



Women in Social & Economic Research

The Minimum Wage and Unemployment

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Introduction

This paper draws upon a report prepared for the May 2006 WAIRC Minimum Wage Case. For this case the Commission sought evidence of the effects of past minimum wage adjustments on the following:

- a) the number of persons employed;
- b) the number of unemployed persons seeking work;
- c) job vacancies;
- d) average weekly ordinary earnings;
- e) the level of inflation;
- f) the profit share
- g) the level of investment.

This paper will lead with (a) and (b) above, but I would be happy to develop the other themes at question time if time permits.

2. Employment and Unemployment

Much research has been undertaken on the employment (or more precisely the unemployment) effects of instituting and adjusting minimum wages. From a reasonable consensus that minimum wage increases result in unemployment for low paid workers (a 1978 survey suggested that 90% of economists surveyed in the USA held such a view¹), today the matter is one of contention with some divergence of opinion. One economist has noted:

As the old saying goes, economists may not be able to agree on the time of day. But for many years, almost all economists have agreed on one issue: raising the minimum wage leads to greater unemployment among workers with low skills. Both basic theory and many empirical studies support that conclusion. Text books preach it, and even liberal economists who chafe at the notion teach it to their students. Or so it was until recently. ... [T]he decades-long agreement on the employment effects of the minimum wage now has been challenged by several scholarly papers.²

Indeed, for some, the pendulum seems to have swung in the opposite direction. In an exaggerated manner, some of these discount any connection between minimum wage increases and employment effects:

Opponents of a raise in the minimum wage often make dire predictions about supposed adverse impacts on employment rates and the economy. But study after study shows that there is simply no evidence that raising the minimum wage has led to higher unemployment, and there is

¹ See, Gorman, L. 'Minimum Wages' [The Concise Encyclopaedia of Economics](http://www.econlib.org/library/ENC/Minimum%20Wages.html), found at [www.econlib.org/library/ENC/Minimum Wages.html](http://www.econlib.org/library/ENC/Minimum%20Wages.html).

² Benjamin Zycher, 'Minimal Evidence' *Reason*, June 1995.

substantial evidence that a responsible minimum wage increase does not affect employment rates at all.³

What is clear from the literature is that there is not unanimous agreement concerning the employment effects of minimum wage increases. In the USA, where the largest number of studies has been undertaken, different conclusions have been reached. Many studies continue to demonstrate an inverse relationship between minimum wage adjustments and employment; others have not been able to determine such a relationship; and, surprisingly, others have shown an increase in employment resulting from an increase in the minimum wage. The literature further provides evidence that prevailing views have changed over time. If there continues to be any consensus, it is that minimum wage increases have a small negative effect on employment.⁴

The above suggests that, notwithstanding the strong assertions of some economists, and the seemingly precise nature of their statistical methodology, there is little pure science in understanding this important relationship. Much of the outcome of economic analysis is determined by the assumptions chosen, and many of the outcomes of statistical analysis are determined by the methodology and data employed. In short, the analysis is not necessarily free from bias. There is much debate about the appropriate methodology and data to be employed.⁵ Even the same methodologies, over different periods of time, have given differing outcomes. This, of course, points to the fact that the employment effects of minimum wage changes are affected by the economic context in which those changes take place.

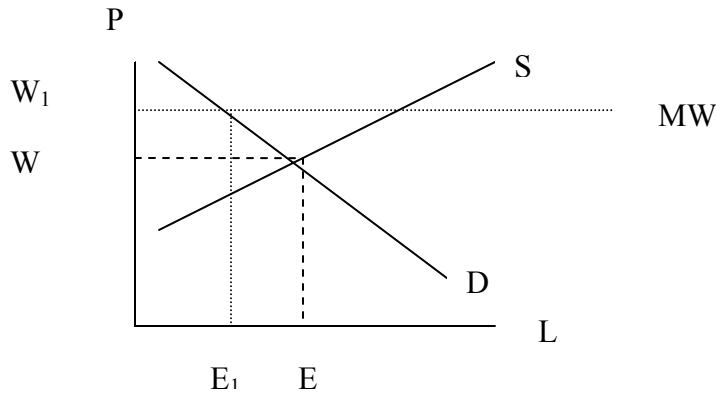
In its simplest form, the economic analysis of a minimum wage increase can be depicted in Figure 1. This shows the demand for labour (D), the supply for labour (S), the equilibrium price or wage (W) and the number employed (E). If minimum wage MW is introduced, then a new wage (W_1) will come into being. However, at this price, fewer workers will be employed since the demand curve now intersects the new supply curve (MW) at E_1 . The effect of increasing the minimum wage from W to W_1 is to induce an employment effect of $E - E_1$.

Figure 1. Unemployment Effects of Minimum Wage above Equilibrium Wage Rate

³ Democratic Staff of the Committee on Health, Education, Labor and Pensions Committee, United States Senate, July 1, 2004, www.policyalmanac.org/economic/archive/minimum_wage02.shtml

⁴ Stephen Bazen and John P. Martin, 'The Impact of the Minimum Wage on Earnings and Employment in France', OECD Economic Studies, No 16, Spring 1991.

⁵ See, for example, Burkhauser, R.V., Couch, K. A., and Wittenburg, D. C. 'A Reassessment of the New Economics of the Minimum Wage Literature with Monthly Data from the Current Population Survey', *Journal of Labor Economics*, Vol. 18, No 4, 2000.



In this situation unemployment is created because the minimum wage has been set at a level above the market clearing rate for labour (the equilibrium price). Labour is out-priced, thereby leading to classical unemployment, a situation in which the number of job seekers exceeds vacancies. In this situation the difficulty arises, not from a lack of aggregate demand, but rather from labour outpricing itself, that is, real wages are too high relative to what the market can bear. It is claimed that the minimum wage can result in this type of unemployment:

In simple terms, institutions such as the minimum wage, keep wages so high that employers do not want to hire all the available workers because the cost would exceed the technologically determined benefit of hiring them (the marginal product of labor).⁶

The situation described above is not the only possible outcome of a rise in the minimum wage. The employment outcome is conditioned by a range of considerations that may differ from the assumptions embedded in Figure 1. If these assumptions are changed, the results will also change. One assumption is that the minimum wage increase must lead to a price that is higher than any equilibrium price. This is not necessarily the case. Clearly, for most workers the minimum wage is lower than their market clearing rate. Further, many unskilled workers may be in receipt of wages that are higher than prescribed wages if demand for their services are high. In this case, adjustments to be minimum wage do not necessarily raise that wage above any market equilibrium.

