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On the Location Attractiveness of Emerging Countries for Foreign Direct Investments

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Our paper investigates the FDI attracting potential of emerging markets by in terms of their location attributes. We use Statistical cluster analysis to study the dynamic evolution of emerging markets' clusters, based on country attributes that are relevant for the MNEs location decision. We find that countries tend to be grouped at a geographical level or depending on the various resources they possess, except for China that clusters independently. Also, there are numerous countries' transitions from one cluster to another over the years, which indicate a natural process of changing location attributes and market development for many emerging economies.

Keywords: *foreign direct investments, location decision, emerging markets, cluster analysis*

JEL Classification: *F21, F23*

1. Introduction

The total volume of foreign direct investments (FDI) has increased tremendously over the past two decades and it became one of the strongest contributors to the economic growth in emerging markets. FDI flows to emerging countries rose continuously since 2002, despite a drop in inward FDI in 2009, reaching a record of $684 billion in 2011 and thus accounting for nearly half of global FDI – 45% more precisely. According to data from the latest Global Investment Trends Monitor published by UNCTAD, developing economies saw their FDI reaching a new high of US$741 billion in 2015, 5% higher than in 2014. Among these countries, developing Asia remained the largest FDI recipient region in the world, accounting for one third of global FDI flows.

Emerging markets attract FDI as they are perceived to be a driver of long-term economic growth, through their estimated indirect effects - especially technological spillovers, access to foreign markets or human capital development stimulus. Therefore, it is vital to understand the factors taken into account by multinational enterprises (MNEs) in their location decision in emerging countries. At their turn, MNEs seek the best market environments where they can locate and develop, as „location decisions are some of the most costly strategic decisions an organization makes", according to Zelbst et al. (2010). They decide to serve foreign markets by reallocating production facilities, instead of exports, only if they possess some special

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advantages that local firms do not have access to. These benefits must exceed all costs associated with a presence on foreign markets, such as transport and communication costs, overseas staff allocation costs, tariff and non-tariff barriers, cultural or linguistic differences.

With respect to MNEs location decision, Dunning (1980) proposes an eclectic theory of international production, known as the "Eclectic Paradigm", starting with the assumption that MNE's decisions of engaging in international production through FDI are based on three determinants: (1) they possess an asset that other competitors do not have access to (Ownership Advantage), such as legally protected rights, trade monopolies, exclusive market control over certain marketplaces, firm size and technical characteristics, which can provide access to economies of scale; etc.; (2) they discover that exploiting their ownership advantage using the resources and characteristics of the host market is more profitable (Location Advantage); (3) they consider that choosing to internalize the assets they own is more profitable than selling or leasing them to other companies (Internalization Advantage).

Chen and Moore (2009) study the location decision of MNEs from a different perspective, concluding that choosing a foreign host country also varies according to total factor productivity: more productive companies will invest more in relatively "harsh" host economies - that have smaller market potential, high fixed costs, low tariffs on imports, but offer higher factor use productivity - as compared to their less productive competitors. Therefore, changes in corporate, investment and trade policies may affect both FDI volumes and the productivity distribution of MNEs that decide to invest in the host country.

Under these circumstances, there is a constant competition between emerging and developed markets, both seeking to attract large FID inflows, that are perceived by academic and politic environments to be a driver of long economic growth for the host markets. This competition has led to the development of many types of incentives offered to the foreign investors by national governments. Besides the industry specific or country specific incentives, there are some general market characteristics offered by emerging markets that attract foreign investors, raising their attractiveness.

They can be found in the academic literature usually divided in two categories: traditional and new influencing factors. The "traditional" FDI attractiveness factors on emerging markets may be considered the following:

(a) market size and growth potential, which reflects a country or region's potential of absorbing new production outputs or the potential to create economies of scale (Lankes and Venables, 1997, Bevan and Estrin, 2000);

(b) low costs, particularly in the form of labour costs or more specifically wage-adjusted productivity of labour, cost of capital, cost and availability of raw materials, etc. (Barrel and Holand, 2000);

(c) the absence or limited number of competitors, which bring a "first-mover" advantage to the investing company (Boeri and Brucker, 2000); or

(d) infrastructure. The literature also advances "new" FDI attractiveness factors that have the ability to facilitate more broad-based FDIs and are highly significant when MNEs evaluate major expansions.

