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Economic Growth and Intangible Capitals: Europe versus Asia

Summary: At present, the international growth model includes important restrictions about the consideration of GDP as a unique tool for measurement. In this sense, taking into consideration the wealth of a country, we must add intangibles such as human development, country image, employment conditions, environmental, innovation, public sector efficiency, and synergies to the variable production, which is defined as national intellectual capital. In this paper, we use a mathematical model of intellectual capital to determine, in monetary terms, the intangible elements that have a greater impact on long-term economic development in European and Asian countries. We have the main limitation of available information and we provide objective results using statistical method. By identifying these components, countries will be able to redirect their policies toward achieving sustainable long-term growth. The results show that the long-term growth of both continents are strongly dependent on the skills of their human resources, but register differences in structural factors such as trade, innovation, or environment.

Key words: Economic growth, Intellectual capital, East and West Europe, Asia, Wealth.

JEL: F02, J24, O3, O57.

When making economic comparisons between countries, the gross domestic product (GDP) is one of the basic variables that many studies consider in measuring economic development. That is, the economic development of a country has been associated to its economic growth measured usually in terms of GDP *per capita* (GDP_{pc}). However, development involves a process of change that takes place in various ways in different countries, and at all levels. Therefore, we require measures that provide information about how such development takes place. In this sense, the term "national intellectual capital" has become enormously important as a complement to explain such economic development.

In this sense, GDP does not expressly include variables such as human development, integration of information in homes, industrial framework, quality of life or environment. As a result, institutions such as the World Bank are working toward creating an indicator that captures all factors that influence the development and the growth in wealth of a nation. The idea is not only to account for such aspects but also to understand how they interact. We can no longer continue to believe that using up the natural resources of a country that exports them makes it richer.

Our growth model is based on two situations, the wealth of a country is the sum of the production values and intangible capitals and their synergies, gathering tangible and intangible factors. In this respect, Leif Edvinsson and Michael S.

Malone (1997) propose a model for companies using a similar approach: intellectual capital is defined as the difference between market value and book value. Moreover, it is a divergent model because the growth in terms of production comes explained by such capital. Otherwise, the best positioned countries in terms of GDP_{pc} will be well positioned on intellectual capital and, more importantly, the growth will depend on these factors.

This paper uses intellectual capital to compare the economic development of countries in Europe and Asia. We have considered three groups of countries from Eastern Europe, Western Europe, and Asia. We have analyzed the differences between these groups of countries using a mathematical model. Panel data models have also been employed to analyze the relationship between economic growth and the various intangibles that make up intellectual capital, such as those of Kosta Josifidis, Radmila Dragutinović Mitrović, and Olgica Ivančev (2012), which explores the heterogeneity of growth in the Western Balkan and Emerging European economies in the period 1997-2009.

1. Literature Review

Economic growth cannot be confined exclusively to measures in terms of GDP, as indicated by Joseph Stiglitz (2003), but must consider other sources of wealth supported by sustainable growth standards and the development of democracy, such as knowledge, education, employment creation, and public sector efficiency.

Therefore, a nation's wealth cannot be measured only in economic terms, as it is necessary to consider other factors such as the real abilities of citizens, the chance of attaining sustainable development, and a country's technological potential. In this sense, two contributions have attempted to disclose the non-measurable elements of economic growth. In a neoclassical framework, the Solow residual (Robert M. Solow 1956) considers that long-term growth depends exogenously on technological progress and population growth, whereas another strand of literature has focused entirely on investment in R&D, human capital, knowledge spillovers, and their impact on growth. As a result, a debate has arisen regarding endogenist and exogenist growth, with different interpretations insofar as how to reach the stationary state. Paul M. Romer (1986) and Robert E. Lucas (1988) determine that capital investment and the accumulation of knowledge or human capital are a source of endogenous growth, both indicating that growth diverges. However, in response, Moses Abramovitz (1986) and William J. Baumol (1986), among others, defend unconditional convergence using these studies as a basis, thus renovating the exogenous growth theory.

