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Do global brands contribute to the economy of their country of origin? – A dynamic spatial approach

Keywords: *brand value; spatial regression, Country Of Origin, intangible assets, economic geography, global factory*

Abstract

Research background: Brand positioning based on the country of origin is at the center of attention of many marketing theories and practices. It is a significant tool for enhancing an effective marketing strategy for global brands. It is evident that global brands constitute critical intangible assets for businesses, companies, and corporations. However, it is not clear how they contribute to national economies.

Purpose of the article: This article aims at discussing the significance of brand value which does not only directly contribute to the value of a company but can also be seen as a tool for leveraging national economies. This paper intends to prove that although products of global brands can be produced and purchased in multiple countries the influence they have on the economy of the country where their owner's seat is located is much more meaningful than in the case of other economies included in the "global factory" processes.

Methodology/methods: Based on 500 Brandirectory, the Most Valuable Global Brands 2011-2015 rankings powered by Brand Finance, the authors observed a spatial-economic autocorrelation which exemplifies the potential interdependency between GDP and brand value. This relationship has become a starting point for designing a spatial regression model.

Findings: The findings of this paper support the hypothesis that states that assumptive spatial dependencies have a significant influence on the examined relationship of brand value and GDP. Data were analysed through two models: the spatial error and the spatial lag model. Both of them confirm that brand is a key intangible asset not only for companies but also for economies of their country of origin.

Introduction

Brand positioning based on the country of origin is a focal point of many marketing theories and practices (Bartikowski and Cleveland, 2017). The ethnic identity and cosmopolitanism determine consumers' choices and are important factors contributing to the effectiveness of marketing strategies of global brands (Cleveland, Laroche, and Papadopoulos, 2009). Using LCCP (local consumer culture

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brand positioning) or GCCP (global consumer culture brand positioning) approach can be determined the final brand performance (Cleveland et al., 2011) on which brand value is reflected. The results achieved by most valuable global brands differ. Economic conditions of countries where global brands originate also differ. This paper investigates the relationship between global brands' performance and the performance of economies of their countries of origin.

In doing so, it examines the potential interdependency between brand values and GDP per capita of the countries where these brands' headquarters are located, in a dynamic spatial approach.

The paper starts with the presentation of the economic and management background that is crucial for developing the research question. By studying the subject literature, the research gap was then defined and the methodology was illustrated. Finally, results, discussion and conclusion were reported.

Literature background

1.1 Economies and intangibles

Economic geography focuses on evolutionary economics in trying to understand processes of regional growth and change. According to MacKinnon et al. (2009), the evolution of the economic landscape is related to processes of capital accumulation and political economy approaches resulting in the uneven development of countries. This paper concentrates on intangible assets as one of the effects of the mentioned capital accumulation. As Suriñach and Moreno (2012) highlight, the geographical dimension is relevant when it comes to explaining the impact of intangible assets on economic growth. The European Union project IAREG (Intangible Assets and Regional Economic Growth, 2008) aimed to study the effect of intangible assets on the regional economic growth and confirmed that intangibles influence economic growth of regions. Scientists such as Iammarino et al. (2012), Kramer and Diez (2012), Schiller and Diez (2012), López-Bazo and Moreno (2012), López-Bazo and Motellón (2012), Manca (2012), Ramos et al. (2012), Dettori et al. (2012) carried out a similar study. Their results confirm that human capital, technological capital, and knowledge diffusion have a positive effect on regional economic growth. Based on Johns' (2006) results of studies on the geography of video games' production, supported by Kerr (2017), software production networks are bounded within three major economic regions: Western Europe, North America, and Asia Pacific; whereas hardware is produced globally. It means that localization of the source of intangible assets matters in the globally networked world and that it intensifies uneven development. The problem engages the attention of many scientists (Coe et al., 2008; Yeung and Coe, 2015; Peck, 2016; Hudson, 2016; Aoyama, 2016; Dunford and Liu, 2017) and leads to questions about intangibles such as brands and their impact on the place of origin.

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1.2 Brand as a key intangible asset

According to Nakamura (2010), intangible investment expenditures rose from roughly 4% of U.S. GDP in 1977 to 9–10% in 2006. Referring to the World Bank estimates (Hamilton *et al*., 2005, pp. 61-70), approximately 78% of the world's wealth is attributed to intangible capital. In developing nations, intangible capital accounts for 59% of the wealth, while in OECD countries this share is approximately 80%. Intangible capital is an important argument of a nation's wealth. The knowledge-based 'network economy' has contributed greatly to economic growth in recent years (Malik, Ali, and Khalid, 2014). The 'new economy' is underpinned by intangible capital (De, 2014) such as brands and not only knowledge, information, technology or human capital.

Brands are believed to be one the most valuable assets a company may possess (Kamakura and Russel, 1993; Barwise et al., 1990). Simon and Sullivan (1993) define brand equity as "the incremental cash flows which accrue to branded products over and above the cash flows which would result from the sale of unbranded products." Whereby Aaker (1996) defines it as "a set of assets (and liabilities) linked to a brand's name and symbol that add to (or subtract from) the value provided by a product or service to a firm and/or that firm's customers." Doyle's (1990) definition of brand equity is "an outcome of the long-term investment." Kucharska (2016) defines brand value as "the full and final result of marketing operations within a given period which constitutes an objective way to measure the efficiency and effectiveness of adopted strategies." Some of the global brands achieve spectacular financial results of their profit-making strategies what is reflected in their value. Referring to the 500 Brandirectory 2017, the Most Valuable Global Brands ranking powered by Brand Finance, e.g., the value of brand No. 1: Google is $109.470m; No. 2: Apple value is $107.141m; No. 3: Amazon brand value is $106.396m. The significance of brands for businesses, companies, and corporations is indisputable (Zéghal and Maaloul, 2011; Belo, Lin, and Vitorino, 2014; Steenkamp, 2014). It is proved by the fact that their value is often greater than the sum of all the company's net assets (Barwise et al., 1989, pp. 34). As regards the network economy, brand builders have become the new primary producers (Klein, 2000, pp.196).

