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TRABAJO FIN DE GRADO

PROGRAMA INTERNACIONAL DEL GRADO EN  
ADMINISTRACIÓN Y DIRECCIÓN DE EMPRESAS

STATISTICAL ANALYSIS OF THE CAPACITY TO ATTRACT  
TALENT

Ana Marraco Cebrián

DIRECTORA

M<sup>a</sup> Carmen García Olaverri

Pamplona

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## **EXECUTIVE SUMMARY**

Taking into account the persistent high unemployment, especially in young people and the growing tendency of brain drain, the development of talent in many countries must be reconstruct.

Countries and businesses long-term competitiveness is highly determined by its global talent. How they attract, grow and retain should therefore remain high on the agenda in order to attain the foreseeable future.

The objective of this study is to assess the ability of countries to develop, attract and retain talent, in order to preserve the talent pool available for enterprises. The analysis is going to be made with 8 indicators, and we are going to be able to classify countries into 5 differentiated groups. The results shows that the most talent competitiveness countries exhibit a balanced between their engagement in education, development of local talent, adjustments to the demand of their economies; and competence to attract overseas talent.

## **KEYWORDS**

Talent, Human capital, Productivity, Skills, Education, Sustainability, Research, Cluster analysis, Brain drain, Market conditions, Business landscape and Talent impact.

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## **1. PRESENTATION AND OBJECTIVES OF THE STUDY**

Talent is defined as the innate ability, aptitude or faculty needed to accomplish a certain task; however the definition of talent considering it as human talent or human capital is a broader concept influenced by many movements or circumstances along years. So far, human talent is defined as the ability of certain person to understand and have the sufficient knowledge in order to solve suitably a certain activity assuming responsibility, flair, experience and skills. Nevertheless human talent also takes into account motivation, interest, strengths and vocation.

The world is becoming more global and more mobile and this trend contribute to place talent in areas where there is a growing emphasis to education, innovative attitudes and policies. Human capital is at the heart of the process of global transformation and it must consider the specific characteristics, needs and constraints of various categories of workers, jobs and skills.

Nowadays there is a shortage in leadership talent in some countries of the world; and there are just two solutions to face it: “buy” talent or “build” talent. The appropriate solution for those countries must be to build it, however it is not a quick and easy solution. This situation is gaining importance in the last years due to the global economic crisis. In those countries heavily affected, the most qualified people decide to go abroad in search of better opportunities. And as a result, the countries have a surplus of less qualified people which don't fit when leaderships are looking for talent.

Moreover firms are reluctant to recruit people because of the labour market rigidities and the barriers to invest in training. There is a serious unemployment especially for young people and millions of jobs are not filled because of mismatches in skills and geography.

Countries are competing globally to grow better talents, attract the talents they need and retain those that contribute to competitiveness, innovation and growth. In order to attain this objectives they develop economic and social policies; but they need quantitative instruments to made decisions and implement better policies. The main areas where government, business and stakeholder implement policies are: education, human resource management and immigration.

## **The ability of a country to attract talent**

Generally there are two main actors which contribute or are involved in the ability of attracting talent: Governments and companies. On one hand governments, because they are in charge of public investment on education and there are responsible of the economic policies. Related issues with education, governments design contents, quality, languages, skills and innovation. All this items could be measured through indicators such as, the pupil-teacher ratio. In economic terms, if the country is performing the correct measures and policies and this have a positive impact on the GDP, the country would demand more workers and as a consequence more talent. This can be reflected through indicators such as, the cost of living and the quality of life. Another important component is the impact of brain drain on the competitiveness of countries.

On the other hand, we must analyse the factors that attract talent but are competence of business. On this area we could mention variables as positive working environment, employee training, work-life balance, female labour force, worker motivation, opportunity to international experience, investments in the research and development department, internal growth of the labour force, salaries, team spirit, flexibility, etc.

In Spain for example it is known that exists a shortage capacity to attract talent and this it is said, is due to: lack of long term vision, lower salaries and limited possibilities to grow in a company. Moreover there is no international, even national knowledge of the important investments in research and development made in Spain.

Nevertheless, we could not only consider the wealth of a country as an important fact to attract talent. It is also very important the way countries decide how is going to distribute and invest this wealth. For instance, a country who decide to invest in prevention or medical research would have more scientific and researchers than a country who decide to expend in infrastructure. For this reason, in our analysis we don't include explicitly the variable GDP per capita; we focus our attention in other indicators.

## **Objective of the analysis**

Our aim in the analysis of talent data is to create an international comparison among countries, dividing the data into different groups depending on the total score of talent obtained. Through this partition we would reach groups of countries with similar characteristics among them. Once we have made the different groups we are going to describe which are the factors that lead countries to obtain the highest positions or those factors that make the worst capacity to attract, grown and retain talent.

Moreover we are going to analyse if those countries that are able to attract, grow and retain the highest talent, are also the ones that take the advantage to get the highest values in terms of talent impact and labour productivity.

## **2. AVAILABLE INFORMATION**

### **The global talent competitiveness index 2014**

Talent competitiveness is the set of policies and practices that enable a country to attract, develop, and retain human capital that contribute to its productivity. The report “The global talent competitiveness index 2014”, edited by Bruno Lanvin and Paul Evans, is an index which determine the policies performed by countries so as to produce and acquire talent. Besides, it examine the required skills they have to achieve in order to get certain results.

The global talent competitiveness index is constructed with the information of 64 variables gathered in 14 indicators. And in turn, this 14 indicators are classify 6 pillars of talent that we are going to describe in this section.

As fundamental result, it is obtained a 90 countries rank according to its global talent competitiveness index.

In the attach table it is shown the 90 countries considered in our analysis:

## Global talent competitiveness index

Table 1

Rank 1-18	Rank 19-36	Rank 37-54	Rank 55-72	Rank 73-90
1-Switzerland	19-Japan	37-Kazakhstan	55-Azerbaijan	73-Sri Lanka
2-Singapore	20-Israel	38-China	56-Turkey	74-Nicaragua
3-United States	21-France	39-Panama	57-Mexico	75-India
4-Canada	22-Czech Republic	40-Trinidad and Tobago	58-Thailand	76-Paraguay
5-Sweden	23-Slovenia	41-Uruguay	59-Moldova	77-Egypt
6-United Kingdom	24-Chile	42-Bulgaria	60-Peru	78-Bolivia
7-Denmark	25-Latvia	43-Croatia	61-Romania	79-Iran
8-Australia	26-South Korea	44-Macedonia	62-Tunisia	80-Cambodia
9-Ireland	27-Spain	45-Armenia	63-Botswana	81-Venezuela
10-Norway	28-Slovakia	46-Brazil	64-Ecuador	82-Morocco
11-Netherlands	29-Saudi Arabia	47-Greece	65-Dominican Republic	83-Indonesia
12-Finland	30-Hungary	48-South Africa	66-Guatemala	84-Ghana
13-Germany	31-Portugal	49-Colombia	67-Albania	85-Uganda
14-Austria	32-Malaysia	50-Mongolia	68-Ukraine	86-Pakistan
15-New Zealand	33-Italy	51-Philippines	69-El Salvador	87-Bangladesh
16-Iceland	34-Lithuania	52-Russia	70-Namibia	88-Algeria
17-Belgium	35-Costa Rica	53-Argentina	71-Kyrgyzstan	89-Madagascar
18-Estonia	36-Poland	54-Lebanon	72-Vietnam	90-Yemen

Source: The global talent competitiveness index, Growing talent for today and tomorrow. 2014

Notes: We have remove Luxemburg, Qatar and United Arab Emirates because they are outliers. This means, atypical statistical values that distort our results.

As we can see the rank is led by Switzerland, Singapore, United States and Canada; followed by the Nordic countries. Spain is in the category 27, and takes up the position 18<sup>th</sup> taking into account the European countries. The worst European country is Ukraine.

The global talent competitive index is compounded of different inputs and outputs variables related with each country. The combination of all this variables endowed classify them according to its capacity to attract talent and achieve a final rank score.

