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Minimum Wage Change Effects on Restaurant Pricing and Employment

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Minimum wage change effects on restaurant pricing and employment

Abstract

Purpose - State and local governments are considering large increases to the minimum wage.

Since restaurants employ many individuals paid at or below minimum wage these changes may affect their businesses. This study evaluates the anticipated effects of minimum wage growth on employment and pricing in U.S. food and beverage operations.

Design - The study utilizes an experimental design where restaurant owners and managers are presented with scenarios of differing levels of potential minimum wage increases and are asked to anticipate changes to employment and pricing.

Findings - Restaurant owners and managers involved in the study indicate the level of the minimum wage increase will significantly affect changes in pricing and employment levels. Results also show that restaurant demographics such as type of restaurant and average check do not significantly affect the relative change operators anticipate implementing. Specific ways participants plan to make adjustments are also presented.

Originality - The anticipated impact of minimum wage increases at the restaurant-level is examined, which differs from previous studies that determine the impact at the industry-level. This study evaluates large minimum wage increases of up to 100%, which have previously not been studied.

Keywords: Employment, pricing, restaurant, minimum wage, staffing, labor

Article Classification: Research Paper

Introduction

It is estimated that 90% of all countries have some type of minimum wage policy (ILO, 2008). This lowest permitted level of employee compensation permitted is intended to provide protection for wage earners, yet interestingly, there is not one ideal minimum wage level (Belser and Sobeck, 2012). Many countries, including the United States, boost minimum wage levels to meet changing fiscal and societal needs. The United States passed federal minimum wage legislation in 1938 and has increased minimum wage levels over time as economic conditions changed (Neumark and Wascher, 2008). New state and local laws resulted in increases to the minimum wage in 21 states in 2015 (Kasperkevic and Srinivas, 2015) and 19 states in 2017, with more hikes coming as a result of phased-in increases (Ruggless, 2017).

Business owners with large percentages of minimum wage workers have expressed concerns about the impact these compensation increases would have on operations (Jargon, 2015; Murphy, 2015; Ruggless, 2017). The U.S. Bureau of Labor Statistics (BLS, 2015) reports that the largest segment of minimum wage earners are employed in the leisure and hospitality sector, with 18% or 9.5 million workers paid at or below minimum wage. The National Restaurant Association (NRA) opposes increasing the minimum wage, claiming that restaurants would be faced with hiring freezes, price increases, employee hour reductions, or a combination of all these factors to compensate for labor cost increases. The organization suggests that 58% of restaurant operators increased prices and 41% cut labor hours following the 14% federal minimum wage increase in 2007 (NRA, 2015). Because food and beverage operations have large numbers of minimum wage employees, it is important to understand the anticipated effects of minimum wage growth on these businesses.

Minimum wage adjustments are typically determined by cost of living and other economic conditions (Belser and Sobeck, 2012). Most recent increases in state minimum wages have ranged from under \$0.25 per hour to \$1.25 per hour (U.S. Department of Labor [DOL], 2015). Recently fast-food workers in the United States demonstrated to increase the federal minimum wage from \$7.25 to \$15.00 per hour, an increase of more than 100% (Lynn and Boone, 2015). When state legislators contemplate minimum wage changes, policy makers need to understand the impact of different levels of possible increases on businesses. This study presents four different levels of minimum wage increases to food and beverage operators to determine the anticipated impact each may have on pricing and employment at the unit level.

Business owners may be able to absorb small changes in wages, but larger increases may require modifications to operations. Several studies (Belman and Wolfson, 2014; Card and Krueger, 1993; Doucouliagos and Stanley, 2009; Neumark and Wascher, 1995) have been conducted on the impact of minimum wage increases on employment levels; however, previous minimum wages increases have not been so significant, and no known study has been conducted to determine the anticipated effects of various levels of potential increases on businesses. Examinations have also measured the impact of minimum wage increases on pricing and employment at the industry level (Dube *et al.*, 2007; Even and Macpherson, 2014; Lynn and Boone, 2015; Persky and Baiman, 2010; Powers, 2009), but few studies examine the effect on individual restaurant operations. Determining the specific actions taken when faced with various levels of minimum wage increases at the unit level may provide alternate solutions for restaurant owners and operators to implement.

This study evaluates the anticipated effects of four different levels of minimum wage increases on employment and pricing of U.S. food and beverage establishments at the restaurant

level. An experimental design is used, which presents to restaurant owners and managers varying levels of potential minimum wage changes and asks them to determine the likely change in their operational employment and pricing. The respondents represent a variety of U.S. locations, types of restaurants, sizes of operations, and restaurant organizational styles, including both independent and chain.

