WAITING FOR CHANGE: IS IT TIME TO INCREASE THE $2.13 SUBMINIMUM WAGE?

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Abstract

The federal subminimum wage for tipped workers is $2.13 an hour and has been for over two decades. The rationale for the lower subminimum wage for tipped workers is the 'tip credit' provision which allows employers to use tips, provided by customers, as credit towards a workers regular minimum wage. As with the regular minimum wage there is state variation in the subminimum wage to exploit. A panel of Quarterly Census of Employment and Wages from 1990q1 through 2012q3 is used to estimate earnings and employment effects of both minimum wages on limited- and full- service restaurants. Both wage floors indicate positive and statistically significant earnings effects for full-service restaurants but only on the minimum wage for limited-service restaurants. Employment estimates that include geographic controls that better account for unobserved heterogeneity are small and not distinguished from zero for the tipped wage -0.012 (-0.005) and the minimum wage -0.026 (-0.045) in the full (limited) service sector.

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1. Introduction

The minimum wage is one of the most researched areas in labor economics with a vast body of literature that dates back nearly seventy years (Brown 1999). Research proliferated as variation in state minimum wage policies gained steam over the last several decades. However, research, debate and policy has largely ignored the lesser known subminimum wage received by tipped workers (also referred to as the tipped or cash wage). That there are two federal wage floors is unknown to many and the existence of the federal subminimum wage—at $2.13 since 1991—often comes as a bit of a surprise.[1]

The rationale for the lower subminimum wage for tipped workers is the 'tip credit' provision. The 1966 Fair Labor Standards Act amendments expanded wage protections to restaurant, hotel and other service workers but also allowed for a tip credit whereby employers may use tips, provided by customers, as credit towards a workers regular minimum wage. Today, at the federal level, the maximum tip credit is $5.12—which is the difference between the regular $7.25 minimum wage and the $2.13 subminimum wage. At the federal level, the tip credit allows an employer to pay workers an hourly wage of $2.13 as long as this base wage combined with additional tipped income equates to at least the regular minimum wage. Thus, the subminimum wage and the tip credit allowance is a zero sum game—an increase in one translates into a decrease in the other.

There has been little research inquiry into the subminimum wage and the tip credit provision thus the effects of each are not well understood. Given the fast growth in the restaurant industry it is important to know the dynamics of the wages floors. Since, 1990

[1] There is also a youth wage that allows employers to pay employees under 20 years of age a lower wage ($4.25) for a limited period (90 calendar days, not work days) after they are first employed.

private sector employment grew by approximately 22% while full-service restaurant employment grew by 72% (Figure 1). The main focus of this paper, as with much of the literature on minimum wages, is to estimate earnings and employment effects of the subminimum wage. Though there has not been any movement at the federal level on the subminimum in over two decades there is more than ample variation due to state enacted policies. Just as many states enact regular minimum wages above the federal level, so too have states adopted subminimum wages above the federal level. The state variation in the regular and the subminimum is the identification strategy used to estimate earnings and employment effects for limited- and full-service restaurants of which both are intense users of low wage workers.

After more than two decades of the $2.13 for the federal sub-wage floor the most basic policy question is whether it can be raised without contributing to employment losses and would the workers benefit in the form of higher earnings. Otherwise, if the tipped credit allowance were decreased or abandoned all together what would the effect be on employment and earnings of tipped workers in affected industries? Even as there is very little literature regarding the subminimum wage this research parallels the literature on the regular minimum wage. Most recently minimum wage researchers are building on past research to better understand the problem of unobservable heterogeneity. Central to the debate is how to best account for minimum wages that are correlated, but not causal, to employment growth patterns. I take the stance that the traditional two-way fixed effects model applied to panel data are inadequate due to the fact that minimum and subminimum wages are not randomly distributed. The non-random nature of state wage floor policies

poses a nontrivial threat to estimating spurious effects of such policies. In Allegretto et al. (2013) it is shown that observable confounds vary considerably across high and low minimum wage states suggesting that unobserved factors do as well. Thus, central to this research and any research on minimum wages is to adequately address the issue of spatial heterogeneity.