A second assumption is that of perfect competition which means that companies cannot raise their prices in order to compensate for the increased costs. In this view, companies are price takers. This is clearly stated in the Gorman passage quoted above. In fact, many labour economists see that by ‘taking wages out of competition’, a minimum wage means that all competitors are faced with the same labour costs.⁷ In such a situation, each employer can raise prices in the knowledge that the other employers will do the same. In a cost-plus approach to pricing (rather than the competitive approach assumed in Figure 1), employers can compensate as a group for a minimum wage increase, thus reducing any unemployment effects.

⁶ ‘Unemployment for Investopedia; www.answers.com

⁷ See, for example, H. Clegg’s analysis of industry and nation-wide bargaining in Britain in The System of Industrial Relations in Great Britain, Blackwell, Oxford, 1970.

A further factor is that capital and labour are not substitutable in the short term. Thus, if the owner of a laundry wants to operate five ironing presses, that owner needs to employ five persons to operate those presses, irrespective of an increase in the minimum wage. The owner may make adjustments in the longer term (for example purchasing larger volume presses) but in the short term he/she has little option but to continue to employ five operators. The notion of lagged adjustments is but one of many problems surrounding an interpretation of the effects of minimum wage adjustments on employment. These lagged effects can be negative, such as when capital replaces labour following a wage increase. They can also be positive. As low paid workers have a high propensity to consume, most increased income will translate into increased spending, increased demand and possibly increased employment.

Another compounding problem is that reduction in hours worked may not be picked up in unemployment data. If the minimum wage is, say, \$4.50 per hour, a minimum wage worker would receive a gross wage of \$180 per 40 hour week. If the minimum wage was increased to \$6.00 per hour, the employee would be no worse off by working only 30 hours per week, and the employer could reduce costs by reducing the hours of work. It is difficult to pick up this reduction in working hours from much unemployment data. It is also difficult (at least in our system where wages tend to be paid by the week rather than by the hour) to pick up any general reduction in working hours as a result of minimum wage increases. There is evidence in the USA of the substitution of full-time workers for part-time workers in response to minimum wage increases.⁸

Yet another consideration is that of labour productivity. If labour productivity outstrips labour costs, a (minimum) wage increase may not lead to increased unemployment. The evidence in the USA is that productivity has outstripped real wage costs over the last 40 years. An assumption (as illustrated by Gorman) is that the minimum wage has adverse effects on labour productivity and that on-the-job training is reduced when minimum wages increase.⁹ There is, however, evidence to the contrary, namely that increasing the price of labour causes employers to make labour more productive.¹⁰ Thus, reporting of recent increases in the United Kingdom's national minimum wage, one commentator has reported:

The steady increases in the UK's minimum wage (NMW) have reportedly affected many lower paying organizations, but have not had a negative effect on UK employment. ... The raising of the pay floor has been a catalyst for the restructuring of pay and skill-mix in a number of organizations, and has been a factor behind the trend towards multi-skilling of retail roles. Despite the NMW running ahead of both inflation and average earnings over the past three years, there has been no negative employment effect. Employment in lower paying

⁸ See, for example, Gramlich, E. 'The Impact of Minimum Wages on Other Wages, Employment and Family Incomes', Brookings Papers, 1976, No.2.

⁹ This was suggested by the 1978 survey of economists in the USA. See Gorman (footnote 1).

¹⁰ See Gramlich, E. 'The Impact of the Minimum Wage'.

sectors such as retail, restaurants, hospitality and leisure has been growing.¹¹

A compounding difficulty is the way in which unemployment data is statistically enumerated. This requires that a person not only be out of work, but also be actively seeking employment. The latter may be affected by the minimum wage. Employment is not a cost-free exercise for those concerned. There are costs associated with work such as traveling and in some cases child care. There are also social costs, particularly if the work is uncongenial or at unsociable hours – a situation that often exists in low skill jobs. Thus, the wage must be sufficiently high to attract persons into the work force (the ‘reservation wage’). If the minimum wage is set at too low a rate, it may not attract workers into the job market. Discouraged workers may cease to look for work and disappear from the unemployment statistics.¹² Conversely, a minimum wage that is sufficiently high may induce people to look for work. Paradoxically, this may increase the participation rate, and, in the absence or increased jobs, also the unemployment rate. Thus, even if an increase in minimum wages does not of itself induce disemployment effects, there could still be an increase in the unemployment rate. At face value, in the USA there is a relationship between the increases in the minimum wage that took place in the 1980s and 1990s and the increased participation rate. The decline in the value of the minimum wage since 1997 may also be reflected in the declining participation rates.¹³

Yet a further consideration in assessing the impact of minimum wages on unemployment is that classical unemployment is not the only type of employment to be found. Economists note several types of unemployment that may exist, including structural, cyclical, frictional and seasonal unemployment. Economists further contend that even in a fully employed economy there exists a ‘natural’ rate of unemployment.

Structural unemployment is unemployment resulting from changes in the basic composition of the economy. It points to a mismatch between the skill sets of workers looking for jobs and the vacancies that are available. This form unemployment may also result from lack of labour mobility. Cyclical unemployment exists due to changes in aggregate demand varying with the business cycle. Frictional unemployment involves people who may be temporarily between jobs as they search for work. Seasonal unemployment is associated with certain industries or jobs that do not typically provide for constant employment (for example construction, fruit picking or fast food outlets in summer holiday resorts). This type of employment can be adjusted for in statistical analysis by using seasonally adjusted data. In statistical analysis it is usual to assume that there is no change in these types of employment and that the only impact is on classical unemployment

¹¹ ‘Minimum wage not increasing unemployment’, *Yorkshire Forward*, 2006.

¹² Some societies have resolved this problem, not through wage adjustments, but rather through increasing the supply of labour by way of international ‘guest’ workers.

¹³ See, for example, Kitov, I., ‘Inflation, Unemployment and Labor Changes in the USA’, www.geninui.econ.umd.edu/cgi-binir/conference.

