ENTRY, EXIT AND PRICE COMPETITION IN UK RESTAURANTS[*]

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ABSTRACT

Entry, exit, multiple dimensions of horizontal product differentiation, including spatial competition and the price-quality relationship in the gourmet restaurant sector are investigated using a unique, large, and comprehensive panel dataset compiled from the UK Good Food Guide (GFG). We find a positive relationship between meal prices and restaurant quality as assessed by the GFG. Restaurants are attracted to post code areas with more existing restaurants and raise prices when the number of nearby restaurants increases. Different spatial competitive forces are identified in the gourmet restaurant sector comparing the London market and the sector outside of the capital city.

(JEL Classifications: D22, D43, L1)

Keywords: spatial competition, price competition, quality competition, restaurant industry

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I. INTRODUCTION

'One cannot think well, love well, sleep well, if one has not dined well.'

Virginia Woolf

Across the UK it seems that the nation's appetite for good food is growing. This is seen in the increasing number of high-profile chefs, cook books and television programs, as well as restaurants celebrating an increasingly diverse and eclectic range of cuisines. According to Keynote (www.keynote.co.uk) there were 27,915 restaurants across the UK in 2010, in which customers spent an estimated £6.405 billion on food alone.[1] Meanwhile, Eatout Magazine (www.eatoutmagazine.co.uk) reports that an increasing number of people are eating out and they are becoming more sophisticated in their choices, making for a very dynamic and buoyant market, with increased product choice and variety as consumers are attracted to niche areas of the restaurant sector. Hence, in 2014, turnover in the UK restaurant sector as a whole reached £21.6 billion (Financial Times, May 18, 2015). If the UK continues to follow US trends (where more than 50% of expenditure on food is on food consumed outside of the home, compared with only 25-30% in the UK) the potential for growth of the non-fast and non-chain food restaurant sectors is promising. Hence, the objective of this paper is to examine the effects of spatial and quality competition on entry, exit and prices of meals in high-quality UK restaurants, using a unique panel dataset gathered from 'The Good Food Guide' denoted by GFG below. Note that by entry we mean entry into the GFG. This encompasses new restaurants which enter the GFG within a year of opening, as well as existing restaurants which in the course of a year increase the quality of their offerings sufficient that they are deemed worthy of an entry into the GFG.

Guides such as the GFG continue to be important as a restaurant meal is necessarily an experience good as described by Nelson (1970). Consumers can use information from restaurant guides and reviews either to help them select a restaurant when visiting an unfamiliar locality or to supplement local knowledge of restaurants in their neighborhoods. If a consumer enjoys a meal in a good restaurant then there is a high probability that they will return so initial

[1] These figures only consider restaurants in the traditional sense, not fast-food restaurants nor pubs serving food.

impressions are backed up by habit persistence. The initial restaurant visit may be motivated, at least in part, by an entry in the GFG, which does tend to be advertised by successful restaurants. Indeed, most high-quality restaurants strive to be in the GFG and inclusion is taken within the industry to be a laudatory commendation. Hence, entries in the GFG can be taken to be a good proxy for restaurant quality.

Our results provide insights into a variety of interrelated subjects addressed in the Industrial Organization literature. Restaurants are characterized by multiple facets of horizontal product differentiation, with establishments not only horizontally differentiated in terms of their geographic location, but also the facilities and cuisine offered which will not be equivalently ranked by all customers or reviewers. Demand for particular restaurants is then seemingly complicated by changing views as to what is fashionable. Restaurants must also choose the quality of their offerings, and as such restaurants will be vertically differentiated.[2] The interplay between aspects of horizontal and vertical differentiation, entry (into the GFG), exit (from the GFG) and price will be explored, with particular attention paid to the nature of competition between restaurants in a locality, considering the impact on entry, exit and meal price of the number of competing restaurants, both those offering comparable and those offering more diverse cuisines. The context for this analysis is a unique dataset, in terms of both scale but also diversity of restaurants compared to studies previously produced. The dataset include variables indicating the physical location of a restaurant, prices, entry into and exit from the GFG, GFG quality indicator, seating capacity, cuisine type, and other restaurant characteristics for all restaurants in the GFG.

The paper is structured in the following way. In the next section we elaborate on the GFG as the focus of our analysis. In Section 3 we discuss relevant literature, while Section 4 describes the data, Section 5 provides the empirical analysis, and conclusions are offered in Section 6.

II. THE GOOD FOOD GUIDE

The GFG began publication in 1951 and has appeared in hard copy every year since with a number of editors and publishers. Around 1,500 restaurants are selected for inclusion each year. Its mission statement is to "help readers to find the very best places to eat and encourage

[2] It is recognised that while all consumers are assumed to prefer high quality to low quality, subject to income constraints, a complicating factor is that all consumers may not agree what constitutes a higher quality restaurant meal. This problem is not considered in the analysis below.

restaurants to offer the best possible food, service and experience". Therefore, the GFG offers long standing signals of restaurant quality. It is generally regarded within the UK restaurant industry as the premier guide for potential diners, having maintained a strong reputation for over 60 years. Restaurants selected for inclusion will typically advertise the fact on websites and on the premises. Most of the included restaurants are independent, single-unit operations but some are part of chains. An example of a chain is the set of Michael Caines restaurants situated within the Abode Hotel group.[3] The 2011 GFG features four such restaurants.

According to its website, www.thegoodfoodguide.co.uk, the GFG sends out a team of anonymous inspectors based around the UK. These inspectors were volunteers in early editions but now include ex-restaurateurs and chefs, experienced writers and food critics. The GFG puts potential new inspectors through a series of tests to demonstrate their credentials as judges before they can be enlisted. The full list of over 1,000 inspectors and reviewers is recorded in the GFG, but the allocation of inspectors to particular restaurants is not revealed. Note that reader feedback will influence the choice of restaurants to visit. We should stress that the numbers of inspectors and the numbers of included restaurants are much greater than for the more exclusive Michelin Guide. In contrast, the GFG is similar in coverage to the Zagat Guides published in the US (Gergaud et al, 2015).

III. LITERATURE REVIEW

There are large theoretical and empirical literature exploring the interplay between combinations of price, entry and competition, dimensions of horizontal differentiation including spatial differentiation, and vertical differentiation variables. As Mazzeo (2002a) recognizes, understanding competition in concentrated market structures remains a challenge. Mazzeo's (2002a) empirical analysis focuses on firms' attempts to enter and compete using differentiated quality and location choices. As such, the analysis addresses US motels' simultaneous use of horizontal and vertical product differentiation as strategic variables. Mazzeo (2002b) goes on to model the impact on motels' prices of the number of competing establishments in a locality, considering competitors as similar or different according to their quality level choices. Our analysis follows the approach of Mazzeo (2002a; 2002b), in the context of the UK restaurant industry, considering factors influencing entry into and exit from the GFG, and then the impact

[3] Michael Caines is a well-known British chef.

of the numbers of similar and different competitors on restaurant prices. Unlike in Mazzeo (2002a and 2002b), competitors are considered similar or different according to the types of cuisine offered, with quality of restaurant meal as measured by its GFG rating also taken into account. The dataset additionally allows us to control for multiple facets of horizontal competition.

Mazzeo (2002b) concludes that competition between motels puts downward pressure on prices which motels can mitigate to some extent through quality differentiation, while we find that there are benefits of agglomeration.[4] Specifically, both more similar and different restaurants in a locality result in restaurants being able to raise prices. Consequently, we conclude that restaurants compete using multiple aspects of horizontal product differentiation and quality differentiation while avoiding price competition that may be damaging to profits. Pal and Sarkar (2002) initially note that clustering firms severely intensifies price competition and drives profits to zero. However, they go on to argue that reduced price competition is feasible under spatial Cournot competition where geographically closely located competing firms can earn positive profits. Therefore, compared to the results obtained with price competition, spatial Cournot competition gives a result that is consistent with frequently observed clustering of establishments in the real-world. As Irmen and Thisse (1998) pointed out, there are alternative explanations in the literature justifying the agglomeration of competing firms. In their theoretical analysis, they also identify conditions under which competition between firms, competing across multiple dimensions of product differentiation, can lead to price competition between firms being relaxed.

Considering the literature on restaurant markets, the majority of studies of restaurant pricing apply hedonic pricing methods. Wider applications of hedonic pricing methods are diverse, for example, encompassing the pricing of wine (Combris et al. 1997, Benfratello et al. 2009, Roma et al. 2013), cigars (Freccia et al. 2003), and violins (Graddy and Margolis 2011) as well as more standard applications such as to property prices (see Kiel and Zabel 2008, Ahlfeldt and Maennig 2013 for recent hedonic house pricing examples). Falvey et al. (1992) examined the average prices paid in New Orleans for a set menu as well as for selected main courses. They found 'service', 'ambiance' and 'French Quarter' to influence meal prices. Interestingly, they concluded that quality does not affect prices. Gunawardana and Havrila (1996) examined the

[4] Fischer and Harrington Jr. (1996) also identify benefits of agglomeration but in the context of search rather than experience good markets.

average price of a three-course meal and average price of main courses in Melbourne restaurants. Like Falvey et al, they did not find a significant role for media/industry ratings in either measure of meal price. Ehrmann et al. (2009), using a cross-section of 256 restaurants, have examined the impact of Michelin stars and GaultMillau scores on meal prices in Germany. They also considered the effects of the number of quality competing restaurants nearby on price. In contrast to some other studies, they show that cuisine scores and having a celebrity chef attached to a restaurant each positively and significantly affected meal prices. Their Michelin star effect is supported by Gergaud et al. (2015) for New York who concluded that each successive award of a Michelin star resulted in a price increase around 30% and concluded that Michelin starred restaurants also invest in better wine lists and décor. A recent contribution to the literature is by Fogarty (2012) who examined Australian meal prices as a function of restaurant quality as scored in influential restaurant guides, cuisine type and restaurant characteristics. As with Ehrmann et al. (2009), Fogarty (2012) finds a significant positive effect of restaurant guide scores on meal prices. At the lower end of restaurant dining, Kalnins (2003) examined the factors that determine 'burger' prices with number of competing 'burger establishments' and rival franchise prices in the vicinity as significant covariates.