1.3 Global Brand's country of origin

Many empirical studies support the opinion that the country of origin matters when consumers decide whether to buy a product branded with a particular brand (Pecotich and Ward, 2007; Winit et al., 2014; Zhang and Merunka, 2015; Haliakias, Davvetas, and Diamantopoulos, 2016). When looking for the underlying reason of that situation, Pecotich and Ward (2007) claimed that what matters is the perceived value of the brand. In their opinion, developed countries such as Japan, Germany, and the USA are associated by global consumers with high-value

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brands and consequently high-quality products; whereas newly developing nations with the lower level of recognition are associated with poorer quality products. Hence, the conclusion that high-level familiarity of a brand's country of origin can positively contribute to the brand's performance.

How about the opposite: Do the brand's reputation and performance influence the reputation and performance of their country of origin? Rojas-Méndez (2013) stresses that a country's identity and images of a country's products are essential factors which create associations with a particular state based on its people, culture, as well as its branded products. This presumption lead to develop the research question of the present paper:

RQ: Do global brands leverage economies of countries of their origin?

In order to answer this question, the paper adopted the approach related to branding geographies which present spatial circuits of brand value meaning and uneven development. Tokatli (2008-2015) examined the economic geography of several global fashion brands by thoroughly analyzing cases such as Burberry (2011), Gucci (2012), Prada (2014), and Zara (2008, 2015). Based on her conclusions, it can be argued that in the fashion industry, the place of production is negligible but the country of origin matters from a consumers' perspective.

Referring to Pikes's comprehensive studies (2009, 2011, 2013, 2015), brand and branding geographies have the potential to stimulate a novel approach to addressing spatial issues at the intersection of economic, social, cultural, political, and ecological geographies.

One of the most engaging papers on this subject, by Ferilli et al. (2016), examined the correlation between the Top 100 Most Valuable Global Brands' positioning and positioning of the corresponding countries regarding quality perceptions. Ferilli's findings suggest that although the correlation between the positioning of a country and the positioning of corporate brands exists, it strongly depends on the category to which they belong and also their economic sectors, which present different levels of representativeness of the country's most common attributes. Balabanis and Siamagka (2017) confirm findings of Ferilli's et al. and strongly highlight that product category matters for global vs. local customer behavior towards brands. Although these findings show a tight link between the most valuable brands and their countries of origin, there is no proof supporting the existence of the connection between brand value and a country's economic condition. As it was mentioned before, Iammarino et al. (2012), Kra-mer and Diez (2012), Schiller and Diez (2012), López-Bazo and Moreno (2012), López-Bazo and Motellón (2012), Manca (2012), Ramos et al. (2012), Dettori et al. (2012) examined the impact of intangible assets on regions. Their results confirm that human capital, technological capital, and knowledge diffusion have a positive influence on regional economic growth. Their research did not include such intangible assets as

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brands. A first attempt was realized by Kucharska and Flisikowski (2017), although they did not take a dynamic approach.

To fill this gap, this manuscript examines the way in which global brands contribute to the development of economies using data from more than one period. The goal was to achieve a dynamic approach to the relationship between strong brands' countries of origin and the condition of particular economies.

According to Papadopoulos (1993), headquarters is one of the key brand-place associations. Thus, it was decided to examine the way global brands contribute to the development of economies of the countries where these brands' headquarters are located.

The GDPpc (Gross Domestic Product per capita) serves mainly to compare the economic standard of living in various countries (Malul, Hadad, and Ben-Yair, 2009). Referring to Wang et al. (2015), GDP pc is the most effective indicator of per capita economic condition among several other widely accepted indicators and for this reason it has been used as an indicator of the economy's condition.

The next paragraph will explain the method and procedure to collect and analysed data via a spatial regression model.

Method of the research

The empirical analysis was performed in a few stages. First, a preliminary assessment of statistical significance of the relationship and spatial autocorrelation for brand values were done, which constituted the basis for selecting the final form of the regression model. Then, estimated coefficients of the most appropriate form for the spatial regression model were adopted. The brand value data was selected on the basis of the yearly published ranking of brand value Brandirectory 500 top global brands 2011 - 2015 ranking powered by Brand Finance (Brandirectory, 2014). The analyses were performed for 33 selected countries, which are not in every case reciprocal neighbors. Thus, it was necessary to construct a spatial weights matrix based on economic distances (Anselin, 1995). The value of real GDP (2011 - 2015) was chosen for that measure. This kind of technical nests inside the spatial model causes an additional interpretation of coefficients[1].

In ordinary least squares (OLS) regression it is assumed that the modeled phenomena or processes are independent of their location, so there is no interaction between the two objects (Longley et al., 2015). This assumption is not always suited to the analysis of socio-economic phenomena in spatial terms. According to the so-called first law of geography formulated by Tobler (1970), all objects in space (observation units) interact, and spatial interactions are the greater, the smaller the distance between objects. Thus, in the analysis and modeling of data

[1] I.e. two countries can be understood in such terms as reciprocal neighbors if their GDP values are similar (they are transformed into weights matrix for estimation of spatial regression coefficients).