In sum, findings indicate that the earnings effect of both wage floors are positive and statistically significant for full-service restaurants; but as expected due to the lack of tipped workers the earnings effect is restricted to the minimum wage for limited-service restaurants. Employment estimates that include geographic controls that better account for unobserved heterogeneity are small and not distinguished from zero for the tipped wage -0.012 (-0.005) and the minimum wage -0.026 (-0.045) in the full (limited) service sector.

2. History of the Subminimum Wage and the Tip Credit Provision

The 1966 Fair Labor Standards Act amendment widened the net of labor protections to include coverage for hotel, restaurant and other service workers but it also introduced a 'tip credit' provision that makes the subminimum wage possible. The tip credit allows employers to use workers' tips as credit toward their regular minimum wage as long as tips plus the subminimum wage paid by the employer equated to at least the regular minimum wage.[2]

[2] Other restrictions apply such as the worker must make at least $30 per week in tips; for additional information see: http://www.dol.gov/esa/whd/state/tipped.htm. The timing of when the calculation of tips plus the subminimum or base wage to be in compliance with the FLSA's wage requirements is assessed on a workweek basis. *See, e.g.*, 29 U.S.C. 206(a). A workweek is any *fixed and regularly* recurring 168-hour

Initially, the tipped wage and the tip credit were each 50 percent of the regular minimum wage as depicted in Figure 2. Over time the ratio of the tipped minimum to the federal minimum varied—it was as high as 60% but never fell below 50%. The relatively proportional link between the two wage floors was broken with the passage of the Minimum Wage Increase Act of 1996 which froze the sub-wage at $2.13 into perpetuity as the regular minimum wage was subsequently increased at various times. Figure 3 shows the two wage floors adjusted for inflation and depicts the long period of decline in the tipped wage—today the tip credit is 71% of the regular minimum wage while the tipped wage is just 29%. The subsidy afforded employers ($5.12) is now more than twice as much as the employer provided sub-wage.

2.1 States Act in Light of Federal Inaction

As with the regular MW many states have set subminimum wage floors above the federal level and seven states do not allow for a subminimum. Over the past several decades there has been considerable variation in both wages across states. States with wage policies above the federal level ranged from just a few in the mid-1980s to over thirty in 2008. The number varies considerably when the federal rate is increased or left unchanged for long periods. The situation is a bit different for state subminimum wage policies given that it has been frozen at the federal level since 1991—thus for the most part the number of states with more generous sub-wage polices has steadily increased over time. The seven no tip credit states over our period of study remain so throughout and by definition have higher tipped wages.

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period. The most recent (2010-12) compliance sweep by program analyst's at the U.S. Department of Labor reported that 83.8% of restaurants had some type of wage and hour violation including 1,170 tip credit that resulted in nearly $5.5 million in back wages (email correspondence).

In the mid-1980s these seven states along with five others had subminimum above the federal level—by 2013 the number increased to 26.

As of January 2013, state minimum and subminimum wage policies are depicted in Figure 4. States minimum wages above the federal level are marked with black lines or hash marks.[3] The three color codes on the map refer to whether the state subminimum is set at the $2.13 federal level (red); above the federal level but below the regular minimum (gray); or if the state does not allow for a subminimum wage (blue)—respectively, the latter three categories are referred to as full-, partial- and no- tip credit states.

The partial tip-credit states currently have subminimum wages that range from just above the federal level such as the $2.23 policy in Delaware to very close to a no tip credit policy such as Hawaii's subminimum of $7.00. The distribution of the workforce across the tip credit scenarios as depicted in the map is that 32.7%, 26.1% and 41.2% work in full-, partial- and no- tip credit states, respectively. The wage policies at both the federal and state level provide a rich data source with ample variation to examine the tipped wages effects on employment and earnings of restaurant workers.

3. Relation to Existing Literature

Unlike the abundant research and long academic debates attributed to the regular minimum wage there is little empirical research on tip credit provisions and the subminimum wage. A descriptive paper by Allegretto and Filion (2011) showed that average wages are higher and

[3] Here and elsewhere in the paper the District of Columbia is included as a state. The number of states with higher minimum wages is much lower than in the recent past. Federal minimum wage increases of 70 cents in 2007, 2008, and 2009 "caught up" to many state minimums and changed the distribution dramatically. For example, prior to the federal increase in 2007, 30 states had minimum wages higher than the federal minimum of $5.15, which had been at $5.15 for a decade.

poverty rates are lower for tipped workers generally and wait staff in particular who reside in states with higher tipped wages. But, this paper did not provide econometric analyses thus more research needs to be undertaken. Other descriptive information from Allegretto and Filion showed that wait staff are overwhelmingly women—over 70%. And while tipped workers and wait staff are disproportionally young it is the case that 45% and 33% are, respectively, at least 30 years old.

