When Firms Go International: Deliberate or Random?[§]

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Abstract

Purpose

The Net Outward Investment Position (NOIP) indicator is insufficient for the purposes of understanding firms' internationalization decision-making behaviour. The indicator does not allow for the withdrawal of insights into the structure of an economy, and is a weak predictor of the degree of Foreign Direct Investment (FDI). We argue that a typology of firms aggregated according to intrinsic characteristics of those firms is a better predictor of the degree of internationalization of an economy than the NOIP.

Design/methodology/approach

We use a database of 2133 firms located in Portugal with international operations, made available by AICEP, a government agency. We use multiple correspondence and cluster analyses to build a typology of firms, and obtain evidence of common characteristics of the constituent groups.

Findings

We identify a typology of firms characterized by five types differentiated by firm age, length of internationalization process, sector of economic activity, legal status, and psychological/cultural proximity. These variables suggest an evolutionary, iterative, self-learning approach to internationalization, which can be better explained by the combined use of the Investment Development Path (IDP) framework, the Uppsala Evolutionary School, and Vernon´s Product Life Cycle theory. Additionally, we find that the most striking differences between developed and developing host countries are in terms of the economic sector, legal status of the firm, and belonging (or not) to an economic group.

Originality

We establish a link between the IDP framework, the Uppsala Evolutionary school, and Vernon´s Product Life Cycle theory, using a categorization of firms made according to selected characteristics to understand the internationalization of firms.

Keywords: Internationalization theories, multiple correspondence analysis, cluster analysis, Portugal.

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1. Introduction

Portugal has long been a player in the internationalization arena, more as a net receiver of trade, foreign direct investment (FDI), etc., than a net sender. However, if we look at data from Statistics Portugal regarding FDI flows, we can see that the country has substantially increased its presence abroad since the 1990s, with FDI outflows representing 17.6% in 1996 and 35.6% in 2020 (relative to inflows), bridging the gap between inflows and outflows. The current research draws upon a database of 2133 firms, all **located** in Portugal, both domestic and foreign, with international operations. We use a broad definition of internationalization, which includes both trade and direct presence abroad (e.g., franchising, FDI). The database includes 35 host countries spanning all continents.

What characteristics of the firms located in Portugal that are already internationalized drove them to their internationalization? We use multiple correspondence and cluster analyses to build a typology of firms, thereby identifying common traits and characteristics of the constituent groups, which allows us to answer this question.

The Net Outward Investment Position (NOIP) indicator, which is widely used in the literature, is insufficient for the purposes of understanding firms' internationalization decision-making behaviour. It does not allow for the withdrawal of insights into the structure of an economy and is a weak predictor of the degree of FDI.

Conceptually, the current research seeks to integrate into the analysis the Uppsala Evolutionary School of thought with the Product Life-Cycle and Investment Development Path (IDP) theories. These schools of thought have been the objects of arduous research. We join the three theories together, and in so doing reveal that when firms decide to internationalize, they do so for reasons that are justifiable by the three theories simultaneously. First, the degree of international exposure, experience, and age, are variables that suggest an evolutionary, iterative, and self-learning approach to internationalization, in adherence to Uppsala thinking. Second, since firms tend to go abroad more as they mature, this is consistent with Vernon´s Product-Life Cycle theory Finally, results also reveal a chronology of investment abroad, a path by which firms can be typified and aggregated according to *a priori* characteristics, in line with the IDP model.

When we divide the sample between only developed and only developing host countries we find that the manufacturing sector is more important for developed markets, while wholesale trade is more important for developing ones. The percentage of limited firms and the percentage of firms that do not belong to economic groups is even greater for developing countries than for developed markets.

We believe that in explaining a firm's internationalization strategic decision-making behaviour in our results, no school's explanatory schemata are better than any others, but that the three schools of thought taken together adequately co-explain the internationalization behaviour of firms. Additionally, foreign host countries, developed or developing, are important in terms of choosing the economic sectors in which the firms choose to internationalize.

Our work begins with a review of the international business literature related with our research topic, followed by the research methodology of the study. We then have a section of results and a section of discussion about them as well as possible theoretical and practical implications of those results. Finally, the last section concludes.

2. Literature Review

We focus initially on the models, grounded on literature, that support the adoption of the variables in our database, i.e., the models that best encompass the identified traits by which we

aggregate our firms in a specific typology of a defined number of groups. Additionally, we present literature on the internationalization of firms in Portugal.

2.1. **Models on Internationalization**

The Investment Development Path Model

The origins of the IDP date back to the theoretical proposition made by Dunning (1981), Narula (1993; 1996), and Dunning and Narula (1996). They propose a framework that managers of multinational enterprises (MNE) may use when deciding on foreign direct investment (FDI) allocation, based upon a set of country of destination criteria. The Eclectic theory (Dunning, 1988) looks at country-specific and company-specific variables in arriving at a rationale for FDI decision-making.

Dunning (1993) advocates that MNE have three fundamental motivations for engaging in FDI activities. The search for natural resources is the first motivation for firms to engage in FDI, as firms seek resources that are scarce in their own countries and abundant elsewhere. Firms also pursue emerging opportunities in foreign markets, following stagnant or falling domestic demand for their goods and services. Lastly, firms actively pursue the acquisition of strategic assets.

IDP literature has mostly scrutinized foreign investment decisions at a macro-country level. The IDP theory fundamentally asserts that the net outward investment position of a country depends critically on its level of development (Dunning, 1986) and that the international investment position of a country will determine the kind of Multinational Enterprises (MNE) that it will be able to attract to its shores. Ragoussis (2011) introduces spatial considerations into the IDP. The author finds that countries that have a higher geographical distance to countries that are in a higher stage of the IDP have a lower probability of transitioning from any stage of IDP.

Wagner (2020) made a literature survey on almost forty years of IDP literature, to summarize the research avenues that the literature has endeavour, to identify the main findings, and also to propose avenues for future research.

Narula and Dunning (2010) have undertaken to intersect the level of development of a country and that of its MNEs in the context of the debate on Ownership (O) and Location (L) advantages. Hence, these authors categorize countries and their level of investment attractiveness in five stages that range from countries with little or no inward or outward FDI to countries at the other end of the spectrum, where FDI, both inward and outward, is a critical contributor to wealth creation.

The first-stage criterion in the investment decision addresses countries, seeking those whose net balance of FDI is positive. In these countries there is a low level of intra-industry trade and investment, with the main focus of foreign investment, residing on the primary sector. In this context the choice of investment destination and advantages thereof relate strictly to gaining access to natural resources, with governments responsible for the definition of the legal framework in which FDI occurs. Countries grouped in the first stage are recipients of FDI, primarily due to favourable natural resource endowments (comparative advantage) and to favourable local market conditions. The entry mode in international markets for these types of countries occurs mainly via trade and FDI.

The second stage combines countries with a growing level of inward FDI and little outward FDI. The net balance of FDI is also positive for these countries. There is still little in the way of intra-industry investment, but increasingly intra-industry trade occurs, with the main emphasis placed on the secondary sector, while the primary sector plays a comparatively smaller role as a target for FDI. Inward FDI for these countries is mostly about investment in

labour-intensive industries. Little outward FDI is attributable to resource procurement or to the pursuit of attractive markets in developing countries. However, there are cases of FDI outflows into developed economies (countries that are geographically close). These countries manufacture mostly standardized, low-cost products in what are mostly labour-intensive industries (e.g., textiles, footwear). International business occurs by means of licensing and/or equity ownership arrangements, which allow for better market control. Latin American, North African, and Asian countries include many examples of the two initial stages.

The third stage, typified by new industrialized countries, is characterized by the prevalence of conditions in an economy that make it a favourable destination for FDI. These conditions include the existence of adequately modern infrastructure, sophisticated markets, quantity and quality of suppliers in competitive sectors of economic activity, cluster-related opportunities, and innovation, among others. Level three countries show increasing inward and outward flows of FDI, with the latter growing faster than the former. Rising intra-industry trade and investment characterize these countries, with foreign firms seeking them primarily for their markets, but also for production efficiencies. FDI into these countries is also attributable to their endowment of scarce natural resources (Narula and Dunning, 2000; Galan *et al.*, 2007).

The third stage typifies some Latin American, Eastern European, and South-East Asian countries. Outward FDI for these countries, on the other hand, targets all types of investments, with firms searching for manufacturing efficiencies upstream and product differentiation down the road. Outward FDI for these countries is mainly concentrated in sectors of economic activity such as textiles and clothing and electrical products, but service businesses, construction, and banking are also relevant sectors. For firms in these countries, engaging in international business requires sophistication over and above that which suffices for stages 1 and 2 countries. Entry modes into international markets follow cooperation and outsourcing arrangements, traits that are akin to those of countries in stages 4 and 5.

Wealthy, industrialized countries, namely the USA, Japan, European Union countries, and other OECD countries, fall into the stages 4 and 5 categories. Stage 4 countries exhibit high levels of inward and outward FDI, with outward FDI levels exceeding inward FDI. Location advantages for inflows of FDI to these countries are mainly justified by the proliferation of highly skilled workforces and created-assets.

