

POLISH GRADUATE STUDENTS FINANCIAL EXPECTATIONS ANALYSIS WITH HUMAN CAPITAL MODEL – COMPARATIVE ANALYSIS WITH OTHER COUNTRIES

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Abstract:

The article covers the issue of salaries for university graduates, which is crucial especially from the labour market and social point of view. In the first part of the article, the author attempts to use the human capital model to determine and estimate rewarding received by university graduates. A special emphasis is put on experience, which is a crucial factor, strongly influencing the chance of finding an appropriate employment. Another factors, such as a capital resulting from experience, human capital, and intellectual capital of graduates were also calculated to determine above-mentioned salaries. The valuation of human capital is acknowledged to be fundamental, when it comes to arranging a fair reward. The theoretical and model description of reality is compared to the results of a survey conducted among students in their final year of studies. The survey included questions about financial expectations in their first job after the graduation. Results were set together with similar data about salaries in other countries to determine how the human capital is valued in Poland, compared to other countries. The article is ended with conclusions concerning conducted analysis and comparisons and the position of the university graduate on sometimes crude reality of the labour market.

Keywords: graduates financial expectations, intellectual capital, university graduates on the labour market, graduates salaries, human capital model, survey, comparative analysis

1. INTRODUCTION

Nowadays, higher education is a standard for young people. There are many different specialist fields of study and everyone is capable to choose the one, which suits one's abilities and predispositions. The major criterion of choosing the type of studies young people follow is desire to get high and decent wage in the job they take after graduation. However, the reality often verifies graduates view of the labour market. It turns out, that university graduates take various jobs that are not in line with their education profile and financial expectations.

Students from different fields of study see their future wages differently, because of their education profile, which allows them to take different jobs. The choice of their field of study is often driven with the prevailing situation on the labour market and their predictions of how this situation will present, when they graduate and start looking for a job.

Appropriate education is always highly appreciated by employers, but also the experience, which potential candidates for a job have is also extremely important. Studies at the university gives students the necessary knowledge that is best used only in a mixture with a practical experience.

The purpose of the paper is to estimate the wage of university graduates based on their human and intellectual capital in their first job after graduation, then the estimation is faced with financial expectations of the graduates. Human Capital Model was used to estimations, because of its inclusion of the experience as a crucial factor affecting the value of human capital in the eyes of employers. Survey research conducted among the graduation year students of economic courses in Lubelskie voivodeship forms the basis of establishing the height of financial expectation of students overall. The research group was narrowed to such a profile because it is commonly known that wages differ in different industries and students base their financial expectations on ongoing trends in the labour market segment, they found suitable to their education profile.

Modern labour market is widely open. It requires high mobility from the candidates for the job, which reflects in the possibility of finding better paid jobs abroad. For the completion of the research and analyses conducted for this article, the results have been faced with financial expectations of students in other countries, giving the full image of students perception on future wages in international aspect.

2. HUMAN CAPITAL MODEL USAGE FOR DETERMINING THE WAGES OF UNIVERSITY GRADUATES IN POLAND

One of the most rooted in the people's consciousness term describing contemporary reality is a confidence of living in information society. It has to be remembered that such society is highly based on the knowledge. (Karvalics, 2008 pp. 29-37) The knowledge has a certain value and should be properly valued on the labour market.

The wage that the employee should receive is connected to the human capital by the knowledge factor, which occurs as a result of one's contribution to properly prepare for the job taken in the future. Such contribution may be expressed in various ways, which is possible to be reduced to living costs, education and the third factor that appears after finding a job – experience, which is increased with further functioning in the labour market as an employee. (Dobija, 2010).

Human capital is given with a following formula (Dobija, 2002, p. 112):

$$H(T) = (K + E) \times (1 + Q(T)),$$

where:

$H(T)$ – value of human capital,
 E – capitalised education costs,
 K – capitalised living costs,
 $Q(T)$ – experience factor.

The experience factor is given by following formula (Dobija, 2002, p. 112):

$$Q(T) = 1 - T^{\frac{\ln(1-w)}{\ln 2}}$$

where:

w – learning factor,

T – number of years of work.