Among these factors one can identify (i) geographic distance, which has had an increasingly important role since the development of closer links among industrial locations and the geographic characteristics of the marketplaces, directly influencing transport or communication costs (Brainard, 1997); (ii) information asymmetry and the cost of obtaining that information; (iii) macroeconomic stability, characterized by transparent institutions (Campos and Kinoshita, 2003, Belascu and Horobet, 2015), private property development degree and method (Carstensen and Toubal, 2004), specific conditions for repatriating profits, legislation or tax regime, time spent in dealing with local authorities, corruption level (Wei, 2000; Al-Sadig, 2009), etc; (iv) country risk, measured by specific indicators – economic growth, inflation, debt to GDP ratio, microeconomic indicators that are computed by various international institutions, etc. (Holand and Pain, 2004).

In the present paper, we investigate the location potential of several emerging markets in terms of some of the previous factors, grouping them into clusters of resemblance and analysing their evolution over time. One important contribution that our paper makes to the existing literature is the uncovering of clustering patterns for emerging countries in terms of location attributes offered to MNEs – more specifically, whether location advantages are regionally-specific or market feature-specific.

The paper is organised as follows: Section 2 presents the data and the research methodology employed in our analysis, Section 3 outlines the main results of our research, and Section 4 concludes and presents a few directions for further investigation.

2. Data and Research Methodology

Our research uses data on 41 countries, classified as key emergent markets by BBVA Research. They can be sub-classified in three categories: (1) Emerging and Growth leading Economies – with an expected incremental GDP in the next ten years that will surpass the average G7 economies' GDP except USA: China, India, Indonesia, South Korea, Brazil, Mexico, Russia, Turkey; (2) NEST – with an expected incremental GDP in the next ten years lower than the average G7 economies' GDP except USA, but higher than Italy's: Argentina, Bangladesh, Chile, Colombia, Egypt, Malaysia, Nigeria, Pakistan, Peru, Poland, Thailand, South Africa, Ukraine and Vietnam; (3) Other Emerging Markets: Bahrain, Bulgaria, Czech Republic, Estonia, Hungary, Jordan, Kuwait, Latvia, Lithuania, Mauritius, Morocco, Oman, Romania, Slovakia, Sri Lanka, Sudan, Tunisia, UAE and Venezuela.

In order to form annual clusters and to relevantly position these emerging markets in the clusters, we use a set of ten macroeconomic variables that we hypothesize to illustrate the relevant economic attributes for MNE's decisions.

(1) For market size and potential, we use three variables: (i) GDP per capita in $US (GDPC); (ii) domestic credit to private sector as percentage of GDP (DC) – it measures financial resources offered to the private sector through loans, trade credits, purchase of non-equity securities and other account receivables; and (iii) the percentage of urban population in total population (UP) – it illustrates the countries' development potential, especially since in the last years a great part of FDI inflows was oriented to the tertiary sector.

(2) To account for country risk, we work with (i) inflation rate calculated as the annual percentage change of the Consumer Price Index (INF); and (ii) international reserves including gold, in $US (IR).

(3) For infrastructure and ease of obtaining information, we use one important variable in the context of the digital development occurring in the last decades: mobile cellular subscriptions as number of subscriptions per 100 people (MS).

(4) To illustrate labour markets – we use both (i) the labour force, as the number of people aged 15 and older who represent economically active population, according to the International Labour Organization, including both the employed and the unemployed, armed forces and first-time job-seekers (LBF) and (ii) labour force participation rate, as percentage of total economically active population aged above 15 years, who supply labour for the production of goods and services during a specified period (LBP).

(5) As a measure of integration in the world economic environment, we use trade Balance in $US (TB) and a measure of goods and services trade openness, computed as sum of imports and exports, as percentage of GDP (TO).

In order to analyze emerging markets' current investment situation, and to understand their level of attractiveness for international investors, we use inward FDI flows per capita (in $US). All the data we employ has an annual frequency and is collected for the period 1994 to 2011 from World Bank and UNCTAD international databases, in order to be able to include it in cross-country comparisons.

We use Statistical cluster analysis (SCA to investigate the dynamic evolution of emerging markets' natural clusters based on countries' attributes that are relevant for the MNEs location decision. SCA's goal resides in discovering natural clusters according to a specific internal criterion, without knowing beforehand the affiliation of entities to the identified clusters.

The entities' assignment to a cluster is made by taking into account the similarity between the studied entities, according to the considered set of variables and the differentiation of entities that belong to a cluster from the ones that belong to other clusters. Our analysis is developed using Euclidian distances, and clusters are first formed using a hierarchical amalgamation algorithm and second using an integrative method – k-means algorithm.

