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THE HIGHER EDUCATION COMPETITION IN POLAND AND THE QUALITY OF TEACHING AND RESEARCH: THE CASE OF ECONOMIC AND LAW STUDIES

SUMMARY

Universities compete for candidates for studies. This phenomenon should be particularly evident in the case of popular mass study programs like economics or law. The choice of a university and the study programs is affected by the level of perceived quality of education and the tuition paid. Therefore using measures of competition similar to the law of universal gravitation we measure the competition pressure exercised on each study program by other programs. Subsequently we assess whether there is interdependence between quality of education and research, taking into account the intensity of competition between studies offered by different universities in Poland. The quality of education is taken from Polish Accreditation Committee resolutions and the research quality data is based on scientific categorization. It can be assumed that the highest quality of education and research prevails only in the most competitive environment. In this way we can determine whether the competition pressure is sufficient to improve the quality of education and research and whether there

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is a need to impose special regulations ensuring external supervision over the quality of education and research activities in higher education sector.

INTRODUCTION

The competition between educational institutions is the rivalry for implementation of their own interests by offering programs more attractive than competitors[1]. On the demand side it is the choice of universities, best suited to the needs and aspirations of students. On the supply side it is an expansion of educational services provided by the most popular universities and simultaneous elimination of inefficient market institutions with poor reputation. Obviously competition reflects in enrollment of students with highest demand. The competition for students is probably the fiercest in mass program studies with a perspective on high-salary-job like law or economics. The purpose of the paper is to investigate the relation between competitive pressure and the quality of teaching and research offered by higher education institutions providing studies of economic or law.

The competition between HEIs is not a perfect one because there is transportation cost if the same type of study is offered in different cities and the perceived quality of teaching is not the same for all universities. Moreover the student motivations and abilities are not homogeneous. Some students prefer higher quality teaching and the others – only formal confirmation of their education level[2]. Therefore their propensity to pay for studies is different. Even in the case of the same type of study (for example part-time study) there is segmentation on the educational market. Probably the higher-education-institution-competition takes the form of imperfect competition or leader-price oligopoly. But we do not address this issue in advance. Instead we propose general approach covering the two possible forms of industrial organization into the form of gravity model. We would like to measure the com-

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[1] G. Bukowska, *Konkurencja na „rynku" edukacji wyższej – uwarunkowania instytucjonalne*, [in:] J. Woźnicki (ed.), *Partnerstwo publiczno-prywatne (PPP) w świetle doświadczeń międzynarodowych oraz strategii rozwoju szkolnictwa wyższego 2010-2020*, Instytut Społeczeństwa Wiedzy, Warszawa 2012, p. 25-46.

[2] This is especially evident for older students with long work experience. They prefer to obtain only the higher level of education from formal and practical reason (for example to preserve their job or to get promotion at work).

petitive pressure exerted on each of the higher education institutions providing the given part-time type of studies in Poland.

Competition may be symmetric when everyone feels the pressure of others and strives to improve the quality or asymmetric when the small institutions feel the higher competition pressure than larger ones or vice versa. Competition may not occur if the hidden factors such as the level of tuition fees and the following segmentation of the market (for example, people from small villages can prefer private higher schools rather than public because they are: cheaper, located close to their homes and they do not require too much effort to complete the given level of education[3]) determines the candidates choice of the school and a study program. Nevertheless, we stipulate that competitive environment increases the quality of teaching and allows for high tuitions fees, whereas competition avoidance is often connected with low tuition and low teaching quality. This conjecture can be confirmed if higher number of students can coexist with expensive studies (indicating high perceived quality) and with correlation of competitive pressure with external measures of quality (grades granted by Polish Accreditation Committee – PAC – or categorization rank granted by Committee for Evaluation of Scientific Units – CESU). We check this hypothesis on the data on programs studies of law and economics in Poland. Nevertheless, it should be emphasized that quality of teaching per se is not a driving force in determination of students programs' choice, according to the observation made by Lee Harvey and Jethro Newton[4].

The article is structured as follows. Firstly, two measures of competitive pressure and price positioning are proposed. They include the intensiveness of competition and the relative price attractiveness of programs. Secondly, the mentioned indicators are derived from law and economics studies in Poland for 2011 with the exception of data on tuition fees collected for 2013. It enables us to compare the ranks of these two measures and distinguish four possible price and competitive mixture strategies. Subsequently we describe the two external quality measures based on the evaluation of teaching process and research activity assessments prepared on the base of grades granted by supervisory authorities. We do not take into account the popular rankings of facul-

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[3] The asymmetric competition between public and private universities is described in: Del E. Rey, L. Romero, *Competition between public and private universities: Exams versus prices*, Economics Working Papers from Universidad Carlos III, http://www.eea-esem.com/papers/eea-esem/2004/2640/competition.pdf (20.09.2013).

