling prices of imported goods fell in line with exchange rate appreciation between 1996 and 2000, and domestic prices fell substantially.
- b) Sectors in which international competitor prices fell in line with the exchange rate rise, but in which domestic prices increased, or fell by modest amounts.
- c) Sectors whose competitor prices fell by only about 8% or less, while domestic prices increased, or fell by only modest amounts.

An implication of these results is relevant to the transmission of inflation and (via the terms of trade) to swings in aggregate demand. Although a floating exchange rate will directly influence the prices of finished goods imported into domestic markets, we find that the impact on competing domestic goods is rather small. Explanations of the pricing decisions of manufacturing firms will remain defective until trade and tariff theory incorporates partial price adjustment rather than import price dominance as the typical circumstance.

Many of these findings produce a coefficient on the import price term explaining domestic price movements in the range 15-30%, which would be zero in an extreme mark-up model (as in Norman (1996)), but 100% in the conventional trade-tariff-exchange model that still dominates textbooks. Unpublished research by the authors for Australian data finds similar results. This is a useful test because the Australian currency appreciated markedly in the years 2005-8 and domestic-product prices did *not* fall much, thus maintaining quite fully their relationship to unit costs as Post-Keynesian approaches would have predicted. A fine note on which to end!

Conclusion – to come

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