On the economic geography of dual distribution - The case of McDonald's in Germany

BY Nisa E. Freiwald, Steffen Juranek and Uwe Walz

DISCUSSION PAPER

NHH

Institutt for foretaksøkonomi
Department of Business and Management Science

On the economic geography of dual distribution - The case of McDonald's in Germany

Nisa E. Freiwald[a], Steffen Juranek[b,*], Uwe Walz[c,1]

[a]*Goethe Business School*
[b]*NHH Norwegian School of Economics*
[c]*Goethe University Frankfurt and CFS, SAFE*

October 21, 2019

Abstract

We analyze the allocation of ownership in a franchise system by focusing on location-specific characteristics of the outlets. This study uses a comprehensive data set on McDonald's restaurants in Germany to investigate the drivers of the decision on whether outlets are company-owned or franchised. We find strong evidence for the repeat-customer hypothesis by showing that outlets are significantly more likely to be company-owned when they are located at places with relatively few repeat customers. We observe the same for outlets that are closer to McDonald's headquarters. Finally, we find pronounced clustering of multi-unit franchisees.

Keywords: Franchising, dual distribution, agency theory, geo-locational data, economic geography

*Corresponding author, NHH Norwegian School of Economics, Department of Business and Management Science, Helleveien 30, 5045 Bergen, Norway, Phone: +47 55959863

Email addresses: nisaesin@gmail.com (Nisa E. Freiwald), steffen.juranek@nhh.no (Steffen Juranek), uwe.walz@wiwi.uni-frankfurt.de (Uwe Walz)

[1]Goethe University Frankfurt, P.O. Box 54, Theodor-W-Adorno Platz 4, 60323 Frankfurt, Germany, Phone: +49 69 79834821

I. Introduction

Franchising has experienced significant growth over the last few decades and has played an important role in a variety of sectors globally (see, e.g., Hoffman and Preble, 2004). In many franchise systems, dual distribution prevails, and company-owned outlets co-exist with franchised ones.

The trade-off between the ownership forms is location specific, i.e., geography matters. While the franchising literature rests on agency theory and transaction cost arguments to explain the coexistence of company-owned and franchised outlets (see Combs and Ketchen Jr., 2003), the observable economic geography of franchising is little explored (see Minkler, 1990, for an exception). We aim to contribute to closing this gap.

We investigate the determinants of company-owned versus franchise outlets with data on all McDonald's outlets in Germany. The agency-based explanation highlights locational aspects by stressing lower local search costs of the franchisee and lower agency costs of franchised outlets (Minkler, 1990). Company-owned restaurants are operated by employees, implying monitoring costs that increase with the distance away from a headquarter office (Gallini and Lutz, 1992; Kalnins and Lafontaine, 2013). We contribute to the literature by focusing on these arguments with the help of the geo-location of the outlets. By relying on German data, we complement the literature on franchising that has focused mainly on the largest market, the US (e.g., Combs and Ketchen Jr., 2003; Perryman and Combs, 2012).

We find that outlets located at airports or close to highways are significantly less likely to be franchised. At airports and highways recurring customers are less important, implying a lower need of local market knowledge, and a higher risk of free-riding of the franchisee on the franchisor's brand. This finding is in contrast with Minkler (1990) who finds no evidence for the repeat-customer hypothesis. In his sample of a fast food restaurant chain and its outlets in

California and Nevada, the outlets that are close to or on highways are not significantly more likely to be company-owned. Furthermore, our empirical analysis shows that monitoring costs matter. The closer an outlet is located to another company-owned restaurant or a McDonald's office, the more likely it is company-owned.

We extend our analysis of the economic geography of franchising by addressing the existence of multi-unit franchisees, which depicts an intermediate form between company-owned and franchised outlets. The more units a franchisee operates the more important agency costs within the franchisee's organization become. However, multi-unit franchisees that operate local clusters attenuate free-riding problems, reap economies of scope, and moderate intra-brand competition. In line with this reasoning and Perryman and Combs (2012) and Kalnins and Lafontaine (2004), we find a strong clustering effect among multi-franchise units.

