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Stars War in French Gastronomy: Prestige of Restaurants and *Chefs*' Careers *

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Abstract

In this paper, we analyze the careers from a sample of more than 1,000 top French *chefs* over more than twenty years and link it to the success or reputation of the restaurants where they have worked. This allows us to test what are the determinants of success but also to investigate the dynamics of performance and reputation, stressing the importance of the quality of apprenticeships, mentoring and entrepreneurship spirit. We find that the prestige of the restaurant where individuals work is on average declining along the career, and that the quality of apprenticeship is strongly related to the future success as chef. We also find that prices of restaurants with higher reputation are more sensitive to bad signals.

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1 Introduction

For most chefs, having his restaurant being awarded one or more stars in the famous Michelin *Guide Rouge* represents a major achievement, a recognition of their work, and also increased notoriety generating a significant stream of future revenues. In this specific industry, experts play a decisive role, and reputation of restaurants and chefs are basically established according to their opinions. The aim of this paper is to analyze how these reputations are made and unmade and to understand better the development of careers in this highly creative occupation. Thanks to the richness of our dataset, we are able to observe the birth of a "star" and its evolution in the constellation of stars forming the French gastronomic scene.

We first describe the typical career of a chef, explaining the different stages of the career and looking at the determinants of performance along the career. We find that careers follow a particular path. At an earlier stage of their career, after graduating from a culinary school, individuals learn the *untaught tricks of the profession* by assisting different accomplished chefs at various stages of the meal preparation, starting as commis de cuisine, then chef de partie and then second de cuisine, or main assistant. This apprenticeship process is nicknamed *Tour de France* as young chefs travel through the country and sometimes beyond to improve their knowledge and benefit from various experiences at the best restaurants. We show that the quality of the restaurant where an individual works on average declines over the career. In other words, individuals start their careers in restaurants with the highest reputation, and gradually move to restaurants with a lower reputation along their apprenticeship. At the end of this apprenticeship, they usually start they own restaurant starting from scratch, and gradually build their own reputation.

We are especially interested in the process of initial accumulation of human capital. We use a quality-weighted measure of apprenticeship human capital measuring the quality of the apprenticeship received during the early

stage of the career, and measure its effect on the determinants of later success. We find that these measures of accumulated human capital are a key determinant of the performance as chef de cuisine. The quality of apprenticeship appears to be particularly important at an intermediate level (chef de partie) and, to a less extent, at the end of the apprenticeship (second de cuisine).

We then measure the consequences of reaching the stars. We estimate hedonic price regressions and find that an additional star translates into a 15% price increase for a typical menu. We also estimate a regression in first difference, looking at the change in price associated with a change in stars. While the overall effect is positive, we find that the effect is stronger the higher was the prestige of the restaurant the previous year, and also that change in prices are more sensitive to downgradings than to upgradings. The first result is in line with the theoretical predictions from models of reputation like Diamond (1989).

We contribute to three very different strands of the literature. First, a long tradition in labor economics has investigated individual careers and the dynamics of productivity over the career. Starting with the theoretical work of Becker, Mincer and Ben-Porath on human capital, the literature on learning (Gibbons and Katz, 1991; Farber and Gibbons, 1996), or on career concerns (Holmström, 1982), and more recently on careers in organizations (Gibbons and Waldman, 1999a,b), these authors have tried to understand what is driving careers.

Empirical work has attempted to validate some key predictions of some of these theories using personal information from mutual fund managers (Chevallier and Ellison, 1999), financial analysts (Hong, Kubik and Solomon, 2000; Hong and Kubik, 2003), academic economists (Coupé, Smeets and Warzynski, 2006a,b,c; Oyer, 2006). Others have documented the career dynamics in single firms (Baker, Gibbs and Holmströn, 1994a,b and followers) and have linked their findings to various theories. *We bring some additional light* by stressing the importance of the quality of initial apprenticeship hu-

man capital as a determinant of success and by documenting careers and the dynamics of performance in the specific context of *haute cuisine*.

Secondly, a relatively large and mostly theoretical literature studies the importance of reputation in contractual agreements (Milgrom and Roberts, 1982; Kreps and Wilson, 1982; Diamond, 1989; see Cabral, 2005 for a comparative description). Reputation is described as a valuable asset, built through repeated interactions where actors update their beliefs about the type of the other contracting party, that firms use as a competitive advantage. We document the emergence of reputation and measure the consequence of this reputation building on the price that restaurants can charge.