The input is composed in four pillars. The first one, called **Enablers**, reflects the situation of the regulatory market and the business environment. This category determines if there is a favourable climate to thrive talent. Reflects the general situation of the country through the following variables: regulatory landscape, market landscape and business landscape.

The next three pillars are from the **Attract-Grow-Retain talent framework** used by corporations to steer talent management. Talent management is defined as the effort of organizations to attract, select, develop and retain talented employees; and meet them with the strategic needs of the company.

Attract is the capacity to grow the talent pool and therefore increase national competitiveness. It takes into account both external (immigration talent) and internal attraction, the ability of the country to remove the barriers and let underprivileged backgrounds enter the talent pool. It is measured with the variables “external openness” and “internal openness”.

Grow is related with education, but also includes training, continuous evaluation and access to growth opportunities. In order to compute this data we use information from: formal education, lifelong learning and access to growth opportunities.

Lastly, retain is the item that ensures the sustainability and the long life of the talent attracted and grew. Retain guarantee quality of life of citizens. This sub-index is composed by variables related with: sustainability and lifestyle.

The output parameters measure the quality of talent in a country resulting from the inputs resources and efforts. Output is divided into two levels: On one hand, **Labour and vocational skills**, described as, skills acquired through vocational training and relevant technical roles in the workforce. The economic impact of this skills is measured by labour productivity and the relationship between salary and productivity.

On the other hand, **Global knowledge skills**, that deals with the knowledge of workers in professional, managerial or leadership roles. Their economic impact is evaluated using indicators relating to innovation or entrepreneurship and sophisticated exports.

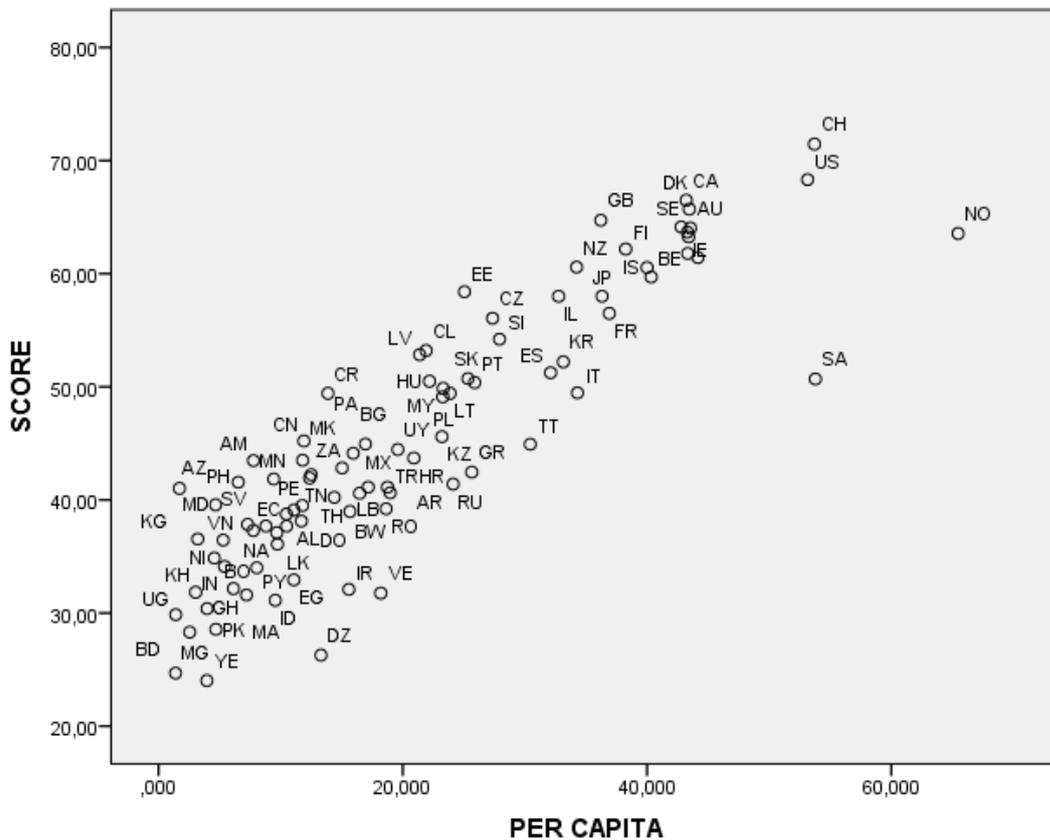
The sub-index mentioned above are the result of different variables. Further information of sub-index composition is detailed in Annex 1.

Finally the global talent competitive index is the result of the arithmetic average of the scores registered on the six pillars.

Before making any analysis we can come ahead that exist a direct a relationship between GDP and talent competitiveness. Can we see the results in the following graph.

## GTCI scores versus GDP per capita

Figure 1



Source: The global talent competitiveness index, Growing talent for today and tomorrow. 2014

Note: country code detail in Annex 2

### 3. METHODOLOGY

The technique that we are going to use in this analysis is the cluster analysis. The cluster analysis is the combination of different multivariate techniques with the aim of group together data in homogeneous groups. This analysis is very important in research due to its ability to classify data, and classifying is one of the fundamental objectives in analysing huge amounts of data.

The problem that this analysis solve is the following:

Given a set of data compose by N individuals, with information of P variables, denoted as  $X_j$ . We are going to be able to create different groups or clusters of individuals.

The first step of the cluster analysis is deciding the **method of aggrupation**. This could be done by hierarchical techniques or optimization techniques.

In the hierarchical technique the groups are formed in successive steps. This technique would be rising hierarchical if at the begging, each individual is a group; and successively bigger groups are formed due to the aggregation of similar groups. Lastly, all individuals are in one unique group.

The technique would be descendant hierarchical if all individuals are one unique group and smaller groups are formed by division.

When one individual is joint or separate, depending if it is rising or descendant, this individual would remain in the same status until the end of the process. There could not be reallocations along the process.

In optimization techniques the optimal function is determined a priori, and throughout iterative procedures individuals are classified in the different groups previously defined. In each step of the procedure we have to measure the improvement of the new solution. When there is no more improvement the process stops.

The main difference between the cluster analysis and discriminant analysis is that in the cluster analysis the groups or clusters are unknown and it is the aim of the analysis, while in the discriminant analysis the groups are known and the aim is gather in which way the available variables differentiate the groups or could help us to classify or assign members to given groups.

In order to make the different groups, first of all we have to establish an **indicator** that is going to tell us the grade of similarity between each individual and all the others. This indicator is denoted as distance.

With the distance we are going to know the similarity between all the individuals in the study. This distance is measured taking into account the information of all the variables involved in the analysis.

One important fact to take into account before the calculations of the distance is that all the variables must be in the same units of measurement in order to avoid problems between the comparison of huge and small values. In case that the variables analyse are compute in different units the standardization of the variables is essential.

Standardization is necessary to balance out the contributions. The conventional way to do this is to transform the variables so they all have the same variance of 1 and at the same time have mean zero and thus it is easier to compare.

There are different ways to compute the distance and there is not a general rule in order to know which one to apply in each situation. The appropriateness of the method depends on the variables, the individuals and the aim of the analysis. One method is the Euclidean distance.

We can carry on this method into 2 or more dimensions, in general P dimensions, where P is the number of variables, applying the following formula:

$$d_{x,y} = \sqrt{\sum_{j=1}^P (x_j - y_j)^2}$$

Another method is the square of the Euclidean distance. It is computed as the Euclidean method, but without square root. It is compute as it is show below:

$$d_{x,y}^2 = \sum_{j=1}^P (x_j - y_j)^2$$

It could also be computed with the Block distance:

$$d_{x,y} = \sum_{j=1}^P |x_j - y_j|$$

We have to note that there are other methods to compute the distance, but we are not going to explain them in depth. This are: Mahalanobis distance, Manhattan distance, Chebyshev distance and Minkowski distances.

Once we have compute all the distances, we write them down in the matrix of distances. This matrix takes the form N individuals x N individuals, it is symmetric, the diagonal is compose by zeros and all the values are non-negative. This matrix shows the proximities among all the individuals, and so, the lowest values in the matrix of distances corresponds to those individuals that are the most similar.