Stage 5 countries are those whose net balance between inward and outward FDI is zero or positive. Countries at this stage of the foreign investment spectrum combine a strong competitive location advantage, based on skill-intensive industries with a strong pool of an already created-asset base.

The services sector becomes more prominent from stage 3 on, whilst the secondary sector declines in stages 4 and 5. Information and communication technologies (ICT), biotechnology, and consultancy are the prominent sectors of economic activity in these countries, and FDI into and out of these countries is mostly focused on these sectors.

Dunning (1981) argues for the existence of a link between the economic development of a country and its net outward investment position, one that is expressed by a curvilinear function. This means that at very low levels of GDP *per capita* the net outward investment position (NOIP) will be low. Any departures from minimal levels of GDP will have detrimental effects on the NOIP. As GDP increases, so too does the NOIP. The relationship between NOIP and the level of development of a country as measured by GDP thus draws a sinusoidal shaped function (Dunning and Narula, 1996). The current research looks at MNE investment flows from a country perspective (akin to Narula and Dunning, 2010), and through the lens of the 5 stage IDP typology derived here.

The Uppsala School Theory

The Uppsala School theory (Johanson and Vahlne, 1977; Johanson and Wiedersheim-Paul, 1975), contends that the internationalization of firms is grounded on evolutionary tenets – a sequential process whereby firms build up commitments over time. Johanson and Vahlne (1977) argue that the internationalization of firms grows as firms acquire experiential knowledge about foreign markets, thus reducing the psychological distance between firms and their intended target markets. Thus, firms do not simply decide to engage in FDI. On the contrary, there appears to be a process of incremental internationalization, an iterative process whereby organizations learn experientially. Johanson and Vahlne (1977) describe the process through a dynamic model stating that firms go through a set of logical steps in the internationalization process, gradually acquiring and using intelligence obtained by virtue of exposure to foreign markets and operations. Incremental exposure to foreign markets is conducive to improved knowledge levels, but also interestingly to greater commitment to those foreign markets. Vahlne and Johanson (2013) make a comparison between the Uppsala model and the eclectic paradigm and claim that the first theoretical approach allows to account for uncertainty in the international business framework, which has been neglected in the literature. The Uppsala model considers uncertainty by means of evolutional learning and experience. Vahlne (2020) extends the process of learning not only to internationalization, but to the evolution of the firm as a whole, including networks of partners and actors, allowing to study the impact of globalization, geographical location, R&D, and organizational and strategic changes. Hakanson (2021) claims that the shift of the Uppsala model from internationalization to evolution of firms, demands for a new conceptual framework. The author proposes the adoption of historical perspectives and discourse analysis methodology, applied to the analysis of internationalization strategies.

The Product-Life Cycle Model

The Product-Life Cycle model (Vernon, 1966) explains the shift from trade to FDI, with the introduction by firms of innovative products. Firms specialize in these products and end up enjoying a monopolistic advantage in export markets. As the product stabilizes in terms of domestic sales, and as production processes and distribution become standardized, the firm decides to invest abroad and begins to export to the foreign markets where it first sought to establish a foreign base. The product life cycle theory of international trade suggests that a trade cycle emerges in which a product is produced by a parent firm, then by its foreign subsidiaries, and finally anywhere in the world where costs are the lowest possible (Vernon, 1966, 1971; Wells, 1968, 1969). Choi *et al.* (1996) challenge the traditional product-life cycle model view that products are sold sequentially across the World, and introduce the type of business system of a country and the role of emerging countries in global competition, in breaking this pattern. Tolentino (2017) challenges three main propositions associated with the product-life cycle model, namely: the scope for innovation, which the author thinks that nowadays is broader for multinational corporations from emerging economies; the location of innovation, which the original theory always places at the home country of the product, can now be conducted also in a developed country and not only in the home country of the product, since their markets are also sophisticated; and finally the role of technological change and accumulation in allowing emerging economies to participate in the innovation process, taking into consideration not only demand, but also supply side factors.

2.2. Internationalization – The Portuguese Case

In this section we analyse previous studies that focus on the internationalization of the Portuguese economy, some of which use the IDP theory as their theoretical framework. Buckley

and Castro (1998) and Castro and Buckley (2001) applied the hypothesis of the IDP to the Portuguese economy, placing the country in stage 3. Castro (2004) later applied the same hypothesis to Portugal, placing the country in stage 4, although still not a fully consolidated stage 4. Stage 4 includes developed countries where the process of industrialization is recent (Dunning, 2000). Fonseca *et al.* (2007) placed the country again in stage 3, i.e., a lower stage, a hypothesis also corroborated by Barros (2009).

Macedo (2010) studied the internationalization of firms in the North of Portugal in light of the Uppsala internationalization model (Johanson and Vahlne, 1977), comparing it with the theories of Born Global and the Theory of Networks. Firms included on this basis seem to prefer to export as a means of entry, prefer commercial subsidiaries and industrial affiliates, and begin their industrialization in countries which they know better. A small portion of these firms show behaviour typical of Born Global firms. Network theory does not seem to apply, as these firms seem to act alone in international markets.

Oliveira (2016) made a mapping of Portuguese multinationals and their subsidiaries abroad, finding that these companies are mostly Small and Medium Enterprises (SME), mature companies, with national location in Lisboa and Porto, internationalizing preferably to Portuguese speaking countries.

Some studies have analysed the relationship between important factors for the internationalization process and the situation of Portuguese firms. Using information from the same database we use (the AICEP – Portugal Global) and also based on surveys conducted among firms to characterize the internationalization of Portuguese firms, Simões (2011) concluded that this process is still very export-based and some investment abroad seems to have stalled. Oliveira and Teixeira (2011) analysed the profile of internationalization of small and medium enterprises in Portugal using cluster analysis and a survey in which firms were also chosen from the database AICEP – Portugal Global, although examining only small and medium enterprises. In a sample of 912 small businesses the authors found 7 very different profiles, in which the size, export intensity, and the sector in which the company belongs, are the factors most distinctive amongst them. Using the same database and also a survey to 320 firms, Fernandes *et al.* (2020) studied the impact of firms' choice of international markets on internationalization processes and international performance, and found a positive effect on both variables.

Vitorino (2018) analysed cultural distance as a determinant of the internationalization process of Portuguese firms to 41 host countries in 2013. The author found that individualism, geographical distance, and colonial ties have an impact on the choice of the destination country.

3. Research Methodology

3.1. The Database

The current research is grounded on information obtained from two databases, both from AICEP – Portugal Global. The first was provided by the department for National Information at AICEP–Portugal Global. This database consisted only of firms registered in BDON (online database from AICEP–Portugal Global). These were firms that were already exporting products and/or services, that claimed to trade own-branded products and/or represent someone else's brands. These firms have international business relationships with 35 host countries.

The database contained 2133 firms fulfilling the conditions above. Firms are required to fill out a questionnaire in which they detail their characteristics. From that questionnaire we used the following variables:

- Company name

- County - the variable "county" was re-classified using the Nomenclature of Territorial Units for Statistics (NUTS) III region to which the county belongs. NUTS III was classified into 30 regions.
- Classification of Economic Activity (CAE, corresponding to the Statistical Classification of Economic Activities in the European Community - NACE)[i] at a 5 digit level – the NACE was then reclassified from 5 digits to 2 digits.
- Export Markets

Additional information on the firms identified was obtained from a second database – Customer Information Management database, also from AICEP – Portugal Global. This database provided information on the following variables:

- Legal form of the firm - the legal forms represented in the database are: cooperative, individually owned firm, joint-stock company, limited company, and single-person limited company.
- Presence of foreign capital – the option for this variable is a binary (yes or no) answer.
- Belonging to an economic group - the option for this variable is a binary (yes or no) answer.
- Direct presence abroad - the option for this variable is a binary (yes or no) answer.
- Age of the firm - was defined as the number of years of existence since the firm was created.
- Length of internationalization - was defined as the number of years since the firm first engaged economic activities outside their own domestic markets.

Additionally, time brackets were defined for these two last indicators, in order to turn them into categorical variables.

In all, the following nine indicators were considered in structuring firm profiles: NACE (2 digits), NUTS III, Legal Form of the Firm, Presence of Foreign Capital, Belonging to a Larger Business Group, Direct Presence Abroad, Age of the Firm, Length of Internationalization, and Export Markets[ii].

3.2. Empirical Methodology

The central purpose of the current research is to explore associations between categorical variables in order to identify company profiles and subsequently define a typology of firms based on these profiles.

Instead of merely focusing the analyses at country level, namely on the macroeconomic relationship between the net outward investment position (NOIP) and GDP *per capita*, as endorsed by the traditional view, the focus here is on firm-level analysis, disaggregated by region, sector, destination market, mode of entry, and legal and institutional characteristics of the firm, as described above. The importance of IDP profiling at firm level rather than at country level has been emphasized in the literature. Narula and Dunning (2010, pp. 269) state that "aggregation to a national level can lead to obfuscation of important trends."