Apart from Kalnins (2003), none of the above-cited papers examine in any detail the effect of spatial competition on restaurants. However, the study by Kalnins examines the fast-food sector serving a fairly homogeneous product in a local area, and the dataset covers a sub-sample of establishments. In contrast, our analysis incorporates all high-quality restaurants in the UK accredited by the GFG. The upscale restaurant sector is occupied by different cuisine types and account is taken of this heterogeneity in the analysis. Specifically, our research distinguishes between similar restaurants serving meals of the same cuisine type, which can be considered as close substitutes, and competing restaurants of dissimilar cuisine type which nevertheless offer substitute options for potential diners.

In other studies, Becker (1991), Banerjee (1992) and Albrecht et al. (2002) have examined why restaurants might choose not to increase prices, even in the presence of excess demand for covers, while Anderson and Magruder (2012) look at the impact of online customer reviews on restaurant reservation availability. Berry and Waldfogel (2010) use the US restaurant (and newspaper) industry to test the relationship between market size and market concentration. Fleck and Hanssen (2008) examine the relationship between the imposition of smoking bans and

sales in restaurants. Chossat and Gergaud (2003) examine factors impacting GaultMillau guide scores given to French restaurants, concluding that these summary quality scores depend both on the quality of the cuisine, but also the restaurant's setting. In a later analysis, Gergaud et al. (2007) studied factors explaining the Michelin Guide score of a restaurant and prices.[5]

Our empirical analysis is based on a large panel dataset of over 8,500 restaurant-year observations featuring 2,098 unique establishments. It is believed that this is the largest dataset analyzed to date for the non-fast food restaurant sector. This is the full population of all restaurants included in the GFG, generally regarded within the industry as the premier guide for potential diners having been established in 1951 and having maintained a strong reputation since that time. Our large sample size facilitates an analysis of the effects of spatial competition, as well as other dimensions of horizontal differentiation on meal prices. The dataset can be used to distinguish the impact of restaurants offering close substitute products in terms of cuisine, and restaurants offering alternative cuisine types. As a secondary objective, the study models the relationship between meal prices and quality scores and confirms the finding of a positive relationship from the rich dataset. In the next section the empirical model and data are described.

IV. EMPIRICAL MODEL AND DATA

Model

We first empirically model restaurant (*i*)'s entry into the GFG by cuisine type (*c*) at a given location (*l)*. The restaurant may already exist in a location and may be on the fringe of being admitted into the GFG. Alternatively the restaurant may be new to the locality. We argue that entry into the GFG is different from entry into the regular sit-down restaurant sector or the fast food restaurant sector, largely because entry is determined by the Guide's editors after reports and recommendations from inspectors. There are likely to be substantial costs of entry into the GFG such as maintaining high and consistent quality of meals and service and provision of various in-house amenities to satisfy both inspectors and customers who prefer GFG restaurants.

To consider entry of restaurants into the GFG at a given location (*l*), we model firms as choosing a location (postcode) to situate their restaurants to enter the Guide and maximize

[5] Note that Combris et al. (1997) similarly model both price and quality in their study of Bordeaux wine.

profits. This specification generates a conditional logit model which allows us to control for factors that researchers in the industrial organization and urban and regional economics literatures suggest are potentially important confounding effects such as spatial competition or agglomeration. Here, we use the number of similar type restaurants (*R*) and number of dissimilar or substitute type restaurants (*S*) to capture spatial competition effects. Additionally, we control for the quality of existing similar (*Q*) and substitute (*U*) restaurants as denoted by average GFG scores. We also control for other socioeconomic and demographic variables such as income and population (*X*) at a given location.

Specifically, we offer an empirical model of a firm (restaurant)'s choice during a given period as the result of an attempt to maximize expected profits by using a conditional logit framework (McFadden, 1973). We write firm *i*'s profit from entering the GFG at postcode *l* at time *t* as:

$$\pi_{i_c,l,t} = R'_{l,t}\beta + S'_{l,t}\gamma + Q'_{l,t}\theta + U'_{l,t}\varphi + X'_{l,t}\varphi + \varepsilon_{i_c,l,t} \quad (1)$$

where $\varepsilon_{i_c,l,t}$ is independent and identically distributed according to a Type-I extreme value distribution. We also assume that each firm knows their private costs and expected profits. This setup enables us to convert the discrete actions of competitors into continuous location choice probabilities. We specify the conditional logit model as:

$$\Pr\left(E_{i_c,l,t} = 1 | R_{l,t}, S_{l,t}, Q_{l,t}, U_{l,t}, X_{l,t}\right) = \Pr\left(\pi_{i_c,l,t} > \pi_{i_c,k,t} \; for \; all \; l \neq k\right) \quad (2)$$

where $E_{i_c,l,t}$ is an indicator variable which equals one if firm *i* chooses location *l* at time *t* and zero otherwise.

Firm *i* will choose location *l* if $\pi_{i_c,l,t} > \pi_{i_c,k,t}$ for all $l \neq k$. Conditional on the decision to enter the market, the probability that firm *i* will choose particular location *l* at time *t* is:

$$\Pr\left(E_{i_c,l,t} = 1 | R_{l,t}, S_{l,t}, Q_{l,t}, U_{l,t}, X_{l,t}\right) = \frac{\exp\left(R'_{l,t}\beta + S'_{l,t}\gamma + Q'_{l,t}\theta + U'_{l,t}\varphi + X'_{l,t}\varphi\right)}{\sum_{k=1}^{m} \exp\left(R'_{k,t}\beta + S'_{k,t}\gamma + Q'_{k,t}\theta + U'_{k,t}\varphi + X'_{k,t}\varphi\right)} \quad (3)$$

Data

Editions of the GFG, 2003 to 2011, provided the data for most of our restaurant variables, including information on the average price of a three course meal in a given restaurant, restaurant

location, restaurant facilities such as seating capacity, affiliation to a hotel, a separate bar, and the GFG's score out of a maximum of ten for a restaurant, for all restaurants included in the GFG.[6] Due to lagged variables 2003 data are not used. Attention is restricted to restaurants that enjoy full entries in the GFG, rather than restaurants that are classed, for example, as 'Also Recommended' as only much more limited information is available on these restaurants in the guides.

Our spatial analysis requires us to organize the Good Food Guide by location and by cuisine. In the UK, residences and businesses have post codes (zip codes). From the GFG 2011 edition, one entry is *Jamie's Italian* situated in Oxford city center. This has a post code of OX1 2AE. The full post code is specific to just a few addresses while OX1 covers the whole inner city area of Oxford. We use OX1 as a spatial unit of observation and find the number of restaurants in this locality. Unlike Gergaud et al. (2015), we further disaggregate by cuisine.[7] We classify *Jamie's Italian* as Italian and find the numbers of Italian restaurants in OX1 and also the number of non-Italian restaurants in OX1. The Italian restaurants in OX1 are considered to be close competitors or direst rivals while we treat non-Italian restaurants in OX1 as dissimilar, not close substitutes and therefore not direct rivals. We have 779 postcodes across the UK where at least one GFG restaurant operates.

Throughout our analysis, we define a given locality by unique postcode identifier as the three or four characters before the space. The UK Census of Population was used to extract measures of total population, population by ethnic groups, average income and average house prices for our postcode identifiers. We use linear interpolation to obtain income and population figures between Census dates of 2001 and 2011.

As a highly condensed urban location, London has a more complex postcode structure relative to the rest of the UK. Around three-quarters of our restaurants are located in London so it is important that we treat London postcodes carefully. As examples, The Restaurant at St. Paul's

[6] See Table A1 for details of the meaning of the scores awarded, and Table A2 for details on all key variables.

[7] Gergaud et al. (2015) focus on New York restaurants and use spatial weights based upon distance to capture frequency of competing Michelin restaurants close to an observed Michelin-starred restaurant. This weighted intensity measure is used as an instrument for an endogenous indicator of inclusion into the Michelin guide (p.820). Their research question is whether Michelin scores have an influence on Zagat scores for New York restaurants. We use GFG scores here as a control variable in models of competition dynamics and price-setting amongst GFG restaurants for the whole of the UK not just London. For that purpose, we consider post code units of observation to be more appropriate than construction of distances between neighbouring restaurants in the Good Food Guide.

Cathedral has a post code EC4M 8AD while *Rochelle Canteen* is at E2 7ES. The postcode identifier for the former is EC4M while for the latter it is E2.

We count the numbers of similar and dissimilar restaurants in a given postcode. The GFG has 34 total cuisine types and for the sake of tractability we reduce these to just eight: British, Chinese, (other) European, French, Indian/Pakistani, Italian, Japanese, Seafood and Other. As examples of our selection, Greek and Spanish restaurants are merged into European. Modern British and Gastropub categories are merged into British which is the largest category, followed by European and then French (see Table 1). Our counts of similar and dissimilar restaurants are based on these eight categories. Although we do not observe openings and closures of restaurants we can track entry and exit into the GFG through our sample period, by year. We can then model likelihood of entry or exit into or out of the GFG by our conditional logit as shown above.[8]

The GFG offers scores of its included restaurants on a scale from one to ten. The distribution of scores is highly skewed with very few restaurants given scores above seven. To deal with skewness, we collapse the scores into one (for GFG scores one to three), two (GFG scores four to six) and three (GFG scores seven to ten). For each postcode, we then measure the difference in collapsed score between an observed restaurant and average collapsed scores for similar restaurants (excluding the observed restaurant) and dissimilar restaurants. Table 1 breaks out our reconstructed quality scores by cuisine type. Inside London, higher quality scores are achieved by French and European restaurants while outside London, some British, European and French restaurants earn the highest ratings. Lower ratings are spread widely across all cuisine types inside London while outside London, British and European restaurants are dominant in the lowest category, perhaps reflecting their greater numbers.

