

# Internalising the Externalities of *Homoeconometricus*: Turning Silicon Astrologers into Popperian Bookmakers

---

Robert Leeson\*

---

## Prologue<sup>1</sup>

In his Presidential Address to the World Congress of the Econometrics Society, Jacques Dreze (1972, 16) promised that looking at real life problems would be ‘a lot of fun’. R. McAfee (1983, 735, 739) responded by making a MADCAP (‘Multiple Augmented Data Construction Assistance Package’) proposal, and discussing the empirical analysis of the ‘effects on scholastic aptitude and economic growth if torture had become an accepted way of teaching undergraduates’. Later, D. McCloskey (1988, 255) reported that ‘the coefficient on DMWITSCI is significant at the 0.05 level, and the coefficient on FAKESCHL at the 0.01 level’.

Presented below is an article in the ‘whimsical’ spirit which Ed Leamer (1983, 43) believes to be appropriate to empirical problems. It addresses the real-life problem of the negative externalities associated with the (privately optimal) output of the ‘economic tricks’ industry, namely, the slings and arrows of outrageous macroeconomic forecasting and policy (Christ 1967, 155). It proposes a diagnostic statistic which will allow these externalities to be reduced, and thus improve the credibility of economists.

This credibility has been questioned from both within the profession and without.<sup>2</sup> *Fortune* reported in January 1976 that a public opinion poll indicated that Americans believed that the forecasting ability of economists was about equal to that of astrologers.<sup>3</sup> Treasury Secretary, Donald Regan, was quoted as saying ‘If you believe [macroeconomic forecasts], then you also believe in the tooth fairy’ (cited by Kennedy 1985, 208). J.M. Keynes (1963 [1930], 373) hoped that one day ‘economists could manage to get themselves thought of as humble, competent people on a level with dentists’. Partly as a result of the disastrous macroeconomic forecasting economists came to be seen as ‘not humble or competent, but a menace to society ... The madmen in authority are now distilling their frenzy from other defunct economists’ (Howitt 1990, 71). Symbolically, Herbert Stein, when serving as Economic Adviser to the President, was obliged to give up the last seat on Air Force One to Moscow for the President’s dentist (McCloskey 1986a, 13). The Keynes-Thatcher solution, a more radical approach, may be required in order to ‘take the con out of econometrics’.

This paper is, in part, a response to Axel Leijonhufvud’s (1974, 327, 329) plea in ‘Life among the Econ’ that ‘More research on this interesting tribe is badly needed ... The prospect for the Econ is bleak. Their social structure and culture should be studied now before it is gone forever. Even a superficial account of their immediate and most pressing problem reads like a veritable catalogue of the woes of primitive people in the present day and age’. It consists of A Story (Section 1) plus a discussion of Popper Among The Econ (Section 2). Section 3 provides a solution to the problem of econometric externalities, a solution which has been inspired by Comment 32 of George Stigler’s (1977, 443) Conference Handbook:

'The trouble with the present situation is that the property rights have not been fully assigned', and by E. Maasoumi's (1988, 343) call for 'putting one's money where one's mouth is!' Also noted is Stigler's (1976, 349) warning that such an approach is unlikely to be actively welcomed by many economists. Therefore, Section 4 offers a Postscript which, in 'whimsical' fashion, justifies the existing situation.

## **1 A Story about Those who Know the $R^2$ of Everything, and The Value of Nothing**

Leijonhufvud (1974, 327, 329, 333, n4) described the four main castes of this 'clannish' tribe: the 'priestly caste', Math-Econ; Macro; Micro; and the lowest Econ caste, the O'Metrs, of whom Leijonhufvud concluded: 'the attitude of the rest of the tribe towards these erstwhile untouchables ... is, as one would expect, one of mingled scorn and envy'. Math Econ are 'thought by some to be animal worshipers because of frequent invocation of walrus' and O'Metrs are viewed with suspicion 'because of their excessive interest in deviations' (Brandis 1972, 109, 110). Ironically these untouchables have acquired a degree of 'technobabble' - including 'dog Mathematics' and 'ghastly pseudocalculus' - which makes the rest of the tribe feel like 'handloom weaver[s]'. But these thoughts are made easier to bear by the suspicion ... that the power loom weavers are weaving the emperor's clothes' (Summers 1991, 17; O'Brien 1975, 83; Johnson 1970, 424; Streeten 1972, 1078). Their initiation ceremony has been exquisitely dissected by Siegfried (1970, 1378-9), and Ziemer (1984, 122) described how their nocturnal activity 'conjures up horrifying visions', while supplying a lucrative business for paper recyclers.

Sadly, many have also developed a severe form of schizophrenia by 'wantonly sinning in the basement and then being metamorphosed into the highest of high priests as they ascended to the third floor' (Leamer 1978, vi). Many of these basement sinners have been employed in the Phillips curve estimation industry, which, according to Robert Solow (1979, 36), has provided more employment than any public works enterprise since the construction of the Erie Canal. Can the war of *homoeconometricus* on *homo sapiens* be ended, and this schizophrenia cured? Can *homoeconometricus* begin to share the nomen *sapiens*?