A working paper by Even and Macpherson (2012) is relevant to the present study in that it is the only paper that examines subminimum wage effects with a panel of data. The authors conclude "results provide fairly convincing evidence that higher cash wages increase earnings but reduce employment" but express caution in their degree of confidence and call for additional research (p. 23). The authors are concerned with the impact of recessions at the beginning and end of their panel data and also express concerns about collinearity between minimum wages and time and state fixed effects. The methods employed and findings from this paper are discussed in further detail in the appropriate sections below.

Anderson and Bodvarsson (2005) asked whether states with higher tipped wages boosted server pay. They examined 1999 aggregated data on wait staff and bartenders from the Occupational Employment Statistics from the Bureau of Labor Statistics. Anderson and Bodvarsson concluded, for the most part, that it does not appear that tipped workers get a boost in total earnings in states with higher tipped wages. This cross-section using 1999 data may be contaminated with heterogeneity.

A third paper by Wessels (1997) theoretically and empirically assessed whether restaurants have monopsony power over wages. Wessels' tested theoretical model hinged on

the fact that tips allow restaurants to pay servers lower wages thus as more servers are hired, each serves fewer customers and consequently earn less in tips—thus restaurants must pay a higher wage. Empirically he concluded that the labor market for tipped wait staff in restaurants is indeed monopsonistic. Wessel detected the full 'reverse C' monopsony employment pattern—over some range (not established) a higher wage will increase restaurant employment. This paper relies on factor demand theory of falling marginal and average wages per server as more servers are hired. To retain workers a restaurant has to pay higher wages. In practice it is questionable if this practice holds. It is likely that restaurants pay the lowest wage possible and that workers rely on tips as the majority of their pay—especially in full-tip credit states.

Another paper by Wessels (1993) on minimum wage and tipped employees employs the Census of Retail Trade to estimate the effect of allowing a total offset of tips towards minimum wage requirement. He concluded that restaurant employment would increase by 6.8% and those jobs would pay 30% or more above the minimum wage (which was $2.01 at the time). Wessels concluded that a 10% increase in the tipped wage would result in a 4% decrease in employment and workers who retained their jobs would have hours cut by 6%. Thus, in total there would be a loss of 3% to 5% in total income coupled with lower employment.

This study looked at aggregate restaurant data from a single year (1987) when the federal tip credit was 40%–the tipped wage was $2.01 and minimum wage was $3.35. This approach, as with Anderson and Bodvarsson, would benefit greatly by using more recent data on a span of years which would allow for the use of fixed effects specifications to better

control for unexplained heterogeneity across states which is very difficult to do with a cross section of data. However, caution must be taken even with panel date and fixed effects estimators as recently documented in the minimum wage literature.

3.1 Relevant Minimum Wage Literature

Recent research on minimum wage effects has documented the importance of including adequate controls in fixed effects models to account for unobserved heterogeneity. Dube, Lester and Reich (2010) used policy discontinuities at state borders as identifying variation to estimate earnings and employment effects in the restaurant industry. DLR generalized the individual case study approach by comparing all contiguous county-pairs the U.S. that straddle a state border—they found no adverse employment effects. DLR did not estimate effects separately by full- and limited- services restaurants (they pooled them together). The present research extends DLR by analyzing separately the two restaurant sectors separately and further by estimating effects for the minimum and the subminimum wage.

Allegretto et al. (2013) used four data sets and six approaches—including geographic controls, boarder discontinuities, synthetic controls, and dynamic panel data models—to show that the two way fixed effects estimator for minimum wage studies is biased due to insufficient controls for time varying heterogeneity.

