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The Local Economic Impact of Higher Education Institutions in Hungary

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The local economic impact of a large tertiary education institution such as a university is an issue which has attracted considerable attention in literature. *Beck et al* (1995, 246) define economic impact as „the difference between existing economic activity in a region given the presence of the institution and the level that would have been present if the institution did not exist." Generally, there are three substantial problems. First, the definition of impact, second, measuring and estimating first-round expenditures and avoiding double-counting, third, estimating the correct value of the multiplier. The economic impact study has become a standard tool used by Western universities to persuade state legislatures of the importance of expenditures on higher education. As economic impact studies become a political tool in the review of education, conservative assumptions and methods should be used to promote objectivity in the research process. After calculations made, we found the total economic impact of the Kodolányi János College in Székesfehérvár around 2500-3000 million HUF (10% of the budget of the city, or slightly over 1% of the local GDP). We compared these results to the impact of higher education of a smaller city, Zalaegerszeg, where somewhat minor importance has been recognized.

Keywords: local economy, university, economic impact, Hungary

1. Introduction

The impact of higher education institution (colleges, universities – we use these expressions as convertible terms as the difference from the point of view of our research is not important) on local economy is extensively wide. Universities have important impact on the input and the output side, or on the demand and supply side, also. In the second chapter of the article we summarize theoretical background of the methodology used in previous articles, in its first section we analyze a general model, while in the second we focus on the economic impacts. Empirical results for two colleges in Hungary are summarized in the third chapter.

2. Theoretical background

2.1. General impacts

Florax (1992) and with modifications Garrido-Iserte and Gallo-Rivera (1995) showed that the regional and local effects of a university can be observed in many fields beyond economy (see Table 1).

Impact on	Example
Politics	Changes in the political structure, an increase in citizen participation, improvement in the organization of political processes
Demography	Impacts upon population growth, population structure and upon mobility
Economy	Impacts upon regional/local income, industrial structure, job market, labor mobility
Infrastructure	Impacts upon housing, traffic, healthcare services, retail
Culture	Greater offer in cultural goods, influence upon cultural environment
Attractiveness	Influence upon the region's (local) image, regional (local) identity
Education	Impact upon participation rate, changes in its quality
Social aspects	Impact upon the quality of life, the influence of the students, influence upon the region's (local) image and regional (local) identity

Source: After Florax (1992) and Garrido-Iserte - Galoo-Rivera (1995)
Table 1. Classification of regional/local impacts of universities

Dusek (2003) sorts the impact into input and output side effects (with students on both sides, see Table 2 and 3). He highlights the role of budget links as an important (economic) factor; the main financial source of the university is the government budget. These classifications are not far from the Segarra I Basco (2003) model, who divided backward and forward effects. Among the forward effect localization factors (instead of

attractiveness) he also mentions foreign investment and high-tech companies (that are typical actors of technopolis type clusters).

Actor	Changes
Households	+ income + employment + consumption
Local authority	+ tax base + services
Business	+ volume of business

Source: After Dusek (2003)

Table 2. Regional/local impacts of universities on the input side

Factor	Changes
Human capital	+ qualification + new firms + migration
Knowledge	+ university-business relations + extensive use of resources
Attractiveness	+ location choice of households and firms + cultural and social possibilities
Business	+ research and development, exhibitions

Source: After Dusek-Kovács (2009)

Table 3. Regional/local impacts of universities on the output side

Huggins and Cook (1997) transferred the keywords into drivers and outcomes, and in their approach, one cannot find hard measures on the driver side, while hardly have soft outcomes.

Brown and Heaney (1997) concluded that the input size effects may be better measured than output side effects, while the third mission of universities, the knowledge transfer has mainly social impacts. Notwithstanding, Beck et al (1995) argues that social (human capital) factors must be heeded, unless the major part of impacts would not be incorporated. Keczer (2007) and Keczer (2012) also mentions the purposive impacts of universities in regional and city development.

2.2. Economic impacts

Pallenbarg (2005) modified the table of Lambooy to achieve a complete list of economic impacts (see Table 4). However, this classification is a wide mixture of impacts of the three main missions of universities (education, research and business linkages).

