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THE ECONOMIC IMPACT OF A HIGHER EDUCATION INSTITUTION – THE STUDY CASE OF THE POLYTECHNIC INSTITUTE OF BEJA, PORTUGAL

Sandra Saúde[*], Carlos Borralho[**], Isidro Féria[***], Sandra Lopes[****]

Summary:

It is widely recognized that the investment in human capital, innovation, and knowledge transfer is essential to sustainable development and growth. Within this context, the role and action of Higher Education Institutions (HEI) are vital.

This paper aims to reflect on the role and the economic impact of a higher education institution, based on the case study of a public HEIs in Portugal namely the Polytechnic Institute of Beja (IPBeja). This institution belongs to the subsystem of polytechnic higher education and is located in a region that has one of the lowest economic and population densities in Europe.

Key words: Higher Education, Regional Development, Economic Impacts.

1. THE PORTUGUESE HIGHER EDUCATION SYSTEM

The Portuguese higher education system is a binary system, integrating universities and polytechnic institutes, which differ in dimension and legal framework. The system comprehends 127 institutions together with 5 non--integrated polytechnic schools. Public higher education corresponds to about 1/3 of all the institutions, 15 of which belong to the university sub-system (14 universities and 1 university institute). It also includes 15 polytechnic

[*] ssaude@ipbeja.pt, Polytechnic Institute of Beja, Portugal.
[**] cborralho@ipbeja.pt, Polytechnic Institute of Beja, Portugal.
[***] iferia@ipbeja.pt, Polytechnic Institute of Beja, Portugal.
[****] slopes@ipbeja.pt,Polytechnic Institute of Beja, Portugal.

institutes, and also 5 non-integrated polytechnic schools. The remaining institutions are private or belong to the military and police higher education network. There is also the Catholic University, which was established under Concordat Law.

Table 1. Number of public and private HEIs in Portugal integrated in the different subsystems

HEI / Subsystem	HEIs (Number – Public and Private Sectors)
Public Higher Education	
University	15
Polytechnic	20 (15+5)
Total	35
Military and Police Higher Education	
University	3
Polytechnic	
Total	3
Private Higher Education	
University	37
Polytechnic	56
Total	93
Catholic Higher Education	
University	1
TOTAL of HEIs	132 (127+5)

Source: General Direction of Higher Education, 2014.

Globally, the Portuguese higher education system involves a total of 86,640 vacancies for initial training courses[1] (licenciate's [*licenciatura*] and integrated master's degrees) and about 390,000 students, from licenciate to PhD studies.

Currently, and following the implementation of the Bologna process, Portuguese HEIs provide three types of academic degrees: licenciate, master, and PhD. The provision of PhD courses is limited to universities.

In Portugal, the higher education network covers the whole country and public HEIs are more territorially dispersed than private ones, which tend to concentrate in the metropolitan areas of Lisbon and Oporto, as well as in more densely populated regions. Polytechnic institutes are located in areas with lower

[1] Data for the academic year 2011/2012 – it does not include the vacancies for the Catholic University.

socioeconomic and population density and farther from big urban areas, except for the Polytechnic Institutes of Oporto, Lisbon, and Coimbra.