The natural rate of unemployment is the lowest rate of unemployment that the economy can sustain in the long run without leading to inflation or other undesirable economic outcomes. There is something disingenuous if those arguing for the need or existence of a 'natural' rate of unemployment also point to any level of unemployment as evidence of labour outpricing itself and the need for wage reductions.

The above is not to argue that minimum wage increases, as with wage increases in general, may not have unemployment effects. It is to suggest that the relationship is a complex one and to reiterate that the outcomes of economic analysis are mixed. Certainly if one takes as the basis of analysis aggregate data, the effects of minimum wage increases are minimal. This of course, is not the most relevant form of analysis, and may be of little comfort for those directly affected. The lack of common agreement amongst economists in recent years is highlighted by Kennan in an article entitled 'The elusive effects of minimum wages'.¹⁴ He breaks writings on the minimum wages into two main epochs: one prior to the 1970s 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'. Looking at the same studies, another scholar concluded that 'almost anything could happen to employment following a moderate increase in the minimum wage. In other words, the data are not decisive, and strong prior beliefs are needed in order to reach a conclusion.'¹⁵

Kennan's second stage concerns time series studies, an approach that continues to this time. A widely quoted and generally accepted study that reviewed the literature to 1982 suggested that a ten per cent increase in the minimum wage resulted a reduction in teenage employment of one to three per cent.¹⁶ This figure remains a commonly accepted one¹⁷ and has become regarded as the 'conventional wisdom'.¹⁸ Kennan, however, takes issue with this conclusion 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?¹⁹

¹⁴ Kennan, J. 'The Elusive Effects of Minimum Wages', *Journal of Economic Literature*, Vol. XXXIII, December, 1995, p1954.

¹⁵ Lester, R. 'Employment Effects of Minimum Wages: Comment', *Industrial Labour and Relations Review*, Vol. 13, No. 2, 1960

¹⁶ Brown, C., Curtis G, and Kohen A., 'The Effect of the Minimum Wage Law on Employment and Unemployment', *Journal of Economic Literature*, Vol 20, No. 2, 1982, p. 508.

¹⁷ See, for example, Gorman L. 'Minimum Wages'.

¹⁸ Card, D., and Krueger, A., Myth and Measurement: The New Economics of the Minimum Wage, Princeton University Press, 1995.

¹⁹ Kennan, J. 'The Elusive Effects of the Minimum Wage', p. 1955.

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 if the above conclusion is not perplexing enough, other research in the USA has suggested that minimum wage increases can result in an increase in employment. This, of course, is contrary to the received wisdom. Card and Kruger’s study of the fast food industry suggested such a situation.²⁰ This study is discussed more fully below.

3. The USA Experience

The United States minimum wages system is complicated by the interplay of federal, state and district established minimum rates. In simple terms, that do not do justice to the degree of complexity involved, it may be stated that where there is more than one prescribed minimum wage, the highest minimum wage, if relevant, applies. A further simplification for present purposes is to remove consideration of district and city minimum wages.

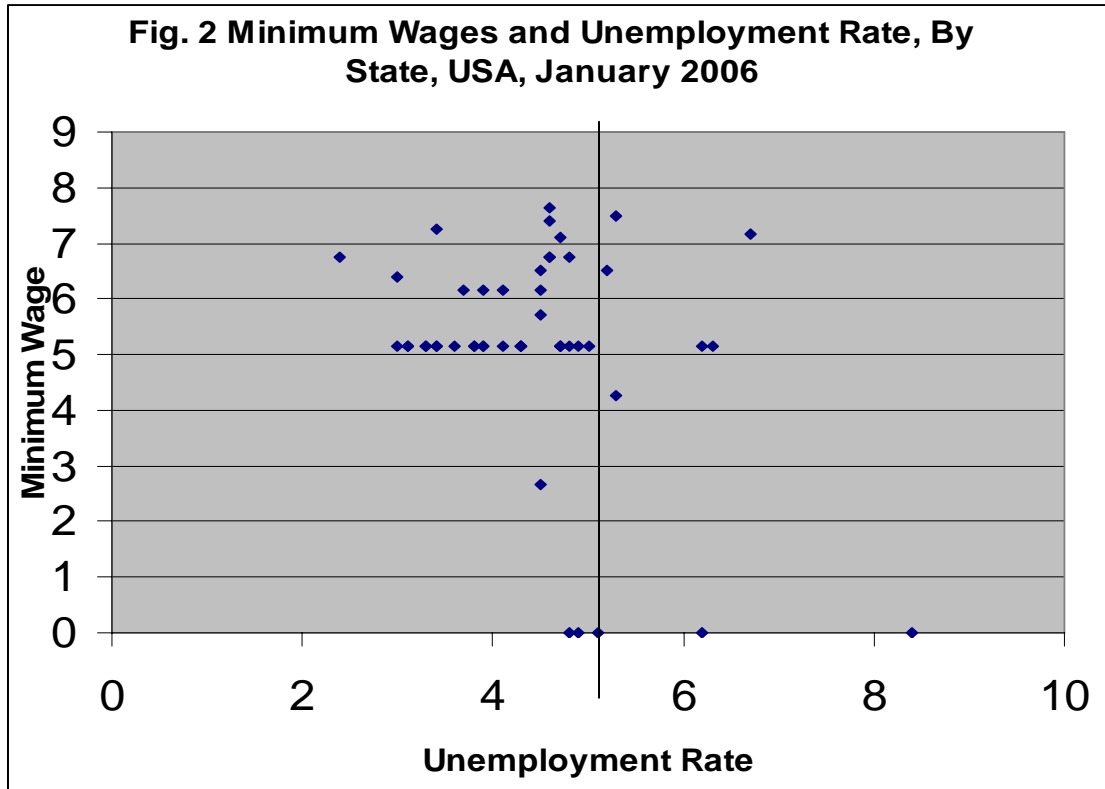
The federal minimum wage increased to \$5.15 an hour in September 1997 and has not been changed since. A number of States, now totaling 17, have legislated for higher minimum wages. By contrast there are two States that have a lower than federal minimum wage, and a further five that have no prescribed minimum wage. In cases where there is no State minimum wage or a lower State minimum wage, the federal minimum wage applies to ‘relevant’ employees. These are those employed in trade and commerce, estimated at 85% of the workforce.