Table 2 reports descriptive statistics by postcode. Since we anticipate the determinants of competition and prices will vary between London and outside London we offer descriptive statistics for these sub-markets. The total number of restaurants in our sample is 2,098 with 1,546 in London and 552 outside London. The number of entrants is slightly higher than number of incumbents, reflecting a high degree of restaurant turnover in the Guide over our sample period.

Also noteworthy from Table 2, the mean quality difference from our reconstructed scores is greater for dissimilar restaurants than for similar restaurants, both inside and outside of

[8] For exit, we consider a theoretical model involving a threshold rule that is analogous to the profit maximization problem considered in our entry analysis. Exit models are estimated using logit models.

London. This reflects greater heterogeneity of dissimilar restaurants in a typical neighborhood. We note that the average quality score is the same inside and outside of London although a typical London neighborhood has more of both similar and dissimilar restaurants compared to a typical non-London neighborhood.

V. RESULTS AND DISCUSSION

Entry into the GFG

Our analysis begins with firm entry into the GFG. Table 3 shows the numbers of entrants' cuisine types by year. Over time, new entries into the GFG have become more 'British', less 'French' and less 'European'. These trends can be explained by i) greater diversity in the British category including absorption of non-British influences into British restaurants and their menus, ii) the rise of Gastropubs in the 2000s where good restaurants are situated within public houses (bars) that serve alcohol[9] and iii) the rise in importance of British celebrity chefs who appeared frequently on television and who have promoted, directly and indirectly, consumer interest in British restaurants and cooking.[10]

Table 4 reports conditional logit results for probability of entry into the GFG, for all postcodes. Column (1) begins with the simplest specification with just numbers of similar and different restaurants as covariates. Moving through Columns (2) to (6) more control variables are added. In column (6) none of the coefficients on population sizes by ethnicity are significant and column (5) emerges as our preferred specification. Regardless of inclusion of control variables, we find that greater numbers of both similar and different restaurants in a given locality encourage entry into the GFG, indicative of agglomeration benefits. However, column (5) shows that if a restaurant quality (as shown by GFG scores) is greater than similar or different restaurants then firms are less likely to enter that location (postcode). Also from column (5) we see that restaurants are more likely to enter the GFG in areas with high population. They are more likely to enter the Guide if located in London or Northern Ireland.

[9] The Gastropub business model allows a new restaurant owner to spread risk. In the early phase of restaurant ownership, bar sales can cross-subsidise the restaurant. If the restaurant is unsuccessful then the owner can exit and focus on the bar business. If the restaurant is successful then the owner can develop complementarities between the bar and restaurant parts of the business.

[10] Examples of celebrity chefs are Hester Blumenthal, Angela Hartnett, Jamie Oliver, Gordon Ramsay, Garry Rhodes, Rick Stein and Marco Pierre White who have all featured on cookery television shows over the last decade. These chefs have all owned or part-owned restaurants that featured in the Good Food Guide.

Tables 5 and 6 split the entry model into outside London and London to explore whether entry patterns are different inside and outside the capital city. As with the aggregate model, restaurants are more likely to enter the GFG in areas with higher population size. Outside London, restaurants are more likely to enter the GFG where there are more similar or dissimilar restaurants, again reflecting advantages of agglomeration. However, inside London, once we control for location characteristics we find the effects of numbers of similar and different restaurants to be not significantly different from zero, perhaps a reflection of the pre-existing high density of quality restaurants where agglomeration benefits have been exhausted.

The effects on entry of quality of GFG restaurants already located in a given postcode are different outside and inside London. Outside London, if a restaurant's quality score is greater than the mean score of dissimilar restaurants then this restaurant is more likely to enter the GFG in that area. Inside London, as the quality difference rises between a restaurant's score and that of both similar and dissimilar restaurants then entry into the GFG becomes less likely. These contrasting results may be due to the fact that outside London, rural areas in particular lack many competing cuisine varieties. We should note that the mean number of similar or dissimilar restaurants outside the London postcode area is less than one while the mean number inside London is 2.8, reflecting the considerably greater concentration of GFG restaurants of all types in the London area. Consequently, entry outside London may reflect a desire to offer a more niche dining opportunity when the extent of local market competition is more limited.

A further consideration when comparing GFG entry inside and outside London is that new restaurants find it costly to ensure the highest quality of food and service in London, not least because of high property rents. Conversely, property rents are lower outside London and especially low in more remote, rural locations.[11] Moreover, it is easier for a GFG restaurant to be seen as distinctive in terms of quality, especially in terms of initial accreditation by the Guide, if it is the 'best' restaurant in an area poorly served by competing gourmet restaurants. Such a restaurant is more likely to attract both customers and the attentions of GFG inspectors.

Exit from the GFG

[11] Income is highly correlated with property values (0.794). Hence, we do not include property values when estimating models with an income explanatory variable.

We turn next to estimates of likelihood of exit from the GFG. This does not imply exit from the industry. A restaurant may be removed from the GFG because its quality is deemed insufficient compared to others. Some restaurants exit and re-enter the GFG in a later year. However, we do not see any firms reentering during our sample. Note that in our exit analysis, we use only firms that entered the GFG between 2004-2010. This allows us to track the full life cycle of a restaurant during this period in the GFG. 2011 entrants are not used because we cannot see exit or survival of a firm in 2012.

Table 7 reports numbers of entries and exits into and out of the GFG, by year. Recall that this refers to entry into the Guide rather than formation or closure of businesses. Turnover is very high; inside London 94 out of 141 new entrants in 2004 had exited the GFG by 2010. Outside London the exit rate is even higher: out of 47 new entrants in 2004 38 had left by 2010. However, the exit rate does decline as survival in the GFG increases in duration. This suggests that new entrants into the GFG need to work hard to sustain their reputation within the GFG as high-quality restaurants. This means retaining and recruiting excellent staff, especially chefs, and continuing use of high-quality ingredients within an appealing menu. Table 8 reports the summary statistics of firms that are used in the exit analysis.

Table 9 reports estimates of likelihood of exit for all postcodes combined. Note that we use only firms that entered the GFG between 2004 and 2010. This allow us to trace the full life cycle of restaurants. As before, we start with the simplest specification in column (1) and gradually add control variables. The control variables in column (4) include covariates for restaurant characteristics. In column (1) it appears that a restaurant is more likely to exit the GFG if it faces a greater number of similar or different restaurants in the neighborhood. But as more control variables are added the coefficients on number of similar and different restaurants weaken in significance until they become insignificant in column (4). A consistent result across all specifications in Table 9 is that exit from the GFG is less likely as the average quality difference between a given restaurant and that of dissimilar restaurants rises. This suggests that GFG restaurants benefit from vertically differentiating themselves from rivals.

Among the numerous restaurant characteristics shown in Table 2 and Table A2 we find that having air conditioning, free parking, allowing children and being owned by the chef are all significantly and negatively associated with likelihood of exit. That chef-owned restaurants are less likely to leave the GFG is particularly notable as this may be due to a greater motivation and

desire to succeed in sustaining restaurant quality by chef-owners as opposed to owners who are more distant from the restaurant production process. In the latter case, principal-agent problems in monitoring and incentivizing restaurant staff could well apply.

Tables 10 and 11 split the exit estimations into outside London and London. Common across both sets of results, a restaurant is not any more likely to leave the GFG if it faces more similar or dissimilar restaurants in its neighborhood. Once established in the GFG, it appears that greater competition is irrelevant to likelihood of exit from the GFG. The negative effect on exit from the GFG of quality differences of a restaurant versus dissimilar restaurants in its locality is only significant outside London. Inside London, there is imprecise evidence that an increase in quality score against that of similar restaurants lowers likelihood of exit from the GFG.

Amongst the restaurant attributes, having a chef-owner lowers probability of exit from the GFG outside London but not inside. Having a child-friendly restaurant lowers probability of exit from the GFG both inside and outside London.

Summarizing the results so far, we find that restaurants are more likely to enter the GFG in areas with more similar cuisine restaurants and in areas with more restaurants of different cuisines. The presence of high-quality restaurants in a given area attracts both similar and dissimilar high-quality restaurants that receive recognition by the GFG. This is suggestive of agglomeration benefits that have been previously identified in the literature (Irmen and Thisse, 1998; Pal and Sarker, 2002). But probability of exit is unaffected by the numbers of similar or dissimilar restaurants in a given locality. This is an interesting asymmetry. In order to remain in the GFG restaurants need to maintain or improve their food and service offerings. Yet, competition effects are not important for likelihood of exit from the GFG.

Price

Our data show that entry rates are higher than exit rates. Clearly, for firms to stay in the market at all, they must make non-negative profits in the area over the long-term. Prices are proxies for revenues and profits. If prices are found to be higher this suggests that restaurants can benefit from agglomeration benefits, while lower prices would indicate that greater competition in the form of a larger number of competing restaurants results in the standard Bertrand result of downward pressure on prices.

Table 12 reports average price of a three-course meal, by cuisine type. Prices in the Guide are taken from questionnaire returns that are checked by the anonymous inspectors. It should be noted that the definition of meal price reported in editions of the GFG changes. Prior to 2007, price is the cost of a three-course meal (lunch or dinner) for one person, including coffee, house wine, service and any cover charge where applicable. In 2007 the price is for a three-course dinner for one person, including coffee, house wine and service. From 2008 onwards, price reflects the average cost of a three-course dinner excluding wine. The inclusion of year effects takes account of these differences.

From Table 12, we see the highest average prices are found in French restaurants, both inside and outside London. Indian/Pakistani is the cheapest category outside London while Seafood is, perhaps surprisingly, the lowest price category inside London. In general, average prices are somewhat higher in London compared to outside reflecting higher property rental rates, higher incomes and greater demand for high-quality dining in London although these effects are moderated by potentially greater competition between restaurants as compared to provincial locations.

Figure 1 Panel A shows how average meal prices vary positively with the number of rival restaurants in a given locality, both for London and outside London. Interestingly, as numbers of rival restaurants exceeds five, average prices outside London overtake those inside London for comparable cuisine types. Figure 1 Panel B plots average prices over time. The sharp downward movement in prices in 2008 compared to 2006 and 2007 is due to the change in price definition noted above but also reflects the UK financial crisis of 2007-08 which led to many restaurant closures, especially in London, and to price reductions as establishments attempted to maintain customer demand in the face of falling incomes.

