Diego Scharifker
Elasticity Memo
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Initiative 77 and its effect on restaurants in Washington DC

I. Introduction -Tipped worker minimum wage

According to current labor regulations in Washington DC, employers are required to pay their employees that receive gratuities a minimum wage of $3.33 per hour. The regulation also states that if "an employee's hourly tip earnings (averaged weekly) added to the service rate do not equal the minimum wage, the employer must pay the difference" (Department of Employment Services n.d.). There has been great debate regarding the existence of two different minimum wages, and various organizations have pushed in many states for the elimination of the tipped wage. In April 2017, the advocacy group "Restaurant Opportunities Center" (ROC-DC) submitted enough signatures to the D.C Board of Elections so that Initiative 77 could be included in the election ballot voted last June 2018.

II. Policy Proposal – Initiative 77

On June 19, 2018 residents of Washington DC voted on a ballot that presented two important changes to the minimum wage in DC. Firstly, if approved and passed, it would gradually increase the minimum wage to $15.00 by 2020. Secondly, it would progressively increase the minimum wage of tipped workers from $3.33 to $15.00. ROC-DC justified this proposal to prevent the practice of "wage theft" which consists of employers not completing the amount necessary to reach the legally established minimum wage after tips. They also argue that the tipped wage system makes those employees income unpredictable (Sidman 2018). On the other hand, the Restaurant Association of Metropolitan Washington stated that the potential consequences of implementing this policy would be catastrophic for the restaurant industry as they try to absorb the impact of the price increase of labor in their businesses (Rojas 2018). During the campaign for the Ballot in DC, it soon became obvious the polarizing effect the issue had on both the members of the restaurant industry and its customers. The purpose of this memo is to calculate the impact this policy would have on the restaurant business of Washington DC and confirm if its effects would be as devastating to the industry as those who oppose the initiative have stated. To do so, I will be using as

reference the restaurant *Baan Thai* and the breakdown of food costs for its *Baan Thai Vermicelli* dish as shown in Table 1 (Hayes 2018). As a simplifying assumption, for this memo it has been decided that *Baan Thai* only serves *Thai Vermicelli*, since it is the only dish we have access to a breakdown of its costs.

III. Methodology

To be able to calculate the potential impact of this policy, the following values will be needed:

a) Price Elasticity of Demand of Food away from Home

b) Quantity of *Baan Thai Vermicelli* served before the policy (Q_o)

c) Price of the plate of *Baan Thai Vermicelli* before the proposed policy (P_o)

d) Price of the plate of *Baan Thai Vermicelli* after the proposed policy (P_n)

Having the previous results, it will be possible to calculate the following:

e) New quantity of *Baan Thai Vermicelli* that will be served after the proposed policy is implemented (Q_n)

f) Change in profit per year obtained by the restaurant *Baan Thai* regarding its *Baan Thai Vermicelli* plate.

IV. Calculations

a) Price Elasticity of Demand of Food away from Home

The economic academic literature has established various calculations of the price elasticity of demand regarding changes in the price of food away from home. Andreyeva and her team (2010) calculated a range from 0.23 to 1.76, with a Mean Price Elasticity at 0.81. For this memo I will be using the three values to find a range of the effects this policy would have on *Baan Thai*.

Elasticity 1: $E^{D1} = -0.23$ **Elasticity 2:** $E^{D2} = -1.76$ **Elasticity Median:** $E^{DM} = -0.81$

b) Quantity of *Baan Thai Vermicelli* served before the policy (Q_o)

Based on estimates from a 2010 report elaborated by Deloitte and the National Restaurant Association, the average daily seat turnover (DST) of a restaurant whose average check per person is between $15 to $24.99 is calculated at 1.5 (National Restaurant Asociation, Deloite 2010). The DST is an estimation of how many times a

day a seat will be occupied by a different client. By knowing that the restaurant has a total capacity (C) of 120 seats:

$$Q_o = DST * C$$

$$Q_o = 180$$

c) Price of the plate of *Baan Thai Vermicelli* before the proposed policy (P_o)