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located the spatial interactions must be taken into account, which may relate to both the dependent variable and the random component. In a situation where the value of the dependent variable in a given location affects the value of this variable from other locations, there is the so-called spatial autoregression. On the other hand, a case where certain spatially autocorrelated variables are omitted or cannot be taken into account relates to the spatial autocorrelation of the random component (Rogerson, 2001). Interdependence of spatial data makes the assessment of the coefficients of regression function estimated with OLS inaccurate (Longley et al. 2015, pp. 86-107). This means that the t-Student statistics obtained when testing the statistical significance of the independent variables of the OLS model may be only seemingly important. Consequently, there is a risk that the results of statistical inference will be wrong. The use of spatial regression modeling enables the elimination of the negative impact of spatial effects. In case of spatial relationships more appropriate is the use of autoregression models and spatial autocorrelation (Rogerson, 2001). The basis for the selection of the most accurate form of the regression model is the analysis of spatial autocorrelation. It is defined as the degree of correlation of observed values of the variable at its different locations (Fisher et al., 2008). This means that the value of the modeled variable is related to values of the same variable in other locations, and the degree of relationship in accordance with Tobler's rule (closer objects are more relevant than distant) affect the relative position of objects and their geographical (or economic) distance. The specific relationship between the observation units (resulting from their location) can be considered thanks to the design of spatial weights matrix (Anselin, 1988, pp. 1-17). This matrix is a square matrix with n×n dimensions, whose elements reflect the existing spatial structure. Specification of that matrix belongs to arbitrary decisions taken by a researcher, and a choice of the alternative method of weighing is often due to the knowledge of the spatial structure of the phenomenon and links between units (Case et al., 1993; Conley and Tsiang, 1994; Conley, 1999). It is assumed that links to spatial entities are positively affected by mutual proximity and negatively by shared distance. Spatial weights matrix is a structure whose elements we take the value 0 when the two objects i, j are not neighbors, and 1 otherwise. In order to construct a matrix of spatial weights based on economic distances by analogy the 0 and 1 value is selected as the Euclidean distance and the optimal cut-off point (usually 0.5) is computed.

Specification of spatial weight matrices is a prerequisite and the first step in the analysis of spatial autocorrelation. Among many measures used for spatial relationships testing the most commonly used is Moran's I statistic (Longley *et al.*, 2015, pp. 86-107). This statistic is calculated based on the formula:

$$I = \frac{n\sum_{i=1}^{n}\sum_{j=1}^{n}(z_i-\bar{z})(z_j-\bar{z})}{\sum_{i=1}^{n}\sum_{j=1}^{n}w_{ij}\sum_{i=1}^{n}(z_i-\bar{z})^2},$$

where:

n – number of observations (locations),

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z_i – the observed value of the *z* variable for all *n* observations (locations),
w_{ij} – weight of spatial interactions (connections) between observations (locations) *i* and *j*.

The statistical significance of spatial autocorrelation measured by Moran's I statistic assuming null hypothesis of a random distribution of z-values (lack of spatial autocorrelation) is verified with the standardized ZI statistic:

$$Z_I = \frac{I - E(I)}{\sqrt{Var(I)}},$$

where $\mathrm{E(I)} = -\frac{1}{\mathrm{n}-1}$ stands for the mean and Var(I) for the variance of its distribution. Evaluation of the degree of spatial autocorrelation is made on the basis of Moran's I value and Z_I test of significance. The spatial autocorrelation is positive when revealed similarity in terms of the analyzed variable between adjacent objects produces value $\mathrm{I} > -\frac{1}{\mathrm{n}-1}$ and ZI > 0. Otherwise, $(\mathrm{I} < -\frac{1}{\mathrm{n}-1})$ I statistic indicates negative autocorrelation (high values are adjacent with low). On the other hand, $\mathrm{I} = -\frac{1}{\mathrm{n}-1}$ (close to zero) and ZI≈0 mean that the values of the considered variable are randomly distributed in space (Cliff and Ord, 1981; Anselin, 1988).

Two basic models with spatial effects are proposed, although it should be mentioned, that these are only the most popular examples of the wide range of spatial models reported in the literature multiplied with their numerous extensions and modifications. Spatial regression models like SAR – spatial autoregressive models (also classified as spatial lag models – SLM) or spatial error models (SEM) are used in case of spatial autocorrelation (Rogerson, 2001).

The response to the negative impact of the spatial interaction to estimate the structural parameters of the OLS models is an implementation of the classical form of the regression equation an additional independent variable and its parameter of ρ relating to this variable (called spatial autoregression coefficient). This variable (spatial lag) determines spatially delayed values of the dependent variable, calculated as a weighted average (according to the adopted spatial weights matrix) from the value of this variable occurring in the neighborhood. We can formulate SLM in the following equation:

$$y_r = \rho\left(\sum_{s=1}^{n} w_{rs} y_s\right) + \sum_{i=1}^{k} \beta_i \, x_{ir} + \varepsilon_r$$

The formula $\rho(\sum_{s=1}^{n} \mathrm{w_{rs}y_s})$ determines the impact of the dependent variables of the adjacent p-th locations (according to the matrix of spatial weights) on the value of the variable in the r-th location (Rogerson, 2001). Spatial error model (SEM) allows to consider the spatial dependence of the sampling error (Rogerson, 2001). In this model, the overarching scheme of the linear spatial autocorrelation of the random component is taken into account. It can be written in the following form:

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$$y_r = \sum_{i=1}^{k} \beta_i x_{ir} + \varepsilon_r$$

$$\varepsilon_r = \lambda\left(\sum_{s=1}^{n} w_{rs}\varepsilon_s\right) + u_r$$

where ε_r stands for the original random component with spatial autocorrelation (residuals from OLS regression for *r*-th location), which is a function of spatially delayed random error $\sum_{s=1}^{n} w_{rs}\varepsilon_s$ (residuals from adjacent *p*-th locations) and „cleaned" random component u_r (that satisfies OLS assumptions). λ coefficient, however, is a measure of interdependency of OLS residuals and on its basis we can infer the existence of significant factors influencing on values of dependent variable, which were not included in the regression model, i.e., unmeasurable or random factors (Arbia, 2006).