II. Hypotheses

A great deal of studies commonly uses agency theory and property rights arguments to explain dual distribution in franchising in general (Perryman and Combs, 2012), and its particular features such as the fee structure (Windsperger, 2001) and the contract length (Vazquez, 2007). The agency theory argues that franchising provides more entrepreneurial incentives than company-owned outlets. However, in the presence of a large share of non-repeat customers, a franchisor faces the risk that a franchisee free-rides on the brand's reputation by lowering the quality of service in order to cut costs. Hence, repeat customers discipline franchisees by providing incentives to sustain a high quality level. Furthermore, the decision between franchising and company-operation depends on the costs of monitoring for the franchisor. The more expensive monitoring is, the less likely that McDonald's will operate the restaurant with employed personnel. We summarize our predictions as:

Hypothesis 1. *The likelihood that a given outlet is operated by the company*

3

1. *decreases with the importance of local knowledge and the presence of repeat customers (repeat customer hypothesis);*

2. *decreases with the monitoring costs (monitoring hypothesis);*

Against the background of agency theory, multi-unit franchisees are at first sight a puzzling organizational mode. Employed managers in multi-unit franchise outlets create similar problems to those from employed managers in company-owned units. However, a number of potential advantages exist that may give rise to multi-unit franchisees and that shape their structure. First, multi-unit franchising leads to a partial internalization of the external effect of free-riding on the franchise brand (Brickley, 1999). This internalization is most pronounced when it affects the same customers in a local market. Second, economies of scope, in particular local market expertise (Kalnins and Lafontaine, 2004) may give rise to multi-unit franchisees. Third, adjacent outlets operated by the same franchisees may reduce intra-brand competition (Blair et al., 2005). All three arguments speak in favor of the local clustering of multi-unit franchisees:

Hypothesis 2. *Multi-unit franchisees operate local clusters of outlets (clustering hypothesis).*

III. Data

Our data set embraces information on all 1478 McDonalds' outlets in Germany in 2016. In order to get the full list of restaurants, their location and their operator, we rely on the information provided by the official McDonald's website. The website provides the addresses and the name of the entity operating a restaurant. We find that 189 restaurants, or 12.8 percent, are operated by McDonald's itself.[2] The other 1289 are operated by 255 distinct franchisees.[3]

Geocoding the addresses allows us to identify restaurants located at airports or near highways, and to calculate the distances between restaurants. We define the variables *Distance to*

---

[2]In those cases the website reports "McDonald's Deutschland LLC" as the operator.

[3]Sometimes one franchisee organizes its restaurants as separate legal entities. We use the n ames of the entities and the Bureau van Dijk ownership database to identify corporate groups.

	N	Mean	St. Dev.	Min	Max
Franchised	1478	0.872	0.334	0	1
Airport	1478	0.010	0.100	0	1
Highway	1478	0.181	0.385	0	1
Distance to Closest	1478	6.610	6.880	0	40.540
Distance to Closest Company-owned	1478	33.447	31.329	0	175.002
#Company-owned within 10km	1478	1.601	3.422	0	17
Distance to Monitor	1478	90.705	62.423	0.024	291.659
Inhabitants	1478	0.503	0.740	0.034	3.547
GDP per Capita	1478	41.151	18.790	17.512	178.706
Population Density	1478	1.084	1.223	0.037	4.701
Multi-unit	1289	0.967	0.180	0	1
Number of outlets of a unique franchisee	255	5.055	4.940	1	41

Note: The table shows the summary statistics for the sample of McDonald's outlets in Germany, the share of multi-unit outlets of the franchised restaurants, and the number of outlets operated by a given franchisee.

Table 1: Summary statistics

Closest and *Distance to Closest Company-owned* as the distance of a restaurant from the closest restaurant and the closest restaurant operated by McDonald's itself, respectively. The variable *#Company-owned within 10km* denotes the number of restaurants operated by McDonald's itself within a 10 km range. We also calculate the distance of a restaurant to a monitoring site, i.e., the closest of the regional service centers (*Distance to Monitor*).

We also match the NUTS[4] regional codes of the European Union to each address. This matching enables the calculation of the population density (*Population Density*) and the use of regional GDP per capita (*GDP per capita*) as control variables.