Assuming that $K + E = H = H(0)$ and relationships given beyond, it is possible to calculate the value of capital that comes from experience $D(T)$, with the following formula:

$$D(T) = Q(T) \times H,$$

human capital is then given by the formula:

$$H(T) = H + D(T),$$

and the value of intellectual capital is given by the following formula:

$$I(T) = H(T) - K.$$

With formulas given above it is possible to estimate the value of capital coming from the experience, human capital and intellectual capital taking the capital coming from the professional experience into account. However, some data need to be specified to conduct proper calculations.

First, $H = H(0)$ needs to be estimated. Fixing living costs is important and such data may be estimated, based on social minimum¹. According to the latest data published by Institute of Labour and Social Studies, in March 2015 in Poland social minimum in a monthly basis was respectively (Kurowski, 2015):

- 1066,99 PLN for single household (1066,99 PLN per capita),
- 1758,61 PLN for double household of two adults (879,30 PLN per capita),
- 2608,39 PLN for three-person household with a child up to 6 years old (869,46 PLN per capita),
- 2769,22 PLN for three-person household with a child of 13-15 years old (923,07 PLN per capita),
- 3367,27 PLN for four-person household with a child up to 6 years old and a child of 13-15 years old (841,82 PLN per capita),
- 4128,32 PLN for five-person household with a child up to 6 years old and a two children of 13-15 years old each (825,66 PLN per capita).

For the purposes of the article to establish $H = H(0)$, living costs are included at monthly social minimum of 923,07 PLN, or 11076,84 PLN annual. Selecting value of social minimum per capita for three-person household was dictated by Eurostat data, which inform that average number of people in a household, according to the latest data, equals 2,7 person².

The next necessary category for calculations are education costs. In this paper the author attempts to estimate the value of human capital for students, so education costs are identified with the costs, that student bears in the course of studies. Values differ depending on the major but the paper focuses on economic majors, so the cost of such studies equal 4200 PLN annually (350 PLN monthly). This value corresponds to the average tuition, which extramural students of economic major are obligated to pay. (*Koszty studiowania w Polsce i za granicą*, 2014). However, such value may be understood as a valuation of the possibility to study certain major, which equals costs of running a major for a single student from the university point of view. Moreover, those costs were capitalised for five years because this is the minimum time needed to obtain a Master's title. Living costs, on the other hand, were capitalised for 24 years, because this is a minimum age for Polish student to obtain Master's title in a standard procedure.

The last two values that need to be included into analysis are learning factor and discount rate. The learning factor is a percentage expression of an impact of every year spent in a job by employee and its influence on the working efficiency. It translates on executing the same activity in shorter time

¹ Social minimum refers to the bundle of resources that a person needs in order to lead a minimally decent life in their society. It can be expressed in money.

² <http://appsso.eurostat.ec.europa.eu/nui/show.do>

thanks to the increase in knowledge. In the formula learning factor is w . In this paper, learning factor is assumed to be 10% and discount rate at the average risk (p) is assumed on a fixed level of 8%. (Dobija, 2011, p. 27)

Two following formulas were used to estimate capitalised living costs (K) and capitalised education costs (E) (Kozioł, 2005, p. 513):

$$K_t = k \times 12 \frac{(1+p)^t - 1}{p} \text{ or alternatively } K_t = k \times 12 \frac{e^{pt} - 1}{p}$$

and

$$E_t = e \times 12 \frac{(1+p)^t - 1}{p} \text{ or alternatively } E_t = e \times 12 \frac{e^{pt} - 1}{p},$$

where:

K_t – capitalised living costs in t period,

k – necessary monthly living costs,

E_t – capitalised education costs in t period,

e – necessary monthly living costs,

p – discount rate.