Taking into account these theories and using intellectual capital (IC) as a basis, we align this paper with the theory of endogenous growth, the management of said capital turning out to be a diverging factor for economic development. That is, the richer countries are more efficient in the management of their intangibles, earning from them a multiplier effect that avoids the convergence to a stationary space. In this line, we consulted the works of Carol Yeh-Yun Lin and Edvinsson (2010) and Victor-Raúl López Ruiz et al. (2011).

Several papers emphasize the importance of intellectual capital, or some of its components, in economic development. Thus, Roberta Capello and Peter Nijkamp

(2009) used human and knowledge capitals; Jovan Filipović, Srečko Devjak, and Goran Putnik (2012) analyzed human talent as factor of sustainable wealth; Marta C. N. Simões (2011) estimated a positive relationship between higher education level and growth to OECD countries; Philip Cooke et al. (2007) used mainly knowledge; Zoltan J. Acs, Henri L. F. de Groot, and Nijkamp (2002) applied innovation. As Christiaan Stam and Daan Andriessen (2009, p. 490) put it: "the main motivation for measuring the IC of nations is to get insight into the relative advantage of countries or regions".

Therefore, GDP has important limitations that have prompted the consideration of other measures such as the intellectual capital of nations. This allows for more accurate conclusions and even, in some cases, a different analysis from that based solely on GDP.

Currently, all the studies that compare the economic development of different countries have either considered GDP to measure economic development or made comparisons, taking into account factors such as human capital, industry, and foreign trade (Usha Jayachandran 2002; María-Carmen Guisan, María-Teresa Cancelo, and Pilar Expósito 2007). Other papers talk about the creation of a Eurasian supercontinent (Johannes F. Linn and David Tiomkin 2006) therefore requiring a better understanding of development factors in both continents or institutions. However, there are approaches such as that taken by Lin and Edvinsson (2010), which have begun to use and to quantify the intellectual capital of each country so as to facilitate analysis, improve policy development, and anticipate future crises.

This article goes beyond a comparison of continents by aiming to determine the factors that have the greatest impact on economic growth across different countries, in terminus of GDP_{pc}. The results allow us to determine which components of intellectual capital are the most significant in each group of countries and where governments should invest further to avoid differences between emerging countries. By doing so, we may offer another approach to explaining the differences in the economic development of countries, which will make it possible to improve the strategic orientation of their policies.

2. Measuring Intellectual Capital

The theoretical model used to measure national intellectual capital (NIC) is based on models of firms on intellectual capital management and competitiveness analysis, under the theoretical and conceptual view of national intangible capital as an "invisible value". We begin with the following equation in order to define the wealth (W) in *per capita* terms (*pc*) of a nation (*n*) in period (*t*) as economic production (GDP) plus (NIC):

$$Wpc_{nt} = GDPpc_{nt} + NICpc_{nt}\,. \tag{1}$$

Following this method, two large groups of capital are identified as intangible: human capital (HC) and structural or non-human capital (SC). Structural capital, due to its nature, will undergo the most changes in the case of nations.

$$NICpc_{nt} = HCpc_{nt} + SCpc_{nt}\,. \tag{2}$$

Human capital encompasses knowledge, skills, and personal development toward achieving objectives (that is, qualifications - QHC). It also includes cultural values, national labour market conditions, and resource inflows from workers abroad (that is, the labour market - MHC).