[4] L. Harvey, J. Newton, *Transforming quality evaluation*, „Quality in Higher Education", Vol. 10, No 2/2004, p. 149-165.

ties offering best studies of law or economics because these rankings are general and concerning the reputation of the school (for example perceived by academics and employers) and not necessarily the program itself. Moreover they are secondary, in the sense that they sometimes base on the grades obtained previously from PAC and CESU. Eventually, the correlations between competitive pressure and external quality measures are calculated and some conclusions are drawn from conducted study.

1. THE PROPOSITION OF COMPETITION MEASURES IN HIGHER EDUCATION

The inspiration for the construction of competition indicators is econophysics (in particular the law of universal gravity formulated by I. Newton) and the gravity models of the new economic geography stemming from the same theoretical background. This approach can easily embrace the occurrence of transportation costs (the cost of moving to another city is high but it can be low if the competitor is located in the same city) and imperfect competition[5] (universities are distinguished by public and posses advantage in recruiting candidates living in their vicinity) into one model[6]. The intensity of the external competition pressure is positively affected by the number of competing programs, the distance between them and the size of the HEIs study measured with the number of students. Therefore it seems appropriate to apply the very well known law of universal gravitation proposed by I. Newton:

$$F = G\frac{m_1 m_2}{r^2},\qquad(1)$$

where:
F – the gravity force,
G – the gravity constant,
m_1 –mass of the first object,
m_2 – mass of the second object,
r – distance between objects.

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[5] If the competition is perfect then the only price would matter and students would choose the study with the lowest tuition anywhere in Poland (because in such a case the transportation cost is zero, there is no difference in perceived quality of teaching and candidates are homogenous).
[6] The importance of transportation cost is well established in literature following Hoxby C., *How the changing market structure US higher education explain college tuition*, NBER Working Paper, No. 6323, Cambridge MA, December 1997.

On the basis of above concept we propose the following indicator of competitive pressure (CP):

$$Competitive\ pressure\ (CP) = \sum_{i=1}^{m}(t_1 - t_i)\frac{n_1 n_i}{r^2}, \qquad (2)$$

where:
CP – the competitive pressure indicator,
m – the number of competing HEIs,
t_1 – tuition fee on the whole study program at given HEI,
t_i – tuition fee on the whole study program at competitor,
n_1 – number of students at the program,
n_i – number of students at the program of competitor,
r – the distance (in kilometers) between the location of HEI and competitor.

The competitive pressure indicator (CP) is the sum of pressure exerted by the difference in tuition between universities (HEIs) and the product of the number of student attending the program at each school, divided by the squared distance. If the tuition of the competitor is lower than tuition of respective program then the single element of sum constituting CP is positive. Therefore the higher the indicator the higher is the competitive pressure. The pressure intensifies with the number of students attending both programs and with the shortening the distance between school headquarters. It implies the highest competitive pressure exerted on universities from the same city. Because we multiply the number of students in both institutions the competitive pressure between two small program studies is moderate and increases with the size of competing universities.

We assume that competition involves only the same type of programs (economics or law) and the same form of studies (here – only part-time studies) of the given degree (undergraduate or graduate). We exclude full-time studies programs because they are offered for free by public HEIs (however, with quantitative limits on the number of students) and separately with tuition by private universities. It prevents the comparison of different program studies and obliterates the perceived quality of teaching, giving the public school the competitive advantage that hampers the competition. The program study is offered in the university headquarter. The distance between headquarters inside the same city is always set to 1. We do not take into account the e-learning activity or delegated centers (the students in these cases are assigned to the HEIs' headquarter).

The second indicator is the rate of price positioning (PP)[7], which depends solely on the difference between tuition fees.

$$Price\ positioning\ (PP) = \sum_{i=1}^{m} \frac{t_1 - t_i}{r^2}, \tag{3}$$

where all marks are the same as in formula (2).

A single element of the sum is positive when competitive pressure indicator is positive. However, the total sum of elements can be positive or negative independently of CP values (because CP elements are weighted with the product of number of students). The lower the indicator the cheaper the program is in comparison with the programs offered by competitors.

To allow for the comparison we have changed the results for the ranks. The high rank of CP links with high competition and high rank of PP indicates relatively expensive studies.

