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Where are craft breweries located? The role of agglomeration, tourism, and know-how

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ABSTRACT

The objective of this article is to identify main drivers determining the geographical location of craft breweries in Slovakia. The main contribution of the article to the literature is to provide empirical evidence on the location determines of small firms as well as the focus on the Eastern European country both of which are less explored in the literature. The article employs a conditional logit model on a regional panel data dataset of craft breweries and location attributes covering 79 counties in Slovakia for the period 1995–2019. The estimated results suggest that agglomeration economies are key determinants of location choices. However, the agglomeration of small breweries has notably strong effect, while the agglomeration of large breweries and past brewing experience are statistically insignificant in affecting location choices. Further, important drivers of craft breweries location choices are demand factors linked to tourist sector development. Other drivers, such as urban effects, life quality and labour market conditions, seem not to play role or have rather a weaker impact.

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1. Introduction

Small and medium enterprises such as craft breweries make an important contribution to the socio-economic development of a region by providing employment opportunities and enhancing the attractiveness of the region for local people and tourists (Murray & Kline, 2015). A growing literature suggests that agglomeration externalities are important determinants for localisation decisions of firms (Carlton, 1983; Disdier & Mayer, 2004; Procher, 2011).

Craft beer is relatively new sector in Eastern Europe. Craft breweries started to emerge in Eastern Europe at the end of the 20th century and follow the development that took place in the US and Western Europe in the 1970s and 1980s, respectively

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(Garavaglia & Swinnen, 2018). The growth in craft breweries has emerged as a response to the lack of beer diversity offered on the market by large international corporations and increase of consumers' demand for differentiated beer products. Craft breweries provide opportunities for the regional development as they generate local development and local employment; in particular they may attract tourists and thus promote the development of the tourist sector (Alonso et al., 2017; Dunn & Wickham, 2016). It is therefore interesting and relevant for policy makers, analysts as well as general public to know how geographical location of craft breweries is determined, among others, to better understand how it can contribute to regional development. This is particularly important given that brewery sector receives support in some EU countries (e.g. Slovakia) through the Rural Development Programme (Ellis & Bosworth, 2015).

The goal of this article is to shed some light on this issue by empirically investigating the main drivers determining the geographical distribution of craft breweries in Slovakia. Besides the extensive application of agglomeration economies to explain the geographical distribution of economic activity (sectors and large firms) in general, this theory is also increasingly used in the literature to explain location choices of small firms such as craft breweries (Forte & Sá, 2021; Rahman & Kabir, 2019; Yeager & Gatrell, 2020). One of the principal ideas of agglomeration economies is that the concentration of firms from the same industry generates positive externalities (e.g. access to specialised suppliers, specialised inputs, knowledge, experience) facilitating growth of firms from that industry in a given location (Fujita et al., 1999; Fujita & Thisse, 2002; Krugman, 1991). Following this theoretical framework, the article investigates to what extent the agglomeration effects of similar firms drive the location of craft breweries relative to agglomeration effect of large breweries and the existence of brewing knowledge. We also investigate the role of urbanisation externalities, labour market conditions, demand factors and life quality in affecting craft breweries locations choices (Danson et al., 2015; Wojtyra et al., 2020).

This article uses a conditional logit model to estimate the location decisions of craft breweries (McFadden, 1973). The estimations are based on a panel dataset of Slovak craft breweries and location attributes covering 79 counties (okres) for the period 1995–2019.

Our main contribution to the literature is to provide empirical evidence on the location determinants of small firms. Most studies analyse large multinational enterprises. Significantly less articles study location behaviour of small firms in a narrowly defined industry such as brewery sector (Dennett & Page, 2017; Rahman & Kabir, 2019). Our second contribution is the focus on the Eastern Europe; most studies analyse craft breweries in the USA or Western Europe. Given that some economic development patterns in many post-communist countries have similar features, the results of our article may be to some extent applicable in other similar economies from Eastern Europe (Valášková et al., 2020).

The rest of the article is organised as follows. The next section provides literature review on the location of craft breweries and outlines hypotheses to be tested, which is followed by the section on the development of large-scale breweries and craft breweries in Slovakia. Section 4 provides a description of the methodology by briefly

explaining the conditional logit model employed in empirical estimations. Section 5 presents the data and variables used in the estimations. Section 6 shows empirical results, and the final section concludes.

2. Literature review and hypothesis

Traditional firm location theory (Moses, 1958; Weber & Friedrich, 1929) usually explains firms' location decisions as being driven primarily by factor prices, relative transport costs of inputs and outputs, and strategic moves to gain spatial monopoly over markets. While these drivers remain important, some studies argue about the importance of local specifics and context for firms' location decisions. This is particularly the case of craft brewery industry were many secondary factors tend to play a role in location choices of firms from this sector (Nesse et al., 2019).

The diversity of styles and tastes, as well as the superior quality of the product, are the primary reasons consumers drink craft beer (Durisin, 2013). Craft brews are considered a 'specialty good,' which implies that they have larger trade areas than, for example, the average neighbourhood pubs (Reid & Gatrell, 2017). This would allow craft brewers to locate further away from demand in high-rent areas. It is more likely, however, that craft breweries locate near competition in so-called brewery districts because consumers are attracted to the location by the marketing or reputation of rivals, which increases foot traffic, and because it allows consumers to sample among offerings. In this context, the demographic characteristics of residents of regions may support the industry by creating reliable local demand and a market in which to test new products (Reid & Gatrell, 2017). The presence of such advantages is expected to attract craft breweries (Pachura, 2020).

One growth area within the craft brewing segment that benefits from clustering is beer-related tourism. More cities and regions are recognising the opportunities associated with attracting tourists who are interested in visiting craft breweries (Alonso, 2011; Francioni & Byrd, 2012). When there is a cluster of breweries within a city, it increases its attractiveness as a destination for the beer tourist, makes it easier for tourists to visit multiple breweries, and makes it easier for cities to promote themselves as beer destinations (Alonso et al., 2017). That is, craft breweries may locate in areas where the demand potential is present given that craft beers are usually consumed in local restaurants and bars whereby tourists may represent an important clientele (Alonso, 2011; Francioni & Byrd, 2012). In this context, the following hypothesis is proposed and tested:

> **Hypothesis 1:** Craft breweries' probability of locating in an area increases with better demand conditions (local demand or tourists).

Findings of Elzinga et al. (2015) suggest, based on the data from USA, that the spatial-production variable, representing nearby production, appears to reduce production and the number of craft breweries. In contrast, the spatial-firms variable, representing the number of firms nearby, appears to raise production and the number of craft brewers. These factors including agglomeration externalities or cluster effects were more recently described in the idea of industry clusters (Bergman & Feser, 1999; Gordon & McCann, 2000). A wide range of agglomeration externalities may

arise that may influence where craft brewers locate such as advantages in innovation and knowledge sharing from embedded networks, greater access to specialised inputs and services at lower costs, and supportive local institutions. Research on places with large craft brewing sectors suggest that many have a history of beer-making that has resulted in supportive institutions (such as colleges with programs in brewing) and networks of people with knowledge of the industry (Batzli, 2014; Cortright, 2002; Yeager & Gatrell, 2020). Further, the regulatory obligation in Slovakia is that each brewery needs to have a certified brewer (Wojtyra et al., 2020). Thus, the existence of local experience obtained through work in traditional brewery in the past could represent an advantage of a particular location in attracting craft breweries as it may indicate the presence of skilled labour (Pokrivčák et. al., 2018). In this context, the following hypothesis is proposed and tested:

Hypothesis 2: Craft breweries' probability of locating in an area increases with the presence (agglomeration externalities) of (a) small breweries, (b) large breweries and (c) past brewing experience.