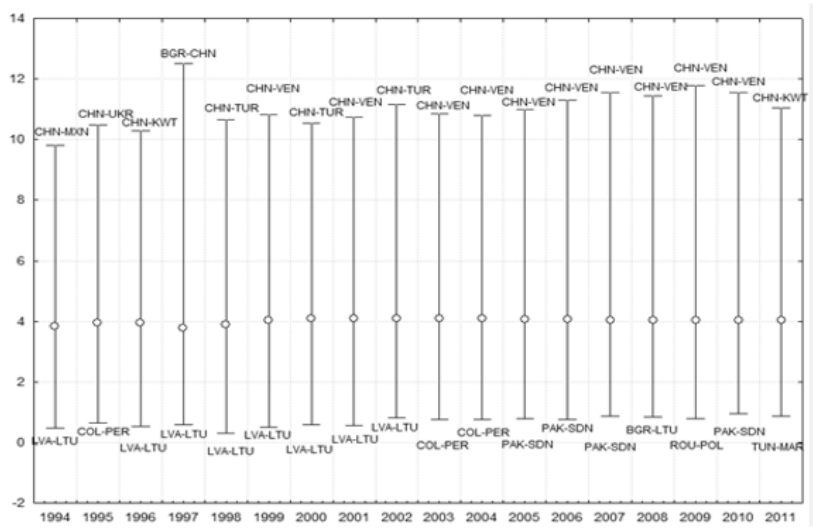
The hierarchical amalgamation is based on the Ward's method, which minimizes the sum of squares (SS) of any two clusters that can be formed at each step. We have chosen this method because it is considered to be very efficient in terms of final clustering result, although it tends to generate clusters of smaller size compared to the other amalgamation methods. The k-means algorithm we use calculates Euclidian distances from normalized quantities (i.e. values with a range between 0 and 1).

The difference between hierarchical clustering and k-means stems from the manner clusters are formed: in the hierarchical clustering algorithm clusters are formed step by step, starting with the entities that have the smallest distance and afterwards linking more and more entities together and aggregating larger and larger clusters of increasingly dissimilar entities until, in the last step, all entities are joined together; the k-means clustering algorithm, on the other hand, is based on a priori hypotheses concerning the number of clusters that may be formed based on the variables taken into account.

We undertake SCA for each year, as well as for the entire time frame of our analysis. This approach will provide us with an overall view on emerging countries similarities and differences in terms of hosts for MNEs, as well as with a dynamic perspective on the changing country attributes that influence the MNEs' location decisions.

3. Results

The hierarchical amalgamation algorithm was applied first on an annual basis, and then for the entire time frame of our analysis (1994-2011). Figure 1 shows the Euclidian distances between all groups of countries for each of the years under analysis. We observe that average Euclidian distances do not vary much during the sample period – the lowest is recorded in 1997 (3.798) and the highest in 2000 (4.097). The same is true for the minimum distances – the lowest value is 0.309 between Latvia-Lithuania, in 1998, while the highest is 0.967 between Pakistan-Sudan in 2010.



Note: Circles indicate average Euclidian distances.
Source : Authors's calculations

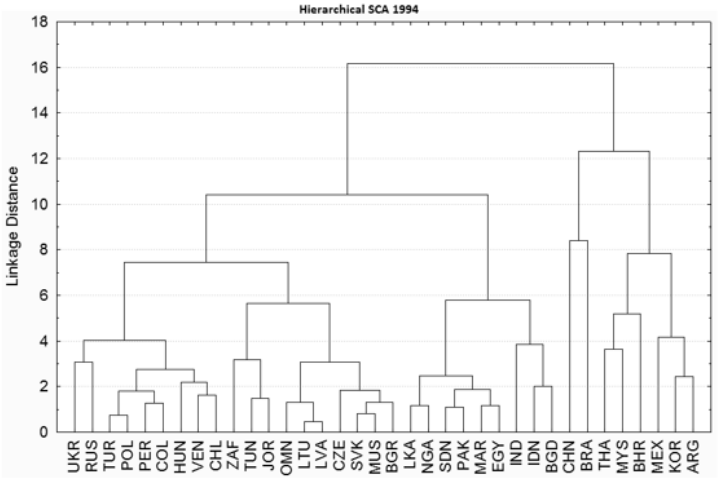
Figure 1. *Plot of minimum, maximum and average Euclidian distances, 1994-2011*