If higher minimum wages automatically translated into higher unemployment, one would have expected a linear relationship between the minimum wage rates and unemployment rates in the states. Figure 2 suggests this is not the case. Indeed, it suggests that only four of the 15 States with unemployment rates higher than the national average of 4.7% (depicted by the vertical line) had minimum rates in excess of \$5.15. It also suggests that most of the states with higher minimum wages have below national average unemployment. Two of the three States with the lowest unemployment levels prescribed higher minimum wages. By contrast, all five States with no prescribed minimum wage had higher than national average unemployment, including the State with the highest level of unemployment of 8.4%. Further, one of the two States prescribing a lower minimum wage also experienced higher than national average unemployment. Figure 2

²⁰ Card, D. and Krueger, A. Myth and Measurement. See also Card, D., ‘Do Minimum Wages Reduce Employment? A Case Study of California 1987-1989’, *Industrial and Labor Relations Review*, Vol 46, No. 1, 1992. It should be noted that though much attention has been given the positive and minor correlation found between increases in the minimum wage and employment, this is not a generalised finding. The authors acknowledge that minimum wage increases sometimes seem to reduce employment, and that often there is no seeming discernable effect.

further shows that the federal minimum wage is associated with a range of unemployment outcomes.

As noted, a problem with the above analysis is that establishing a relationship between minimum wage adjustments and aggregate employment may not be appropriate if the labour market is fragmented (that is, if the wage increases effect only those on the minimum wage). The analysis does have some merit if one assumes that, following a minimum wage increase, other workers seek wage adjustments to preserve their established relativities. In this case, a minimum wage increase has much wider application.²¹



[Note: Those States prescribing lower than federal minimum rates have been depicted as having a lower minimum wage. In practice, and unless exempt, minimum wage workers would receive the federal rate. This does not do any violence to the argument advanced].

A more sophisticated analysis of different minimum wage regimes has been undertaken by Card and Krueger who, in 1995, published a study comparing the fast food industry in New Jersey and Pennsylvania. They chose this industry because it was ‘the leading employer of low wage earners and an industry that enforces the minimum wage’. They found that following a minimum wage increase in New Jersey, ‘employment actually

²¹ A number of studies have demonstrated that a minimum wage increase may result in wage increases for others whose wages are close to the minimum wage. See, for example, Obenauer, M. and Von Der Nienburg, B., ‘Effect of minimum-wage determinations in Oregon’, *Bulletin of the United States Bureau of Labor Statistics*, Number 176, Washington, DC.

expanded relative to Pennsylvania, where the minimum wage was constant'.²² These authors subsequently expanded their study to other areas and found further support for their earlier findings. Table 1 summarises the results of their work. This shows minimum wage increases for seven low-wage groups in different industries and States. In each case the minimum wage increase was accompanied by increased employment.

According to one source, though there has been some criticism of the above studies, 'there has been no peer-review research that contradicts the findings or supports the claim that an increase in the minimum wage increases unemployment.' The same source demonstrated that those states with a minimum wage above the federal minimum wage in 1998 recorded an average lower unemployment rate (amongst minimum wage earners) than those states with a minimum wage at the federal level.²³

Analysis	Source of wage change	Wages	Employment
New Jersey – Pennsylvania Fast Food	NJ MW increases to \$5.05	+ .11	+ .04
Texas fast food	Federal MW increases to \$4.25	+ .08	+ .20
California teenagers	Cal. MW increases to \$4.25	+ .10	+ .12
Cross-States teenagers 1989-1992	Federal MW (\$3.35 to \$4.25)	+ .07	.00
Cross-States low wage workers 1989-1992	Federal MW (\$3.35 to \$4.25)	+ .07	+ .02
Cross-States retail employees 1989-1992	Federal MW (\$3.35 to \$4.25)	+ .05	+ .02
Cross-States restaurant employees 1989-1992	Federal MW (\$3.35 to \$4.25)	+ .07	+ .03

Source: Card and Krueger (1995), p. 389

One major criticism of the work of Card and Krueger is how to explain their results, something that the authors themselves do not do particularly convincingly. They explain the results in terms of monopsony, that is the employer being the only buyer of labour. In order to attract one more employee the employer must raise the wages of all those employed. This explanation has some overtones of the 'reservation wage' explanation of why an increase in the wage may increase employment. Further, it does show some understanding of a non-competitive market. As noted, the explanation has not convinced fellow economists.

Another explanation centres on the 'hungry teenage theory'.²⁴ This suggests that teenagers account for a large proportion of the demand for fast food. An increase in the minimum wage enables them to spend more on fast food, thereby creating greater

²² Card, D. and Krueger, A. Myth and Measurement, p. 66.

²³ Cascio et al, (2001) 'The Effects of Increases in the Minimum Wage', The University of Vermont, www.uvm.edu.

²⁴ Kennan, J. 'The Elusive Effects'.

demand. As Kennan has noted, if this explanation is correct, it is difficult to explain the fast food industry's opposition to minimum wage increases.

If one moves away from the assumption that retailers in the fast food industry are price takers, the results are plausible. Unlike Gorman's depiction of the restaurant industry as one where owners are particularly price sensitive, the industry, which in the USA includes fast food chain 'restaurants', has monopsonistic elements if fast food chains act in concert regarding wage rates. These chains include those that we are familiar with in Australia - McDonalds, Wendy's, Pizza Hut, Denny's, Kentucky Fried Chicken – as well as many others. These institutions are not necessarily the price takers assumed by Gorman. Further, over many years they have devised production systems that maximize productivity. They have developed economies of scale that allow for the cheap sourcing of products, and so have reduced their capacity to substitute buy-in ingredients (such as ready-peeled French fries) for in-house produced ingredients. They have fixed and standard techno-socio and management systems. The former means that, in the short to medium terms at least, there is a relatively fixed capital-labour ratio. Products are standard, as are methods of delivery and service. Most 'restaurants' operate on a franchise basis in which the franchisor has considerable capacity to determine a range of inputs, products and outcomes.