The urbanisation economics literature recognises that the externalities may also emerge because of the concentration of companies in a geographical location irrespective of the sector concerned. These urbanisation externalities are derived from the density of the urban economy and accessibility externalities such as the accessibility of skilled labour in multiple fields, the presence of developed infrastructure (Reid, 2018), knowledge-creating institutions, and public administration (de Bok & van Oort, 2011; Han et al., 2018; Isard, 1956; Lenzi & Perucca, 2018). In this context, the following hypothesis is proposed and tested:

Hypothesis 3: Craft breweries' probability of locating in an area increases with the presence of urbanization externalities derived from the density of the urban economy.

Yet another factor that affects craft breweries location choices is the quality of life in an area. Firms are generally thought to be oriented towards considerations of costs, profits, and market share, but firms are also made up of people. If people's preferences about where they want to live are affected by quality of life, then such factors are likely to affect where firms locate as well. Empirical research has shown quality of life to be of less importance than other factors, but still an important consideration, especially for smaller firms (Dixit et al., 2019). Places with a high quality of life are likely to be attractive to executives and others with direct control over location decisions. In considering a location, such individuals will consider not only the implications for their business, but also for themselves, their family, and their employees (Gottlieb, 1994; Thurnell-Read, 2015). In this context, the following hypothesis is proposed and tested:

Hypothesis 4: Craft breweries' probability of locating in an area increases with the higher quality of life of that area.

Finally, labour market conditions may play a role in impacting craft breweries location. For example, a high unemployment rate and labour costs is expected to deter the location of craft breweries as it may reflect rigid labour markets and the lower availability and more costly labour, respectively (Meixnerová & Krajňák, 2020). On the other hand, higher labour costs may also reflect the skill effects (Boudier-

Bensebaa, 2005; Cirillo, 2017; Lee & Clarke, 2019). That is, higher labour costs may reflect the availability of skills in a given county which may attract craft breweries. In this context, the following hypothesis is proposed and tested:

> **Hypothesis 5:** Craft breweries' probability of locating in an area increases with the lower rigidity of labour markets and more costly labour and increases with the skilled labour availability.

2.1. The development of beer industry and craft beer in Slovakia

Historically, two distinct periods of beer industry development can be distinguished in Slovakia that have important implications for the growth of craft brewery industry: (i) the communist period (between 1948 and 1989) and (ii) the post-communist period (after 1989) (Kratochvíle, 2005; Larimo et al., 2011; Pokrivčák et al., 2019).

Between 1948 and 1989 Slovakia (as part of Czechoslovakia)[1] was a centrally planned economy where all decisions on the location of breweries, production and distribution of beer were made by central planners rather than managers of profit maximising firms. Competition between brands was limited in spite of differing quality of beer produced. The breweries were regional monopolies and supplied the beer to their surrounding areas as a regional product.[2] The number of breweries varied during this period in Slovakia (the highest number of breweries was 14). With increasing demand for beer, the central planners either reconstructed and expanded capacities of the existing breweries (Bratislava, Nitra, Bytča, Poprad, Michalovce, Martin, and Košice) or built new breweries (Ilava in 1950, Topoľčany in 1964, Rimavská Sobota in 1966, Veľký Šariš in 1967, Hurbanovo in 1969, Banská Bystrica in 1971, and Trnava in 1974). Some breweries were closed during socialism: brewery in Levoča was closed in 1967 and brewery in Hlohovec ended its production in 1989. At the end of socialism in 1989 there were 4 breweries in Eastern Slovakia, 5 in Central and 5 in Western Slovakia. Craft braveries were not allowed to operate or emerge during this period (Pokrivčák et al., 2019).

After the fall of Berlin Wall and collapse of socialism in 1989, state-owned breweries were privatised in Slovakia and later they were taken over by multinational corporations (Heineken, SABMiller), went bankrupt or carried on as independent private breweries. More specifically, Heineken bought the biggest Slovak brewery Zlatý Bažant Hurbanovo in 1995, followed by Corgoň Nitra in 1997, Martiner Martin in 2003 and Gemer Rimavská Sobota in 2006. SABMiller bought brewery Topvar Topoľčany in 2005 and Šariš, Veľký Šariš in 2007. Both Heineken and SABMiller gradually concentrated production of beer into two locations: Heineken in Hurbanovo and SABMiller in Veľký Šariš.[3] Majority of independent breweries that were not taken over by international corporations ended their production.[4] Only two independent breweries continued their operation: one in Banská Bystrica and one in Vyhne. Thus, currently beer is produced in large-scale in 4 cities in Slovakia. (Pokrivčák et al., 2018).

Craft breweries started in Slovakia at the end of the 20st century where the first craft brewery opened in 1994. In 1995 there were 8 craft breweries in Slovakia and their number declined to 5 by 2000. In 2020 there were 97 of them. The fastest

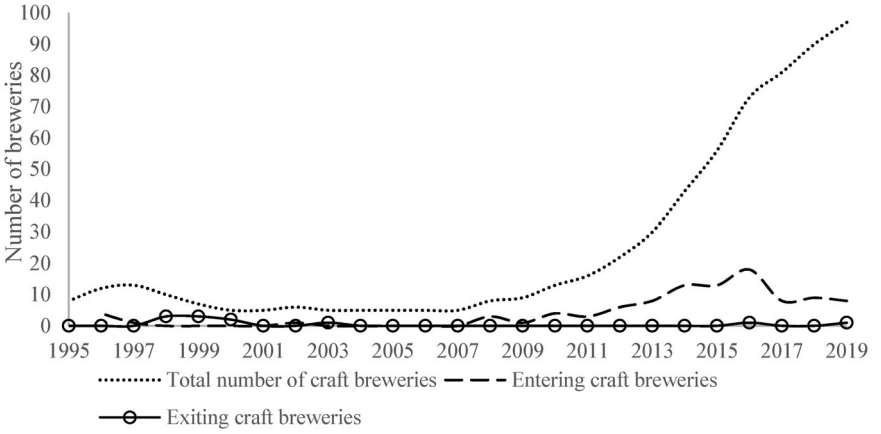

Figure 1. The development of craft breweries in Slovakia, 1995–2019.
Source: Slovak Statistical Office

growth of craft breweries occurred after 2013 when on average about 10 new craft breweries were launched a year (Figure 1) (Dudić et al., 2020).

