
Internationalization on Higher Education Institutions (HEI): a transversal issue on economic development for Brazilian universities

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Resumen

El presente trabajo tiene como propósito una discusión preliminar sobre el tema de la internacionalización de los Institutos de Educación Superior y el impacto en el desarrollo regional en el contexto de Brasil.

PALABRAS CLAVE: educación superior, instituto de educación superior, economía y desarrollo regional.

Abstract

The present work intends to propose a preliminary discussion on the subject of internationalization of HEIs and the impact on regional development in the Brazilian context.

KEY-WORDS: Higher education, higher education institutions, economic and regional development.

1. Introduction

The impact of higher education institutions (HEI)¹ or higher education (in general) on regional development is a new subject that is starting to appear in the development economies studies. The discussion is still preliminary, especially in what is still called “third countries”, where the level of population that concluded tertiary studies is not significant. Besides this level, others impacts are related to the presence of HEI on regional and local development. This means that there are direct and indirect impacts, especially due to the capillarity of the human capital and other resources that is involved in the process of higher education.

Considering this general context, the present work intends to propose a preliminary discussion on the subject of HEIs and the impact on regional development in the Brazilian context, especially considering the States.

The aim of this work is to answer the following question: how/which is the impact of internationalization of HEIs on the regional development?

Finally, this work is a first exercise on the expectative of answering the questions and promoting the discussion for new comments.

2. Contextualization

Higher education, in general, has proliferated in Brazil. Although still smaller than the percentages indicate the number of people with college degree, this share has grown over the past five years in view of some social and economic factors. Among the factors, it is possible to can highlight the market's demand for qualified staff working in higher education, as well as larger and better financial conditions. These financial improvement had occur, even in part, by economic stabilization in Brazil, but also due to greater involvement of social classes C and D in access to services. The National Institute of Educational Studies Teixeira (INEP) published in the month of February, 2009 statistics from the Higher Education Census 2007.

In general, for Brazil, data indicate 2,281 institutions of higher education, courses and 23,488 students 4,880,381, and 1,481,955 of those are new students. Data collection took place in 2008 with reference to the situation observed in 2007.

The analysis of training human resources in higher education is important when one reflects on the development of a specific regional geographic scope. The integration of the population in a Higher Education Institution (HEI) introduces and reinforces the theoretical and practical knowledge to the profession. Beyond the specific knowledge, an IES introduces and extends the critical capacity of the population, through the debate of socio-economic events in the city, state, country or world.

3. Higher Education and the impact on development

It is important to bring the understanding of the formation of human resources in higher education and regional development. Within this context, Porter (1990) highlights that as a contribution to the process of socio-economic factors has been considered basic consolidated, such as natural resources, capital and skilled labor. The author believes that HEIs are also somewhat responsible for the improvement of social conditions and living standards.

Whereas a statistical and theoretical analysis of the question, Arroteia (1999),

who analyzed the case of Portugal, proposes the following question: what is the relationship between the development of the GNP of a country and training of workforce? In Brazil, few studies have into this issue. One explanation can be given because it is a new and largely unexplored theme, considering that education alone does not constitute as a priority item of Government plans.

In the case of the European Union in 2001, the data pointed to two conclusions that support the importance of investment in human capital for the development of regions. First, the employment rate of workers with higher education is around 83%. Per second, the employment rate of workers with secondary education is around 70%. (ARROTEIA, 1999).

As highlighted by Arroteia (1999, p. 428), “[...] in the scenario of economic growth recorded in the sixties in Europe and the U.S., which appreciated the importance of education as a productive investment and as a push factor of income equality and national mobility [...]”.

This indicates that it has, in general, a positive relationship between education and employability. Several factors may contribute to sustaining this relationship, especially regarding access to information and critical skills developed by people with access to education.

