



Public Policy, Minimum Wages and Economic Paradigms

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Abstract

This paper applies Kuhn's theory of scientific revolutions to economic paradigms. It does so by examining the dominant paradigm as it relates to minimum wage theory and policy. It examines the pre-dominant period in which the minimum wage was supported, the dominant neoclassical period in which the minimum wage is anathema, and the current period which has witnessed anomalies and a shift in professional allegiances away from the paradigm in dominance. The dominant paradigm must either broaden its scope and integrate anomalies or face the challenge of an emergent paradigm capable of doing so.

Key words: Kuhn's scientific revolutions, economic paradigms, labor market, minimum wage, employment effects, neo-classical economics

Introduction

Economics is a discipline of import for public policy. To remain relevant economic theory and practice must be able to assist in acceptable policy making, to predict likely economic difficulties and to be able to explain these difficulties. In the absence of the above, economics is likely to come under fire as either irrelevant or in need of a new paradigm. Thus, following the recent financial crises there have been calls for an 'economic thought revolution'. Bouchard has argued:

Compared with physics, it seems fair to say that the quantitative success of the economics sciences has been disappointing. Rockets fly to the moon; energy is extracted from minute changes of atomic mass. What is the flagship achievement of economics? Only its recurrent inability to predict and avert crisis, including the current worldwide credit crunch. (1)

Bouchard considers that economics is in need of a scientific revolution, and in so doing invokes the notion of paradigm shifts popularised by Kuhn (2). This paper addresses the issue of paradigm shifts within economics using the Kuhn perspective. Rather than identifying major discipline-wide shifts such as the classical, neoclassic,

Keynesian and monetarist revolutions that have taken place, the paper addresses a particular policy issue, that of the minimum wage. The professional economists' approach to minimum wages is a reflection of the paradigm in dominance prevailing at any one time.

The relevance of economic paradigms to those concerned with science, technology, ethics and policy is illustrated by the issue of climate change. At the ethical level this matter was described by a former Australian Prime Minister as 'the greatest moral challenge of our time' (3). At the policy level, in 2007 Australians voted for action notwithstanding the costs involved. Despite this, little has been done to reduce the carbon footprint or otherwise bring about remedies. This is so, notwithstanding scientific knowledge and technical know-how that would assist. Rather it is because of economics, and in two forms. The first is the costs attendant upon seeking remedies. As noted, Australians have voted for remedies notwithstanding these costs. The second is the prevailing economic paradigm which sees government 'interference', in any form, as undesirable. In this view any transactions, including those for 'disutilities' are best left to the free market. This paradigm promotes a passive approach to policy. A different economic paradigm, one in which government

action is perceived as legitimate and leading to better outcomes, would promote a different government response.

In addressing the issue of economic paradigms the paper is broken into a number of sections. Following this introduction Section 2 briefly describes the Kuhn framework that informs the paper. Section 3 addresses what, in Kuhn's terms, is the pre-paradigm period, that period in which institutional economists saw utility in prescribing minimum wages. Section 4 addresses the dominant paradigm, that of neoclassical economics and its negative view of minimum wages. Its view, that society must choose between 'low pay or no pay' in relation to minimum wage earners, forms the theme of the paper. Section 5 examines the current shift away from the dominant view and suggests reasons for this shift. The final section is by way of summary and conclusion.

Kuhn and Scientific Revolutions

In his *The Structure of Scientific Revolutions*, Kuhn (2) provides a synthesis of those factors and processes that lead to paradigm shifts, or, what he terms 'scientific revolutions'. Kuhn defined paradigms as 'universally recognized scientific achievements that for a time provide model problems and solutions to a community of practitioners' (2).ⁱ Though Kuhn himself limited the scope of his work to the natural sciences, a number of writers have applied his work to social sciences and, in particular, economics (see, for example, De Vroey (4), Coats (5), Bronfenbrenner (6), Karsten (7), Dean (8), and Johnson (9)).