The third step in the cluster analysis is determine the **aggregation algorithm**. This takes place once we have compute the matrix of distances and we have to start aggregating individuals. The different aggregation algorithms are:

Aggregate nearest neighbour: In this method the pair of observations more similar or with lower values are going to form the first cluster. Once we have the first aggregation, we have to recompute the matrix of distance with the values of the first cluster included as only one individual, and calculate the other boxes. The next cluster is formed in the same way as the first one, the lowest value of the new matrix, would correspond to the two individuals that are the most similar. This process continues until all the individuals are aggregated in only one cluster.

This algorithm is summarised as follows, where  $i$  represents any individual of cluster A, and  $j$  represents any individual of cluster B.

$$D_{AB} = \min d_{ij}$$

Aggregate furthest neighbour: This method uses the same methodology as the former one, but instead of selecting the lowest values of the matrix of distance, in this case, we select the values with the highest scores, that would correspond to the pair of individuals that have the greater differences taking into account the studied variables.

It is describe as follows; where  $i$  represents any individual of cluster A, and  $j$  represents any individual of cluster B.

$$D_{AB} = \max d_{ij}$$

Weighted average aggregation algorithm: this aggregation is computed with the weighted average of the pairs of observations. It is compute as:

$$D_{AB} = \sum d_{ij} / n_A n_B$$

We have to note that once we have choose a certain method of aggregation algorithm we could not change the method throughout the process.

Moreover, it is recommended to use different procedures and compare the results. If the different methods give us similar aggregations or clusters, we could suppose that exists a natural and objective aggrupation. Otherwise, if we change the initial conditions, such as, type of distance; and we get very different solutions, we could came to the conclusion that the cluster is not stable, and therefore the solution could not be accepted.

Finally, if when we change the initial conditions, we get similar solutions, we would chose the one that creates clusters with the following criteria: ***The individuals of the same cluster must be very similar among them; but very different among the individuals of other clusters.***

That is to say, maximum variability among groups and minimum variability inside each group. (Heterogeneity among groups and homogeneity inside the groups). The Wilk's Lambda statistic provide information of this coefficient. The lower is the statistic, the better fulfils our criteria.

In short, in order to carry out the Cluster Analysis we must have into account the following aspects: Variables that take part of the analysis, type of standardization, hierarchical technique or optimization technique, type of distance, type of aggregation algorithm, number of cluster in the solution, stability of the solution, choice among stable solutions and description and interpretation of the selected clusters.

#### **4. CLUSTER ANALYSIS TALENT COMPETITIVENESS INDEX**

The cluster analysis is going to analyse 90 countries of the world. From this countries we have selected to analyse eight variables which are going to be detailed in the next pages. The variables selected are from different categories of talent. We have selected this variables because they are the more general and the ones that gave us the most appropriate information in order capture the general idea of talent. Moreover, with this variables we cover all the areas in which talent could be divided and the factors that measure it. Our objective is to create groups of analogous countries considering the relevant variables to attract, grow and retain talent.

From our point of view this variables are:

- Market landscape and Business landscape, which corresponds to the category of enable talent
- External openness from the category of attract talent
- Formal education and lifelong learning are variables involve in growing talent
- Sustainability from the category of retaining talent.
- Employable skills is related with the category of labour and vocational skills
- Higher skills and competences corresponds to global knowledge

In the selection criteria of variables we have had taken into account the following reports: *From global careers to talent flow* (Carr, S. C. ; Inkson, K. and Thorn, K.); *Talent Management* (Cappelli P. and Keller, J.R.); *Global talent management and global talent challenges: Strategic*

*opportunities for IHRM* (Schuler, R. S.; Jackson S.E.; Tarique, I.) and *Global talent: Literature review, integrative framework, and suggestions for further research* (Tarique, I. and Schuler, R. S.)

This authors point out those variables as the most relevant from the view of the human resources.

Once we have done the clusters we are going to describe them considering not only the countries that belong; also the variables than define the characteristics of the group.

Lastly, we are going to analyse the performance of the different clusters. In order to do that we are going to analyse two new variables, talent impact and labour productivity, applying them to the different groups of countries.

#### **Technical aspects of the cluster analysis:**

- Method: Rising hierarchical
- Distance: Square Euclidean distance
- Aggregation algorithm: weighted average aggregation algorithm
- Stability or acceptance criteria: we have verify that the solution is stable changing the distance it to the Minkowski distance
- Equivalent solution decision: applying the minimization criteria of Wilk's Lambda

Variables in the analysis: They are described below all the variables employed and its relationship with talent and the elements that take part in each variable.

#### **4.1 Market landscape**

The computation of the market landscape for a company of a related country is generally done thought a portfolio analysis called Market Attractiveness Framework, which analyse the situation of the products and services of a company in the concrete market to which it belong. The analysis define attractive market segments in old and new markets. First, prioritize markets to be included in the analysis and carry out country focused research to support the evaluation of opportunities in the selected areas. After the external analysis is completed, we have to evaluate the resources needed to obtain a preferred market position. The portfolio determines the strengths and weaknesses of each product or service and its market attractiveness.

Market attractiveness is an important analysis when a business is selecting a single market to enter or when building a business portfolio with a combination of different types of attractiveness. Analysing the market is also important to review where you are already in a market, with the thought that if attractiveness has decrease it may be better to exit the market.

Market landscape can be measure with variables such as: market size, market growth, pricing trends, intensity of competitions, opportunity to differentiate products or service and overall risk of the industry.

In our analysis we are going to determine the situation of the market landscape with the analysis of the following variables:

**Intensity of local competition.** With this variable we are going to determine the competition climate of the country. This variable is compute with the answer of companies to the question: How would you assess the intensity of competition in the local markets in your country? Being 1-limited in most industries; and 7-intense in most industries.

The innovation climate of the companies in the country is going to be measure by the variables: Venture capital deals, Firm-level technology absorption and R&D expenditure.

**Venture capital deals** is compute with data collected by investment location and a query of the number of venture capital deals signed on one year. The data is reported in terms of Gross domestic product per capital, per billion habitants. (PPP\$ GDP)

**Firm-level technology absorption** is compute with the result of the following question: To what extent do businesses in your country absorb new technology? Where, 1-Not at all; 7-Aggressively absorb.

**R&D expenditure** refers to the total domestic intramural expenditure on research and development during a given period as a percentage of GDP. Considering intramural expenditure as the R&D performed within a statistical unit or sector of the economy during a specific period, whatever the source of funds.

Market landscape measure also the connectivity of the companies and habitants of a country to internet and other technologies thought the variable **ICT access**. This variable is compute taking into account the number of fixed telephone lines, mobile cellular subscriptions, international internet bandwidth (Bits/s) per internet user, proportion of household with a computer and proportion of household with internet access at home.

Lastly, the market landscape analyse the general environment and the ease of doing business with the variable **Ease of doing business**. This variable measure aspects as: dealing with

construction permits, getting electricity, registering property, getting credit, protecting investors, paying taxes, trading across borders, enforcing contracts and resolving insolvency. A high ranking indicates that the regulatory environment is more conducive to setting up business.

The three countries with the highest scores in this variable are: United States, Israel and Sweden. Spain is positioned in the number 31.

## 4.2 Business Landscape

Business landscapes provide a global view on all business functions and business items within a company. However it is important to separate out the government's meta-role as rule maker and the interactions among other players. It is defined by Pankaj Ghemawat, professor at the Harvard Business School as "the purpose of business landscape is not to identify whether one operates on a part of it that is high above or well below economic sea level. Instead, it is to understand the reasons for such variations and ideally, to capitalize on them".

To assess the business landscape, the first step is to draw the boundaries, which means, identifying the types of players that will be taken into account. The next step involves the identification of key relationships among the players considered. Finally, they must be find ways of adapting to or shaping those relationships so as to maximize a business's total profitability, rather than just the average profitability of the environment in which it operates.