Results

In the first stage of the analysis, the calculations of the spatial autocorrelation Moran's measure for Brand Value were performed. When spatial autocorrelation statistics are computed for variables, such as GDP or Brand value, they are based on the assumption of constant variance. This is usually violated when the variables are for areas with greatly different populations. That is why we should implement here the Assuncao and Reis (1999) empirical Bayes standardization to correct it. Results are shown in Table 1.

Table 1

As shown in Table 1, the calculated Moran's I values of autocorrelation coefficient (with the Bayesian correction) for brand values through the differences in scale of GDP increased its intensity in the observed period and began to explain its spatial character to a greater extent. Statistically significant ($p<0.01$) spatial autocorrelation of the brand value is the basis to make the estimation of the structural parameters of spatial regression models in the next step of our analysis (Rogerson, 2001). Positive spatial autocorrelation means that similar values of GDP cluster together in a map in terms of Brand Value as its main predictor. This clustered pattern generates a Moran's I of 0.26 in the year 2011 and even 0.55 in 2015. The z-score of 7.85 in the year 2011 and 26.22 in 2015 indicates there is a less than 1% likelihood that this clustered pattern could be the result of a random choice. In Table 2 we can see the results of an estimation of linear regression models LM and regression models based on the matrix of spatial weights: SEM (spatial error model) and SLM (spatial lag model).

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Table 2

The obtained results (presented in Table 2) have correct statistical properties (LR and BP tests, the significance of coefficients, Akaike criterion, R2) and a correct economic interpretation both for LM and spatial models. Both SLM and SEM regression models showed statistical significance of parameters and a positive sign of spatial coefficients. Spatial lag model (SLM) however, proved the highest (96%) determination coefficient and high ($p<0.001$) statistical significance. The use of spatial-economic weight matrices gave us a very good fit of the model to the empirical data which is evident in the values of the logarithm of the likelihood function, values of the coefficient of determination, and also Akaike criterion. The presented fit to the empirical data is mainly due to a complete description of the spatial autocorrelation of brand values. The choice of the spatial form of the regression model allowed to achieve a significant improvement of explanatory abilities of the analysis.

According to the question of the research: "Do global brands leverage economies of countries of their origin?", the spatial distribution of high values and low values in the dataset is more spatially clustered than would be expected if underlying spatial processes were random, what let conclude the positive answer and confirm that brand is a key intangible asset not only for companies but also for economies of their Country of Origin. Whatsmore, comparing the spatial lag and spatial error models, we can see both alternative models yield improvement to the original OLS model. Therefore, we should conclude that controlling spatial dependence will improve our model performance. If we have a more spatial model than the linear OLS itself, it means that not only the higher the brand value, but the strength of this dependence has been strengthened by the inclusion of GDP. Summarizing, brands meaning for the value capturing for economies of the country of origin is evident.

Discussion and Limitations

The results presented above corroborate the assumption made in the introduction regarding the relationship between best global brands and the condition of economies where these brands' owners are located. It may seem disputable, however, to what extent it is justifiable to analyze the influence of global brands on economies of countries where these brand owners' headquarters are located if we take into account their global reach. Global brands are one of the most valuable assets of "global factories." When global companies invest in brands (Buckeley, 2009), they perform constant spatial reorganization, internationalization, and integration of all processes connected with brand value creation which make it difficult to assign them to just one particular country. There is no question about globality of these processes. This justified the decision to examine the prob-

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lem of spatial dependencies for the investigated relationship between brand value and GDP of the country where the brand's owner's headquarters is located. Referring to Buckeley (2009), it can be claimed that although “global factories” put a radical shift into generally all economies of all the locations of their activities, the control or orchestration of these operations remain very firmly within the advanced countries (Buckley and Strange, 2015) where the headquarters of the owners of “global factories” are located. Moreover, referring to Kamakura and Russel (1993), and Barwise et al. (1990), we conclude that a brand, being the key intangible asset of the company, is analogously the key intangible asset of the “global factory.” Thus, the assignment of global brands to the “countries of origin” is substantiated.

Moreover, keeping in mind the presented results of our research, it is worth stressing that the whole set of 500 cases of global brands' value data has been assigned to only 33 countries (38% of them to the US, and 33% to Europe). None of the European brands came from the ex-Eastern Bloc (details in Appendix 1). This situation shows that regional integration and governance strongly influence both brands and economies, whether it is in a positive or a negative way. Taking into consideration all the above it can be argued that global brands and economies are closely related, and they constitute an interesting area for research which should be carried on.

The main drawback of the presented survey is that, because of the data accessibility, only 33 countries have been examined and only one indicator of a particular economy's condition was adopted. This can offer a starting point for future research on this topic.

