

Barbara Oliwkiewicz

Andrzej Frycz Modrzewski Krakow University

e-mail: boliwkiewicz@afm.edu.pl

ORCID: 0000-0002-0752-2288

THE IMPACT OF CAPITAL FROM EXPERIENCE ON THE VALUE OF AN EMPLOYEE'S FAIR REMUNERATION*

WPŁYW KAPITAŁU Z DOŚWIADCZENIA NA WARTOŚĆ GODZIWEGO WYNAGRODZENIA PRACOWNIKA

DOI: 10.15611/pn.2019.10.15

JEL Classification: J24, E49, E24

Summary: Human capital is a category that has been the subject of economists' considerations for years. Numerous concepts, research approaches and various ways of classifying capital have appeared. Since the 1990s, in accordance with the fundamental principle of dualism, according to which capital is an abstract category, an alternative scientific research program has been conducted in the field of measuring human capital and fair wages. This program was initiated by M. Dobija and has been followed by a team of researchers from the Cracow University of Economics. The program in question is based on a proper understanding of the capital category. It has been consistently developing, and the scientific research covers a wide range of theories related to human capital and fair remuneration. The purpose of this study is to present the impact of capital from experience on the level of the fair remuneration of employees. The human capital model, in the presented considerations enables the measurement of employee qualifications in monetary units and a fair pay model. A case study on the impact from experience capital on the level of fair remuneration of employees was also presented.

Keywords: capital from experience, human capital, fair remuneration.

Streszczenie: Kapitał ludzki to kategoria, która od lat stanowi temat rozważań ekonomistów. Powstały liczne koncepcje, podejścia badawcze oraz różne sposoby klasyfikacji kapitału. Od lat 90. ubiegłego stulecia, w zgodzie z fundamentalną zasadą dualizmu według której kapitał stanowi kategorię abstrakcyjną, prowadzony jest alternatywny naukowy program badawczy w zakresie pomiaru kapitału ludzkiego i godziwych płac. Program ten zapoczątkował M. Dobija, a kontynuuje go zespół badaczy z UEK w Krakowie. Wspomniany program opiera

* The article has been financed from the funds allocated for the statutory activity of the Faculty of Management and Social Communication of Andrzej Frycz Modrzewski Krakow University no. WZKiS DS./3/2018-KON.

się na właściwym rozumieniu kategorii kapitału. Prowadzone badania naukowe obejmują wiele teorii związanych z kapitałem ludzkim i godziwym wynagrodzeniem. Celem niniejszego opracowania jest przedstawienie wpływu kapitału z doświadczenia na wysokość godziwych wynagrodzeń pracowników. W tekście zaprezentowano model kapitału ludzkiego umożliwiający pomiar kwalifikacji pracownika w jednostkach pieniężnych oraz model płacy godziwej. Przedstawiono również studium przypadku dotyczące wpływu kapitału z doświadczenia na wysokość godziwych wynagrodzeń pracowników.

Słowa kluczowe: kapitał z doświadczenia, kapitał ludzki, wynagrodzenie godziwe.

1. Introduction

The remuneration for work is the main source which enables to meet the most important needs of an employee. An employee's pay should be set at a level relevant to the type of work performed, the employee's qualifications as well as to the quantity and quality of work performed. Currently there are many more or less consistent theories regarding employee remuneration. According to the modern theory of human capital and fair remuneration, the author of which is Mieczysław Dobija, employee's human capital is the potential ability to perform work, where work is understood as the transfer of capital to work objects, and remuneration is the equivalent for the completed transfer of capital. For the work done, the employee should receive fair remuneration, which should increase with the next period worked.

The purpose of this study is to present the impact of capital from experience on the level of the fair remuneration of employees. The considerations present a model of human capital enabling the measurement of employee qualifications in monetary units and the fair pay model. A case study on the impact of capital from experience on the fair remuneration of employees with various levels of education was also presented.

2. Model of measuring human capital

The foundation of accounting practice is the principle of duality, which results in the double entry rule (capital = total assets) and which allows organizing a capital measurement system which enables the owner to monitor its changes on an ongoing basis. One part of the financial statements is information about a change in capital (whether the capital has increased or decreased in connection with the profit or loss). The accounting system therefore forces the distinction between assets and capital (liabilities) as two separate categories. In order to better understand the category of capital, one can cite the observations of Y. Ijiri, who writes that capital is abstract, aggregated and consistent, while assets are substantive and heterogeneous [Ijiri 1995]. The principle of dualism leads here to a system that measures capital (profit) growth and allows to state that capital "is not born from nothing".