A new area of knowledge that it is developing the “knowledge society” or “learning society”. According to Gasque & Tescarolo (2004, p. 26), from the conception of an “information society”, it moved to a “knowledge society”, whereas the information [...] represents an exogenous element that corresponds to raw material to be transformed into knowledge through the interpretation and understanding of each individual. Considering the role of IES, which has as an essential stimulus to “think”, Gasque & Tescarolo (2004, p. 29) indicate that:

Think this perspective, can mean the spirit or combine to form thoughts or ideas; make reflections; discern, reason, meditate, ponder, intend, think, be worried, be careful; assess the reasoning, judge, imagine, devise mentally; meditate. Thinking can also include the memory, fantasies, dreams, animism and creation activities.

All the discussion so far performed on the development and the role of higher education provided the theoretical basis for this work. The work of Goddard & Chatterton (2003) works with several aspects that, in the empirical data may be correlated. One aspect focuses on the creation or involvement in an IES (supposedly) is to the region where it is located. According to the authors (p. 20), “The capacity of the HEI to respond to regional needs is influenced by which conditions result from the inter-relations between several geographic scales from the global to the local and also from the historical legacy of each HEI and ITS region.”

Among the “answers” that an HEI can give to a particular region, one should emphasize the teaching, research and community service, always considering that all this will develop from “[...] network knowledge, the transfer of knowledge from one group to another region to form learning systems - the institutional infrastructure of public and private partnership. “(Goddard & Chatterton, 2003, p. 23).

It is worth noting that this theoretical debate has not been exhausted in this text, opening up possibilities for new work. Given the above, below, is intended to highlight some data to demonstrate the evolution of higher education in the states of Brazil. The central idea of the work is to perform a look at the figures from the IES and the quantitative data of graduates in higher education, both inside and in the state capital.

3.1. Overseas discussion: the multidimensional problematic

The Organisation for Economic Co-Operation and Development (OECD) could be mention as one of the first international organizations to promote the debate about the impact of higher education institutions on regional development. In 2008, the OECD had published the “Guidelines for the Self-Evaluation Report 2008-2010”, which was a review of higher education institutions in regional development, as a program on institutional management. The aim of the guide was “suggest a structure for the self-evaluation report and give examples of the questions”, regard the “common problems and issues in the regional role of higher education (HE)” (p. 3). Unfortunately, the results are still not available, but is important to highlight the main aspects that OECD is trying to capture, which is multi-dimensional: geographical, demographic situation, the economic and social base and the governance structure.

Hill (2006) argues about the role that universities in the process of economic growth. The author argues two main parts, which are: source of new knowledge and a trainer of scientists and engineers who work in industrial laboratories. The focus of Hill’s study is on U.S. national innovation system and he looks to answer the following questions: “Are local economies more prosperous if they have a research university? How important is having a research university to economic growth and development in a city or region?”(p. 7). The main results indicated that while there is abundant evidence that university research can have important effects on jobs and incomes in the local economy, the size of these local impacts is likely to be modest for most universities, considering the USA context. Considering universities research, scholars argue that some of the greatest benefits are long term in nature. The main contribution of the paper was the focus on the interaction

between the industries and universities: “(...) large share of the benefits of university research accruing to producers and consumers located outside of the local economy, research will be grossly underfunded if it is done so simply on the basis of benefits that local residents will receive.” (p. 36).

Pellenbarg (2005) studied the impact of the University of Groningen, in The Netherlands. The author mention that the establishment of universities has actually become part of regional policy in several countries. He gives as examples: Sweden (Lulea, Norlan) and in Norway, Finland, Germany, Ireland and the United Kingdom. Especially in the Netherlands, the establishment of the Technical University of Twente and the University of Maastricht were established to be instruments of regional development.