Literature Review

Minimum wage rates in the United States are set at the federal and the state levels. While the federal minimum wage has remained the same since 2009, many state minimum wage levels continue to increase while other states discuss future increases (Solly, 2016). Federal lawmakers suggest that a federal minimum wage increase may be appropriate but encourage states' policy makers to examine their own markets and adjust minimum wage levels in their respective states (Belser and Sobeck, 2012). Recent state minimum wage proposals have ranged from a 10% increase to a 100% increase (DOL, 2015).

In 2014, food and beverage establishments were the largest segment of the leisure and hospitality sector in terms of number of employees. According to the BLS (2015), 21.9% of all hourly workers in food and beverage businesses report being paid at or below the federal minimum wage largely because these workers receive tips in addition to a base wage. Federal law permits states to determine if they want to allow employers to take a tip credit, up to 70% of the hourly wage, to offset employees' income earned from gratuities as long as their tips compensate for the difference between their actual hourly wage and the minimum wage level. As of January 1, 2015, seven states did not permit a tip credit. In 28 states and the District of Columbia, a tip credit was allowed but the state had either a higher minimum wage or a lower tip

credit than what is prescribed at the federal level. These modifications result in a higher minimum wage and higher labor expense for restaurant operators.

Impact of Minimum Wage Increases on Restaurant Operations

Many restaurant operators are concerned about the business ramifications of minimum wage increases given the large number of minimum wage earners in their businesses. Sally Smith, CEO of Buffalo Wild Wings, states that wage levels and labor availability are two of the biggest challenges facing restaurant operators, claiming that her organization will limit expansion in markets like Seattle, San Francisco, and Los Angeles because those markets have had significant minimum wage increases (Jargon, 2015). Smith describes operational adjustments the company could make to offset increased wages, including introducing automation, modifying employee schedules, and evaluating kitchen efficiencies. Haley-Lock (2012) finds that in response to minimum wage variations, restaurant operators tighten control over working hours and make changes in business models to reduce labor needs, such as moving full-service restaurants toward fast-casual or express models.

Other companies have proposed increasing prices to counterbalance the rise in labor expense due to minimum wage growth. Thomas Edwards, Jr., Finance Chief of Brinker International Inc., states that a 2% increase in pricing is not enough to compensate for rising minimum wage rates and increases in overall labor costs (Murphy, 2015). Danny Meyer's restaurant group, Union Square Hospitality, eliminated tipping in its restaurants and raised menu prices 20% to 25%, in an effort to balance compensation levels between servers and kitchen staff (Ramey, 2015). James Parrott, Deputy Director and Chief Economist at the Fiscal Policy Institute, describes Union Square Hospitality's pricing increase as an enterprising way to adjust to an environment where there is pressure to raise wages (Ramey, 2015).

Pollin and Wicks-Lim (2016) argue that firms facing increasing minimum wages could raise worker productivity, raise prices, increase revenue through economic growth, or redistribute revenue within the firm. These alternatives allow firms to maintain their level of operations and retain their customer base. Schmidt (2013) lists 11 possible adjustments due to changes caused by minimum wage increases: a) decreases in hours worked, b) decreases in non-wage benefits, c) decreases in training, d) changes in employment composition, e) higher prices, f) improvements in efficiency, g) efficiency wage responses from workers as they work harder on their own due to the new wage, h) wage compression, i) reduction in profits, j) increase in demand due to the higher wages being paid to employees and hence higher consumer spending, and k) reduced turnover. This study evaluates the effect of two of these possibilities: adjustments to employment hours and to pricing.

Economic Theory

Economic theory suggests that increasing minimum wage rates may decrease employment levels and increase productivity to offset labor costs. Neo-classical economic theory suggests that labor markets are perfectly competitive and the potential effects of raising the minimum wage include reductions in employment levels, increases in prices, or reductions in non-wage employee benefits (Schmidt, 2015). Institutional economists who view labor markets as less than perfectly competitive argue that increasing wages may increase productivity through employer incentives to improve automation or develop training for employees (Schmidt, 2015).