The craft breweries in Slovakia are located mainly in the capital city, in other larger cities and in northern Slovakia along the Tatra mountains. However, they can be found in various places on the whole territory of Slovakia. That is, regionally the highest number of craft breweries is located in the capital of Bratislava (20 craft breweries), which is followed by Košice and Žilina (each 7 craft breweries) (Wojtyra et al., 2020). Košice is the second largest city in Slovakia while Žilina is a major city in North Central Slovakia. Between 3 and 4 craft breweries are situated in Nitra, Banská Bystrica, Martin and Poprad. Nitra and Banská Bystrica are cities with population close to 100 thousand inhabitants, which are considered large cities in Slovakia of 5,4 million inhabitants. Cities of Martin, Poprad, together with Žilina, Liptovský Mikuláš, Banská Bystrica and Ružomberok are major destinations for tourism in Slovakia because of their location by the Tatra mountains. In these 6 cities there are together 21 craft breweries (Krogmann et al., 2020; Wojtyra et al., 2020). Figure 2 shows the geographical location of craft breweries in Slovakia.

The craft beer expansion in Slovakia occurs on the backdrop of declining per capita consumption of beer. Between 2003 and 2019 beer consumption declined from 90 to 77 litres per capita (Pokrivčák et al., 2018). According to Pokrivčák et al. (2018), the decrease in beer consumption is caused by rising beer prices, changing drinking patterns towards at-home consumption rather than drinking in pubs, unfavourable tax treatment of beer relative to alternative alcoholic beverages, rising wine consumption, and changing preferences towards healthier life styles of many Slovaks.

As in other countries (e.g. USA, Germany, UK), the demand for craft beer in Slovakia was propelled by preference of consumers for product differentiation and rising consumer incomes (Garavaglia & Swinnen, 2018). In Slovakia it coincided with the demise of regional socialist breweries and their replacement with homogeneous international beers. The rising demand for differentiated beer was reflected in both growing imports of beer and expansion of craft beer (Rogovská & Masár, 2018).

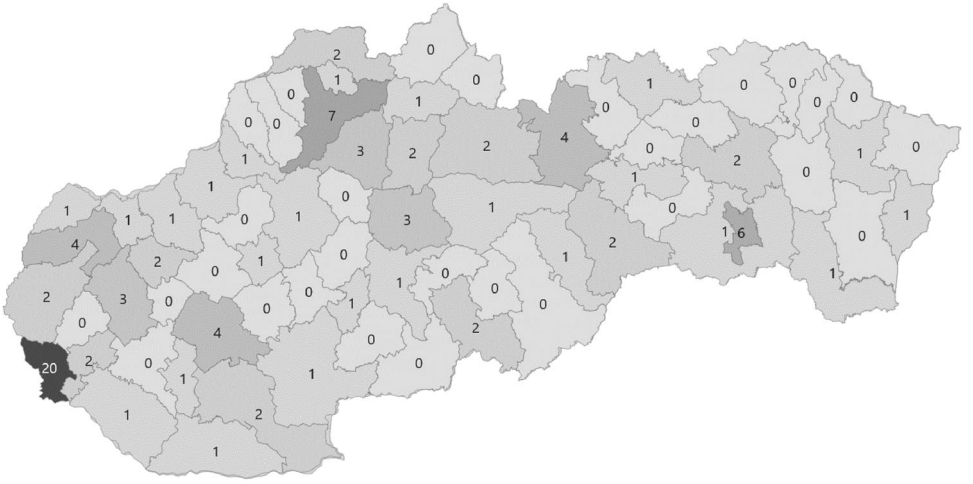

Figure 2. Geographical distribution of craft breweries in Slovakia, 2019.
Source: Slovak Statistical Office, own processing

Finally, there is some government support provided to craft brewery sector in Slovakia. The disbursement of investment support to craft breweries was given as part of the Rural Development Program granted in the financial period 2007–2013 and 2014–2020. The beneficiary could receive a grant covering 50% of the initial investment.

3. Research methodology

We apply the conditional logit model to investigate the determinants of the location choice of craft breweries based on the random utility maximising framework developed by McFadden (1973). The conditional logit model is commonly used to analyse location choice of firms (e.g. Chang & Park, 2005; Ciriaci et al., 2019; Head et al., 1995; Krenz, 2016; Lavoratori et al., 2020; Lei & Chen, 2011; Martí et al., 2017). Craft breweries face a set of location choices with different attributes. The model estimates how each attribute affects the chance that a given location will be chosen. One of the advantages of this approach is that it allows for the possibility that explanatory variables driving firms' location choices are endogenous.

The theoretical underpinning of this approach is based on the rational behaviour assumption where the choice of location j by craft brewery i at time t is based on selecting a location that delivers a maximum benefit (or utility) V_{ijt}, among all m possible locations. Given that the utility depends on attributes of a given location and assuming a linear relationship it yields to (1):

$$V_{ijt} = \beta X_{ijt} + \varepsilon_{ijt} \tag{1}$$

where X is a vector of location-specific attributes that affect location choices, and ε is captures random factors affecting the choices.

The maximisation behaviour implies that craft breweries observe the utility achieved from all locations and select the alternative that provides the maximum

Table 1. List of variables.

Name	Definition	Period available
Dependent variable		
Location choice of breweries	Binary variable, equals 1 if the county was chosen as location by the craft brewery, and 0 for the other regional alternatives	1995–2019
Agglomeration effects		
Agglomeration of small breweries	The share of the number of craft breweries in a county in the total number of craft breweries in all counties divided by the share of the number of all small firms in that county in all small firms in Slovakia	1995–2019
Agglomeration of large breweries	The share of the number of large breweries in a county in the total number of large breweries in all counties divided by the share of the number of all firms in that county in all firms in Slovakia	2015–2018
Past brewing experience	Binary variable, equals 1 if the county had large brewing companies in the past, 0 otherwise	1995–2019
Urbanisation effects and accessibility		
Population (log)	Total population in a given county (in logs)	1995–2019
Population density (log)	Total population density in a given county (in logs)	1996–2019
Moved in (log)	Population that immigrated in a given county (in logs)	1995–2019
Number of cities (log)	Number of cities present in a given county with a population larger than 5000 inhabitants (in logs)	2005–2019
Agglomeration of small breweries and population density (interaction)	Interaction variables between the agglomeration of small breweries variable and the population density variable	1996–2019
Agglomeration of large breweries and population density (interaction)	Interaction variables between the agglomeration of large breweries variable and the population density variable	1996–2019
Labour market conditions		
Unemployment rate	Unemployment rate in a given county	2001–2019
Average real wage (log)	Real average wage in a given county (in logs)	2009–2018
Demand conditions		
Hotels and restaurants (log)	Number of hotels and restaurants in a given county (in logs)	2008–2018
Overnights of tourists (log)	Number of overnights of tourists in a given county (in logs)	2001–2019
Overnights of tourists per capita	Number of overnights of tourists per capita in a county	2001–2019
Life quality		
Life expectancy	Life expectancy in a given county (average man and women)	1999–2018
Number of divorces (log)	Number of divorces in a given county (in logs)	1995–2019

Source: own construction of variables.

utility; that is, the location j that yield the maximum V_{ijt}, among m utilities. Hence, the statistical choice model implies deriving the probability (2) that the utility in location choice j is higher than utility in other locations.

$$Prob(V_{ijt} > V_{ikt}) \text{ for all k such that } k \neq j \tag{2}$$

Assuming the independence of irrelevant alternatives, the probability that the location j is selected by craft brewery i at time t can be specified by (3):

$$p_{ijt} = \frac{\exp(\beta X_{ijt})}{\sum_{k=1}^{m} \exp(\beta X_{ikt})} \tag{3}$$

where *pijt* is binary variable that equals 1 if a location *j* is selected by the craft brewery *i* at time *t*, and 0 otherwise.