Capitalised living costs (K) amounted to 739542,56 PLN and capitalised education costs (E) – 24639,72 PLN. Therefore:

$$H = H(0) = K + E = 739542,56 \text{ PLN} + 24639,72 \text{ PLN} = 764182,28 \text{ PLN} \sim 764128 \text{ PLN}$$

Table 1 contains estimated experience factor, experience capital, intellectual capital and human capital of university graduates with different professional seniority. There are also values of alteration above-mentioned variables with the time passage. The table takes five years of professional experience into account. The first year was divided into 12 periods according to number of months in the year. Therefore, the first value equals 0,08. Only first year was divided that way because of important changes occurring in the first year of work. Periods after the first year were divided into half-year scale. Moreover, it also includes the important alteration of experience factor. The employee starts gaining experience since the beginning of professional work. Data from the table inform that the highest increase may be seen in first few months of work – 14,6% after the first month and 7,8% after the second month. It is important from the employer's point of view because it is connected to certain incommensurable costs.

Young employee is not only less efficient in the beginning of his career but he also needs help from more experienced co-workers. Such help requires time and it pulls co-workers from their activities, which has negative influence on overall efficiency. However, the higher the adaptability of young employee, the less time the whole process takes and the new value that such employee brings to the company will positively affect the efficiency of the whole team in the long run. (Forth and Metcalf, 2014, pp. 7-11)

The highest increase in the experience factor may be noticed in the first month of employment and being 14,6%. Increases are weaker in next periods and in the last month of the first year of work - 1,3%. After the first year, values of experience factor are positive but increases are weaker than those in first few months – 6% after 1,5 year up to 1,3% in 5th year.

The employee gains the most experience in first few periods of work. Later, a certain recurrent pattern of activities and events occur, which still provides an employee with some experience and knowledge but definitely less than it does at the beginning of his career.

The consequence of the learning process and less efficiency is decreasing value of human capital, which is getting negative values in the first year of professional career. Human capital is lesser than $H(0)$ and it strives by negative numbers to the level of $H(0)$, which is equal to the first full year of professional experience. Further years of work reflect the human capital level being greater than $H(0)$

Table 1: Value of experience capital, human capital and intellectual capital according to years of professional work

Years of professional work	Experience Factor	Experience Factor Alteration (%)	Experience Capital for people with Master's degree (PLN)	Human Capital for people with Master's degree (PLN)	Intellectual Capital for people with Master's degree (PLN)
(T)	$Q(T)$	$\Delta Q(T)$	$D(T)$	$H(T)$	$I(T)$
0,08	-0,4589	-	-350693	413435	-326107
0,17	-0,3131	14,6%	-239211	524917	-214625
0,25	-0,2346	7,8%	-179240	584888	-154654
0,33	-0,1817	5,3%	-138877	625251	-114291
0,42	-0,1423	3,9%	-108762	655366	-84176
0,50	-0,1111	3,1%	-84903	679225	-60318
0,58	-0,0854	2,6%	-65240	698888	-40655
0,67	-0,0636	2,2%	-48576	715552	-23991
0,75	-0,0447	1,9%	-34156	729972	-9570
0,83	-0,0281	1,7%	-21473	742655	3113
0,92	-0,0133	1,5%	-10173	753955	14412
1,00	0,0000	1,3%	0	764128	24585
1,50	0,0598	6,0%	45673	809801	70258
2,00	0,1000	4,0%	76413	840541	100998
2,50	0,1300	3,0%	99348	863476	123933
3,00	0,1538	2,4%	117518	881646	142104
3,50	0,1734	2,0%	132493	896621	157079
4,00	0,1900	1,7%	145184	909312	169770
4,50	0,2044	1,4%	156167	920295	180752
5,00	0,2170	1,3%	165826	929954	190411

Source: own elaboration.

Table 2: Gross wage for university graduates with Master's degree calculated with Human Capital Model

Years of professional work	Human Capital for people with Master's degree (PLN)	Annual wage from Human Capital (PLN)	Monthly gross wage
(T)	$H(T)$	$Aw(T)$	$Mw(T)$
0,08	413435	33075	2185
0,17	524917	41993	2774
0,25	584888	46791	3091
0,33	625251	50020	3304
0,42	655366	52429	3463
0,50	679225	54338	3589
0,58	698888	55911	3693
0,67	715552	57244	3781
0,75	729972	58398	3857
0,83	742655	59412	3924
0,92	753955	60316	3984
1,00	764128	61130	4038
1,50	809801	64784	4279
2,00	840541	67243	4441
2,50	863476	69078	4563
3,00	881646	70532	4659
3,50	896621	71730	4738
4,00	909312	72745	4805
4,50	920295	73624	4863
5,00	929954	74396	4914

Source: own elaboration.

