Why do restaurants in the United States offer significantly larger serving sizes than those provided by their counterparts in the United Kingdom?

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Abstract:

Serving sizes differ greatly between US and UK restaurants with the former offering much larger portions. In this essay I will argue that this difference is due to firms in both markets seeking to maximise their profits. I will then discuss how these differing behaviours are dependent on the relative fixed and variable cost levels between UK and US markets.
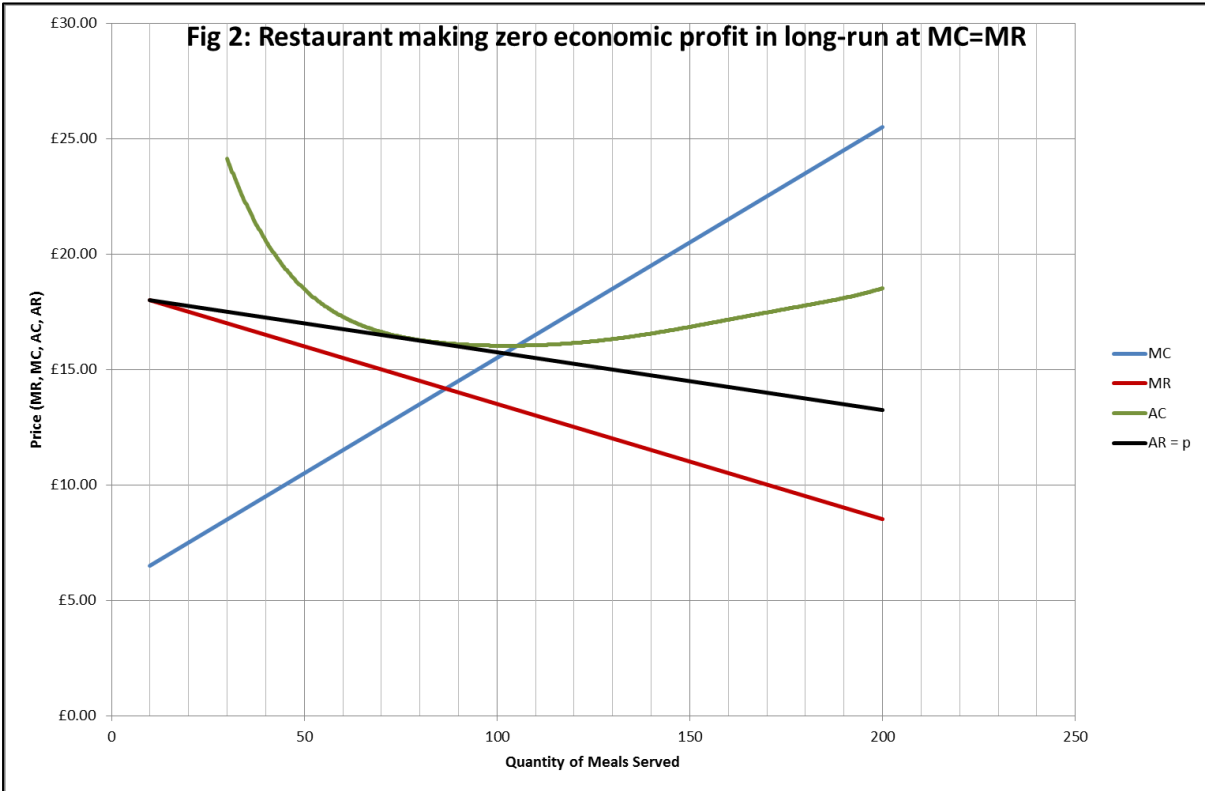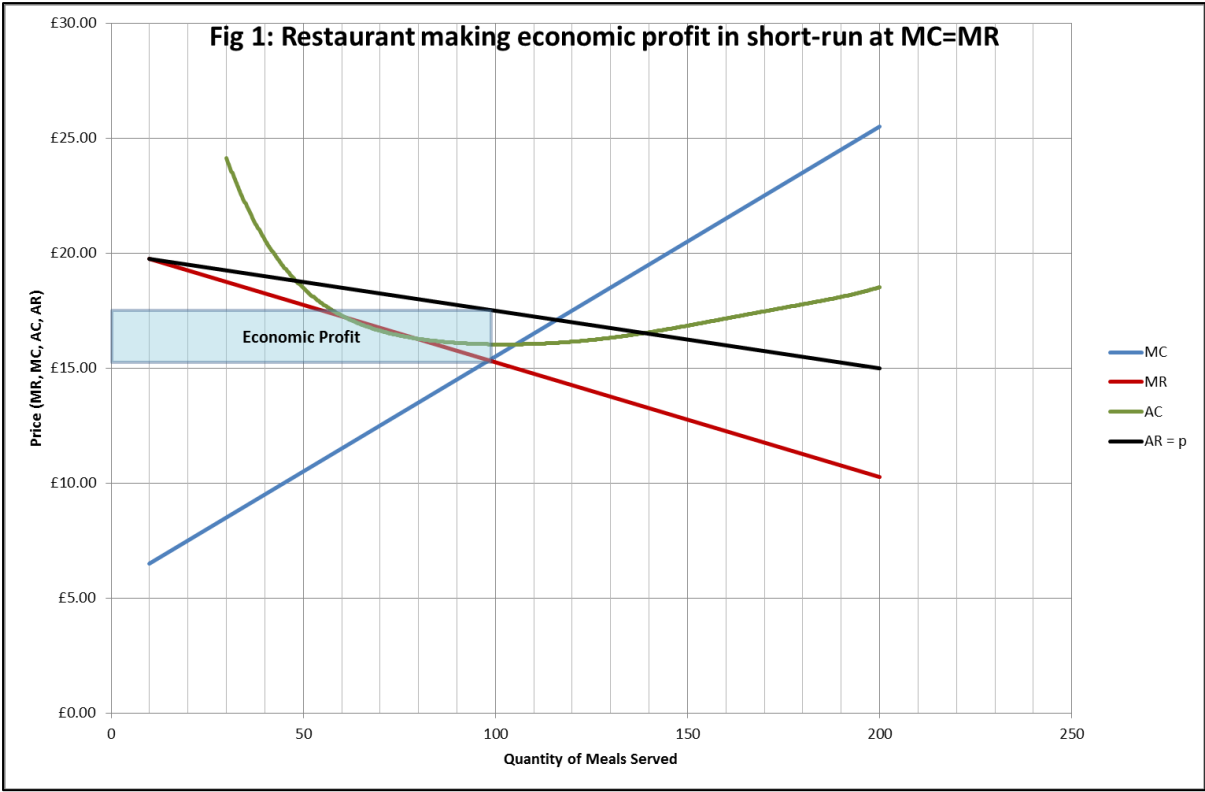
As a visitor to the United States of America (US), it is difficult to ignore the dramatic difference in serving sizes offered at restaurants there, compared with those in the United Kingdom (UK). If restaurants in both markets are seeking to maximise their own profits, why do they act so differently?