Economic impacts of a university	Example
Employment at the university	Number of university jobs and related institutions
University income	State contributions, fees, benefits arising from entrepreneur activity, etc.
University expenditure	Purchase of goods and services by the university
Income and expenditures of the university employees	Wages and salaries, social security costs
Effects on the job market	Qualified job provision effect upon productivity; flexible working supply of the students
Generation of business	Companies created by university students and employees, with or without employment knowledge and technology
Knowledge marketing	The sale of knowledge in a variety of ways: from ideas, courses and patents

Source: Pallenbarg (2005)

Table 4. Regional/local economic impacts of universities

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Garrido-Iserte and Gallo-Rivera (2010) also attached importance to the separation of short and long term effects, and constructed a matrix of impacts (see Table 5).

Impacts upon	Short term	Long term	
Expenditures	Increase of the regional GDP Salaries Employment Taxes	Steady increase of regional GDP Investments on equipment and installation	
Knowledge	Changes in the job market Development of human capital	<u>Subjective</u> Externalities Workers productivity Increase of income throughout life	<u>Objective</u> Patents Investigation and development

Source: Garrido-Iserte and Gallo-Rivera (2010)

Table 5. Classification of the economic impacts of the universities

Brown and Heaney (1997) compare two approaches of the computation, the skill-based approach and the economic-based approach. Johnson (1994) argues to divide local and non-local, direct and indirect impacts, but he also attends to various negative impacts of universities and to the necessity of a net approach (i.e. individuals could spend more, if the government did not tax them to be able to pay the expenditures of universities). In other context, Klophaus (2008) emphasizes direct, indirect and induced effects.

In Bleaney et al (1992) we can find a mathematical deduction of the formula of the Keynesian regional multiplier. This method is the most often used one for computation, with a series of disadvantages and deficiencies. Its simplicity makes it so popular, as a relatively narrow scale of data is necessary. In our comparison, we will follow a version of regional multiplier model. The figure we applied in Figure 1 and 2 is modification of Caffrey – Isaacs (1971) and Bridge (2005) models.

3. Empirical evidence

Even if the theoretical background is not unanimous, but well-known, estimation methods are wrought and discussed (see Siegfried et al, 2006 or Kotosz 2012 and Kotosz 2013 for a general discussion), and many international empirical example can be found in the literature (Armstrong 1993, Blackwell et al 2002, Bleaney et al 1992, Bridge 2005, Brownigg 1973, Caroll-Smith 2006, Cooke 1970, Huggins and Cooke 1997, Jabalameli et al 2010, Lewis 1988, Love and McNicoll 1988, Ohme 2003,Pallenbarg 2005, Robert-Cooke 1997, Simha 2005, Tavoletti 2007) only one finished case study is known for Hungary, the case of the University of Győr (Széchenyi István University). Some steps were also made in Pécs (Mezei, 2005), but this research has not reached the level of having at least one numerical result.

In our paper, we followed the computations made for Győr, using the same methodology, model and primary research agenda, so our results are fully comparable. The Keynesian model was modified at the points: (1) we use and apply local consuming habits (and so local marginal propensity to consume), (2) we calculate primary production and consumption effect in two steps. The latter methodological background is described in Bleaney et al (1992) and Felsenstein (1997).

The multiplication effect is the function of the following factors:

- Personal income tax rate (average rate) [t]
- Value added tax (average rate) [n]
- Marginal propensity to consume [c]
- Local consumption proportion of students [d]
- Local consumption proportion of employees [e]
- Local consumption proportion of the college [b]

Armstrong-Taylor (2000) and Lengyel-Rechnitzer (2004) supposed a fix amount of spending of visitors and an equivalent local consumption proportion of students, employees and the college. Thereby the formula of the multiplier is:

$$\frac{1}{1-e\cdot c\cdot(1-t)\cdot(1-n)}$$

Expenditure data of the college can be reached from public information (profit and loss statements). In the case of multi-campus institutions, allocation of expenditures by campus has been based on our estimation. We supposed that employees have an additional income of 20% over their salary at the college. Estimation of visitors' expenditures is proportioning of earlier case studies. Otherwise these items affect barely the total economic effect.

To map expenditure of student, we asked them to fill in a questionnaire (in 2011 in Zalaegerszeg, and in 2012 in Székesfehérvár). This element was based on a sample, we multiplied the sample mean by the number of students enrolled at the college. In the case of part-time students (who were not asked in the survey) we supposed one fifth of the full-time students' local consumption. Most of their consumption would be realized if the college did not exist.