Table 1 summarizes the variables in our data set and their descriptive statistics. A substantial number of McDonald's outlets are located at highways (18 percent). This result reflects the particular role of highways in a densely populated country like Germany. Only a few outlets are located at airports, which is not very surprising given the rather small number of airports in Germany.

---

[4]"Nomenclature of Territorial Units for Statistics." We use information on the most granular NUTS3 level.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Airport	-1.070** (0.458)						-0.750** (0.313)
Highway		-0.179* (0.104)	-0.450** (0.206)				-0.334*** (0.109)
Distance to Closest Company-owned				0.045*** (0.007)			
# Company-owned within 10km					-0.135*** (0.014)		
Distance to Monitor						0.004*** (0.001)	0.001* (0.001)
Population Density							-0.158*** (0.041)
GDP per Capita							-0.007*** (0.002)
Constant	1.153*** (0.078)	1.172*** (0.087)	0.293*** (0.000)	0.332*** (0.120)	1.469*** (0.065)	0.825*** (0.136)	1.616*** (0.144)
Region FE	no	no	yes	no	no	no	no
N	1478	1478	485	1478	1478	1478	1478

Note: This table shows the probit regression with *Franchised* being the endogenous variable in all specifications. Standard errors are clustered at the regional level and shown in parenthesis. The ***, **, and *denote that the coefficient is significantly different from zero at the 1%, 5%, and 10% level, respectively.

Table 2: Determinants of company-owned outlets

IV. Results

We estimate a probit model with the *Franchised* dummy variable as the dependent variable. Table 2 presents our results. McDonald's is less likely to franchise restaurants located at airports or near highways. The observation regarding highways becomes even stronger if we add region fixed effects and focus solely on regions where restaurants with both modes of operation are present (specification 3). Within those regions, the restaurants located near a highway are more likely to be company-owned.

Airports and highway restaurants are characterized by a high share of travelers who are less likely to visit a restaurant repeatedly. We thereby find evidence for the repeat customer hypothesis of Klein et al. (1980). With outlets at airports or near highways the fact that the repeated and local customer base is rather low makes local knowledge of market characteristics and the investment in customer relationships via entrepreneurial efforts less important. At the same time, free-riding on the franchisor's brand is particularly costly because it affects an overpropotional

number of customers passing by.

We also find evidence for the monitoring hypothesis. Specifications 4 and 5 show that restaurants operated by McDonald's itself cluster. That means that a given restaurant is more likely to be company-owned if another company-owned restaurant is close by (as measured by the *Distance to Closest Company-owned* variable) or the more company-owned restaurants are within 10km (as measured by the *#Company-owned within 10km* variable). Operating a cluster implies economies of scale in monitoring, decreasing the monitoring costs of one particular restaurant. Specification 6 also shows that the distance to a monitoring office matters. The closer a restaurant is to a monitoring office, the less likely that McDonald's will franchise it.

Specification 7 combines the different variables in one specification and additionally controls for population density and GDP per capita. The three monitoring variables are highly correlated, and we, therefore, keep only the distance to the monitoring office in the model. All results are robust to this change, and to using a logit or a linear probability model instead.[5] Finally, the observation that restaurants in densely populated areas are more likely to be company-owned hints also at economies of scale in learning about local market conditions (e.g., Sorenson and Sørensen, 2001).

With regard to the determinants of multi-unit franchisees, we follow the cluster definition of Kalnins and Lafontaine (2004) who use Thiessen polygons to define a geographic cluster. Thiessen polygons partition an area into regions. A region around a restaurant includes all points that are closer to this restaurant than to any other restaurant. Following Kalnins and Lafontaine (2004), we define a geographic cluster of restaurants as the set of restaurants of any owner that are neighbors, either directly or indirectly through other units of the same owner. This cluster definition means that the closest neighbors of cluster members also belong to the cluster (see

---

[5]The tables are available upon request.