On the other hand, structural capital covers several intangibles related to the socio-economic framework of a country, namely, the non-human structure that enables a country to generate future benefits: business structure, bureaucracy, image, international market share, technology, innovation, and sustainability. This capital has been divided into:

(i) Process capital (PrC), which focuses generally on a country's private sector structure. More specifically, it measures information and management systems, bureaucracy and also organizational structures. In this case, the information available makes difficult its estimation. We use capitalisation or market value of resident firms as absolute terms and as variables to built efficiency indicator: time of start a business and ICT conditions (mobile and Internet use);

(ii) Relation or trade capital (RC), which captures the quality of the balance of trade with positive information about high technologies exports, and negative information about development aids;

(iii) Marketing or image capital (MC), which contemplates a country's domestic as well as foreign image and international relations. In this case, we use a relevant complex index built by the World Economic Forum about "tourism and travel possibilities" as variable for efficiency indicator;

(iv) Research, development, and innovation capital (RDC), which explicitly measures innovation, research, and development possibilities through investment and how efficiently existing resources are exploited with the information available for the countries considered that it has been reduced to mobial and land conections as well as Internet users;

(v) Social and environmental capital (SEC), which is determined by the social commitment of the social welfare state in relation to the quality of life of its inhabitants, together with action related to the environment and sustainable development. The situations about health systems' access and the life expectancy, together with the conditions for safeguarding the environment, are the determinants of this capital.

The next step is to establish the variable scorecard (Table 1) in order to determine the intangibles considered in Equation (2). Following the intellectual capital model, the first column defines the intangibles to be estimated as generators of long-term benefits. We then justify each of these generators or intangibles in theoretical terms.

Finally, overcoming the main problem related to obtaining information, two kinds of variables are used to estimate two types of indicators: absolute indicators (AI), in monetary terms, and efficiency indicators (EI), on a percentage scale. In or-

der to obtain the latter, only when variables do not have a percentage scale, they are rescaled assigning 100 to the highest value and 0 to the lowest. As a result, all the variables generated by the indicators have values ranging from 0 to 100 (minimum and maximum). That is, the maximum must coincide with the highest score obtained by the country with the highest value in the sample for the year in question, whereas the minimum will coincide with the countries that record the lowest scores.

Table 1 Scorecard for National Intangibles

Intangibles	Theoretical justification	Variables	
		Absolute	Efficiency
Human capital			
Knowledge	Qualifications	Education expenditure Capital formation Internal human capital (UNESCO)	Literacy index (adjusted gross school enrolment) (UNESCO)
Skill	Motivation and employability	Non residential wage mass and remittances Human capital exported	Activity rate (UN)
Development	Excess employability		Adjusted migration (UN)
Process capital			
Reporting and management systems	System/structure quality	Capitalisation/market value over resident firms as of 31st December	Adjusted firm start-up time GDP ranking
Organizational structure	Level of management: technology		Line index: adjusted mobile and land lines/inhabitant
			Internet users per 100 inhabitants
Relational or trade capital			
Client portfolio	Product brand name quality	Trade balance in goods and services	High technology export index
			1-development aid index
Marketing or image capital			
Image and international institutional relations	Internal image	Foreign direct investment	GDP ranking
			Life expectancy index
	External image		Travel and tourism infrastructure index (WEF)
Research, development and innovation capital			
Innovation, research and development	Level of innovation and development	Investment in R&D&I (UNESCO)	Line index: adjusted mobile and land lines/inhabitant
	Technological level		Internet users per 100 inhabitants
Social and environmental capital			
Social and environmental responsibility	Environment	Health expenditure (WHO)	CO_2 emissions *per capita*
	Sustainability		Hectares of green areas/habitant
	Quality of life, welfare society		Life expectancy index
			Access to health system in rural areas
			Access to water

Note: Sources in brackets if not World Bank.

Source: Own elaboration.

Each intangible capital was obtained by the process presented for the first time for Skandia by Edvinsson and Malone (1997) and was later modified in the method of Integrated Analysis by López Ruiz and Domingo Nevado Peña (2008) and José-Luis Alfaro Navarro, López Ruiz, and Nevado Peña (2011).

$$C = \sum_{c=1}^{m} AI_c \cdot EI_c, \text{ with } EI_c = \sum_{i=1}^{k} w_i PC_{ic}, \tag{3}$$

where w_i is the percentage of variance retained by each component (a total of k, the same number as variables) and $PC_{ic} = \sum_{i=1}^{k} u_i x_i$.