As OECD proposed, Florax (1987) apud Pellenbarg (2005) proposed a kind of classification and examples of regional and economics effects of a university, as the table below:

Table 1: Regional and Economics Effects of a university

| Regional Effects | Examples | Economics Effects | Examples |
|------------------|--|------------------------------|---|
| Politics | Change in political structure, increased citizen participation, improved organisation of the political process | Employment at the university | Number of jobs at the university and related institutions |
| Demography | Change in the birthrate and deathrate, greater mobility | Income of the university | State contributions, tuition fees, financial a.o. benefits e.g. from book sales & merchandising |
| Economy | Effect on regional income, the industrial structure, the labour market, labour mobility | University spending | Purchase of goods and services by the university |

| Regional Effects | Examples | Economics Effects | Examples |
|------------------|--|---|---|
| Infrastructure | Effect on housing, traffic, medical services, the retail sector | Income and spending of university employees | Wages, salaries, and social security costs. Expenditures in shops, on entertainment and culture, and on public transportation |
| Culture | Greater supply of cultural goods, influence on the cultural climate Labour market effects | Delivery of educated labour. | Heightened productivity effect. |
| Attraction | Influence on the image of the region, the regional identity | Spin-off of business | Companies founded by (former) students and university employees, whether or not employing academic knowledge and technology |
| Education | Effect on participation, change in quality | Marketing of knowledge | The sale of knowledge in a variety of forms: from ideas and courses, to patents. |

Source: Florax (1987) and Lambooy (1996) apud Pellenbarg (2005), but modified by the author.

Through descriptive statistic analysis, the paper of Pellenbarg (2005) had showed that over the years, especially from before the I World War, the universities are receiving more attention than. The reason for this is due to the amount of direct and indirect job. Another point that is under discussion is related to the presence of Technological Parks, which seems to improve job opportunities and aggregation of value in industrial production.

Kelly (2007) proposed a way to measure the impact of higher education. It is interesting to mention the reasons to measure the impacts, especially because there is a common sense of the importance of having patents, for example, but it is not clear the quality of these on the way to produce regional development. Another difficulty is the definition about the concept of regional level and the city-region level. In 2004-2005, an initial pilot case study was promoted, looking for a estimation of the economic value of the outputs of Scottish higher education institutions. The methodology proposed could be explained by follow: $Y = A L^{\alpha} K^{\beta} R^{\gamma}$, where: A, K and L are L, labour, is measured in homogenous primary units such as “person years” with no skill dimension; K is in homogenous units with no quality dimension; A is strictly speaking a catch-all residual variable, but it is often interpreted as reflecting “the level of technology”, but even on this interpretation it is not explained why A is at a given level or why it might change; and the new variables are as follows: H is a measure of human capital, which might be “total years in education” or better, “the average qualification level” of the workforce or population; R is a measure of research and development activity, which might be “total spend on R&D” or “proportion of GDP spent on R&D”. In particular, this equation postulates that the level (growth) of GDP is, inter alia, a function of the level(growth) of human capital and the level(growth) of R&D. Specifically, it is hypothesised that: $dY/dH > 0$, and $dY/dR > 0$, that is, the partial derivatives of Y with respect to H and R are positive. In 2007, another research project had proposed an application of methodology to 3 areas of activity, which are cultural outreach, community outreach and public policy advisory work.

Even considering the brief overview listed above, the understanding about the impact of HEIs on the regional development is still under discussion. For November 2010, the University of Strathclyde (Glasgow, Scotland) is coordinating the discussion about the theme, bringing contributions all over the Europe and overseas. The event is financially supported by the Economic and Social Research Council (ESRC) and looks to promote better understanding of the key economic and social impacts generated by higher education institutions. It is also interesting to mention the list of aspects that could be listed to support the understanding of HEIs impacts, which are:

- HEIs and civic engagement; the economic impact of HEIs;
- the public space role of HEIs;
- measuring higher education impact;
- the impact of students and graduates on their host community;
- graduate migration patterns;
- HEIs and innovation;
- knowledge exchange between HEIs and business;
- public sector, third sector or the wider community.