Conversely, Lynn and Boone (2015) suggest viewing restaurants as having the market power to set a prevailing wage. This demand-side power is referred to as a monopsony and is demonstrated via the tip credit. Wessels (1997) argues that the market for tipped servers is monopsonistic because employing more servers would decrease per server tips (assuming equal

demand). Aaronson *et al.* (2008) state that raising the minimum wage in monopsonistic labor markets could increase or decrease employment based on the wage rates in relation to the marginal value of labor. Wessels (1997) postulates that increases in the minimum wage of tipped employees would likely first increase and then decrease the employment level of restaurant servers. Lynn and Boone (2015) suggest that economic theory alone cannot determine what effect minimum wage increases might have on employment and prices and recommend the use of research data to examine the issue. This study uses a scenario-based experiment to better understand the anticipated actions of restaurant operators at varied levels of possible wage growth.

Impact of Minimum Wage Increases on Employment Levels

Examinations of the impact of minimum wage levels on employment reveal conflicting findings with some studies reporting that minimum wage growth has no negative effect on employment (Belman and Wolfson, 2014; Card and Krueger, 1993; Doucouliagos and Stanley, 2009; Dube *et al.*, 2007; Lynn and Boone, 2015; Persky and Baiman, 2010) and others stating that minimum wage increases result in a decline in employment (Baker *et al.*, 1999; Neumark and Wascher, 1995; O'Neill *et al.*, 2006; Powers, 2009). Still other studies reveal mixed outcomes (Addison *et al.*, 2012; Even and Macpherson, 2014). A summary of previous research findings on the effects of minimum wage changes on employment levels and pricing is presented in Table 1.

<INSERT TABLE 1 HERE>

Card and Krueger's (1993) seminal study to determine the impact of minimum wage increases on the fast-food sector reports no negative effect on employment levels which challenged the prediction that a rise in the minimum wage would reduce employment. Dube *et*

al. (2007) find no statistically significant effect on the number of employees or full-time equivalents in fast-food or table-service restaurants when examining San Francisco after a citywide minimum wage increase. In a study of employment in Illinois and Indiana after a 18% minimum wage increase, Persky and Baiman (2010) also find the levels of employment are not statistically different from zero.

Conducting a meta-analysis of 64 minimum wage increase studies across a variety of U.S. industries, covering more than 1,000 employment estimates from 1972 to 2007, Doucouliagos and Stanley (2009) find that the estimates cluster around a zero-employment effect. Their explanation for this effect is based on two possibilities. Either there is no significant effect on employment due to an increase in the minimum wage, or if minimum wage effects do exist, they are “too difficult to detect and/or very small” (Doucouliagos and Stanley, 2009, p. 423). Belman and Wolfson (2014) conduct a similar meta-analysis and concentrate on the 27 studies published since 2000. Though these results vary slightly from Doucouliagos and Stanley (2009), there is still no statistically significant negative effect on employment when the minimum wage increases. The authors do find a few statistically significantly positive effects and some statistically significant yet economically irrelevant results. Lynn and Boone (2015) substantiate these studies, finding that increases in base and tipped minimum wages do not have significant or reliable effects on overall full-service or limited-service restaurant employment. Hirsch *et al.* (2015) study minimum wage changes’ effects on employment levels, finding mostly small and insignificant impacts and speculate that other modifications are made by operators, including non-labor expenses and pricing.

There are studies, however, that directly contradict these results and report negative effects on employment levels when adjustments to minimum wage levels are made. Neumark

and Wascher (1995), for instance, report a statistically significant decline in fast-food sector employment as a result of a minimum wage increase when they re-evaluate the findings of Card and Krueger (1993) two years later using actual payroll data records. Similarly, Powers (2009) examines the same data as Persky and Baiman (2010) and finds large declines in part time positions and worker hours in Illinois relative to Indiana. Internationally, Baker *et al.* (1999) find that a 10% increase in the Canadian minimum wage is associated with roughly a 2.5% decrease in employment while O'Neill *et al.* (2006) examine the implementation of minimum wage levels in Ireland and report a 6% reduction in employment.

And still other studies have mixed outcomes. Addison *et al.* (2012) find significantly negative results for minimum wage increases on employment levels when evaluating a sample of 1,825 U.S. counties. When they take county-level trends into account, the results indicate a negative yet insignificant effect on employment. However, the authors do find a long-term downward trend in employment for states that increase their minimum wage relative to states that do not. Employment in limited-service restaurants has a negative affect but only marginally, whereas full-service restaurants experience a significant positive effect. While Dube *et al.* (2007) find no statistically significant effect for minimum wage increases on the number of employees or full-time equivalents in fast-food or table-service restaurants, there is a 15.6% increase in the number of workers in tipped positions earning near minimum wage in full-service restaurants. The authors suggest that this increase may be an indication that a change in the minimum wage causes employers to convert some non-tipped positions into tipped positions to better balance wage growth. Though there is no net change to the number of employees, there may be shifts in the employment structure.

