The minimum wage, employment, and the AS-IF methodology: A forecasting approach to evaluating the minimum wage

Paul Wolfson¹, Dale Belman²

¹ Amos Tuck School of Business Administration, Dartmouth College, Hanover, N.H. USA 03755
² Michigan State University, School of Labor and Industrial Relations, 4th Floor, South Redzie Hall, East Lansing, MI 48824-1032 (e-mail: drdale@msu.edu)

First version received: August 1999/Final version received: July 2000

Abstract. Out-of-sample employment forecasts for 33 U.S. industries which are likely to be sensitive to the federal minimum wage are, more often than not, more accurate when information about the minimum wage is not taken into account. This is true even in instances where this information improves wage forecasts. When employment forecasts conditional on the minimum wage are better, the improvement is typically small. These results are invariant to the number of workers previously making less than the new minimum wage, and to the value of the minimum wage relative to industry average wages.

Key words: Minimum Wage; Wage; Forecast Accuracy Comparisons; Box-Jenkins Modeling; Intervention Analysis; Time Series Analysis

JEL classification: Wages, Compensation, and Labor Costs: Public Policy (wage subsidies, minimum wage legislation) (J380)

George Stigler’s (1946) elegant analysis is credited with developing the professional consensus on minimum wage legislation; whenever it leads to increased wages, employment necessarily suffers. The argument is logically correct, with conclusions following from assumptions, but its usefulness for analysis and discussions of policy is less well established. The consensus view of the empirical evidence, which Brown, Gilroy and Kohen (1982) crystalized, has been that a 10% increase in the minimum wage reduces employment of teenage workers by at least 1% and as much as 3%, while the effect on older workers is smaller, and perhaps ambiguous. This conclusion is ultimately rooted in the conventional econometric practice of examining t-statistics and calculating point elasticities. “Does an elasticity of this size strengthen arguments against raising the minimum wage?” is not a question that is heard in this debate. Answering it requires another approach. Stigler’s long association
with Chicago economics suggests one associated with two of his colleagues at Chicago, Milton Friedman and D. McCloskey.

The debate on the minimum wage has been whether the employment response is or is not zero. Both Friedman and McCloskey have forcefully argued that this question is not of much interest for policy issues. McCloskey (1985a, 1985b, 1983, 1996) notes that in empirical analyses of exchange rates, for example, purchasing power parity implies a value of one for some parameter, and that many studies find a statistically significant difference between the point estimate and one, apparently rejecting the hypothesis. Observing that this result is almost a certainty so long as the sample is sufficiently large – the only information here is that sampling error is not likely to be the cause of this difference – McCloskey argues that having found a statistically significant result, we must go further and ask whether it is economically significant.

Friedman [1953, pp. 16–17] makes a similar point in discussing the role of assumptions and the as if methodology. Consider how the standard formula for gravitational acceleration is used to analyze the motion of an object which is falling through the air to the Earth. Because the object is not falling in a vacuum, the formula is not entirely correct. Because the formula’s predictions are, nevertheless, frequently useful, it is often reasonable to ignore this: often but not always. The formula works quite well for predicting how long it will take a ball to fall from the roof of a building to the ground, but it does not work well for either a feather falling the same distance or a ball dropped from several miles above the ground.

While making the point that it is necessary to go beyond mechanical reliance solely on t-statistics in analysis of policy issues, McCloskey gives little guidance beyond saying “Use sound judgement.” Friedman emphasizes differences in forecast error between two hypotheses. Judgement is still required to determine whether a difference is large, but this approach is potentially a productive step beyond examination of t-statistics.

For the analysis presented here, we construct equations to forecast employment in several three digit SIC industries, under different assumptions about the response of employment to the minimum wage; that the Federal minimum wage has no effect on employment, and that it has some effect not specified a priori.1 To assess the impact of the minimum wage on employment in an industry, we compare the accuracy of 1-step ahead out-of-sample employment forecasts, using root mean squared errors (RMSEs) of the forecasts.

The forecasting equations are the result of a specification search that ranges over lags of employment, the real minimum wage, and the rates of inflation and unemployment. The chosen specification is the one that minimizes Schwarz’s Bayesian Information Criterion (SBIC).2 The search is repeated

---

1 Restricting either the short run or the long run employment elasticity of the minimum wage to Brown, Gilroy and Kohen’s (1982) preferred value of −0.1 generated forecasts that were little different from those based on the equation with the unrestricted elasticity.

2 The SBIC and the related Akaike Information Criterion are goodness-of-fit statistics, similar in spirit to the adjusted $R^2$ statistic. In contrast with the adjusted $R^2$, the information criteria get smaller as the fit improves, and larger as the number of parameters increases. They differ as to the relative weight to accord fit versus number of parameters, and the conventional wisdom is that the SBIC is to be preferred to the AIC (Harvey 1989, Granger and Newbold 1986).