The modern Econ tribe began with an Adam,<sup>4</sup> who offered *homo sapiens* the greatest alchemy of all time: the secret of transforming the base metal of primitive egotism into the gold of the socially optimal result. Yet the Econ tribe have recently sunk to unparalleled depths of unpopularity amongst non-*homoacademicus* employers.<sup>5</sup> The Gods of the tribe have repeatedly warned about 'nefarious econometrics', 'witchcraft', 'statistical pyrotechnics', 'econometric fools gold' and 'econometric illusion [resulting in] Babel or babble ... we may be to blame for the poor opinion the world has of us' (Keynes, cited by Stone 1978, 63; Galbraith, cited by Pratson, 1978, 44; Summers 1991, 17-18; Hendry 1980, 395; Solow 1983, 281-2).<sup>6</sup> Yet some members of the deviant sub-culture of the Econ tribe continue to write professional suicide notes which exhibit a type of alchemy-in-reverse: transforming the gold ('there's gold in them thar formulae') of private optimality into the base metal of 'macroecono-mystic' forecasts, which have improved little in quality over the last 30 years (Hendry 1980, 388; Leamer 1983, 42; Pagan 1987, 3-4; McNees 1988; Rivlin 1987, 2; Zarnowitz 1992).

The rituals of tribal entry have also produced some bizarre results: only three per cent of graduate students believed that knowledge of the economy was very important to get on the fast track yet ninety per cent placed knowledge of

mathematics and modelling in that category (Colander and Klamer 1987, 99). David Colander (1989, 31, 34) concluded that these answers suggest ‘that something is terribly wrong in the economics profession and in the incentives that economists perceive ... in economics normal science has run amok. The invisible hand of truth has lost its guiding influence’.

Three clans, or sub-tribes are examined below in descending order of malevolence: *econometricurse* (or *ecainometricians* to distinguish them from the able), *macroeconometricus* and *microeconometricus*.

### 1.1 Econometricurse

This advice-giving branch is the most pernicious group of the tribe and are believed to be ‘blood-sucking ghosts’ in need of an Optimal Destruction (Snower 1982, ‘647). In partnership with *homopoliticus* they have inflicted massive damage on *homo sapiens*. This type of ‘chicanery’ is the most obvious source of externalities emanating from the ‘icon-ometrics’ tribe (Leamer 1983, 37; Hendry 1980, 388). They have adopted the Old Saxon ritual of ‘trial by ordeal’. The Saxon guilt or innocence of, for example, a suspected witch was revealed in response to an enforced ‘ducking’ in the nearest well or pond. Drowning was evidence of innocence (a certificate of innocence would be issued - posthumously); not drowning evidence of guilt. A favourite source of torture advocated recently has been trial by monetary contraction,<sup>7</sup> or, in other words, ‘If it’s not hurting, it’s not working’,<sup>8</sup> and ‘If it’s not working, then double the dose’. This bizarre behaviour has been traced to a virulent disease described by Milton Friedman (1988, 86) as ‘Potomac Fever’.

### 1.2 Macroeconometricus

Like *Pisces Economicus*, these people join schools and hunt in packs, and are closely connected to *econometricurse* (Boulier and Goldfarb 1991). The animosity felt towards them is partly a reflection of the primitive and ‘shabby’ state of their artistic endeavour: mostly straight lines, and the occasional curve, with a few dots scattered around (Leamer 1983, 37). If the dots are not close enough to the curve they are usually discarded, and other more acceptable dots are substituted in. The ‘number mysticism’ component (Basman 1972) of this *macroeconometricus* religious practice is also regarded as being rather uninspiring, although it does have one very special, indeed magical quality: it is often unreplicable by any person other than the original *economartrician* (Dewald *et al.* 1986).

All tribes have their origination myths, and there has been much activity associated with the origin of a particularly malign spirit known as ‘inflation’. This story involves a virility cult, and a palace *coup d’état*. The old guard were disciples of Alvin Hansen and were known as ‘Khansenians’. (The pidgin is sometimes mistranslated as ‘Keynesian’, but this is a tragic mistake). The Khansenians were ‘snuggled, secure in their Chairs, ... Paul with his textbook, and Art with his gap, had settled their brains for a long post war nap’ (Feldstein 1981, 1266). They showed signs of their declining virility by embracing an inflation origination myth known, in its graffiti form, as the Phallus Curve. (This pidgin is sometimes mistranslated as the Phillips Curve, but this too is a tragic mistake). This explanation of inflation invoked Ludwig von Mises’s principle known as anthropomorphism-in-reverse, or seeing people as things. Early art historians have discerned, in the shape of the Phallus Curve, a symbolic representation of the diminished potency of the Khansenian Gods: it is clearly non-linear and

representative of the problem that the Porter alluded to in Act II, Scene III of *Macbeth* (Covick 1974). The Khansenians also failed to deliver what had been promised, an important lapse for a cargo (or trade-off) cult.

The persuasive power of the old guard almost entirely disappeared when their inflation origination myth suffered an opaque shock (in pidgin, 'opec1'). *Horror vacui*: the new guard, freed from the long Khansenian bondage<sup>9</sup> became maniacs (in pidgin, 'moneyhaks'<sup>10</sup>). Hence their name, Friedmaniaks. They demonstrated the superior virility of their inflation origination myth by vandalising the graffiti of the Khansenians. This ritual act of sacrilege consisted of superimposing a more potent and vertical Phallus Curve upon the tired Curve of the Khansenians. This new Curve was proudly referred to as a *long 'un Phallus Curve*: the old one, dismissively, as a *short 'un Phallus Curve*.<sup>11</sup> This activity was believed to have increased the size of artist's personal phallic symbol, known as the c.v.<sup>12</sup>

### 1.3 Microeconometricus

*Homo sapiens* have been inclined to advocate cultural genocide as the final solution for *homoeconometricus*. However a good case can be made for suggesting that *microeconometricus* perform some useful, even socially optimal, functions. Like most tribes, there is a good deal of secretive and symbolic behaviour. This branch has clearly been too exclusive: too many disappointed applicants have dissipated themselves elsewhere. Rejected or expelled members are referred to as an *uncle* or an 'unrequited correlation examiner'. However, allowing *microeconometricus* to retain their cultural identity may well keep deviants harmlessly engaged.