In our study as we are talking of talent we have to relate business aspects with the conditions of workers in companies or the general practices that companies develop in terms of labour. We are going to consider variables that corresponds to the framework of the flexibility of the labour market and the ownership of companies. The studied variables are:

**Difficulty of hiring.** This variable measures: whether fixed-term contracts are prohibited for permanent tasks, the maximum cumulative duration of fixed-term contracts and the ratio of the minimum wage for a trainee or first-time employee to the average value added per worker. The values are between zero and 100, with higher values indicating more rigid regulation, which means, workers with more probability to be hired under good conditions.

**Difficulty or redundancy** is measure taking into account data of whether redundancy is disallowed as a basis for terminating workers; whether the employer needs to notify a third party, such as government agency, to terminate one redundant worker; whether the employer needs to notify a third party to terminate a group of nine redundant workers; whether the employer needs approval from a third party to terminate one redundant worker; whether the

employer needs approval from a third party to terminate a group of nine redundant workers; whether the law requires the employer to reassign or retrain a worker before making the worker redundant; whether priority rules apply for redundancies; and whether priority rules apply for reemployment. The values are between zero and 100, with higher values indicating more rigid regulation, and so, more difficult to make redundant workers.

The next variable is **labour-employer cooperation** and is computed by the average answer to the question: In your country, how would you characterise labour-employer relations? Being, [1 = generally confrontational; 7 = generally cooperative]. As in the previous ones, the higher values indicates better situation for the worker, in this case, in terms of cooperation.

The last variable to analyse in the business landscape framework is **Reliance on professional management**. Being compute as the average answer to the question: In your country, who holds senior management positions? [1 = usually relatives or friends without regard to merit; 7 = mostly professional managers chosen for merit and qualifications] As in the former situations, the higher the results are obtained, the better is the situations of the country.

In order to conclude the analysis if this variable and the variables involved to attain it, we are going to look up the data. Those countries getting the highest results are going to be the best in terms of workers conditions. This means, good conditions to be hired and difficulty to be redundant. This data is going to show also countries with a cooperative relation with the employer and countries where managers are chosen for merits. The best three countries are: Switzerland, Singapore and Denmark. On the other hand, the three worst countries are: Morocco, Venezuela and Bolivia. We have to note that Spain is in a very bad position, 72 out of 90. Nevertheless is also very impressive the position of France: 80 out of 90.

### 4.3 External Openness

Companies, countries and people need resources to grow, develop and fulfilled its actions. However, sometimes there are not all the resources available. In this case, we should get the way to attain them. Applying this concept to countries we already know that there are different flows of capitals and technology from some countries to others. As it is impossible for a country to have enough resources, they open its boundaries to receive this flows. This is called external openness. However it is not also in terms of finance and technology, it also includes other aspects such as, flows of migration, knowledge or goods.

In our case, to study the external openness we are going to use industrial openness and migration openness.

**Foreign direct investor inflow** is a kind of industrial openness. It refers to the capital provided, either directly or through other related enterprises, by a foreign direct investor to an FDI enterprise as a percentage of GDP. FDI includes: equity capital, reinvested earnings and intra-company loans.

Data on FDI flows is computed as capital transactions' credits less debits between direct investors and their foreign affiliates. Net decreases in assets or net increases in liabilities are recorded as credits, while net increases in assets or net decreases in liabilities are recorded as debits. The higher the score is obtained, the greater investment inflow is going to receive.

**FDI and technology transfer** is the average answer to the question: 'To what extent does foreign direct investment (FDI) bring new technology into your country? [1 = not at all; 7 = to a great extent – FDI is a key source of new technology]'. This variable shows if investment and technology are correlated. The higher the results, the more correlated they are.

The last variable of industrial openness is: **Prevalence of foreign ownership** and it is compute with the answer to the question: How prevalent is foreign ownership of companies in your country? Being, [1 = very rare; 7 =highly prevalent]. This means, is the dominant tendency is having companies with foreign ownership. In this case, the higher score the more external companies are located in the country.

Now is time to analyse the migration openness, in order to do so we are going to analyse the following variables:

**Adult male migrant stock (%):** Adult male migrant stock refers to the percentage of male migrant stock (above 25 years old) out of its male population in the respective age group.

**Adult female migrant stock (%):** Adult female migrant stock refers to the percentage of female migrant stock (above 25 years old) out of its female population in the respective age group.

And finally with the next two variables we are going to attain if a country attract and retain the most talented people.

**Brain gain:** Compute as the average answer to the question: Does your country attract talented people from abroad? Being, [1 = not at all; 7 = attracts the best and brightest from around the world].

**Brain drain:** as the average answer to the question: Does your country retain talented people? Where, [1 = the best and brightest leave to pursue opportunities in other countries; 7 = the best and brightest stay and pursue opportunities in the country]

To sum up, we are going to look up data to determine which are the countries that, in terms of investments, receive the most and also, transfer this to technology. These countries have also in common a high amount of external companies and high migration. In terms of qualified people, they attract and retain the best. So, the higher the results the most externally open is the country performing and also the better outlook could be forwarded due to its results. The three best countries in terms of external openness are: Singapore, Ireland and Switzerland. On the other hand, the three worst are: Algeria, Iran and Yemen. If we look in more detail the results, the countries are generally classified into developed and non-developed. Being the developed countries in the highest positions, and the least developed in the worsts.

#### 4.4 Formal education

Formal education is classroom-based, the one provided by trained teacher. It is hierarchically structured, chronologically graded 'education system', running from primary school through the university and including, in addition to general academic studies, a variety of specialised programmes and institutions for full-time technical and professional training.

In order to study the formal education of countries we are going to analyse variables related with: Education climate, Internationalisation of education and performance of the education system. The first two variables described below correspond to Education climate.

**Vocational enrolment (%):** Vocational enrolment refers to the total number of students enrolled in vocational programmes at a given level of education, expressed as a percentage of the total number of students enrolled in all programmes (vocational and general) at that level.

**Tertiary enrolment (%):** Tertiary enrolment refers to the ratio of total tertiary enrolment, regardless of age, to the population of the age group that officially corresponds to tertiary level of education. Tertiary education, whether or not to an advanced research qualification, normally requires as a minimum condition of admission, the successful completion of education at the secondary level.

According to the internationalisation of education we use the variable **Tertiary inbound mobility ratio (%)** that refers to the number of students from abroad studying in a given country, as a percentage of the total tertiary enrolment in that country.

Finally, are in charge of analysing the performance of the education system the following last two variables. They analyse the scores in reading, maths and science through the **OCDE Programme for International Student Assessment (PISA)** and they also analyse the

universities thought the **QS world university ranking**. The QS World University Ranking is based on six indicators: Academic reputation from global survey (40%); Employer reputation from global survey (10%); Citations per faculty from SciVerse Scopus (20%); Faculty-student ratio (20%); Proportion of international students (5%); and Proportion of international faculty (5%). The value is derived from the average score of the top three universities per country. If the country has fewer than three universities listed in the QS ranking, the sum of the scores of the listed universities is still divided by three, implying a score of zero for non-listed universities.

The countries with higher results in formal education are: Australia, Canada and Switzerland. Spain is really good classify in relation with other variables, is in position 24 out of 90, a value greater than the mean. The three worst countries in formal education are: Bangladesh, Cambodia and Madagascar.

Very related with formal education is lifelong learning, the next variable that we are going to study.

#### 4.5 Lifelong learning

Education is not only the one teach at schools and universities. It is as important the educative processes endowed with flexible curricula and methodology, capable of adapting to the needs and interests of students or workers, for which time is not a pre-established factor but is contingent upon the work pace, as for instance, home reading, internships and paperwork.

Applying this concept to the company environment, lifelong learning could be related with further education and continuous training development. The variables used in the analysis are the following:

**Quality of management schools:** Average answer to the question: How would you assess the quality of management or business schools in your country? Being, [1 = poor; 7 = excellent – among the best in the world]

**Extent of staff training:** Average answer to the question: To what extent do companies in your country invest in training and employee development? Where, [1 = hardly at all; 7 = to a great extent]

**Firms offering formal training** computed with the index Proportion of firms offering formal training (%)

With the analysis of the data we are going to attain those countries that invest the most in formal staff training and also have the best management schools. This countries are: Switzerland, Finland and Ireland. On the other hand, we have Algeria, Egypt and Yemen with the worst scores. Spain obtains a score of 23 out of 90, almost the same that the score obtained in formal education.