Human capital is decreasing overtime, which is in addition strengthened by providing the employer with it, at the same time decreasing because of the effort of executing professional activities. The recompense of this decrease should be a certain discount rate of potential economic growth. Empiric research gives a rise to assumptions that such discount rate should equal at about 8% annually.

Therefore, annual wage based on human capital should be a product of the value of human capital $H(T)$ and the discount rate $r = 8\%$.

Table 2 presents the estimated worthy wage for economic major graduates with Master's degree. It includes data annually and monthly with an additional compulsory social security contribution attributable to the employer, which was at the level of 20,74% in 2015 in Poland.

Conclusions that can be drawn from the analysis of estimated monthly wages based on professional experience are connected to financial expectations. Theoretically, financial expectations of a person starting a career should be lowered by 46% than those of a person with a year of experience. Nominally, based on the used human capital model it equals 1853 PLN gross. However, further years of experience should not make a huge difference. The wage of an employee with a year of experience should be lesser by 9% than those of a two-year experience. Employee with a two-year experience should get a wage lessened by 5% than three-year experience employee, which, in turn should get 3% less than an employee with four years of experience, which ultimately should earn 2% less than five-year experience employee. Therefore, it can be seen that the increase in wage is decreasing along with consecutive years of gained experience. This is due to the repetitive nature of certain schemes that contributes lesser to the knowledge and experience and the employee staying on the same position at work for a long time learns less and less.

3. FINANCIAL EXPECTATIONS OF GRADUATION YEAR STUDENTS OF ECONOMIC MAJOR FROM LUBELSKIE VOIVODSHIP UNIVERSITIES – EMPIRICAL RESEARCH

Survey research was conducted in order to confront wages estimated with human capital model with reality. The survey was conducted among graduation year students of economic major from Lubelskie voivodeship universities. Results of the survey are presented in table 3. The research took place at the end of winter semester 2015/2016 and covered 330 students. Respondents have been asked to enter their financial expectations expressed in monthly gross wage after graduation with Master's degree. They were supposed to give their hitherto professional experience. The important fact is that many students start their career during studies in order to gain crucial professional experience, which gives them significant advantage in finding a job. Respondents were further divided into 6 groups according to years of professional experience. Arithmetic and weighted means were calculated for each group.

High diversity may be observed in the field of financial expectations among research group. Extreme values are especially interesting. On 01.01.2016 minimum wage in Poland equals 1850 PLN gross. It means that 13 respondents (3,9%) do not realise of that fact, expecting lesser wages. It may be accepted that those people are looking for a job based on civil contract, however the awareness of minimum wage should exist, especially in the mind of economic major students. On the other hand, among people with professional experience of less than one year, financial expectations of 6000-20000 PLN seem unreal. Conclusion that can be drawn from these facts is the lack of awareness of labour market mechanisms and wages among economic major students from Lubelskie voivodeship. Extreme responses in the survey were not neglected in the analysis because they appeared repeatedly and their consideration allow to stress the problem of lacking knowledge of labour market and its' requirements and mechanisms among students.

Conclusions that can be drawn from the analysis of arithmetic mean is that students are not aware of not only formal education but experience greatly influence wages. With increasing years of experience, financial expectations seem to be more real. Arithmetic mean has been used in this research only to stress that observation. For further analysis it is justified to use weighted mean, which better reflects the specificity of the statistical community because it includes the frequency of choosing certain answers. Therefore, average financial expectations of economic major students in Poland are as follows – 3529,75 PLN with less than one-year experience, 3761,54 PLN with one-year experience, 3836,67 PLN after two years, 3888,89 PLN after three years, 6666,67 PLN after four years and 8164,29 PLN after five years.