The maximum likelihood approach is used to estimate the coefficients β, associated with the location-specific attributes, *X*, that affect the probability that a craft brewery selects a particular location from among all possible locations.

4. Data and variable description

The estimations are based on a county level panel dataset of Slovak craft breweries and the counties' characteristics available from the Statistical Office of Slovakia and publicly available documents from different Ministries. The data cover the period 1995–2019 for most variables; some variables are available for a shorter period.[5] The description of the variables and the covered period for each variable are provided in Table 1. The continues variables are transformed by taking the logarithm with base 2.[6] We use base 2 to make the interpretation of the estimated coefficients more intuitive: i.e. the estimated odds ratio (see further) is associated with the original (not transformed) variable increased by factor 2, in other words, with increasing the original variable by 100%. Other variables (e.g. percentage change variables, binary variables) are not transformed for an easier interpretation of their estimated coefficients as well as to avoid undefined variables with zero values (if log transformed).

The dependent variable is the location choice of craft breweries among 79 counties (okres) in Slovakia. It takes the value one for the chosen county and zero for the remining counties for each decision on the location selection of craft breweries.

The explanatory variables represent the locational characteristics of each of the chosen 79 counties. Following the hypotheses derived in previous section, we consider five set of variables in our empirical estimations: (i) agglomeration effects, (ii) urbanisation effects and accessibility, (iii) labour market conditions, (iv) demand conditions, and (v) life quality.

As discussed above, the literature suggests that agglomeration externalities are important determinants for localisation decisions of firms. In order to account for these agglomeration effects, we include three variables in our estimated equation: *agglomeration of small breweries*, *agglomeration of large breweries*, and a *past brewing experience*. The first variable attempt to tests Hypothesis 2a accounting for the agglomeration effect of small craft breweries, while the second one tests Hypothesis 2 b related to the agglomeration effect of large breweries. The third variable correspond to Hypothesis 2c accounting for the past brewing experience which may measure the existence of brewery-related knowledge base in a particular county.

To account for the potential urbanisation externalities (Hypothesis 3) in a given county we consider several proxies controlling for the total population (*population*), population density (*population density*), immigration in a county (*moved in*) and the presence of larger cities (*number of cities*).

Table 2. Descriptive statistics.

Variables	*Obs*	*Mean*	*Std. Dev.*	*Min*	*Max*
Agglomeration of small breweries	36419	0.967	2.284	0	25.902
Agglomeration of large breweries	23700	1.183	7.13	0	58.291
Past brewing experience	49612	0.43	0.495	0	1
Population (log)	49612	10.981	0.584	9.378	12.076
Population density (log)	48980	4.827	0.948	3.322	8.514
Moved in (log)	49612	6.24	0.807	4.263	8.378
Number of cities (log)	43608	0.5	0.48	0	1.386
Agglomeration of small breweries and popul. density (interaction)	36419	5.139	14.927	0	208.084
Agglomeration of large breweries and popul. density (interaction)	23700	4.97	29.813	0	254.935
Unemployment rate	45267	9.308	6.263	1.46	37.22
Average real wage (log)	34207	6.788	0.189	6.23	7.401
Hotels and restaurants (log)	34839	4.018	1.096	0	6.299
Overnights of tourists (log)	43797	11.165	1.522	5.509	14.586
Overnights of tourists per capita	43797	3.477	6.527	0.002	41.931
Life expectancy	38631	76.073	1.679	69.64	79.875
Number of divorces (log)	49612	4.616	0.701	1.946	6.14

Source: own calculations.

The explanatory variables accounting for labour market conditions (Hypothesis 5) include *unemployment rate* and labour costs (*average real wage*). The proxies for demand factors of craft beer consumption in a given county considered in estimations include the number of hotel and restaurants (*hotels and restaurants*), the number of overnights of tourists (*overnights of tourists*) and the number of overnights of tourists per capita (*overnights of tourists per capita*). These variables attempt to test the Hypothesis 1.

Finally, two variables capturing local life quality of counties are included in the estimated equations: life expectancy (*life expectancy*) and the number of divorces (*number of divorces*). These variables attempt to test Hypothesis 4. However, they may also complement or indirectly capture the above demand factors (i.e. Hypothesis 1) by reflecting local characteristics of potential consumers as opposed to the tourist driven demand drivers.

5. Estimation results

Table 2 and Table 3 provide the descriptive statistics and correlations between explanatory variables, respectively.

Before estimating the conditional logit model,[7] we examine correlations among the explanatory variables. We use the correlation results to specify the estimated models in order to avoid variables that may lead to unreliable and unstable estimated coefficients. The correlation matrix reveals that several variables are highly correlated between each other (greater than 50%). This is the case of the moved in variable which is highly correlated with population variables and the number of divorces; the average real wage with the population density, unemployment rate, and hotels and restaurants; overnights of tourists and life expectancy with hotels and restaurants; the number of divorces with population; and as expected for agglomeration variables with their corresponding interaction variables. There is also moderate correlation (between 40% and 50%) for the variable hotels and restaurants with the population density, the unemployment rate, and overnights of tourists per capita; the average

Table 3. Correlation matrix.

J	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(1) Agglomeration of small breweries	1.000															
(2) Agglomeration of large breweries	−0.062	1.000														
(3) Past brewing experience	0.205	0.177	1.000													
(4) Population (log)	−0.050	0.063	0.011	1.000												
(5) Population density	0.358	−0.116	−0.127	0.330	1.000											
(6) Moved in (log)	0.157	−0.037	−0.142	0.733	0.671	1.000										
(7) Number of cities (log)	−0.102	0.021	0.355	−0.029	−0.217	−0.068	1.000									
(8) Agglomeration of small breweries and popul. density (interaction)	0.958	−0.052	0.168	−0.039	0.471	0.206	−0.142	1.000								
(9) Agglomeration of large breweries and popul. density (interaction)	−0.062	0.999	0.180	0.064	−0.115	−0.037	0.023	−0.052	1.000							
(10) Unemployment rate	−0.145	−0.049	0.100	−0.245	−0.288	−0.292	0.159	−0.150	−0.048	1.000						
(11) Average real wage (log)	0.368	0.063	0.028	0.145	0.594	0.445	−0.212	0.396	0.062	−0.589	1.000					
(12) Hotels and restaurants (log)	0.376	0.067	0.303	0.138	0.405	0.386	0.174	0.361	0.072	−0.444	0.570	1.000				
(13) Overnights of tourists (log)	0.321	0.089	0.270	0.089	0.196	0.211	0.182	0.304	0.088	−0.311	0.313	0.753	1.000			
(14) Overnights of tourists per capita	0.420	−0.024	0.233	−0.294	0.043	−0.155	0.099	0.420	−0.025	−0.120	0.185	0.441	0.603	1.000		
(15) Life expectancy	0.297	0.140	0.204	0.108	0.367	0.251	−0.227	0.322	0.142	−0.541	0.574	0.599	0.459	0.328	1.000	
(16) Number of divorces (log)	0.022	0.030	−0.004	0.922	0.391	0.790	−0.007	0.011	0.029	−0.412	0.291	0.248	0.136	−0.242	0.156	1.000

Note: Calculated based on 22758 observation.
Source: own calculations.

real wage with the moved in variable; for overnights of tourists per capita with agglomeration of small breweries variables; and overnights of tourists with life expectancy.