In this context consider a fast food outlet along one of the many American highways. The outlet may be in a university town with most employees attending college. If the wages paid do not meet some attraction or reserve rate, students will not be enticed to offer their services. Economic theory would suggest that this could be easily remedied by simply offering a higher wage. However, under the franchise arrangement the 'owner' of the restaurant may not have the capacity to raise wages. The franchisor is aware that raising the rate in one outlet may lead to similar increases elsewhere. The added costs could reduce the returns to the franchisor. Further, within the fast food chain-store industry there may be an implicit arrangement not to invoke wage hikes that, in the end, all outlets must pay to attract labour. In this context, a mandated wage increase means that the local outlets can (must) increase their wages without concern for any flow-on effects since all competitor fast food outlets must pay the increased rate. The wage increase would enable those seeking more employees to recruit and could increase the participation rate by inducing more to seek employment in the industry.

All of the above suggests that the effects of minimum wage increases on employment outcomes are not as clear cut as some might suggest. The use of sophisticated data analysis is not, of itself, a remedy, particularly if those employing the techniques have little understanding of the labour markets they are addressing. For example, the draft of a recent analysis of the effects of minimum wage changes in the Western Australian system suggests that the greatest unemployment effects were in the defence industry, one whose conditions are not determined by the WA system at all. The area in which there is likely to be the most agreement is that, other things being equal, the state of the economy is an important moderator of outcomes. A minimum wage increase during a period of recession is likely to have a greater effect on unemployment than a minimum wage increase during a period of economic buoyancy.

4. The WA Experience

In examining the WA experience a number of comments are in order.

- a) For much of the period since 1975, a *de facto* national minimum wage system has applied as State tribunals made determinations that were in line with the federal tribunal's determinations. Though never explicitly stated, the minimum wage was adjusted in line with general wage/earnings movements.²⁵ An exception in WA was the operation of the *Minimum Conditions of Employment Act* which prescribed a statutory minimum wage that differed from the award minimum wage for the period August 1994 to August 2002.
- b) As a result of (a), the minimum wage in Western Australia, as a proportion of average weekly earnings, is high by international standards. In Australia the minimum wage is 58% of full-time median weekly earnings. The comparable figures are 45% in the UK and 34% in the USA.²⁶ In the last country the proportion has dropped from 50% in the 1970s.
- c) The minimum wage has been adjusted on a regular basis in Western Australia over the last decade. Indeed, since 1997 annual adjustments have become the norm (see Figure 3).
- d) The combination of the factors listed above have collectively resulted in high estimated labour elasticities in Australia. For aggregate labour the elasticities range from -0.4 to -0.9. For minimum wage earners they range from -0.2 to -1.14 depending on time lags and type of employment.
- e) The methods of estimation of these elasticities are similar to those utilised in the USA and subject to the same subjective, interpretative and diagnostic difficulties. Further, the capacity to undertake statistical analysis in Australia is more limited as there is not the same richness of data. In the USA, it is possible to obtain a range of data on those who are employed at hourly rates at, or below, the federal minimum. These include such matters as industry of employment, marital status, age, gender, educational attainment, usual hours worked per week, region/state, ethnicity, major occupation, and full-time or part-time status. This information is not so readily available in Australia.
- f) There is no precise figure concerning the number of workers in the State who are paid exactly the minimum wage. However, because of Australia's (and therefore WA's) higher proportionate minimum wage (see (b) above), it is expected that the proportion of minimum wage employees would be higher than in the USA (where, as noted, it is 0.7% of the workforce). It is estimated that about 2.2% of

²⁵ D. Plowman, 'Public Policy and the Minimum Wage: An Australian Perspective', in J. Browne (ed) *The Role of the State in Industrial Relations*, Oak Tree Press, Dublin, 1997.

²⁶ A. Leigh, 'Does Raising the Minimum Wage Help the Poor?', Discussion Paper No 501, ANU Centre for Economic Policy Research, 2005.

the workforce is directly affected by a minimum wage increase and a further 1.8% indirectly affected.

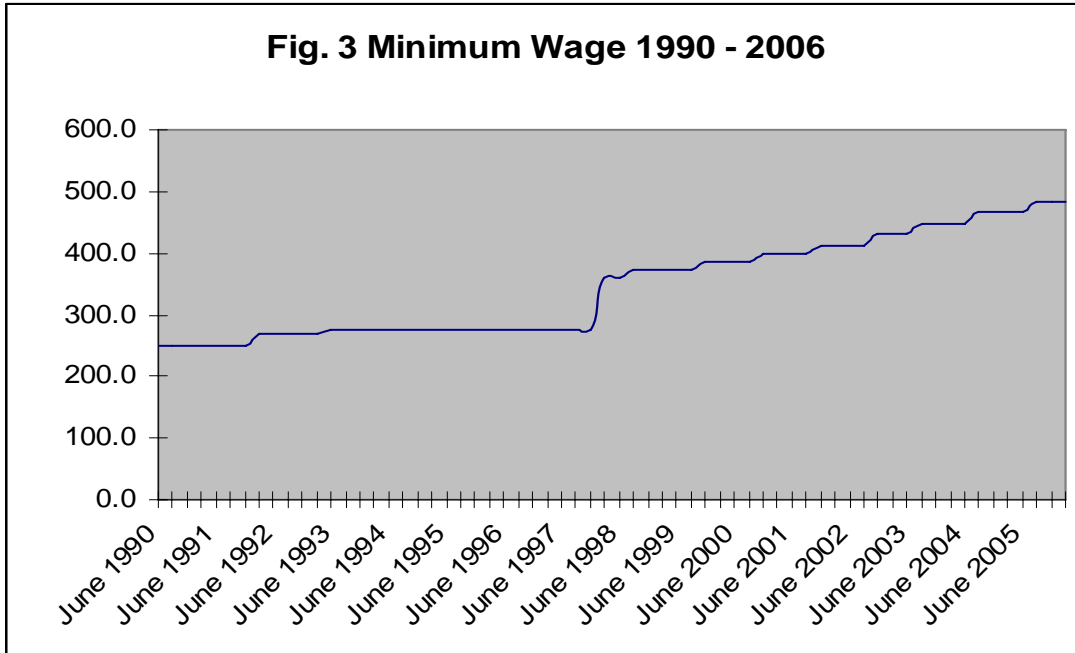
- g) If one accepts that (i) 2.2% of the WA work force is directly affected by a minimum wage increase, (ii) that 35% of these work on a part-time basis²⁷, and (iii) that a further 1.8% of the workforce receive ‘repercussive’ increases as the result of a minimum wage increase (see (f) above),²⁸ then it can be shown that a 4% increase in the minimum wage in 2005 would have added approximately \$518,450 to the total wages bill in a year when that bill amounted to nearly \$41m.²⁹ The minimum wage increase would add about 1.3% to the total wages bill and would add a smaller percentage contribution to total costs.
- h) As in the USA, a large number of low income earners is not in full-time employees and that many are students. ABS data suggest that the work force participation rate for full-time students aged 15 and over is 56%.
- i) ABS data further suggest that those paid at the minimum wage rate are predominantly to be found in the ‘award only’ arena for determining conditions of employment. The prime industries of concern for present purposes are retail; accommodation, cafes, restaurants; and personal and other services. It should be noted, however, that average employee earnings in each of these industries in well in excess of the minimum wage (see below).
- j) Both federal and state award coverage is to be found in all industries, including those with relatively high levels of minimum wage earners. In industry analysis it is not possible to separate out those whose employment conditions, including wages, are determined by each jurisdiction. However, since there has been a symbiotic relationship between minimum rates in the different jurisdictions (see (a) above) it is possible to use WA industry employment data for minimum wage analysis.