Even and Macpherson (2014) evaluate the effect of a change in the allowable tip credit on wages and hours. A reduction in the allowable tip credit causes an increase in the tipped minimum wage that employers are required to pay. This reduction in a tip credit affects payroll costs the same way an increase in the overall minimum wage would, although the results may be different based on how many employees are affected by the increase. Even and Macpherson (2014) find that an increase in the tipped minimum wage significantly increases earnings in full-service restaurants but not in limited-service restaurants, whereas an increase in the minimum wage has a positive effect on both. The minimum wage increase effect in full-service restaurants is three times larger than that of the increase in the tipped minimum wage. When considering employment, an increase in the tipped minimum wage has a significant negative effect in full-service restaurants but not in limited service restaurants, while there is no significant effect in either type of restaurant with an increase in the minimum wage.

To summarize, while a considerable number of studies examine the effects of a minimum wage increase on employment the results are mixed. Many studies show that an increase in the minimum wage does not affect employment. Other studies suggest that minimum wage growth negatively affects employment levels. These examinations investigate the restaurant labor market as a whole by looking at industry-level labor employment numbers. To understand the impact of minimum wage changes at the restaurant-level, this study asks individual restaurant owners and operators what, if any, changes they foresee making if required to adjust wage levels. These specific actions may be lost when examining the impact at the industry level. In addition, the previously discussed studies evaluate minimum wage increases of less than 30%. For example, the studies conducted by Powers (2009) and Persky and Baiman (2010) evaluate a minimum wage increase of \$1.00 per hour, or 18%, and Dube *et al.* (2007) evaluate a minimum wage

increase of \$1.75 per hour, equivalent to 26%. Additional research examining the impact on restaurant operations of minimum wage increases of differing levels up to 100% can add to the body of knowledge.

Impact of Minimum Wage Increases on Pricing

In addition to analyzing employment, Dube *et al.* (2007) also evaluate the effect of a minimum wage increase on the prices of restaurants' best-selling items. Fast-food restaurants have a significant price increase of 6.2%, whereas table-service restaurants only have an insignificant increase of 2.8%. The calculated cost pressure of a 26% increase in minimum wage is estimated at 4.4%, so the price increase is above and beyond the cost increase. It should be noted, though, that the authors estimate the 4.4% cost effect only on those employees making the minimum wage and not on the potential ripple effect that might occur.

Basker and Khan (2016) study pricing in the fast-food sector and report considerable cost pass-through, estimating that a 33% increase in minimum wage rate could raise prices of fast-food menu items by 3%. The authors report that this is consistent with a competitive labor market model, yet they cannot generalize the effect of higher-level minimum wage increases.

Aaronson *et al.* (2008) find similar results when evaluating a 21.2% federal minimum wage change from 1995 to 1997. This includes 7,500 restaurant items at more than 1,000 different locations. In limited-service restaurants, individual items have price increases of 22.6% within the two months after a minimum wage increase. These results are significantly higher than the 11.5% increase during other two-month periods that do not have minimum wage increases. Full-service restaurants also have a significantly higher price increase after a minimum wage increase, 12%, as compared to 10.7%. In contrast to limited-service restaurants, full-service restaurants have a smaller price increase, which most likely is due to the greater number

of employees that are in tipped positions. These employees may not be affected by the minimum wage increase because their wages with tips are already higher than the minimum wage and the tipped minimum wage did not change during the sample period. When the authors evaluate each business, and average all item price changes, they still find a significant increase in limited-service restaurants; however, full-service restaurant prices are not significantly different. The authors estimate price increases due to a minimum wage increase and find that a 10% increase in the minimum wage would increase prices approximately 0.7%, with more than half of the increase occurring in the first two months. Limited-service restaurants are estimated to have a price increase five times higher than full-service restaurants, 1.6% compared to 0.3%. In addition, those areas with lower average wages have larger price increases for both limited-service and full-service restaurants.

Prior research shows that restaurant prices increase as minimum wage increases. While these results are significant the minimum wage changes considered are small in most studies, ranging from 0.7% to about 4%. Aaronson *et al.* (2008) study that examines higher percentage minimum wage changes finds higher increases. Examining the effect of varied large minimum wage changes on pricing will add to the body of literature.