It is clear from the textual evidence that Shakespeare was *uncle-ised*. Hamlet's father was murdered by Hamlet's *uncle*, by having poison poured into his ear. In an earlier version of the play, initially entitled the *Heteroscedastic Autocorrelated Maximum Likelihood Estimating and Testing Princes of Sweden*, a group of data-miners go on a correlation hunting and fishing expedition, and uttering various magical phrases such as 'Shazam!' successfully levitate their  $R^2$  and t-statistics. The deadly aural deed was performed by five Khansenian Nobel men, Franco, Lawrence, Paul, Robert and James, who poured verbal poison into the King's ear: 'There is an exploitable North-North-West relationship between unemployment and inflation'. The King's dying words were, 'I am but mad North-North West',<sup>13</sup> and, turning to a sixth non-Khansenian Nobel man, 'et tu Milton?' who replied, 'In the short run - you're all dead! I *positively* predict a North-Easterly movement ... from Chicago to Stockholm'.<sup>14</sup>

For writing these words Shakespeare was *uncle-ised*, and rewrote and relocated the play and abbreviated its title. Shakespeare was also persuaded to omit the character of Milton from the subsequent script, as his repeated sacrilegious utterances, 'Assumptions are Irrelevant', were found to be highly offensive, particularly to Eastern Orthodox Christians.

Other excluded members have become notorious for their anti-social activity upon receiving notification that they are forever to be an *uncle*. This frustration explains much of the behaviour of *uncle* Joe Stalin who had shown an early interest in tribal membership. Stalin showed a lifelong interest in data abuse ('one death is a tragedy, one million deaths is a statistic'; 'how many divisions has the Pope' etc.) and his speeches revealed an obsession with falsifying industrial statistics (Treml and Hardt 1972). Unfortunately, Stalin was not admitted for tribal membership. The reasons will probably always remain obscure, because

*homoeconometricus* has almost no memory and it is considered to be rude to express any interest in that part of the past that cannot be tabulated and fed into a computer. We may speculate that Stalin was *uncle-ised* sometime in the late 1920s, for that was when many Soviet econometricians were deported to Siberia.

The consequences for world history of Stalin's exclusion have been profound. Prohibited from offering regressions, he instead extracted confessions; prohibited from calculating degrees of freedom, he built a monstrous tyranny; excluded from the 'probit'ariat he advocated the blood-thirsty dictatorship of the proletariat; instead of beating the data into submission (or torturing the data till they confesses) he took his revenge on the human race. To misquote Keynes, it is better that such people tyrannise over their data sets than over other people.

Besides, we can detect at least one admirable quality in some econometricians - modesty - even if this relates only to 'modesty in describing how industrious a search was undertaken in generating reported results' (Lovell 1983, 11). It is true that some may continue to be deceived and seduced by microeconomic gigo-los (the practitioners of garbage-in-garbage-out) and are driven to consume Portuguese wine (Stigler 1976, 348), but since the externalities are smaller in this case, *caveat emptor* may suffice.

## 2 Popper Among The Econ

The collapse of the Phillips curve in the 1970s is widely regarded as a major econometric failure. This relationship had initially been developed by a group at the London School of Economics who attempted to reconstruct economics as a fully empirical science and who regarded themselves as disciples of Karl Popper (De Marchi 1988; Darnell and Evans 1989, 40-57). Popper's views on the demarcation criterion between science and non-science are well known: theories must be constructed so that they are potentially falsifiable; these theories must be subjected to rigorous testing; immunising stratagems must be avoided. Under the influence of these strictures the LSE economists formulated the Phillips curve from which macroeconomic forecasts were derived. Unfortunately, Popper had no *direct* contact with the LSE economists because 'they smoked and he had an aversion to smoke' (de Marchi 1988, 33). (He may have reflected: *c'est une pipe*). Popper's terms for attendance were that all doors and windows must be left open for twenty-four hours beforehand. The M<sup>2</sup>T group discussed and rejected this request. As a consequence, Popper's precise views on macroeconomic forecasting remain mysterious. Presented in section 3 below is a simple recommendation which would transform future macroeconomic forecasters - silicon astrologers - into Popperian bookmakers, thus reducing the externalities of the econometrics industry.

## 3 The Keynes-Thatcher Statistic

Econometrics has been described as 'The art of drawing a crooked line from an unproved assumption to a foregone conclusion' (Kennedy 1985, 6). The cost of producing a regression coefficient is less than 10 cents and what used to take skilled operators three months now takes less than 30 seconds on a personal computer ((McCloskey 1986b, 163; Friedman 1991, 36). The resulting output is often little more than the product of lengthy nocturnal fishing expedition in a sea of data (Epstein 1987, 137, n62).