As stated in Table 1, the price of making each plate of *Baan Thai Vermicelli* is \$14.29 (P_o) and it is sold at \$15.00, making the restaurant a profit of \$0.71 (Hayes 2018). The percent of the profit margin of this plate can be calculated as:

$$\%\ of\ Profit\ margin = \frac{0.71 * 100}{14.29}$$

$$\%\ of\ Profit\ margin = 4.97\%$$

This value will be used for the following calculation.

d) Price of the plate of *Baan Thai Vermicelli* after the proposed policy (P_n)

Based on Table 1, we know the price of labor with a minimum wage of \$3.33. But we must calculate its new price if the minimum wage is increased.

$$\%\ Increase\ of\ Minimum\ Wage = \frac{(New\ minimum\ wage - old\ minimum\ wage) * 100}{Old\ minimum\ wage}$$

$$\%\ Increase\ of\ Minimum\ Wage = \frac{(15 - 3.33) * 100}{3.33}$$

$$\underline{\%\ Increase\ of\ Minimum\ Wage = 350.45\%}$$

Now that we know that the price of labor increased by 350.45%, we can calculate the new price of labor (PL_n) for the *Baan Thai Vermicelli:*

$$PL_n = PL_o * \%\ Increase\ of\ Minimum\ Wage$$

$$PL_n = (\$1.79 * 350.45\%) + \$1.79$$

$$PL_n = \$8.06$$

By adding this new cost of labor to the original breakdown of the rest of the inputs on Table 1, we get that the new cost of making the *Baan Thai Vermicelli* is $20.55 as seen in Table 2. By maintaining the same percent of profit margin for this plate, we have that the new price (P_n) is:

$$P_n = (\$20.56 * 4.97\%) + \$20.55$$

$$\underline{P_n = \$21.57}$$

e) New quantity of *Baan Thai Vermicelli* that will be served after the proposed policy is implemented (Q_n)

Having obtained the previous values from my calculations and from the economic literature we can now use the price elasticity of demand equation to find Q_n:

$$E^D = \frac{\left(\frac{Q_n - Q_o}{Q_o}\right)}{\left(\frac{P_n - P_o}{P_o}\right)}$$

$$-0.23 = \frac{\left(\frac{Q_n - 180}{180}\right)}{\left(\frac{21.57 - 15}{15}\right)}$$

$$\underline{Q_{n1} = 162}$$

Figure 1

$$-1.76 = \frac{\left(\frac{Q_n - 180}{180}\right)}{\left(\frac{21.57 - 15}{15}\right)}$$

$$\underline{Q_{n2} = 41}$$

Figure 2

$$-0.81 = \frac{\left(\frac{Q_n - 180}{180}\right)}{\left(\frac{21.57 - 15}{15}\right)}$$

$$\underline{Q_{nm} = 116}$$

Figure 3

f) Change in profit per year obtained by the restaurant Baan Thai regarding its *Baan Thai Vermicelli* plate.

By knowing the change in quantity of plates sold in relation to each estimate of elasticity, we can proceed to calculate the profit the restaurant will obtain in each scenario:

i. Profit before proposed policy

$$Total\ Profit_{day} = Q_o * Profit$$

$$Total\ Profit_{day} = 180 * \$0.71$$

$$Total\ Profit_{day} = \$127.80$$

$$Total\ Profit_{year} = \$46{,}647$$

ii. Profit after proposed policy is implemented

$$Total\ Profit_{day} = Q_{n1} * Profit$$

$$Total\ Profit_{day} = 162 * \$1.02$$

$$Total\ Profit_{day} = \$165.24$$

$$Total\ Profit_{day} = Q_{n2} * Profit$$

$$Total\ Profit_{day} = 41 * \$1.02$$

$$Total\ Profit_{day} = \$41.82$$

$$Total\ Profit_{day} = Q_{nm} * Profit$$

$$Total\ Profit_{day} = 116 * \$1.02$$

$$Total\ Profit_{day} = \$118.32$$

$Total\ Profit_{year} = \$60{,}312.60$

$Profit = \$60{,}312.60 - \$46{,}647$

$\underline{Profit = \$13{,}665.60}$

$Total\ Profit_{year} = \$15{,}264.30$

$Profit = \$15{,}264.30 - \$46{,}647$

$\underline{Profit = -\$31{,}382.30}$

$Total\ Profit_{year} = \$43{,}186.80$

$Profit = \$43{,}186.80 - \$46{,}647$

$\underline{Profit = -\$3{,}460.20}$

V. Conclusion

Based on the results obtained by the calculations shown above, we can conclude that *Baan Thai* **is** capable of coping with the increase in the price of labor. By viewing the results using the highest and median elasticity calculations from Andreyeva (2010) we can notice that even though there is a decrease of -67.28% and -7.42% in profits respectably, the restaurant would continue to generate a profit meaning it could continue in business. It is interesting to note the result from the calculations constructed on the lowest elasticity estimate, which shows a 29.30% increase in profits due to an increase in the price of the dish. It must be noted that both the median and lowest elasticity estimates from Andreyeva (2010) shows the price elasticity of food away from home as inelastic, something I found peculiar since I would have considered the consumption of food in restaurants to be greatly influenced by changes in prices. That is why I believe that the highest range in her elasticity estimate is the closest to represent the real effect of this policy if implemented.

Even though I had to make a simplifying assumption to obtain these results, it can be concluded that restaurants that have a similar cost scheme as *Ban Thai* would be capable of coping with the increase in the price of labor and still generate a profit. I would assume that since profit margins would diminish so greatly, less individuals would be interested in wanting to enter this market, generating consequently fewer gastronomical variety for the consumer in the city. So even though it seems false that restaurant will not be able to cope with the increase in costs, the consumer will be affected with less options to choose from.

If I were to continue research into understanding the effects this policy would have on the restaurant industry in Washington DC, I would calculate the consequences of the increase in the price of labor on the different types of restaurants in the city. I predict that those most affected will be lower end restaurants (fast food and casual) whose clientele must be more susceptible to price changes than those that dine at mid-range and fine dining restaurants.