Methodology

A survey was designed to gather data from restaurant operators based on instruments from previous studies that examined the impact of minimum wage growth (Aaronson *et al.*, 2008; Addison *et al.*, 2012; Dube *et al.*, 2007). An Employment Policies Institute (EPI, 2015) survey on the expected changes due to a possible \$15 minimum wage in New York was also referenced. Because the purpose of this study is to determine the impact of various levels of minimum wage increase, the researchers included four potential levels: 25%, 50%, 75% and

100%. These levels were established after evaluating previous industry level studies and popular press estimates of commonly discussed future minimum wage levels. Questions relating to restaurant demographics were created using characteristics suggested by Haley-Lock (2012), including geographic location, firm size, and ownership type. As previous studies found mixed results depending on the type of restaurant (Addison *et al.*, 2012; Dube *et al.*, 2007), respondents were asked details about the size and type of restaurants for which they were responsible. In addition, some jurisdictions, such as New York, are implementing different minimum wages depending on the type of operation, particularly fast-food (McAndrew, 2015). Including restaurant ownership type is also important because prior research has shown that independent restaurants have a higher failure rate than chains (Parsa *et al.*, 2005; Parsa *et al.*, 2011).

A within-subject experimental design was used to eliminate some of the between-subject variance. Within-subject experimental designs are generally considered to have more comparable groups because every group has the same respondents and the tests are more sensitive and have more power due to reduced error variance (Keppel and Wickens, 2004).

Sampling

The survey instrument was distributed online to a panel of restaurant owners and managers recruited through Qualtrics, a market research organization. Qualtrics directly contacted potential participants via email and screened for eligibility based on criteria determined by the researchers. To participate in the survey, individuals were required to be at least 18 years of age and actively working as a restaurant owner or manager responsible for pricing or employment decisions. Qualtrics offered a nominal award for respondents' participation. Depending on whether the participant had control over pricing, employment, or both, different sets of questions were asked. Respondents who had control over pricing were

asked, “If the state minimum wage increased in your area and you could *only* adjust pricing, how much would you adjust pricing under each of the minimum wage increase scenarios?” The respondents were then given four potential minimum wage increases: 25%, 50%, 75%, and 100%, and, using a slider, were asked to select the price increase from 0% to 100%. For respondents responsible for employment decisions, a similar question was asked, but instead of adjusting pricing, they were asked how they would decrease employee hours under the same potential minimum wage increases. Respondents responsible for pricing and employment decisions received both question sets and were also asked, “If the state minimum wage increased 25% in your area and you could adjust pricing and/or employment, how much would you adjust each in combination with the other?” This question was repeated under the differing wage increases. To produce a relative answer, respondents were then given two slider scales from 0% to 100%, one for the increase in pricing and the other for the decrease in employment. Respondents were asked to base their decisions on percentage increases in minimum wage instead of dollars because states have differing minimum wages. Finally, respondents were asked to describe, in open-ended questions, how they would adjust pricing or employment levels as a result of minimum wage increases.

Repeated-measures ANOVAs were analyzed to see if there were any significant differences in how restaurant operators adjust pricing or employment based on different minimum wage increases. ANOVAs and t-tests were also conducted to see if there were significant differences in different types of operations.

Results

There were 219 completed surveys out of 845 started, for a completion rate of 25.9%. Respondent demographics are given in Part 1 of Table 2. Participants were 39.3% male and

60.7% female. Respondents had restaurants in 46 states around the United States. Supervisors and managers accounted for 66.2% of respondents while 33.8% held higher positions such as a general manager or owner. Of the respondents, 142 controlled pricing, 174 had control over employment, and 97 controlled both. Each respondent was responsible for one to 69 restaurants, with an average of 1.9 restaurants per respondent, with 79.0% of respondents responsible for just one.

Characteristics of the respondents' restaurants are shown in Part 2 of Table 2.

Respondents' restaurants had an average check of \$20.54, an average of 30.2 employees, and an average of 53.7% of employees at or below minimum wage. All restaurant types were encompassed in the results, from fast casual to fine dining. In addition, both chain restaurants (46.1%), and independent restaurants (53.9%), were represented. Of the chain restaurants 38.6% were corporate run, while the remaining 61.4% were franchises.

<INSERT TABLE 2 HERE>

Table 3 contains descriptive statistics indicating how respondents would adjust their pricing or employment if they were faced with the varying minimum wage increase. As shown in Part A of Table 3, if pricing was the only thing respondents could change, they anticipated increasing prices on average between 18.84% and 60.69%, depending on the minimum wage change, with each minimum wage increment increasing pricing an additional 12-17%. If employment was the only thing respondents could change (Part B of Table 3) they expected to decrease hours on average between 13.20% and 49.36% depending on the minimum wage change, with each minimum wage increment decreasing hours an additional 12-13%.