A forecast concerning the future is normally interpreted, by non-forecasters, as a confident expression of expert opinion. This may be true, but these forecasts should also come with confidence intervals, which are normally not accorded equal prominence. If forecasters in economic debates were required to specify in advance the circumstances which would falsify their predictions, in addition to specifying the degree of confidence that they attached to their predictions this could produce a dramatic transformation. And if forecasters were required, in Mrs Thatcher's phrase, to 'back their forecasts with their money', this might reduce dubious macroeconomic 'information'. As it turned out, Mrs Thatcher failed to compel her own monetarist advisers to 'back their forecasts with their money'.<sup>15</sup>

We have, at least, one thing to be grateful to Mrs Thatcher for - the monetary shock administered in the early years of the Conservative government sent many econometrics models to the scrap heap. The fingers of econometricians (so long used to drumming out on a keyboard a doom-laden message for those who have macroeconomic externalities inflicted upon them) may in future thump out a message more harmonious to the Invisible Ear. Coasian market forces may be allowed to facilitate the benign operation of the econometricians' 'Invisible Fang'"(Snower 1982, 648). Future historians may remember Mrs Thatcher, not so much as Prime Minister, but as the joint eponymous saviour of the world from econometric externalities.

Keynes (1936a, 524; 1940, 156; 1936b, 298, 159) had been President of the Econometrics Society in 1944-5, despite his much quoted references to the 'black arts of inductive economics', 'black magic' and 'statistical alchemy', and to the 'maze of pretentious and unhelpful symbols'. In *The General Theory* he suggested that 'when the capital development of a country becomes a by-product of the activities of a Casino, the job is likely to be ill-done'. However, casino operators and bookmakers have to pay for the privilege of taking money from punters; names at Lloyds have unlimited personal liability for ill-judged risks. In contrast, econometric forecasters frequently receive subsidies from the taxpayer. If econometric forecasts became a by-product of the activities of a casino, the job may well be less ill-done than at present. Especially if forecasters, like bookmakers, were required to be licensed and, like names at Lloyds, commit their personal assets to their projections, and specify the degree of confidence that they attach to their forecasts.<sup>16</sup>

Peter Phillips (1988, 348, 357) advised econometricians that they should be prepared to risk some intellectual capital in order to reduce what he regarded as a massive credibility gap. The Keynes-Thatcher (*KT*) Statistic would reduce this credibility gap still further and could become the most important diagnostic of all routinely reported with the others. It would make Lawrence Klein's (1984, 2) first question - 'what is your track record' - redundant. It would also put to rest Arthur Bowley's concern that 'I am not sure that the "confidence interval" is not a "confidence trick"' ([1934], cited by Darnell and Evans 1990, 24, n29).

This *KT* statistic could be applied world-wide. Its potency can be illustrated by reference to the 'short sharp monetary shock' undertaken in Australia. In April 1989 the unemployment rate in Australia was 6.1 per cent, and less than half a million Australians were registered as being unemployed.<sup>17</sup> Paul Keating (1989, 3, 13, 16), in his Treasury Statement accompanying the 1989 Budget, boasted about the impressive growth in employment during the previous six years. Fiscal policy, he declared, would be kept as 'tight as a drum ... with demand

running too strongly inflation has not fallen as we had hoped. We have therefore seen interest rates in Australia rise to higher levels than any of us would like. However recent indicators have provided welcome signs that demand is returning to more sustainable rates of growth. *We are confident* [emphasis added] that this trend will continue as the past tightening of fiscal and monetary policy takes increasing effect ... I affirm that monetary policy will continue to play its vital balancing role in our overall economic strategy<sup>7</sup>.

The soft landing was forecast to result in an unemployment rate of 6.25 per cent in April 1990<sup>18</sup> and 7.25 per cent in April 1991.<sup>19</sup> The Treasurer did not specify *precisely how confident* his forecasters were in these projections. The Australian Treasury calculate uncertainty bands around these forecasts, but these are not made available to the public. This situation can be remedied through the use of the *KT* statistic. In order to specify *precisely* the degree of confidence attached to economic forecasts, the soft landing, inspired by the monetary contraction could have been advertised, through the *KT* statistic, in the following way:

### The Australian Treasury Soft Landing Stakes: The Keynes Thatcher Odds

April 1989 - April 1991

Level of unemployment in April 1989 = 6.1 per cent.

Predicted level of unemployment for April 1991	"We are confident" at the following levels	The Random Bullet Test: Probability of Forecast Error (=∇)	The Keynes Thatcher Odds (KTO = 1/∇)
U # 7.25	0.95	0.05	20 : 1
U < 7.75	0.99	0.01	100 : 1
U < 8.25	0.999	0.001	1,000 : 1
U < 8.75	0.9999	0.0001	10,000 : 1
U < 9.25	0.99999	0.00001	100,000 : 1
U < 9.75	0.999999	0.000001	1,000,000 : 1
U < 10.25	0.9999999	0.0000001	10,000,000 : 1

The way the unemployment figures turned out (9.9 per cent<sup>20</sup>) a one dollar bet placed in April 1989 would have yielded a pay-out of one million dollars in April 1991, a considerable disincentive for Treasury to engage in forecasts of doubtful quality. Shouting the odds in macroeconomic policy debates may not be so privately optimal for Popperian bookmakers as it was in the past for silicon astrologers and their political masters. In this way, by obliging econometricians to take responsibility for the *ex post*, we may witness an appropriate degree of caution associated with economic forecasting.

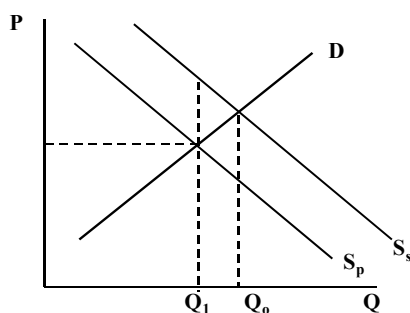
#### 4 Postscript: The Optimality of Market Failure?

