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The Effects of Minimum Wages on Employment: The Legacy of *Myth and Measurement*

John T. Addison

Darla Moore School of Business, Durham University Business School (U.K.), and IZA Bonn

Abstract

This essay offers a critical review of the path taken by U.S. minimum wage research in the years since the publication of *Myth and Measurement* from which it is clear that Card and Krueger's challenging book has continued to inform debate and shape research strategies. A shift in the locus of research is likely in the future, however, focusing on new wage floors in Germany and Britain and U.S. cities. Although the empirical issues addressed and methodologies used in this new literature will continue to build on *Myth and Measurement* these innovations can also be expected to set their own stamp on the path of minimum wage research.

“Research suggests that a minimum wage set as high as \$12 an hour will do more good than harm for low-wage workers, but a \$15-an-hour national minimum wage would put us in uncharted waters, and risk undesirable and unintended consequences.” (Alan Krueger 2015)

“We may be in the dark ... but it’s much more like we’re on the top of a rounded hill and if you go a little bit too far down, you just walk back up again. Nothing here is irreversible” (Remark attributed to Alan Manning in O’Connor 2016)

In the Beginning

How did *Myth and Measurement: The New Economics of the Minimum Wage* (hereafter *M&M*) change our thinking about minimum wages? Its impact on empirical methodology was central, the challenge to theory less so. The breadth of empirical discussion in *M&M* – what Charles Brown (1995: 829) has referred to as the authors’ *collage strategy* – is really quite remarkable, starting with the extension of the more traditional experimental analysis from the natural sciences which is the hallmark of the authors’ treatment. The natural experiments covered fast food employment in New Jersey/Pennsylvania, Texas, and teenage and restaurant employment in California, and were supplemented by cross-state variations in the effective minimum against the backdrop of the increases in the federal minimum wage in 1990/91. In addition, the authors examined the distributional implications of minimum wages, offered a meta-analysis of time-series studies of the employment effects of minimum wages, provided events studies of the impact of minimum wages on shareholder wealth, considered margins of adjustment other than employment, and presented a modicum of international evidence.

To be sure, the theory offered in support of the findings was not used to form hypotheses. However, formal development of the dynamic monopsony model took almost another decade (Manning 2003), while its empirical exploitation in the form of estimated separation elasticities awaited a 2010 *JoLE* symposium. More direct tests were to take even longer. One may therefore cut the authors some slack on theoretical imprecision. The same holds true for those sizable positive employment effects stemming from a failure to account for clustering in the data, correction for which was only later to become commonplace.

Before documenting how *M&M* has continued to inform current debate and shape future research strategies in this area, a disclaimer needs to be entered on behalf of (one of) the authors. Specifically, a \$15 minimum wage for the United States has been characterized as excessive by Alan Krueger, who has long cautioned against setting the minimum wage outside the range studied in past research. However, not to mince words, the second quote favoring *experimentation* in minimum wage setting supports what can only be described as a “suck it and see” strategy. It highlights an important unintended legacy of *M&M*: the advocacy of ambitious minimum wage increases on the basis of out of sample prediction.

Development

In the years following *M&M*, research in the United States has gone through several phases. The first focused on state data and either followed an industry case study approach exploiting geographical variation in the setting of minimum wages or a standard state panel route in which state effects were held constant. The former pointed to an absence of job loss very much in line with what I would term a Card and Krueger (2000) augmented *M&M*, while the latter approach pointed to disemployment effects with minimum wage elasticities in the -0.1 to -0.3 range (e.g. Neumark and Wascher 2007).

The second phase again took two paths. One continued to use national panels but now incorporated geographic-specific trend variables as a means of controlling for underlying long-term growth prospects of low-wage employment (e.g. Allegretto, Dube, and Reich 2011; Addison, Blackburn, and Cotti 2012). The other extended the case study approach using larger panels; in effect allowing multiple New-Jersey-Pennsylvania experiments in a single study. Minimum wages effects were identified by comparing and pooling differences in employment and minimum wages across paired counties on either side of a state border. Both approaches were to yield results at odds with the standard state panel exercises.

The linear trends approach was initially criticized for its potential for bias stemming from the choice of sample period, and latterly on the grounds that any post-treatment deviation in employment growth caused by the treatment will attenuate an estimated static treatment effect if the specification includes a single trend for the pre- and post-treatment periods (Meer and West 2016). Yet studies reporting small negative disemployment effects proved insensitive to these criticisms (e.g. Addison, Blackburn, and Cotti 2015).