Thirdly, a small literature studies the economics and management of gastronomy. A few papers discuss the leadership qualities of the top French chefs (Balazs, 2001, 2002). Chossat and Gergaud (2003) look at the effect of the quality of the setting on experts' opinion and find a positive relationship. The paper more closely associated to our work is Durand, Monin and Rao (2001). Building on the the resource-based view of the firm, they discuss how chefs are able to improve their resource or reputation (measured by an increase in the number of Michelin stars) through innovation and investment in general human capital. However, none of these papers analyze the dynamics of careers, nor analyze the initial accumulation of human capital as key determinant for future success.

Section 2 describes the construction of the dataset and provides some summary statistics. Sections 3 details our empirical methodology, while section 4 shows our results. Section 5 concludes and provides suggestions for future research.

2 Data

Our dataset is constructed by combining two sources of data. The first dataset describes the careers of 1,000 top chefs in French gastronomy, as assessed by the guide Le Botin Gourmand in their book *Les Etoiles de la Gastronomie Française* published in 2001. The second consists of the Michelin books *Guide Rouge* from 1980 to 2001.

The first source associates the name of the chef to name of the restaurant, its location, a clear description of the career similar to a vitae (i.e. which type of job at which restaurant over which period of time), as well as other individual information such as the gender, the date of birth, the type of education (the different types of degrees obtained and the date of graduation), information about apprenticeships, and whether he learned by itself (autodidacte). The second source provides, associated to the name of the restaurant, the location, presence of an hotel, the minimum and maximum prices for a menu, and also a remark as to whether it is necessary or advised to call in advance. More importantly, it provides for each restaurant ranked by Michelin two measures of quality: the quality of the food as measured by the number of stars (on a scale from 0 to 3), and the quality or luxury of the setting as measured by the number (and color) of forks (or houses), on a scale from 0 to 5. Chefs from restaurants with at least one star are also asked to indicate three recipes among their specialties. We then merged the two datasets by location, restaurant and by year.

Table 1 shows the number of individuals working in Michelin starred restaurants by year. By construction, our dataset contains a succession of new cohorts arriving on the market and a few incumbents who were already chefs before 1980.

The job structure in the industry is very clearly defined and hierarchical. At the top of the hierarchy are the chefs. They are assisted by their second de cuisine. Lower in the hierarchy are chef de partie and commis de cuisine, who assist at different stages of the process. Table 2 shows the evolution of

the distribution of jobs over our period of analysis. Again, by construction, we see that the proportion of chefs and, to a lower extent, of seconds de cuisine is increasing with time, while the proportion of chef de partie and commis de cuisine is declining.

Concentrating on the firm/restaurant side, Figure 1 shows the evolution of the average price (not controlling for inflation) and the price ratio between restaurant categories. We can clearly see that the price difference between 3-stars restaurant and the other categories increases gradually, suggesting a superstar effect.

Table 3 shows the transition matrix in and out of the Michelin guide, as well as the star transition. We observe that there is more upward mobility (probably as a consequence of our sample selection) and also quite a lot of persistence. Persistence is also much higher at the top than at the bottom[1].

3 Empirical Methodology and Results

3.1 Stylized facts about prestige of the restaurant and career dynamics

We start by linking the prestige of the restaurant to the career dynamics. Table 4 shows the percentage of individuals working in different subsets of restaurants ranked by quality at various stages of their careers. A striking pattern is that the prestige of the restaurant is higher at the beginning of the career: commis de cuisine and chefs de partie work on average in higher-quality restaurants than seconds de cuisine, themselves working in higher-quality restaurants than chef de cuisine This should come as no surprise as individuals at the beginning of their career tour the best restaurants in the country, learning the techniques from the most famous chefs. This fact can partly be explained by the selective nature of our sample. However, it also provides an interesting description of the typical pattern regarding

[1] See Schumacher (2009) for a theoretical motivation.

career dynamics and reputation building for our subset of highly talented individuals: after learning from all these top chefs, individuals start from scratch, become chefs themselves and start with no reputation. We turn next to what can explain their success of their restaurant once they become chef.