2. THE RESULTS OF COMPETITIVE PRESSURE CALCULATION FOR LAW AND ECONOMICS PROGRAMS

The analysis concerns three types of part-time studies: law (5 years graduate program) and economics (undergraduate 3 years program and postgraduate 2 years program). The total number of assessed programs varies from 32 for law, to 90 for undergraduate economics. In general we expect the price positioning rank to be consistent with rank of competitive pressure. This attributes to the similarity of two measures (CP and PP). In general taking into account the quality of teaching the only programs of high quality can be expensive on a long term basis. If a study program is not competitive then it will be closed due to the lack of students and profitability.

The graphs 1-3 stick to this hypothesis very well. However, we notice several exemptions. The fit is the best for the average level of competitive pressure (this is especially evident for undergraduate economics) and worsens for the study programs with very high or very low pressure (especially for economics studies experiencing higher competition than law). It seems reasonable to assume that price is good equivalent of HEIs' perceived quality for medium levels of tuitions. However for very cheap and very expensive programs

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[7] The high impact of cross-price effect on the enrollment of students was discovered in R. Allen, J. Shen, *Some new evidence of the character of competition among higher education institutions*, „Economics of Education Review", Vol. 18, No. 4/1999, p. 465-470.

this relationship breaks down. We notice the highest discrepancy for under-graduate economics and the lowest for law.

Theoretically, we can encounter four situations: relatively high CP and PP – indicating high quality studies, low CP and high PP – suggesting either exclusive type of study or too expensive studies, high CP and low PP – hinting relatively cheap studies but intensively competing with other low-price-studies and eventually (setting too low price for remote competitors and too high for the very local ones) low CP and low PP – attributing (probably) to the low perceived teaching quality. The first situation for part-time study of law characterizes: University of Warsaw (CP rank – 1 ; PP rank – 1), Lazarski University (CP rank – 2; PP rank – 2) and Jagiellonian University (CP rank – 3; PP rank – 7). The second situation concerns for example: Vistula University (CP rank – 5; PP rank – 86) and Real Estate University in Warsaw (CP rank – 7; PP rank – 85) for undergraduate part-time economics. The third situation can be represented by: Bolesław Markowski Higher School of Commerce in Kielce (CP rank – 43; PP rank – 10) and Jan Kochanowski University in Kielce (CP rank – 36; PP rank – 10) for graduate part-time economics[8]. The last situation is typical for: University of Finance and Management (CP rank – 29; PP rank – 32) or Warsaw Management Academy (CP rank – 31; PP rank – 31) (if we consider only the part-time studies of law).
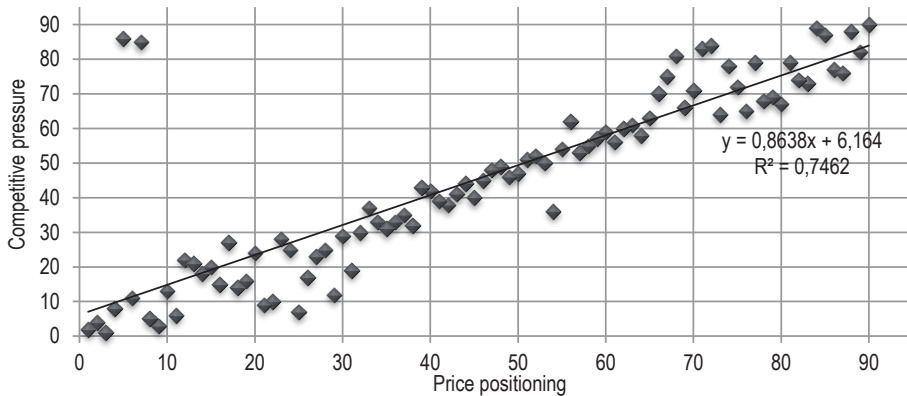
Figure 1. Rank of competitive pressure and price positioning for part-time studies of law
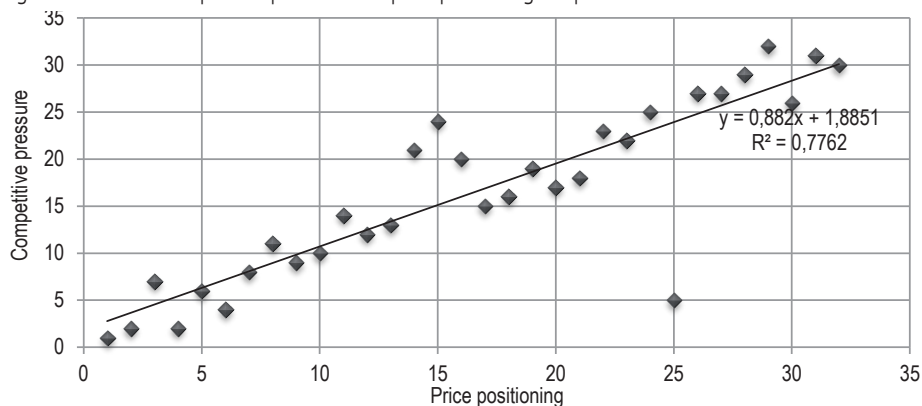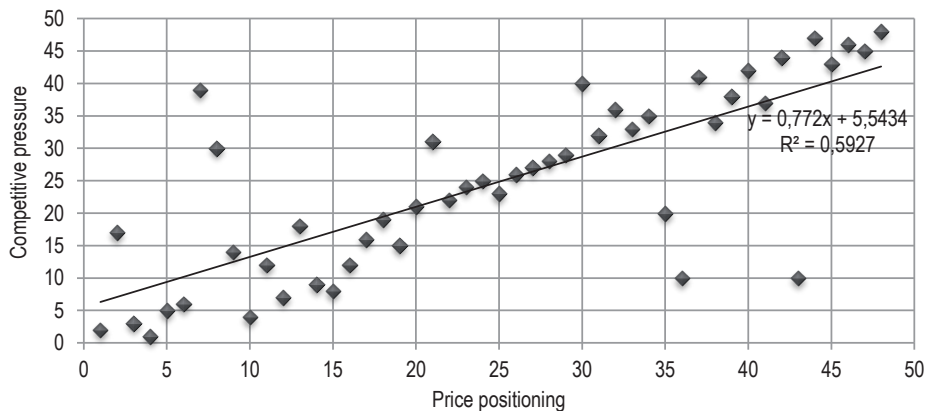