To account for these correlations as well as for different duration of the variables and thus to check for the robustness of the results, we estimate several model specifications by excluding different correlated variables or variables with a shorter duration. Model M1 is a complete model which includes all considered explanatory variables. The rest of models (M5 to M13) differ in terms of excluded variables that were identified to have high correlations or have shorter duration. That is, labour market variables are excluded in M2, life quality variables in M3, different agglomeration and interaction variables in M4 to M5, moved in variable in M6, different demand condition variables in M7 and M8. The last two models (M9 and M10) exclude interaction variables given that by construction they are highly correlated with the agglomeration variables.

The estimation results from the conditional logit model with robust standard errors for all model specifications are reported in Table 4.[8] All estimated models explain the dependent variable well with high level of overall fitness as represented by χ^2. The overall model specification is statistically significant at 1% significance level for all 10 models. These test results suggest that the null hypothesis that the coefficients are all zero (except for the constant) is rejected for all estimated models.

The coefficients reported in Table 4 are odd ratios. An odd ratio associated with an explanatory variable greater than one indicates higher odds (likelihood) for craft breweries to locate in a county as the value of the variable increases. Conversely a value smaller than one implies the opposite (i.e. negative relationship or hlower likelihood).

6. Discussion

As reported in Table 4, the estimated results are rather robust across different estimated models in terms of the signs of the estimated coefficients and to large extent also with respect to the magnitude of the coefficients. Agglomeration economies increase the likelihood (i.e. the odd ratio is greater than 1) of craft breweries' locating in a county in Slovakia. However, the impact is significant for the agglomeration of small breweries, whereas the agglomeration of large breweries is statistically insignificant across all estimated models. The estimated coefficients for the agglomeration of small breweries variables are significant at 1% significance in all estimated models. That is, the estimates suggest that the likelihood that craft breweries choose to locate in a county increases between 85% and 117% for an increase of 1 in the variable agglomeration of small breweries (i.e. in the ratio of the share of the number of craft breweries of a county on total craft breweries in Slovakia to the share of the number of all small firms in that county in all small firms in Slovakia) in models M1-M8.[9] These estimated values decrease to around 33% in models M9 and M10 because interaction variable between agglomeration and population density is not considered; i.e. they reduce the likelihood of firms locating in a given county (see further). These results suggest that craft breweries benefit from the agglomeration externalities related

Table 4. Estimated results: Conditional logit model of craft breweries' location choices in Slovakia (odd ratios).

	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
Agglomeration effects										
Agglomeration of small breweries	1.954***	1.919***	1.983***	1.854***		1.952***	1.987***	2.170***	1.332***	1.332***
Agglomeration of large breweries	0.750	0.828	0.784		0.695	0.751	0.578	0.615	0.979	0.979
Past brewing experience	1.052	0.957	0.935	0.999	2.497***	1.038	1.275	1.171	1.010	1.010
Urbanisation effects and accessibility										
Population (log)	1.157	0.910	1.049	1.244	0.860	1.159	1.067	1.278	1.028	1.028
Population density (log)	0.954	0.980	0.939	0.968	0.937	0.961	0.925	0.957	0.726**	0.726**
Moved in (log)	1.029	1.052	1.063	0.936	1.130		1.134	1.203	0.970	0.970
Number of cities (log)	1.170	1.151	1.350	1.491	0.749	1.173	1.303	1.341	1.067	1.067
Agglom. of small brew. and popul. density (interaction)	0.958***	0.959***	0.957***	0.962***		0.958***	0.956***	0.947***		
Agglom. of large brew. and popul. density (interaction)	1.048	1.031	1.040		1.055	1.047	1.094	1.084		
Labour market conditions										
Unemployment rate	0.960		0.985	0.988	0.972	0.961	0.960	0.959	0.975	0.975
Average real wage (log)	2.378		2.110	2.730	1.851	2.435	6.746**	5.121**	2.575	2.575
Demand conditions										
Hotels and restaurants (log)	1.657***	1.820***	1.576**	1.781***	1.652***	1.663***			1.807***	1.807***
Overnights of tourists (log)	0.982	0.930	0.933	0.964	1.059	0.983	1.243***		1.002	1.002
Overnights of tourists per capita	1.017	1.025	1.023	1.009	1.020	1.017		1.044***	1.004	1.004
Life quality										
Life expectancy	0.810	0.917		0.926	0.814	0.808	0.892	0.974	0.806	0.806
Number of divorces (log)	0.887	1.140		0.867	1.078	0.904	0.849	0.869	1.134	1.134
LL	−1218.89	−1222.89	−1221.35	−1745.57	−1283.55	−1218.91	−1232.70	−1232.37	−1229.91	−1229.91
χ^2	177.8***	182.8***	181.5***	269.9***	86.1***	178.1***	165.4***	171.6***	160.4***	160.4***
Number of observations	22,758	22,758	22,758	33,005	22,758	22,758	22,758	22,758	22,758	22,758

Notes: *** significant at 1% level, ** significant at 5% level, * significant at 10% level; the reported results are odd ratios from a conditional logit estimation. LL represents log-pseudo-likelihood statistics. χ^2 is the likelihood ratio (LR) chi-square test.
Source: own estimations.

to the concentration of firms from the same industry (i.e. small craft breweries); the agglomeration externalities of large breweries apparently do not generate gains and thus do not affect location choices of craft breweries. The coefficient estimated for the past brewing experience is statistically insignificant for most estimated models which implies that the past presence of large brewing company in a county does not affect the location choice of craft breweries in that county. Only in model M5, where the variable measuring the agglomeration of small breweries is excluded, the past brewing experience is significant at 1% level providing certain support that this variable may capture similar effects as the agglomeration variable. The craft brewery in Slovakia is required to employ a certified brewer, and this result provides some support that the past work experience in traditional brewery of a given county may generate an advantage in attracting craft breweries.

Overall, these results reveal the support for Hypothesis 2a (agglomeration externalities of small breweries), weak support for Hypothesis 2c (agglomeration externalities of past experience) and reject Hypothesis 2 b (agglomeration externalities of large breweries). Our results are consistent with the literature that finds that agglomeration of similar firms are important factors determining location choice of firms (Alcácer & Chung, 2014; Cingano & Schivardi, 2004; Delgado et al., 2010; Hecht, 2017; Mariotti et al., 2019).