To estimate the local consumption function, we can follow two different ways. From one part, we can use national statistics, as by empirical evidence (see Árvai-Menczel 2001, Vidor 2005) local and national functions are not significantly different. From the other part, local sample surveys can also serve as starting point. General results for Hungary are around 0.6, specific results for students are between 0.7-0.8 (Dusek 2003). Here we applied 0.6.

By official data, 30-40% of students are local, with the higher proportion in Székesfehérvár. The proportion of local consumption is 68% in Székesfehérvár and 74% in Zalaegerszeg; based on survey data.

Estimation of employees' local consumption proportion is the most problematic point of the process. As the dominant part of the staff is local, we supposed that local consumption proportion is higher than students', we used 75%.

Local consumption proportion of the college is typically not campus dependent, but restricted by national law. Well-known estimation problems arises with the limitation of local level (see e.g. Székely 2013), but this question is beyond the goals of the paper. We used a 70% value for each college.

For the average tax rates, we used recent estimations of the Hungarian National Bank, so the average personal income rate is 20.1% and 19.6% for 2011 and 2012 respectively while the average VAT is 20.5% in our model. (for methodology, see Benczúr-Kátay 2010)

3.1. Székesfehérvár

Székesfehérvár is located in the Central Transdanubia region in Hungary with a population around 100.000 people. Historically, it is not a university town, albeit faculties of different universities have been installed there long ago. The first, locally based college is Kodolányi János College was funded in 1992 as a private college. It has programmes in the fields of business, social sciences and music.

Results of our estimations can be found in Figure 1.

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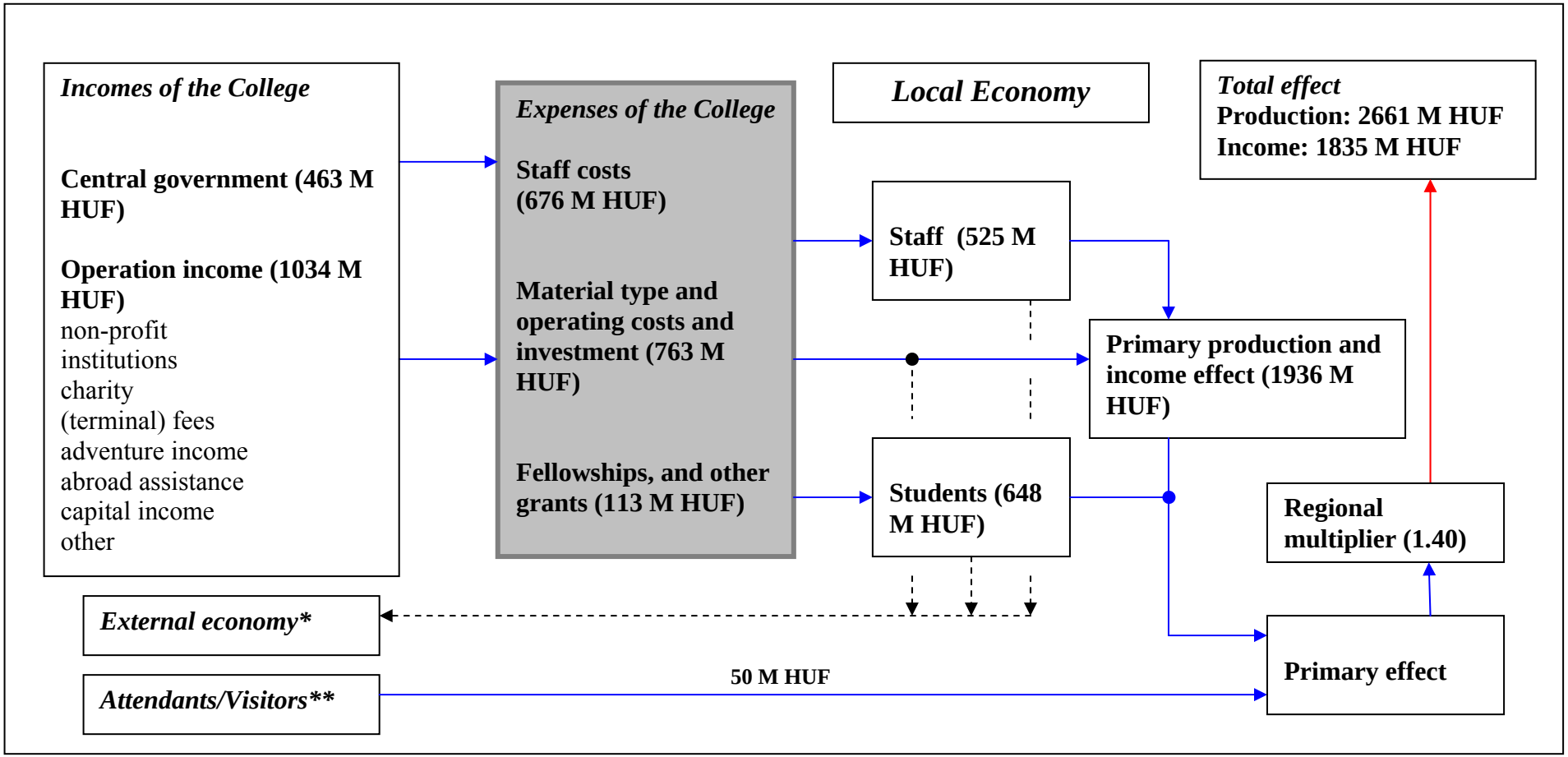