When examining price patterns, we regress log restaurant price (of a typical three-course meal) on numbers of similar and dissimilar restaurants in a locality, quality differences against these other restaurants and a set of control variables.[12] Results for all postcodes are shown in Table 13. All continuous variables are in logs so coefficients are elasticities. Our main result is that an increase in the number of restaurants in an area, i.e. more competition, leads to an increase in prices, not a decrease. A 1 per cent rise in number of similar restaurants leads to a 2.2

[12] The pricing model has the same covariates as for the entry and exit models. The average (log) price of a three course meal for a given restaurant is given by: $p_{ilt} = R'_{l,t}\gamma + S'_{l,t}\omega + Q'_{l,t}\theta + U'_{l,t}\varphi + X'_{l,t\beta} + \alpha_i + \lambda_l + \tau_t + \epsilon_{ilt}$, where α_i, λ_l and τ_t are restaurant, location and time effects while ϵ_{ilt} is a stochastic error term.

percent rise in prices (column 4). A 1 per cent rise in number of dissimilar restaurants leads to a larger rise in prices, 4.9 percent.

There are two candidate explanations for the positive association between GFG restaurant prices and numbers of similar and dissimilar restaurants in a given locality. The first is tacit collusion. In this industry, prices are clearly displayed on menus outside the restaurant and in most cases online. Restaurant owners can easily see rivals' prices. Staff, including chefs, are highly mobile between restaurants and owners will often meet with fellow owners socially. These conditions are all compatible with the existence of tacit collusion in this industry.

An alternative explanation for the positive effect of spatial competition on prices is agglomeration benefits. These are associated with positive externalities between firms. For example, a greater density of alternative restaurants results in larger numbers of potential customers being attracted to a locality. This is perhaps partly because of the greater ease of finding high-quality restaurants that match individual or household preferences (lower search costs). Also, there is an externality due to a more pleasant ambiance associated with being located in an area well-served by large numbers of high-quality restaurants.

As expected, larger restaurants, in terms of seat capacity (covers), charge lower prices. Group restaurants with multiple branches also charge lower prices, most likely as a consequence of economies of scale. Restaurants with Michelin stars charge considerably higher prices than establishments without a star. A three-star Michelin restaurant has 30 per cent higher prices than a Good Food Guide entrant without any stars. The Michelin star effect appears to be highly nonlinear with a large jump in price associated with a move from two to three Michelin stars. Higher meal prices are also associated with an inside hotel setting, a bar facility, top quality wine list and being located in London. Prices are lower if the restaurant has a child-friendly policy, has live music or is located in Scotland or Wales. Across all restaurants, our year effects reveal that prices were about 30 percent lower after the 2008 financial crisis.

Tables 14 and 15 again offer separate estimations for outside and inside London. Results for outside London are broadly in line with those just summarized for all postcodes. For London, we see some interesting differences in results. Specifically, the number of similar restaurants does not seem to influence prices. Numbers of dissimilar restaurants do affect prices in London, to a greater extent than outside London (5.9 percent as opposed to 4.9 percent at the mean). Quality differences with similar cuisine restaurants do not have a significant effect on price in

London whereas it did for outside London. Quality differences with dissimilar cuisine type restaurants continue to have a significant, positive effect on price inside London albeit of smaller magnitude. To some extent then, higher quality (as assessed by Good Food Guide scores) is associated with higher prices, unsurprisingly.

Given the large number of covariates, especially in competition variables, there may be concerns regarding overfitting the model and covariates being correlated. First, we test for correlation among variables. We observe correlation among variables to be small, less than |0.27|.[13] Next we test for overfitting the model using five-fold cross-validation. This procedure splits the data randomly into k partitions, in our case five, then for each partition it fits the specified model using the other k-1 groups and uses the resulting parameters to predict the dependent variable in the unused group. Our estimated measure of goodness-of-fit from each attempt, root mean squared error (RMSE) and R^2 values indicate that models are not biased or over esitimated.[14]

Overall, we find that greater numbers of similar and different restaurants result in restaurants being able to raise prices, i.e. firms compete on factors other than price, especially outside London. Inside London the positive competition-price linkage only applies for restaurants of different cuisine types, consistent with knowledge spillovers. Our conjecture based on our empirical results is that firms in the gourmet restaurant industry compete on factors other than price. Firms can compete using multiple aspects of horizontal product differentiation while avoiding price competition that may be damaging to profits, as in Irmen and Thisse (1998)'s theoretical analysis. Restaurants can even utilize this product differentiation to enhance quality and raise prices to distinguish themselves from growing numbers of similar restaurants (outside London) or dissimilar restaurants (inside and outside London)

VI. CONCLUSIONS

This paper has investigated entry, exit, multiple dimensions of horizontal product differentiation, including spatial competition and the price-quality relationship in the UK gourmet restaurant sector using a unique, large and comprehensive panel dataset compiled from

[13] Results withheld for the sake of brevity but of course available on request.
[14] Again results available on request.

the GFG. Our analysis distinguishes restaurants not just by location but also by disaggregated cuisine type.

There is no evidence that GFG editors ration entries into the Guide by location so we consider entry and exit effects to be outcomes of locational characteristics, restaurant quality and spatial competition. Our results show that these effects vary considerably inside and outside London and these differences are most likely connected to high property rental prices and wages in London, pre-existing restaurant density in London and more substantial agglomeration effects outside London. Inside London, likelihood of entry into the GFG is negatively related to quality difference between a given restaurant and both similar and dissimilar restaurants but is unrelated to numbers of competing restaurants. Outside London, likelihood of entry into the GFG is positively related to numbers of similar and dissimilar restaurants in a neighborhood and positively related to quality difference of a restaurant compared to the average of dissimilar restaurants. In contrast, likelihood of exit from the GFG is largely unrelated to spatial competition, both inside and outside London. The only consistent significant effect of spatial competition on likelihood of exit from the GFG is a negative association with quality difference of a restaurant compared to average of different restaurants in a locality, outside London. We conjecture that this immunity from spatial competition of GFG restaurants reflects underlying economic rents and we proceeded to investigate price determination for GFG restaurants.

Our results on meal prices show that increased spatial competition in a locality raises, not lowers, prices, controlling for socio-demographic variables and many restaurant characteristics. A 1 percent rise in the number of similar restaurants raises price by 2.5 per cent while the same increase in the number of different cuisine restaurants raises price by 4.0 to 6.5 percent. If own quality score is higher by 1 percent compared to either similar or dissimilar restaurants own price is higher by around 4.0 to 6.5 percent.

Taken together, we find that entry of gourmet restaurants into the GFG is partly determined by management strategy. A restaurant located outside London should make the effort to be selected for the GFG if there are many similar and dissimilar restaurants in its neighborhood, to capture agglomeration benefits, and if it can sustain a high-quality difference compared to gourmet restaurants of a different cuisine type, presumably to draw customers away from those cuisines. Inside London, recalling that the minimum GFG score is 1, the amount of spatial competition is irrelevant for selection into the GFG but quality differences are relevant

and a new restaurant seeking inclusion would be better off aiming at a low threshold score rather than a high score compared to rivals. This highlights the difficulties of gaining recognition for a new restaurant in London faced with incumbents which have already gained high scores and reputation from selection into the GFG.

We interpret our results as offering empirical support for the theoretical results of Irmen and Thisse (1998) who identify conditions under which price competition is decreased in market characterized by multiple facets of horizontal product differentiation. Our results are also consistent with both tacit collusion and agglomeration benefits. Future research should attempt to distinguish between tacit collusion and agglomeration effects as drivers of spatial competition and prices in the restaurant industry and in the leisure industry more generally. The 'recipe for success' for UK gourmet restaurants is to gain entry into the GFG, sustain a reputation for food quality and service that is reflected in longevity in the GFG and, in the meantime, charge high meal prices that do not drive customers away but maintain economic rents. Our analysis sheds light on the various determinants of entry into and exit from GFG and meal prices and finds considerable heterogeneity across cuisine types and between London and the provinces of the UK.