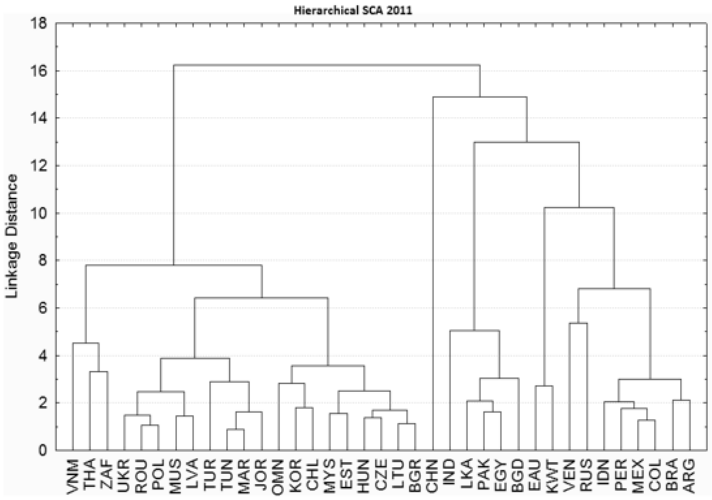
We notice that emerging markets from similar geographic regions and with similar economic background and/or cultural environment are generally clustered at lower distances (Latvia-Lithuania, Romania-Poland, Columbia-Peru, Egypt-Morocco, Tunisia-Morocco, Chile-Venezuela), with few exceptions of country pairs with warm diplomatic or economic relations or similar general characteristics (Poland-Mexico or Turkey; Mauritius or Oman with several CEE countries; Pakistan-Sudan).

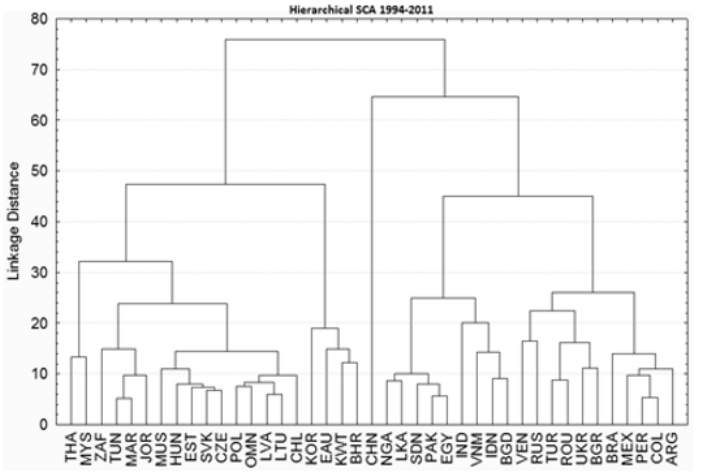
The highest maximum Euclidian distances appear between China and several different countries (UAE, Venezuela, Turkey, etc) and record higher variability, from 9.815 China-Morocco in 1994, to 12.551 between China-Bulgaria in 1997. In each of the 18 years, the highest distances belong to pairs formed of China and almost all the other countries, probably because China has experienced accelerated economic growth in this period.

When we study countries' placements in clusters over time (see Figure 2), we generally observe countries grouped in two or three clusters, depending to a high extent on their geographical location and economic development or access to natural resources (oil, natural gas, access to the international waters). European countries are usually grouped in 2 sub-clusters, one with Ukraine, Romania, Russia, Poland, Bulgaria and one with Slovakia, Hungary, Czech Republic, Lithuania, Latvia and Estonia.

Turkey and Oman are usually in the same clusters with the European countries. South American countries also appear clustered together, except for Chile. In many years, CEE and South American countries appear in the same cluster. African markets are generally grouped in two clusters, along with Pakistan. Many Asian countries also appear clustered: India, Indonesia, Vietnam, Bangladesh, or Thailand and Malaysia. Bahrain, UAE and Kuwait, are usually grouped in one cluster, mainly due to their access to oil reserves. The analysis over the entire period confirms these results (see also Figure 2).