Fig 1. Cash-flow of the Kodolányi János College, 2012

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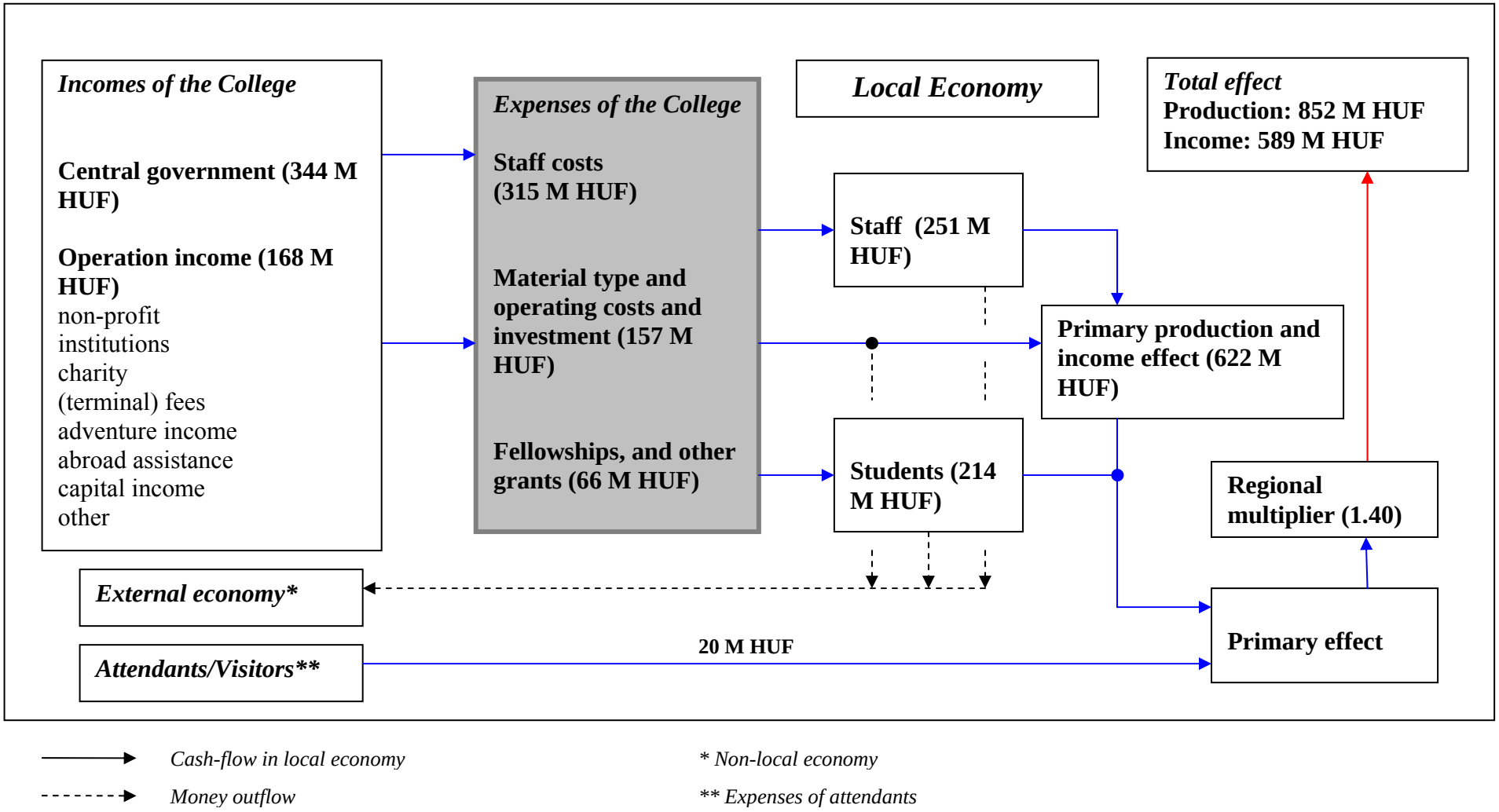