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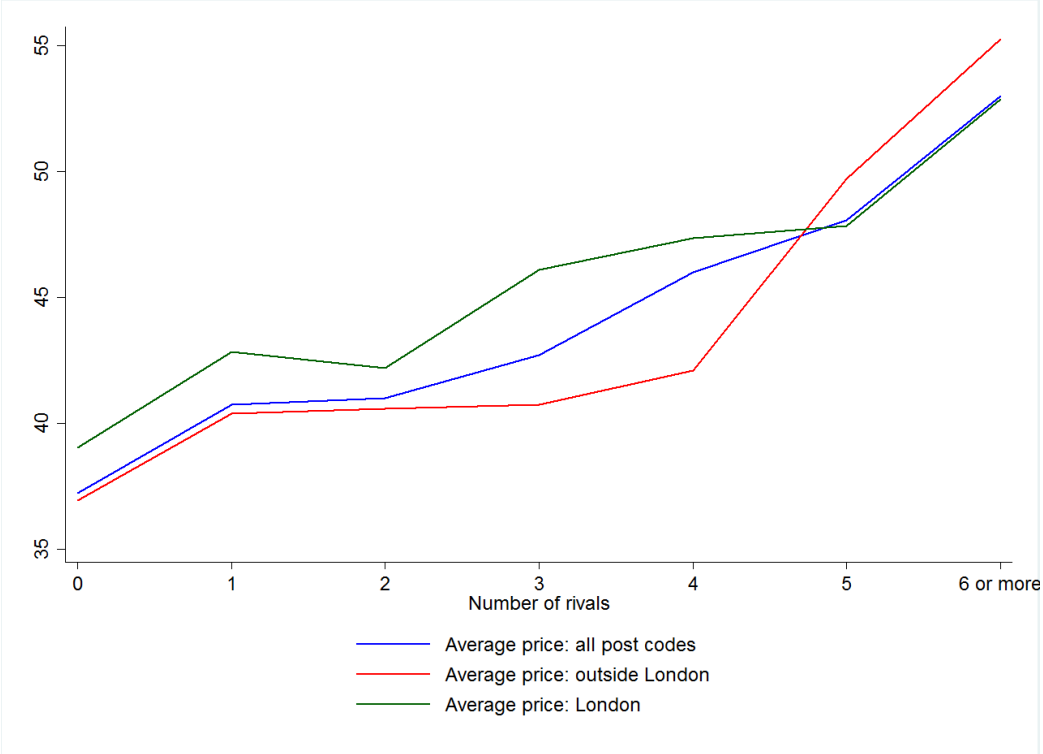
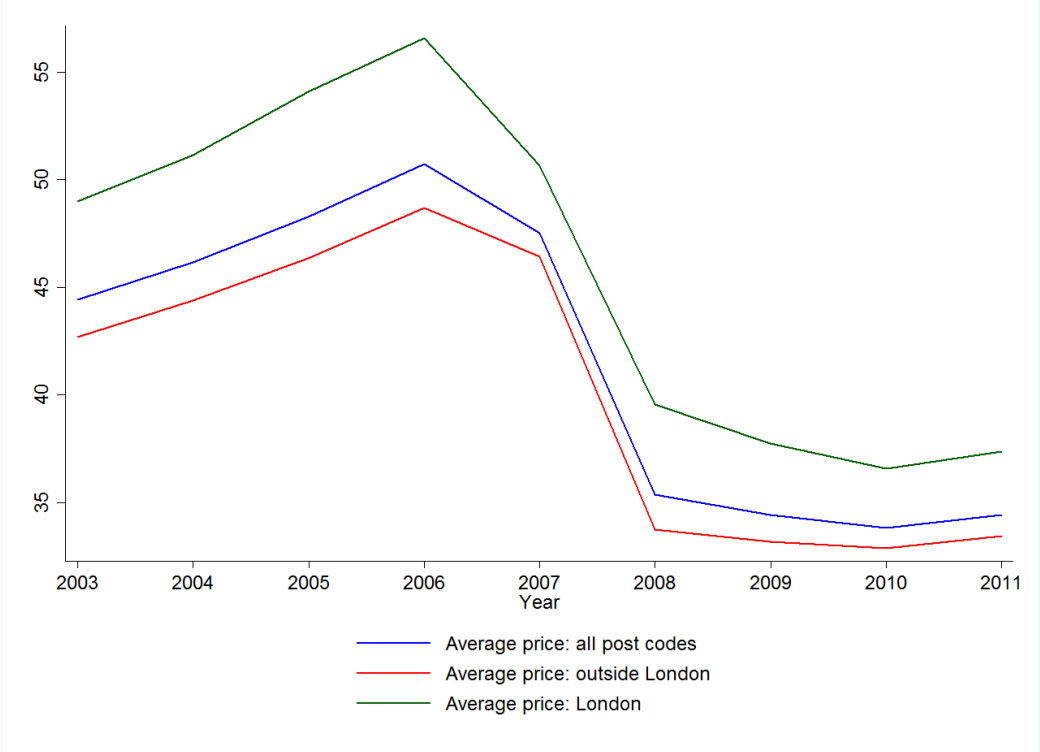
FIGURE 1
Price patterns



Panel A: Average prices by number of rivals and area



Panel B: Average prices by year and area

TABLE 1
Distribution of cuisine types by quality score

Cuisine type	Quality score			Total
	1-3	4-6	7-10	
Panel A: All post codes				
British	563	322	13	898
Chinese	52	14	0	66
European	274	220	17	511
French	93	126	26	245
South Asian	54	10	0	64
Italian	66	32	1	99
Japanese	22	11	0	33
Seafood	68	33	1	102
Other	61	21	0	82
Total	**1,253**	**789**	**58**	**2,100**
Panel B: outside London				
British	496	283	13	792
Chinese	18	7	0	25
European	207	166	13	386
French	59	76	12	147
South Asian	19	2	0	21
Italian	22	13	0	35
Japanese	4	2	0	6
Seafood	56	26	1	83
Other	42	10	0	52
Total	**923**	**585**	**39**	**1,547**
Panel C: London				
British	67	39	0	106
Chinese	34	7	0	41
European	67	54	4	125
French	34	50	14	98
South Asian	35	80	0	43
Italian	44	19	1	64
Japanese	18	9	0	27
Seafood	12	7	0	19
Other	19	11	0	30
Total	**330**	**204**	**19**	**553**

TABLE 2
Summary statistics by post code

Variable	Mean		
	All	Outside London	London
Number of post codes with at least one restaurant	779	716	63
Number of entrants	1,199	892	307
Number of incumbents	901	656	245
Average number of similar incumbent restaurants	0.291	0.264	0.597
	(0.688)	(0.572)	(1.421)
Average number of different incumbent restaurants	0.743	0.564	2.755
	(2.083)	(0.831)	(6.427)
Average quality score of entrants	3.169	3.169	3.169
	(1.412)	(1.412)	(1.412)
Quality difference with similar incumbent restaurants	2.846	2.851	2.788
	(1.564)	(1.566)	(1.548)
Quality difference with different incumbent restaurants	3.066	3.079	2.924
	(1.42)	(1.417)	(1.452)
Average income (£)	34,996.70	33,776.33	48,834.86
	(9,597.01)	(8,611.55)	(9,344.97)
Average house price (£)	293,427.50	274,230.10	511,112.50
	(132,026.90)	(92,139.01)	(259,560.50)
Average population	204,369.50	202,834.60	221,773.80
	(164,469.20)	(170,546.80)	(60,366.47)
Average white population	178,607.50	181,817.20	142,206.70
	(133,542.60)	(138,244.30)	(43,681.63)
Average south Asian population	9,769.23	9,103.58	17,317.23
	(26,868.53)	(27,369.88)	(18,770.45)
Average east Asian population	3,809.19	3,178.89	10,956.41
	(6,068.14)	(5,765.78)	(4,673.81)
Average African population	6,197.41	4,079.23	30,216.08
	(14,659.52)	(11,720.43)	(21,611.83)
Average other population	5,986.60	4,655.76	21,077.37
	(9,462.16)	(8,426.01)	(7,207.971)
Scotland	0.106	0.115	
	(0.308)	(0.319)	
Wales	0.071	0.077	
	(0.256)	(0.267)	
Northern Ireland	0.014	0.015	
	(0.118)	(0.123)	
London	0.081		
	(0.273)		

Standard deviations are in parentheses.

TABLE 3
Number of entrants by cuisine type

Cuisine type	**Number of entrants by year**								
	2004	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**Total**
British	65	65	60	63	52	76	104	83	568
Chinese	2	11	7	5	3	6	1	1	36
European	57	42	30	36	23	22	35	36	281
French	29	27	13	8	4	15	13	14	123
South Asian	2	7	4	2	1	2	11	4	33
Italian	10	7	3	4	5	9	10	8	56
Japanese	3	3	3	2	4	1	2	0	18
Seafood	11	4	5	4	4	4	8	10	50
Other	9	6	0	3	4	3	5	4	34
Total	**188**	**172**	**125**	**127**	**100**	**138**	**189**	**160**	**1,199**

TABLE 4
Conditional logit results: all post codes

Variables	Restaurant entry							
	2004-2011						2004-2007	2008-2011
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Number of similar incumbent restaurants	0.138***	0.067***	0.066***	0.063***	0.064***	0.063***	0.072**	0.055**
	(0.015)	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)	(0.029)	(0.026)
Number of different incumbent restaurants	0.072***	0.031***	0.031***	0.028***	0.032***	0.031***	0.044***	0.023***
	(0.003)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.011)	(0.009)
Quality difference with similar		-0.266***	-0.269***	-0.268***	-0.267***	-0.269***	-0.332***	-0.192***
incumbent restaurants		(0.043)	(0.043)	(0.043)	(0.044)	(0.044)	(0.060)	(0.064)
Quality difference with different		-1.250***	-1.047***	-1.021***	-0.743***	-0.692***	-0.43	-1.052***
incumbent restaurants		(0.187)	(0.185)	(0.186)	(0.186)	(0.187)	(0.280)	(0.250)
Log (income)			0.592***		0.235	0.037	0.256	0.242
			(0.120)		(0.172)	(0.183)	(0.244)	(0.246)
Log (housing price)				0.422***				
				(0.069)				
Log (population)			0.204***	0.209***	0.159***		0.175**	0.146**
			(0.047)	(0.046)	(0.050)		(0.070)	(0.071)
Log (white population)						-0.004		
						(0.093)		
Log (South Asian population)						-0.019		
						(0.050)		
Log (East Asian population)						0.109		
						(0.108)		
Log (African population)						-0.106		
						(0.070)		
Log (other population)						0.165		
						(0.162)		
Scotland					-0.010	0.006	0.038	-0.053
					(0.139)	(0.183)	(0.199)	(0.195)
Wales					-0.068	-0.13	-0.29	0.143
					(0.141)	(0.147)	(0.212)	(0.190)
Northern Ireland					0.476*	0.456*	0.054	0.815***
					(0.246)	(0.257)	(0.406)	(0.314)
London					0.651***	0.586***	0.683***	0.590***
					(0.098)	(0.146)	(0.132)	(0.149)
Number of entrants	1,199	1,199	1,199	1,199	1,199	1,199	612	587
Number of locations (post codes)	779	779	779	779	779	779	779	779
Pseudo log likelihood	-7,649	-7,610	-7,589	-7,586	-7,565	-7,562	-3,861	-3,698