Kuhn describes the basic elements of his hypothesis thus:

Normal science ... is predicated on the assumption that the scientific community knows what the world is like. Much of the success of the enterprise derives from the community's willingness to defend that assumption, if necessary at considerable cost. Normal science, for example, often suppresses fundamental novelties because they are necessary subversive of its basic commitments. Nevertheless, so long as those commitments retain an element of the arbitrary, the very nature of normal research ensures that novelty shall not be suppressed for very long. Sometimes a normal problem, one that ought be solvable by known rules and procedures, resists the reiterated onslaught of the ablest members of the group within whose competence it falls. ... In these and other ways besides, normal science repeatedly goes astray.

And when it does – when, that is, the profession can no longer evade anomalies that subvert the existing tradition of science practice – then begin the extraordinary investigations that lead the profession at last to a new set of commitments, a new basis for the practice of science. The extraordinary episodes in which that shift of professional commitments occurs are the ones known in this essay as scientific revolution. (2)

Kuhn's 'normal science' refers to 'the specific state of development of two related but distinct realities, namely, science as a social system, and science as a system of ideas'. The former refers to the 'invisible college' whose institutions, through such practices as reviews, meetings and journals, act 'as support for the development of interactions and education'. In this 'college' 'there is a structure of power, linked with the prestige elements and based upon past achievements and the holding of strategic positions. Scientific communities thus constitute a well-structured in-group' (4). Science as a system of ideas concerns its paradigms. De Vroey notes that the 'notion of paradigm expresses the unity and coherence of a system of ideas. It encompasses the social vision, methodological principles and categories, theories, techniques and stereotyped examples, all of which together make up a particular system of ideas, the content of which is reflected in textbooks' (4).

Kuhn notes that in addition to the controversies that accompany them, revolutions necessitate the rejection of time-honoured theories in favour of incompatible ones, a shift in the problems available for scrutiny, and a transformation of methodologies. For the defenders of the *status quo* resistance is the order of the day (2). Kuhn further notes the inherent conservative bias in science. New scientists 'learn the basis of their field from the same concrete models [they] subsequently practice [and will] seldom evoke overt disagreement over fundamentals. Further, professionals whose 'research is based on shared paradigms [become] committed to the same rules and standards' (2). Once a paradigm is established, the areas under investigation become 'miniscule' – a 'small range of relatively esoteric problems'. This has advantages and disadvantages: investigation in 'depth and detail' are permitted, but only by forcing nature 'into the performed and relatively inflexible box that the paradigm supplies' (2). This forcing may be at the expense of reality.

In this view, 'scientific revolutions are inaugurated by a growing sense ... often restricted to a narrow subdivision of the scientific community, that an existing paradigm has ceased to function adequately' (2). 'Probably,' Kuhn writes, 'the single most prevalent claim advanced by the proponents of a new paradigm is that they can solve the problems that have led to the old one to a crisis' (2). Quoting Planck, Kuhn adds: 'a new scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die, and a new generation grows up that is familiar with it' (2). This view is juxtaposed with another, in which 'there is no single argument that can or should persuade them all. Rather than a single group conversion, what occurs is an increasing shift in the distribution of professional allegiances' (2).

In De Vroey's view, 'Kuhn's main thesis is that a change of the paradigm in dominance occurs in a rather brutal way rather comparable to political revolution'. He adds:

The signs of crisis are the appearance of anomalies, that is, puzzles which the existing paradigm cannot resolve. A general uneasiness about the relevance of the frame of analysis then arises. If the anomalies are not resolved and the uneasiness tempered, and if approaches involving a radically different way of looking at the problems are suggested, then the chances of a revolution will grow. (4)

De Vroey notes that 'cognitive factors are not sufficient in themselves to cause the move'. The power elites within the profession have a vested interest in maintaining the existing paradigm and will use their powers to oppose change. Opponents can use cognitive forces (the ability of the paradigm to broaden its scope and integrate anomalies) and social forces. The latter include the system of paradigm inculcation (2), publication bias (10) and recruitment and promotions systems (11).