The estimated results suggest that that craft breweries are sensitive to demand conditions. The likelihood of craft breweries locating in a county increases with the increase of demand conditions in that county – as proxied by the availability of hotels and restaurants, overnights of tourists, and overnights of tourists per capita—thus supporting Hypothesis 1. One variable of the total three variables measuring demand conditions is always statistically significant at 1% level in each estimated model; the exception is model M3 where it is significant at 5% level. Craft breweries prefer to locate in more abundant than less abundant counties in terms of the number of hotels and restaurants or the number of overnights of tourists in line with the literature suggestions (e.g. Alonso, 2011; Reid & Gatrell, 2017). For example, as estimates in Table 4 suggest, the likelihood that craft breweries choose to locate in a county increases between 58% and 82% for an increase of 100% (doubling) in the number of hotels and restaurants in that county across all estimated models where this variable was considered (M1-M6; M9-M10).

However, variables capturing local life quality – life expectancy and the number of divorces – seem not to affect the location choices thus failing to accept Hypothesis 4. These results indicate that local characteristics of potential consumers have no implications on craft breweries; only market potential related to the development of the tourism play a more prominent role (Table 4). This is in line with literature which finds that quality of life might not necessarily be a stronger driver for location choices than other factors (Dixit et al., 2019).

Most of the variables capturing the urbanisation effects and accessibility drivers appear not to impact location decisions of craft breweries. The exceptions are coefficients associated with the variable accounting for the population density in models M9 and M10 (significant at 5% level). This variable decreases the likelihood of craft breweries locating in a county. This finding is in contradiction with the expectation

that craft breweries prefer to locate in counties with greater population density. However, in most estimated models the coefficient associated with this variable is not statistically significant. As a result, we cannot confirm Hypothesis 3.

Further, the estimated results suggest that that the agglomerations effect on craft breweries location decisions is smaller in more than less densely populated counties (i.e. interaction between effects of Hypothesis 2a and Hypothesis 3) as indicated by the statistically significant and lower than one coefficients associated with the interaction variable between the agglomeration of small breweries variable and the population density variable (significant at 1% level in models M1-M4 and M6-M8). That is, craft breweries have lower likelihood to gain from agglomeration externality linked to small breweries if they locate in more than less densely populated counties. These results suggest that the agglomeration externalities (Hypothesis 2a) generate less gains in more densely populated counties (Hypothesis 3) and thus negatively affect location choices of craft breweries. Note that, when the interaction variable is included in the estimated model the population density variable is statistically insignificant suggesting that the interaction effect might be more important than the direct effect of this variable on the location choices of craft breweries (Table 4).

Variables measuring labour market conditions are statistically insignificant across most estimated models. The exception is the real wage variable (*average real wage*) which is significant and greater than one (at 5% level) in models M7 and M8 (Table 4). As aground above, this variable may capture skill effects (the availability of skills in the market) additionally to labour cost effects thus potentially suggesting that the first effect may offset the second one thus causing a higher likelihood of craft breweries locating in a given county if the county has higher average real wage. These results provide a weak support for Hypothesis 5. Similar results for labour cost effects were found in Boudier-Bensebaa (2005) and Cirillo (2017).

7. Conclusions

There was a significant growth of numbers of craft breweries in Slovakia in last two decades. It coincided with the decline of the number of large-scale breweries in the country. While large-scale breweries were distributed uniformly on the whole territory of Slovakia by decisions of central planners during socialism, newly created craft breweries tend to be located in different parts of Slovakia. We have applied the conditional logit model to investigate the determinants of the location choice of craft breweries based on the random utility maximising framework developed by McFadden (1973). The aim was to analyse to what extent the agglomeration externalities of similar firms drive the location choices of craft breweries relative to agglomeration externalities of large breweries and the existence of brewing knowledge as well as urban effects, demand factors, life quality and labour market conditions.

Overall, the estimated results suggest that location selection of craft breweries in Slovakia is influenced by two key sector specific factors – agglomeration externalities of similar firms (Hypothesis 2a) and demand conditions linked to the development of the tourist sector (Hypothesis 1). Other factor found in the literature to be important drivers of firms' location decisions – agglomeration externalities of large breweries

and past brewing experience (Hypothesis 2b, 2c), labour market conditions (Hypothesis 2a), urbanisation externalities (Hypothesis 3), life quality (Hypothesis 4) – seem not to play role or have a weaker impact on location choices of craft breweries in Slovakia.

The results might have significant implications for both academics and stakeholders. Craft beer represents 3–5% of total beer consumption in Western Europe and USA, while in Eastern Europe it is only about 1% (Pokrivčák et al., 2019). For this reason, it is possible to expect further development of craft breweries in Eastern Europe. Therefore, it could be of higher interest for policy makers, analysts as well as for potential businessmen to know how geographical location of craft breweries is determined in this region. From the business perspective, the results of the article suggest that the profitable location choices of craft breweries are characterised by the presence of agglomeration externalities and tourist related demand rather than other drives. From the policy perspective, these results can contribute to a better targeting of the rural development support for this sector and to stimulate growth where it has the highest potential. Particularly, the results of this article highlight that there is need to generate local hubs so that craft breweries can gain from agglomeration externalities. Rural Development Program can enhance craft breweries potential in a given location by supporting development of agglomeration related externalities such innovation and knowledge, networks and supportive local institutions.

The findings of our article have to be considered with some caution given that the analyses are highly dependent on the geographical units used in the estimations. From a location point of view, counties may not be the ideal geographical disaggregation to identify locations of craft breweries and a more refined spatial location may be required to more accurately capture the drivers of location choices of firms from this sector. Second, the location decisions may differ according to the size of craft breweries which was not accounted for due to the data unavailability. Finally, we could not identify the role of government support in determining the geographical distribution of craft breweries in Slovakia both because of the unavailability of regional county level data on support granted to craft breweries and because of the presence of rather uniform policy support environment applied across the whole Slovakia. Future research should analyse each of these limitations of the current article to test the robustness of the results and to provide a more complete picture of the location determinants of craft breweries.

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Disclosure statement

No potential conflict of interest was reported by the authors.

Notes

1. Between 1918 and 1992 Slovakia was part of Czechoslovakia.
2. The only exception was Pilsner Urquell which was available on the whole territory of Czechoslovakia.
3. Heineken closed down Martiner brewery in Martin in 2003, Nitra brewery in 2004, and Rimavska Sobota in 2006. Topoľčany brewery was closed by SABMiller in 2009.
4. Brewer in Košice went bankrupt in 1998, Trnava ended production in 1998 too, brewery in Michalovce in 1999, Ilava in 2000, Bratislava and Poprad in 2007 and brewery in Bytča in 2012.
5. The variable with the shortest period will determine the actual duration of the data used in estimations.
6. The advantage of log transforming variables is also to address their skewness or to better reflect a normal distribution.
7. Note that, conditional logit estimation is most appropriate when the number of degrees of freedom for the estimated model is large relative to the number of observations and with the panel structure of the data (as in this paper). In contrast, standard unconditional estimation is more appropriate when the degrees of freedom is small relative to the number of observation. Further, since our explanatory variables represent county characteristics rather than the characteristic of craft braveries, the conditional logit model is preferable to multinomial logit models. That is, the conditional logit model estimates the choice as a function of the "choices' characteristics" (i.e. characteristics of counties), whereas the alternative multinomial logit models is applicable to estimate location choice as a function of the "chooser's" characteristics (i.e. characteristics of craft breweries) (Hauber et al., 2016).
8. We use Stata software package.
9. The percentage changes are obtained by subtracting the estimated coefficients by 1 and multiplying the obtained value by 100.