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

TABLE 5
Conditional logit results: outside London

Variables	**Restaurant entry**						
	2004-2011					**2004-2007**	**2008-2011**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
Number of similar incumbent restaurants	0.247***	0.276***	0.269***	0.251***	0.272***	0.227**	0.320***
	(0.049)	(0.074)	(0.075)	(0.075)	(0.075)	(0.108)	(0.104)
Number of different incumbent restaurants	0.108**	0.300***	0.273***	0.262***	0.279***	0.282***	0.266***
	(0.045)	(0.070)	(0.072)	(0.072)	(0.072)	(0.100)	(0.101)
Quality difference with similar		0.041	0.028	0.021	0.027	-0.07	0.137
incumbent restaurants		(0.077)	(0.078)	(0.078)	(0.078)	(0.104)	(0.118)
Quality difference with different		1.575***	1.474***	1.514***	1.521***	1.340*	1.668**
incumbent restaurants		(0.528)	(0.531)	(0.534)	(0.532)	(0.736)	(0.760)
Log (income)			0.212		0.351*	0.190	0.544**
			(0.146)		(0.187)	(0.272)	(0.258)
Log (housing price)				0.489***			
				(0.102)			
Log (population)			0.200***	0.227***	0.199***	0.220***	0.181**
			(0.048)	(0.049)	(0.050)	(0.068)	(0.074)
Scotland					0.088	0.025	0.164
					(0.141)	(0.201)	(0.199)
Wales					-0.02	-0.267	0.213
					(0.142)	(0.214)	(0.191)
Northern Ireland					0.547**	0.041	0.961***
					(0.250)	(0.411)	(0.321)
Number of entrants	892	892	892	892	892	455	437
Number of locations (post codes)	716	716	716	716	716	716	716
Pseudo log likelihood	-5,846	-5,840	-5,831	-5,822	-5,829	-2,969	-2,855

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

TABLE 6
Conditional logit results: London

Variables	**Restaurant entry**					
	2004-2011				**2004-2007**	**2008-2011**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Number of similar incumbent restaurants	0.087***	0.025	0.025	0.029	0.05	0.001
	(0.025)	(0.025)	(0.025)	(0.025)	(0.044)	(0.031)
Number of different incumbent restaurants	0.064***	0.010	0.010	0.012	0.026*	-0.008
	(0.005)	(0.008)	(0.008)	(0.008)	(0.014)	(0.010)
Quality difference with similar incumbent restaurants		-0.445***	-0.446***	-0.443***	-0.619***	-0.228
		(0.101)	(0.103)	(0.104)	(0.136)	(0.162)
Quality difference with different incumbent restaurants		-1.469***	-1.531***	-1.548***	-0.804**	-2.381***
		(0.234)	(0.240)	(0.238)	(0.362)	(0.308)
Log (income)			-0.686		0.024	-1.643**
			(0.477)		(0.631)	(0.775)
Log (housing price)				-0.490***		
				(0.186)		
Log (population)			-0.189*	-0.183*	-0.211	-0.200
			(0.110)	(0.096)	(0.131)	(0.191)
Number of entrants	307	307	307	307	157	150
Number of locations (post codes)	63	63	63	63	63	63
Pseudo log likelihood	-1,063	-1,029	-1,027	-1,025	-533.4	-485.7

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

TABLE 7
Entry and exit year

Entry year	Total entrants	Exit year							Total exits
		2004	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	
Panel A: All post codes									
2004	188	32	31	20	21	9	8	11	132
2005	172		30	22	18	11	8	11	100
2006	125			19	23	6	13	7	68
2007	127				33	11	12	7	63
2008	100					23	16	9	48
2009	138						16	22	38
2010	189							54	54
Total	**1,039**	**32**	**61**	**61**	**95**	**60**	**73**	**121**	**503**
Panel B: London									
2004	141	19	24	16	14	6	7	8	94
2005	127		23	14	14	7	6	8	72
2006	90			12	20	3	11	5	51
2007	96				27	10	9	3	49
2008	65					16	13	3	32
2009	97						12	16	28
2010	152							52	52
Total	**768**	**19**	**47**	**42**	**75**	**42**	**58**	**95**	**378**
Panel C: outside London									
2004	47	13	7	4	7	3	1	3	38
2005	45		7	8	4	4	2	3	28
2006	35			7	3	3	2	2	17
2007	31				6	1	3	6	14
2008	35					7	3	6	16
2009	41						4	6	10
2010	37							2	2
Total	**271**	**13**	**14**	**19**	**20**	**18**	**15**	**26**	**125**

TABLE 8
Summary statistics: exit sample

Variable	Mean		
	All	**Outside London**	**London**
Average number of similar incumbent restaurants	1.762	1.065	3.73
	(2.430)	(0.896)	(3.884)
Average number of different incumbent restaurants	4.758	0.66	16.331
	(11.336)	(1.072)	(17.522)
Quality difference with similar incumbent restaurants	0.623	0.712	0.369
	(1.723)	(1.756)	(1.599)
Quality difference with different incumbent restaurants	5.121	5.361	4.445
	(2.636)	(2.689)	(2.354)
Average size (number of seats)	67.000	61.421	80.983
	(77.353)	(86.869)	(35.929)
Number of branches	1.094	1.101	1.074
	(0.292)	(0.301)	(0.262)
Michelin starred	0.044	0.037	0.064
	(0.205)	(0.189)	(0.245)
Owned by a celebrity chef	0.060	0.037	0.124
	(0.237)	(0.189)	(0.329)
Smoking allowed	0.222	0.187	0.322
	(0.416)	(0.390)	(0.467)
Air-conditioned	0.472	0.327	0.876
	(0.499)	(0.469)	(0.329)
Free parking	0.411	0.529	0.078
	(0.492)	(0.499)	(0.269)
Owned by the Chef	0.415	0.468	0.264
	(0.493)	(0.499)	(0.441)
Inside of a hotel	0.167	0.190	0.1
	(0.373)	(0.393)	(0.301)
Bar available	0.564	0.566	0.557
	(0.496)	(0.496)	(0.497)
Kids allowed	0.835	0.835	0.835
	(0.371)	(0.371)	(0.372)
Live music	0.758	0.780	0.697
	(0.428)	(0.415)	(0.460)
Top quality wine	0.158	0.154	0.168
	(0.365)	(0.361)	(0.374)
Income	38,680.26	34,317.92	51,000.47
	(11207.56)	(8678.74)	(7881.56)
Population	221,425.80	226,625.00	206,742.30
	(160510.20)	(184424.40)	(46782.68)

Standard deviations are in parentheses.

TABLE 9

Logit results for exit: all post codes

Variables	**Exit**						
			2004-2010			**2004-2007**	**2004-2010**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
Number of similar	-0.011**	-0.009*	-0.009*	-0.008	-0.008	-0.005	-0.010*
incumbent restaurants	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.010)	(0.005)
Number of different	0.000	-0.001	-0.001	-0.001	-0.001	-0.003	0.000
incumbent restaurants	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)
Quality difference with similar		-0.011**	-0.011**	-0.009*	-0.010**	-0.008	-0.009
incumbent restaurants		(0.005)	(0.005)	(0.005)	(0.005)	(0.007)	(0.006)
Quality difference with different		-0.015***	-0.015***	-0.012***	-0.013***	-0.006	-0.018***
incumbent restaurants		(0.003)	(0.003)	(0.003)	(0.003)	(0.005)	(0.004)
Size: log (number of seats)		-0.003	-0.002	0.012	0.011	0.006	0.013
		(0.013)	(0.013)	(0.014)	(0.015)	(0.022)	(0.019)
Log (number of branches)		0.023	0.022	0.022	0.025	0.062	0.003
		(0.034)	(0.034)	(0.034)	(0.034)	(0.055)	(0.043)
Log (income)			-0.022	0.006	0.029	0.015	0.015
			(0.030)	(0.041)	(0.040)	(0.058)	(0.060)
Log (population)			0.004	0.000	0.001	0.014	-0.014
			(0.010)	(0.011)	(0.011)	(0.017)	(0.014)
Michelin starred				-0.031	-0.027	-0.054	-0.005
				(0.046)	(0.047)	(0.070)	(0.056)
Air-conditioned				-0.035**	-0.034**	-0.009	-0.053**
				(0.016)	(0.016)	(0.024)	(0.022)
Free parking				-0.036**	-0.035*	-0.020	-0.045*
				(0.018)	(0.018)	(0.028	(0.024)
Owned by the Chef				-0.053***	-0.052***	-0.061**	-0.040*
				(0.016)	(0.016)	(0.025)	(0.021)
Inside a hotel				0.009	0.007	0.033	-0.021
				(0.022)	(0.022)	(0.031)	(0.031)
Bar available				-0.022	-0.02	-0.030	-0.012
				(0.015)	(0.015)	(0.024)	(0.020)
Kids allowed				-0.111***	-0.108***	-0.145***	-0.056**
				(0.017)	(0.017)	(0.023)	(0.028)
Live music				0.018	0.020	0.024	0.016
				(0.017)	(0.017)	(0.026)	(0.023)
Top quality wine				-0.011	-0.014	-0.031	0.012
				(0.023)	(0.023)	(0.034)	(0.029)
Scotland				-0.002	0.009	-0.050	0.050
				(0.031)	(0.032)	(0.052)	(0.038)
Wales				0.019	0.021	-0.137*	0.090**
				(0.033)	(0.033)	(0.072)	(0.035)
Northern Ireland				0.158***	0.173***	-0.018	0.271***
				(0.061)	(0.06)	(0.131)	(0.073)
London				-0.001	-0.010	0.028	-0.025
				(0.025)	(0.024)	(0.035)	(0.036)
After 2008					-0.010		
					(0.015)		
Year effects	Yes	Yes	Yes	Yes	No	Yes	Yes
Type effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number Observations	2,937	2,937	2,937	2,937	2,937	1,342	1,595
Pseudo log likelihood	-1,323.78	-1,309.74	-1,309.28	-1273.57	-1,281.60	-596.983	-652.029