Therefore, human or structural capitals (C) are estimated by one or m absolute indicators (AI), filtered by k efficiency indicators synthesized into only one indicator, and weighted in accordance with an objective weighting w. Thus, we propose an objective procedure to establish the weights in the synthesis of the efficiency indicator. The procedure followed to allocate weights to efficiency indicators is based on a principal component analysis (PCA), which makes it possible to assign weights to each indicator highly objectively. More specifically, bearing in mind that it is impossible to directly assign weights to each efficiency indicator, we proceeded to transform them into the same number of principal components (PC), where u_i are the characteristic vectors of each principal component and x_i the variables used to build the efficiency indicators (collected on last column in Table 1). As a result, we can obtain efficiency indicators to filter the absolute indicators, which are far from being as subjective as the person performing the analysis due to being based on a widely used technique in economics: principal component analysis.

Finally, the international model of wealth, in *per capita* terms (*pc*), proposed for (*n*) countries, in period (*t*), is the following:

$$Wpc_{nt} = GDPpc_{nt} + \left[\begin{array}{l} \left(QHCpc_{nt} + MHCpc_{nt}\right) + \\ +\left(PCpc_{nt} + RCpc_{nt} + MCpc_{nt} + RDCpc_{nt} + SECpc_{nt}\right) \end{array} \right] \tag{4}$$

where each capital is obtained using Equation (3).

This equation allows us to determine the value of wealth using GDP and other important elements for wealth not considered in the GDP. All of these elements are calculated in *per capita* terms and constant dollars in order to be able to compare different countries and times.

3. Intangible Capitals: Europe versus Asia

In the analysis of European and Asian countries, we have prepared a database using information from the World Bank - WB (1998, 2006), the United Nations - UN (2011)[1], and the World Economic Forum - WEF (2011) for the period 2000-2008.

[1] **United Nations.** 2011. "UN Data. A World of Information." http://data.un.org/ (accessed January 15, 2013).

More specifically, we have considered information for the years 2000, 2005, and 2008, in order to construct a panel data model.

The information refers to 49 countries that were selected considering statistical data availability limitations and grouped into three geographical groups:

(a) East European countries: Armenia, Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Greece, Hungary, Latvia, Lithuania, Poland, Romania, Slovak Republic, Slovenia, and Ukraine;
(b) West European countries: Austria, Belgium, Denmark, Finland, France, Germany, Iceland, Ireland, Italy, Luxemburg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and United Kingdom;
(c) Asian countries: China, Georgia, Hong Kong, India, Indonesia, Israel, Japan, Kazahstan, Korea Republic, Kyrgyz Republic, Malaysia, Mongolia, Pakistan, Russian Federation, Saudi Arabia, Thailand, and Turkey.

For each country, we have estimated national intellectual capital and its components in *per capita* terms and constant dollars. As a result, we can compare the values of intangible capitals across different countries.

In order to detect the most important intellectual components in the differences between the groups of countries, we explored whether they displayed significant differences in the averages reached in 2008. In the first place, Table 2 shows the homogeneity test of the variance within groups, a necessary condition in order to be able to use the F statistic in order to compare their averages. We can see how the null hypothesis of homogeneity was rejected in several cases. Therefore, in this case, we have used the Welch statistic and, in the other case, the F statistic to compare the averages.

Table 2 Test of Homogeneity of Variance; Levene's Statistic

Variable	Levene's statistic	Sig.
GDP_{pc}	1.913	.159
NIC_{pc}	2.828	.069
HC_{pc}	5.044	.010
SC_{pc}	2.877	.066
QHC_{pc}	2.855	.068
MHC_{pc}	3.920	.027
PrC_{pc}	2.519	.092
RC_{pc}	11.388	.000
MC_{pc}	3.860	.028
RDC_{pc}	11.334	.000
SEC_{pc}	4.896	.012

Source: Own elaboration.