Fig 2. Cash-flow of the Budapest Business School in Zalaegerszeg, 2011

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3.2. Zalaegerszeg

Zalaegerszeg is located in Western Transdanubian region with a population of 60.000 people. The predecessor of the current Faculty of Business (of Budapest Business School) was established in 1971, it works as a faculty from 2011. Its main profile is finance and accounting. Other smaller programmes of different universities are also in function, but their importance is significantly lower.
Results of our estimations can be found in Figure 1.

4. Conclusion

In our article, we summarized the results of a comparative research of two colleges in the Transdanubian region of Hungary. We chose a relatively large private college with a wide range of education programmes and a specialized public college with focus on business education. Their local economic effect is similar, but its magnitude is different, almost proportional to the student number. The regional multiplier is practically equal in the two cities with a value of 1.40. We can also see from the results that the larger college has a relatively more important economic impact at local level – about 1.5 times more important compared to local economic performance.
An optimal state of art would be having multiple results with different methods and comparative analysis of applicable country-specific methods. This goal is very far yet, but the way is open to achieve.

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References

Armstrong, H. W. (1993). “The local income and employment impact of Lancaster University”. Urban Studies, 30, 1653-1668.
Armstrong, H. W. – Taylor, J. (2000). “Regional Economics and Policy”. Oxford: Blackwell.
Árvay, Zs. – Menczel, P. (2001). “A magyar háztartások megtakarításai 1995 és 2000 között”. Közgazdasági Szemle, XLVIII. 93-113.
Beck, R. – Elliott, D. – Meisel, J. – Wagner, M. (1995). “Economic impact studies of regional public colleges and universities”. Growth and Change, 245-260.
Benczúr, P. –Kátay, G. (2010). “Adóreformok hatása a magyar gazdaságra egy általános egyensúlyi modellben”. http://media.coauthors.net/konferencia/conferences/3/benczur_katay.pdf (retrieved 2011.03.24.)
Blackwell, M. – Cobb, S. – Weinberg, D. (2002). “The Economic Impact of Educational Institutions: Issues and Methodology”. Economic Development Quarterly, 16/1, 88-95.
Bleaney, M. F. – Binks, M. R. – Greenaway, D. – Reed, G. – Whynes, D. K. (1992). “What does a university add to its local economy?” Applied Economics, 24, 305-311.
Bridge, M. (2005). “Higher education economic impact studies: accurate measures of economic impact?” Journal of College Teaching and Learning, 2, 37-47.
Brown, K. H. – Heaney, M. T. (1997). “A Note on Measuring the Economic Impact of Institutions of Higher Education”. Research in Higher Education, 38/2, 229-240.
Brownigg, M. (1973). “The economic impact of a new university”. Scottish Journal of Political Economy, 20, 123-129.
Caffrey – Isaacs (1971). “Estimating the impact of a College or University on the Local Economy”. Washington: American Council on Education.
Caroll, M. C. – Smith, B. W. (2006). “Estimating the Economic Impact of Universities: The Case of Bowling Green State University”. The Industrial Geographer, 3/2, pp. 1-12.
Cooke, E. (1970). “Analysing university student contribution to the economic base of the community”. Annals of Regional Science, 4, 146-153.
Dusek, T. (2003). “A felsőoktatás lokális termelésre és jövedelmekre gyakorolt hatása”. Rechnitzer János-Hardi Tamás (eds): A Széchenyi István Egyetem hatása a régió fejlődésére. Győr: Széchenyi István Egyetem Gazdaság- és Társadalomtudományi Intézet, 60-71.
Dusek, T. – Kovács, N. (2009). “A Széchenyi István Egyetem hatása a helyi munkaerőpiacra”. A Virtuális Intézet Közép-Európa Kutatására (VIKEK) Évkönyve, II. Régiók a Kárpát-medencén innen és túl konferencia tanulmányai, 69-73.
Felsenstein, D. (1995). “Dealing with ”induced migration” in university impact studies”. Research in Higher Education. 36, 457-472.