The total profits earned by any restaurant will consist of total revenue from selling to customers, minus the total costs associated with operating the establishment (Varian, 2010). In turn, total cost is made up from two constituent parts. Firstly, fixed costs are incurred from payments the business will have to make regardless of the number of customers they serve. For a restaurant, this is likely to include rent, equipment costs such as depreciation, salaries paid to more senior staff as well as the costs of alcohol and food service licensing among others. Secondly, variable costs are those which depend on the number of customers served. Principally, these are likely to be costs of raw food and wages paid to hourly staff.

In the majority of restaurants then, is seems reasonable to assume that the fixed costs associated with holding and maintaining premises are likely to be more significant than variable costs involved with serving customers. Thus, the average cost of a meal is likely to fall with each customer served as this cost will be greater than the marginal cost of serving one more meal (Frank, 2008).

Now let us consider the market in which an individual restaurant is likely to operate. Given a number of conditions, it seems reasonable to model such a market under the structure of monopolistic competition (Varian, 2010). If we exclude consideration of the large multi-national fast food chains, then we can imagine a market in which there are a significant number of smaller, independent businesses. All of these firms are essentially competing for the same customers and make independent decisions about what price to charge and output to produce. The fact that their products are different from each other means that they will face a downward sloping demand curve.

By examining **Figure 1** we can see that when the establishment is operating at the profit maximising level where marginal cost equals marginal revenue (MC=MR), in the short-run it will be making economic profits equivalent to the shaded area. Corresponding with the principals of monopolistic competition, over time, this will mean that competitors are likely to move in, undercut the firm and therefore reduce the going rate (Sloman, 2012). Thus in the long-run firms will make zero-economic profits as demonstrated in **Figure 2.** Not only will this mean that the "market" price has dropped, but the new, competing firms that have been established will have stolen almost all of the customers away from any firm still charging the original price. In order to compete, these firms might lower their price but must ideally find some other way of differentiating themselves from the competition in order to regain customers.

Fig 1: Restaurant making economic profit in short-run at MC=MR

Fig 2: Restaurant making zero economic profit in long-run at MC=MR

Microeconomic theory for profit maximisation under monopolistic competition tells us that provided marginal cost is less than marginal revenue; a firm can increase its total profit by increasing the number of customers it serves. Now, let us consider a situation where increasing "portion size" is interchangeable with the idea of serving more customers,

assuming those customers are charged proportionally to the increased size of their meal. With reference to **Figures 3 and 4**, we can see how this allows the firm to move along the x-axis and towards the point where marginal cost is equal to marginal revenue, and therefore to maximise their profits.

Fig 3: Profit maximisation at MC=MR

Fig 4: Profit (+ve) only
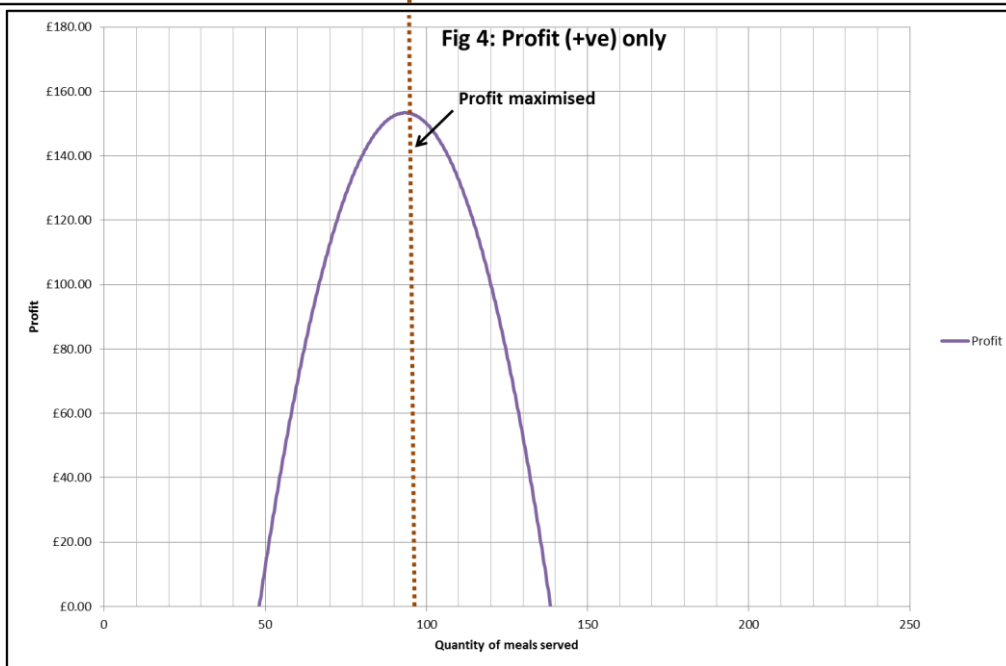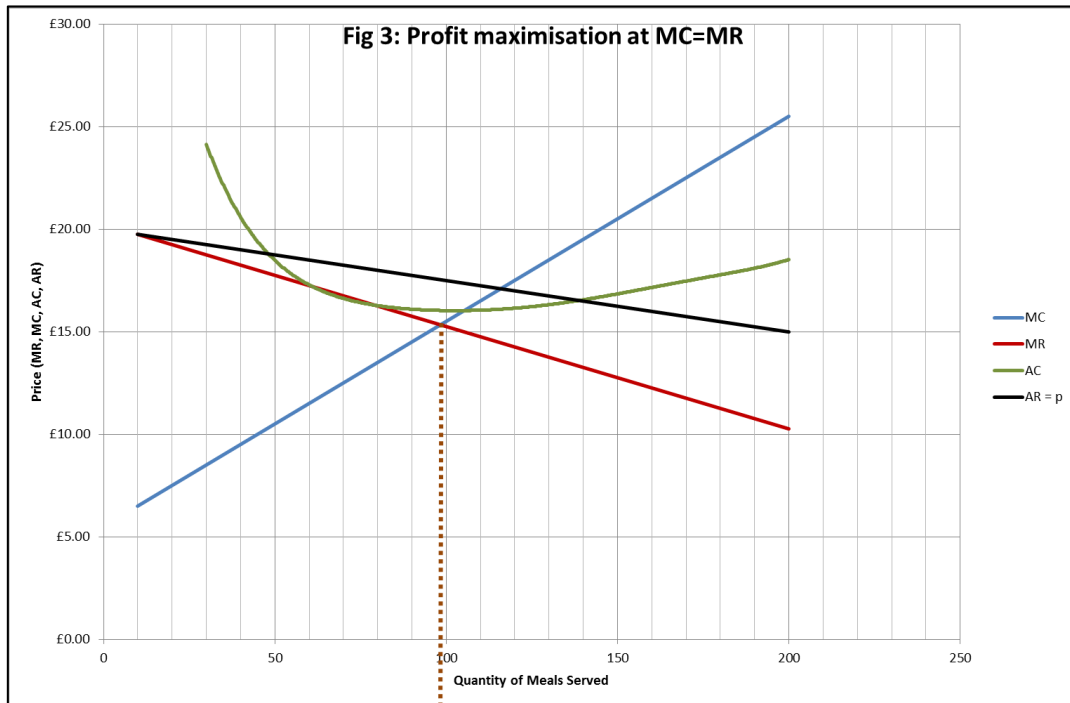
We can now see clearly the incentive for a restaurant to increase their portion sizes in this way in order to have the same effect as an increase in custom. However there is also a secondary incentive. Customers who experience the advantage of being able to take food home, will be motivated to choose this firm over its rivals. Thus the restaurant will be able to increase the number of customers it serves. This approach is known in the industry as