#### 4.6 Sustainability

Sustainability is based on the principle that our survival and well-being depends, either directly or indirectly, on our environment. Sustainability creates and maintains the conditions under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic and other requirements of present and future generations. Applying this concept in more economic terms, the sustainability of a country takes into account taxes and social services. Sustainability is compose by:

**Workforce contributing to pension system (%).** Pension system coverage, in this context, includes only mandatory schemes as voluntary arrangements are not formally integrated into most mandatory social security systems. It is reported as the percentage of active workforce contributing to the pension system.

**Extent and effect of taxation,** computed as the average answer to the question: What impact does the level of taxes in your country have on incentives to work? Being, [1 = significantly limits incentives to work; 7 = has no impact on incentives to work]

**Pay level – head of organisations (deflated by retail price index):** refers to total cash compensation (mid value) for the head of an organisation in US\$.

**Pay level - head of information technology (deflated by retail price index):** refers to total cash compensation (mid value) for the head of information technology of an organisation in US\$.

Analysing the data we are going to get the countries that are more sustainable for the future, due to the high percentage of workforce contributing to the system or the low effects of taxes in the incentives to work. It is also consider the pay level and the effects on the purchasing power. United States, Chile and Switzerland and the three countries with better position in sustainability. Note than Chile has never been in the ranking of the best three

countries. Spain is not very well positioned, 42 out of 90. Lastly Madagascar, Yemen and Bangladesh are the three with worst results.

#### 4.7 Employable skills

This variable is in charge of analysing the education and the related skills of one country workforce. Employable skills are the ones you need to enter, stay in, and progress in the world of work—whether you work on your own or as a part of a team. They are typically attitudes that enable employees to get along with their colleagues, to make critical decisions, solve problems, develop respect and have initiative and enterprise. The variables use to determine the employable skills are the following:

**Secondary-educated workforce** computed with the index Labour force with secondary education (%): Secondary-educated workforce refers to the percentage of labour force (above 15 years old) whose highest educational attainment is secondary level.

**Secondary-educated population** compute with the index Population with secondary education (%). Secondary-educated population refers to the percentage of population (above 25 years old) whose highest educational attainment is secondary level.

**Technicians and associate professionals** compute with the index Technicians and associate professionals (%). Technicians and associate professionals refer to the percentage of technicians and associate professionals out of total employment.

**State of cluster development** denote as the average answer to the question: In your country's economy, how prevalent are well-developed and deep clusters? Where, [1 = non-existent; 7 = widespread in many fields]

The results obtained through the analysis of this variable are bewildered because no one of the best three countries has never ever been on the top positions. They are: Czech Republic, Slovakia and Germany. Stand out that the 5 first positions are all European countries. In spite of, in general, very good position of the European countries, Spain is rank 47 out of 90. Albania, Greece and Portugal are the European countries below Spain. The three with the worst position are: Algeria, Yemen and Uganda.

#### 4.8 Higher skills and competencies

This variable is much related with employable skills, however in this case we analyse the workforce or population with higher qualifications; and the quantity of researcher or workers in high management positions. It also considers the quality of research. The variables are the following:

**Tertiary-educated workforce** compute with the index Labour force with tertiary education (%). Where Tertiary-educated workforce refers to the percentage of labour force (above 15 years old) whose highest educational attainment is tertiary level.

**Tertiary-educated population** compute with the index Population with tertiary education (%). Where Tertiary-educated population refers to the percentage of population (above 25 years old) whose highest educational attainment is tertiary level.

**Professionals (%)**, where professionals refer to the percentage of professionals out of total employment.

**Researchers** compute with the index Full-time equivalent researchers (per million population), where researchers are professionals engaged in the conception or creation of new knowledge, products, processes, methods or systems, as well as the management of these projects. Full-time equivalence (FTE) R&D data is a measure of the actual volume of human resources devoted to R&D, and is especially useful for international comparisons.

**Quality of scientific research institutions:** compute as the average answer to the question: How would you assess the quality of scientific research institutions in your country? Where, [1 = very poor; 7 = the best in their field internationally]

**Scientific and technical journal articles** compute with the index Number of scientific and technical journal articles (per million PPP\$ GDP). Where scientific and technical journal articles refer to the number of scientific and engineering articles published in the following fields: physics, biology, chemistry, mathematics, clinical medicine, biomedical research, engineering and technology, and earth and space sciences. The data is reported per million PPP\$ GDP.

The countries with the highest scores in this field are Israel, United States and Canada. European countries are well positioned, almost all are ranked between the fourth position and 34 out of 90. However Albania is scored 87 out of 90. Spain is in the position number 25. The three countries with the worst scores are: Guatemala, Cambodia and Madagascar.

## 5. CLUSTER RESULTS

Once we have performed the cluster analysis with the eight variables studied, we have get as a result six groups or clusters of countries. The first cluster and the one who corresponds to the best marks obtained is formed by only one country, Singapore. The second group is much more numerous and is formed by 20 countries. These countries are characterised by having very good scores in all the variables of the analysis. The countries are: Switzerland,

United States, Canada, Sweden, United Kingdom, Denmark, Australia, Ireland, Norway, Netherlands, Finland, Germany, Austria, New Zealand, Iceland, Belgium, Estonia, Japan, Israel and Czech Republic. These countries are also the ones that get the highest positions in the global ranking shown in table 1.

The next two groups, cluster 3 and cluster 4 are smaller. Both are characterised by having scores in variables greater than the mean and also, other variables with scores lower than the mean. The denominated cluster 3 is composed by the following 8 countries: Chile, Latvia, Saudi Arabia, Malaysia, Costa Rica, Kazakhstan, Trinidad and Tobago and Brazil. In the global rank these countries are among the 24<sup>th</sup> and the 46<sup>th</sup>.

Cluster 4, is formed by 5 countries and Spain is among them. The countries are: France, Slovenia, South Korea, Spain and Portugal. In the global ranking they are between the position 21 and 31.

Lastly there are two more clusters, these two remaining clusters are characterised by having the average scores of all variables with values lower than the mean. Nevertheless, there is a huge difference between cluster 5 and cluster 6. Countries in cluster 5 are lower than the mean but near to it; and countries of cluster 6 are lower than the mean and very far.