Durán and Ubeda (2001) claim the need for a new methodological approach in the light of what they perceive to be three problems with the traditional methodology:

- the inadequacy of econometric models, with problems of misspecification and heteroscedasticity;
- the incompleteness of the NOIP indicator, since it can lead to multiple interpretations, with some authors advising in favour of separating inward and outward FDI, since both stages 1 and 5 provide NOI positions around zero;
- the use of GDP *per capita* as the only barometer of country development levels, ignoring other characteristics of economic structure.

In order to overcome these problems, multiple correspondence analysis (MCA) was used initially, followed by cluster analysis, thus allowing multiple interdependent variables to be worked on and a typology to be drawn from the analysis; the work was also conducted taking and outward perspective instead of NOIP, and finally, the analysis was performed at firm level.

3.2.1. Multiple Correspondence Analysis

Since the company profiles have multiple characterizations and the variables under scrutiny are categorical, we performed multiple correspondence analysis (MCA) (Meulman, 1992; Geer, 1993a; 1993b; Heiser and Meulman, 1994; Gifi, 1996; Carvalho, 2008; Ramos and Carvalho, 2011; Oliveira *et al.*, 2015). MCA defines a system of orthogonal dimensions (axis/factors), each of which explains part of the total variance and reduces the multidimensionality of the input space. Through the MCA optimal scaling procedure, categories and objects are subject to a quantification process. The new category quantification and object scores allow for a separate graphic display, a joint representation, as points in a sub-space with a minimum number of dimensions possible, namely, bi-dimensional graphs.

These new dimensions are defined by all the active variables, which have different discrimination measures (or contributions). The interpretation of each dimension is based on the more discriminating active variables. By focusing on categories, their favoured associations are emphasized by geometric proximity of their coordinates in the factorial plan and, consequently, from the configurations designed by those associations. Thus, with the MCA we mapped the structure of the interrelationships between variables through their categories, and in this study, we identify the multivariate configuration of the firm profiles.

First, MCA was performed using Legal Form of the Firm, Presence of Foreign Capital, Belonging to a Business Group, Direct Presence Abroad, Age of the Firm, Length of Time of Internationalization, NACE, and Export Markets as active variables. The use of NACE and Export Markets in subsequent MCA applications is explained by NACE having a high number of categories (61), 30% consisting of 1 or 2 firms only. It is to avoid residual categories in such large proportion at MCA.

Thus NACE was used in a second phase of the analysis, when defining firm profiles. Export Markets in turn presents 35 options (variables) thus nullifying the effect of other variables. Company profiles were then defined in two phases in order to manage such a large number of variables (Figures 1 and 2).

3.2.2. Cluster Analysis

In validating the MCA solution, cluster analysis was performed for the purposes of grouping firms according to particular profiles.

A hierarchical cluster analysis was applied using two different agglomerative methods: ward and furthest neighbour. The convergence of the cluster solution proposed by each agglomerative method, coupled with the MCA solution, sustained the robustness of the results.

Finally, another heuristic measure was used to optimize the partition of the firms across different types and an optimization algorithm (k-means) was implemented to define the final typology of firms.

Data analysis was performed using SPSS.

4. Results

4.1. Benchmark Analysis

MCA results highlight that a two-dimension model explained the configuration of the firms' profiles. Table 1 shows the discrimination of the variables in each dimension. Variables

related to firm internationalization discriminate more in dimension 1, as well as the legal form of the firm. The age of the firm and the length of time since companies went international are different in both dimensions.

Table 1 - Discrimination Measures and Contributions

Active variables in MCA	Dimension 1		Dimension 2	
	Discrimination measures	Contributions %	Discrimination measures	Contributions %
Legal form	*.264*	11.7	.174	10.0
Presence of foreign capital	*.159*	7.1	.007	.4
Inserted in an economic group	.090	4.0	.009	.5
Direct presence abroad	**.333**	14.8	.062	3.6
Age of the firm	**.706**	31.3	**.772**	44.3
Length of internalization	**.703**	31.2	**.719**	41.3
Total (eigenvalue)	2.255	100.0	1.743	100.0
Inertia (eigenvalue mean)	0.376		0.291	

The combined analysis of the two dimensions provides the graphical display of the typological configuration of the firm's profiles, preserving their multidimensionality (Figure 1). It shows an approximately parabolic shape (Guttman effect or inverted-U) drawn by the hierarchical arrangement of the categories of the two variables related to the age of the firm and length of internationalization. The associations between the multiple categories provide different configurations, and thus five profiles were identified as described below. Figure 2 shows the distribution of profiles according to the Markets, also described below.

Cluster analysis was performed in order to validate the five profiles arrived at via the MCA solution. The two agglomerative methods used – ward method and furthest neighbour method – substantiate the identification of five groups (clusters/types) of firms (Figures A1 and A2 in Appendix A). The five-cluster solution shows fusion coefficients to be very similar, and thus coefficient distribution tends to be parallel to the horizontal axis, which shows redundancy in the selection of more clusters. Optimization method k-means subsequently defines the final typology with five clusters (types).[iii] The five types (clusters) were subsequently described using the original MCA variables. The features that most distinguish between clusters are presented (MCA figures). However, recall that some categories inside each variable have a greater weight within the whole database, and therefore often show up in every type. Results are found in Tables B1 to B5 in Appendix B. Table 2 summarizes our main findings.

Figure 1 – Topological Configuration of the Firm's Profiles

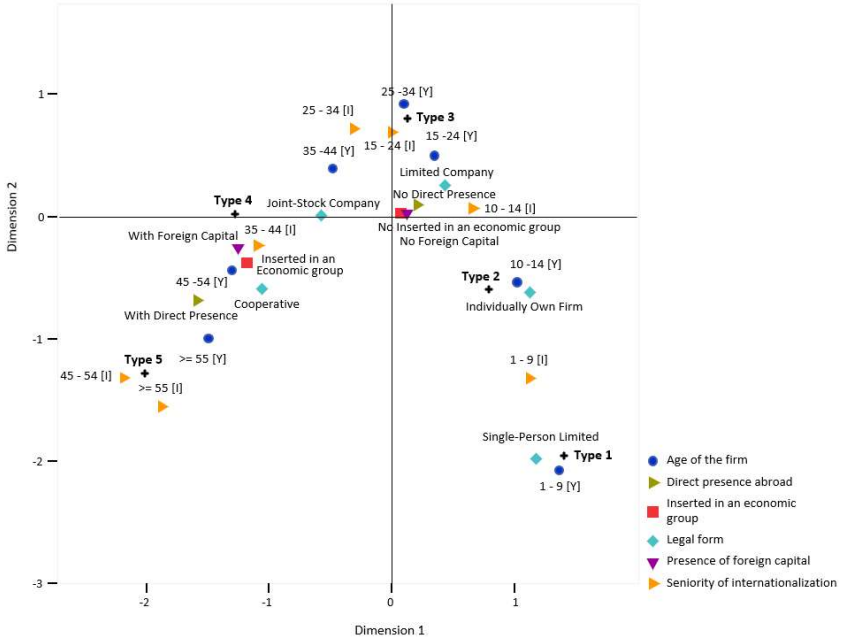
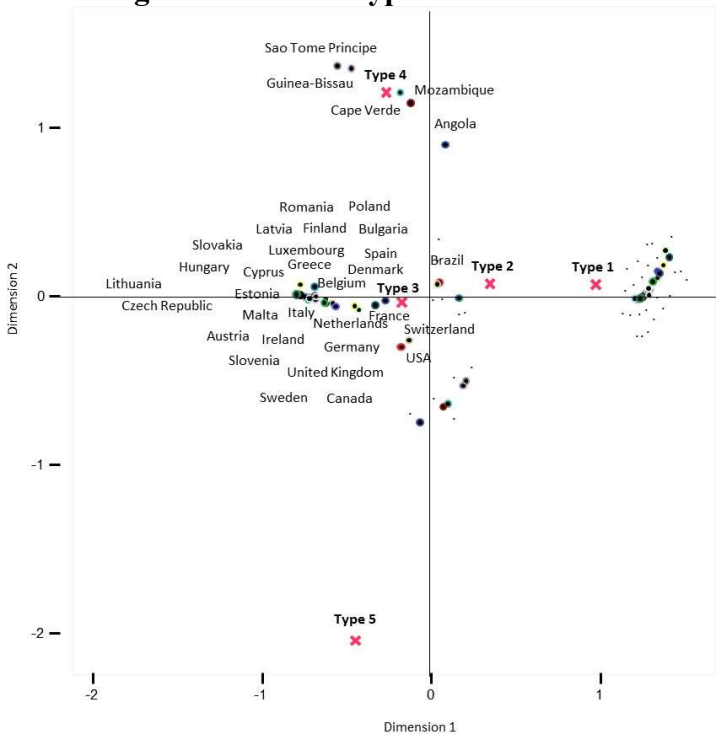