Conclusions and Implications

The spatial autocorrelation analysis of this paper confirms a positive association between the GDP pc of the country where the brand's owner's headquarters is located and the brand value. Presented results allow to conclude that global brands alter economies. However, in our study, global brands' influence was not compared with other drivers of countries' economies. It could be interesting to examine and compare results of the relationship of brand value with other economic indicators referring to the condition of economies. A correlation analysis of the dynamics in the time of this relationship could also lead to an interesting conclusion. The presented findings prove that having strong global brands is positive for economies, since they not only enhance them but, referring to Ferilli et al. (2016), they also help build a positive image of their country of origin. Thus governments should create favorable conditions for the development of global brands. However, such brands are often subject to international transactions these days. For example, only recently China came to appreciate their significance. In October 2014, the Chinese global concern Lenovo bought Motorola from Google. The total purchase price at the close was approximately US$2.91 billion. It

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means that a strong global brand counts as an asset and consequently influences not only the global economy but also the economy of origin. Thus, to leverage economies, it is recommended to build a set of successful brands under a national umbrella brand (Brodie and Manson-Rea, 2016). Papadopoulos, Hamzaoui-Essoussi, and El Banna (2016) suggest that national brand image strongly influences investors' decisions and consequently also influences the condition of economies in an indirect manner. Therefore, global brands are crucial for economies. Given the presented results, the most valuable global brands are closely related to the economies with the highest GDP levels, namely to the most developed countries. The conclusion is that strong brands are worth a great deal to their countries of origin because of their direct and indirect impact on economies (the intensity of spatial autocorrelation of brand value increased significantly in observed period). This is the reason why the condition of global brands and economies constitute such an interesting research area, especially when we take into account social pro- and anti-globalization trends, as well as a historical and cultural background. This work, thanks to its empirical studies, draws attention to a strong correlation between brand value and a country's economic condition and encourages further research in this area.

References

Aaker D.A., (1996), "Measuring Brand Equity Across Products and Markets", *California Management Review*, Vol. 38, pp. 102–120.

Anselin, L. (1988), "Lagrange multiplier test diagnostics for spatial dependence and spatial heterogeneity", *Geographical analysis*, Vol. 20 No. 1, pp. 1-17. DOI: https://doi.org/10.1111/j.1538-4632.1988.tb00159.x

Anselin, L. (1995), "Local Indicators of Spatial Association—LISA", *Geographical Analysis*, Vol. 27, pp. 93–115. DOI: 10.1111/j.1538-4632.1995.tb00338.x

Aoyama, Y. (2016), "Reorienting the drivers of development: alternative paradigms", *Area Development and Policy*, Vol.1 No. 3, pp.295-304.

Arbia, G. (2006), *Spatial Econometrics: Statistical Foundations and Applications to Regional Convergence*, Springer-Verlag, Berlin.

Assunção, R. M. and Reis, E. A. (1999), "A new proposal to adjust Moran's I for population density". *Statist. Med.*, Vol. 18, pp. 2147–2162. Doi: 10.1002/(SICI)1097-0258(19990830)18:16<2147::AID-SIM179>3.0.CO;2-I

Balabanis, G., Siamagka N.T. (2017), "Inconsistencies in the behavioural effects of consumer ethnocentrism: The role of brand, product category and country of

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origin", *International Marketing Review*, Vol. 34 No. 2, pp. 166-182. https://doi.org/10.1108/IMR-03-2015-0057

Bartikowski, B., Cleveland, M. (2017), "'Seeing is being': Consumer culture and the positioning of premium cars in China", *Journal of Business Research*, Vol. 77, pp. 195-202. DOI: https://doi.org/10.1016/j.jbusres.2016.12.008

Barwise, P., Higson, C., Likierman, A., Marsh, P. (1989), *Accounting for brands.* London: London Business School and The Institute of Chartered Accountants in England and Wales.

Barwise, P., Higson, C., Likierman, A., Marsh P. (1990), "Brands as Separable Assets", *Business Strategy Review*, Vol. 1 No. 2, pp. 43-59. DOI: https://doi.org/10.1111/j.1467-8616.1990.tb00010.x

BBC, (2014), http://www.bbc.com/news/technology-29833131(03.01.2017)

Belo, F., Lin, X., Vitorino, M. A. (2014), "Brand capital and firm value", *Review of Economic Dynamics*, Vol. 17 No. 1, pp. 150-169. DOI: http://dx.doi.org/10.1016/j.red.2013.05.001

Brodie, R.J., Benson-Rea M. (2016), "Country of origin branding: an integrative perspective", *Journal of Product and Brand Management*, Vol. 25 No. 4, pp. 322-336. DOI: https://doi.org/10.1108/JPBM-04-2016-1138

Buckley, P.J. (2009), "The impact of the global factory on economic development", *Journal of World Business*, Vol. 44 No. 2, pp. 131-143. DOI: http://dx.doi.org/10.1016/j.jwb.2008.05.003

Buckley, P.J., Strange, R. (2015), "The governance of the global factory: location and control of world economic activity", *Academy of Management Perspectives*, Vol. 29 No. (2), pp. 237-249. DOI: http://dx.doi.org/10.5465/amp.2013.0113

Brandirectory (2017), *The most 500 Valuable Global Brands Ranking*. Brand Finance. http://brandirectory.com/ (03.07.2017)

Case, A., Harvey, S. R., Hines, J. R. (1993), "Budget Spillovers and Fiscal Policy Interdependence: Evidence from the States, Journal of Public Economics Vol. 52, pp. 285-307.

Cleveland, M., Papadopoulos, N., Laroche, M. (2011), "Identity, demographics, and consumer behaviors: International market segmentation across product categories", *International Marketing Review*, Vol. 28 No. 3, pp. 244–266.

MOST WIEDZY Downloaded from mostwiedzy.pl

Cliff, A., Harvey, S. R. (1981), *Spatial Process: Models and Applications*. Pion: London.