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

TABLE 10
Logit results for exit: outside London

Variables	**Exit**						
			2004-2010			**2004-2007**	**2004-2010**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
Number of similar	-0.024**	-0.011	-0.010	-0.011	-0.009	-0.030	0.000
incumbent restaurants	(0.011)	(0.013)	(0.013)	(0.013)	(0.013)	(0.020)	(0.016)
Number of different	0.002	-0.002	-0.002	-0.005	-0.005	-0.017	0.005
incumbent restaurants	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.012)	(0.011)
Quality difference with similar		-0.008	-0.008	-0.008	-0.009	-0.012	-0.004
incumbent restaurants		(0.006)	(0.006)	(0.006)	(0.006)	(0.008)	(0.008)
Quality difference with different		-0.018***	-0.018***	-0.015***	-0.015***	-0.007	-0.022***
incumbent restaurants		(0.004)	(0.004)	(0.004)	(0.004)	(0.006)	(0.006)
Size: log (number of seats)		-0.004	-0.002	0.004	0.003	0.021	-0.011
		(0.015)	(0.015)	(0.017)	(0.017)	(0.026)	(0.023)
Log (number of branches)		0.024	0.023	0.020	0.024	0.083	0.024
		(0.039)	(0.039)	(0.039)	(0.039)	(0.060)	(0.053)
Log (income)			-0.049	-0.006	0.020	-0.029	0.050
			(0.037)	(-0.049)	(0.048)	(0.072)	(0.068)
Log (population)			0.004	-0.006	-0.006	0.018	-0.028
			(0.012)	(0.013)	(0.013)	(0.019)	(0.018)
Michelin starred				-0.006	0.001	-0.061	0.047
				(0.056)	(0.058)	(0.088)	(0.066)
Air-conditioned				-0.031*	-0.030	-0.012	-0.053**
				(0.000)	(0.019)	(0.027)	(0.026)
Free parking				-0.049**	-0.048**	-0.046	-0.053*
				(0.021)	(0.021)	(0.030)	(0.028)
Owned by the Chef				-0.071***	-0.070***	-0.079***	-0.049**
				(0.018)	(0.018)	(0.027)	(0.024)
Inside a hotel				0.010	0.006	0.042	-0.024
				(-0.025)	(0.025)	(0.035)	(0.035)
Bar available				-0.007	-0.002	-0.017	0.004
				(0.019)	(0.019)	(0.028)	(0.025)
Kids allowed				-0.085***	-0.082***	-0.123***	-0.040
				(0.021)	(0.021)	(0.028)	(0.034)
Live music				0.028	0.031	0.033	0.030
				(0.022)	(0.022)	(0.032)	(0.028)
Top quality wine				-0.037	-0.038	-0.056	-0.007
				(0.028)	(0.028)	(0.043)	(0.035)
Scotland				0.007	0.020	-0.062	0.074*
				(0.034)	(0.034)	(0.053)	(0.042)
Wales				0.017	0.019	-0.139**	0.098***
				(0.033)	(0.033)	(0.071)	(0.037)
Northern Ireland				0.153**	0.169***	-0.067	0.315***
				(0.064)	(0.063)	(0.133)	(0.079)
After 2008					-0.004		
					(0.017)		
Year effects	Yes	Yes	Yes	Yes	No	Yes	Yes
Type effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number Observations	2,169	2,169	2,169	2,169	2,169	1,009	1,160
Pseudo log likelihood	-989.82	-976.928	-975.8	-951.073	-960.663	-440.353	-483.997

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

TABLE 11
Logit results for exit: London

Variables	**Exit**						
			2004-2010			**2004-2007**	**2004-2010**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
Number of similar	-0.005	-0.007	-0.007	-0.007	-0.007	0.007	-0.014**
incumbent restaurants	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.012)	(0.006)
Number of different	-0.001	-0.002	-0.002	-0.002	-0.002	-0.005**	0.000
incumbent restaurants	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)
Quality difference with similar		-0.023***	-0.023***	-0.024**	-0.022**	-0.019	-0.026**
incumbent restaurants		(0.009)	(0.009)	(0.009)	(0.009)	(0.013)	(0.012)
Quality difference with different		-0.002	-0.002	-0.004	-0.005	0.004	-0.009
incumbent restaurants		(0.006)	(0.006)	(0.007)	(0.007)	(0.013)	(0.007)
Size: log (number of seats)		0.009	0.011	0.045	0.046	-0.017	0.110**
		(0.033)	(0.034)	(0.034)	(0.034)	(0.050)	(0.044)
Log (number of branches)		0.062	0.045	0.004	-0.006	-0.175	0.037
		(0.073)	(0.000)	(0.079)	(0.079)	(0.204)	(0.082)
Log (income)			0.180	0.224**	0.223**	0.289*	0.201
			(0.114)	(0.114)	(0.110)	(0.156)	(0.172)
Log (population)			0.035	0.049	0.049	0.019	0.102**
			(0.034)	(0.035)	(0.035)	(0.051)	(0.041)
Michelin starred				-0.067	-0.067	-0.097	-0.138
				(0.085)	(0.084)	(0.131)	(0.123)
Air-conditioned				-0.043	-0.042	-0.028	-0.039
				(0.037)	(0.037)	(0.059)	(0.048)
Free parking				-0.037	-0.042	0.011	-0.060
				(0.000)	(0.000)	(0.000)	(0.069)
Owned by the Chef				0.019	0.022	0.039	0.007
				(0.036)	(0.036)	(0.055)	(0.048)
Inside a hotel				0.023	0.025	0.019	0.015
				(0.053)	(0.053)	(0.076)	(0.069)
Bar available				-0.040	-0.042	-0.044	-0.043
				(0.028)	(0.028)	(0.050)	(0.036)
Kids allowed				-0.167***	-0.167***	-0.214***	-0.124**
				(0.030)	(0.030)	(0.041)	(0.052)
Live music				-0.022	-0.019	-0.054	-0.012
				(0.030)	(0.031)	(0.049)	(0.037)
Top quality wine				0.043	0.041	0.021	0.081*
				(0.042)	(0.042)	(0.065)	(0.047)
After 2008					-0.031		
					(0.031)		
Year effects	Yes	Yes	Yes	Yes	No	Yes	Yes
Type effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number Observations	768	768	768	768	768	333	435
Pseudo log likelihood	-325.074	-321.014	-319.61	-301.85	-304.44	-135.468	-151.644

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 12
Prices by cuisine type

Cuisine type	**Average price (£)**		
	All post codes	**Outside London**	**London**
British	38.83	38.69	39.87
	(11.27)	(11.03)	(12.87)
Chinese	41.24	38.37	42.60
	(14.32)	(10.37)	(15.70)
European	42.65	41.92	44.98
	(14.57)	(13.95)	(16.23)
French	50.82	47.63	55.89
	(19.02)	(18.35)	(18.99)
South Asian	38.00	27.15	41.58
	(14.50)	(9.00)	(14.27)
Italian	42.87	36.35	46.43
	(13.13)	(10.09)	(13.25)
Japanese	47.85	32.02	51.78
	(23.10)	(10.38)	(23.72)
Seafood	41.66	40.50	39.38
	(12.16)	(11.53)	(15.87)
Other	37.35	36.20	48.41
	(11.94)	(8.81)	(13.55)

Standard deviations are in parentheses.

TABLE 13
Regression results for price: all post codes

Variables	Log (price)						
	2004-2010					2003-2007	2008-2011
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Log (number of similar incumbent restaurants)	0.026***	0.025**	0.026***	0.027***	0.016	0.021*	0.028
	(0.009)	(0.010)	(0.010)	(0.010)	(0.010)	(0.012)	(0.018)
Log (number of different incumbent restaurants)	0.043***	0.065***	0.069***	0.069***	0.047***	0.044***	0.056***
	(0.006)	(0.005)	(0.006)	(0.006)	(0.006)	(0.008)	(0.012)
Quality difference with similar incumbent restaurants		0.032***	0.032***	0.032***	0.027***	0.031***	0.030***
		(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.005)
Quality difference with different incumbent restaurants		0.034***	0.032***	0.031***	0.026***	0.022***	0.026***
		(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)
Size: log (number of seats)			-0.012*	-0.012*	-0.027***	-0.013	-0.039**
			(0.007)	(0.007)	(0.008)	(0.010)	(0.015)
Log(number of branches)			-0.033***	-0.032***	-0.027***	-0.009	-0.007
			(0.010)	(0.010)	(0.010)	(0.013)	(0.022)
Log (income)			-0.014	-0.017	0.074***	-0.042	-0.129**
			(0.020)	(0.020)	(0.022)	(0.034)	(0.054)
Log (population)			-0.032***	-0.032***	-0.001	-0.009	-0.032**
			(0.007)	(0.007)	(0.008)	(0.009)	(0.014)
Michelin star = 1				0.058***	0.044***	0.043**	0.074***
				(0.017)	(0.016)	(0.020)	(0.026)
Michelin star = 2				0.052	0.063*	0.118***	-0.033
				(0.036)	(0.033)	(0.043)	(0.069)
Michelin star = 3				0.251***	0.278***	0.211**	0.093
				(0.072)	(0.081)	(0.107)	(0.157)
Air-conditioned					0.046***	0.040***	0.040*
					(0.012)	(0.015)	(0.024)
Free parking					0.039***	0.056***	0.050**
					(0.013)	(0.018)	(0.024)
Owned by the Chef					-0.012	-0.022**	0.013
					(0.008)	(0.010)	(0.014)
Inside a hotel					0.106***	0.091***	0.083***
					(0.013)	(0.015)	(0.027)
Bar available					0.026**	-0.006	0.071***
					(0.011)	(0.013)	(0.022)
Kids allowed					-0.062***	-0.035**	-0.118***
					(0.012)	(0.016)	(0.027)
Live music					-0.028***	-0.050***	-0.024
					(0.011)	(0.013)	(0.022)
Top quality wine					0.061***	0.036***	0.076***
					(0.009)	(0.010)	(0.020)
Scotland					0.014	-0.033	-0.084*
					(0.019)	(0.025)	(0.044)
Wales					-0.034**	-0.040**	-0.043
					(0.017)	(0.020)	(0.035)
Northern Ireland					-0.046	-0.071	-0.097
					(0.052)	(0.058)	(0.122)
London					0.037*	0.075***	0.105***
					(0.019)	(0.025)	(0.040)
After 2008					-0.318***		
					(0.005)		
Year effects	Yes	Yes	Yes	Yes	No	Yes	Yes
Type effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number Observations	8,534	8,534	8,534	8,534	8,534	4,732	3,802
R^2	0.816	0.839	0.84	0.841	0.843	0.862	0.852