The Welch or F statistics displayed in Table 3, at the critical level of 0.05, verifies the existence of significant differences between the groups for several variables.

Table 3 Test of Average Equality (ANOVA); F or Welch Statistic

Variable	Statistic	Statistics value	Sig.
GDP_{pc}	F	39.924	.000
NIC_{pc}	F	2.849	.068
HC_{pc}	Welch	28.391	.000
SC_{pc}	F	2.490	.094
QHC_{pc}	F	49.955	.000
MHC_{pc}	Welch	4.763	.017
PrC_{pc}	F	1.973	.151
RC_{pc}	Welch	5.180	.014
MC_{pc}	Welch	.523	.599
RDC_{pc}	Welch	24.309	.000
SEC_{pc}	Welch	35.919	.000

Source: Own elaboration.

More specifically, the results show that there is a significant difference between the groups of countries if we measure wealth using GDP_{pc}. That is, for this measure, the average values of the different groups are very different. However, if we measure wealth using intellectual capital, we observe no significant difference between groups. In relation to these measurements, we can emphasize that West European countries record the highest values in terms of GDP_{pc} and national intellectual capital (NIC_{pc}). Notwithstanding, if we use GDP to measure wealth, East Europe registers a higher value than Asian countries, whereas the opposite is true if we use intellectual capital as a measure.

If we analyze each component of intellectual capital, we find that the differences appear in terms of human capital. In structural capital, as a set, there are no differences. This indicates the importance of human component in the wealth because the higher value for this capital appears in the West European countries that they have the higher values in terms of GDP_{pc} and NIC_{pc}.

In relation to structural capital elements, there are no significant differences in terms of process and image capitals, confirming the greater similarity of these elements. On the contrary, the largest differences appear in trade; country research, development and innovation; social and environmental capitals. West Europe records the highest value followed by Asia and East Europe in the trade and research capitals, whereas in the case of environmental capital, East Europe has a higher value than Asia. These results show that the largest differences between Europe and Asia can be found in these capitals. More specifically, in all of these capitals, the differences between East and West Europe and between West Europe and Asia are significant. However, the differences between East Europe and Asia are not significant. In the case of human capitals, the situation is the same, that is, there is a significant difference with the same behaviour as we described previously in the knowledge, skill, and personal development capital, but no significant difference between countries in the case of labour market capital. These results lead to the conclusion that Asian countries must focus on knowledge, skill, and personal development; trade; research, development, and innovation; social and environmental capitals in order to reach the level of wealth of the West European countries.

4. The Impact of Intangible Capitals on Economic Growth: Europe versus Asia

Using panel data information for the 49 countries in the years 2000, 2005, and 2008, we studied the relationship between the components of intellectual capital, valued according to Section 3, and growth in terms of GDP_{pc}. More specifically, we have considered three models in which the endogenous variable is GDP_{pc}, analyzing its relationship with the different components of human capital (Regression 1), structural capital (Regression 2), and human and structural capitals as a whole (Regression 3). In addition, in order to analyze the intellectual capital components that have the most influence on Asian and European economic growth, we have estimated the regressions considering Asian countries (Table 4) and European countries divided into: East (Table 5) and West regions (Table 6).