Figure 2 - Firm's Types and Markets



	Type 1	Type 2	Type 3	Type 4	Type 5
Active Variables in the MCA					
Age of the firm	[1-9] – 87.1%	[10-14] – 58.2% [15-24] – 24.3%	[15-24] – 37.6% [25-34] - 40.6% [35-44] – 20.2%	[35-44] – 31.6% [45-54] – 25.9% >=55 – 26.5%	[45-54] – 28% >=55 – 69.4%
Length of internationalization	[1-9] – 93.8%	[1-9] – 52.6% [10-14] – 42.4%	[15-24] – 50.7% [25-34] – 31.5%	[15-24] – 27.7% [25-34] – 28.6% [35-44] – 34.9%	[45-54] – 34.2% >=55 – 43%
Legal form	Single-person limited (26.8%) Individually own firm (6.2%)	Individually owned firm (3.8%) Limited Company (63.5%)	Limited Company (64.2%)	Joint-stock company (54.8%) Cooperative (5.8%)	Joint-stock company (70.3%) Cooperative (4.7%)
Inserted in an economic group	No (96.7%)	No (98%)	No (97.4%)	Reveals more insertion in an economic group (16.9%)	Reveals more insertion in an economic group (16.6%)
Presence of foreign capital	No (96.7%)	No (98.2%)	No (94.3%)	Reveals more foreign capital (21.7%)	Reveals more foreign capital (27.5%)
Direct presence abroad	No (95.2%)	No (98.8%)	No (99%)	Reveals more direct presence abroad (37.7%)	Reveals more direct presence abroad (51.3%)
Markets	- Increasing (linear) relevance of the European markets from Type 1 to Type 5, with the exception of Bulgaria and Romania, which stand out at Type 2 also -Although Angola, Brazil, and the USA stand out - Lowest implementation in most markets	- Increasing (linear) relevance of the European markets from Type 1 to Type 5, with the exception of Bulgaria and Romania, which stand out at Type 2 also - Angola, Brazil, and Mozambique stand out	- Increasing (linear) relevance of the European markets from Type 1 to Type 5, with the exception of Bulgaria and Romania, which stand out at Type 2 also	- Increasing (linear) relevance of the European markets from Type 1 to Type 5, with the exception of Bulgaria and Romania, which stand out at Type 2 also - African markets stand-out - Canada, Switzerland, and the USA stand out - Highest implementation in all markets	- Increasing (linear) relevance of the European markets from Type 1 to Type 5, with the exception of Bulgaria and Romania, which stand out at Type 2 also - Canada, Switzerland, and the USA stand out - Highest implementation in all markets
Association between Typology and Other Indicators					
NACE	1 (1.9%), 10 (3.8%), 11 (6.2%), 13 (3.3%), 14 (2.9%), 23 (2.4%), 28	1 (5.3%), 10 (7%), 11 (58%), 14 (4.4%), 15 (2.3%), 16 (1.5%), 22 (1.5%), 23 (3.2%), 25 (4.7%), 26	1 (2.2%), 10 (5.7%), 11 (4.1%), 13 (5.1%), 14 (8.9%), 15 (7.3%), 16 (2%), 17 (1.1%), 20	10 (8.1%), 11 (7.2%), 13 (7.5%), 14 (7.8%), 15 (6.3%), 16 (3.6%),	10 (9.8%), 11 (19.7%), 13 (8.8%), 14 (3.1%), 16 (5.2%), 17 (1.6%), 18

	(2.4%), 31 (4.8%), 32 (1.9%), 33 (1%), 46 (31.1%), 47 (7.2%), 52 (1%), 58 (1.4%), 62 (6.2%), 70 (2.4%), 71 (2.9%), 72 (1.4%), 74 (1.4%), 82 (2.9%) Only at Type 1 – 79 (0.5%)	(1.2%), 28 (3.8%), 31 (2%), 32 (1.8%), 43 (1.8%), 46 (23.4%), 47 (6.4%), 58 (1.2%), 62 (5.3%), 68 (1.2%), 70 (1.5%), 71 (3.5%), 72 (0.9%) Only at Type 2 – 81 (0.3%), 90 (0.3%), 95 (0.3%)	(2.6%), 22 (3.6%), 23 (5.4%), 25 (6.5%), 26 (0.9%), 27 (1.9%), 28 (6.1%), 31 (5.3%), 32 (2.4%), 46 (18.4%), 58 (0.9%), 62 (1.2%) Only at Type 3 – 38 (0.3%), 92 (0.1%), 94 (0.1%)	20 (2.4%), 22 (3.9%), 23 (4.8%), 24 (1.5%), 25 (8.4%), 27 (4.2%), 28 (3.6%), 29 (2.1%), 30 (1.5%), 31 (2.4%), 32 (1.5%), 46 (11.4%), 64 (1.2%) Only at Type 4 – 36 (0.3%), 69 (0.3%)	(1%), 20 (2.6%), 21 (2.6%), 22 (2.1%), 23 (4.1%), 24 (1%), 25 (6.7%), 27 (3.1%), 28 (5.2%), 32 (2.6%), 46 (10.4%), 56 (1%) Only at Type 5 – 2 (0.5%), 51 (0.5%)
NUTSIII	Alentejo Central (3.3%), Algarve (1%), Ave (9.1%), Baixo Alentejo (1.9%), Baixo Mondego (4.3%), Baixo Vouga (5.7%), Beira Interior Norte (1%), Cávado (4.3%), Douro (3.3%), Entre Douro e Vouga (3.3%), Grande Lisboa (22.5%), Grande Porto (14.4%), Lezíria do Tejo (1.9%), Madeira (1%), Minho Lima (1.9%), Oeste (4.8%), Península de Setúbal (2.4%), Tâmega (9.1%)	Alentejo Central (2.3%), Algarve (1.2%), Alto Alentejo (1.2%), Alto Trás-os-Montes (1.5%), Ave (8.8%), Baixo Mondego (1.8%), Baixo Vouga (5%), Cávado (3.2%), Cova da Beira (0.9%), Dão-Lafões (3.8%), Douro (3.2%), Entre Douro e Vouga (4.4%), Grande Lisboa (17.8%), Grande Porto (17.5%), Lezíria do Tejo (1.5%), Médio Tejo (2.6%), Minho Lima (1.8%), Oeste (3.5%), Península de Setúbal (2.6%), Pinhal Interior Norte (0.9%), Pinhal Litoral (6.4%), Tâmega (5%)	Ave (8.8%), Baixo Mondego (1.9%), Baixo Vouga (9.9%), Cávado (4.6%), Cova da Beira (1%), Dão-Lafões (1.9%), Entre Douro e Vouga (9.1%), Grande Lisboa (13.6%), Grande Porto (15.6%), Lezíria do Tejo (2.6%), Médio Tejo (1.8%), Minho Lima (1.5%), Oeste (4.3%), Península de Setúbal (1.7%), Pinhal Interior Norte (1.1%), Pinhal Litoral (6%), Tâmega (6.7%)	Alentejo Central (1.2%), Algarve (1.2%), Alto Alentejo (1.5%), Ave (9.3%), Baixo Mondego (3.3%), Baixo Vouga (10.8%), Beira Interior Sul (0.9%), Cávado (2.7%), Cova da Beira (0.9%), Dão-Lafões (2.7%), Entre Douro e Vouga (8.1%), Grande Lisboa (18.4%), Grande Porto (15.4%), Lezíria do Tejo (1.5%), Oeste (4.5%), Península de Setúbal (3.3%), Pinhal Interior Norte (0.9%), Pinhal Litoral (2.7%), Tâmega (5.7%)	Algarve (2.1%), Alto Alentejo (1%), Ave (6.2%), Baixo Mondego (2.6%), Baixo Vouga (9.3%), Beira Interior Norte (1%), Cávado (2.1%), Cova da Beira (1%), Dão-Lafões (3.1%), Entre Douro e Vouga (7.3%), Grande Lisboa (17.6%), Grande Porto (26.4%), Madeira (3.1%), Médio Tejo (1%), Minho Lima (1.6%), Oeste (3.6%), Península de Setúbal (3.1%), Tâmega (2.6%) - Only in Type 5 – Açores (1%)

Table 2 - Description of the Five Types

Type 1 firms are young and have embarked recently on their internationalization process. They are also characterized by a stronger presence of single-person limited liability organizations or individually own firms than can be found in other typologies, thus confirming that they are also smaller in size (and younger). The results for "belonging to a wider economic or business group", "presence of foreign capital", and "direct presence abroad" are aligned with those obtained for the entire sample – these firms are mainly independent firms, with very little foreign capital, and a residual direct presence abroad.

These firms have the lowest levels of internationalization of all types identified in the context of the present research, but Angola, Brazil, and the US markets stand out amongst all the other markets. Sectors of economic activity identified in this typology consist fundamentally of firms in the tertiary sector, with the exception of **Type 2** (lower weight) which is not common in the other types. Additionally, sectors that belong to the secondary sector present a lower weight (sectors between 10 and 33). These firms are more disperse between NUTS III. They represent 9.8% of the sample used in the current research.

Firms included in **Type 2** are between 10 to 24 years old, and exhibit 1 to 14 years of internationalization of economic activity. These types of firms are mostly individually owned firms and limited liability organizations, and as with **Type 1** firms, these are autonomous firms, with scarce foreign capital, and a residual direct presence abroad. Angola, Brazil, and Mozambique are all key markets for these firms. The degree to which these firms have internationalized their economic activities to European markets increases linearly as one moves from **Type 1 to Type 5**, however in **Type 2**, the Bulgarian and Romanian markets stand out as destination markets for domestic firms.