Coe, N. M., Dicken, P., Hess, M. (2008), "Global production networks: realizing the potential", *Journal of Economic Geography*, Vol. 8 No. 3, pp. 271-295.

Conley T. G., Tsiang G. (1994) "Spatial Patterns in Labor Markets: Malaysian Development", *Working Paper*, University of Chicago.

Conley, T. G., Tsiang, G. (1999), "GMM Estimation with Cross Sectional Dependence", *Journal of Econometrics*, Vol. 92 Issue 1, pp. 1-45.

De, S. (2014), "Intangible capital and growth in the 'new economy': Implications of a multi-sector endogenous growth model", *Structural Change and Economic Dynamics*, Vol. 28, pp. 25-42. DOI: http://dx.doi.org/10.1016/j.strueco.2013.11.003

De Propris, L. (2012), "Beyond Territory. Dynamic Geographies of Knowledge Creation, Diffusion and Innovation", *Regional Studies*, Vol. 46 No. 10, pp. 14017-1422.

Dettori, B., Marrocu, E., Paci, R. (2012), "Total factor productivity, intangible assets and spatial dependence in the European regions", *Regional Studies*, Vol. 46 No. 10, pp. 1401-1416.

Doyle P. (1990), "Building Successful Brands: The Strategic Options", *Journal of Consumer Marketing*, Vol. 7, pp. 5–20.

Dunford, M., Liu, W. (2017), "Uneven and combined development", *Regional Studies*, Vol. 51 No. 1, pp. 69-85.

Ferilli, G., Sacco, P. L., Teti, E., Buscema, M. (2016), "Top corporate brands and the global structure of country brand positioning: An AutoCM ANN approach", *Expert Systems with Applications*, Vol. 66, pp. 62-75. DOI: http://dx.doi.org/10.1016/j.eswa.2016.08.054

Fischer, M. M., Griffith, D. A. (2008), "Modeling Spatial Autocorrelation in Spatial Interaction Data: An Application to Patent Citation Data in the European Union (2008-03)", *Journal of Regional Science*, Vol. 48 No. 5, pp. 969-989.

Haliakias, G., Davvetas, V., Diamantopoulos, A. (2016), "The interplay between country stereotypes and perceived brand globalness/localness as drivers of brand

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preference”, *Journal of Business Research*, Vol. 69 No. 9, pp. 3621–3628. DOI: https://doi.org/10.1016/j.jbusres.2016.03.022.

Hamilton, K., Ruta, G., Bolt, K., Markandya, A., Pedroso-Galinato, S., Silva, P., Ordoubadi, M. S., Lange, G.M., Tajibaeva, L. (2005), *Where is the wealth of nations?: measuring capital for the 21st century*. The World Bank, Washington DC.

Hudson, R. (2016), “Rising powers and the drivers of uneven global development”, *Area Development and Policy*, Vol. 1 No. 3, pp. 279-294.

Iammarino, S., Piva, M., Vivarelli, M., Von Tunzelmann, N. (2012), “Technological capabilities and patterns of innovative cooperation of firms in the UK regions”, *Regional Studies*, Vol. 46 No. 10, pp. 1283-1301.

IAREG (2008), http://cordis.europa.eu/project/rcn/88565_en.html [13.07.2017]

Kamakura, W. A., Russell, G. J. (1993) “Measuring brand value with scanner data”, *International Journal of Research in Marketing*, Vol. 10 No. 1, pp. 9-22. DOI: http://dx.doi.org/10.1016/0167-8116(93)90030-3

Kerr, A. (2017), *Global Games: Production, Circulation and Policy in the Networked Era*. Taylor and Francis.

Klein, N. (2000), *No logo*. London: Flamingo.

Kramer, J. P., Diez, J. R. (2012), “Catching the local buzz by embedding? Empirical insights on the regional embeddedness of multinational enterprises in Germany and the UK”, *Regional Studies*, Vol. 46 No. 10, pp. 1303-1317.

Kucharska, W. (2016), *Customer Assessment of Brand Valuation and Social Media*. In ECSM2016-Proceedings of the 3rd European Conference on Social Media, pp. 134-142, DOI: 10.13140/RG.2.2.13573.35045

Kucharska, W., Flisikowski, K. (2017), “The Most Valuable Global Brands and Condition of Economies: A Spatial Approach”. *Institute of Economic Research Working Papers*, No. 53/2017.

Longley, P. A., Goodchild M. F., Maquire D. J., Rhind D.W. (2015), *Geographic Information Systems and Science*, 4th edition, New York: Wiley.

López-Bazo, E., Moreno, R. (2012), “Profitability of investments in education: evidence from Spanish regions”, *Regional Studies*, Vol. 46 No. 10, pp. 1333-1346.

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López-Bazo, E., Motellón, E. (2012), “Human capital and regional wage gaps”, *Regional Studies*, Vol. 46 No. 10, pp. 1347-1365.

Malik, K. Z., Ali, S. Z., Khalid, A. M. (2014), “Intangible capital in a real business cycle model”, *Economic Modelling*, Vol. 39., pp. 32-48. DOI: http://dx.doi.org/10.1016/j.econmod.2014.02.018

Malul, M., Hadad, Y., Ben-Yair, A. (2009), "Measuring and ranking of economic, environmental and social efficiency of countries", *International Journal of Social Economics*, Vol. 36 Issue: 8, pp. 832-843. DOI: https://doi.org/10.1108/03068290910967109

Manca, F. (2012), “Human capital composition and economic growth at the regional level”, *Regional Studies*, Vol. 46 No. 10, pp. 1367-1388.