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

TABLE 14

Regression results for price: outside London

Variables	**Log (price)**						
	2004-2010					**2003-2007**	**2008-2011**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
Log (number of similar incumbent restaurants)	0.015	0.017	0.019*	0.014	0.018	0.005	0.034*
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.013)	(0.019)
Log (number of different incumbent restaurants)	0.031***	0.035***	0.034***	0.031***	0.030***	0.033***	0.032*
	(0.009)	(0.009)	(0.009)	(0.008)	(0.008)	(0.010)	(0.018)
Quality difference with similar incumbent restaurants	0.030***	0.029***	0.028***	0.024***	0.024***	0.026***	0.025***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.005)
Quality difference with different incumbent restaurants	0.033***	0.032***	0.031***	0.025***	0.024***	0.022***	0.026***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)
Size: log (number of seats)		-0.028***	-0.028***	-0.039***	-0.041***	-0.028***	-0.066***
		(0.008)	(0.008)	(0.008)	(0.009)	(0.010)	(0.018)
Log(number of branches)		-0.017*	-0.016	-0.006	-0.012	-0.018	0.021
		(0.011)	(0.011)	(0.010)	(0.011)	(0.014)	(0.022)
Log (income)		-0.068***	-0.071***	-0.032	0.138***	-0.028	-0.092
		(0.024)	(0.024)	(0.029)	(0.026)	(0.042)	(0.063)
Log (population)		-0.037***	-0.038***	-0.016*	-0.007	-0.005	-0.039**
		(0.009)	(0.009)	(0.009)	(0.009)	(0.012)	(0.018)
Michelin star = 1			0.041**	0.042**	0.037**	0.042*	0.056*
			(0.018)	(0.017)	(0.017)	(0.022)	(0.029)
Michelin star = 2			0.019	-0.008	0.016	0.099*	-0.206**
			(0.044)	(0.037)	(0.041)	(0.059)	(0.092)
Michelin star = 3			0.239***	0.255***	0.303***	0.192*	0.288***
			(0.090)	(0.076)	(0.100)	(0.116)	(0.074)
Air-conditioned				0.059***	0.064***	0.026	0.083***
				(0.013)	(0.014)	(0.020)	(0.028)
Free parking				0.056***	0.055***	0.054**	0.086***
				(0.014)	(0.015)	(0.022)	(0.030)
Owned by the Chef				0.002	-0.001	-0.029***	0.018
				(0.008)	(0.009)	(0.011)	(0.016)
Inside a hotel				0.076***	0.066***	0.074***	0.056*
				(0.016)	(0.016)	(0.020)	(0.032)
Bar available				0.014	0.029**	-0.015	0.053**
				(0.013)	(0.013)	(0.016)	(0.026)
Kids allowed				-0.100***	-0.101***	-0.064***	-0.148***
				(0.015)	(0.016)	(0.021)	(0.029)
Live music				-0.045***	-0.030**	-0.061***	-0.045*
				(0.013)	(0.014)	(0.016)	(0.027)
Top quality wine				0.053***	0.062***	0.047***	0.054**
				(0.010)	(0.010)	(0.012)	(0.023)
Scotland				-0.003	0.067***	-0.038	-0.002
				(0.022)	(0.022)	(0.030)	(0.052)
Wales				-0.027	-0.000	-0.039	-0.019
				(0.020)	(0.020)	(0.025)	(0.041)
Northern Ireland				0.010	0.068	0.005	0.041
				(0.047)	(0.046)	(0.053)	(0.092)
After 2008					-0.312***		
					(0.005)		
Year effects	Yes	Yes	Yes	Yes	No	Yes	Yes
Type effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number Observations	6,293	6,293	6,293	6,293	6,293	3,502	2,791
R^2	0.857	0.859	0.86	0.869	0.86	0.865	0.875

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

TABLE 15
Regression results for price: London

Variables	Log (price)						
	2004-2010					2003-2007	2008-2011
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Log (number of similar incumbent	-0.003	-0.004	-0.005	-0.003	-0.024	-0.018	0.053
restaurants)	(0.019	(0.020	(0.020	(0.021	(0.020	(0.021	(0.042
Log (number of different	0.064***	0.068***	0.066***	0.059***	0.034*	0.043*	0.039
incumbent restaurants)	(0.021	(0.018	(0.017	(0.019	(0.018	(0.023	(0.034
Quality difference with similar	0.006	0.007	0.003	-0.002	-0.008	-0.011	0.024
incumbent restaurants	(0.012	(0.012	(0.012	(0.012	(0.012	(0.012	(0.028
Quality difference with different	0.024***	0.024***	0.022***	0.016**	0.015*	0.004	0.004
incumbent restaurants	(0.008	(0.008	(0.008	(0.008	(0.008	(0.008	(0.018
Size: log (number of seats)		0.010	0.008	0.000	-0.010	-0.018	-0.006
		(0.023	(0.023	(0.024	(0.024	(0.024	(0.046
Log(number of branches)		-0.064***	-0.063***	-0.054***	-0.054**	-0.022	-0.054
		(0.021	(0.021	(0.021	(0.021	(0.018	(0.040
Log (income)		-0.153	-0.156	-0.216*	-0.033	-0.442***	-0.024
		(0.125	(0.127	(0.111	(0.052	(0.143	(0.428
Log (population)		-0.104**	-0.094**	-0.107	-0.060	-0.360***	0.067
		(0.048	(0.048	(0.065	(0.062	(0.059	(0.060
Michelin star = 1			-0.003	-0.008	-0.005	-0.046	0.036
			(0.044	(0.043	(0.045	(0.060	(0.060
Michelin star = 2			0.158**	0.107	0.104	0.037	0.035
			(0.063	(0.067	(0.065	(0.043	(0.105
Michelin star = 3			0.124	0.032	0.020		0.002
			(0.089	(0.122	(0.125		(0.116
Air-conditioned				-0.132*	-0.110	-0.015	-0.070
				(0.077	(0.076	(0.088	(0.109
Free parking				0.245**	0.279***	0.493***	0.138
				(0.098	(0.101	(0.170	(0.350
Owned by the Chef				-0.031	-0.019	-0.021	0.024
				(0.020	(0.020	(0.021	(0.032
Inside a hotel				0.063	0.078	-0.724***	-0.075
				(0.102	(0.100	(0.151	(0.170
Bar available				0.042	0.033	-0.006	0.085
				(0.065	(0.061	(0.090	(0.208
Kids allowed				0.081	0.094	0.186**	-0.531***
				(0.067	(0.066	(0.076	(0.194
Live music				-0.063	-0.070	-0.043	-0.148
				(0.048	(0.046	(0.074	(0.094
Top quality wine				-0.003	0.013	0.001	0.018
				(0.028	(0.029	(0.029	(0.039
After 2008					-0.334***		
					(0.013		
Year effects	Yes	Yes	Yes	Yes	No	Yes	Yes
Type effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number Observations	2,241	2,241	2,241	2,241	2,241	1,230	1,011
R^2	0.893	0.894	0.894	0.897	0.887	0.928	0.886

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

APPENDIX

TABLE A1
Good Food Guide Scores

Score	
1 – 2	Competent cooking. Sound, basic and capable cooking where restaurants scoring 2 use better ingredients, take fewer short-cuts, please more reporters and make good neighbourhood restaurants.
3 - 4	Competent to good cooking. Use of fine ingredients with appropriate cooking, although with some inconsistencies with reporters being pleased most of the time. Restaurants scoring 4 reveal greater skill in handling materials and have special standing in their locality.
5 - 6	Good to very good cooking. Restaurants use high quality ingredients, achieve consistently good results and are enthusiastically reported. Restaurants scoring 6 have extra flair and are considered to be among the best in the region.
7 - 8	Very good to excellent cooking. High levels of ambition and achievement with the finest ingredients applied with skill and imagination. Restaurants scoring 8 are worth a special effort to visit.
9 – 10	This very best category is reserved for only a few restaurants that are highly individual and display impressive artistry by the head chef. These restaurants compare favourably with the strongest international competition.

Source: Good Food Guides (various)

TABLE A2
Key Variable Definitions

Price (£)	Price of a three course meal for a given restaurant as recorded by the *Good Food Guide*
Number of similar incumbent restaurants within a given post code	This is the number of restaurants (n_d) that offer similar cuisines within post code *l*. The log values of this variable are taken log(number of restaurants + 1).
Number of different incumbent restaurants within a given post code	This is the number of restaurants (n_d) that offer different cuisines within a given post code. The log values of this variable are taken log(number of restaurants + 1).
Number of seats	Total number of seats in a restaurant, inside and outside
Score	Good Food Guide restaurant score out of 10 converted into bands
Average income (£)	Average income in the local area
Average population	Average population in the local area
Dummy variables	
Takes value of 1 if:	
One Michelin star	Restaurant has one Michelin star, taken from editions of *Michelin Guide*
Two Michelin stars	Restaurant has two Michelin stars
Three Michelin stars	Restaurant has three Michelin stars
Restaurant characteristics	
Air-conditioning	Air conditioning in dining room
Parking	Parking on site
Owned by the Chef	Restaurant is owned or part-owned by the head chef
Inside of a hotel	Restaurant is situated within a hotel
Bar	Restaurant has a separate bar
Children welcome	Restaurant welcomes children and offers children's meals
Music	Restaurant plays recorded music
Smoking	Restaurant permits smoking inside the premises subject to smoking in public places being legal
Top quality wine	Restaurant has a wine list accredited as top quality by inspectors
London	Restaurant is situated in the Greater London area
Scotland	Restaurant is situated in Scotland
Wales	Restaurant is situated in Wales
Northern Ireland	Restaurant is situated in Northern Ireland