The notion of a revolution may imply instantaneous change. This is not warranted. 'Revolution' in the Kuhn schema refers to the completeness of change rather than its timing. De Vroey has noted that there can often be an interregnum 'between the ancient and the nouveau regime, one in which the terrain is contested and in which the usurping paradigm has not yet become the new dominant paradigm (4). Thus, paradigms can have a life cycle in which they gestate and develop in the predominant period; grow to become the paradigm in dominance; and

then face contestation and possible usurpation leading to a post-dominant phase.

Low Pay or No Pay?

'Following Adam Smith', writes Stabile, 'great thinkers in the history of economic thought continuously considered the negative consequences to society of paying workers low wages. The lack of concern for a living wage that can be found among economists today is a recent episode ... that started in the early twentieth century' (12). That lack of concern is the outcome of the prevailing paradigm which, unlike earlier paradigms, sees the minimum wage as having negative, rather than positive, effects. This is the 'low pay or no pay' condition (13). 'Typically,' write Prasch and Sheth, 'the economics literature presented minimum wage legislation as an example of a policy that was subject to "the perversity thesis", in which a well-intentioned social policy inadvertently harms the very group that it was designed to assist' (14).

As noted, economists have long concerned themselves with the labour market and the effects of minimum wages. Approaches, and the prevailing orthodoxy, have varied over time. For this purposes of this review, three somewhat arbitrary periods are chosen: the early period, the neoclassical period and the reassessment period. These periods are determined on the bases of the prevailing dominant (though by no means, exclusive) paradigm. In Kuhn's language, the first period is considered to be the pre-paradigm period, the neoclassical period the period of 'natural science' and the third period the paradigm contestation period.

The early period was one in which economists accorded importance to institutions and social norms in addition to economic forces. Miller has argued that leading economists of the 'early' period publicly supported mandated minimum wages (15). This view is supported by many writers. Levin-Waldman (10), for example, has noted the influence of prominent economists in New Deal legislation, including minimum wage legislation. He writes that 'early in the [20th] century a consensus maintained that the minimum wage could produce great potential benefits to society as a whole, particularly with regard to efficiency gains (10).

Because of their belief in the influence and importance of institutions these were often regarded as 'institutional economists'. As they reacted to the ascendancy of the

neoclassical paradigm they were also dubbed by some as 'social economic revisionists' (16). For these (and their more modern successors) the labour market could not be treated as just another market. In somewhat colourful language, Hughes draws attention to institutional aspects of the labour market: 'When there is a glut of Brussels sprouts, the price of a bag falls; not so with labour. [The labour] market deals in people with perceptions of their own worth, while Brussels sprouts do not talk back. Just as important, it deals with buyers and sellers who are not standardised. For these reasons the labour market has developed tendencies of its own which will be misunderstood if it is seen merely as a badly functioning version of the markets of the economic text books' (17).

Solow, in more traditional style, also questions whether the 'observable labour market failures' justify the continuation of traditional economic analysis (18). Following Pigou (19) he suggests that social norms of equity, labour market institutional arrangements, labour market segmentation, and expectations of wage outcomes beyond the existing economic cycle, result in markets not clearing as might be predicted by orthodox economics.

Wooten emphasises the non-economic forces that help explain wage and salary structures. She writes that to explain these structures 'in purely economic terms ... is found to be inadequate: such explanations can indeed be made intellectually coherent; but only at the heavy price in the sacrifice of contact with reality'. That reality consists of the 'the accumulated deposit laid down by a rich mixture of social and economic forces operating through considerable periods of history' (20).

Prasch and Sheth write that 'the labor market cannot be treated as simply another market, subject to textbook theory of "supply and demand". The reason is that the labor market is so much larger and all-encompassing than the market for carrots and futures Wages make up a large component of incomes, and we consume out of our incomes.' (14).

The relationship between income and consumption has led to consumption-led growth theories. Since the propensity to consume from wages is much larger than from profits, it is argued that redistributing income from profits to wages increases society's marginal propensity to consume (21). Higher consumption leads to higher capital utilisation and to higher levels of investment (22). So long as the rise in wages is not so high as to diminish in-

vestment, the consumption-led theory would suggest that increasing minimum wages would have a positive effect on the economy (23). Others have noted that an increased minimum wage has positive effects on the work ethic, induces the acquisition of skills and new technologies, and improves the overall level job performance (24).