Specifically the author's document ways in which higher minimum wage states systematically differ from lower minimum wage states in many observables such as business cycle severity, inequality growth, job polarization, political economy and spatial distribution. Hence, it is likely they differ with regard to unobservable. More generally, the

incorporation of more localized spatial controls—such as contiguous counties—are better counterfactuals given they are more similar. Depending on the data used it is not always possible, for example, to use contiguous border county pairs but a localized estimate even at a coarser level—such as Census divisions when using Current Population Survey data or OCEW data at the state level. The inclusion of geographic controls did not attenuate minimum wage effects on earnings but did reduce the employment effect and it was rendered statistically not distinguishable from zero. Importantly, the canonical two way fixed effects models consistently displayed the existence of pre-trends in employment that disappeared with the inclusion of spatial controls.

In relation to the present study it may be that the confounders with variation in the tipped wage may be similar but not necessarily identical to those relating to the minimum wage (as the map suggests) thus spurious effects may differ but the basic issue of heterogeneity remains a serious one.

The advances of incorporating spatial controls and policy discontinuities to account for heterogeneity as presented in Allegretto et al. (2013) and Dube, Lester and Reich (2010) is an often favored approach (for example see: Autor 2003; Lee and Lemieux 2010: Magruder 2013) but not universally accepted within the discipline. Specifically research by Neumark, Salas and Wascher (2013) use a synthetic control approach to argue that areas in close proximity are not more similar. And, more relevant to the present study is the aforementioned paper on the subminimum wage by Even and Macpherson (2012).

Even and Macpherson use Quarterly Census of Employment and Wages to estimate employment and earnings effects and the Current Population Survey (CPS) to estimate an

hours effect.[4] They prefer the canonical two-way fixed effects estimates and report that a reduction in the tip credit (otherwise a 10 percent increase in the subminimum wage) increased worker earnings by less than one percent and reduced employment in full service restaurants by less than one percent. Even and Macpherson state that a high degree of collinearity between minimum wages and time and state fixed effects is worsened with the inclusion of state-specific time trends. They also contend that panel data that begins and ends during recessionary periods are unreliable and provide estimates for two time spans: 1990q1-2011q4 and 1991q2-2007q3. The present study benefits from the passage of time and utilizes QCEW data from 1990q1-2012q3 thus extends the time frame several years out from the end of the last recession which was officially June 2009.[5]

3. Data

A panel of Quarterly Census of Employment and Wages (QCEW) data from 1990q1 through 2012q3 is used for this analysis. The QCEW is a near census of employment and earning given that it covers approximately 98 percent of all jobs. Importantly these data are well suited for research on the subminimum wage as the restaurant industry may be broken out by full- and limited- service which is important given tipped workers are common in full service restaurants but rare in limited service establishments. In general, the restaurant

[4] I originally used the CPS but found the inability to distinguish between workers in full- and limited- service restaurant industry was a hindrance—for example a strong wage effect or a tipped wage 'bite' to establish a treatment group was not possible. Moreover, reported hours of work in the CPS for tipped workers, such as wait staff and bartenders, are often -4 (around 10%) which indicate variable hours that change so much from week to week that reporting usual hours of work is not an option. It is not clear in Even and Macpherson how they handled this variability. Thus, I abandoned the individual level CPS data in favor of the firm level QCEW data that allows for the distinction between the limited- and full- service restaurant sectors.

[5] As determined by the National Bureau of Economic Research the official dating committee of business cycles: http://www.nber.org/cycles.html.

industry employs a large share of the minimum wage workforce and of all workers employed in the restaurant about a third earns wages within 10 percent of the minimum wage (Dube, Lester and Reich 2010). The main outcome variables of interest are average weekly earnings and employment. The QCEW data are then aggregated by state for full- and limited- service restaurants.

The QCEW data are merged with control variables generated from the CPS to capture labor supply dynamics such as the employment rate, the share of prime age workers, female labor force participation, etc. Additionally, other state control measures include population from the U.S. Bureau of the Census; unemployment rates from the Bureau of Labor Statistics; personal income from the Bureau of Economic Analysis. The data set is further appended with measures of the regular minimum and subminimum wages for each state and time period (year, quarter). The descriptive statistics are provided in Table 1.