<INSERT TABLE 3 HERE>

T-tests were conducted on whether the restaurant was a chain or independent and whether the chain was corporate-run or franchised, and both tests were found to not have significant differences. ANOVAs were analyzed on type of restaurant and average check amount, and no significant differences were found. In addition, there were no significant differences in responses from participants based on the position held or the number of restaurants.

Results of the repeated measures ANOVAs indicated that there was a significant difference in the expected change in price and employment based on the various changes in minimum wages. In regard to the effect on pricing, Mauchly's test indicated that the assumption of sphericity had been violated, $\chi^2(5) = 363.24, p < .0005$; therefore, a Greenhouse-Geisser correction was used ($\epsilon = .47$). There was a statistically significant difference in the proposed price increases based on the different minimum wage changes, $F(1.42, 200.49) = 258.14, p < .0005$. Post hoc tests using the Bonferroni correction revealed that there was a significant increase in proposed pricing ($p < .0005$) between each minimum wage change. In regard to the effect on employment, Mauchly's test indicated that the assumption of sphericity had been violated, $\chi^2(5) = 517.24, p < .0005$; therefore, a Greenhouse-Geisser correction was used ($\epsilon = .43$). There was a statistically significant difference in the proposed employment decreases based on the different minimum wage changes, $F(1.29, 223.68) = 257.81, p < .0005$. Post hoc tests using the Bonferroni correction revealed that there was a statistically significant anticipated decrease in employment ($p < .0005$) between each minimum wage change.

Part C of Table 3 shows the results when respondents were given the ability to increase pricing or decrease hours together. When changed in combination with employment, pricing is expected to increase between 22.78% and 49.57% with each varying minimum wage change accounting for an additional 7 - 10% increase. Employment would decrease between 17.73% and

40.12% when used in combination with pricing increases. Each additional minimum wage increment is expected to decrease hours an additional 4 - 9%. Both of these anticipated ranges are smaller than when adjusting only one.

There were no significant differences in expected changes in pricing and employment together when comparing different restaurant characteristics. There was a significant difference; however, in all minimum wage increases for how much pricing is anticipated to increase and employment decrease. Results of these paired t-tests, illustrated in Table 4, show that respondents anticipate increasing pricing at a significantly higher percentage than they would decrease employee hours.

<INSERT TABLE 4 HERE>

Repeated measures ANOVAs were also conducted to see if there was a significant difference in expected change in price and employment when respondents had the ability to change both at the same time. Evaluating the effect on pricing when respondents had the ability to change either, Mauchly's test indicated that the assumption of sphericity had been violated, $\chi^2(5) = 131.41, p < .0005$, therefore, a Greenhouse-Geisser correction was used ($\epsilon = .54$). There was a statistically significant difference in the proposed price increases based on the different minimum wage changes, $F(1.61, 154.72) = 106.18, p < .0005$. Post hoc tests using the Bonferroni correction revealed that there was a significant increase in proposed pricing ($p < .0005$) between each minimum wage change. Evaluating the effect on employment when respondents had the ability to change either, Mauchly's test indicated that the assumption of sphericity had been violated, $\chi^2(5) = 101.34, p < .0005$; therefore, a Greenhouse-Geisser correction was used ($\epsilon = .59$). There was a statistically significant difference in the proposed employment decreases based on the different minimum wage changes, $F(1.75, 168.41) = 68.93,$

$p < .0005$. Post hoc tests using the Bonferroni correction revealed that there was a statistically significant anticipated decrease in employment ($p = .018$) between the 25% and 50% minimum wage changes and a statistically significant difference ($p < .0005$) between every other minimum wage change combination.

Respondents were asked if there was an increase in the minimum wage at such a point that they would need to close their business and 65.3% stated that a minimum wage increase up to 100% would not cause them to close their business. The average minimum wage increase that would cause the remaining 34.7% to close their business was 73.9%. The most common level that would lead respondents to close was an increase of 100%, indicated by 35.5% of respondents who would close.

To better understand how restaurant managers would implement changes to operations, respondents were presented with open-ended questions asking for specific potential changes that would be made if they were faced with minimum wage increases. The responses were analyzed to identify main ideas resulting in 14 distinct concepts that were categorized using constructs defined by Pollin and Wicks-Lim (2016) and Schmidt (2013). The categories were then refined into three specific operational change types: price adjustments, employment expense reductions, and job redesign. Table 5 lists the identified areas operators would change when managing minimum wage increases.