For its part, the border discontinuity design attracted criticism on the grounds that limiting comparisons to geographically proximate areas tends to generate the appearance of no disemployment effects. This criticism boils down to the design of credible control groups for minimum wage studies. A synthetic controls approach is the key here. Debate over this key concern in *M&M* – namely the issue of geographically proximate controls – is today perhaps the most highly contested (and technically sophisticated) area in minimum wage research. (The arguments for and against ‘close’ versus ‘remote’ controls, with supportive studies in tow, are rehearsed by Allegretto et al. 2015, and Neumark 2016, respectively.)

The third phase of research is wider ranging and mixes greater theoretical focus with a more practical bent. In one sense, the third phase was led by Meer and West’s (2016) employment-growth centered challenge to the state-specific trends model noted earlier. Their preoccupation with flows rather than stocks has proven influential, the key idea being that new firms unlike existing firms are able to choose labor-saving technology after a minimum wage increase. Enter the putty clay model. Prior to its entry into a sector a firm can freely choose its input mix from a putty and flexible technology but subsequent to entry the technology hardens

to clay and the input mix is fixed or baked in for the life of the plant. The model thus introduces an asymmetry between incumbent firms and potential entrants. Apart from the gap between short- and long-run employment effects that arises (Sorkin 2015), another interesting application of the putty clay model includes wage costs that are passed on completely to consumers – in line with the competitive model but contrary to the monopsony model (on which, see Aaronson, French, and Sorkin 2013).

If the putty clay model is an extension of the standard theory of dynamic factor demand, there has also been development of the search frictions viewed as central in *M&M* to the finding of positive or zero effects of minimum wage increases on employment. Again using a border discontinuity design, in a study of employment flows for teens as well as restaurants, Dube, Lester, and Reich (2016) argue that their results in the form of a strongly positive wage effect, a small employment effect, and a strongly negative effect on separations are consistent with both job ladder and match-quality models with search frictions. The bottom line is that these authors' estimates of supply elasticities are lower than those assumed in *M&M* but still suggest that wages are some 10 to 20 percent lower on account of this dynamic monopsony power.

The final component of this third stage of research is notable in accounting for small and often statistically insignificant minimum wage employment effects without claiming that they reflect estimation procedures. In a return to the case study approach, Hirsch Kaufman, and Zelenska (2015) examine the effect on employment and hours of differential minimum wage compliance costs for a sample of fast food restaurants in Georgia and Alabama, 2007-2009. Having found minimal effects of the federal minimum wage on employment, the authors explore a wide range of other channels of adjustment based partly on manager surveys and personal interviews. They report that about two-thirds of total cost increases were offset by higher prices, such that had minimum wages been the sole source of increasing costs, restaurants could have passed most or all of the higher cost on to consumers. They also report evidence of wage compression as a form of cost containment.

A related study is the analysis of Ahn, Arcidiacono, and Wessels (2011), who tackle the issue of the distributional impact of minimum wages on employment. The authors advance a one-shot job search model with endogenous firm entry and endogenous labor supply that is consistent with small increases in employment in the wake of a hike in minimum wages: the number of matches increases with the number of searchers, even if the number of firms declines. But increased employment from a greater number of searchers nevertheless leads to smaller prospects of a match at the individual level. Those with the lowest reservation wages are hurt most by the minimum wage increase. The new searchers attracted by the higher minimum are more privileged teenagers whose employment probabilities increase due to their increased probability of searching. Although these teenagers have higher reservation wages they also have lower search costs vis-à-vis those teenagers already in the market. If most low-

wage employees are indeed able to progress through minimum wage jobs into better ones, the costs side of the ledger may be seriously inflated by their exclusion

Future

M&M may be expected to continue to inform debate and shape research strategies. Future U.S. research may thus be expected to pay more attention to long-run versus short-run employment effects, engage in further testing of the monopsony model (e.g. concerning the bonuses paid to a worker who recruits another worker to the firm), and investigate channels of adjustment other than employment. The question of choice of controls so central to *M&M*, may be expected to focus on synthetic control estimation, signifying a more technical approach to the calculation of employment effects. More attention is also likely to be given to the neglected issue of minimum wage effects over the business cycle, but this issue is perhaps more likely to be explored via the endogeneity between, say, teen employment and minimum wage formation using an instrumental variables approach. Much more attention will also be accorded distributional issues, again foreshadowed in *M&M*, focusing squarely on the plight of the lowest skilled workers.