University subsystem
15 Universities

Polytechnic Subsystem
15 Polytechnic Institutes
and 5 Higher Education Schools

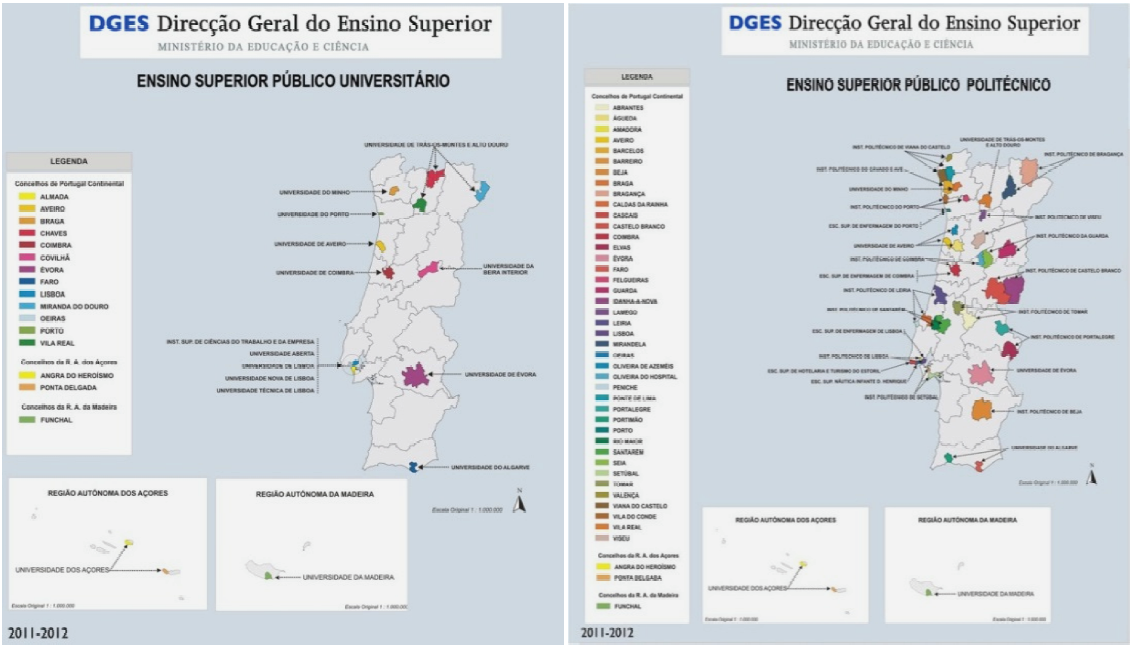

Figure 1. Territorial distribution of the public higher education network

Source: General Direction of Higher Education. Retrieved on May 18th, 2014, from http://www.dges.mctes.pt/DGES/pt/AssuntosDiversos/FHEQ/.

Since the Revolution of April 1974, higher education has expanded significantly in Portugal. This phenomenon was a result of the growing number of institutions and the increasing number of students, unique in the whole of Europe, especially during the first decade of the twenty-first century [Amaral and Fonseca 2012: 82–96].

In spite of this evolution, current data shows that Portugal still remains far short of the average values for the other European and OECD countries. In 2011, Portugal had about 15% of graduates among the population aged between 25 and 64 years old, according to the 2013 edition of *Education at a Glance*. This clearly differs from the average 32% of the OECD and the 29% of the EU21. Among the people in the 30–34 age range, on the other hand, the national average was, in 2011, 28,6%, still very far from the 40% defined as a target for 2020. In some regions, as is the case of Baixo Alentejo, this value decreases to 22,5%.

2. THE POLYTECHNIC INSTITUTE OF BEJA (IPBEJA) – FACTS AND NUMBERS

The Polytechnic Institute of Beja (IPBeja) is located in Beja, the capital of Baixo Alentejo region and has as direct influence in the geographical areas called Baixo Alentejo and Alentejo Litoral. The IPBeja is the only public HEI in the region.

Figure 2. The territory under the direct influence of the IPBeja

Source: Map retrieved from http://www.infoplease.com/atlas/country/portugal.html.

Located in the south of Portugal, between Lisboa, the capital, and the Algarve, this territory has, according to the 2011 census, a population of 224,587 inhabitants scattered over an area of 13,852 km^2, equivalent to 15% of the total area of Portugal. This accounts for a population density of 16 people/km^2, while the national average is 115.49/km^2 [www.ine.pt, data from 2014]. In fact, the territory suffers from a „double aging" process:

– The average proportion of young people is 13.5% (15.8% for Portugal), whereas the older population reaches 24% (19% for the whole country) [Census, INE, 2011].