MacKinnon, D., Cumbers, A., Pike, A., Birch, K., McMaster, R. (2009), “Evolution in economic geography: institutions, political economy, and adaptation”, *Economic Geography*, Vol. 85 No. 2, pp. 129-150.

Nakamura, L.I. (2010), “Intangible assets and national income accounting”, *Review of Income and Wealth*, Vol. 56 No. 1, pp. 135-155. DOI: https://doi.org/10.1111/j.14754991.2010.00390.x

Papadopoulos, N. (1993), *What Product and Country Images Are and Are Not*. In N. Papadopoulos and L.A. Heslop, eds., Product-Country Images: Impact and Role in International Marketing. Binghampton, N.Y.: The Haworth Press, pp. 1-38.

Papadopoulos, N., Hamzaoui-Essoussi L., El Banna A. (2016), "Nation branding for foreign direct investment: an Integrative review and directions for research and strategy*", Journal of Product and Brand Management*, Vol. 25 Issue: 7, pp. 615-628. DOI: https://doi.org/10.1108/JPBM-09-2016-1320

Peck, J. (2016), “Macroeconomic geographies”, *Area Development and Policy*, Vol. 1 No. 3, pp. 305-322.

Pecotich, A., Ward, S. (2007), “Global branding, country of origin and expertise: An experimental evaluation”, *International Marketing Review*, Vol. 24 No. 3, pp. 271-296. DOI: https://doi.org/10.1108/02651330710755294

Pike, A. (2009), “Brand and branding geographies”, *Geography Compass*, Vol. 3 No.1, pp. 190–213. DOI: https://doi.org/10.1111/j.1749-8198.2008.00177.x

MOST WIEDZY Downloaded from mostwiedzy.pl

Pike, A. (2011), "Placing brands and branding: a socio-spatial biography of Newcastle Brown Ale", *Transactions of the Institute of British Geographers*, Vol. 36 No. 2, pp. 206-222.

Pike, A. (2013), "Economic geographies of brands and branding", *Economic Geography*, Vol. 89 No. 4, pp. 317-339. DOI: https://doi.org/10.1111/ecge.12017

Pike, A. (2015), *Origination: The Geographies of Brands and Branding*. John Wiley and Sons.

Ramos, R., Surinach, J., Artís, M. (2012), "Regional economic growth and human capital: the role of over-education", *Regional Studies*, Vol. 46 No. 10, pp. 1389-1400.

Rogerson, P. (2001), "A statistical method for the detection of geographic clustering", *Geographical Analysis*, Vol. 33, pp. 215-227. DOI: 10.1111/j.1538-4632.2001.tb00445.x

Rojas-Méndez, J. (2013), "The nation brand molecule", *Journal of Product and Brand Management*, Vol. 22 No. 7, pp. 462-472.

Schiller, D., Diez, J. R. (2012), "The impact of academic mobility on the creation of localized intangible assets", *Regional Studies*, Vol. 46 No. 10, pp. 1319-1332.

Simon C.J., Sullivan M.W. (1993), "The Measurement and Determinants of Brand Equity: a Financial Approach", *Marketing Science*, Vol. 12, pp. 28-52.

Steenkamp, J.B. (2014), "How global brands create firm value: the 4V model", *International Marketing Review*, Vol. 31 No. 1, pp. 5-29. DOI: https://doi.org/10.1108/IMR-10-2013-0233

Suriñach, J., Moreno, R. (2012), "Introduction: Intangible assets and regional economic growth", *Regional Studies*, Vol. 46 No. 10, pp. 1277-1281.

Tobler, W. (1970), "A computer model simulating urban growth in Detroit region", *Economic Geography*, Vol. 42 No. 2, pp. 234–240.

Tokatli, N. (2008), "Global sourcing: insights from the global clothing industry—the case of Zara, a fast fashion retailer", *Journal of Economic Geography*, Vol. 8 No. 1, pp. 21-38.

MOST WIEDZY Downloaded from mostwiedzy.pl

Tokatli, N. (2011), “Old firms, new tricks and the quest for profits: Burberry’s journey from success to failure and back to success again”, *Journal of Economic Geography*, Vol. 12 No. 1, pp. 55-77.

Tokatli, N. (2012), “Doing a Gucci: the transformation of an Italian fashion firm into a global powerhouse in a ‘Los Angeles-izing’world”, *Journal of Economic Geography*, Vol. 13 No. 2, pp. 239-255.

Tokatli, N. (2014), “‘Made in Italy? Who cares!’ Prada’s new economic geography”, *Geoforum*, Vol. 54, pp. 1-9.

Tokatli, N. (2015), “Single-firm case studies in economic geography: some methodological reflections on the case of Zara. Journal of Economic Geography, Vol. 15(No. 3), pp. 631-647. DOI: https://doi.org/10.1093/jeg/lbu013

Yeung, H. W. C., Coe, N. (2015), “Toward a dynamic theory of global production networks”, *Economic Geography*, Vol. 91 No. 1, pp. 29-58.