3.2 Effect of "apprenticeship human capital"

In the second part, we only consider the subset of individuals who have reached the level of chef and try to understand which factors affect their performance, or the prestige of the restaurant they work at. In particular, we stress the importance of the quality of the apprenticeship human capital accumulated at the earlier stage of the career. As we have just seen in the previous step, individuals spend their apprenticeship learning in the restaurants with well established reputation. Obviously, some are more lucky or talented than others and end up in better places. So how does the quality of the restaurant where you worked as commis de cuisine, chef de partie or second de cuisine affects your success as a chef? To study this, we create a measure of quality weighted accumulation of apprenticeship human capital by summing the number of stars accumulated over the years at the various stages of your career. We then look at the effect of this variable on performance as a chef:

$$\text{Performance}_{ijt} = f\left(\begin{array}{c} Gender_i, Age_{it}, Age_{it}^2, Education_{it}, \\ \text{Stars accumulated as second de cuisine,} \\ \text{Stars accumulated as chef de partie,} \\ \text{Stars accumulated as commis de cuisine} \end{array}\right)$$

Tables 5 to 7 show the results. It appears that the quality of apprenticeship has an important effect on performance, as the stars accumulated, especially as chef de partie, impacts on the presence in the Michelin and the number of stars as a chef. This could indicate either that there is a selection between individuals to be selected as chef de partie in the best restaurants,

or/and that you need to be sufficiently close to the chef to really learn from him, what might not be the case as commis de cuisine. Finally, the fact that the number of stars accumulated as second de cuisine is only significant in one specification could be linked to the different career choices that individuals make, as some individuals might wait a long time as second de cuisine that the chef retires to take over the restaurant, while others would start rapidly on their own. We study that decision more carefully in a companion paper.

3.3 Hedonic price regressions

As a third part, we measure the consequence of reaching the stars and link the average price of a menu to the number of stars awarded to the restaurant, We also look at the effect of the quality of the setting on the average price charged.

$$\log P_{it} = g(Stars, Forks, Location)$$

In table 8,we find that, on average, an extra star is associated with a 15% price increase, reflecting the increased value the consumer is expected to receive in his plate. The quality of the setting is also associated with higher price.

We next analyze more precisely the dynamic relationship between price and performance, stressing the importance of reputation. We test change in performance should matter differently whether you were a three stars restaurant or a restaurant with no star. We run a simple first difference regression between the change in price and the change in stars, as well as the interaction between the change in stars and the past reputation of the restaurant, and the interaction between the change in stars and the type of change (positive or negative assessment):

$$d\log P_{it} = dStars_{it} + dStars_{it} * Positive + dStars_{it} * \mathrm{Re}putation_{i(t-1)}$$

Table 9 shows the results. We find that the relationship between a change in performance and a change in price is much stronger at the top of the prestige ladder than at the bottom. In others words, a bad signal is much more costly when a firm has acquired a high level of reputation, in line with the theoretical predictions from several models of reputation like Diamond (1989). We also find that change in prices are more sensitive to downgradings than to upgradings.

4 Conclusion

In this paper, we analyzed the career patterns of a subset of top French chefs. We described a few stylized facts about this specific labor markets: the quality of the workplace is on average higher at the beginning of the career. This is consistent with the idea that individuals acquire human capital on the job and then start their own firm from scratch using the tools they have learned by observing the best chefs at work. We then tested whether this reputational human capital had an impact on future performance. Our results confirmed our prior that the quality of the restaurant where individuals learned the profession had a significant impact on the probability to enter in the Michelin and acquire highly valuable stars. We also analyzed the pricing patterns of restaurants. We found that prices were more sensitive to bad signals for restaurants of higher quality. As such, our paper contributes to the understanding of the dynamics of reputation.

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Table 1: Number of individuals in Michelin starred restaurants by year

	Not in Michelin	In Michelin	Of which with one star	Of which with two stars	Of which with three stars
1980	109	264	91	38	29
1981	108	295	106	44	30
1982	115	319	124	51	28
1983	129	332	109	68	23
1984	140	355	113	65	37
1985	147	379	130	71	36
1986	143	401	150	72	41
1987	169	412	148	75	36
1988	145	444	165	79	38
1989	158	468	178	70	39
1990	162	502	193	80	40
1991	155	538	200	77	39
1992	149	566	222	79	42
1993	132	594	207	84	41
1994	145	593	200	76	37
1995	140	620	211	77	36
1996	*129*	641	227	77	27
1997	*141*	646	225	66	27
1998	117	673	230	61	26
1999	106	703	238	68	26
2000	90	718	243	64	25