– The aging rate is of 190 elderly for 100 young residents, averagely.

This low demographic vitality, typical of this region, coincides with a low percentage of qualified people, if compared with the national average, mainly in what concerns higher levels of education. The relative weight of the population with high academic qualifications is between 8% and 9%, while the national average is 12%.

The gross enrolment rate in higher education[2], of about 20%, is much lower than the national average (53%), which confirms the clear need to take action in what concerns the qualification of the resident population.

In the academic year 2012/2013, the IPBeja had a total of 2,597 students and 342 full-time employees, 191 (56%) of whom were faculty and 151 (44%), non-teaching staff. It was the fourth employer in the whole of the municipality of Beja[3].

The great majority of the employees (75%) were local residents, some of whom (36%) only moved to this municipality when they started working at the IPBeja[4]. This was more common among the teaching staff (49% of all faculty members moved to the area) than among other staff (9.7% of all non-teaching staff).

Transfers from the State Budget are the main source of funding for IPBeja, since it is a public HEI. The other sources of funding are:

1) own revenues and

2) european projet funds, as shown in the following table 2.

[2] By gross enrolment rate in higher education we mean the percentage ratio between the students enrolled in initial training courses (between 18 and 22 years old) and the total resident population in this age range [INE: 2011. *Anuário Estatístico da Região Alentejo 2010*].

[3] The first position was occupied by the Local Health Unit of Baixo Alentejo (integrating several hospitals and health centers, with 1,767 employees), the second by the Portuguese Air Force (local Air Base, with 730 permanent employees), and the third, by the Municipality itself (552 employees).

[4] Source: Inquiry by questionnaire applied to all employees (teaching and non-teaching staff) of the IPBeja, in July 2012.

Table 2. Revenues of IPBeja

Source of Funds	Value	%
State Budget	12 096 758,04€	74,42%
European Funds	514 229,09€	3,16%
Own Revenues	3 643 943,91€	22,42%
Total	16 254 931,04€	100%

Source: Management Accounts, IPBeja [2011].

In 2011, the total amount of income and funds received by IPBeja was 16.254.931,04€. 74% from direct transference of the State Budget and 22% from Own Revenues. In the Own Revenues 25% came from the execution of projects and the provision of services to the community and the sale of agricultural products.

In percentage terms, we find out, also, that 90% of total operating expenses correspond to personnel expenses and acquisition of goods services, the highest percentage of it to regional suppliers.

3. THE ECONOMIC IMPACT OF IPBEJA IN THE REGIONAL ECONOMY

3.1. Methodological approach followed in the impact study

To estimate the local impact of the IPBeja, it was decided to adopt a demand-side approach, aiming to measure the direct and indirect effects of the Institute on the economic activity of the municipality of Beja during 2012. We developed an approach which allowed us to „isolate" the effect of the IPBeja, by identifying „what it added to the economic dynamic" and „the added value generated". We applied five different models:

1) The ACE model: in 1970, the economists John Caffrey and Herbert H. Isaacs, from California State University, were assigned, by the American Council of Education (ACE), the task of developing a method to determine the quantitative estimation of the economic impact of a school (educational institution) in the territory or locality where it is based. The model is based on:

Dimensions	Sub-dimensions
Impact on HEI-related consumption/expenditure – local business (B)	B.1. HEI-related local business volume
	B.2. Value of local business property committed to HEI-related business
	B.3. Expansion of the credit base of local banks due to HEI-related deposits
	B.4. Local business volume unrealized because of the existence of HEI enterprises
Impact on local government (G)	G.1. HEI-related revenues received by local government
	G.2. Operating cost of municipal services provided to public school by local government
	G.3. Value of local government's properties allocable to HEI-related portion of services provided
	G.4. Real-estate taxes foregone through the tax-exempt status of the HEI
	G.5. Value of municipal-type services self-provided by the HEI
Impact on individuals (I)	I.1. Number of local jobs attributable to the presence of the HEI
	I.2. Personal income of local individuals from HEI-related jobs and business activities
	I.3. Durable goods procured with income from HEI-related jobs and business activities

Source: Adapted from Caffrey and Isaacs [1971].