Clarke (25), Kapp (26) and Stabile (27) support minimum wages on equity grounds. They note that workers face what they call 'overhead' costs. These costs must be met irrespective of employment or unemployment. If wages are insufficient for this purpose, costs have to be covered, often by the State. It follows that firms that hire workers below subsistence level wages are effectively transferring a portion of production costs to the community.

Some writers differentiate between 'high road' and 'low road' growth strategies even if employing similar technologies and techniques. This presumes that firms are not the price-takers assumed by traditional analysis and have some discretion over the level of wages. "High road" firms pay good benefits and high wages with the expectation of high levels of effort from employees. 'Low road' firms seek productivity through punitive measures rather than incentives. This may result in wages savings but the resultant need for stronger supervision and discipline adds to operation costs (28). It is argued that the minimum wage can lead to firms adopting the 'high road'. 'In the presence of a minimum wage, firms would have a direct incentive to modify their management strategies, adopt new techniques of production, and/or invest in their [workers]. An indirect benefit would be the more rapid development of new techniques and management strategies' (29).

Early empirical studies supported the notion that minimum wages had little effect on unemployment for low income workers. Britain introduced the minimum wage in 1909. Between 1913 and 1915 Bulkeley and Tawney published the results of studies in three of the affected industries. They concluded that the minimum wage had little adverse effects on employment and, if anything, increased employment (30, 31, 32).

In the USA Lester surveyed business executives in the 1930s and 1940s, shortly after the introduction of that country's minimum wage. He observed 'that business executives, unlike economists, tend to think of costs and profits as dependent upon the rate of output, not the other way around. For these executives, employment levels were not determined by wage rates, but the rate by out-

put.’ (10). Lester further advanced empirical evidence demonstrating that ‘the effects of the minimum wage on the level of employment are either minimal or supportive of higher levels of employment’ (33, 34, 35).

In Kuhn’s schema, theory and method are integrally related. In reviewing the literature, Kennan claims that empirical work on the minimum wage can be divided into two epochs. The first reflects writing of the ‘early’ period when most of the research took the form of case studies or ‘natural experiments’. Quoting Peterson, he notes of these studies a ‘generally accepted conclusion that minimum wage laws had no appreciable effect on employment’ (36). His second epoch, discussed below, is concerned with writings of the dominant period.

The Paradigm in Dominance

Stabile notes that the support of economists for the minimum wage eroded as neoclassical economics became the prevailing paradigm. ‘The typical economist today’, he writes, ‘would argue that justice, fairness, rights and dignity are not economic concepts and the movement for a living wage begs important questions of what and why’ (12). In the neoclassical view, the labour market is just another market where any ‘potential sources of market failure are as so many fleas on the thick hide of an ox, requiring only an occasional flick of the tail to be brushed away’ (18). Thus, the labour market is amenable to the assumptions and techniques used in other markets. In this schema, mandating minimum wages distorts markets, is counterproductive and puts people out of work.

The paradigm is one in which markets reach equilibrium and result in the most efficient allocation of resources. Laissez faire, and the effectiveness of untrammelled markets, have become not just matters of science, but rather articles of faith bordering on religious dogma. A number of simplifying assumptions enable the economist to model the complicate world of reality. Firms are price takers, since prices are determined by the forces of supply and demand. *Homo economicus*, the object of neoclassical analysis, is one driven by a single motive, that of personal utility maximisation. Atomistic rather than group behaviour and decision-making are assumed, as are competitive markets, and a lack of government intervention. *Homo economicus* acts rationally, and has the relevant information to make rational decisions. The theoretical abstraction and assumptions allow for deductive systems, and methodologies based upon deduction, to inform and reinforce

the paradigm. Since ‘scope and method are interdependent’ (37), the assumptions of utility maximisation and perfect information ‘made it possible to reduce decision-making to a mechanical application of mathematical rules for optimisation’ (38).