Paul Feyerabend (1970, 200) concluded that ‘Every statement which Kuhn makes about normal science remains true when we replace “normal science” by “organised crime”; and every statement he has written about the ‘individual scientist’ applies with equal force to, say, the individual safebreaker’. Can economic theory be used to justify macroeconomic forecasting as not only a legitimate form of organised crime but also as a socially optimal type of safebreaking?

Econometric forecasting is a lucrative business (Tobin 1977, 760; Galbraith 1987, 261-2).<sup>21</sup> Suppliers in this market (macroeconomic policy advocates) interact with demanders (politicians and government officials who receive and act upon this advice) in a manner that is privately optimal to both parties, at least in the short-run. These privately optimal actions often generate spill-over costs elsewhere. However, there are reasons for believing that economic theory can be invoked to justify *non-intervention* to correct these externalities in the market for macroeconomic policy advice, and to *refute* the orthodox Pigovian policy conclusion that privately optimal actions should be brought into harmony with socially optimal outcomes.

The supply curve in this market for macroeconomic policy advice is likely to be downward-sloping, because of economies of scale associated with the preferred method of research of some policy advisers.<sup>22</sup> Average and marginal cost curves for the output of macroeconomic policy advisers may be downward-sloping, because the output of previous advisers, regardless of the quality, reduces the effort required to produce further advice. (The social marginal cost curve incorporates the detrimental externalities associated with this output.)

The private demand for output from macroeconomic policy advocates possesses Veblen effect characteristics, whereby price and professorial rank are taken to be reflections of the inherent quality of the product. (*Socially* this output may be regarded as an economic bad and may command a negative price because the community may be willing to pay some price to dispose of it). Thus the demand curve may slope upwards. The market for macroeconomic policy advice can be described by Figure 1:



**Figure 1 The Market for Macroeconomic Policy Advice**

D = Demand curve

$S_p$  = Supply curve, reflecting private marginal costs

$S_s$  = Social marginal cost curve, incorporating negative externalities

From a social perspective the quantity  $Q_1$  is preferable to  $Q_0$  because the volume of macroeconomic policy advice inflicted upon the population is reduced, thus illustrating *the optimality of market failure*. Truly a Panglossian outcome!

---

\* Economics Department, Murdoch University, Murdoch, WA 6150 Australia.  
Email: [r.leeson@murdoch.edu.au](mailto:r.leeson@murdoch.edu.au).

## Notes

1 This paper started life as a satirical lecture to undergraduates and I am particularly grateful to my econometrics students, at the University of London, Adelaide University, Flinders University, Murdoch University and the Curtin University of Technology (plus two referees from this journal), who have had my econometrics and my humour inflicted upon them. It is dedicated to the minority of the profession whose teaching motto is 'I suffered for my econometrics - now it's your turn'. Their students should remember that although econometricians often swagger around with all the pomp of Whitehall bureaucrats On Her Majesty's Service, their briefcase of tricks usually contains Only Highschool Maths and Stats.

2 Johnson (1991, 55) concluded that 'charges of data mining and other abuses have confused this [formerly dominant] tribe of [classical econometricians] and they are presently in some disarray'. These concerns go back some way. Champenowne (1972, 223) noted that 'a wide section of American students want qualification in econometrics, just as a wide section of the British people require pageantry' Streissler (1970, 23) referred disparagingly to 'the sham stance of the irrefutable expert' adopted by some econometricians. Leontief (1948, 411) had earlier displayed optimism about the econometrician's project of turning economics into a genuine quantitative science, which 'seemed to be nearing its fulfilment'. Later, he (1971, 3) emphasised in his AEA Presidential address that 'in no other field of empirical inquiry has so massive and sophisticated a statistical machinery been used with such indifferent results'. Christ (1975, 54) concluded that the models of the U.S. economy 'cannot be considered reliable guides' to the analysis of the effects of policy. Harry Johnson (1971, 2) wrote that 'The testing of hypotheses is frequently merely a euphemism for obtaining plausible numbers to provide ceremonial adequacy for a theory chosen and defended on *a priori* grounds'. Worswick (1972, 79) referred to the econometricians' 'marvellous array of pretend tools which would perform wonders if ever a set of facts should turn up in the right form'. Phelps Brown (1972, 6) concluded, in his Presidential address to the Royal Economic Society, that 'running regressions between time series is only likely to deceive'. 'Sloppy sentences' had been replaced by 'sloppy equations' (Kmenta [1972], cited by Darnell and Evans, 1990, 54, n5). Many regressions were found to be spurious and there was also talk at this time of 'stoning the prophets' (Basmann 1972, 43; Granger and Newbold 1974). Christopher Sims (1980, 1) referred to the 'deep vein of scepticism' about the value of macroeconomic models and the 'game playing' of econometrics was likened to 'playing tennis with the net down' (Blaug 1980, 261, 256). Gunder Frank (1981, 104) suggested that 'equating economic forecasting with astrology is an insult - to astrologers'. Charges of data mining led to widespread scepticism (Lowell 1983; Ziemer 1984; Denton 1985), and Robbins (1981, 3) cautioned that time-series analysis, in the wrong hands, 'can be seriously misleading'. Black (1982, 29) concluded that 'it is doubtful ... that traditional econometric methods will survive'. The simulations derived from some macroeconomic models were described by Lucas (1984,