2) The simplified version of the ACE model: due to the lengthy and complex nature of these calculations, Leslie and Lewis [2001] defend the application of a simplification of the traditional ACE model. In this simplified version the calculations focus on just two dimensions, as follows:

Dimensions	Sub-dimensions
1. B.1. HEI-related business	B.1.1. Local expenditure generated by the HEI
	B.1.1.1. Local expenditure of the HEI
	B.1.1.2. Local expenditure of staff (teaching and non-teaching)
	B.1.1.3. Local expenditure of students
	B.1.1.4. Local expenditure of visitors
	B.1.2. Purchase to local sources by local enterprises supporting the volume of HEI-related business
	B.1.3. Volume of local business stimulated by local individuals' expenditure (except the institution, staff and students) resulting from HEI-related income
2. I.1. Number of local jobs attributable to the presence of the HEI	

3) A simplification of the ACE model, focusing on the spending of staff and students of the IPBeja residing or studying in the municipality and also of those residing outside Beja but spending there because they work or study at the IPBeja;

4) The Keynesian Local Multiplier: the use of a Keynesian multiplier must reflect the particularities of the region where it is applied [Jabalameli et al., 2010: 643–652; Sen 2011: 25–42). The calculation of the multiplier develops from the determination of the value directly injected into the local economy, in which:

$$E = L + G$$

where:
E – expenditure base,
L – wages paid (labor services purchased by the institution),
G – goods and services purchased by the institution.

5) The Ryan Short-Cut model. The RSC model is an adaptation of the ACE model developed in 1981 by G. J. Ryan, who later improved it, in 1992. The estimation of the direct economic impact considers three fundamental types of expenditure, as expressed by this formula:

$$DEI = I + W + S$$

where:
DEI – direct economic impact,
I – institution's expenditure,
W – workers' expenditure,
S – students' expenditure.

Data collection techniques

We used documentary and non-documentary sources, depending on the indicators. The collection of information about students and staff was obtained by questionnaire survey. The design of the questionnaire followed the guidelines of instruments validated in previous research [Pellenbarg 2005; Yserte et al. 2008; Pastor and Pérez 2009; José Manuel et al. 2010] of a similar nature. Besides, a pilot test was applied to samples of these universes (students and staff). In order to guarantee the representativeness of the sample, in terms of statistical significance, we assumed as reference the distribution of the following parameters: age, gender, year of the course (students) and years of service (staff). This allowed us to estimate the results for the universe.

3.2. What is the economic impact of the IPBeja?

Based on the application of five (5) different methods of calculation (the most consensual in this type of studies worldwide) and a time span limited to 2012, the results of this study demonstrate:

A. Impact on regional economic activity

The direct and indirect economic impact (expenditure, taxes, revenues) of the IPBeja showed a minimum interval between 38.72 million euros and 46.88 million euros.

1. For every euro received from the State Budget, the IPBeja injected between 3,20 and 3,88 euros into the local economy[5].

2. Regarding the direct volume of businesses, the IPBeja generated 41,3 million euros, which represents 2,2% of the Gross Regional Product for the entire Baixo Alentejo.

In what concerns the volume of businesses generated by the influence of the IPBeja, those resulting from expenditure by students and staff are particularly relevant:

- The annual expenditure of students reached a total of 18 million euros. Rents alone were responsible for an injection of 2,139,054.9 euros into the local economy. The students spent an average amount of 19 euros a day on accommodation, food, school material, personal goods, transport and cultural expenses.
- The average expenditure of the IPBeja employees amounted to 37 euros daily (including all types of spending, from housing to cultural consumption), which adds up to 4.5 million euros.
- Finally, the expenditure of the IPBeja itself and that of students' and staff's visitors reached a total of almost one million euros, 986 thousand euros, to be exact.