<INSERT TABLE 5 HERE>

Discussion and Conclusions

Results of the study show two significant findings. First, the level of minimum wage increase is anticipated to significantly affect changes in pricing and employment. The higher the minimum wage increase, the more significant an anticipated increase in price or decrease in

employment. It is important for legislators considering minimum wage levels to understand the impact of these changes at the restaurant level to determine the best way to introduce wage hikes to markets. The second significant finding of this study is that all types of restaurants anticipate approximately the same percentage price increases and employment decreases when faced with minimum wage increases. This knowledge can help policy makers to determine if minimum wage levels should be varied based on business type.

Dube *et al.* (2007) state the cost pressure on pricing is calculated as the percentage of employees at minimum wage (53.7% in this study) multiplied by the minimum wage increase (25% - 100%) multiplied by the percentage of labor costs compared to total costs (which runs between 25% and 35% in various restaurant structures). This indicates that the cost pressure on pricing should be approximately 3%, with a 25% increase in the minimum wage, which corresponds to what Basker and Khan (2016) find, and up to 19% at the high end of the 100% minimum wage increase. This study finds a higher than expected increase in pricing, with an average anticipated price increase of 20% at a 25% minimum wage increase and almost 61% at a 100% increase in the minimum wage. Even if this is analyzed under the scenario in which managers can adjust pricing and employment (ranging from 23% to 50%), it is still expected to be significantly higher.

The EPI (2015) finds that 70% of New York fast-food business respondents would raise prices if faced with a \$15 minimum wage, mainly because only around 30% of respondents made a profit in 2014 at the current wage levels. The results of this study show that for respondents who could only adjust pricing, at a 25% increase in the minimum wage, 83.8% would raise prices, and with each minimum wage increase the percentage of respondents who would raise prices increases to 94% at the 100% increase in the minimum wage. Varying jurisdictions could

be a reason for this discrepancy, as could the fact that New York may already have high prices, and fast-food operators think their customers are price sensitive, so they would adjust employment.

The EPI (2015) also finds that 48% of respondents were very likely to reduce hours or staffing levels in response to a \$15 minimum wage, with another 35% stating they would be somewhat likely to do so. Results of the current study support this and show that with a 25% increase in the minimum wage, 71.2% would decrease employees' hours. Similar to pricing, as the minimum wage increases, larger adjustments are made; at a 100% increase in minimum wage, 87.9% of respondents would decrease hours. The results of this study differ from previous studies that do not find significant negative effects (Doucouliagos and Stanley, 2009; Dube *et al.*, 2007; Even and Macpherson, 2014; Hirsch *et al.*, 2015; Persky and Baiman, 2010; Powers, 2009).

Even though the level of minimum wage increases significantly differed, the anticipated effect on earnings did not vary considerably. Earnings are calculated as the number of hours worked multiplied by the hourly rate. Table 6 shows the anticipated effect on earnings given the minimum wage increase and the anticipated decrease in employee hours if only employment can be adjusted. This calculation assumes that all anticipated hours decreased are those of minimum wage employees. Evaluating the effect on hours instead of employment effect may explain why this study finds significant effects on employment where previous studies have not. By evaluating total employment effects, previous researchers offset the decrease in hours worked with the increase in the minimum wage. While total employment may not be significantly affected, the expected number of people employed and the hours they will be scheduled is significantly affected.

<INSERT TABLE 6 HERE>

The results that 34.7% of respondents would need to close their businesses if there were a minimum wage increase is similar to what the EPI finds. When asked if quick-service restaurants in New York would close their business if they were forced to pay a \$15 minimum wage, a 71% increase over the current minimum wage, 22% of respondents stated that this was very likely and 21% said it was somewhat likely (EPI, 2015).

This study finds that the effect of a minimum wage increase is expected to be approximately the same percentage for all types of restaurants. These results contradict those of Even and Macpherson (2014) and Addison *et al.* (2012), who find that employment in different types of restaurants is affected differently but supports the findings of Dube *et al.* (2007). In relation to pricing, the results of this study contradict those of Dube *et al.* (2007) and Aaronson *et al.* (2008). These results do support the pricing decisions that different types of operators such as Brinker International (which mainly operates casual dining establishments) and Union Square Hospitality (which chiefly offers fine-dining restaurants), have made to offset recent increases in minimum wages or potential near-future increases (Murphy, 2015; Ramey, 2015).

The results of this study suggest that chain and independent operations will both adjust pricing and employment equally, indicating that the two different operations act similarly, most likely because the majority of chain operators (61.4%) are franchise run and allowed to make their own pricing and employment decisions, making them similar to independent restaurants. Some observers may assume that chain operators such as McDonald's or Darden would absorb more of the additional labor costs than an independent restaurant. This study suggests that operators of all organizational types would increase prices similarly.