Source: Authors' calculations

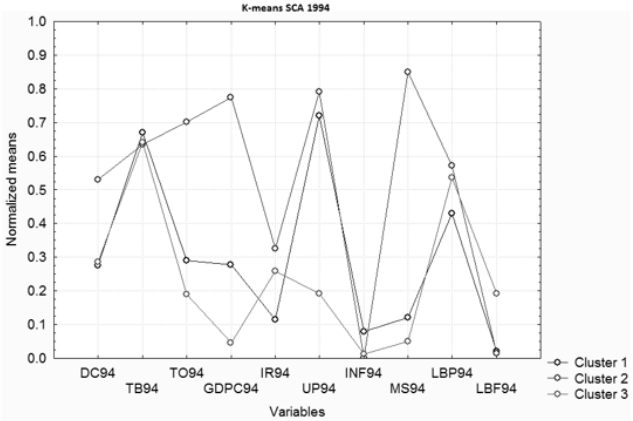
Figure 2*. Results of hierarchical clustering algorithm*

When we apply the k-Means algorithm we observe the tendency of countries to group in up to four clusters over the years, indicating that over time, they transit from one cluster to another. Table 1 shows clusters' members for each year and for the overall period. All clusters contain countries from all continents. In 1994, one big cluster contains countries from Latin America and Europe and the other big cluster countries from Africa and Asia. In 2011, there are four clusters, one with Latin American countries and Turkey, one with Asian and African countries, one with big Asian countries (China, Russia) and one with the European countries and a few others. When looking at the entire 1994-2011 period, China is in a cluster by itself.

***Table 1**. Clusters' members, 1994-2011*

Country	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	1994-2011
ARG	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BRA	1	1	1	1	1	1	1	4	1	1	1	1	1	1	1	1	1	1	1
COL	1	1	1	1	1	1	1	4	1	1	1	1	1	1	1	1	1	1	1
EAU	n/a	n/a	n/a	n/a	n/a	2	2	2	2	2	2	2	2	2	2	2	2	4	1
KWT	n/a	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	1
MEX	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
PER	1	1	1	1	1	1	1	4	1	1	1	1	1	1	1	1	1	1	1
RUS	1	1	1	1	1	1	1	4	1	1	1	1	1	1	1	1	2	3	1
TUR	1	1	1	1	1	1	1	4	1	1	1	1	1	1	1	1	1	1	1
VEN	n/a	1	1	1	1	1	1	4	1	1	1	1	1	1	1	1	1	1	1
BGD	3	1	1	1	3	1	1	3	1	1	1	1	3	1	1	3	1	2	2
EGY	3	1	1	1	1	1	1	3	1	1	1	1	3	1	1	3	1	2	2
IDN	3	1	1	1	3	1	1	3	1	1	1	1	3	1	1	3	1	2	2
IND	3	1	1	1	3	1	1	3	1	1	1	1	3	1	1	3	1	2	2
LKA	3	1	1	1	3	1	1	3	1	1	1	1	3	1	1	3	1	2	2
NGA	3	1	1	1	3	1	1	3	1	1	1	1	3	1	1	3	1	n/a	2
PAK	3	1	1	1	3	1	1	3	1	1	1	1	3	1	1	3	1	2	2
SDN	3	1	1	1	3	1	1	3	1	1	1	1	3	1	1	3	1	n/a	2
THA	3	1	1	2	3	2	1	3	2	2	2	2	3	2	2	2	2	4	2
VNM	1	1	1	1	3	1	1	3	1	1	1	1	3	2	2	2	2	4	2
BGR	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	4	3
BHR	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	n/a	3
CHL	1	1	1	1	1	2	1	1	2	2	2	2	2	2	2	1	2	4	3
CZE	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	4	3
EST	n/a	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	4	3
HUN	1	1	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	4	3
JOR	1	1	1	1	1	2	1	1	2	2	1	1	2	2	2	2	2	4	3
KOR	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	4	3
LTU	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	4	3
LVA	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	4	3
MAR	1	1	1	1	1	1	1	1	1	1	1	1	3	1	1	1	1	4	3
MUS	1	1	1	2	3	2	1	1	2	2	1	1	3	2	2	2	2	4	3
MYS	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	4	3
OMN	1	1	1	1	1	2	1	1	2	2	1	1	2	2	2	2	2	4	3
POL	1	1	1	1	1	1	1	1	2	2	1	1	2	2	2	1	2	4	3
ROU	n/a	n/a	1	1	3	1	1	4	1	1	1	1	1	1	1	1	1	4	3
SVK	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	n/a	n/a	n/a	3
TUN	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	1	2	4	3
UKR	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	2	4	3
ZAF	1	1	1	1	1	2	1	1	2	2	1	1	2	2	2	2	2	4	3
CHN	3	1	1	1	3	1	1	4	1	1	1	1	3	1	1	3	2	3	4
Number of clusters	**3**	**2**	**2**	**2**	**3**	**2**	**2**	**4**	**2**	**2**	**2**	**2**	**3**	**2**	**2**	**3**	**2**	**4**	**4**