4. Estimation Strategy

To estimate the effects of higher subminimum wages on earnings and employment the estimation strategy starts with the two-way fixed effects specification with time and state fixed effects. This difference-and-difference approach is often applied to panel data. The dependent variables *y,* are respectively: the natural log of average weekly earnings or the natural log of employment and regressions are ran on separate samples of limited- and full-service restaurants. The baseline fixed-effects specification is then:

$$\ln y_{it} = \eta_1 \ln(TW_{it}) + \eta_2 \ln(MW_{it}) + X_{it}\Gamma + \phi_i + \tau_t + \varepsilon_{it} \quad (1)$$

where ln*TW* and ln*MW* refer to the log of the tipped (or subminimum wage) and the regular minimum wage where *i* and *t* denote, respectively, state and time (year, quarter) indexes. *X* is a vector of worker characteristics such as: employment rates, the share of prime age workers, the shares of teenager and those 60 and above, marriage rates, and older workers with state level controls such as the unemployment rate and personal income. Here ϕ_i refers to a state fixed effect and τ_t represents time dummies incremented in quarters. In this baseline or canonical specification, including state and time dummies as well as the overall unemployment rate is thought to sufficiently control for local labor market conditions.

As previously discussed, there is growing evidence (Allegretto et al. 2013; Dube, Lester and Reich 2010) that the two-way specification does not fully capture heterogeneity in underlying employment patterns that are correlated with minimum wages. To account for this heterogeneity, a second specification allows time effects to vary by Census divisions. Allegretto, Dube and Reich (2011) show that including even a geographical control as coarse as division-specific time effects (τ_{dt}) which eliminates the between-division variation better controls for spatial heterogeneity in differential employment patterns, including region-specific economic shocks which is equation (2):

$$\ln y_{it} = \eta_1 \ln(TW_{it}) + \eta_2 \ln(MW_{it}) + X_{it}\Gamma + \phi_i + \tau_{dt} + \varepsilon_{it} \quad (2)$$

In a third specification a state-specific linear time trend variable provides a second means of controlling for heterogeneity in the underlying growth of low-wage employment and other trends in restaurant employment. Thus, the third specification is:

$$\ln y_{it} = \eta_1 \ln(TW_{it}) + \eta_2 \ln(MW_{it}) + X_{it}\Gamma + \phi_i + \psi_s \cdot t + \tau_t + \varepsilon_{it} \quad (3)$$

where ψ_s denotes the state-specific time trend for state *s*.

In the last and preferred specification, both the division-specific time effect and the state-specific time trends are included:

$$\ln y_{it} = \eta_1 \ln(TW_{it}) + \eta_2 \ln(MW_{it}) + X_{it}\Gamma + \phi_i + \psi_s \cdot t + \tau_{dt} + \varepsilon_{it} \quad (4)$$

The resulting estimates are less likely to be contaminated with unobservable long term trends and region-specific economic shocks in this final specification for both the regular minimum wage and the tipped wage even as the variation and the nature of the confounders may differ between the two wage floors. The four specifications estimate earnings and employment effects in full- and limited- service restaurants. Specifications include standard errors clustered at the state level.

For reference specifications (1) and (3) from above are similar to the two specifications used by Even and Macpherson.

5. Results

5.1 Main Findings

Earnings estimates are reported in panel A of Table 2 for both restaurant sectors. As expected the treatment effect on both the regular minimum and the tipped wage shows there is a 'bite' for the full-service sector. All of the coefficients for full-service, which are also elasticities in this case, are statistically significant and important in an economic sense. The earnings effect for the tipped wage is 0.043 and 0.045 in specifications (1) and (4), respectively. Thus a 10 percent increase in the tipped wage raises industry earnings by .45

percent. The earnings effect of the regular minimum wage are considerably larger than that of the sub-wage across all four specifications—the effect is 0.152 and 0.127 (both highly significant) in specifications (1) and (4), respectively.