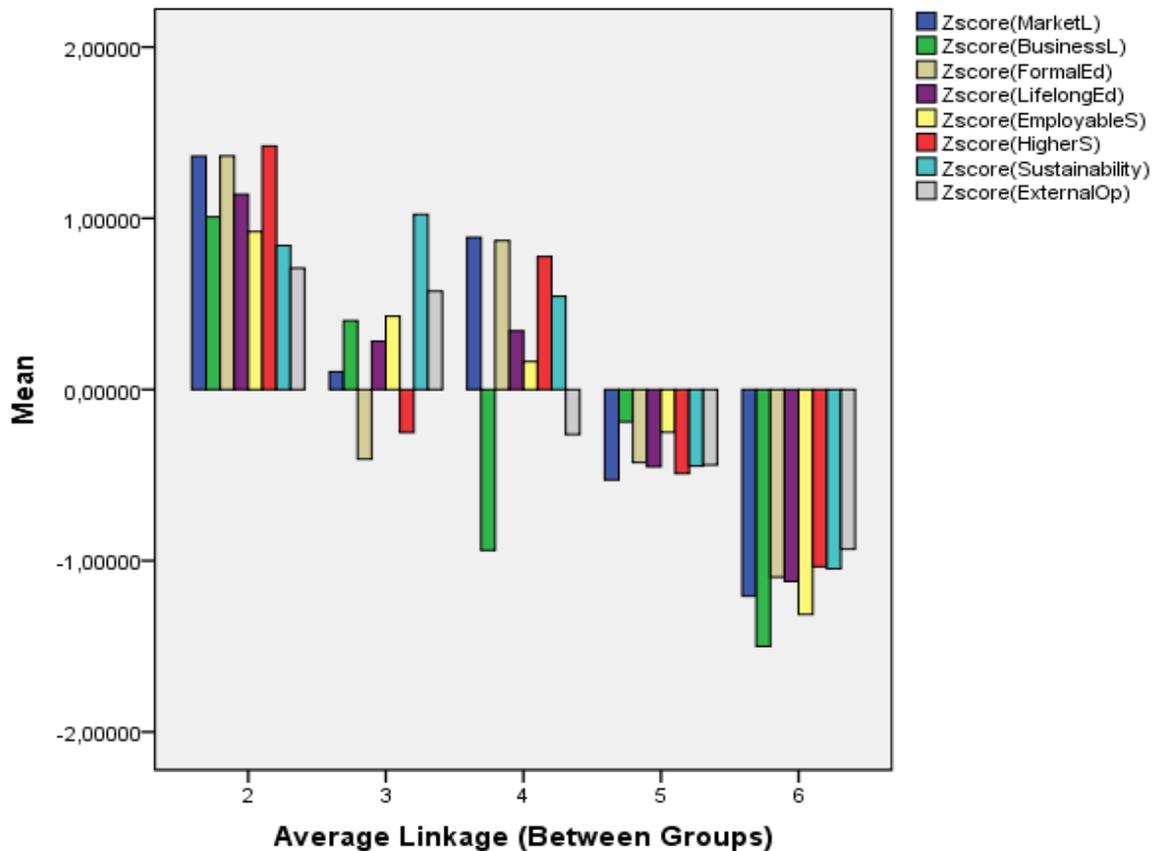
These countries are the ones with the least capacity to attract talent. Cluster 5 is the most numerous one, formed by 45 countries, which are: Slovakia, Hungary, Italy, Lithuania, Poland, China, Panama, Uruguay, Bulgaria, Croatia, Macedonia, Armenia, Greece, South Africa, Colombia, Mongolia, Philippines, Russia, Argentina, Lebanon, Azerbaijan, Turkey, Mexico, Thailand, Moldova, Peru, Romania, Tunisia, Botswana, Ecuador, Dominican Republic, Guatemala, Albania, Ukraine, El Salvador, Namibia, Kyrgyzstan, Vietnam, Sri Lanka, Nicaragua, India, Egypt, Iran, Cambodia, Ghana, Uganda. Finally, cluster 6 is formed by the following 10 countries: Paraguay, Bolivia, Venezuela, Morocco, Indonesia, Pakistan, Bangladesh, Algeria, Madagascar and Yemen. The countries of this cluster are the ones that yield the worst results in the global rank. They are among the 76 and the 90 positions.

From now on and with the view to facilitate the explanation and members of the different clusters, we are not going to call them with numbers. Instead they are going to be: Cluster 1 is going to remain Singapore. Cluster 2 is going to be “Most talent ready countries”. Cluster 3 and 4, as they are very similar, they are going to be: “Middle talent countries A” and “Middle talent countries B”, respectively.

Cluster 5 is going to be denominated as “Lower talent countries” and cluster 6 is going to be “Least talent ready countries”.

In the following graph we can see the representation of the different variables according to each cluster. We have already eliminate Singapore because it gives us not representative result.

Figure 2



### Clusters description

Now we are going to analyse in more detail the variables and scores of each cluster. In the first place **most talent ready countries**. This group of countries is characterised by having scores of all variables above the mean. This means good capacity to attract talent in all the aspects analysed. The variable with the greater score is higher skills and competences, which is in charge of analysing the quantity of population with tertiary education, the number of professional and researchers and the quality of scientific research and its spreading. So this means, that this countries are the ones with the most qualified workers and the most scientific

research. Ranked with a score very similar, are the variables market landscape and formal education. These variables are much related with higher skills and competences because it also analyses education and the ability of a country to invest and absorb technology. At an intermediate position according to all the variables studied are lifelong education, business landscape, employable skills and sustainability. The variable with the lowest score is external openness.

The next group is **middle talent countries A**. This is one out of the two clusters which have both, variables above the mean and variables under the mean. The variable with the highest score and a huge difference among the others is sustainability. Sustainability represents high contribution of workforce to the system and low effect of taxes. At an intermediate position are the variables external openness, employable skills and business landscape. The lowest variables, but still above the mean are: lifelong education and market landscape. Lastly, the variables with negative scores are formal education and higher skills and competences. If we look in detail, we can appreciate that the two highest variables for the cluster “most talent ready countries” are the worst in this group of countries; and perhaps there is the clue of being lower in the rank.

Thirdly we have the group named **middle talent countries B**. Let us see which variables make the difference with the group above. In this case the variable with the highest score is market landscape, followed by formal education and higher skills and competences, all with very good scores. They also attain positive scores: sustainability, lifelong education and employable skills. The variables with negative values are business landscape and external openness.

Looking carefully to the three variables with the highest scores, we can see that they are the same three best variables than the ones of the cluster that corresponds to “most talent ready countries”. In the opposite way, the variable business landscape gets scores under the mean and very negative. The rigidities of the labour market and the suspicion of the companies makes very low scores in these variables. We would come up with interesting conclusions about these three groups and the scores in the different variables in the next section.

Lastly we are going to analyse the two last groups, the ones that are characterised by having all the variables with scores under the mean. In group **lower talent countries** all variables have attained more or less the same values. The variable with the higher score is market landscape and the lower is business landscape. The group **least talent ready countries** have the variables a bit more dispersed, specially the two worst ones are the ones with the highest

distance relating all the others. This two variables are business landscape, the worst, and employable skills a bit better. The best result, taking into account that all of them are very negative, is obtained with the variable external openness.

To sum up we can conclude that the countries of the cluster “most talent ready countries” wager decidedly to get high scores in the eight relevant variables in order to attract, grow and retain talent.

In the case of cluster “Middle talent countries A” they decide to pursue good results in several variables, but not in education. Neither formal education nor professional education.

Countries members of cluster “Middle talent countries B” are characterise by giving low support to companies, but high investments in education.

## 6. TALENT IMPACT & LABOUR PRODUCTIVITY

In this last section our aim is to verify if the variables of attract, grow and retain talent are able to attain the expected results in the country. In order to get this information we are going to analyse two new performance variables. They are: Talent impact and Labour productivity.

**Talent impact** is related with the effects of qualified people or activities in a company. In business terms is related with the ability of decision-making solutions to forecast talent needs, engage employees for maximum productivity, mobilize workforce for strategic growth, reward key performers, assess organizational talent, and develop skills.

Talent impact is computed as the aggregate of innovation, entrepreneurship, new business and sophisticated exports that the country is performing. Where sophisticated exports are net exports of high technology manufactures.

The countries with innovative techniques and entrepreneurship activity are the ones with greater score. The countries with the highest score in this variable are: China, Switzerland and United Kingdom. Spain is ranked at position 49.

On the other hand, **labour productivity** is define as the amount of goods and services produced by one hour of labour. It is an analytical tool to measure the economic growth of a country, more specifically measures the amount of real GDP produced by one hour of labour. Labour productivity is much related with technological innovation, labour resources,

investments and human capital. It is very useful to compare efficiency of different countries. An upward in labour productivity could lead to a rising cost of living. As a result the labour productivity is computed considering the variables: productivity per employee, relationship between salaries and productivity and vocational skill-intensive exports. Where vocational skill-intensive exports is define as net exports of low and medium technology manufactures.

The best countries in labour productivity are: United States, Japan and Switzerland. Spain is the 26<sup>th</sup>.

Our hypothesis is that members of cluster “most talent ready countries” are going to attain the best results in this two indicators, and with a huge difference in relation with others clusters.