Number of Clusters	Outlets operated by a franchisee							Sum
	1	2	3	4	5	6-10	11+	
1	43	29	33	33	19	41	10	208
2	0	7	5	4	3	9	10	38
3	0	0	1	1	1	3	1	7
4	0	0	0	0	0	1	1	2
Sum	43	36	39	38	23	54	22	255

Note: This table provides information on the distribution of franchised outlets. It depicts the number of clusters (as defined in the text) for different sizes of franchisees.

Table 3: Clustering of franchised outlets

the Appendix A.2 for more details).

We calculate the number of clusters operated by one particular franchisee (see Table 3). By definition the outlets of single-unit franchisees belong to one cluster only. However, two remarkable observations occur. First, the maximum number of clusters is four, despite the fact that we observe 22 multi-unit franchisees in our sample that operate more than 11 outlets. Second, the vast majority of multi-unit franchisees cluster. In all size classes of multi-unit franchisees, the one-cluster case dominates. Only eight (seven of the two-unit and one of the three-unit franchisees) of the multi-unit franchisees operate not in a cluster.

In Table 4 we analyze the clustering hypothesis in a multivariate setting. The main variable of interest on the right-hand side is *Distance to Closest*. The binary variable *Closest has Same Owner* indicates whether the next neighbor is operated by the same multi-unit franchisee as the outlet under consideration. We find that the further away the closest restaurant is, the less likely it has the same owner (see specification 1 of Table 4). We also include the *Highway* variable in the regressions of Table 4 to provide further evidence that restaurants located near a highway tend to operate in a segmented market: the likelihood that an outlet has the same (franchise) owner as its closest neighbor decreases significantly with the fact that the outlet is located near a highway (see specification 2). In contrast to our analysis in Table 2, we only include franchised outlets in this analysis. Including *Population Density* as well as GDP per

capita as controls leaves our findings qualitatively unchanged.

	(1)	(2)	(3)
Distance to Closest	-0.026***		-0.038***
	(0.006)		(0.008)
Highway		-0.205**	-0.211**
		(0.098)	(0.097)
Population Density			-0.153
			(0.068)
GDP per Capita			-0.001
			(0.003)
Constant	0.717***	0.563***	0.947***
	(0.081)	(0.057)	(0.165)
N	1289	1289	1289

Note: This table shows the probit regression with *Closest has Same Owner* being the endogenous variable in all specifications. This variable is binary which is one if the next neighbor (measured by Euclidean distance) belongs to the same multi-unit franchisee as the one under consideration and zero otherwise. Standard errors are clustered at the regional level and are shown in parenthesis. The ***, **, and *denote that the coefficient is significantly different from zero at the 1%, 5%, and 10% level, respectively.

Table 4: Determinants of multi-unit franchise outlets

We interpret our findings as strong evidence for our clustering hypothesis. Our findings speak in favor of the existence of the internalization of external reputation effects arising from the risk of free-riding as well as of the existence of local economies of scope. The strong clustering effects also points to the benefits of internalizing intra-brand competition effects in local markets via clusters of the same franchisee.

V. Conclusion

We provide a detailed analysis of the economic geography of dual distribution. We present recent evidence from a franchise market outside the US for the repeat-customer hypothesis. Furthermore, we find that the distance to the franchisor's headquarters matters. Finally, we observe strong clustering of multi-unit franchisees.

References

Blair, R. D., Lafontaine, F., et al., 2005. The economics of franchising. Cambridge University Press.

Brickley, J. A., 1999. Incentive conflicts and contractual restraints: Evidence from franchising. The Journal of Law and Economics 42 (2), 745–774.

Combs, J. G., Ketchen Jr., D. J., 2003. Why do firms use franchising as an entrepreneurial strategy?: A meta-analysis. Journal of Management 29 (3), 443–465.

Gallini, N. T., Lutz, N. A., 1992. Dual distribution and royalty fees in franchising. Journal of Law, Economics, and Organization 8 (3), 471–501.

Hoffman, R. C., Preble, J. F., 2004. Global franchising: current status and future challenges. Journal of Services Marketing 18 (2), 101–113.

Kalnins, A., Lafontaine, F., 2004. Multi-unit ownership in franchising: evidence from the fast-food industry in texas. The RAND Journal of Economics 35 (4), 747–761.