The ESRC has financed some research projects related to these subject - as listed below:

| General Topic | University | Name of the project | Duration and Deadline |
|-----------------------------------|---|---|-------------------------|
| Regional Competitiveness | University of Sheffield (UK) | Higher education institution knowledge and its impact on regional competitiveness | 2 years – May 2009 |
| | University of Manchester | Impact of research and innovation networks on regional competitiveness: the role of HEIs | 2 years – February 2009 |
| University-Industry relationships | University of Cambridge | University-Industry Knowledge Exchange: demand pull, supply push and the public space role of higher education institutions in the UK regions | 2 years – March 2009 |
| | Institute of Fiscal Studies and University of Bristol | Investigating business-university innovation linkages | 1 year – April 2008 |

| General Topic | University | Name of the project | Duration and Deadline |
|------------------------|---------------------------------|--|---|
| Students and graduates | University of Glasgow | Students as catalysts of city and regional growth | 18 months – the deadline was not informed |
| | Institute of Employment Studies | The impact of economics and quality of life on graduate flows and subsequent innovative capacity of cities in the UK | 1 year – the deadline was not informed |
| Social Impact | University of Newcastle | University and community engagement: learning with excluded communities | 2 years – the deadline was not informed |
| | Open University | Higher education and regional transformation: social and cultural perspectives | 2 years – the deadline was not informed |
| Overall | University of Strathclyde | The overall impact of HEIs on regional economies in the UK | 3 years – March 2010 |

Source: Kelly (2007), but modified by the author.

Lundvall (2007) presented a discussion about the links between higher educa-

tion to economic development through an analysis of how graduates contribute to innovation and learning and it draws policy implications for economic development. It quite interesting to point that the analytical part concludes that investment in higher education may not give substantial rates of return in a technologically stagnant economy. Finally, the paper had indicated that less developed countries to build universities more strongly rooted in the regional context. For example, it bring the idea of the a model referred is the US land grant college including its extension services.

Intending to recognize the importance of the subject, it is quite evident that possibilities of funding this research projects means that the answer about the implications or the impacts of HEIs on regional development are multidisciplinary and are still under construction, especially considering public policies implications.

3.2. Brazilian discussion: a brief discussion

In terms of scientific publications about the theme of HEIs and the regional impacts, the literature in Brazil is still incipient, but with some interesting results.

Tartaruga (2010) had focused on the discussion through the prism of the economic geography. He had looked some of the theoretical bases of studies about science, technology and technological innovations for the economic and social development of regions and countries. It had showed the roles of higher education institutions for the territorial and technological development. Focusing the State of Rio Grande do Sul (Brazil), Technological Innovation Survey – Pintec (IBGE/Finep/MCT). More specifically, the author had brought to the discussion the role of universities, in three main different aspects: teaching, research and community services. As main results, the author had listed:

- an HEIs can provide a place to the manifestation of learning dynamics and interaction between different economic actors (networks of cooperation), where the use of local and regional resources (natural environment, culture, identity) can be better planned;

- the university environment is essential for the development of regions learning, fertile ground for the creation and maintenance of innovation, where the proximity geographical seems crucial;

- but, considering the data analyzed for relations between universities and enterprises State of Rio Grande do Sul seem to indicate problems in the realization of this relationship. The problems arise on both sides, both in academia how much of the business, and difficult to solve because they have deep historical and cultural roots.

As a result from the OECD's report, Rolim & Serra (2009) had focused on the discussion about Paraná State. The objective of this article is to analyze the cooperative efforts between HEIs (Higher Education Institutions) in the northern Parana region and their regional partners in the quest of regional development. The absence of statistic had brought to the analysis more qualitative, instead of quantitative. The paper had pointed a list of difficulties – for example – that is quite impossible a HEI promote the regional development as a constant and systematic tool. The author had justified theirs considerations by presenting: the promotion of practices and methodologies for strengthening regional capacity buildings; the existence of synergies and conflicts of interest between the intentions of the institutions and the region; the incentives for greater commitment from IES, the challenges faced by the different actors in the region. Two main important results deservers to be mention:

results show a positive correlation (R-squared = .26) between the discretionary learning forms and the percent of the population with third level education, and no discernible correlation between the DL forms and the measure of the importance of new science and engineering graduates; (...) that there are fairly strong positive correlations (R-squared = .75 and .52 respectively) between the frequency of the discretionary learning form and two measures of firms' investments in continuing vocational training: the percentage of all firms offering such training and the participants in continuing vocational education as a percent of employees in all enterprises. The results suggest that these forms of firm-specific training are key complementary resources in the development of the firm's capacity for knowledge exploration and innovation. (p. 19; 20-1)