Table 3: Financial expectations of economics major graduation year students from Lubelskie Voivodeship

Years of Professional Experience	Expected Gross Wage	Respon-dents	Average Expected Gross	Weighted Arithmetic Mean of	Years of Professional Experience	Expected Gross Wage	Respon-dents	Average Expected Gross	Weighted Arithmetic Mean of
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	(PLN)		Wage (PLN)	Expected Gross Wage (PLN)		(PLN)		Wage (PLN)	Expected Gross Wage (PLN)
Less than 1 year	1300	1	4558,82	3529,75	1 year	2000	3	4231,25	3761,54
	1500	3				2200	1		
	1600	2				2500	9		
	1700	1				2700	1		
	1750	1				2800	1		
	1800	5				3000	5		
	1900	2				3200	2		
	2000	32				3500	2		
	2200	4				3800	2		
	2300	2				4000	4		
	2400	4				4500	2		
	2500	47				5000	1		
	2600	4				5500	1		
	2700	1				6000	2		
	2800	1			7000	1			
	3000	39			10000	2			
	3200	2			2 years	2000	2	4280,00	3836,67
	3500	21				2500	5		
	3600	2				2800	2		
	3750	1				3000	9		
	3800	1				3500	1		
	4000	14				4000	2		
	4500	2				4500	3		
	5000	19				5000	2		
	5400	1				5500	2		
	5500	1				10000	2		
	6000	4			3 years	3000	1	3750,00	3888,89
	6200	1				3500	2		
6500	1	4000	4						
7000	3	4500	2						
8000	1	4 years	3000	1	6375,00	6666,67			
10000	5		6000	2					
15000	1		8000	1					
20000	3		8500	2					
					5 years	2000	1	8858,33	8164,29
						2300	1		
						2500	1		
						3500	1		
						4000	3		
						5000	1		
						7600	1		
						10000	1		
						13400	1		
						15000	1		
16000	1								
25000	1								

Source: own elaboration based on the survey.

Thus, the person, which starts a career expects 6% less than person who already has professional experience of one year, which in turns expects 2% less than an employee with two years of experience. The graduate with two years of experience expects only 1,3% less than an employee with experience higher by one year. Financial expectations of an average student with three years of experience show a great gap of 42% according to an employee with four years of experience. Such person, on the other hand, expects 18% less than an employee with five years of professional

experience. It is clear that differences are significant, especially in the surplus for four and five years of professional experience. Observing dominants in each group, it can be seen that financial expectations are in most cases close to the model, however average expectations are highly different.

In the topic of average values it is possible to refer the model and the survey results to the average wage in Poland. According to Central Statistical Office, average wage in IV quarter of 2015 was 4066,59³ PLN. From the model perspective, the graduate should achieve such wage after 1,5 years of professional experience. Conducted research shows that average graduate of economic major wants to exceed this level from the beginning of a career. Analysing weighted mean, in which weights are frequencies of choosing a certain wage, it stands that such student will achieve a wage close to the national average after more than three years of professional experience. It can be concluded that the most likely scenario is presented by values from weighted mean of financial expectations from the research sample.

4. FINANCIAL EXPECTATIONS OF STUDENTS FROM OTHER COUNTRIES

Students financial expectations differ according to the country, where they study. Table 4 presents a list of 23 countries with financial expectation of their students. The data is derived from a survey conducted by Universum Global⁴ to calculate Global Cost of Talent Index⁵. Average and minimum wages for every country were also added to the table.