3. The estimated value of expenses made by visitors (students' and employees' relatives and friends) to the municipality was 817,463.92 euros.

- Among students' and staff's family and friends, 5,166 people visited the municipality and the town, spending an average of 60,5 euros a day.

4. Due to income obtained by jobs and businesses linked to the IPBeja, a total of 794 thousand euros was spent locally on durables.

5. Local banks had an estimated credit base expansion of 5,7 million euros on accounts and deposits related to the IPBeja (the institute itself, staff and students).

[5] Based on the IPBeja budget [2011].

6. The Municipality of Beja earned 863.7 thousand euros in revenue, resulting from property taxes and other taxes paid by teaching and non-teaching staff and students of the IPBeja.

7. As a result of jobs and businesses connected with the IPBeja, an income of 19.4 million euros was generated in the municipality.

8. Detailed analysis of expenditure and revenue between the IPBeja and third parties underlines the crucial role the institute plays in the economic activity of the municipality, the district, and the whole region, in all sectors of activity, from agriculture to services

The total amount expended by IPBeja in the purchase of goods and services were linked to 787 suppliers, 39% of them with headquarters in the district of Beja. and 38% in the district of Lisbon. The relevance of Lisbon is only justified by the lack of suppliers in the local economy, namely of energy: EDP and Galp, of security services: Vigiexpert and computer applications: Digitalis and Able Solutions.

In terms of own revenues gathered by services provided and sales, 42% of the costumers (in 2012) are from the district of Beja, what underlines the crucial importance of IPBeja for the region as a supplier in different activity sectors.

The results in terms of expenses and revenues reflects the crucial contribution of IPBeja for the regional economic activity, establishing itself as a client and a major supplier from agriculture to services sector.

B. Impact on the population dynamics

The influence of the IPBeja reaches beyond the municipality, stimulating its gravitational effect regional and nationwide:

1. The academic community of the IPBeja represents over 10% of the total population of the municipality (2011 Census: 35,854 inhabitants).

2. The IPBeja contributes unequivocally to the rejuvenation of the age structure of the population.

According to the latest census, there were 1,860 youngsters aged between 20 and 24, in the municipality. Among the students attending 1st cycle courses, 1,997 were included in this age group. This proves that the IPBeja attracts an expressive number of non-local youth to the municipality.

3. The influence of the IPBeja spreads beyond the municipality and stimulates its gravitational effect at a regional and national scale.

Among the students attending 1st cycle courses:

- 78% did not come from the municipality of Beja.
- 47.4% come abroad from the region of the direct influence of IPBeja.

C. Impact on employment and qualification

The IPBeja is responsible for the creation of jobs:

1. Besides the 342 direct jobs it guarantees[6], the IPBeja indirectly contributed to the creation of between 453 (according to the simplification of the ACE model – 1st line impacts) to 823 jobs (according to the ACE model).
2. The IPBeja was the 3rd largest employer in the municipality and was also indirectly responsible for twice to three times (depending on the calculation method) the jobs it directly generates[7].
3. Globally, and considering the direct and indirect impact on jobs, the IPBeja accounts for 7,5%[8] of all the employed population of the municipality.

CONCLUSIONS

These conclusions and findings must be considered as a first approach to the economic impact the Polytechnic Institute of Beja generates on its local surroundings. However, we may conclude that these effects are really important and contribute to the growth of local economy and, to a larger extent, to the economic development of the whole region, namely of the its territory of direct influence that is Baixo Alentejo and Alentejo Litoral.

Surely, the estimated economic impact of the institute is a conservative estimation of global impact, since other dimensions have to be taken into account, such as the generated long-term effects. These consequences or qualitative type effects (impact of the institute on the citizens' quality of life, or as a determinant factor influencing company location, etc.) are important to acknowledge, even though it may be complex to undertake the analysis of these impacts. On the other hand, the impact of the IPBeja on local budgets, the incidence upon the value of the properties or upon the banking sector, due to the generation of a larger market, are some of the aspects being currently analyzed.