Source: Own calculations based on of CP and PP.

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[8] The PP rank is the same for both studies because they have the same tuition fee and they are located in the one city (Kielce).

Figure 2. Rank of competitive pressure and price positioning for part-time studies of undergraduate economics

$y = 0,8638x + 6,164$
$R^2 = 0,7462$

Source: Own calculations based on CP and PP.

Figure 3. Rank of competitive pressure and price positioning for part-time studies of postgraduate economics

$y = 0,772x + 5,5434$
$R^2 = 0,5927$

Source: Own calculations based on CP and PP.

3. THE TEACHING QUALITY ASSESSMENT
AND THE CATEGORIZATION OF SCIENTIFIC UNITS

To compare the competition pressure indicators with the level of teaching quality we utilize the assessment grades of Polish Accreditation Committee (further PAC). It is an independent public institution established to enhance the quality of higher education in Poland. The grades are granted after evaluation process. Inter alia the PAC procedure consists of: analysis of a self-eval-

uation report, the site visit and the response of the HEIs authority. The assessment (grade) of education, takes into account teaching outcomes and the compliance with the legal requirements. There are four kinds of quality grades in quality system in Poland: outstanding, positive, conditional and negative. In program evaluation, all grades refer to the specified studies. The positive grade is valid for 6 years, outstanding for 8 years and conditional for 1 year. For the latter the reassessment is required after that and the new grade can be either positive or negative. In the case of negative evaluation the academic institution is forced to close down the existing type of studies but this can take some time because students can graduate the existing programs. In practice it occurs up to: 5 years for law, 3 years for undergraduate economics and 2 years for graduate economics programs. Sometimes the higher education institution appeals to the PAC to reevaluate the negative or conditional decision and this request is approved by the committee. In such a situation after negative grade the conditional or positive grade can be granted. The outstanding grade is awarded after receiving the positive grade by the program and not earlier than after assessment of all studies of given type in Poland. Starting from 2011 the program evaluation is gradually replaced by an institutional one for faculties which have the majority of their programs already evaluated. The institutional evaluation, in contrast to program evaluation, applies to all fields of study provided by the faculty.

Separately, the Committee for Evaluation of Scientific Units evaluates the quality of research, granting the institutes or faculties inside public research institutions with scientific category grade. Generally there were 5 levels of scientific categories in 2010[9]. The highest one was the first grade and the lowest – fifth. The categorization is voluntary for the bodies of academic institutions but has a large impact on the level of financing received from the budgetary funds. The obtained categorization is valid for 3 years.

To describe the quality of higher school providing the study program we propose two measures: the first – Evaluation – seizes the quality of teaching and the second – Category – captures the quality of research. The construction of variables stems from evaluation and categorization data provided by PAC[10] and CESU[11]. As a proxy of teaching quality of the program we have

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[9] The last scientific assessment occurred in 2013 but with different scale (A+, A, B, C).

[10] Details of the evaluation of the quality of education are provided by the Polish Accreditation Committee, http://www.pka.edu.pl/index.php?page=s_ocenione (21.09.2013).