"value sizing" and is one way to create the product differentiation required for the firm to remain ahead of their competitors (Richardson, 2012).

During my own time spent travelling in the States, I have seen that the differentiating factor appears to lie firmly in portion size. It is certainly not hard to find examples of this. From 7Eleven's 40 fl oz (1.18 litre) Super-Big Gulp drink; to the Steakhouse where your meal is "free" if you can finish their 72 oz plate, businesses unashamedly place quantity as their unique selling point (Roadside America, 2012).
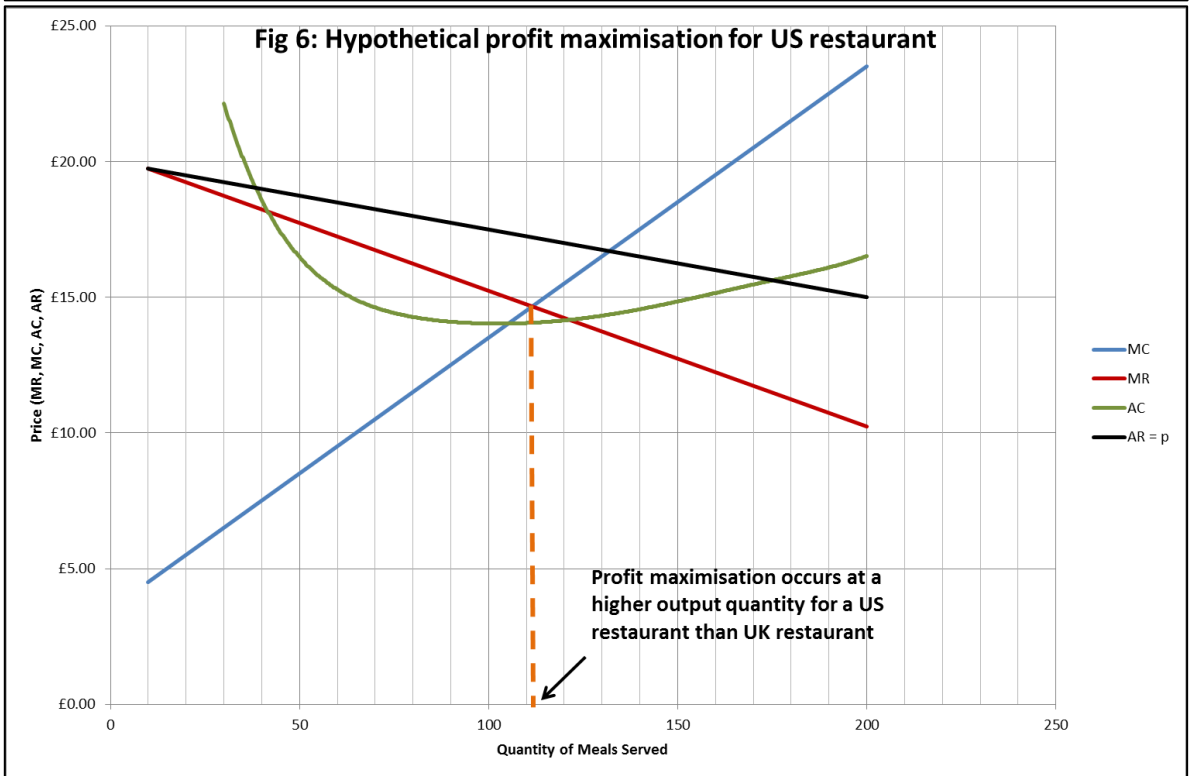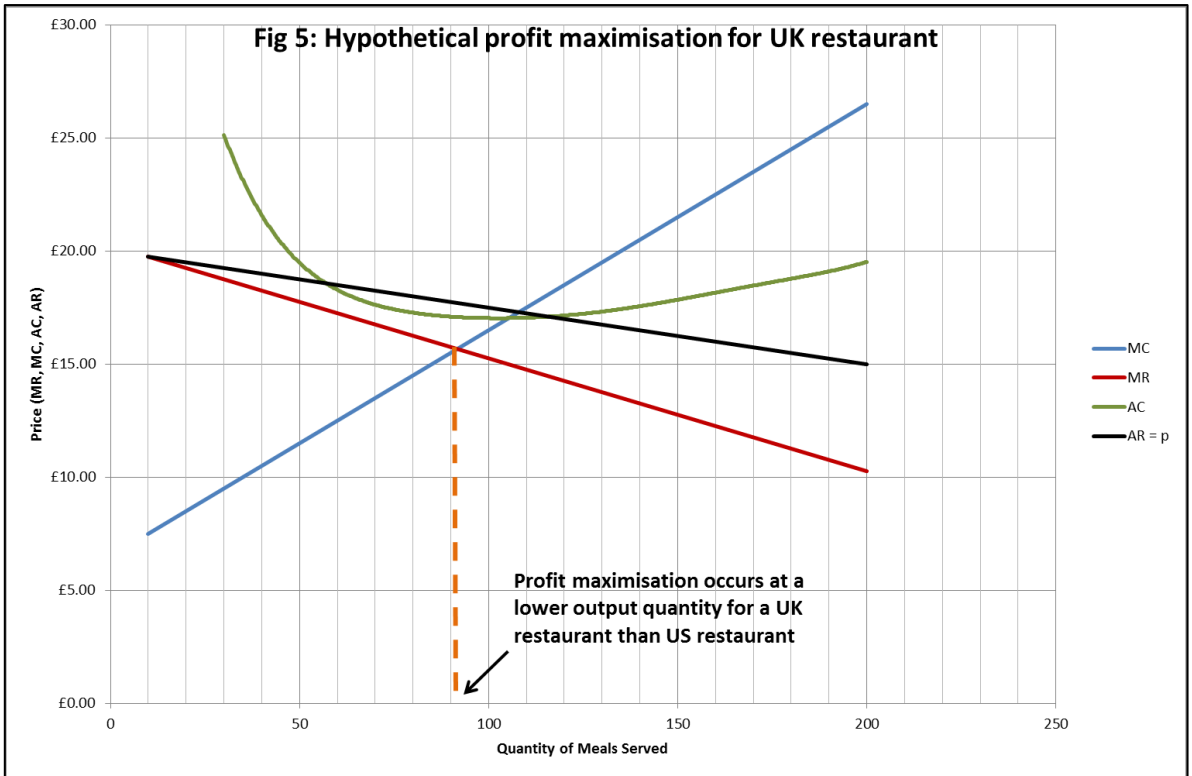
Why have restaurants in the US taken to selling such large meals, when such extremes are rarely seen in the UK? It is unsatisfactory, in economic terms, to claim that the average American is more gluttonous than the typical British consumer. After all, rational humans everywhere will seek to maximise their utility as far as possible, given their income. Therefore, a more reasonable explanation for differing portion size lies in the efforts of firms to maximise their own profits, given the conditions in the local market in which they operate.