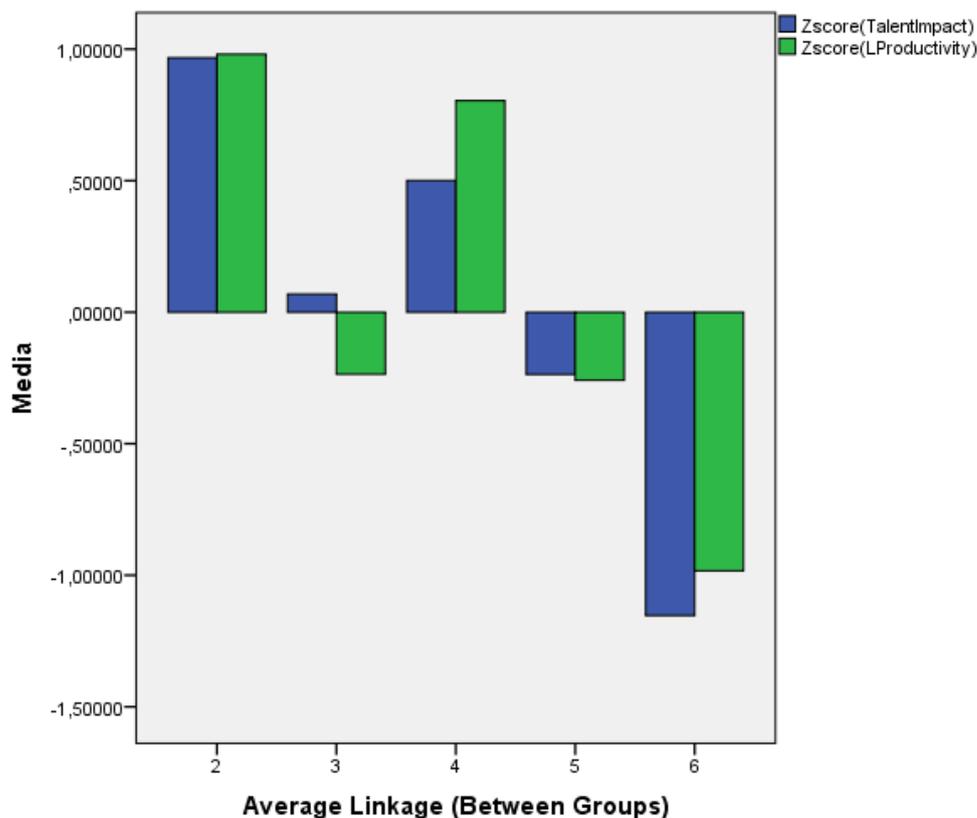
The question that we have to gather is: Have the 5 clusters a different behaviour in this two indicators of talent performance?

Logically we could think that the cluster “most talent ready countries” would have positive results in both variables, and by contrast, the cluster “lower talent countries” would have very low scores, especially in the case of cluster “least talent ready countries”.

According to clusters 3 and 4, “medium talent countries” We have a more precise question, Is better formal education investment, as Spain does, for example? Or is it better to attain good scores in business landscape as countries of cluster A?

The following graph is going to show us the result:

Figure 3



The results of clusters 2, 5 and 6 are the ones supposed to be. The cluster that corresponds to most talent ready countries is positive in both variables in correlation with the eight variables studied in the first analysis. As well, clusters 5 and 6 are supposed to be negative and they are also correlated with the former analysis. Cluster 6 is much more negative than cluster 5.

We could sum up that talent investment is reflected in better productivity, more entrepreneurship and innovation.

The important fact is in cluster 3 and 4. Cluster 4 has better much results than 3, in spite of having similar results in the general ranking. This is due to the fact that countries that corresponds to the cluster medium low development countries devoted more resources to important variables to attract, grow and retain talent. The important variables to make this happen are: higher skills and competencies, formal education and market landscape. This three variables are the highest ones in cluster higher development countries and middle low development countries. This two clusters are the ones with positive results in both, talent

impact and labour productivity. Nevertheless, the cluster that corresponds to middle talent countries A has a medium score in talent impact and negative results in labour productivity. These results are verify with the Anova analysis through the analysis of the variance. With the Anova analysis we are going to be able to know by another way the mean of this two variables. The results are shown in the following table:

Table 2

<b>Labour productivity ANOVA</b>	<b>Media</b>	<b>Standard deviation</b>
Most talent ready countries	0,9806136	0,57504109
Middle talent countries A	-0,2355144	0,48900476
Middle talent countries B	0,8036431	0,35867794
Lower talent countries	-0,2590344	0,91718539
Least talent countries	-0,9830790	0,81768263

<b>Talent impact ANOVA</b>	<b>Media</b>	<b>Standard deviation</b>
Most talent ready countries	0,9673455	0,43826930
Middle talent countries A	0,0692255	1,18159850
Middle talent countries B	0,5008049	0,49910537
Lower talent countries	-0,2363803	0,88514751
Least talent countries	-1,1531244	0,52166463

As we can see all the values are correlated with the values of talent impact and labour productivity attain through the cluster analysis.

## 7. FINAL CONCLUSIONS

Once we have analysed all variables and we have get groups of countries we could come up with general conclusions. One fact to take into account is that the scores achieve in talent are directly correlated with its GDP. So the greater is the availability to invest in variables such as education, investments in research and innovation, and business facilities framework; the most competitiveness in talent your country is going to be.

We can determine that education is the most important field to develop in order to be successful. The importance of this aspect is represented for example in the case of Spain. Spain is characterise by devoting decidedly more resources in education, and much more less in other areas; this position is against Brazil for example, that takes part of cluster “middle talented countries A” and is characterise by pursuing a strategy in order to attach good scores

in all variables.

The most significant scores of Spain data are, on one hand the variables with a score higher than 80 points: difficulty of redundancy, quality of management schools, quality of live and sanitation; and on the other hand, the variables with the lowest scores are: foreign direct investment inflow, international student inflow and new business density. To sum up, Spain has good business conditions and high quality in education. Nevertheless, the most important lack is in external openness. The fact of low score in new business density could be related with the impact of global economic crisis.

Brazil is characterised by a divide society reflected in very high scores of pay level in head of organisations. The variables with scores lower than 20 are: venture capitals deals, ease of doing business, male adult migrants, female adults migrants, international student inflow, labour productivity per employee, researchers, new product entrepreneurial activity, new business density and sophisticated export. Therefore, the main problem is not achieving good scores in any “important” variable and having too much variables with very low scores. The solutions for Brazil might be through investment in education, and thus this would have an impact in more scientific investigation and more high qualified professionals.

Another interesting country is Ireland. Ireland is not very good consider in terms of the European Union and takes part of the “PIGS”. However it is rank in the 10<sup>th</sup> position. It is able to get this scores thanks to a very good performance in many variables. The most important variables with score higher than 80 are: government effectiveness, political stability, venture capital deals, ICT access, foreign direct investment and firms offering formal training; among others.

To sum up, we determine that talent is a practical tool to ensure brighter prospects for future generations. The most ideal performance would take place with a stable landscape and flexible business environment. So as to grow effectively talent management, training must be ensure and countries must be keen on developing a strong performance in primary schools and also business and engineering schools. Retain must also be guarantee because it gives citizens better quality of life.

Education is the best way to grow the talent countries need. Moreover openness is crucial in order to guarantee labour and talent mobility. Such as important is to match and grow up in a correlated way the needs of the economy and the country with the development of talent. Continuous education with lifelong training is also crucial to increase opportunities of employees and guarantee the continuous growth of talent.

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## 9. ANNEXES

### Annex 1: Sub-index composition variables

#### 1. Enablers

##### 1.1 Regulatory Landscape

1.1.1 Government effectiveness: The government effectiveness index captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.

1.1.2 Business-government relations: Average answer to the question: In your country, how would you best characterise relations between businesses and government

1.1.3 Political stability: The political stability and absence of violence index captures perceptions of the likelihood that the government will be destabilised or overthrown by unconstitutional or violent means, including politically motivated violence and terrorism.

1.1.4 Starting a foreign business: The ease of establishment index evaluates the characteristics of regulatory regimes for business start-up.