Figure 3 plots the State Minimum Wage for the period 1990 to 2006. It will be seen that following an increase in Quarter 3 of 1992, the minimum wage remained almost unchanged until towards the end of 1997 when it was increased by 30.5%. Thereafter, there have been annual increases. Over the period depicted, the minimum wage has nearly doubled, increasing by 95%. At the beginning of 2006 it stood at \$484.40 per week.

²⁷ In December 2005 30.1 per cent of the WA work force was employed on a part-time basis. Those sectors catering for the low paid had a higher proportion of part-time employment. These sectors (as described in (i)) account for about 22% of total employment. The part-time employment is assumed to average at 75% of full-time employment.

²⁸ For present purposes the increase for these is assumed to be 50% of the minimum wage increase.

²⁹ The wage increases from a 4% (\$19.38) minimum wage increase is given by the formula [(TWF x 2.2% x 65%) + (TWF x 2.2% x 35% x 50%) + (TWF x 1.8% x 40%)] \$19.38



Estimating the relationship between minimum wage changes and employment is complicated by the lack of data concerning those in receipt of the minimum wage. At best estimates have to be made. These use different assumptions (such as in (f) and (g) above). This analysis attempts to gauge the employment effects of minimum wage changes using two approaches.

The first examines the effects of minimum wage increases on young workers. The literature suggests that it is young, unskilled workers who are most adversely affected by minimum wage changes.

The second approach examines employment trends in the three sectors considered to be most affected by minimum wage adjustments, namely retail; accommodation, cafes and restaurants; and personal and other services.

ABS data were obtained on the employment and participation rates for two age groups, those aged 15 to 19, and those aged 20 to 24. This data was regressed with the minimum wage (MW) and the State Final Demand (SFD), the latter being a good surrogate for aggregate demand. Participation rates, for both groups, showed weak correlation with MW and SFD, with the latter being statistically significant for the 15 to 19 age group but not the 20 – 24 age group.³⁰

In the case of unemployment for the 15 – 19 age group, about 46% of the variation in employment was explained, however only SFD

³⁰ For 15-19: Adj r^2 = 0.064; SFD t-Stat = 2.256, pv = 0.028; Adj r^2 = 0.129; SFD t-Stat = -0.161, pv = 0.873; MW t-Stat =

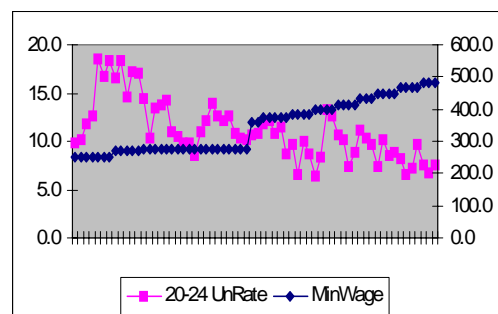


Fig. 4 Unemployment & MW, 20-24 Group

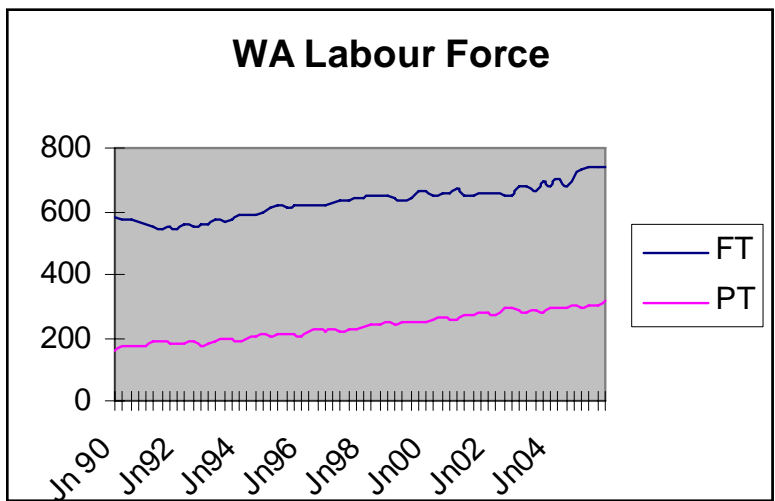
was statistically significant. About the same proportion of the variation in employment in the 20-24 age group was explained, again with SFD, but not MW, being statistically significant.³¹ Taking this simple regression at face value would suggest that the best indication of ‘youth’ unemployment is the level of aggregate demand.

The accompanying Figure 4 shows the relation between unemployment rates and the minimum wage for the 20 – 24 age group. The graph covers the 1990 to 2005. It will be seen that for the first half of that period a static minimum wage was associated with high levels of unemployment peaking at nearly 20%. In the second half unemployment and the minimum wage have trended in opposite directions.