As defined previously, variable costs are likely to be small relative to fixed costs in a restaurant business, regardless of whether it is US or UK based. In the States, however, food prices are much lower. Using data for consumer products, which should provide an accurate approximation to wholesale food costs, prices may be as much as 30% higher in the UK than in the US. Staple ingredients such as chicken breasts are 55% higher and milk is 52% more expensive (Numbeo, 2013). As it is goods such as these that make up variable costs, such costs will be more prevalent relative to fixed costs in a UK based restaurant than an equivalent business in America.

This is further reinforced in the relative variable cost of labour. Chefs and restaurant managers are likely to be paid a monthly salary, which will be a fixed cost regardless of customers served or hours worked. The average salary for a UK executive chef of £32,580 (Payscale, 2013) is comparable to the $56,419 (£35,104) (Payscale, 2013) earned by an executive chef working in the US.

However, there is a dramatic difference between how waiting staff - whose wages will make up variable costs - are paid in each country. US employment law allows front-of-house staff to be paid as little as $2.13/hr (£1.33/hr) by their employers, provided that the gratuities they receive are sufficient to make up their pay packet to the minimum wage (US Department of Labor, 2013). In most cases they are. In the UK, however, employers are legally required to pay their workers a national minimum wage of £6.31, irrespective of earnings from tips (Gov.uk, 2013).

This comparative prevalence of variable costs relative to fixed costs between UK and US restaurants has definite economic significance. As such, the profit maximising quantity where MC=MR will be lower in the UK, as can be seen from comparing **Figures 5 and 6**. Consequentially, there is a much greater incentive for US restaurants to dramatically increase their portion sizes both in order to compete and to maximise their profits.

Fig 5: Hypothetical profit maximisation for UK restaurant

Profit maximisation occurs at a lower output quantity for a UK restaurant than US restaurant

MC
MR
AC
AR = p

Price (MR, MC, AC, AR)

Quantity of Meals Served

Fig 6: Hypothetical profit maximisation for US restaurant

Profit maximisation occurs at a higher output quantity for a US restaurant than UK restaurant

MC
MR
AC
AR = p

Price (MR, MC, AC, AR)

Quantity of Meals Served

Bibliography:

Brownell, K. (2004) *Food Fight: The Inside Story of the Food Industry,* New York: McGraw-Hill

Frank, R H. (2008) *The Economic Naturalist: Why Economics Explains Almost Everything,* London: Virgin Books

Gov.uk (2013) National Minimum Wage rates, [Online], Available: https://www.gov.uk/national-minimum-wage-rates [23 Oct 2013]

Gov.uk (2013) Tips at work, [Online], Available: https://www.gov.uk/tips-at-work [23 Oct 2013]

Numbeo (2013) *Cost of Living Comparison Between United States and United Kingdom,* [Online], Available: http://www.numbeo.com/cost-of-living/compare_countries_result.jsp?country1=United+States&country2=United+Kingdom [23 Oct 2013]

Payscale (2013) *Executive Chef Salary (UK),* [Online], Available: http://www.payscale.com/salaries/e6f8fdae/Executive-Chef-UK-Salary [23 Oct 2013]