Table 4: Financial expectations of students from different countries along with minimum and average monthly wage

Country	Students Financial Expectations (USD)	Monthly Minimum Wage (USD)	Monthly Average Wage in 2014 (USD)
Switzerland	7062	-	7917
Norway	6556	-	6792
Denmark	5427	-	6163
Australia	4701	2566	5838
Germany	4405	1979	4040
Sweden	4355	-	4604
United States	4336	1257	4762
Canada	4146	1598	4710
France	3889	1946	3990
Finland	3777	-	4488
United Kingdom	3688	1825	4529
Austria	3564	-	4424
Japan	3208	1134	3166
Netherlands	3132	2023	5052
Singapore	2743	-	3082
Hong Kong	2268	727	1848
Spain	2072	1004	2974
Italy	2069	-	3179
Brazil	1815	404	563
Russia	1310	155	418
Mexico	1268	130	776
China	1084	138	718
India	976	64	295

Source: own elaboration based on data from OECD (www.data.oecd.org), www.tradingeconomics.com and universumglobal.com.

In order to be able to get comparable results of students financial expectations, each value is expressed in USD. In Poland minimum wage equals about 470 USD and average wage is about 1030 USD. Average expected wage of students in conducted research is 3529,75-8164,29 PLN, which translates to 893-2065 USD. Taking the minimum of this range into consideration, financial expectation of Polish students are lesser than every country from Table 4. However, the maximum

³ <http://stat.gov.pl/sygnalne/komunikaty-i-obwieszczenia/18,2015,kategoria.html>

⁴ <http://universumglobal.com/>

⁵ <http://universumglobal.com/blog/2013/11/global-cost-of-talent-index/>

value from the range puts Polish students expectations comparatively close to Italian (2069 USD), surpassing expectations in such countries as Brazil, Russia, Mexico, China or India.

Financial expectations of Polish students are far from those in Switzerland, Norway or Denmark. The highest financial expectations may be observed in Switzerland, which is 7062 USD. It is about 3,5 times higher than those of Polish students, who declare already five years of experience. However, the interesting fact is that in most cases financial expectations are close to national average wages. In the researched group, lowest values are close to average wage but highest values exceed the average wage twice. In this characteristics Poland is close to Brazil, Russian and Mexico.

In top three countries with highest financial expectations among students, there are no official minimum wage. It shows that there is no correlation between minimum wage and students financial expectations. Pearson correlation coefficient was calculated to check this phenomenon and it equals 15,2% for the minimum wage and 94,8% for the average wage in the country. It is also an indirect observation in the conducted research, where some of respondents were not suggested with minimum wage at all. It reflects high ambitions of students who want to earn much more than a minimum wage.

5. CONCLUSIONS

Analysis of human capital model confirms that wage for the university graduate is reduced by the increase of experience, which is provided by employer. Conducted modelling and empirical studies revealed a set of interesting observations. It is worth to stress the fact that human capital is hard to measure and value because it depends on many factors. Model used in this paper allowed for relatively efficient valuation, which has been proven by empirical study.

However, there is another observation considering certain gaps in knowledge and education of labour market and its mechanisms in Lubelskie voivodeship. Some students were not aware of minimum and average wages, which reflected in their financial expectations that were sometimes very unreal. Some students, without any experience expect wages of CEOs of large companies. It was highlighted in the analysis to present the lack of awareness of labour market among Polish students.

Compared to other countries, Polish students do not have high financial expectations. However, it has to be stressed that the level economic development of Poland and some countries used in the comparative analysis is different, which reflects in the results.

Comparative analysis provided another conclusions. It was observed that students financial expectations are highly correlated with average wage in country they are studying (94,8%) and low correlated with the minimum wage in the country of their studies (15,2%). Empirical studies confirmed this relationship because students were not suggested by minimum wage in their country, while forming the financial expectations. The height of expectations oscillates with little deviations around the average wage in the country.

From the technical standpoint of the model analysis, it can be concluded that students do not appreciate experience gained in a job. On the one hand, there is a group expecting high wages without any experience, on the other hand every consecutive year of experience influenced the increase in wage by a lesser mean.

The paper should be ended with the ultimate conclusion that every available tool should be used to raise the awareness of students, especially those with economic major, of reality and conditions on the labour market and the way of how the knowledge and experience should affect the financial expectations. Such awareness will positively influence whole labour market not only on the graduates side, who will be able to assess their knowledge and experience postulating their financial requirement, but potential employers as well. Overall, it will decrease the friction on the labour market.

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