Comparable results from Even and Macpherson are very similar to those reported here (E&M Table 2). The magnitude differences for the two wages makes sense given that there are less tipped workers compared to workers earnings wages around the minimum wage in full-service restaurants. Moreover, the tipped wage effects are mitigated given that they are comprised of the base or tipped wage paid by the employer and tips received from customers.[6] There is also the interplay between the two wage measures. Regression analyses (not shown) indicates that when each wage is individually included in the regressions without the other (i.e. include the lnTW (lnMW) but exclude the lnMW (lnTW) the effects are a bit stronger in each case. Moreover, in practice the tipped wage is often increased along with the minimum wage and in the case of the seven no tip credit states they are exactly the same. Thus I expect that there is good reason to believe that the pure effect from the tipped wage is actually larger than reported here.

It is reassuring that the earnings effect of the tipped wage in the limited-service sector (given few workers receive tips in this sector) are not statistically significant and the point estimates in all four specifications are very small and range from -0.005 to 0.009. However, the minimum wage remains highly significant with elasticities that range from 0.137 to 0.213 across the four specifications. Earnings effects from Even and Macpherson

[6] The QCEW notes: Under most State laws or regulations, wages include bonuses, stock options, severance pay, profit distributions, cash value of meals and lodging, tips and other gratuities, and, in some States, employer contributions to certain deferred compensation plans such as 401(k) plans. Accessed December 21, 2013 http://www.bls.gov/cew/cewfaq.htm#Q15.

are qualitatively similar as reported here. However, E&A posit that there is a high degree of collinearity between both the minimum and the tipped wage with the two-way fixed effects model and even more so with the inclusion of state-specific time trends (specification 3 in this paper) but the strong earnings effect in both restaurant sectors belie this notion.

Employment elasticities are reported in panel B, Table 2. Negative employment effects for the tipped wage (-0.094) and the minimum wage (-0.114, both significant at the 5 percent level) are estimated for full-service restaurants from the canonical specification (1). The minimum wage effect is in the range of -1 percent to -3percent that is often found when employing the two-way specification (Allegretto et al. 2011; Dube, Lester and Reich 2010; Neumark and Wascher 2013). Moving across specifications the elasticities on both wage variables become much smaller and statistically insignificant except in specification (3) where the minimum wage elasticity is -0.073 (significant at the 5 percent level). Effects for the preferred specification (4) are quite small and statistically insignificant at -0.012 and -0.026 on the tipped and regular wage floors, respectively. As noted, the specifications employed by Even and Macpherson are akin to specifications (1) and (3) here and their analogous results are mixed depending on panel length (1990q1-2011q4 or their preferred data 1991q2-2007q3). Using their preferred panel (net the recessions at the beginning and end of the full period panel) the canonical model reports a significant -0.078 tip wage effect and a -0.015 (not significant) minimum wage effect on employment in the full-service sector. The second specification from E&M that includes state linear time trends reports elasticities of -0.029 (significant) and a positive 0.053 (not significant) for the tipped and regular minimum wages, respectively.

Looking at the employment effects of the two wages in the limited-service sector my results show (Table 2, bottom right quadrant) that tipped wage effects are very small and not significant: -0.032 in specification (1) to -0.005 in specification (4). Here again akin to the regular minimum wage effects for full-service become much smaller (less negative) and are not distinguishable from zero from specification (1) to (4): -0.176 and -0.045, respectively. Corresponding results from E&M with their full panel show results similar to those reported here except the tipped wage elasticity is not significant. Estimates from canonical model are -0.023 (not significant) and -0.191 (significant) for the tipped and minimum wage, respectively. In their second specification the employment effect for the tipped wage is a positive 0.079 and -0.157 for the minimum wage, both are significant.

E&A results using the shortened panel report small elasticities on both wages and all are insignificant—elasticities of -0.015 (0.009) on the tipped wage and -0.095 (0.000) on the minimum wage for E&As specification (1) ((2)).

A triple difference was employed in Even and Macpherson on the premise that the point estimates on the tipped wage using the limited-service restaurant sample are spurious and may be due to unobservables—thus differencing them from the estimates using the full-service sample would net out the unobserved effects; but it may also represent other noise; when they do so their estimates on the tipped wage are all significant at least at the 10 percent level and range from -0.079 to -0.038.[7] Doing so for my estimates from Table 2 nets a triple difference on the tipped wage from -0.062, -0.032, -0.031 and -0.007 across the four specifications, respectively. Again their specifications (1) and (2) are similar to my

[7] The process for calculating the triple-difference standard error is not documented.

specifications (1) and (3). I do not triple difference the minimum wage effects across the two restaurant sectors as an effect would be expected in both and not necessarily equal. Thus the evidence here does not indicate that there are significant negative effects of tipped wages or regular minimum wages at the levels experienced in the U.S. since 1990 in full-service establishments.