Table 2: Evolution of the distribution of jobs

	Chef de cuisine	Second de cuisine	Chef de partie	Commis de cuisine	Other
1980	232	18	39	37	61
1981	255	23	42	42	59
1982	266	28	48	48	65
1983	293	26	63	34	59
1984	322	24	66	31	61
1985	339	31	68	34	68
1986	358	36	54	37	80
1987	386	42	57	38	72
1988	409	40	52	34	78
1989	435	40	51	41	78
1990	462	42	49	39	83
1991	484	50	55	33	78
1992	510	49	52	33	77
1993	527	51	53	20	82
1994	552	66	35	22	73
1995	577	67	41	14	69
1996	594	70	33	12	69
1997	624	72	27	9	61
1998	651	75	27	5	40
1999	677	94	11	3	22
2000	690	102	3	2	11
2001	870	111	2	0	15

Figure 1: Evolution of average price

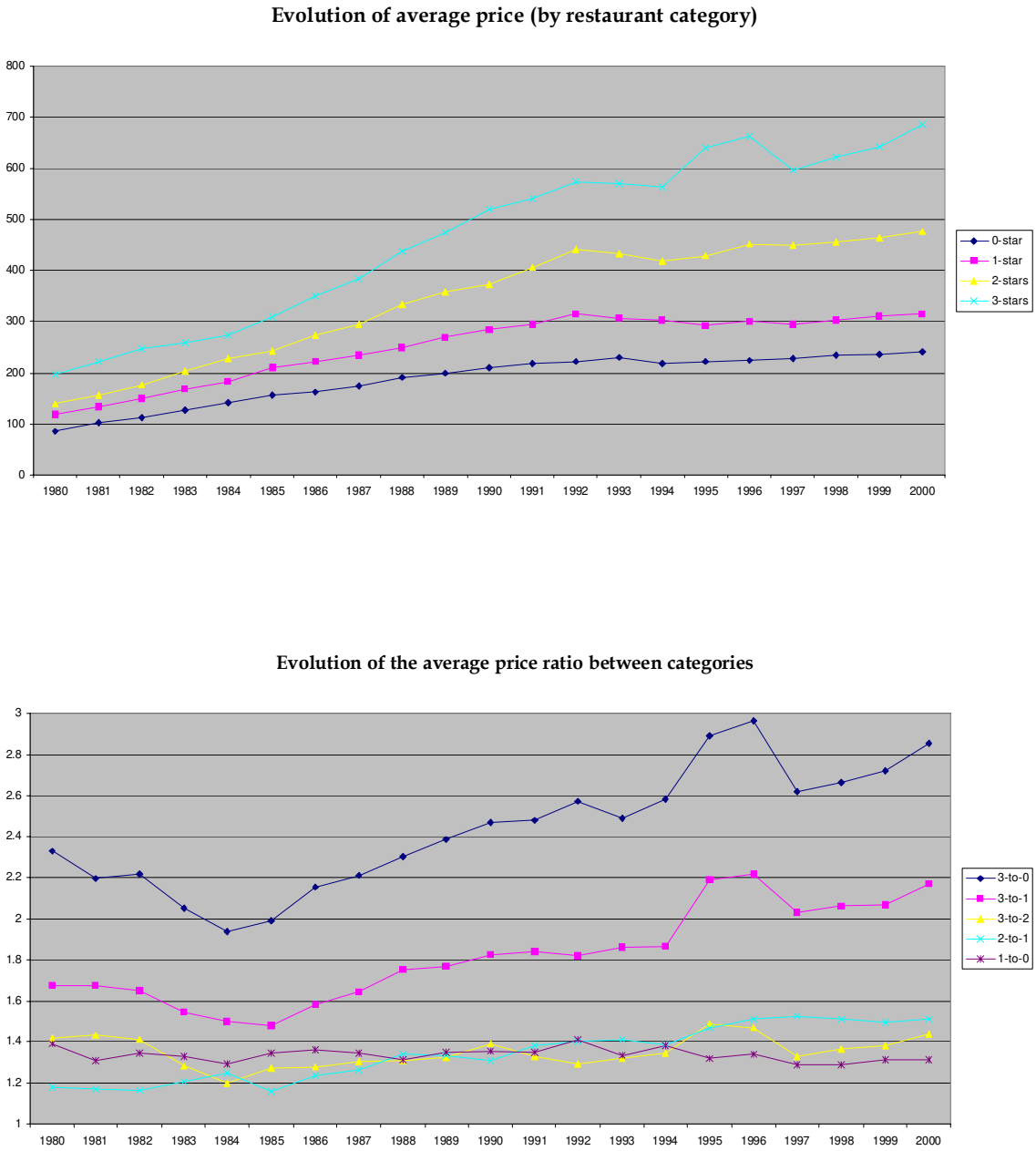

Table 3: Transition matrix

A: Presence in the Michelin

Michelin in t	Michelin in $t-1$: No	Michelin in $t-1$: Yes
No	1,649	174
Yes	435	7,173