In this paradigm, the labour market operates like any other market. It is one in which employers are price-takers; in which workers are perfectly informed about wages at other firms, and capable of moving to another job that pays better. ‘In the standard model, workers are treated no differently than are other inputs that employers purchase, such as computers or electricity. The labor market is assumed to operate as smoothly and impersonally as the market for these other inputs’ (16). In this model each worker is paid his or her ‘marginal product’, and therefore to pay above the market rate would be to incur costs that are higher than the return from labour. Further, the ‘law of one price’ applies. At the prevailing rate, demand is perfectly elastic, that is employers are assumed to be able to employ as many workers as they need. Workers with the same skills receive the same wage rate irrespective of their employer or industry of employment.

Gorman provides the typical type of analysis that underlies the reasoning in such analysis:

The combination of inputs used and the amount that [a] diner owner can afford to pay for each one depends both on the productivity of the input and on the price that customers will pay for the product. Suppose that a trainee French-fry cutter can peel, cut, and prepare ten orders of fries an hour, and that the diner’s customers order about ten orders of French fries an hour at \$1.00 each. If the minimum profit required to keep the owner in business plus all costs except the cutter’s labor amounts to \$.80 for each order, then the owner can afford a wage of up to \$2.00 per hour for one trainee. Legislating a minimum wage of \$4.50 per hour means that the diner owner loses \$2.50 an hour on the trainee. The owner will respond by firing the trainee. The minimum wage prices the trainee out of the labor market. Similarly other employers will respond to the increased minimum wage by substituting skilled labor (which does not cost as much more than unskilled labor as it did before the minimum wage) for unskilled labor, by substituting machines for people, by moving production abroad, and by abandoning some types of production altogether. (39)

There have been a number of criticisms of neoclassical model. These have included not only arguments put forward in the pre-paradigm stage, but also concerning the reality of the assumptions and models chosen. The social, rather than individual, nature of work is claimed to determine different outcomes (20). The assumption that any existing minimum wage is set at the equilibrium market rate and therefore should not be increased is also disputed. This is particularly so in situations where that minimum wage remains unchanged for many years, as experienced in the USA⁴. The notion of all firms being price takers is also called into question (40), as is the notion of perfect (or easy) capital-labour substitution (41). Others have demonstrated that minimum wage increases have not been accompanied by the substitution of unskilled by skilled labour (42). Indeed, there is evidence of multi-skilling and greater labour flexibility following minimum wage increases (43).

The above, and other, objections are but fleas to be brushed off the neoclassical hide, a view buttressed by innumerable empirical studies confirming the negative relationship predicted by the model. The major method of inquiry of neoclassical economics regarding minimum wages and unemployment has been time series studies, giving rise to Kennan's second epoch in his review of empirical works (36). By the early 1980s these studies were synthesised by Brown, Gilroy and Kohen (44). Their encompassing report analysed over 100 articles. As would be expected given the low wage group composition, many of these studies centred on youth or teenage employment, with about 40% specifically including those terms in their titles. Their survey summary led to the 'conventional wisdom' concerning the relationship between minimum wages and youth unemployment:

In summary, our survey indicates a reduction of between one and three percent in teenage employment as a result of a 10 percent increase in the federal minimum wage. We regard the lower part of this range as most plausible because this is what most studies, which include the experience of the 1970s and deal carefully with minimum-wage coverage, tend to find. (44):508

The conventional wisdom leads to a definite policy conclusion: 'attempts to rise the poorly paid workers will cost some of them their jobs' (45). It also suggests the level of unemployment effect: 'Estimates of job losses suggest that a 10 percent increase in the minimum wage would decrease employment of low-skilled workers by 1 or 2

percent' (39). This orthodoxy has won international support with the OECD noting: 'There is no convincing evidence to refute the prediction that minimum wages cause reductions of employment (for young workers at least)' (46).

Anomalies and a Paradigm under Pressure

The 'conventional wisdom' has come under attack over the last three decades, leading to a period reassessment. Zycher has recorded this wind shift, noting that the 'decades-long agreement on the employment effects of the minimum wage now has been challenged by several scholarly papers' (47).