When we observe the means of the variables for each cluster (see Figure 3), they seem to be better differentiated in 2011, as compared to 1994. There are several variables that lead to this differentiation: trade openness, GDP per capita and mobile subscriptions in each year of the analysis; urban population and labour force are significant differentiators only in some years. Domestic credit to private sectors becomes relevant after 2006, indicating that in recent years, the existence of consumption credits could be a significant differentiating factor in MNEs location decision.



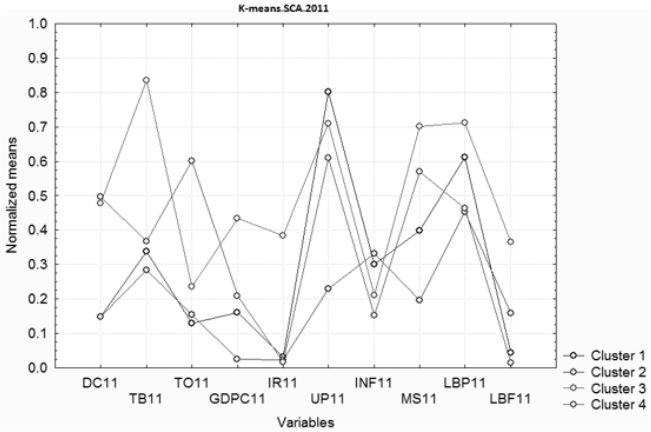


Figure 3. *Results of k-means clustering algorithm – graph of means*

Analysing the distances between clusters' centroids (see Table 2) we observe no trend in terms of the average distance evolution over time – before 1997 and in 2011, a high level of dissimilarity among clusters exists, while in the period 1997-2010 the level was lower, indicating that clusters tended to be closer to each other in this period and, subsequently, that countries' groups were more similar, at least based on the variables included in our analysis.

Table 2. *Distances between clusters' centroids, 2000-2011*

Clusters	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	1994-2011
1 and 2	1.04	0.97	0.93	0.67	0.65	0.56	0.70	0.63	0.66	0.68	0.70	0.70	0.59	0.66	0.69	0.58	0.70	0.66	3.12
1 and 3	0.64				0.57			0.57					0.62			0.65		0.89	2.23
1 and 4								0.54										0.68	7.38
2 and 3	1.37				0.92			1.02					0.82			0.96		1.15	2.91
2 and 4								0.84										0.84	6.95
3 and 4								0.59										0.87	7.53
Average distance	1.02	0.97	0.93	0.67	0.71	0.56	0.70	0.70	0.66	0.68	0.70	0.70	0.68	0.66	0.69	0.73	0.70	0.85	5.02

4. Conclusions and Further Research

Our paper examined the attraction potential of 41 emerging countries for MNEs, by analysing some of their attributes that may be considered such attraction factors over the 1994-2011 period. We have uncovered clustering patterns of emerging countries in terms of location attributes relevant for MNEs through the use of Statistical Cluster Analysis. The clusters are formed annually and the position of countries in clusters was considered for each year and dynamically over the years, with the purpose of comprehending emerging markets' evolution in time from the perspective of their relevant attributes for the MNEs decision.

We find that countries are typically grouped in two or three clusters, depending to a high extent on their geographical location and economic development or access to natural resources (oil, natural gas, access to the international waters). This result is observable for each of the 18 years covered in our research, as well as over the entire period. An interesting but not unexpected result is that China clusters independently from the other emerging countries. At the same time, there are numerous transitions of countries from one cluster to another over the years, which indicate a natural process of changing location attributes and market development for many emerging economies. A remarkable observation is that clusters that are formed by using the K-means methodology include countries from all continents, which indicates that the countries' similarities and differences matter less in geographic terms and more in terms of economic development.

Further research on the topic is needed and intended on a few directions, depending on data availability. First, the analysis deserves to be replicated on a higher number of emerging markets, although this involves the use of a shorter time period than the one used in the present paper. Second, the number of variables deserves to be increased, so that they offer a better view on countries' location attributes. Third, the origin and sector orientation of multinational enterprises present in each country should be studied in relation to the inward FDI, as to provide a better understanding of different location characteristics importance for these companies' investment decision abroad.

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