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References

Alcácer, J., & Chung, W. (2014). Location strategies for agglomeration economies. *Strategic Management Journal*, *35*(12), 1749–1761. https://doi.org/10.1002/smj.2186

Alonso, A. D. (2011). Opportunities and challenges in the development of micro-brewing and beer tourism: A preliminary study from Alabama. *Tourism Planning & Development*, *8*(4), 415–431. https://doi.org/10.1080/21568316.2011.598181

Alonso, A. D., Sakellarios, N., & Bressan, A. (2017). Stakeholders and craft beer tourism development. *Tourism Analysis*, *22*(1), 45–58. https://doi.org/10.3727/108354217X14828625279690

Batzli, S. A. (2014). Mapping United States Breweries 1612 to 2011. In M.W. Patterson & N. Hoalst-Pullen (Eds.), *The geography of beer* (pp. 31–43). Springer.

Bergman, E. M., & Feser, E. J. (1999). *Industrial and regional clusters: Concepts and comparative applications*. Reprint. Edited by S. Loveridge & R. Jackson. WVU Research Repository, 2020.

Boudier-Bensebaa, F. (2005). Agglomeration economies and location choice: Foreign direct investment in Hungary. *The Economics of Transition*, *13*(4), 605–628. https://doi.org/10.1111/j.0967-0750.2005.00234.x

Carlton, D. (1983). The location and employment choices of new firms: An econometric model with discrete and continuous endogenous variables. *The Review of Economics and Statistics*, *65*(3), 440–449. https://doi.org/10.2307/1924189

Chang, S. J., & Park, S. (2005). Types of firms generating network externalities and MNCs' co-location decisions. *Strategic Management Journal*, *26*(7), 595–615. https://doi.org/10.1002/smj.464

Cingano, F., & Schivardi, F. (2004). Identifying the sources of local productivity growth. *Journal of the European Economic Association*, *2*(4), 720–742. https://doi.org/10.1162/1542476041423322

Ciriaci, D., Grassano, N., & Vezzani, A. (2019). Regulations and location choices of top R&D investors worldwide. *Structural Change and Economic Dynamics*, *49*, 29–42. https://doi.org/10.1016/j.strueco.2019.04.005

Cirillo, V. (2017). Technology, employment and skills. *Economics of Innovation and New Technology*, *26*(8), 734–754. https://doi.org/10.1080/10438599.2017.1258765

Cortright, J. (2002). The economic importance of being different: Regional variations in tastes, increasing returns, and the dynamics of development. *Economic Development Quarterly*, *16*(1), 3–16. https://doi.org/10.1177/0891242402016001001

Danson, M., Galloway, L., Cabras, I., & Beatty, T. (2015). Microbrewing and entrepreneurship: The origins, development and integration of real ale breweries in the UK. *The International Journal of Entrepreneurship and Innovation*, *16*(2), 135–144. https://doi.org/10.5367/ijei.2015.0183

de Bok, M., & van Oort, F. (2011). Agglomeration economies, accessibility, and the spatial choice behavior of relocating firms. *Journal of Transport and Land Use*, *4*(1), 5–24. https://doi.org/10.5198/jtlu.v4i1.144

Delgado, M., Porter, M. E., & Stern, S. (2010). Clusters and entrepreneurship. *Journal of Economic Geography*, *10*(4), 495–518. https://doi.org/10.1093/jeg/lbq010

Dennett, A., & Page, S. (2017). The geography of London's recent beer brewing revolution. *The Geographical Journal*, *183*(4), 440–454. https://doi.org/10.1111/geoj.12228

Disdier, A., & Mayer, T. (2004). How different is Eastern Europe? Structure and determinants of location choices by French firms in Eastern and Western Europe. *Journal of Comparative Economics*, *32*(2), 280–296. https://doi.org/10.1016/j.jce.2004.02.004

Dixit, A., Clouse, C., & Turken, N. (2019). Strategic business location decisions: Importance of economic factors and place image. *Rutgers Business Review*, *4*(1), 73–91.

Dudić, Z., Dudić, B., Saxunová, D., Peráček, T., & Beňová, E. (2020). Development of small breweries and innovation in the brewing industry in the Republic of Slovakia. Економика пољопривреде, *67*(3), 913–924.

Dunn, A., & Wickham, M. (2016). Craft brewery tourism best-practices: A research Agenda. *Annals of Tourism Research*, *56*, 140–142. https://doi.org/10.1016/j.annals.2015.10.009

Durisin, M. (2013). Why everyone is going crazy for craft beer. Business Insider, 23p.

Ellis, V., & Bosworth, G. (2015). Supporting rural entrepreneurship in the UK microbrewery sector. *British Food Journal*, *117*(11), 2724–2738. https://doi.org/10.1108/BFJ-12-2014-0412

Elzinga, K. G., Tremblay, C. H., & Tremblay, V. J. (2015). Craft beer in the United States: History, numbers, and geography. *Journal of Wine Economics*, *10*(3), 242–274. https://doi.org/10.1017/jwe.2015.22

Forte, R. P., & Sá, A. R. (2021). The role of firm location and agglomeration economies on export propensity: the case of Portuguese SMEs. *EuroMed Journal of Business*, *16*(2), 195–217. https://doi.org/10.1108/EMJB-02-2020-0011

Francioni, J. L., & Byrd, E. T. (2012). Beer tourism: A visitor and motivational profile for North Carolina craft breweries. *Masters Abstracts International*, *50*(6), 32–54.

Fujita, M. M., Krugman, P., & Venables, A. J. (1999). *The spatial economy-cities, regions and international trade*. The MIT Press.