##### 1.2 Market Landscape

###### 1.2.1 Intensity of local competition

Average answer to the question: How would you assess the intensity of competition in the local markets in your country?

1.2.2 Venture capital deals: Number of deals (per billion PPP\$ GDP) | 2013

1.2.3 Firm-level technology absorption: Average answer to the question: To what extent do businesses in your country absorb new technology?

1.2.4 R&D expenditure. Gross expenditure on R&D (%) | 2011

1.2.5 ICT access: ICT access index | 2012

1.2.6 Ease of doing business: Ease of doing business index | 2014

##### 1.3 Business Landscape

1.3.1 Difficulty of hiring: Difficulty of hiring index | 2014

1.3.2 Difficulty of redundancy: Difficulty of redundancy index | 2014

1.3.3 Labour-employer cooperation: Average answer to the question: In your country, how would you characterise labour-employer relations?

1.3.4 Reliance on professional management: Average answer to the question: In your country, who holds senior management positions?

#### 2. Attract

##### 2.1 External Openness

2.1.1 FDI inflow: FDI inflows (%) | 2012

2.1.2 FDI and technology transfer: Average answer to the question: To what extent does foreign direct investment (FDI) bring new technology into your country?

2.1.3 Prevalence of foreign ownership: Average answer to the question: How prevalent is foreign ownership of companies in your country?

2.1.4 Male adult migrants: Adult male migrant stock (%) | 2013

2.1.5 Female adult migrants: Adult female migrant stock (%) | 2013

2.1.6 Brain gain: Average answer to the question: Does your country attract talented people from abroad?

2.1.7 Brain drain: Average answer to the question: Does your country retain talented people?

## 2.2 Internal Openness

2.2.1 Tolerance to minorities: Percentage of respondents who answered yes for the question: Is the area where you live a good place for racial and ethnic minorities to live?

2.2.2 Tolerance to immigrants: Percentage of respondents who answered yes for the

2.2.3 Female graduates: Female tertiary graduates (%) | 2012

2.2.4 Female-to-male earnings ratio: Estimated earned income ratio | 2013

2.2.5 Social mobility: Average answer to the question: To what extent do individuals in your country have the opportunity to improve their economic situation through their personal efforts regardless of the socioeconomic status of their parents?

## 3. Grow

### 3.1 Formal Education

3.1.1 Vocational enrolment: Vocational enrolment (%) | 2012

3.1.2 Tertiary enrolment: Tertiary enrolment (%) | 2012

3.1.3 International student inflow. Tertiary inbound mobility ratio (%) | 2012

3.1.4 Reading, maths and science scores: PISA average scales in reading, mathematics and science

3.1.5 University ranking: QS world university ranking | 2013

### 3.2 Lifelong Learning

3.2.1 Quality of management schools: Average answer to the question: How would you assess the quality of management or business schools in your country?

3.2.2 Extent of staff training: Average answer to the question: To what extent do companies in your country invest in training and employee development?

3.2.3 Firms offering formal training: Proportion of firms offering formal training (%) | 2013

### 3.3 Access to Growth Opportunities

3.3.1 Use of virtual social networks: Average answer to the question: How widely used are virtual social networks (e.g., Facebook, Twitter, LinkedIn) for professional and personal communication in your country?

3.3.2 Number of LinkedIn users: LinkedIn users (per 1,000 labour force)

3.3.3 Willingness to delegate authority: Average answer to the question: In your country, how do you assess the willingness to delegate authority to subordinates?

3.3.4 Voicing concern to officials: Percentage of respondents who answered yes for the question: Have you voiced your opinion to a public official in the past month? | 2013

#### 4. Retain

##### 4.1 Sustainability

4.1.1 Pension system: Workforce contributing to pension system (%) | 2012

4.1.2 Extent and effect of taxation: Average answer to the question: What impact does the level of taxes in your country have on incentives to work?

4.1.3 Pay level – head of organisation: Pay level (deflated by retail price index)

4.1.4 Pay level – head of information technology: Pay level (deflated by retail price index)

##### 4.2 Lifestyle

4.2.1 Environmental performance: Environmental performance index | 2014

4.2.2 Safety at night: Percentage of respondents who answered yes for the question: Do you feel safe walking alone at night in the area where you live?

4.2.3 Female part-time workers: Female share of part-time employment (%)

4.2.4 Physician density: Physicians (per 1,000 people) | 2012

4.2.5 Improved sanitation: Population with access to improved sanitation facilities (%)

#### 5. Labour and Vocational Skills

##### 5.1 Employable Skills

5.1.1 Secondary-educated workforce: Labour force with secondary education (%) | 2012

5.1.3 Technicians and associate professionals: Technicians and associate professionals

5.1.4 State of cluster development: Average answer to the question: In your country's economy, how prevalent are well-developed and deep clusters?

##### 5.2 Labour Productivity

5.2.1 Labour productivity per employee: Labour productivity per person employed

5.2.2 Relationship of pay to productivity: Average answer to the question: To what extent is pay in your country related to productivity?

5.2.3 Vocational skill-intensive exports: Low and medium technology manufactures (%)

#### 6. Global Knowledge

##### 6.1 Higher Skills and Competencies

6.1.1 Tertiary-educated workforce: Labour force with tertiary education (%)

6.1.2 Tertiary-educated population: Population with tertiary education (%)

6.1.3 Professionals: Professionals (%) | 2012

6.1.4 Researchers: Full-time equivalent researchers (per million population)

6.1.5 Legislators, senior officials and managers: Legislators, senior officials and managers (%) | 2012

6.1.6 Quality of scientific research institutions: Average answer to the question: How would you assess the quality of scientific research institutions in your country?

6.1.7 Scientific and technical journal articles: Number of scientific and technical journal articles (per million PPP\$ GDP) | 2011

##### 6.2 Talent Impact

6.2.1 Innovation output: Innovation output sub-index | 2013

6.2.2 New product entrepreneurial activity: New product entrepreneurial activity (%) | 2013

6.2.3 New business density: New corporate registrations (per 1,000 working-age population)

6.2.4 Sophisticated exports: High technology manufactures (%) | 2013

## Annex 2: Countries code

COUNTRY	CODE				
Albania	AL	Guatemala	GT	Poland	PL
Algeria	DZ	Hungary	HU	Portugal	PT
Argentina	AR	Iceland	IS	Qatar	QA
Armenia	AM	India	IN	Romania	RO
Australia	AU	Indonesia	ID	Russia	RU
Austria	AT	Iran	IR	Saudi Arabia	SA
Azerbaijan	AZ	Ireland	IE	Singapore	SG
Bangladesh	BD	Israel	IL	Slovakia	SK
Belgium	BE	Italy	IT	Slovenia	SI
Bolivia	BO	Japan	JP	South Africa	ZA
Botswana	BW	Kazakhstan	KZ	South Korea	KR
Brazil	BR	Kyrgyzstan	KG	Spain	ES
Bulgaria	BG	Latvia	LV	Sri Lanka	LK
Cambodia	KH	Lebanon	LB	Sweden	SE
Canada	CA	Lithuania	LT	Switzerland	CH
Chile	CL	Luxembourg	LU	Thailand	TH
China	CN	Macedonia	MK	Trinidad and	
Colombia	CO	Madagascar	MG	Tobago	TT
Costa Rica	CR	Malaysia	MY	Tunisia	TN
Croatia	HR	Mexico	MX	Turkey	TR
Czech Republic	CZ	Moldova	MD	Uganda	UG
Denmark	DK	Mongolia	MN	Ukraine	UA
Dominican		Morocco	MA	United Arab	
Republic	DO	Namibia	NA	Emirates	AE
Ecuador	EC	Netherlands	NL	United Kingdom	GB
Egypt	EG	New Zealand	NZ	United States	US
El Salvador	SV	Nicaragua	NI	Uruguay	UY
Estonia	EE	Norway	NO	Venezuela	VE
Finland	FI	Pakistan	PK	Vietnam	VN
France	FR	Panama	PA	Yemen	YE
Germany	DE	Paraguay	PY		
Ghana	GH	Peru	PE		
Greece	GR	Philippines	PH		