Table 4 Asian; Relationships between Intellectual Capital Components and GDP (per capita at Constant Dollars)

Components	Regression 1: human capital		Regression 2: structural capital		Regression 3: intellectual capital	
	Coefficient (elasticity)	T-stat	Coefficient (elasticity)	T-stat	Coefficient (elasticity)	T-stat
Qualifications (QHC)	**26.9417 (1.1087)**	**46.3424**				
Motivation and employability Excess employability (MHC)	-158.473 (-0.1326)	-4.8638			**20.8229 (0.8744)**	**27.2674**
Process (PrC)			-0.07144 (-0.0717)	-2.6847		
Relational (RC)			3.94904 (0.1583)	9.43726		
External and internal image (MC)			2.57988 (0.1372)	7.05468	0.07416 (0.0845)	7.2180
Research, development and innovation (RDC)			**22.7720 (0.2951)**	**5.24294**		
Social and environmental (SEC)			**12.5069 (0.4773)**	**4.85029**		
R^2	0.9680		0.9705		0.9714	
d-statistic	0.990		1.144		0.950	

Note: Generalized least squares; total panel observations: 51 (3x17). In bold, elasticity values are more significant in relationship. Elasticities estimates as product of coefficients and ratio between averages of independent and dependent variables.

Source: Own elaboration.

Table 5 Europe (West); Relationships between Intellectual Capital Components and GDP (per capita at Constant Dollars)

Components	Regression 1: human capital		Regression 2: structural capital		Regression 3: intellectual capital	
	Coefficient (elasticity)	T-stat	Coefficient (elasticity)	T-stat	Coefficient (elasticity)	T-stat
Qualifications (QHC)	**12.4683 (0.6966)**	**25.8632**				
Motivation and employability Excess employability (MHC)	18.1974 (0.0702)	7.1196			**12.3508 (0.7377)**	**24.162**
Process (PrC)			-0.0153 (-0.0093)	-0.62^{NS}		
Relational (RC)			**2.38439 (0.1227)**	**14.0548**		
External and internal image (MC)			0.04359 (0.0129)	2.2572	0.0444 (0.0447)	2.4432
Research, development and innovation (RDC)			**8.87058 (0.1301)**	**2.8797**		
Social and environmental (SEC)			**8.71967 (0.3590)**	**8.2564**		
R^2	0.9751		0.9926		0.9749	
d-statistic	0.981		1.177		0.8935	

Note: Generalized least squares; total panel observations: 51 (3x17); NS: nonsignificant at 0.05. In bold, elasticity values are more significant in relationship. Elasticities estimates as product of coefficients and ratio between averages of independent and dependent variables.

Source: Own elaboration.

Table 6 Europe (East); Relationships between Intellectual Capital Components and GDP (per capita at Constant Dollars)

Components	Regression 1: human capital		Regression 2: structural capital		Regression 3: intellectual capital	
	Coefficient (elasticity)	T-stat	Coefficient (elasticity)	T-stat	Coefficient (elasticity)	T-stat
Qualifications (QHC)	**17.66778 (0.8276)**	**30.9949**				
Motivation and employability Excess employability (MHC)	36.1336 (0.0855)	4.7159			**15.8061 (0.7812)**	**16.3445**
Process (PrC)			0.26847 (0.0348)	1.16178 ^{NS}		
Relational (RC)			3.16736 (0.0064)	0.93779 ^{NS}		
External and internal image (MC)			**2.13129 (0.0752)**	**3.22573**	0.64147 (0.1326)	3.21188
Research, development and innovation (RDC)			14.2404 (0.0613)	1.37481 ^{NS}		
Social and environmental (SEC)			**18.9251 (0.6716)**	**11.8704**		
R^2	0.9773		0.9575		0.9654	
d-statistic	1.199		1.146		0.985	

Note: Generalized least squares; total panel observations: 45 (3x15). In bold, elasticity values are more significant in relationship. Elasticities estimates as product of coefficients and ratio between averages of independent and dependent variables.

Source: Own elaboration.

The results above verify the different patterns displayed by intellectual capital and economic growth. In all cases, this relationship of economic growth is very important. This affirmation is based on the higher values of the determination coefficients in all the relationships considered in East and West European and Asian countries. The *d* statistic confirms that it is an appropriate specification, with values above the coefficient of determination.