The estimated elasticities on the minimum wage for the sample of limited-service restaurants mirrors what was previously found in Dube, Lester and Reich (2011)—that the simple two-way fixed effects specification generates a negative employment effect between the once widely accepted 1 percent to 3 percent range (-0.176) but as in DLR the effect is rendered insignificant and much smaller in subsequent specifications especially in specification 4.

Extrapolating from the results in specification (4) we can determine the effect of moving from the status quo to a no tip credit policy. Thus, in this scenario the tip wage would equate to the minimum wage and the equation becomes:

$$\ln y_{it} = (\eta_1 + \eta_2)\ln(MW_{it}) + X_{it}\Gamma + \phi_i + \psi_s \cdot t + \tau_{dt} + \varepsilon_{it} \quad (5)$$

Subtracting equation (5) from the status quo (4) results in:

$$\ln y_{it} = (\eta_1)[E(lnMW) - E(lnTW)] \quad (6)$$

where *E* is the expected value and the MW and TW are evaluated at the current federal policy of $7.25 and $2.13, respectively. The model estimates that a no tip credit policy would have a 0.056 effect on earnings (significant) and a -0.014 on employment which is not distinguishable from zero in specification (4).

5.2 Business Cycle Dynamics

As discussed Even and Macpherson run results on two panels—a longer panel from 1990q1-2011q4 and a shorter panel that dropped the early-90s recession and the Great Recession. Their results in some cases vary substantially and are not consistent across the two panels of data. Dropping valuable data may not be the best remedy if there is reason to suspect that the inclusion of state unemployment rates and state specific time trends may not adequately account for business cycles. I take two different approaches here to address the issue.

Three sets of results are reported in Table 3.[8] For ease of comparison panel A repeats the employment results from Table 2. Panel B estimates effects after dropping all recessionary quarters as defined by the National Bureau of Economic Research. Panel C adds state specific recession controls to each of the specifications. Estimates are again reported for both restaurant sectors. As Table 3 shows, the results across the three panels are nearly identical.

The issue of minimum wage effects and phases of the business cycle was addressed in Allegretto, Dube and Reich (2011, p. 224). Here the method of interacting the minimum wage with the unemployment rate and estimating a joint effect was used. Results were reported for a 4 percent and an 8 percent unemployment rate. For each the canonical specification elasticities were -0.049 and -0.046, respectively (both significant) but subsequent results from specifications with geographic controls similar to those used here were attenuated and they were not significant at 0.011 and 0.043, respectively.

[8] I was not able to replicate the estimated effects for the E&A shortened panel (1991q2-2007q3)

6. Summary

The federal subminimum wage received by tipped workers has been frozen at $2.13 since 1991. While there may be some tipped workers who earn decent tips to make up for such a low base wage it is clear that many do not and restaurant employment is one of the fastest growing sectors in the economy over the last two decades. The sub-wage floor was originally 50 percent of the regular minimum wage—today it is just 29 percent. State variation in the tipped wage allows for valuable variation to estimate effects on earning and employment in full- and limited- services restaurant sectors.

Earnings estimates show that the minimum wage effect is 0.127 and 0.137 in full- and limited- restaurants, respectively. The tipped wage, as expected, only has an effect on earnings in the full service (0.045) sector as few tipped workers are employed in limited service. Given that the earnings data employed (QCEW) confound the base wage with tipped income it is likely the effect of earnings is larger than estimated.

Employment effects for the tipped (-0.094) and minimum wage (-0.012) floors for full service restaurants are negative and significant in the canonical two-way fixed effects specification—but estimates become less negative and indistinguishable from zero in the preferred specification with division controls (-0.012 and -0.026, respectively). As expected, given there is no earnings ‘bite’ on the tipped wage in the limited service sector, there is also no adverse employment effect. Measured disemployment effects on the minimum wage in the limited service sector mirrors recent finding in the literature in that significant negative effects are estimated with the canonical specification but the elasticity (-0.045) from our