Fujita, M. M., & Thisse, J. F. (2002). *Economics of agglomeration cities, industrial location, and regional growth*. Cambridge University Press.
Garavaglia, C., & Swinnen, J. (Eds.). (2018). *Economic perspectives on craft beer: A revolution in the global beer industry*. Palgrave Macmillan.
Gordon, I. R., & McCann, P. (2000). Industrial clusters: Complexes, agglomeration and/or social networks? *Urban Studies*, *37*(3), 513–532. https://doi.org/10.1080/0042098002096
Gottlieb, P. D. (1994). Amenities as an economic development tool: Is there enough evidence? *Economic Development Quarterly*, *8*(3), 270–285. https://doi.org/10.1177/089124249400800304
Han, F., Xie, R., & Lai, M. (2018). Traffic density, congestion externalities, and urbanization in China. *Spatial Economic Analysis*, *13*(4), 400–421. https://doi.org/10.1080/17421772.2018.1459045
Hauber, A. B., González, J. M., Groothuis-Oudshoorn, C. G. M., Prior, T., Marshall, D. A., Cunningham, C., IJzerman, M. J., & Bridges, J. F. P. (2016). Statistical methods for the analysis of discrete choice experiments: A report of the ISPOR conjoint analysis good research practices task force. *Value in Health: The Journal of the International Society for Pharmacoeconomics and Outcomes Research*, *19*(4), 300–315. https://doi.org/10.1016/j.jval.2016.04.004
Head, K., Ries, J., & Swenson, D. (1995). Agglomeration benefits and location choice: Evidence from Japanese manufacturing investments in the United States. *Journal of International Economics*, *38*(3-4), 223–247. https://doi.org/10.1016/0022-1996(94)01351-R
Hecht, V. (2017). Location choice of German multinationals in the Czech Republic: The importance of agglomeration economies. *Economics of Transition*, *25*(4), 593–623. https://doi.org/10.1111/ecot.12131
Isard, W. (1956). *Location and space-economy: A general theory relating to industrial location, market areas, land use, trade, and urban structure*. MIT Press.
Kratochvíle, A. (2005). *Pivovarství českých zemí v proměnách 20*. Výzkumný ústav pivovarský a sladařský.
Krenz, A. (2016). *Firm structure and the location decision of German manufacturing firms: Evidence from official firm-level data*. cege Discussion Papers No. 298. University of Göttingen.
Krogmann, A., Mróz, F., Nemčíková, M., Líšková, Z. D., Dubcová, A., & Oremusová, D. (2020). Possibilities for developing beer routes in Slovakia. *Studies of the Industrial Geography Commission of the Polish Geographical Society*, *34*(3), 36–52. https://doi.org/10.24917/20801653.343.3
Krugman, P. (1991). *Geography and trade*. MIT Press.
Larimo, J., Marinov, M., & Marinova, S. (2011). The brewing industry in CEE. In *the changing nature of doing business in transition economies* (pp. 87–103). Palgrave Macmillan.
Lavoratori, K., Mariotti, S., & Piscitello, L. (2020). The role of geographical and temporary proximity in MNEs' location and intra-firm co-location choices. *Regional Studies*, *54*(10), 1442–1456. https://doi.org/10.1080/00343404.2020.1732901
Lee, N., & Clarke, S. (2019). Do low-skilled workers gain from high-tech employment growth? High-technology multipliers, employment and wages in Britain. *Research Policy*, *48*(9), 103803. https://doi.org/10.1016/j.respol.2019.05.012
Lei, H. S., & Chen, Y. S. (2011). The right tree for the right bird: Location choice decision of Taiwanese firms' FDI in China and Vietnam. *International Business Review*, *20*(3), 338–352. https://doi.org/10.1016/j.ibusrev.2010.10.002
Lenzi, C., & Perucca, G. (2018). Are urbanized areas source of life satisfaction? Evidence from EU regions. *Papers in Regional Science*, *97*(S1), S105–S122. https://doi.org/10.1111/pirs.12232
Mariotti, S., Mosconi, R., & Piscitello, L. (2019). Location and survival of MNEs' subsidiaries: Agglomeration and heterogeneity of firms. *Strategic Management Journal*, *40*(13), 2242–2270. https://doi.org/10.1002/smj.3081

Martí, J., Alguacil, M., & Orts, V. (2017). Location choice of Spanish multinational firms in developing and transition economies. *Journal of Business Economics and Management*, *18*(2), 319–339. https://doi.org/10.3846/16111699.2015.1013980

McFadden, D. (1973). Conditional logit analysis of qualitative choice behavior. In P. Zarembka (Ed.), *Frontiers in econometrics* (pp. 105–142). Academic Press.

Meixnerová, L., & Krajňák, M. (2020). Macroeconomic time series affecting the minimum and average wages of V4 countries. *E&M Economics and Management*, *23*(4), 4–22.

Moses, L. N. (1958). Location and the theory of production. *The Quarterly Journal of Economics*, *72*(2), 259–272. https://doi.org/10.2307/1880599

Murray, A., & Kline, C. (2015). Rural tourism and the craft beer experience: Factors influencing brand loyalty in rural North Carolina, USA. *Journal of Sustainable Tourism*, *23*(8-9), 1198–1216. https://doi.org/10.1080/09669582.2014.987146

Nesse, K., Green, T., & Ferguson, B. (2019). Quality of life in potential expansion locations is important to craft brewers. *Journal of Regional Analysis & Policy*, *49*(1), 65–77.

Pachura, P. (2020). The role of space in the business models of microbreweries. *Applied Geography*, *125*, 102303. https://doi.org/10.1016/j.apgeog.2020.102303

Pokrivčák, J., Lančarič, D., Savov, R., & Tóth, M. (2018). Craft beer in Slovakia. In C. Garavaglia & J. Swinnen (Eds.), *Economic perspectives on craft beer* (pp. 321–343). Palgrave Macmillan.

Pokrivčák, J., Supeková, S. C., Lančarič, D., Savov, R., Toth, M., & Vašina, R. (2019). Development of beer industry and craft beer expansion. *Journal of Food & Nutrition Research*, *58*(1), 63–74.

Procher, V. (2011). Agglomeration effects and the location of FDI: Evidence from French first-time movers. *The Annals of Regional Science*, *46*(2), 295–312. https://doi.org/10.1007/s00168-009-0349-9

Rahman, S. M. T., & Kabir, A. (2019). Factors influencing location choice and cluster pattern of manufacturing small and medium enterprises in cities: Evidence from Khulna City of Bangladesh. *Journal of Global Entrepreneurship Research*, *9*(1), 61. https://doi.org/10.1186/s40497-019-0187-x

Reid, N. (2018). Craft breweries, adaptive reuse, and neighborhood revitalization. *Urban Development Issues*, *57*(1), 5–14. https://doi.org/10.2478/udi-2018-0013

Reid, N., & Gatrell, J. D. (2017). Craft breweries and economic development: Local geographies of beer. *Polymath: An Interdisciplinary Arts and Sciences Journal*, *7*(2), 90–110.

Rogovská, V., & Masár, I. (2018). Tendencies in brewing industry in Czech Republic and Slovakia. *Economics of Agriculture*, *18*(3), 58–68.

Thurnell-Read, T. (2015). Beer and belonging: Real Ale consumption, place and identity. In T. Thurnell-Read (Ed.), *Drinking dilemmas* (pp. 61–77). Routledge.

Valášková, K., Gavurová, B., Ďurana, P., & Kováčová, M. (2020). Alter ego only four times? The case study of business profits in the Visegrad group. E&*M Economics and Management*, *23*(3), 101–119.

Weber, A., & Friedrich, C. J. (1929). *Alfred Weber's theory of the location of industries*. The University of Chicago Press.

Wojtyra, B., Kossowski, T. M., Březinová, M., Savov, R., & Lančarič, D. (2020). Geography of craft breweries in Central Europe: Location factors and the spatial dependence effect. *Applied Geography*, *124*, 102325. https://doi.org/10.1016/j.apgeog.2020.102325

Yeager, C., & Gatrell, J. D. (2020). Brewpubs and microbreweries: A Midwestern geography of local craft beer markets by firm type. In N. Hoalst-Pullen & M. W. Patterson (Eds.), *The geography of beer* (pp. 159–168). Springer.