For **Type 2**, sector 1 (crop and animal production) stands out, with a 5.3% share. As with **Type 1** firms, companies aggregated in the secondary sector are fewer and exhibit a lower weight, although their share is greater than in **Type 1**. The services sector is also less represented, when compared to **Type 1**, but it is still strong. As in **Type 1, Type 2** is also dispersed amongst NUTS III. This type represents 16% of the sample.

Type 3 firms are middle-aged firms (intermediate in terms of the present categorization) that have internationalized some time ago. These firms consist mostly of limited companies, which still share the characteristics of **Types 1 and Type 2** firms regarding belonging to a larger business group, presence of foreign capital, and direct presence abroad. This typology of firms has conducted its internationalization process with Europe as its market of destination. **Types 3, 4, and 5** firms are organizations that mostly belong to the secondary sector. Type 3 presents a higher concentration of economic activity, with firms concentrated in fewer regions, when compared with the other typologies. This is the largest type in the sample – 49.6% of firms belong in Type 3.

Type 4 firms are between 35 to just over 55 years of age. The length of internationalization of these firms ranges between 25 to 44 years of presence in international markets. These firms consist mainly of joint-stock arrangements, but cooperatives also stand out. Contrary to types 1 to 3 and to the entire sample in fact, there is here a stronger concentration of firms within a particular economic group, more presence of foreign capital, and an enhanced direct presence abroad (more than 1/3 of firms). Firms in this particular context continue to expand their internationalization activities to European markets, but according to this typology, a stronger presence in African countries of destination is to be found. Markets outside Europe including Canada, Switzerland, and the USA are also relevant here. Type 4 companies, akin to Types 3 and 5 firms, belong fundamentally to the secondary sector. Type 4 shows a higher concentration of economic activity, with firms concentrated in fewer regions. Type 4 accounts for 15.6% of the sample.

Type 5 firms are the ones that have been operating longer. These are companies that also show the greatest experience and exposure to international markets. Joint-stock is the

predominant ownership type by far, but cooperatives also stand out in **Type 5**, as is the case with **Type 4**. Also, as in **Type 4, Type 5** firms exhibit a higher percentage of firms belonging to wider business groups, a higher percentage of firms with foreign capital, and a strong direct presence abroad (more than 50%). Type 5 firms exhibit the highest levels of internationalization of economic activity directed at European markets, but Canada, Switzerland, and the USA also stand out as preferred markets of destination for their goods and services.

Type 5 firms, as well as companies in **Types 3 and 4**, are mostly to be found in the secondary sector. **Type 5** can, however, be characterized as possessing a higher concentration of economic activity, with firms concentrated in fewer regions, than in **Types 1 and 2. Type 5** firms are mostly to be found in Madeira, the Açores, and the Algarve. **Type 5** firms make up 9.0% of the sample.

4.2. Analysis by Type of Host Country

In this section we consider the partition of our database between host countries that are more developed and host countries that are less developed.[iv] Askarzadeh *et al.* (2020) found that multinational firms find a higher degree of institutional distance in countries with poor institutional quality (less developed) than in countries that have high quality institutions (more developed). Hence, to analyse this question having Portugal as the country performing internationalization, we restrict our consideration to the firms that export for only one type (developed) or the other (developing), never for both.[v] We thus end up with a sample of 251 firms (11.8% of the database) that internationalize for developed countries only, and a sample of 116 (5.4% of the database) that internationalize for developing countries only.

For the developed host countries, we reach the same 5 clusters solution as in the benchmark analysis, but with some differences in the characteristics of the firms. There is only 1 cooperative in the analysis and only a few individually own firms (5) or single-person limited (12), being the majority of the firms limited or joint-stock. The distribution in the clusters changes little, but it becomes higher for limited firms. The relevance of foreign capital firms is accentuated in clusters 4 and 5, and belonging to an economic group is more important in cluster 5 of this analysis than it was in the benchmark. Concerning firms with direct presence abroad, the importance of cluster 5 falls substantially (now 33.3% against 51.3% in the benchmark), and cluster 4 slightly increases (from 37.7 to 44.1%), while in the other clusters the percentage of no direct presence abroad is 100% or close to it. The ages of the firms are slightly higher than in the benchmark, as well as the length of internationalization. In terms of sectors of economic activity, we notice an increase in the relevance of manufacturing sectors, and this has an impact in the Portuguese regions where these firms reside, since we can see a drop in the importance of Grande Lisboa, while Grande Porto, Ave, Cávado, and Tâmega increase their weight, since these are regions where the manufacturing sector has greater importance.

Regarding developing countries, we reach a 3 clusters solution in which the majority of firms are limited firms, more than for developed countries. The presence of foreign capital is even greater than in the case of developed countries, and the age and length in internationalization of the firm, too, is even higher than in the case of developed countries, except for the last cluster. Most of the firms do not belong to an economic group and the percentage of firms that have a direct presence abroad is lower. In terms of economic activities, we see that the presence of sector 46 – wholesale trade – increases its relevance compared to the benchmark and the developed countries' results. Additionally, the predominance of sector 46 in the Grande Lisboa region increases dramatically.

Summing up, the most noteworthy differences between these two types is that the manufacturing sector is more important for developed markets, while wholesale trade is more important for developing ones. The percentage of limited firms is even higher for developing

countries and the percentage of firms that do not belong to economic groups is higher in developing than in developed countries.

5. Discussion and Theoretical and Practical Implications

The purpose of the current research was to explore associations between multiple categorical variables and to establish typologies of firms based on the resulting profiles. As stated earlier, we adopt a firm-level analysis using variables like region, sector, destination market, mode of entry, and legal and institutional characteristics of the firm, since this affords a better way of looking into foreign investment flows from a structural perspective rather than strictly from a national accounting one. In the spectrum that goes from Type 1 through 5 not only is one able to ascertain the level of FDI, but crucially a structural overview of the economy is provided, which in turn acts as a proxy for predicting FDI flows to and from.

We found that **Type 1** firms are young firms that have only recently ventured into international markets. Typically these firms are represented by a single-person and are limited liability organizations. They are typically independent firms with scarce foreign capital and virtually no presence abroad. They also show only modest levels of internationalization, although Angola, Brazil, and the US are markets that are worthy of mention. These are also firms whose activities are essentially in the tertiary sector.

Type 2 firms are relatively new and have had some relevant internationalization experience. They are also individually owned firms and limited liability organizations. Not unlike **Type 1** firms, these firms have scarce foreign capital, and little presence abroad. As one progresses from **Type 1 to Type 5** firms, the latter show a higher degree of internationalization, in particular with regard to European markets. Specifically, **Type 2** firms tend to focus on the Bulgarian and Romanian markets as destination markets. The current research has also found that depending on the typology, different sectors of economic activity are also more or less represented. This is certainly the case with **Type 2** firms, which are mainly oriented to crop and animal production.

Type 3 firms are middle-aged limited companies. They internationalize mostly to Europe and are mostly secondary sector firms, concentrated in fewer regions. **Type 4** firms are older firms. They have also internationalized for longer. They are, as noted above, mostly joint-stock arrangements, but there are also cooperatives. Firms are concentrated within a particular economic group, there is more foreign capital, and a more active direct presence abroad. They focus on Europe, but also Africa and North America. These are secondary sector firms. Again, there is a higher concentration of economic activity in Type 4 firms, as they operate in only a few regions.

Type 5 are the oldest in the sample and have had the most exposure to international markets. Joint-stock (more) and cooperatives (less) stand out in **Type 5**. A higher percentage of firms belonging to wider business groups, a higher percentage of firms with foreign capital, and a strong direct presence abroad exists here. These firms target European markets, but North America also provides key markets. **Type 5** firms are secondary sector, concentrated in only a few regions (Madeira, the Açores, and the Algarve).

In developing the aforementioned typologies of internationalization it has been widely acknowledged that FDI is the step that follows exports in international trade. The chronology and path direction are unambiguous. The intellectual debate addresses process, the rationale underpinning the strategic path of firms when engaging in the internationalization process. To that effect, key theories of FDI are put forward, namely the Product Life Cycle Model (Vernon), the Eclectic theory, and the Uppsala Evolutionary School theory. In going from Type 1 to Type 5, firms do so in a manner that can find simultaneous justification in all of these theories.

Specifically, the Uppsala School theory (Johanson and Vahlne, 1977; Johanson and Wiedersheim-Paul, 1975) contends that the internationalization of firms is grounded on evolutionary tenets, a sequential process, whereby firms build up commitments over time. Johanson and Vahlne (1977) argue that the internationalization of firms grows as firms acquire experiential knowledge about foreign markets, thus reducing the psychological distance between firms and their intended target markets. Firms also tend to go abroad more as they mature, which is a process coherent with Vernon´s Product-Life Cycle theory. Again, when companies go from Type 1 to Type 5 that can be explained by an iterative, learning process in which firms decide to take more risks by learning from previous experiences. Hence, there is a link between the IDP framework and the categorization of firms according to *a priori* criteria. These criteria are essentially degree of international exposure, experience, age, all of which are types of variables that suggest an evolutionary, iterative, self-learning approach to internationalization. Thus, the IDP framework, the Uppsala Evolutionary School, and Vernon´s Product Life Cycle are better when simultaneously explaining firm internationalization behaviour. The progression of firms through the typology presented here is justified by all of these theories.