35) as 'worthless'. McCloskey (1985, 201; 1986b, 159; 1988, 289) calculated that three-quarters of the contributions to the *American Economic Review* misused tests of significance, and also highlighted the 'inconclusive rhetoric provided by the pseudoscientific ceremony of hypothesise-fit-test-publish'. This deplorable state of affairs was due to the minimal athleticism required to leap the 'six inch hurdles' of econometric evaluation. Galbraith (1987, 263) complained that 'Rarely in history has so much questionable information been so confidently offered'. Solow (1988, 33) concluded that we have been 'conned ... by the rhetoric of econometrics'. Summers (1991, 15, 18) asked 'Why Does Formal Econometric Work Prove So Unpersuasive?' and concluded that researchers, referees and editors tend to 'ask the same question that jugglers' audiences ask - have virtuosity and skill been demonstrated?' Leamer (1978, 13; 1987, 312; 1988, 334; 1983, 370) argued that regression equations have increasingly come to be regarded as 'merely stylistic devices, not unlike footnotes, referencing obscure scholars' papers'; '... current institutions have clearly encouraged and have produced delusion or deception'; '... A map will distort reality purposefully ... if you are a statistician, it is easy to falsify these maps'; 'Like elaborately plumed birds who have long since lost the ability to procreate but not the desire, we preen and strut and display our t-values'. Machlup (1974, 892) described an econometrician as someone who 'had to use a proxy for risk and a dummy for sex'.

3 The *Financial Times* referred to 'lies, damned lies and forecasts' (December 19, 1978). Art Buchwald wrote in *International Herald Tribune* (June 8, 1978) that 'whenever I get worried about the economy I go up to the top of the mountain to see the Great Exalted Economist. "Blessed Guru what is the answer?" "We must hold our hand firmly on the rudder until the storm blows over, keeping all options open even if it means tightening our belts". "I knew you would have the answer Exalted One", I said with tears in my eyes. He turned to go into his cave ... The last words he said to me were "Then again I could be wrong"'.

4 In Boulding's (1969, 1) phrase, Adam Smith has a 'strong claim to being both the Adam and the Smith of systematic economics'.

5 This may be because the dominant characteristics of the Econ tribe (free-riding, chiselling and defecting) are not likely to be endearing, and may often be self-defeating (Frank, Gilovich and Regan 1993).

6 Einstein is reputed to preside over the immortal heaven to which all scientists aspire. It is also said that he divides newcomers into three groups: those with an I.Q. of over 150, with whom he discusses his theory of relativity; those with an I.Q. of between 50 and 150, with whom he discuss the prospects for world peace; and, finally those with an I.Q. of less than 50, of whom he asks 'what is your estimate of GNP for next year?'

7 The null hypothesis to be tested is that the economy will experience a shock therapy. (This is always rejected). The alternative hypothesis is that the economy will experience *either* a shock or a therapy.

8 We owe this phrase to John Major.

9 That is, the age of bond-financed expansionary fiscal policy.

10 *Moneyhak* derives from the Arabic, *hakim*, meaning rule or ruler.

11 As Szostak (1992, 89-90) noted, 'as a work of econ-art ... it is perhaps the greatest creation of the twentieth century ... it serves the Cubist goal of replacing the curve which depict reality with the straight line of true art ... once one stops mistakenly searching for reality it is, one can not help but be struck by its beauty'.

12 *The Economist* (7 September 1985, 61) subsequently revealed the true origin of the malign inflation spirit, by plotting the close correlation between the rise in the number of government economists and the rise in retail prices.

13 These words were subsequently given to Prince Hamlet (Act II, scene ii).

14 There is an aural tradition which has claimed to trace Stoppard's words in *Rosencrantz and Guildenstern are Dead* to this earlier version: 'The equanimity of your average tosser of coins depends on a law ... which relates the fortuitous and the ordained into a reassuring union which we recognised as a [natural?] rate' (cited by Thomas 1983, 1). But this tradition, like many regressions, may be spurious. (For a comparison between this play and contemporary economics, see Kutner 1985, 79).

15 'Oh yes, I know, we have recently been told by no less than 364 academic economists that such things cannot be, that British enterprise is doomed. Their confidence in the accuracy of their own predictions leaves me breathless. But having myself been brought up over the shop, I sometimes wonder whether they back their forecasts with their money' (Thatcher, cited by Young 1989, 217).

16 The National Association of Business Economists, which has more than 3,300 members, might be an appropriate licensing vehicle (Zarnowitz 1991, 4).

17 Australian Bureau of Statistics, Catalogue Number 6202.0, Table II.

18 Budget Statements 1989, 2.65.

19 Budget Statements, 1990, 2.63.

20 Australian Bureau of Statistics, Catalogue Number 6202.0, Table II.

21 Galbraith (1987, 261-2) noted that 'No other economic effort ... was ever commercially so lucrative. From these models came forecasts and more specific information relevant to corporate decisions of a highly saleable character. In 1979, Data Resources, an econometric consulting firm established by Otto Eckstein was sold to McGraw-Hill, the publishing company for [US] 103 million dollars. Not many economics professors have created so much capital value in one lifetime'.

22 Method of research is sometimes erroneously referred to as *methodology*. The ending *-logy* is derived from the Greek *-logia* signifying 'study, discourse'. The prevailing method of research amongst macroeconomic policy advocates should perhaps be described by the term *methodologos*, the ending *-logos* meaning 'the Word of God incarnate'.