B. Number of stars

Number if stars in t	Number of stars in $t-1$: 0	1	2	3
0	3,261	150	-	-
1	311	2,556	51	-
2	-	87	800	8
3	-	-	17	309

Table 4: Link between restaurant prestige and job level

	Chef de cuisine	Second de cuisine	Chef de partie	Commis de cuisine
Working in 0-star restaurant	5,690 (58.81%)	676 (55.05%)	352 (35.56%)	267 (43.63%)
Working in 1-star restaurant	2,836 (29.31%)	332 (27.04%)	232 (23.43%)	159 (25.98%)
Working in 2-star restaurant	844 (8.72%)	156 (12.70%)	203 (20.51%)	116 (18.95%)
Working in 3-star restaurant	305 (3.15%)	64 (5.21%)	203 (20.51%)	70 (11.44%)

Table 5: The effect of initial human capital accumulation on performance (presence in the Michelin). Probit regression (marginal changes).

Dep. variable: Presence in the Michelin as chef de cuisine		
Male	0.25***	(0.09)
Age	0.09***	(0.013)
Age^2	-0.001***	(0.0001)
Autodidacte	-0.18***	(0.07)
Dummy for Paris	0.06	(0.05)
Stars accumulated as second de cuisine	-0.01	(0.01)
Stars accumulated as chef de partie	0.032***	(0.008)
Stars accumulated as commis de cuisine	0.015	(0.013)
Log-likelihood	-3560.19	
Pseudo R^2	0.037	
Number of observations	7120	

Note: standard errors in parentheses; ***/**/* indicates statistical significance at the 1%/5%/10% level respectively

Table 6: The effect of initial human capital accumulation on performance (number of stars in the Michelin). Ordered probit regresion.

Dep. variable: Number of stars in the Michelin as chef de cuisine		
Male	0.16*	(0.09)
Age	0.016	(0.011)
Age^2	0.0002	(0.0001)
Autodidacte	-0.019	(0.06)
Dummy for Paris	0.29***	(0.05)
Stars accumulated as second de cuisine	-0.01	(0.01)
Stars accumulated as chef de partie	0.032***	(0.008)
Stars accumulated as commis de cuisine	0.015	(0.013)
Log-likelihood	-6158.76	
Pseudo R^2	0.024	
Number of observations	6393	

Note: see table 6

Table 7: The effect of initial human capital accumulation on performance (number of stars in the Michelin if in the Michelin). Ordered probit regresion.

Dep. variable: Number of stars in the Michelin as chef de cuisine (only those in the Michelin)		
Male	0.08	(0.10)
Age	-0.015	(0.012)
Age^2	0.0005***	(0.0001)
Autodidacte	0.01	(0.07)
Dummy for Paris	0.33***	(0.05)
Stars accumulated as second de cuisine	0.027**	(0.012)
Stars accumulated as chef de partie	0.021***	(0.007)
Stars accumulated as commis de cuisine	0.002	(0.013)
Log-likelihood	-5323.17	
Pseudo R^2	0.025	
Number of observations	4999	

Note: see table 6

Table 8: Hedonic price regression

Dep. variable: $\log P$		
One Star	0.17***	(0.007)
Two Stars	0.29***	(0.010)
Three Stars	0.45***	(0.015)
Hotel	0.046***	(0.007)
One fork/house	-0.20***	(0.09)
Two forks/houses	-0.002	(0.09)
Three forks/houses	0.13***	(0.09)
Four forks/houses	0.31***	(0.09)
Five forks/houses	0.41***	(0.09)
Color of the forks/houses	0.001	(0.001)
Year dummies	YES	
Dummy for Paris	0.18***	(0.008)
Adj. R^2	0.78	
Number of observations	7197	

Note: see table 6

Table 9: First difference estimation

Dep. variable: dlog P		
dStars	0.15***	(0.03)
dStars if had one star	-0.01	(0.03)
dStars if had two stars	0.09***	(0.03)
dStars if had three stars	0.10***	(0.03)
dStars if Positive	-0.12***	(0.03)
Adj. R^2	0.17	
Number of observations	3251	

Note: see table 6