[11] Details of the categories of university research units are taken from the website of the Ministry of Science and Higher Education, *Informacja w sprawie ujednoliconego wykazu ustalonych kategoriI jednostek naukowych*, http://www.nauka.gov.pl/g2/oryginal/2013_05/499dcd796d fd5a75492b8682ab9eb072.pdf (21.09.2013).

used the grades which had been evaluated in the institution before the given year. We can't use the grades granted exclusively at a given year because the choice of program assessment was not random in the past. The PAC has started evaluation from programs perceived as better, in order to set the initial standards of quality. It means that evaluation results are time-biased and the higher grades were more often granted at the beginning of the quality assessment process. This bias was subsequently replicated according to the expiration date of early-issued decisions granting the evaluation levels.

The evaluation measure calculation focuses only on the program evaluation so the results of institutional assessment have been omitted. The nominal grades obtained by an academy are represented in our study by four numbers: 1 – outstanding, 2 – positive, 3 – conditional and 4 – negative. Generally the greater the number the lower is the quality of teaching. Several weaknesses of this measure should be stressed. In particular, the PAC assessment does not classify the relative quality of different study programs, if they are included into positive category. The positive category may in fact contain both very good programs (but not outstanding) and only satisfactory. The number of negatively evaluations decreases over time, because poor academic institutions mimic the programs of good universities. These two characteristics constrain the usefulness of proposed measure in education quality comparison of various higher education institutions over time.

Similarly, the quality of university research is manifested in the scientific category of institutes and faculties providing the given study program inside the university. The scientific categories are decreasing with the quality of research. For units without categorization grade the number six was assigned. Therefore the obtained research quality indicator has the maximum value – one and minimum – six.

4. THE DEPENDENCE BETWEEN DERIVED MEASURES AND EXTERNAL QUALITY GRADES

The final stage of the study is the comparison of competitive pressures measure with external quality measures calculated on the base of PAC and CESU data. For this purpose, we provide correlations of PC with Evaluation (PAC teaching quality grades) and separately with Category (CESU scientific category grade of a unit of HEI). It should be noted that due to the categorical (discontinuous) characteristic of external quality of variables we cannot expect a high correlation between the variables because the Evaluation and Category consist of only several values.

The pairwise correlation of law studies competitive pressure with Evaluation is -0,8613 (0) and respectively with Category is -0,3038 (0,091). The significance levels are given in parentheses. In both cases significance the level lies below 10%, confirming the negative correlation with both variables. This is consistent with the expectation that higher competition pressure triggers higher quality. It should be noted that the correlation with teaching quality grade is greater and more significant in this context.

The pairwise correlation for undergraduate economics with PAC grades is -0,2055 (0,1005) and with scientific category -0,1867 (0,0781). Therefore the first is slightly beyond the 10%-significance-level. The pairwise correlation for graduate economics with Evaluation is -0,3651 (0,0242) and for scientific categorization -0,1413 (0,3381). Only the last number is insignificant.

CONCLUSIONS

Application of the formula similar to the law of universal gravity can be a handful tool in assessing the competition pressure facing studies at higher education institution. Moreover, the comparison of competitive pressure rank with price positioning rank can help to distinguish the incorrect tuition policy and recognize the quality perceived by students choosing the individual programs of law or economics.

The revealed correlations between external quality measures and competitive pressure are consistent with the hypothesis stated in the introduction for law and partially coherent for economics. Interpretation of this result for undergraduate economics emphasizes the preferences for programs offered not far from students' home and the choice of the program according to the reputation of a faculty or a university (which is better expressed by scientific category of the unit providing study)[12]. On the graduate economics level the teaching quality is more important for students but not necessarily the scientific quality of the institution. In this case, the choice of the program is probably determined with respect of its practical usefulness[13].

Eventually, we should determine whether the competition is sufficient to improve the quality of education and research and whether there is a need

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[12] The similar hypothesis was formulated by P. Aghion, N. Bloom, R. Blundell, R. Griffith, P. Howitt, *Competition and innovation: an inverted-U relationship*, „Quarterly Journal of Economics", Vol. 120, No. 2/2005, p. 701-728 for excessive competition hampering innovations.

[13] It explains why large and well-known universities have problem with enrollment in graduate studies offering highly academic programs instead of practical ones.

to impose special regulations ensuring external supervision over the quality of education and research activities in higher education sector. In the light of obtained results, the competition pressure is sufficient for the limited number of competing programs (like law) but it turns out to be inadequate for an abundant type of studies (like economics). In the latter, some forms of control and supervision would be appropriate because, to our surprise, the free market does not ensure the elimination of bad teaching programs.

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