## References

- Basmann, R.L. 1972. The Brookings Quarterly Econometric Models: Science or Number Mysticism? In Brunner, ed.
- Black, F. 1982. The Trouble with Econometric Models. *Financial Analysts' Journal* March/April: 29-37.
- Blaug, M. 1980. *The Methodology of Economics or How Economists Explain*. Cambridge: Cambridge University Press.
- Boulding, K. 1969. Economics as a Moral Science. *American Economic Review* March: 1-12.
- Boulter, B.L. and Goldfarb, R.S. 1991. Pisces Economicus: The Fish as Economic Man. *Economics and Philosophy* 7: 83-6.
- Brandis, R. 1972. An Irreverent Glossary. *Journal of Economic Issues* 6: 107-10.
- Brunner, K., ed. 1972. *Problems and Issues in Current Econometrics Practice*. Columbia: Ohio State University.
- Champernowne, D.G. 1972. Review of Theil's 'Principles of Econometrics'. *Economic Journal* March: 222-3.
- Christ, C.F. 1967. Econometrics in Economics: Some Achievements and Challenges. *Australian Economic Papers* December, 6 (9): 155-170.
- Christ, C.F. 1975. Judging the Performance of Econometric Models of the U.S. Economy. *International Economic Review* 16: 54-74.

- Colander, D. 1989. The Invisible Hand of Truth. In Colander and Coats, eds.
- Colander, D. and Klamer, A. 1987. The Making of an Economist. *Journal of Economic Perspectives* 1 (2), Fall: 95-111.
- Colander, D. and A.W. Coats, eds. 1989. *The Spread of Economic Ideas*. Cambridge: Cambridge University Press.
- Covick, O.E. 1974. The Quantity Theory of Drink - A Restatement. *Australian Economic Papers* 13, December: 171-7.
- Darnell, A.C. and Evans, J.L. 1990. *The Limits of Econometrics*. England: Edward Elgar.
- De Marchi N., ed. 1988. *The Popperian Legacy in Economics*. Cambridge: Cambridge University Press.
- Denton, F. 1985. Data Mining as an Industry. *Review of Economics and Statistics* 67: 124-7.
- Dewald, W.G., Thursby, J.G. and Anderson, R.G. 1986. Replication of Empirical Economics: 'The Journal of Money Credit and Banking Project'. *American Economic Review* 76: 587-603.
- Dreze, J. 1972. Econometrics and Decision Theory. *Econometrica* January, 40 (1): 1-17.
- Ellis, H.S., ed. 1948. *A Survey of Contemporary Economics*. American Economic Association. Illinois: Richard D. Irwin. Vol. 1.
- Epstein, R. 1987. *A History of Econometrics*. Amsterdam: North Holland.
- Feldstein, M. 1981. Twas a Night in the Sixties. *Journal of Political Economy* 89 (6): 1266-9.
- Feyerabend, P. 1970. Consolations for the Specialists. In Lakatos, I. and Musgrave, A., eds.
- Frank, A.G. 1981. *Reflections on the World Economic Crisis*. London: Hutchison.
- Frank, R.H., Gilovich, T. and Regan, D.T. 1993. Does Studying Economics Inhibit Cooperation? *Journal of Economic Perspectives* 7 (2), Spring: 159-72.
- Friedman, M. 1988. In Brett, W. and Spencer, R., eds. *Lives of the Laureates*. Cambridge Mass: MIT Press.
- Friedman, M. 1991. Old Wine in New Bottles. *Economic Journal* 101 (404): 33-40.
- Galbraith, J.K. 1978. *The Galbraith Reader*. England: Penguin.
- Galbraith, J.K. 1987. *A History of Economics: The Past as the Present*. London: Hamish Hamilton.
- Granger, C.W.J. and Newbold, P. 1974. Spurious Regression in Econometrics. *Journal of Econometrics*: 111-20.
- Hendry, D. 1980. Econometrics: Alchemy or Science? *Economica* November: 388-406.
- Howitt, P. 1990. *The Keynesian Recovery and Other Essays*. London: Phillip Allen.
- Hylleberg, S., and Paldam, M., eds. 1991. *New Approaches to Empirical Macroeconomics*. Oxford: Blackwell.
- Intriligator, M., ed. 1977. *Frontiers of Quantitative Economics*. Amsterdam: North Holland. Vol. B.
- Johnson, H.G. 1970. Review of Scitovsky's 'Money and the Balance of Payments'. *Journal of Political Economy* 78: 424.
- Johnson, H.G. 1971. The Keynesian Revolution and the Monetarist Counter-Revolution. *American Economic Review* May, Papers and Proceedings, 1-12.