For his part, having noted his concern over a \$15-an-hour national minimum wage, Alan Krueger (2016) has emphasized the need for empirical identification of ‘turning points’ and hence the scope for a more cleverly defined minimum wage as it were. He also foresees more attention being paid particular channels of adjustment, namely the willingness of employers to absorb higher costs through lower profits, the preparedness of their customers to pay higher prices, as well as the role of minimum wages as a stimulus to demand. He also anticipates increased emphasis on the behavioral economics of the firm, as befits the dedication of *M&M* to Richard Lester.

Something of a shift in the locus of minimum wage studies is also likely because of minimum wage innovations in the United Kingdom and Germany. In both cases, the fillip is the introduction of a new minima with greater bite. Absent a \$15 federal minimum, a shift in U.S. research toward cities will be part and parcel of the same trend. One commonality is an increased emphasis on measurement. Thus, one interesting aspect of Seattle’s Ordinance 124490 is program evaluation concurrent with the phase-in period. Specifically, in December 2014, Seattle entered into an agreement with the University of Washington to conduct a mixed-methods evaluation of the impact of the minimum wage hikes to include minimum wage effects on the mix of firms and business survival, the manner of adaptation of businesses to higher costs, impacts on public program eligibility and benefits received, and the experiential and perceived benefits and costs of policy implementation on low-wage employees and employers. In the case of the United Kingdom, the agency charged with determining the minimum wage, the Low Pay Commission, has already funded some 140 research studies. In Germany, where a national minimum wage of €8.50 was introduced for the first time in January

2015, the remit of the corresponding agency also includes scientific appraisal, even if the funding is characteristically spartan.

The most obvious link between all three examples is the enhanced bite of the minimum wage, which can only assist in the determination of employment effects. Taking the British case as illustrative, despite the absence of material disemployment effects in the past, the new wrinkle is the 'political' introduction in April 2016 of a national living wage (NLW) alongside the existing minimum wage machinery, strictly the replacement of then national minimum wage (NMW) for those aged 25 years. By 2020 it is proposed that the NLW will reach £9 per hour, some 12.5 percent higher than the £8 previously planned for this group. The bite is set to increase to 60 percent of the median by 2020, and could reach 90 percent for workers in the retail and 100 percent in the cleaning and hospitality sectors.

Interest in the German minimum, apart from its not dissimilar bite by 2020, resides in the stimulus given to research through the work agenda of the research arm of the German Federal Labor Agency, the Institute for Employment Research (IAB). IAB researchers Bossler and Gerner (2016) have offered an interesting first analysis of the impact of the introduction of the €8.50 minimum using the IAB Establishment Panel. They apply a difference-in-differences comparison of a group of affected establishments with a control group of unaffected establishments. It is estimated that an extra 60,000 workers would have been employed in the absence of the minimum wage. In common with an important strand of the modern U.S. research, Bossler and Gerner add treatment group specific time trends, both linear and nonlinear, to the baseline specification. They also examine spillovers within and across establishments, as well as estimating separate effects by product market competition. Employment effects are found to be robust to the inclusion of treatment group specific trends. For establishments with positive wage spillovers (or the opposite in the form of wage cuts or a trimming of extra payments) the employment effect shrinks to zero (increases markedly), flagging the importance of ability to pay. For its part, a self-assessed measure of product market competition yields employment effects that are more adverse for the group claiming to face greater competition. The authors also follow the recent U.S. research in investigating employment turnover, specifically breaking down the employment effect into hires and separations. It is reported that reduced hires rather than increased separations are the more important labor demand adjustment route, while layoffs dominate quits in the less important separations route. Bossler and Gerner also follow modern practice in addressing other margins of adjustment. Specifically, they examine changes in hours of work and usage of freelance employment/informal labor. Contracted hours are shown to have declined by 0.2 hours per week or by 0.6 percent. However, no effect on informal employment is evident.

Notwithstanding very favorable labor market developments over 2015, the main challenge of the new German minimum wage is its likely impact on the economic assimilation of huge numbers of immigrants. This reminds us of the challenges to and limitations of even cleverly designed low pay policies based solely on wage floors.

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