Annexes

Figure 1

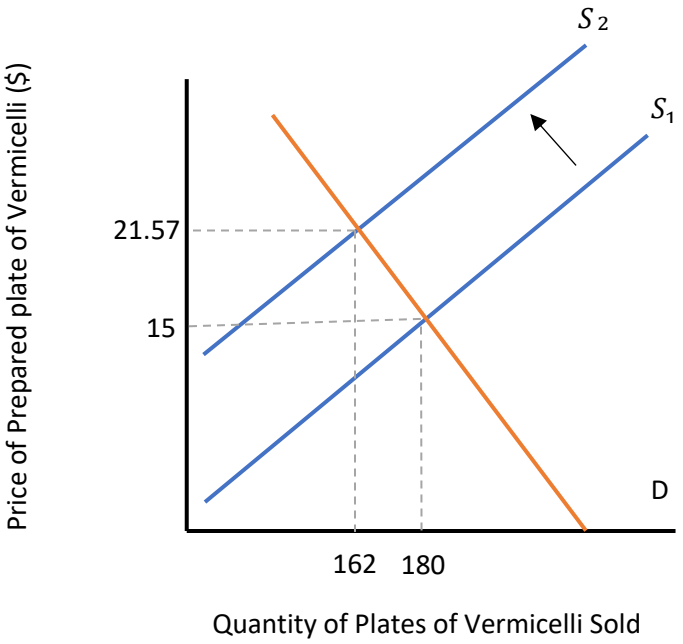

Figure 2

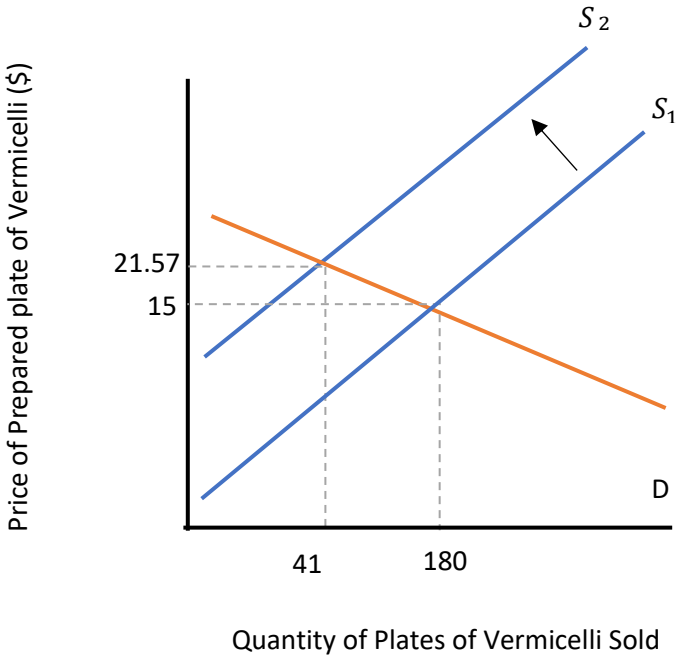

Figure 3

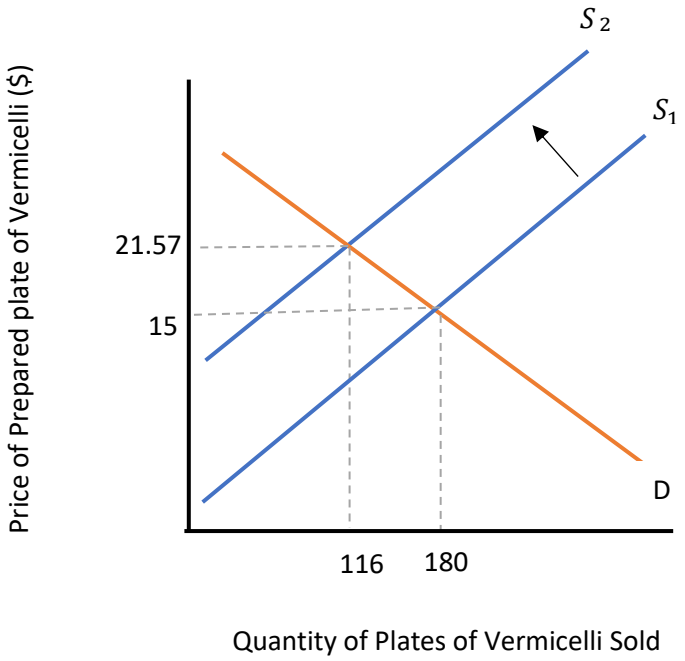
S_2
S_1
21.57
15
D
116
180
Price of Prepared plate of Vermicelli ($)
Quantity of Plates of Vermicelli Sold

Table 1:

Baan Thai Vermicelli ($3.33 Minimum Wage)	
Item	Cost
Noodles	$0.60
Coconut Milk	$0.63
Shrimp	$3.66
Chicken	$1.20
Peanuts	$0.19
Garlic	$0.40
Watercress	$0.60
Tempura Batter	$0.21
Assorted Spices	$0.09
Labor	$1.79
Rent	$1.29
Other dept. labor	$1.10
Manager salaries	$0.82
Insurance	$0.44
General Supplies	$0.13
General Repairs	$0.08
Linen Service	$0.08
Trash Service	$0.08
Property Tax	$0.02
Miscellaneous	$0.44
Federal corp. taxes	$0.33
DC corp. taxes	$0.11
Total	$14.29
Profit	$0.71
Sale Price	$15.00

Table 2:

Baan Thai Vermicelli ($15 Minimum Wage)	
Item	Cost
Noodles	$0.60
Coconut Milk	$0.63
Shrimp	$3.66
Chicken	$1.20
Peanuts	$0.19
Garlic	$0.40
Watercress	$0.60
Tempura Batter	$0.21
Assorted Spices	$0.09
Labor	$8.06
Rent	$1.29
Other dept. labor	$1.10
Manager salaries	$0.82
Insurance	$0.44
General Supplies	$0.13
General Repairs	$0.08
Linen Service	$0.08
Trash Service	$0.08
Property Tax	$0.02
Miscellaneous	$0.44
Federal corp. taxes	$0.33
DC corp. taxes	$0.11
Total	$20.56
Profit	$1.02
Sale Price	$21.57

Works Cited

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