Hence, what characteristics of the firms located in Portugal that are already internationalized drove them to their internationalization? Our results demonstrate that firm age, the length of internationalization process, the sector of economic activity, legal status, and psychological/cultural proximity are the main drivers, at different stages, of the internationalization process.

The comparison between only developed and only developing host countries reveals that the manufacturing sector is more important for developed markets, while wholesale trade is more important for developing ones. The percentage of limited firms and the percentage of firms that do not belong to economic groups is even higher for developing countries than for developed markets.

The results of our work are important for academia and policy makers, since when analysing a given problem they should consider that the specific issue may require the inclusion of not only one, but several theoretical frameworks, in order to be fully understood. Additionally, foreign host countries, developed or developing, are important in terms of choosing the economic sectors in which they choose to internationalize.

6. **Conclusions**

A typology of firms was identified consisting of five distinct types, aggregated according to specific criteria: age, the length of internationalization process, the sector of economic activity, legal status, and psychological/cultural proximity. With this aggregation we seek to better understand the strategic internationalization decision-making of firms. The approach taken thus far and largely reported in the literature suffers mostly from the shortcomings inherent to the NOIP indicator, which tells little about the degree of internationalization of firms within a country. Our approach allows us to understand the structure of an economy in greater depth by scrutinizing the strategic internationalization decision-making process amongst firms.

Hence, regarding the characteristics of the firms located in Portugal that are already internationalized, and the factor(s) that drove them to their internationalization, we found that there is a link between the IDP conceptual framework and the categorization of firms according to *a priori* criteria. These are essentially degree of international exposure, experience, and age, all of which are types of variables that suggest an evolutionary, iterative, self-learning approach to internationalization, in adherence with Uppsala thinking, but also with Vernon´s Product-Life Cycle theories, as firms tend to go abroad more as they mature; and finally also in line with

IDP postulates of a chronology of investment abroad, a path by which firms can be typified and aggregated according to *a priori* characteristics. When we performed the division between only developed and only developing host countries we found that the manufacturing sector is more important for developed markets, while wholesale trade is more important for developing ones. The percentage of limited firms and the percentage of firms that do not belong to economic groups is even higher for developing countries than for developed markets.

We believe that in explaining the strategic internationalization decision-making behaviour of firms located in Portugal that are already internationalized, we cannot regard the explanatory schemata deriving from any one school as being superior to any other, but rather the three schools of thought adequately co-explain the internationalization behaviour of firms. The results of our work are important for academia and policy makers, since when analysing a given problem they should consider that the specific issue may require the inclusion of not only one, but several theoretical frameworks, in order to be fully understood. Additionally, foreign markets, either developed or developing, are important in terms of the choice of the economic sectors and countries chosen for internationalization.

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Appendix A

Figure A1 – Fusion Coefficient by Ward's Method

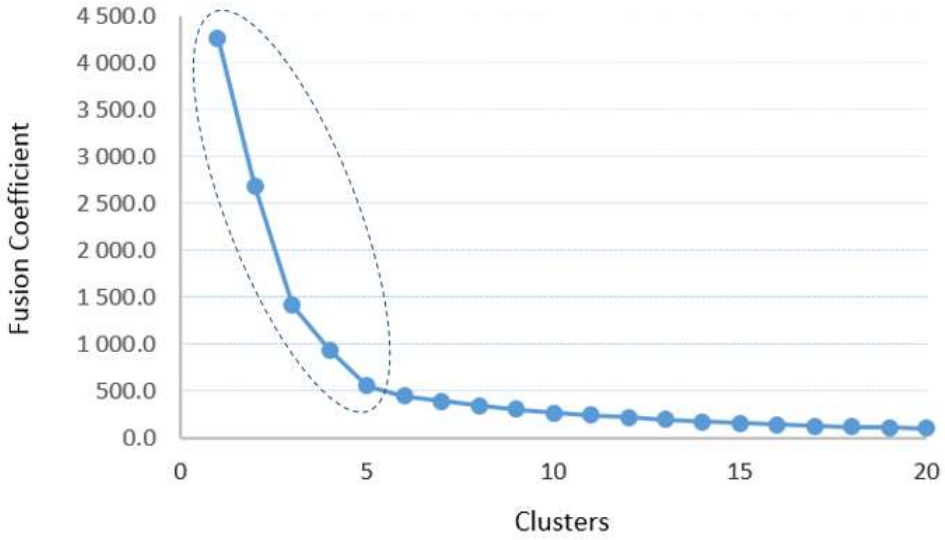
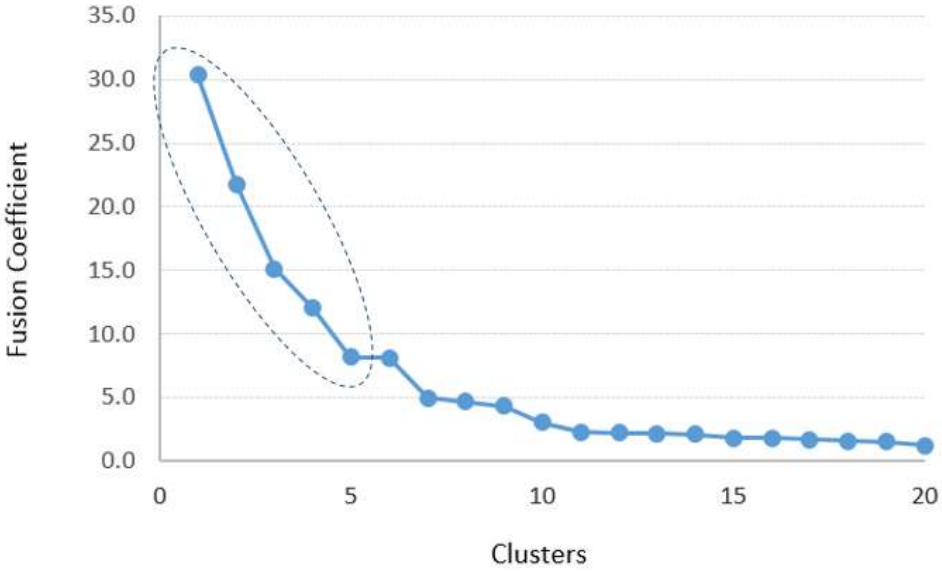


Figure A2 – Fusion Coefficient by Furthest Neighbour Method



Appendix B

Table B1 - Typology Distribution

Typology	N	%
Type 1	209	9.8
Type 2	342	16.0
Type 3	1057	49.6
Type 4	332	15.6
Type 5	193	9.0
Total	2133	100.0

Table B2 - MCA Input Variables and Clusters (Types)

		Typology									
		Type 1		Type 2		Type 3		Type 4		Type 5	
		N	%	N	%	N	%	N	%	N	%
Legal form	Cooperative	0	,0	2	,6	1	,1	19	5,8	9	4,7
	Individually Own Firm	13	6,2	13	3,8	9	,9	0	,0	0	,0
	Joint-Stock Company	27	12,9	94	27,5	367	34,8	181	54,8	135	70,3
	Limited Company	113	54,1	217	63,5	677	64,2	125	37,9	45	23,4
	Single-Person Limited Company	56	26,8	16	4,7	0	,0	5	1,5	3	1,6
	Total	209	100	342	100	1054	100	330	100	192	100
Presence of foreign capital	No Foreign Capital	202	96,7	336	98,2	997	94,3	260	78,3	140	72,5
	With Foreign Capital	7	3,3	6	1,8	60	5,7	72	21,7	53	27,5
	Total	209	100	342	100	1057	100	332	100	193	100
Inserted in an economic group	No Inserted in an economic group	202	96,7	335	98,0	1029	97,4	276	83,1	161	83,4
	Inserted in an economic group	7	3,3	7	2,0	28	2,6	56	16,9	32	16,6
	Total	209	100	342	100	1057	100	332	100	193	100
Direct presence abroad	No Direct Presence	199	95,2	338	98,8	1046	99,0	207	62,3	94	48,7
	With Direct Presence	10	4,8	4	1,2	11	1,0	125	37,7	99	51,3
	Total	209	100	342	100	1057	100	332	100	193	100
Age of the firm	1 - 9 [Y]	182	87,1	0	,0	0	,0	0	,0	1	,5
	10 -14 [Y]	25	12,0	199	58,2	0	,0	2	,6	0	,0
	15 -24 [Y]	2	1,0	83	24,3	397	37,6	24	7,2	0	,0
	25 -34 [Y]	0	,0	39	11,4	429	40,6	27	8,1	0	,0
	35 -44 [Y]	0	,0	11	3,2	213	20,2	105	31,6	4	2,1
	45 -54 [Y]	0	,0	5	1,5	18	1,7	86	25,9	54	28,0
	>= 55 [A]	0	,0	5	1,5	0	,0	88	26,5	134	69,4
	Total	209	100	342	100	1057	100	332	100	193	100
Seniority of internationalization	1 - 9 [I]	196	93,8	180	52,6	0	,0	5	1,5	1	,5
	10 - 14 [I]	13	6,2	145	42,4	148	14,0	17	5,1	2	1,0
	15 - 24 [I]	0	,0	15	4,4	536	50,7	92	27,7	6	3,1
	25 - 34 [I]	0	,0	1	,3	333	31,5	95	28,6	7	3,6
	35 - 44 [I]	0	,0	1	,3	40	3,8	116	34,9	28	14,5
	45 - 54 [I]	0	,0	0	,0	0	,0	7	2,1	66	34,2
	>= 55 [I]	0	,0	0	,0	0	,0	0	,0	83	43,0
	Sem inf	0	,0	0	,0	0	,0	0	,0	0	,0
	Total	209	100	342	100	1057	100	332	100	193	100