- Johnson, J. 1991. Econometrics: Retrospect and Prospect. *Economic Journal* 101, January: 51-6.
- Keating, P.J. 1989. Economic Statement, April 1989. Canberra: AGPS.
- Kennedy, P. 1985. *A Guide to Econometrics*. Oxford: Basil Blackwell.
- Keynes, J.M. 1936a. W.S. Jevons 1835 - 1882. *Journal of the Royal Statistical Society* Part III: 516-55.
- Keynes, J.M. 1936b. *The General Theory of Employment, Interest and Money*. London: Macmillan.
- Keynes, J.M. 1940. Professor Tinbergen's Method. *Economic Journal* 49: 558-68.
- Keynes, J.M. 1963. Economic Possibilities for our Grandchildren. In *Essays in Persuasion*. New York: W.W. Norton.
- Klamer, A. 1984. *Conversations with Economists*. New Jersey: Rowman and Allenheld.
- Klamer, A., McCloskey D., and Solow R., eds. 1988. *The Consequences of Economic Rhetoric*. Cambridge: Cambridge University Press.
- Klein, L.R. 1984. The Importance of the Forecast. *Journal of Forecasting* 3: 1-9.
- Kutner, R. 1985. The Poverty of Economics. *The Atlantic Monthly* February-March: 74-84.
- Lakatos, I. and Musgrave, A. 1970. *Criticism and the Growth of Knowledge*. Cambridge: C.U.P.
- Leamer, E.E. 1978. *Specification Searches: Ad Hoc Inferences with Non-experimental Data*. New York: Wiley.
- Leamer, E.E. 1983. Let's Take The Con Out of Econometrics. *American Economic Review* 73: 31-43.
- Leamer, E.E. 1985. Sensitivity Analysis Would Help. *American Economic Review* June, 75 (3): 308-13.
- Leamer, E.E. 1988. Things That Bother Me. *Economic Record* 64 (187): 331-5.
- Leijonhufvud, A. 1974. Life Among the Econ. *Western Economic Journal* 11(3): 327-37.
- Leontief, W. 1948. *Econometrics*. In Ellis, ed.
- Leontief, W. 1971. Theoretical Assumptions and Non Observable Facts. *American Economic Review* March, 61 (2): 1-7.
- Lovell, M.C. 1983. Data Mining. *Review of Economics and Statistics* LXV (1): 1-12.
- Lucas, R. 1984. In Klamer.
- Maasoumi, E. 1988. On Econometric Methodology. *Economic Record* 64 (187): 340-3.
- Machlup, F. 1974. Proxies and Dummies. *Journal of Political Economy* 82: 892.
- McAfee, R. 1983. American Economic Growth and the Voyage of Columbus. *American Economic Review* September, 73: 735-740.
- McCloskey, D.N. 1985. The Loss Function Has Been Mislaid: The Rhetoric of Significance Tests. *American Economic Review* 75(2), May, Papers and Proceedings: 201-5.
- McCloskey, D.N. 1986a. The Economic Consequences of Economists. *Book World* November 30: 12-3.
- McCloskey, D.N. 1986b. *The Rhetoric of Economics*. Great Britain: Wheatsheaf.
- McCloskey, D.N. 1988. *The Consequences of Rhetoric*. In Klamer, McCloskey and Solow, eds.

- O'Brien, D.B. 1975. Whither Economics? *Economics* 11 (2), Summer: 75-98.
- Pagan, A. 1987. Three Econometric Methodologies. *Journal of Economic Surveys* 1.1: 3-24.
- Phelps Brown, H. 1972. The Underdevelopment of Economics. *Economic Journal* March, 82 (325): 1-10.
- Phillips, P.C.B. 1988. Reflections on Econometric Methodology. *Economic Record* 64 (187): 344-59.
- Pratson, F.J. 1978. *Perspectives on Galbraith: Conversations and Opinions*. Massachusetts: CBI Publishing.
- Rivlin, A.M. 1987. Economics and the Political Process. *American Economic Review* March, 77 (1): 1-10.
- Robbins, L. 1981. Economics and Political Economy. *American Economic Review* 71(2), May, Papers and Proceedings, 1-10.
- Seigfried, J.J. 1970. A First Lesson in Econometrics. *Journal of Political Economy* 78: 1378-9.
- Sims, C. 1980. Macroeconometrics and Reality. *Econometrica* January, 48 : 1-48.
- Snower, D. 1982. Macroeconomic Policy and the Optimal Destruction of Vampires. *Journal of Political Economy* 90: 647-655.
- Solow, R. 1979. What We Know and Don't Know About Inflation. *Technology Review* December/January: 30-46.
- Solow, R. 1983. In Tobin, ed.
- Solow, R. 1988. In Klamer, McCloskey and Solow, eds.
- Stigler, G.J. 1976. Do Economists Matter? *Southern Economic Journal* 42. 347-54.
- Stigler, G.J. 1977. The Conference Handbook. *Journal of Political Economy* 85 (2): 441-3.
- Stone, R. 1978. Keynes, Political Arithmetic and Econometrics. *Proceeding of the British Academy* 64: 55-92.
- Streeten, P. 1972. Review of Reynold's 'Three Worlds of Economics' and Eckstein's 'Comparison of Economic Systems'. *Economic Journal* September: 1076-8.
- Streissler, E.W. 1970. *Pitfalls in Econometric Forecasting*. London: Institute of Economic Affairs.
- Summers, L.H. 1991. The Scientific Illusion in Empirical Macroeconomics. In Hylleberg and Paldam, eds.
- Szostak, R. 1992. The History of Art and the Art in Economics. *History of Economics Review* Summer, 18: 70-107.
- Thomas, J.J. 1983. *An Introduction to Statistical Analysis for Economists*. London: Weidenfeld and Nicolson. Second Edition.
- Tobin, J. 1977. Macroeconomic Models and Policy. In Intriligator, ed.
- Tobin, J., ed. 1983. *Macroeconomics: Prices and Quantities*. Oxford: Basil Blackwell.
- Treml, V.G. and Hardt, J.P. 1972. *Soviet Economic Statistics*. Durham: Duke University Press.
- Worswick, G.D.N. 1972. Is Progress in Science Possible? *Economic Journal* March, 82: 73-86.
- Young, H. 1989. *One of Us*. London: Macmillan.
- Zarnowitz, V. 1992. Has Macro Forecasting Failed? National Bureau of Economic Research Inc., Working Paper No. 3867.
- Ziemer, R. 1984. Reporting Econometric Results: Believe it or not? *Land Economics* 60 (1), February: 122-7.