Considering different components, a more significant relationship is clearly seen in the human capital *versus* structural components for the three cases considered (Asian, West and East European countries). More specifically, the elasticity values of economic growth obtained in Regression 3 on three groups are higher for human capital. For example, the elasticity value is 0.87 for Asian countries compared to 0.08 for structural capital. These results verify the greater relevance of human capital in economic growth, this component being the most important in both groups of countries.

Moreover, in human capital, the inhabitant qualifications of a country are the most important factor for the economic growth. Thus, for example, in Regression 1 for East European countries, elasticity was 0.827 for qualifications, but only 0.085 for labour market conditions. Furthermore, human capital is conceptually different in Asian countries because the indicator of labour market conditions is a saturated component, which entails a negative effect and does not favor growth. In this sense, other research has shown how certain components of intellectual capital can boost growth in some countries, but can also become saturated in others. For example, Ronald Inglehart (1997) had shown that democracy and trade openness effectively boost the economy in certain circumstances. Pirjo Ståhle and Ahmed Bounfour (2008) established that in certain developed countries there are drivers that are saturated, whereas in other countries these same drivers can be interesting for growth, giving computer usage as an example. This situation implies that results cannot be extrapolated to all contexts.

The effect of structural intangible components on economic growth is different depending on the region to which countries belong. If we apply the model to Asian countries, all the components show a significant relationship as the T statistic of Regression 2 displays. However, process capital has a negative effect on the growth relationship. In this case, we can consider that this intangible has reached its threshold in these countries and, for this reason, improving it does not contribute to economic growth, because it is saturated. Finally, the greater significance of social and environmental capital and research, development and innovation capital is worth highlighting (Table 4).

In Europe, the effect of structural intangible components on economic growth is also different; however, process capital appears to be irrelevant for growth. On the other hand, the results underline the greater significance of research, development and innovation capital in economic growth, followed by relational and social and environmental capitals (Table 5). Nevertheless, when we consider only East European countries, process, relational and research, development and innovation capitals are not significant. In this case, we can interpret that these intangibles are needed to contribute to economic growth. The best policy for East Europe consists of improv-

ing the level of these capitals, because the relationship is positive, but not significant (Table 6).

5. Conclusions

Based on the results of the research, we can assert that the theories of intangible capital as a source of long-term benefits and their valuation in terms of indicators can account for national wealth more accurately and, therefore, complement the value of gross domestic product (GDP).

In this sense, analyzing the relationship between the various components of intellectual capital and economic growth, in terms of production, is useful for planning an increase in wealth.

By applying the model to 49 countries, classified as European and Asian, we are able to recommend some common actions for growth and other differentials. Firstly, human capital, and more specifically, the skills of the inhabitants of the country, ensures growth in all cases. Thus, education is the first of the political safeguards of long-term growth. Hence, skilled emigration is a serious threat to nations, for example, flows to Western from Eastern Europe countries. Migration flows are conditioned by the management of other intangibles such as the labour market, image, organizational processes, technology, and business community. Thus, economic growth is divergent, attracting human capital to better position in structural intangible countries.

In the Asian case, motivation factor remittances are saturated, displaying a negative sign, and thus, limiting growth. Meanwhile, in the European case, this factor can contribute to reversing the long-term growth.

In relation to the growth models from a structural perspective, there is certainly more variation. The Asian model is based on innovation and social policies, its greatest challenges being to further enhance business organization and the mark of quality at an international level (although less so than their processes). In the case of Europe, growth is supported by image and brand name combined with social policies and innovation. However, the group of East European countries has limitations, especially where innovation and trademarks are concerned.

Finally, the theory behind the research undertaken in this paper on intangible capitals and economic growth can be considered an endogenous development theory, because convergence in terms of wealth for this decade is not evident and is supported by the general impoverishment of intangibles in 2008, more than by development reasons. Therefore, intellectual capital is a key factor for growth, but development in this sense corresponds to each country.

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