Kalnins, A., Lafontaine, F., 2013. Too far away? the effect of distance to headquarters on business establishment performance. American Economic Journal: Microeconomics 5 (3), 157–79.

Klein, B., et al., 1980. Transaction cost determinants of "unfair" contractual arrangements. American Economic Review 70 (2), 356–362.

Minkler, A. P., 1990. An empirical analysis of a firm's decision to franchise. Economics Letters 34 (1), 77–82.

Perryman, A. A., Combs, J. G., 2012. Who should own it? an agency-based explanation for

multi-outlet ownership and co-location in plural form franchising. Strategic Management Journal 33 (4), 368–386.

Sorenson, O., Sørensen, J. B., 2001. Finding the right mix: Franchising, organizational learning, and chain performance. Strategic Management Journal 22 (6-7), 713–724.

Vazquez, L., 2007. Determinants of contract length in franchise contracts. Economics Letters 97 (2), 145–150.

Windsperger, J., 2001. The fee structure in franchising: a property rights view. Economics Letters 73 (2), 219–226.

Appendix

A.1. Geographical distribution of McDonald's restaurants

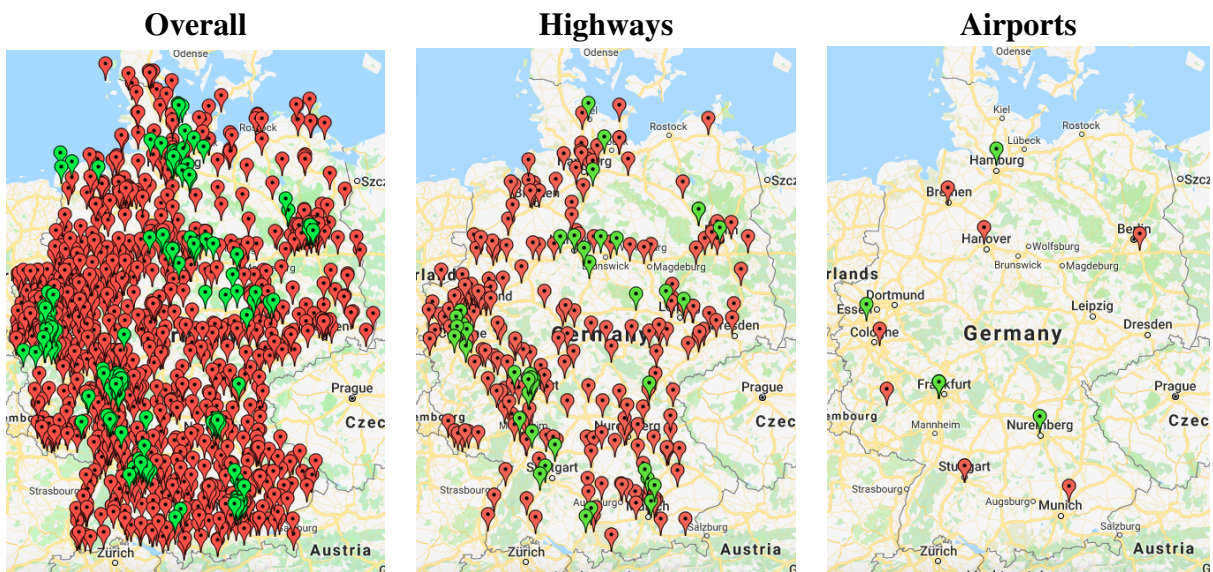| **Overall**	**Highways**	**Airports**

Figure 1: Geographical distribution of McDonald's restaurants in Germany (franchised restaurants in red)

A.2. Thiessen polygons around McDonald's restaurants

Figure 2 exemplifies the cluster definition. It shows the area to the north of Berlin. In this extract *MakS 1 Food GmbH* owns four restaurants in one cluster. *Oliver Mix* owns two restaurants in two clusters in this extract.

Figure 2: Regional extract of Thiessen polygons

NHH

NORGES HANDELSHØYSKOLE
Norwegian School of Economics

Helleveien 30
NO-5045 Bergen
Norway

T +47 55 95 90 00
E nhh.postmottak@nhh.no
W www.nhh.no