The major challenges centre around three aspects of the method of analysis. The first concerns criticism of the level of abstraction and lack of reality of the model. Arising from this is the reliance on time series analysis and the way in which the prevailing 'rule of thumb' estimates are obtained. The third is the use of, or more accurately the return to, inductive research involving 'natural experiments'.⁵ These suggest 'anomalies' that are not amenable to resolution by orthodox methods. It is evident from surveys of American economists that fewer now subscribe to the 'conventional wisdom'. This, in the Kuhn view, reflects a change in professional allegiances and a possible retreat from the paradigm in dominance.

In 1978 a stratified random sample of members of the American Economics Association was surveyed on a range of issues, including the statement that 'a minimum wage increases unemployment amongst young and unskilled workers'. Of those that responded, 68% agreed with the proposition, 22% agreed 'with provisions' and only 10% disagreed (48). A survey of members of the same association in 1990 showed that 62.4% agreed with the same proposition, 20% gave qualified support and 17.5% disagreed (49)⁶. In 2000 the proportion giving full support to the statement had dropped to only 45.5%, a further 27.5% gave qualified support, and 27 per cent disagreed (49). Thus, between 1978 and 2000 the proportion of unconditional support fell by one third, conditional support increased by 23%, and the proportion disagreeing nearly trebled.

The assumptions underlying neoclassical economic decision making relate to an idealised and normative world rather than the one the model purports to analyse. The use of highly technical mathematics and sophisticated models

do not alter this situation. Such models emphasise some variables and relationships and exclude others. In so doing, they allow for value judgements and for the preferred outcomes being proffered (50). Further, the homo economicus of the paradigm has been challenged. 'Economists,' writes Brooks, 'achieved coherence as a science by amputating most of human nature'. Yet much of human behaviour is 'not amenable to the methodologies of social science. The moral and social yearnings of fully realized human beings are not reducible to universal laws and cannot be studied like physics' (51).

Kennan's review of empirical works exemplifies concerns with the methodology of those supporting the 'conventional wisdom'. He takes issue with the accepted conclusion which he notes is based upon 'a tabulation of many overlapping studies, by various authors, using various specifications, on different but closely related data sets'. He writes:

The summary conclusion is unconvincing. There seems to be an implicit belief that an average of the estimates from many such studies must mean something. But in fact if there is one impeccable study in the set, and if the results of this study are inclusive, what is gained by tossing in the results of other studies and taking an average? What if all the studies are impeccable, and they are all inclusive? (36)

After viewing the seasonally adjusted employment data for teenagers, data that display large cyclical swings and a high degree of serial correlation, he notes that observers are, in effect, seeking employment rate changes of about one percentage point 'and such changes happen all the time, even from one month to the next. In short, we are looking for a needle in a haystack'. As well as indicating the difficulties of disengaging cyclical and other forms of unemployment, Kennan also identifies the subjective elements that intrude into statistical models despite their apparent rigour (36).

Card and Kruger's use of 'natural experiments' to suggest different outcomes has also played a role in reducing the certainty attached to the 'conventional wisdom' (49). Indeed, Card and Kruger note that 'if accepted, [their] findings call into question the standard model of the labor market that has dominated economists' thinking for the past half century' (16). In these experiments, the impact of a minimum wage change is evaluated by comparing before and after effects with a suitable control group. This

work, according to Watson, 'reversed the conventional wisdom by showing that increasing statutory minimum wages had no deleterious effects on employment, and do so in a way which survived critical scrutiny' (52).