Analysis was undertaken with employment data in the three industries/sectors of most relevance for this discussion – retail; accommodation, cafes and restaurants (ACR); and personal and other services (POS). As noted, these tend to be the sectors in which ‘award only’ employees predominate, sectors which have been identified as having relatively large number of minimum wage employees, and sectors in which a relatively high proportion of employees come under WAIRC jurisdiction. The analysis is necessarily sub-optimal for a number of reasons, one being that the majority of employees in each sector do earn more than the minimum wage. In 2004, when the minimum wage in WA was \$467.40 per week, average weekly earnings for each of the sectors were: retail \$693.10; ACR \$684.70 and POS \$970.20.³²

In the period 1990 to 2006, total employment grew from 114, 400 to 152,900 in the retail sector. This represents an increase 34%. ACR total employment grew more modestly, and from a lower base – 34,400 to 42,500 (24%), In the POS sector, total employment increased from 27,600 to 41,600, an increase of 51%. Growth in each sector has not been even. Employment in each sector peaked in 2002 before declining and then increasing to present levels.

The total growth disguises differences in full-time and part-time growth rates, as well as of

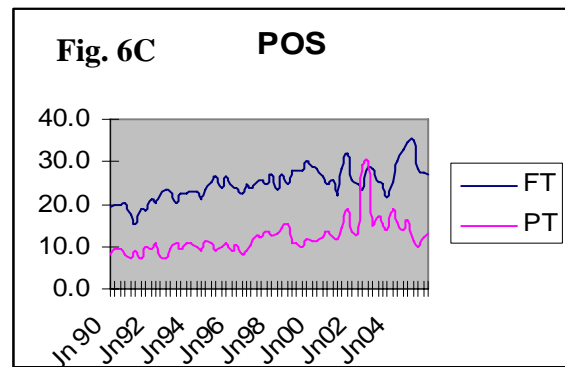
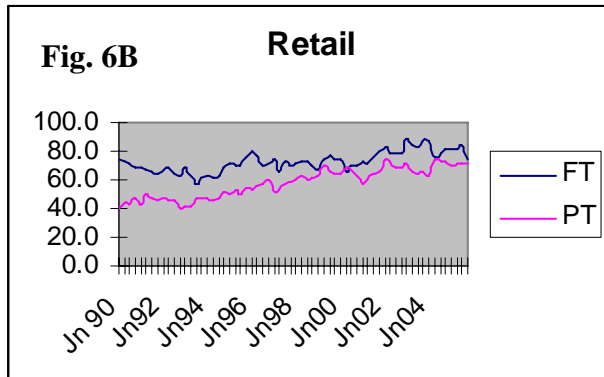


³¹ Ac

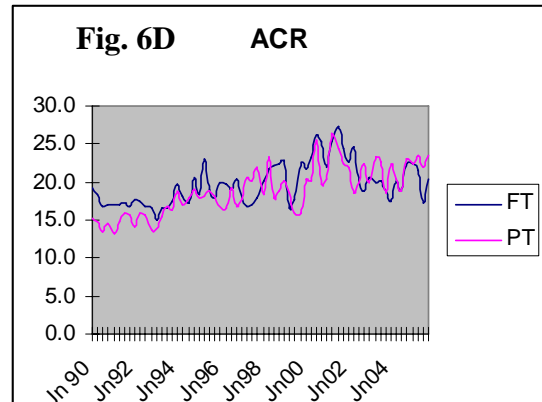
³²:

Fig 6A

Figure 6A suggests that between 1990 and 2006 there was a 26% growth in aggregate full-time employment. In the sectors reviewed there were variations in this growth. In retail the number of full-time employees remained relatively constant within a narrow 10% band. Full-time employment growth in ACR was 14% while in POS it was 40%.



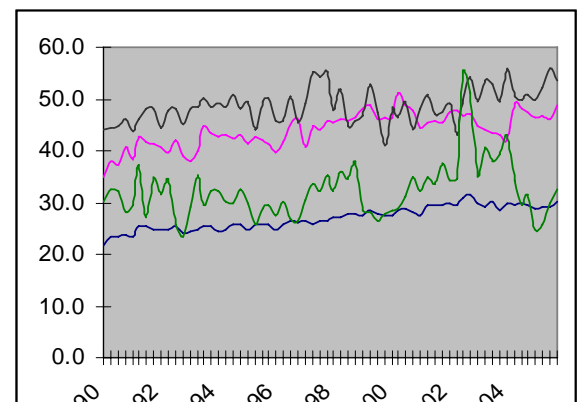
There have also been more marked variations in the growth of part-time employment. For the workforce as a whole, part-time employment nearly doubled and increased by 97%. In Retail, part-time employment grew by nearly 80% while in the ACR sector it grew by 40%. The POS sector increased its part-time employment by 50%.



Of interest is the proportion of part-time employment in each sector, as such employment could provide a buffer against minimum wage increases in two ways. Firstly, there could be substitution effects as employers substitute part-time employment for full-time employment. Secondly, part-time employees may be easier to dismiss and so could bear the brunt of minimum wage effects.

The proportion of part time employment in the workforce as a whole has increased over the period from about 22% to 30%. The increase has been gradual and within a narrow base. By contrast, in retail the proportion of part-time employment has shown significant variations over

Fig. 6E % part-time employment



the period. In 1990, the proportion of part-time employment was 38% and by 2006 had grown to 49%. That proportion has fluctuated, in some quarters by as much as five percentage points.

About half of the employees in the ACR sector are employed on a part-time basis. This proportion has fluctuated between 44% and 55%. The POS sector shows the greatest volatility on each employment measure, and also exhibits a seemingly less instrumental use of part-time workers.

In the POS sector full-time employment has ranged between 16,000 and 35,000. There has been an even greater range in the number of part-time employees over the period – between 7,000 and 30,000. The proportion of part-time employment in this sector has varied between 25% and 59% of total employment. With the notable exception of the Quarters of 2002, much of the fluctuation has been the result of increased full-time employment with a relatively constant level of part-time employment. In the last two years of the period reviewed, full-time employment growth has been accompanied by a reduction in part-time employment and therefore the proportion in part-time employment. It would appear that in this sector part-time employment is not used as a flexibility buffer as in the retail and ACR sectors.