Table B3 – Types of Firms According to NACE

		Typology									
		Type 1		Type 2		Type 3		Type 4		Type 5	
		N	%	N	%	N	%	N	%	N	%
NACE	1	4	1,9	18	5,3	23	2,2	2	,6	1	,5
	2	0	,0	0	,0	0	,0	0	,0	1	,5
	3	0	,0	0	,0	1	,1	2	,6	0	,0
	8	1	,5	1	,3	2	,2	0	,0	2	1,0
	10	8	3,8	24	7,0	60	5,7	27	8,1	19	9,8
	11	13	6,2	20	5,8	43	4,1	24	7,2	38	19,7
	13	7	3,3	4	1,2	54	5,1	25	7,5	17	8,8
	14	6	2,9	15	4,4	94	8,9	26	7,8	6	3,1
	15	1	,5	8	2,3	77	7,3	21	6,3	2	1,0
	16	0	,0	5	1,5	21	2,0	12	3,6	10	5,2
	17	0	,0	3	,9	12	1,1	1	,3	3	1,6
	18	1	,5	0	,0	2	,2	1	,3	2	1,0
	19	0	,0	0	,0	1	,1	1	,3	0	,0
	20	0	,0	2	,6	28	2,6	8	2,4	5	2,6
	21	2	1,0	1	,3	2	,2	3	,9	5	2,6
	22	1	,5	5	1,5	38	3,6	13	3,9	4	2,1
	23	5	2,4	11	3,2	57	5,4	16	4,8	8	4,1
	24	1	,5	1	,3	6	,6	5	1,5	2	1,0
	25	4	1,9	16	4,7	69	6,5	28	8,4	13	6,7
	26	1	,5	4	1,2	10	,9	2	,6	1	,5
	27	2	1,0	2	,6	20	1,9	14	4,2	6	3,1
	28	5	2,4	13	3,8	64	6,1	12	3,6	10	5,2
	29	1	,5	3	,9	13	1,2	7	2,1	1	,5
	30	0	,0	1	,3	6	,6	5	1,5	1	,5
	31	10	4,8	7	2,0	56	5,3	8	2,4	1	,5
	32	4	1,9	6	1,8	25	2,4	5	1,5	5	2,6
	33	2	1,0	2	,6	1	,1	0	,0	0	,0
	36	0	,0	0	,0	0	,0	1	,3	0	,0
	38	0	,0	0	,0	3	,3	0	,0	0	,0
	41	1	,5	2	,6	0	,0	0	,0	1	,5
	42	0	,0	0	,0	3	,3	0	,0	1	,5
	43	2	1,0	6	1,8	4	,4	0	,0	0	,0
	45	1	,5	0	,0	4	,4	2	,6	0	,0
	46	65	31,1	80	23,4	195	18,4	38	11,4	20	10,4
	47	15	7,2	22	6,4	19	1,8	5	1,5	1	,5
	49	0	,0	0	,0	1	,1	1	,3	0	,0
	51	0	,0	0	,0	0	,0	0	,0	1	,5
	52	2	1,0	0	,0	0	,0	1	,3	0	,0
	56	0	,0	1	,3	0	,0	0	,0	2	1,0
	58	3	1,4	4	1,2	9	,9	3	,9	1	,5
	59	0	,0	1	,3	1	,1	0	,0	0	,0
	62	13	6,2	18	5,3	13	1,2	2	,6	0	,0
	63	1	,5	0	,0	1	,1	0	,0	0	,0
	64	0	,0	1	,3	2	,2	4	1,2	1	,5
	68	1	,5	4	1,2	0	,0	0	,0	0	,0
	69	0	,0	0	,0	0	,0	1	,3	0	,0

70	5	2,4	5	1,5	5	,5	1	,3	1	,5
71	6	2,9	12	3,5	4	,4	3	,9	0	,0
72	3	1,4	3	,9	0	,0	0	,0	1	,5
73	0	,0	1	,3	1	,1	1	,3	0	,0
74	3	1,4	2	,6	3	,3	0	,0	0	,0
79	1	,5	0	,0	0	,0	0	,0	0	,0
80	1	,5	1	,3	0	,0	0	,0	0	,0
81	0	,0	1	,3	0	,0	0	,0	0	,0
82	6	2,9	2	,6	1	,1	1	,3	0	,0
85	0	,0	1	,3	1	,1	0	,0	0	,0
86	1	,5	1	,3	0	,0	0	,0	0	,0
90	0	,0	1	,3	0	,0	0	,0	0	,0
92	0	,0	0	,0	1	,1	0	,0	0	,0
94	0	,0	0	,0	1	,1	0	,0	0	,0
95	0	,0	1	,3	0	,0	0	,0	0	,0
Total	209	100,0	342	100,0	1057	100,0	332	100,0	193	100,0

Table B4 - Types of Firms According to NUTS III

		Typology									
		Type 1		Type 2		Type 3		Type 4		Type 5	
		N	%	N	%	N	%	N	%	N	%
NUTS III	Açores	0	,0	0	,0	0	,0	0	,0	2	1,0
	Alentejo Central	7	3,3	8	2,3	6	,6	4	1,2	1	,5
	Alentejo Litoral	0	,0	1	,3	2	,2	1	,3	0	,0
	Algarve	2	1,0	4	1,2	7	,7	4	1,2	4	2,1
	Alto Alentejo	1	,5	4	1,2	8	,8	5	1,5	2	1,0
	Alto Trás-os-Montes	1	,5	5	1,5	3	,3	3	,9	1	,5
	Ave	19	9,1	30	8,8	114	10,8	31	9,3	12	6,2
	Baixo Alentejo	4	1,9	3	,9	6	,6	1	,3	0	,0
	Baixo Mondego	9	4,3	6	1,8	20	1,9	11	3,3	5	2,6
	Baixo Vouga	12	5,7	17	5,0	105	9,9	36	10,8	18	9,3
	Baixo-Mondego	0	,0	0	,0	0	,0	0	,0	0	,0
	Beira Interior Norte	2	1,0	3	,9	5	,5	1	,3	2	1,0
	Beira Interior Sul	1	,5	1	,3	4	,4	3	,9	0	,0
	Cávado	9	4,3	11	3,2	49	4,6	9	2,7	4	2,1
	Cova da Beira	0	,0	3	,9	11	1,0	3	,9	2	1,0
	Dão-Lafões	2	1,0	13	3,8	20	1,9	9	2,7	6	3,1
	Douro	7	3,3	11	3,2	14	1,3	4	1,2	2	1,0
	Entre Douro e Vouga	7	3,3	15	4,4	96	9,1	27	8,1	14	7,3
	Grande Lisboa	47	22,5	61	17,8	144	13,6	61	18,4	34	17,6
	Grande Porto	30	14,4	60	17,5	165	15,6	51	15,4	51	26,4
	Lezíria do Tejo	4	1,9	5	1,5	27	2,6	5	1,5	1	,5
	Madeira	2	1,0	0	,0	2	,2	0	,0	6	3,1
	Médio Tejo	0	,0	9	2,6	19	1,8	3	,9	2	1,0
	Minho-Lima	4	1,9	6	1,8	16	1,5	3	,9	3	1,6
	Oeste	10	4,8	12	3,5	45	4,3	15	4,5	7	3,6
	Península de Setúbal	5	2,4	9	2,6	18	1,7	11	3,3	6	3,1
	Pinhal Interior Norte	1	,5	3	,9	12	1,1	3	,9	0	,0
	Pinhal Interior Sul	1	,5	2	,6	3	,3	0	,0	0	,0
	Pinhal Litoral	2	1,0	22	6,4	63	6,0	9	2,7	3	1,6
	Serra da Estrela	1	,5	1	,3	2	,2	0	,0	0	,0
	Tâmega	19	9,1	17	5,0	71	6,7	19	5,7	5	2,6
	Total	209	100,0	342	100,0	1057	100,0	332	100,0	193	100,0