Payscale (2013) *Executive Chef Average Salary (USA),* [Online], Available: http://www.payscale.com/research/US/Job=Executive_Chef/Salary [23 Oct 2013]

Richardson, J. (2012) *The History of Supersizing: How We've Become a Nation Hooked on Bigger Is Better*, [Online], Available: http://www.alternet.org/story/155932/the_history_of_supersizing%3A_how_we%27ve_become_a_nation_hooked_on_bigger_is_better [16 Oct 2013]

Roadside America (2012) *Big Texan Steak Ranch,* [Online], Available: http://www.roadsideamerica.com/story/3087 [16 Oct 2013]

Sloman, J. (2012) *Economics*, Harlow: Pearson

United States Department of Labor (2013) *Tipped Employees Under the Fair Labor Standards Act (FLSA),* [Online], Available: http://www.dol.gov/whd/regs/compliance/whdfs15.htm [23 Oct 2013]

Varian, H. (2010) *Intermediate Microeconomics: A Modern Approach,* New York: W.W. Norton & Company

Appendix:

The numerical values used in producing the graphs shown throughout the essay are theoretical and were chosen to demonstrate the points made in the text. The values for costs, revenues and quantities used to produce the curves in Figures 5 and 6 are provided

below to allow comparison between the variable cost assumptions made while holding fixed costs constant.

Table 1: Values used for production of Figure 5

Q	FC	VC	TC	AC	AVC	MC	p	TR	AR	MR	Profit
0	£500.00	£7.00	£500.00	#DIV/0!	#DIV/0!		£20.00	£0.00	#DIV/0!		-£500.00
10	£500.00	£7.50	£575.00	£57.50	£0.75	£7.50	£19.75	£197.50	£19.75	£19.75	-£377.50
20	£500.00	£8.00	£660.00	£33.00	£0.40	£8.50	£19.50	£390.00	£19.50	£19.25	-£270.00
30	£500.00	£8.50	£755.00	£25.17	£0.28	£9.50	£19.25	£577.50	£19.25	£18.75	-£177.50
40	£500.00	£9.00	£860.00	£21.50	£0.23	£10.50	£19.00	£760.00	£19.00	£18.25	-£100.00
50	£500.00	£9.50	£975.00	£19.50	£0.19	£11.50	£18.75	£937.50	£18.75	£17.75	-£37.50
60	£500.00	£10.00	£1,100.00	£18.33	£0.17	£12.50	£18.50	£1,110.00	£18.50	£17.25	£10.00
70	£500.00	£10.50	£1,235.00	£17.64	£0.15	£13.50	£18.25	£1,277.50	£18.25	£16.75	£42.50
80	£500.00	£11.00	£1,380.00	£17.25	£0.14	£14.50	£18.00	£1,440.00	£18.00	£16.25	£60.00
90	£500.00	£11.50	£1,535.00	£17.06	£0.13	£15.50	£17.75	£1,597.50	£17.75	£15.75	£62.50
100	£500.00	£12.00	£1,700.00	£17.00	£0.12	£16.50	£17.50	£1,750.00	£17.50	£15.25	£50.00
110	£500.00	£12.50	£1,875.00	£17.05	£0.11	£17.50	£17.25	£1,897.50	£17.25	£14.75	£22.50
120	£500.00	£13.00	£2,060.00	£17.17	£0.11	£18.50	£17.00	£2,040.00	£17.00	£14.25	-£20.00
130	£500.00	£13.50	£2,255.00	£17.35	£0.10	£19.50	£16.75	£2,177.50	£16.75	£13.75	-£77.50
140	£500.00	£14.00	£2,460.00	£17.57	£0.10	£20.50	£16.50	£2,310.00	£16.50	£13.25	-£150.00
150	£500.00	£14.50	£2,675.00	£17.83	£0.10	£21.50	£16.25	£2,437.50	£16.25	£12.75	-£237.50
160	£500.00	£15.00	£2,900.00	£18.13	£0.09	£22.50	£16.00	£2,560.00	£16.00	£12.25	-£340.00
170	£500.00	£15.50	£3,135.00	£18.44	£0.09	£23.50	£15.75	£2,677.50	£15.75	£11.75	-£457.50
180	£500.00	£16.00	£3,380.00	£18.78	£0.09	£24.50	£15.50	£2,790.00	£15.50	£11.25	-£590.00
190	£500.00	£16.50	£3,635.00	£19.13	£0.09	£25.50	£15.25	£2,897.50	£15.25	£10.75	-£737.50
200	£500.00	£17.00	£3,900.00	£19.50	£0.09	£26.50	£15.00	£3,000.00	£15.00	£10.25	-£900.00