Theoretical Implications

This study adds to the body of knowledge examining the impact of minimum wage changes on restaurants in three key areas. First, scholars have suggested that the restaurant industry is monopsonistic (Lynn and Boone, 2015; Wessels, 1997). The results of this study support this concept, as operators indicate they would modify prices more than they would reduce employment levels when faced with minimum wage growth. Second, while many studies have investigated minimum wage change effects at the industry-level, this study evaluates how unit-level operators would react to varied levels of minimum wage growth. Understanding the unit-level impact provides insight into changes that may be significant yet hidden, when compiled and examined at a broader level, due to the size of the industry. Knowing the unit perspective when making policy decisions, such as minimum wage rates, is important so legislators understand the potential impact of changes prior to the decision. While industry employment numbers may not significantly change when minimum wage grows, unit employment is anticipated to decrease, and this could affect social concerns such as individual take-home pay, unemployment rates, and unemployment benefits. This is the opposite effect that minimum wage increases are designed to have. Further, the significant increase in pricing, as shown in this study, affects purchasing power within a community, which is also a concern for legislators. While an increased minimum wage increases purchasing power, if the offset is increased prices by the same or higher amount, the effect on purchasing power is non-existent. Finally, this study is the only one that evaluates large minimum wage increases of up to 100%. Policy makers can also use the results of this study when determining if minimum wage changes should be implemented, and if so, at what rate.

Practical Implications

The results of this study show that when faced with minimum wage increases, whether managers adjust pricing and employment or just one of the two, they anticipate adjusting pricing more than employment. Respondents indicate that pricing adjustments could include increasing prices, simplifying menus, and/or changing portion sizes or ingredients. Changes in employment would also likely be affected in addition to pricing. Restaurant operators surveyed indicate that employment changes may include terminating employees, reducing scheduled work hours, and/or eliminating overtime. A third option identified by restaurant operators is to redesign the work to be completed. This redesign may result in changes to work processes and task assignment, including enlarging job responsibilities, implementing technology, and/or reducing the services being offered.

Restaurant operators can benefit from the results of this study by adjusting operations when faced with minimum wage increases. If minimum wage levels are scheduled to increase in their market, operators can make proactive adjustments using some of the tactics indicated by the respondents in this study that may save in labor costs. The earlier that management can make changes, the more it could save the firm. For an industry with small margins, proactive changes are extremely important to decrease the chance of failure. Restaurant managers also need to be aware that the potential increase in pricing could lead to a loss of customers or an expectation of higher quality or service. Operators further need to consider the ripple effect on other non-labor costs because their suppliers also need to pay a higher wage due to minimum wage increases (Dube *et al.*, 2007).

Restaurant operators can also lobby policy makers to offset the impact of minimum wage increases. Operators may approach policy makers with proposals to consider approving

minimum wage hikes using phase-in approaches to allow business owners to make adjustments over time to reduce the potential negative outcomes.

Policy makers could also use these results to assist in the setting of minimum wage levels for various state or local markets. In 2017, New York implemented various minimum wage levels from \$9.70 to \$12.00 depending on the region, type of restaurant, and number of employees (Riback, 2017). If lawmakers are debating adjusting minimum wage levels by using type of restaurant as a determining factor, the results of this study indicate there is no significant difference based on type of restaurant, suggesting that a standardized minimum wage level across the industry is appropriate.

Limitations and Future Research

While this study provides interesting information, it also has drawbacks. The first limitation is the use of an online survey. Online surveys can have weaknesses such as being perceived as junk e-mail, potentially skewed demographics, respondents' lack of online experience, technological variations, and/or low response rates (Evans and Mathur, 2005). Second, even with the advantages of using within-subject designs, there are potential limitations of the design such as lack of independence between a single respondent's responses and carryover effects. Obtaining responses from broader and more varied geographic areas, restaurant service styles, and employment levels would provide more generalizable results. Conducting a follow-up longitudinal study to examine the actions taken by management after an increase in minimum wages takes place may yield insight into the actual effects versus those that are anticipated.

The impact of minimum wage changes on employment levels could be examined more extensively at the unit level. Future studies could investigate the link of this anticipated response

to changes in employment levels to direct employee outcomes including productivity, engagement, and satisfaction. While it may be predicted that management would adapt to minimum wage changes through either price increases or employee reductions, perhaps future studies could attempt to find a best way to cope with an increased minimum wage and the manner in which the changes in minimum wage might affect hospitality employees.

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