In line with other economic impact studies, carried out worldwide, the collected data help to show that IPBeja is a key institution for the regional development and economic activity. It seems obvious that any change to the produced dynamics may reflect on the current scenario, reducing the effects of the common effort to increase the region's competitiveness, or making it harder

[6] Only considering full-time employees at the date of the study.

[7] The calculation of the impact of the IPBeja on job creation was done only in the short-term perspective. The global impact is much more substantial, since the institute supplies a qualified workforce from and for the region on a yearly basis.

[8] Taking into account the number of employed population of the municipality of Beja – 10,998. Source: *Anuário Estatístico de 2011*, INE [2012].

to be achieved. This situation is even more dramatic in regions where there is only one public HEI, which is the case of the District of Beja, in Portugal.

REFERENCES

Amaral A., Fonseca M., 2012, *Portugal. Higher education and lifelong education in Portugal*, [in:] M. Slowey, Schuetze H. G. (ed.), *Global Perspectives on Higher Education and Lifelong Learners,* Routledge, New York.

Armstrong H., Taylor J., 2000, *Regional economics and policy*, 3rd ed., Blackwell Publishers, Oxford.

Blackwell M., Cobb S., Weinberg D., 2002, *The economic impact of educational institutions: Issues and methodology*, „Economic Development Quarterly", February, vol. 16, no. 1.

Brunner J. J., 2013, *The rationale for higher education investment in Ibero – America*, OECD Development Centre [disponível em http://www.oecd.org./dev/wp].

Caffrey J., Isaacs H., 1971, *Estimating the impact of a college or university on the local economy*. American Council of Education, Washington, D. C.

Elliot D., Levin S., Meisel J., 1988, *Measuring the economic impact of institutions of higher education*, „Research in Higher Education", vol. 28, no. 1.

Fuentes E. M., Pons J. S. (ed.), 2010, *Summer university courses: economic impact, economic perspectives* [disponível em http://www.slideshare.net/evamartin/summer-university-courses-economic-impact-economic-perspectives].

Jabalameli F., Ahrari M., Khandan M. (ed.), 2010, *The economic impact of University of Tehran on the Tehran district economy*, „European Journal of Social Sciences", vol. 13, no. 4.

Kelly H., McNicoll M. (ed.), 2011, *Through a glass, darkly: Measuring the social value of universities. National co-ordinating Centre for public engagement* [disponível em www.public-engagement.ac.uk.].

Leslie L., Lewis D., 2001, *Economic magnet and multiplier effects of the University of Minnesota*, University of Arizona and University of Minnesota.

Pastor J. M., Pérez F., 2009, *La contribuición socioeconómica de las Universidades Públicas Valencianas*. Universitat de Valéncia

Pastor J. M. et al., 2010, *Measuring the local economic impact of universities: An approach that considers uncertainty*.

Pellenbarg P. H., 2005, *How to calculate the impact of a university on the regional economy*, A case study of the University of Groningen, Holanda.

Saúde S. et al., 2013, *O impacto socioeconómico do IPBeja no concelho de Beja*, Norprint, Beja.

Sen A., 2011, *Local income and employment impact of universities: The case of Izmir University of Economics*, „Journal of Applied Economics and Business Research", no. 1.

Tavoletti E., 2007, *Assessing the regional economic impact of higher education institutions: an application to the University of Cardiff*, „Transition Studies Review", vol. 14(3).

Yserte et al., 2008, *El impacto Económico de la Universidad de Jaén: Un análisis de demanda*, Universidad de Jaen.

Yserte-G. R., Rivera-G. M. T. (ed.), 2010, *The impact of the university upon local economy: Three methods to estimate demand-side effects*, Ann Reg Sci, 44.