Table 2: Values used for production of Figure 6

Q	FC	VC	TC	AC	AVC	MC	p	TR	AR	MR	Profit
0	£500.00	£4.00	£500.00	#DIV/0!	#DIV/0!		£20.00	£0.00	#DIV/0!		-£500.00
10	£500.00	£4.50	£545.00	£54.50	£0.45	£4.50	£19.75	£197.50	£19.75	£19.75	-£347.50
20	£500.00	£5.00	£600.00	£30.00	£0.25	£5.50	£19.50	£390.00	£19.50	£19.25	-£210.00
30	£500.00	£5.50	£665.00	£22.17	£0.18	£6.50	£19.25	£577.50	£19.25	£18.75	-£87.50
40	£500.00	£6.00	£740.00	£18.50	£0.15	£7.50	£19.00	£760.00	£19.00	£18.25	£20.00
50	£500.00	£6.50	£825.00	£16.50	£0.13	£8.50	£18.75	£937.50	£18.75	£17.75	£112.50
60	£500.00	£7.00	£920.00	£15.33	£0.12	£9.50	£18.50	£1,110.00	£18.50	£17.25	£190.00
70	£500.00	£7.50	£1,025.00	£14.64	£0.11	£10.50	£18.25	£1,277.50	£18.25	£16.75	£252.50
80	£500.00	£8.00	£1,140.00	£14.25	£0.10	£11.50	£18.00	£1,440.00	£18.00	£16.25	£300.00
90	£500.00	£8.50	£1,265.00	£14.06	£0.09	£12.50	£17.75	£1,597.50	£17.75	£15.75	£332.50
100	£500.00	£9.00	£1,400.00	£14.00	£0.09	£13.50	£17.50	£1,750.00	£17.50	£15.25	£350.00
110	£500.00	£9.50	£1,545.00	£14.05	£0.09	£14.50	£17.25	£1,897.50	£17.25	£14.75	£352.50
120	£500.00	£10.00	£1,700.00	£14.17	£0.08	£15.50	£17.00	£2,040.00	£17.00	£14.25	£340.00
130	£500.00	£10.50	£1,865.00	£14.35	£0.08	£16.50	£16.75	£2,177.50	£16.75	£13.75	£312.50
140	£500.00	£11.00	£2,040.00	£14.57	£0.08	£17.50	£16.50	£2,310.00	£16.50	£13.25	£270.00
150	£500.00	£11.50	£2,225.00	£14.83	£0.08	£18.50	£16.25	£2,437.50	£16.25	£12.75	£212.50
160	£500.00	£12.00	£2,420.00	£15.13	£0.08	£19.50	£16.00	£2,560.00	£16.00	£12.25	£140.00
170	£500.00	£12.50	£2,625.00	£15.44	£0.07	£20.50	£15.75	£2,677.50	£15.75	£11.75	£52.50
180	£500.00	£13.00	£2,840.00	£15.78	£0.07	£21.50	£15.50	£2,790.00	£15.50	£11.25	-£50.00
190	£500.00	£13.50	£3,065.00	£16.13	£0.07	£22.50	£15.25	£2,897.50	£15.25	£10.75	-£167.50
200	£500.00	£14.00	£3,300.00	£16.50	£0.07	£23.50	£15.00	£3,000.00	£15.00	£10.25	-£300.00

Abbreviations used in above tables:

Abbreviation	Term
Q	Quantity
FC	Fixed Costs
VC	Variable Cost
TC	Total Cost
AC	Average Cost
AVC	Average Variable Cost
MC	Marginal Cost
p	Price (demand curve)
TR	Total Revenue
AR	Average Revenue
MR	Marginal Revenue