Table B5 - Types of Firms According to the Markets of Interest

	Typology									
	Type 1		Type 2		Type 3		Type 4		Type 5	
	N	%	N	%	N	%	N	%	N	%
Angola	112	54,9	177	52,5	418	42,2	142	46,9	67	37,9
.	92	45,1	160	47,5	573	57,8	161	53,1	110	62,1
Total	204	100,0	337	100,0	991	100,0	303	100,0	177	100,0
Austria	53	26,0	164	48,7	700	70,6	221	72,9	146	82,5
.	151	74,0	173	51,3	291	29,4	82	27,1	31	17,5
Total	204	100,0	337	100,0	991	100,0	303	100,0	177	100,0
Belgium	71	34,8	183	54,3	757	76,4	236	77,9	155	87,6
.	133	65,2	154	45,7	234	23,6	67	22,1	22	12,4
Total	204	100,0	337	100,0	991	100,0	303	100,0	177	100,0
Brazil	81	39,7	119	35,3	226	22,8	79	26,1	47	26,6
.	123	60,3	218	64,7	765	77,2	224	73,9	130	73,4
Total	204	100,0	337	100,0	991	100,0	303	100,0	177	100,0
Bulgaria	34	16,7	69	20,5	159	16,0	53	17,5	40	22,6
.	170	83,3	268	79,5	832	84,0	250	82,5	137	77,4
Total	204	100,0	337	100,0	991	100,0	303	100,0	177	100,0
Cape Verde	65	31,9	109	32,3	349	35,2	117	38,6	57	32,2
.	139	68,1	228	67,7	642	64,8	186	61,4	120	67,8
Total	204	100,0	337	100,0	991	100,0	303	100,0	177	100,0
Canada	39	19,1	63	18,7	182	18,4	73	24,1	56	31,6
.	165	80,9	274	81,3	809	81,6	230	75,9	121	68,4
Total	204	100,0	337	100,0	991	100,0	303	100,0	177	100,0
Cyprus	38	18,6	155	46,0	677	68,3	216	71,3	136	76,8
.	166	81,4	182	54,0	314	31,7	87	28,7	41	23,2
Total	204	100,0	337	100,0	991	100,0	303	100,0	177	100,0
Denmark	67	32,8	183	54,3	729	73,6	230	75,9	154	87,0
.	137	67,2	154	45,7	262	26,4	73	24,1	23	13,0
Total	204	100,0	337	100,0	991	100,0	303	100,0	177	100,0
Germany	98	48,0	220	65,3	809	81,6	253	83,5	157	88,7
.	106	52,0	117	34,7	182	18,4	50	16,5	20	11,3
Total	204	100,0	337	100,0	991	100,0	303	100,0	177	100,0
Estonia	39	19,1	156	46,3	674	68,0	218	71,9	137	77,4
.	165	80,9	181	53,7	317	32,0	85	28,1	40	22,6
Total	204	100,0	337	100,0	991	100,0	303	100,0	177	100,0
Finland	59	28,9	171	50,7	719	72,6	224	73,9	142	80,2
.	145	71,1	166	49,3	272	27,4	79	26,1	35	19,8
Total	204	100,0	337	100,0	991	100,0	303	100,0	177	100,0
France	111	54,4	241	71,5	854	86,2	263	86,8	160	90,4
.	93	45,6	96	28,5	137	13,8	40	13,2	17	9,6
Total	204	100,0	337	100,0	991	100,0	303	100,0	177	100,0
Greece	45	22,1	166	49,3	709	71,5	223	73,6	143	80,8
.	159	77,9	171	50,7	282	28,5	80	26,4	34	19,2
Total	204	100,0	337	100,0	991	100,0	303	100,0	177	100,0
Guinea-Bissau	27	13,2	75	22,3	295	29,8	97	32,0	49	27,7
.	177	86,8	262	77,7	696	70,2	206	68,0	128	72,3
Total	204	100,0	337	100,0	991	100,0	303	100,0	177	100,0
Netherlands	65	31,9	192	57,0	763	77,0	237	78,2	158	89,3
.	139	68,1	145	43,0	228	23,0	66	21,8	19	10,7
Total	204	100,0	337	100,0	991	100,0	303	100,0	177	100,0
Hungary	44	21,6	158	46,9	681	68,7	220	72,6	140	79,1
.	160	78,4	179	53,1	310	31,3	83	27,4	37	20,9
Total	204	100,0	337	100,0	991	100,0	303	100,0	177	100,0
Ireland	44	21,6	166	49,3	707	71,3	226	74,6	144	81,4
.	160	78,4	171	50,7	284	28,7	77	25,4	33	18,6
Total	204	100,0	337	100,0	991	100,0	303	100,0	177	100,0
Italy	61	29,9	176	52,2	724	73,1	242	79,9	150	84,7
.	143	70,1	161	47,8	267	26,9	61	20,1	27	15,3
Total	204	100,0	337	100,0	991	100,0	303	100,0	177	100,0

Latvia	40	19,6	154	45,7	670	67,6	218	71,9	139	78,5
.	164	80,4	183	54,3	321	32,4	85	28,1	38	21,5
Total	204	100,0	337	100,0	991	100,0	303	100,0	177	100,0
Lithuania	41	20,1	155	46,0	673	67,9	217	71,6	137	77,4
.	163	79,9	182	54,0	318	32,1	86	28,4	40	22,6
Total	204	100,0	337	100,0	991	100,0	303	100,0	177	100,0
Luxembourg	53	26,0	177	52,5	702	70,8	224	73,9	142	80,2
.	151	74,0	160	47,5	289	29,2	79	26,1	35	19,8
Total	204	100,0	337	100,0	991	100,0	303	100,0	177	100,0
Malta	37	18,1	151	44,8	666	67,2	214	70,6	137	77,4
.	167	81,9	186	55,2	325	32,8	89	29,4	40	22,6
Total	204	100,0	337	100,0	991	100,0	303	100,0	177	100,0
Mozambique	71	34,8	133	39,5	362	36,5	112	37,0	57	32,2
.	133	65,2	204	60,5	629	63,5	191	63,0	120	67,8
Total	204	100,0	337	100,0	991	100,0	303	100,0	177	100,0
Poland	57	27,9	178	52,8	707	71,3	230	75,9	143	80,8
.	147	72,1	159	47,2	284	28,7	73	24,1	34	19,2
Total	204	100,0	337	100,0	991	100,0	303	100,0	177	100,0
Czech Republic	48	23,5	166	49,3	689	69,5	224	73,9	142	80,2
.	156	76,5	171	50,7	302	30,5	79	26,1	35	19,8
Total	204	100,0	337	100,0	991	100,0	303	100,0	177	100,0
Romania	33	16,2	86	25,5	167	16,9	57	18,8	39	22,0
.	171	83,8	251	74,5	824	83,1	246	81,2	138	78,0
Total	204	100,0	337	100,0	991	100,0	303	100,0	177	100,0
Slovakia	41	20,1	156	46,3	676	68,2	217	71,6	138	78,0
.	163	79,9	181	53,7	315	31,8	86	28,4	39	22,0
Total	204	100,0	337	100,0	991	100,0	303	100,0	177	100,0
Slovenia	43	21,1	154	45,7	675	68,1	214	70,6	137	77,4
.	161	78,9	183	54,3	316	31,9	89	29,4	40	22,6
Total	204	100,0	337	100,0	991	100,0	303	100,0	177	100,0
Spain	119	58,3	257	76,3	868	87,6	271	89,4	161	91,0
.	85	41,7	80	23,7	123	12,4	32	10,6	16	9,0
Total	204	100,0	337	100,0	991	100,0	303	100,0	177	100,0
Sao Tome Principe	34	16,7	81	24,0	303	30,6	100	33,0	52	29,4
.	170	83,3	256	76,0	688	69,4	203	67,0	125	70,6
Total	204	100,0	337	100,0	991	100,0	303	100,0	177	100,0
Sweden	65	31,9	182	54,0	732	73,9	230	75,9	148	83,6
.	139	68,1	155	46,0	259	26,1	73	24,1	29	16,4
Total	204	100,0	337	100,0	991	100,0	303	100,0	177	100,0
Switzerland	37	18,1	64	19,0	201	20,3	79	26,1	46	26,0
.	167	81,9	273	81,0	790	79,7	224	73,9	131	74,0
Total	204	100,0	337	100,0	991	100,0	303	100,0	177	100,0
United Kingdom	91	44,6	221	65,6	788	79,5	254	83,8	158	89,3
.	113	55,4	116	34,4	203	20,5	49	16,2	19	10,7
Total	204	100,0	337	100,0	991	100,0	303	100,0	177	100,0
USA	66	32,4	101	30,0	321	32,4	119	39,3	88	49,7
.	138	67,6	236	70,0	670	67,6	184	60,7	89	50,3
Total	204	100,0	337	100,0	991	100,0	303	100,0	177	100,0

[i] Hereinafter we designate CAE by NACE. The definition of the NACE codes is available at https://ec.europa.eu/competition/mergers/cases/index/nace_all.html.

[ii] A detailed analysis of the database is available upon request.

[iii] Results are available upon request.

[iv] Results are available upon request.

[v] We use the definition of the World Bank to classify countries between developed and developing.