Wang, S., Luo, K., Liu, Y., Zhang, S., Lin, X., Ni, R., ... Gao, X. (2015), “Economic level and human longevity: spatial and temporal variations and correlation analysis of per capita GDP and longevity indicators in China”, *Archives of Gerontology and Geriatrics*, Vol. 61 No. 1, pp. 93-102. DOI: http://dx.doi.org/10.1016/j.archger.2015.03.004

Winit, W., Gregory, G., Cleveland, Mark., Verlegh, P. (2014), “Global vs local brands: how home country bias and price differences impact brand evaluations”, *International Marketing Review*, Vol. 31 No. 2, pp. 102-128. DOI: https://doi.org/10.1108/IMR-01-2012-0001

Wood, S., Wrigley, N., Coe, N. M. (2016), “Capital discipline and financial market relations in retail globalization: insights from the case of Tesco plc”, *Journal of Economic Geography*, Vol. 17 No. 1, pp. 31-57. doi:10.1093/jeg/lbv045

Zéghal, D., Maaloul, A. (2011) “The accounting treatment of intangibles–A critical review of the literature”, *Accounting Forum*, Vol. 35 No. 4, pp. 262-274. DOI: http://dx.doi.org/10.1016/j.accfor.2011.04.003

Zhang, M., Merunka, D. (2015), “The impact of territory of origin on product authenticity perceptions: An empirical analysis in China”, *Asia Pacific Journal of Marketing and Logistics*, Vol. 27 No. 3, pp. 385-405. DOI: https://doi.org/10.1108/APJML-12-2014-0180

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Appendix 1.

Country	BV (2011)	BV (2012)	BV (2013)	BV (2014)	BV (2015)
Australia	0.59%	0.98%	1.35%	1.09%	1.04%
Austria	0.13%	0.17%	0.07%	0.14%	0.16%
Belgium	0.00%	0.00%	0.07%	0.08%	0.08%
Brazil	1.56%	2.00%	1.38%	1.11%	1.09%
Canada	0.99%	1.77%	1.71%	1.83%	1.79%
Chile	0.00%	0.07%	0.08%	0.00%	0.00%
China	3.20%	4.78%	6.38%	7.34%	8.85%
Colombia	0.00%	0.00%	0.09%	0.00%	0.00%
Czech Republic	0.00%	0.10%	0.00%	0.00%	0.00%
Denmark	0.11%	0.15%	0.26%	0.22%	0.25%
Finland	0.18%	0.14%	0.00%	0.00%	0.00%
France	3.94%	6.24%	6.51%	6.28%	5.48%
Germany	3.82%	6.08%	7.31%	7.09%	6.79%
India	0.70%	1.06%	0.99%	0.94%	1.04%
Italy	0.79%	1.28%	1.62%	1.48%	1.37%
Japan	5.53%	9.09%	8.83%	8.33%	7.89%
Korea	0.90%	2.52%	3.57%	3.42%	3.45%
Luxemburg	0.08%	0.11%	0.11%	0.11%	0.09%
Malaysia	0.15%	0.24%	0.20%	0.21%	0.20%
Mexico	0.12%	0.42%	0.31%	0.10%	0.17%
Netherlands	0.87%	1.43%	1.57%	2.20%	2.00%
Norway	0.18%	0.32%	0.46%	0.37%	0.38%
Portugal	0.05%	0.09%	0.08%	0.07%	0.07%
Russian Federation	6.98%	1.11%	1.31%	0.83%	0.71%
Saudi Arabia	0.04%	0.08%	0.16%	0.12%	0.12%
Singapore	0.20%	0.28%	0.19%	0.09%	0.10%
South Africa	0.09%	0.15%	0.15%	0.13%	0.10%
Spain	1.39%	1.86%	1.80%	1.44%	1.25%
Sweden	0.69%	1.07%	1.35%	1.34%	1.33%
Switzerland	1.43%	6.97%	2.06%	2.35%	2.18%
Taiwan	0.09%	0.18%	0.09%	0.00%	0.00%
Thailand	0.00%	0.00%	0.09%	0.09%	0.08%

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UK	4.71%	7.47%	7.30%	7.04%	6.42%
United Arab Emirates	0.12%	0.19%	0.20%	0.21%	0.24%
USA	23.86%	41.60%	42.34%	43.94%	45.27%

Source: authors' own calculation, based on 500 Brandirectory, the Most Valuable Global Brands 2011-2015 Rankings powered by Brand Finance http://brandirectory.com/
Note: BV – Brand value share (%).

Table 1. Univariate spatial autocorrelation statistic with empirical Bayes standardization for Brand Value (2011 – 2015).

Year	Moran's I	E(I)	$\sqrt{\mathrm{Var(I)}}$	Z_I	p-value
2011	0.2656	-0.0312	0.0379	7.8526	0.004
2012	0.3442	-0.0335	0.0255	14.831	0.001
2013	0.4336	-0.0311	0.0316	14.749	0.002
2014	0.4860	-0.0319	0.0388	13.341	0.004
2015	0.5516	-0.0325	0.0223	26.229	0.001

Source: Own calculations performed in Geoda.
note: E(I) – expected value of I statistic, Var(I) – variance of I statistic, Z_I – standardized value of I statistic.

Table 2. Estimation of linear and spatial regression functions for GDP (p-values in brackets) in 2011 and 2015.

Model	LM (2011)	SEM (2011)	SLM (2011)	LM (2015)	SEM (2015)	SLM (2015)
constant	7.373 (0.006)	1.766 (0.036)	-5.580 (0.000)	6.471 (0.014)	1.219 (0.000)	-5.804 (0.000)
Brand value (share %)	3.837 (0.000)	6.568 (0.000)	2.666 (0.000)	6.471 (0.001)	1.494 (0.000)	2.411 (0.000)
λ / ρ		2.131 (0.000)	0.716 (0.000)		2.069 (0.000)	0.719 (0.000)
R^2	0.818	0.859	0.848	0.861	0.761	0.966
Log-likelihood	-967.593	-966.925	-965.221	-967.173	-946.429	-944.828
Akaike criterion	1939.19	1937.85	1936.44	1938.35	1896.86	1895.66

Source: Own calculations performed in Geoda / R.
Note: LM – linear model, SEM – spatial error model, SLM – spatial lag model

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