Teixeira & Silva (year) estimate the importance of education to economic growth in municipalities of São Paulo State from 1980 to 2000. To measure the impact of education on economic growth were estimated six models. The first three

models were based on the neoclassical approach in which human capital is added as a production input, which leads to the conclusion that sustained economic growth

is only possible with the use of technology and education. The three models use the following endogenous growth approach, in which sustained economic growth is only possible with the use of technology, which in turn depends on education. The results in this paper indicate that education has an effect least in explaining growth, whereas the coefficients are mostly negative and / or of low magnitude, and that the explanatory power of the dependent variable is the exogenous low not exceeding 32%, indicating that alternative specifications might be more appropriate.

Considering this briefly literature, it is possible to highlight:

It is possible to find a direct and positive relation between higher education and development;

This relation is not so evident;

It is necessary a database in large scale with local or regional information regarding the HE to capture the impacts;

To focus on study cases, for example in one university or in one network of university, could be easier to organize some database.

4. The internationalization issue

As could be seen in the sections above, the internationalization is an issue that implicates in all matters of economic development. For example, a fifth column could be included in table 1.

| Regional Effects | Examples | Economics Effects | Examples | Internationalization as a transversal issue |
|------------------|--|------------------------------|---|--|
| Politics | Change in political structure, increased citizen participation, improved organisation of the political process | Employment at the university | Number of jobs at the university and related institutions | Once more the HEIs promote the mobility and cooperation projects, more jobs and more improved would be the regional development. |
| Demography | Change in the birthrate and deathrate, greater mobility | Income of the university | State contributions, tuition fees, financial a.o. benefits e.g. from book sales & merchandising | The internationalization is able to promote the finance of projects, research on continuing education. |

| Regional Effects | Examples | Economics Effects | Examples | Internationalization as a transversal issue |
|------------------|---|---|--|---|
| Economy | Effect on regional income, the industrial structure, the labour market, labour mobility | University spending | Purchase of goods and services by the university | The internationalization could help to innovate and purchase new goods and services. |
| Infrastructure | Effect on housing, traffic, medical services, the retail sector | Income and spending of university employees | Wages, salaries, and social security costs. Expenditures in shops, on entertainment and culture, and on public transportation | The presence of foreign people and institutions, through the internationalization of HEIs, could improve the infrastructure by new services, for example. |
| Culture | Greater supply of cultural goods, influence on the cultural climate | Labour market effects | Delivery of educated labour. Heightened productivity effect. | This is the most important effect that brings the internationalization issue as a key role. |
| Attraction | Influence on the image of the region, the regional identity | Spin-off of business | Companies founded by (former) students and university | Once there is a internationalization to promote joint projects, the |

| Regional Effects | Examples | Economics Effects | Examples | Internationalization as a transversal issue |
|------------------|--|------------------------|--|---|
| | | | employees, whether or not employing academic knowledge and technology | attraction for new business are improved |
| Education | Effect on participation, change in quality | Marketing of knowledge | The sale of knowledge in a variety of forms: from ideas and courses, to patents. | This is the most direct impact of internationalization – that qualifies and improve the marketing of knowledge. |

The biggest challenge on this fifth column is to measure the real impacts of internationalization. For each university there is one kind of regional development and one economic context. By this, the internationalization could be the 'link' to promote the development in a multidisciplinary context.

Final discussion

Considering the literature, is quite difficult to measure the impacts of internationalization of HEI or HE on economic development. It is important to mention that there is no doubt that internationalization of HEI or HE are important for economic development, but forms to measure the impact are still under construction.

For next exercise, it is important to improve the literature, international and Brazilian, and to have access to database that is more completed that could be worked as time series.