Statistical analysis relating to the minimum wage and employment effects in the WA economy and in the sectors of special interest can take a number of forms. Here we have undertaken simple multi-regression to establish the broad contours of any important relationships. In this analysis the two independent variables are State Final Demand (SFD) and the Minimum Wage (MW). The level of employment is the dependent variable. The employment examined consists of full-time employment, part-time employment, total employment and the proportion of part-time employment. The results are provided in Tables 3a and 3b.

Table 3a. Industry Employment Data Summary, Total Workforce & POS									
<i>WA Workforce</i>					<i>Personnel & Other Services</i>				
	FT	PT	Total	%PT		FT	PT	Total	%PT
Adjusted r ²	0.94	0.95	0.97	0.83	Adjusted r ²	0.56	0.33	0.62	0.10
SFD					SFD				
t- Stat	12.29	6.76	13.15	1.09	t- Stat	3.16	-0.09	2.15	-1.15

P-value	**	**	**	ns	P-value	**	ns	ns	ns
MW					MW				
t- Stat	-0.78	6.29	3.01	5.40	t- Stat	0.93	-0.74	1.39	2.07
P-value	ns	**	**	**	P-value	ns	*	ns	**
* statistically significant at 0.05 level; ** statistically significant at 0.01 level.									

The analysis would suggest varying degrees of correlation according to sector and type of employment. Table 3a provides details of the analysis concerning the total WA workforce and the POS sector. In relation to the first, the analysis suggests that employment correlates highly with SFD and MW. SFD is shown to have a significant statistical relationship with all types of employment, but not with the proportion of employees in part-time employment. MW, on the other hand, is not significantly related to full-time employment, but is significantly related with part-time and total employment, as well as with the proportion of employees working part-time. This analysis would suggest that if there are employment effects arising from minimum wage increases, those effects relate to part-time employment.

As was noted above, there seems to be, at best, an idiosyncratic relationship between full-time and part-time employment in the POS sector. The statistical analysis suggests a moderate relationship between full-time and total employment with SFD and MW; a weak relationship with part-time employment; and an even weaker relationship with the proportion of employees in part-time employment. Any full-time employment effects are explained by SFD, but part-time employment and the proportion of part-time employees are explained by MW in this model. Curiously, neither SFD nor MW has a statistically significant relationship with total employment in the sector, providing further evidence of the idiosyncratic employment patterns of this sector.

Table 3b. Employment Analysis Summary – Retail and ACR									
<i>Retail</i>					<i>Accommodation, Cafes & Restaurants</i>				
	FT	PT	Total	%PT		FT	PT	Total	%PT
Adjusted r ²	0.54	0.84	0.83	0.49	Adjusted r ²	0.28	0.57	0.48	0.33
SFD					SFD				
β Coef	0.00	0.00	0.00	0.00	β Coef	0.00	0.01	0.00	-0.01
t- Stat	2.56	3.55	2.425	1.21	t- Stat	-1.40	3.01	0.77	4.59
P-value	*	**	**	ns	P-value	*	**	ns	**
MW					MW				
β Coef	0.05	0.21	0.26	0.06	β Coef	0.01	0.01	0.000	-0.31
t- Stat	0.63	3.18	2.46	1.68	t- Stat	3.09	0.37	0.145	-2.98
P-value	ns	**	*	ns	P-value	**	ns	*	**
* statistically significant at 0.05 level; ** statistically significant at 0.01 level.									

Full-time employment in Retail is only moderately correlated with SFD and MW. SFD has a significant relationship with full-time, part-time and total employment, but not with the proportion of employees in part-time employment. MW does not have a significant relationship with full-time employment in the industry but does have a significant relationship with part-time employment. The analysis supports the contention of an

industry with a core level of full-time employment and one in which fluctuations, either because of demand or cost increases, are borne, initially at least, by part-time employees.

The ACR sector suggests that all forms of employment are weakly correlated with SFD and MW, with the weakest correlation being with full-time employment. The analysis suggests that 28% in the full-time employment variance is correlated with SFD and MW, again suggesting a core of full-time employees whose employment levels have only a small relationship to aggregate demand and minimum wage costs. However, the analysis further suggests the 28% of full-time employment variance is strongly related to demand and the minimum wage. Fluctuations in demand are accompanied by increased part-time employment. There is modest correlation between this form of employment and SFD and MW. There is a strong relationship with demand but not with the minimum wage.

The general impact of SFD and MW on part-time, rather than full-time, employment makes sense for the industries under review. They include a large number of small (and unincorporated) businesses, most of which must keep a core element of staffing, sometimes including supervisory staff. Legislation may play a part, since part-time employees are usually easier to lay off. Employers will usually resist losing persons in whom they have invested training and other resources, or on whom they are dependent, irrespective of economic conditions. To the extent that many of the part-time employees are students in transient employment, there is a high labour turnover that can facilitate employment changes in line with fluctuations in demand.

In summary, the analysis would suggest the following:

- For the 15-19 age group there is a moderate correlation between unemployment, SFD and MW. There is a significant relationship with SFD but not MW.
- There is also a moderate correlation between unemployment, SFD and MW for those in the 20-24 age group. Again, there is a significant relationship with SFD but not MW.
- Unfair dismissal applications under s. 29 of the Act do not support a relationship between dismissals and minimum wage changes. They do suggest an inverse relationship with SFD.
- SFD appears to be the prime determinant of total employment in the WA labour force. The minimum wage is not significantly related to full-time total employment. It appears to be significantly related to part-time employment and, as a result, the proportion of the workforce in part-time employment.
- There is a moderate correlation between POS employment and SFD and MW. SFD is significantly related to full-time employment, MW to part-time employment.
- In Retail, there is a moderate correlation between full-time employment and SFD and MW. There is a significant relationship with SFD but not MW. There is a strong correlation between part-time employment and the two independent variables. Both of these variables show a statistically significant relationship with part-time employment.

- In the ACR sector there is a very weak to modest correlation between employment types SFD and MW. In the case of full-time employment, the analysis suggests not only a weak correlation, but also that both SFD and MW have a significant relationship with this type of employment. By contrast, there is a stronger correlation between part-time employment and the two independent variables. However, though there is a significant relationship between SFD, this is not the case with MW.

Our conclusion is that the minimum wage has had little effect on employment in general, but has impacted, in small measure, on employment in vulnerable sectors. That impact has affected part-time rather than full-time employment.