Kotosz, B. (2013): The Local Economic Impact of Higher Education Institutions in Hungary. In: Khavand, K. J. (ed): *Intellectual Capital Management. Global Perspectives on Higher Education, Science and Technology*. IICM, Zanjan. ISBN: 978-964-196-194-9, pp. 45-60.

Florax, R. (1992). "The university: a regional booster?" England: Avebury.

Garrido-Iserte, R. – Gallo-Rivera, M. T. (2010). "The impact of the university upon local economy: three methods to estimate demand-side effects". Annals of Regional Science, 44, 39-67.

Huggins, R. - Cooke, P. (1997). "The economic impact of Cardiff University: innovation, learning and job generation". GeoJournal. 41/4. 325–337.

Jabalameli, F. – Ahrari, M. – Khandan, M. (2010). "The Economic Impact of University of Tehran on the Tehran District Economy". European Journal of Social Sciences, 13/4, 643-652.

Johnson, T. M. (1994). "Estimating the Economic Impact of a College or University on a Nonlocal Economy". PhD dissertation, Texas: Texas Tech University.

Keczer, G. (2007). "Az egyetemek szerepe a tudásalapú régiófejlődésben". Régiók a Kárpát-medencén innen és túl, Baja: Eötvös József Főiskola, 243-247

Keczer, G. (2012). "A felsőoktatási intézmények szerepvállalása a régió- és város-fejlesztésben". Közép-európai Közlemények, V/1, 136-144.

Klophaus, R. (2008). "The impact of additional passangers on airport employment: The case of German airports". Airport Management, 2, 265-274.

Kotosz, B. (2012). "Felsőoktatási intézmények regionális multiplikátor hatása". Jelenkori társadalmi és gazdasági folyamatok. VII/1-2, 7.

Kotosz, B. (2013). "Local Economic Impact of Universities". Analecta Technica Szegedinensia, 2013/1-2, 22-26.

Lengyel, I. – Rechnitzer, J. (2004). "Regionális gazdaságtan". Budapest-Pécs: Dialóg-Campus.

Mezei, K. (2005). "A Pécsi Tudományegyetem hatása a város gazdaságára". A magyar városok kulturális gazdasága. Budapest: MTA Társadalomkutató Központ,.

Lewis, J. A. (1988). "Assessing the effect of the polytechnic, Wolverhampton, on the local community". Urban Studies, 25, 25-31.

Love, J. H. – McNicoll, I. H. (1988). "The regional economic impact of overseas students in the UK: A case study of three Scottish universities". Regional Studies, 22, 11-18.

Ohme, A. M. (2003). "The Economic Impact of a University on Its Community and State Examining Trends Four Years Later". University of Delaware, mimeo.

Pallenbarg, P. H. (2005). "How to Calculate the Impact of University on the Regional Economy". Paper presented to the Conference on Knowledge and Regional Economic Development, Barcelona, 9-11 June 2005.

Robert, H. – Cooke, P. (1997). "The economic impact of Cardiff University: innovation, learning and job generation". GeoJournal, 41/4, 325-337.

Segarra i Blasco, A. (2004). "La universitat com a instrument de dinamització socioconómica del territori ». Coneixement i Societat, 03, 78-101.

Siegfried, J. J. – Sanderson, A. R. – McHenry, P. (2006). "The Economic Impact of Colleges and Universites". Vanderbuilt University Working Paper No 06-W12.

Simha, O. R. (2005). "The Economic Impact of Eight Research Universities on the Boston Region". Tertiary Education and Management, 11, 269-278.

Székely, A. (2013). "Regionális multiplikáció a szegedi Árkád példáján". Fiatal Regionalisták VIII. Konferenciája. Évkönyv 2013. Győr: Széchenyi István Egyetem Regionális- és Gazdaságtudományi Doktori Iskola, forthcoming.

Tavoletti, E. (2007). "Assessing the Regional Economic Impact of Higher Education Institutions: An Application to the University of Cardiff". Transition Studies Review, 14/3, 507-522.

Vidor A. (2005). "A megtakarítás-ösztönzők hatása: magyarországi tapasztalatok". PM Kutatási Füzetek, http://www2.pm.gov.hu/ (retrieved October 13, 2010).