References

- CHATTERTON, Paul, GODDARD, John. The response of HEIs to regional needs. In: RUTTEN, Roel (Ed.) *Economic Geographic of Higher Education: knowledge infrastructure and learning regions*. Londres: Routledge, 2003.
- GASQUE, Kelley Gonçalves Dias; TESCAROLO, Ricardo. Sociedade da aprendizagem: informação, reflexão e ética. In: *Ci. Inf.*, Brasília, v. 33, n. 3, p.35-40, set./dez. 2004.
- HILL, Kent. *University research and local economic development*. Arizona: ASU W. P. Carey School of Business. 2006.
- Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira (Inep). *Censo da Educação Superior 1997*. Disponível em: <http://www.inep.gov.br/superior/censosuperior/>. Acesso em: 20 fev. 2009 e em 15 out. 2010.
- Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira (Inep). *Censo da Educação Superior 2007*. Disponível em: <http://www.inep.gov.br/superior/censosuperior/>. Acesso em: 20 fev. 2009 e em 15 out. 2010.
- Instituto de Pesquisa Econômica Aplicada (Ipeada). *Dados regionais*. Disponível em: <http://www.ipeadata.gov.br/ipeaweb.dll/ipeadata?946184812>. Acesso em: 15 out. 2010.
- LUNDEVALL, Bengt-Ake. *Higher Education, Innovation and Economic Development*. In: *World Bank's Regional Bank Conference on Development Economics*, Beijing, January 16-17, 2007.
- OCDE. *Guidelines for the Self-Evaluation Report 2008-2010*.
- PELLENBARG, P.H. *How to calculate the impact of a university on the regional economy: a case study of the University of Groningen, the Netherlands*. Conference on Knowledge and Regional Economic Development, organised by the Regional Quantitative Analysis Research Group, University of Barcelona, 9-11 June 2005.
- PORTER, Michael. *A vantagem competitiva das nações*. São Paulo: Campus, 1990.
- ROLIM, Cássio. SERRA, Maurício. *Instituições de Ensino Superior e Desenvolvimento Regional: O Caso da Região Norte do Paraná*. In: *Revista de Economia*, v. 35, n. 3 (ano 33), p. 87-102, set./dez. 2009. Editora UFPR.
- SEN, Amartya. *Desenvolvimento como liberdade*. São Paulo: Companhia das Letras, 2000.
- TARTARUGA, Iván G. Peyré. *As inovações nos territórios e o papel das universidades: notas preliminares para o desenvolvimento territorial no Estado do Rio Grande do Sul*. In: *Textos para Discussão FEE*, nr. 81. Porto Alegre, setembro de 2010.

Appendix 1

- ANDRADE, M. V Educação e crescimento econômico no brasil: evidências para os estados brasileiros: 1970/1995. In: ENCONTRO NACIONAL DE ECONOMIA, 25, 1997.
- BARRO, R. J. Education and economic growth. Cambridge MA: Harvard University, Department of Economics, 2000. (Working paper)
- BARRO, R. J.; LEE, J. W. International data on educational attainment: update and implications. In: Oxford Economic Papers, v.53, n.3, p.541-563, 2001.
- BENHABIB, J.; SPIEGEL, M. M. The role of human capital in economic development: evidence from aggregate cross-country data. In: Journal of Monetary Economics, v. 34, n.2, p.143-173, 1994.
- DOWRICK, S. Ideas and education: level or growth effects? Cambridge, MA: National Bureau of Economic Research, 2003. 30p. (Working paper, 9709)
- LAU, L. J.; JAMISON, D. T; LIU, S. C ; RIVKIN, S. Education and economic growth: some cross-country evidence from Brazil. In: Journal of Development Economics, v.41, n . 1, p.45-70, J u n e 1993.
- PRITCHETT, L. Where has all the education gone? In: The World Bank Economic Review, V.15, n.3, p.367-391, 2001.

1 In general, higher education is mention as HE.

2 This paper was found on the Web, whit no specification of date and place of publication. It is available at: http://www.mackenzie.br/fileadmin/Graduacao/CCSA/Publicacoes/Jovens_Pesquisadores/04/3.4.08.pdf.