Card and Kruger demonstrated that the 1992 minimum wage increase in New Jersey did not result in low wage employment being adversely affected. They surveyed over 400 fast food restaurants in New Jersey and neighbouring eastern Pennsylvania (where minimum wages had not been increased) both before and after the New Jersey wage increase. Their analysis shows that employment in New Jersey actually expanded and that those restaurants that were forced to increase their wages had a higher employment growth than other restaurants. They found similar results in the fast-food industry in Texas after the 1991 increase in the federal minimum wage, as well as for teenagers in California following that state's minimum wage increase in 1988. Further cross-state analysis suggested that teenage employment was not adversely affected following the 1990 and 1991 federal minimum wage increases. This analysis included states such as Alabama and Mississippi where about half of employed teenagers were in the affected wage range. 'On the basis of the textbook model of minimum wage' they wrote, 'one would have expected teenage employment to decrease in the low-wage states ... relative to high wage states'. Instead, the results suggested no meaningful differences in employment growth between high-wage states. 'If anything', the authors note, 'the states with the largest fraction of workers affected by the minimum wage had the largest gains in teenage employment' (16). In all, Card and Kruger analysed the impact of minimum increases for seven low-wage groups in different industries and States. In no case was the minimum wage increase accompanied by increased unemployment, and in all but one case employment increased. 'If', they note, 'a minimum wage increase does not reduce employment, the relevance of the textbook supply-demand apparatus seemingly is called into question' (16).

Kuhn predicted that challenges to the dominant paradigm are attacked by defenders of the *status quo*. Card and Krueger's challenge has been no exception, though some attacks have been personal rather than directed at methods and results. 'No self-respecting economist', Nobel-laureate Buchanan states, 'would claim that an increase in the minimum wage increases employment. Such a claim, if seriously advanced, becomes equivalent to a denial that there is even minimum scientific content in economics,

and that, in consequence, economists can do nothing but write as advocates for ideological interests. Fortunately, only a handful of economists are willing to throw over the teachings of two centuries; we have not yet become a bevy of camp-following whores' (53).

Another Nobel laureate, Krugman, has come to the defence of Card and Krueger, noting that 'their work has been attacked because it seems to contradict Econ 101 and because it was ideologically disturbing to many. Yet it has stood up very well to repeated challenges, and new cases confirming its results keep coming in' (54). Krueger himself has responded noting that 'more [is] at stake than the minimum wage – the methodology of public policy [is] also at issue. Some economists, such as James Buchanan, have simply rejected the notion that their view of economic theory could possibly be proved wrong by data' (55).

As Krugman noted, the Card and Krueger analysis has stood up to close scrutiny. Indeed, studies financed by the fast food industry to discredit their work has only served to confirm their findings (10). Krugman has further noted that 'new cases confirming [the Card and Krueger] results keep coming in.' Watson has shown that recent studies concerning the USA, Europe, the UK, Australia, and the OECD are much more reserved in their conclusions (54). The OECD, after reviewing over 20 studies, concluded 'that there were no clear, unambiguous findings', a far cry from the 'conventional wisdom' and its own statements of a decade earlier (56).

The development of 'natural experiments' has dented, rather than removed, the time honoured use of time-series analysis. However, it has added to the sophistication of such analysis in a way that has tended to refute, rather than confirm, the neoclassical view (57).

Summary and Conclusion

Kuhn has noted that there are phases during which paradigms grow to become the paradigm in dominance and are then eclipsed by other paradigms that are better able to integrate anomalies which cannot be accommodated within the previous paradigm. This paper suggests that many of the Kuhn features of a scientific revolution appear to be in place which requires that the neoclassical approach either broaden its scope, or be replaced by a more encompassing paradigm. Though the paper has only examined the area of minimum wage determination and has demonstrated a

swing in allegiances in this area, the systems-wide nature of neoclassical analysis would suggest that an inability to explain any one market may seriously affect its capacity to remain the paradigm in dominance.

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Disclaimer

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Competing interest

The authors declare that they have no competing interests.

Notes

- i. In the Postscript to the 1970 printing of the book, Kuhn explores in detail the many elements of his formulation of the term 'paradigm'.
- ii. In the USA the federal minimum wage was set at \$5.15 in 1997 was not altered until 2007.
- iii. Kennan has demonstrated that 'natural experiments' formed a part of early empirical studies during what we have called the 'early' period (Kennan 1995: 1952-54).
- iv. The 1990 data are the result of the authors re-weighting data from a 1990 sample to align that data with the 2000 survey.

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