M. Dobija and others claim that capital is an abstract ability to do work. Understood in this way, capital is indispensable for the functioning of every unit. If the appropriate level of capital is not maintained, then the individual is doomed to the end of their existence. Can anyone create capital? The double entry results from the fact that “capital does not arise from nothing and nobody can create it”, it can only be transferred through work to work objects. Thus one can say that work is a deliberate transfer of capital from the initial location to the intended location. If an asset increases its value as a result of work, one must indicate the source from which the capital is transferred to reduce it by the equivalent of the increase. M. Dobija wrote [Dobija 2012]: “The essence of double accounting is that the principle of dualism, which is the consequence of applying the guilty rule, ensures that the fundamental principle of capital preservation is respected”.

The compound interest formula is of fundamental importance in the capital growth model. Albert Einstein once said that compound is the eighth wonder of the world and called it the greatest mathematical discovery in history. This simple compound interest formula, with continuous capitalization, is as follows:

$$C_t = C_0 \times e^{rt}, \quad (1)$$

where: C_t – final capital, C_0 – initial capital, e – Euler number, t – number of years to maturity of the deposit, r – nominal annual interest rate.

Using the above formula and the principle of duality, a capital measurement model was derived [Dobija 2003; Dobija 2009]:

$$C_t = C_0 \times e^{(p-s+mt)t}, \quad p = E(s) = 0,08 \text{ [1/year]}, \quad (2)$$

where: p – economic constant of potential growth (SEPW); s – the rate of spontaneous capital dispersion; m – the rate of capital increase as a result of capital inflow through work processes.

When analyzing Formula (2), the components of the rate of return should be interpreted as follows:

e^{pt} – represents the natural potential for capital growth that is achievable through the laws of nature in which we live; economic constant of potential growth (SEPW) $p = 0.08$ [1 / year];

e^{-st} – presents the impact of the thermodynamic time arrow as random scattering of capital (influence of the second law of thermodynamics); t – time;

e^{mt} – presents activities that increase capital growth by managing and performing work, and at the same time eliminate the impact of the thermodynamic time arrow [Oliwkiewicz 2018].

The right side of the equation represents the initial capital, which according to the fundamental principle does not arise from nothing. Only the capital raised is a subject to change through dispersion and as a result of revenues from natural

sources and work. A clear example to illustrate the above formula is a human being. As an infant, a person is already born with his/her initial capital (C_0), which, but for his/her parents' activities would be dispersed ($-st$). Parents and the state reduce the process of capital dispersion and guarantee its existence (mt), and the rate of capital growth is determined by the economic constant of potential growth [Oliwkiewicz 2019].

One of many assumptions in the presented model is the statement that capital is not created from nothing and has its sources enabling its valuation in monetary units. Special attention should be paid, following M. Dobija, to the differences between an employee and their human capital, which is a measure of a person's ability to perform work. This author believes that a human being is a triad of: body – mind – spirit. Thus, human capital has its roots in the capitalized expenditure necessary to create an economic resource in the form of a human individual. The body and mind need expenditure related to the cost of living which is required to properly prepare the human body, i.e. the carrier of human capital. A necessary condition for the disclosure and development of the innate skills, abilities and possibilities during learning and working (mind) is the proper constitution of the human body. Expenditure is incurred from birth until the time of starting work. Although these expenses are financed by the family and society, the owner of the created human capital is the person for whom these outlays were incurred [Kozioł 2010]. The third component of the triad – the spirit, is revealed at the time of the creative activity of the individual and is not measured as a stream of inputs. Assuming, therefore, that a person is the owner of their human capital, a formula of employee's human capital (H_t) is created, which will depend on initial inputs (H_0), economic constant of potential growth (p) and time of capitalization (t). From the general capital model, assuming that $s = m$, one can obtain the general formula of human capital:

$$H_t = H_0 \times e^{pt}. \quad (3)$$

It should be emphasized here that the variable (H_0) is an input stream (maintenance costs, professional education costs). The employee's human capital is created throughout their life. From the moment of birth until the commencement of employment, human capital is constituted by capitalized living costs (K). If a young person undertakes studies, the value of his/her capital is increased by the capitalized costs of professional education (E) for the period of study (respectively, five years in the case of Master's degree and three years for Bachelor's degree). Expenditure on upkeep and education is a source of the ability to perform work, which is improved during its performance. This increase in capacity and efficiency during work is called the $Q(T)$ experience factor [Kozioł 2011].

The evolution of the human capital model makes it possible to add up amounts representing capitalized expenses for upkeep and education ($K + E$). Thus, human capital, called the source of human resources financing, can be represented by the following formula [Dobija 2002a]:

$$H_t(T, p) = (K_t + E_t) \times (1 + Q(T)). \tag{4}$$

Table 1 presents formulas that show the inception of human capital from the cost of living and professional education:

Table 1. Formulas showing the inception of human capital

	Upkeep costs	Education costs
Annual capitalization	$K_t = k \times 12 \times \frac{(1+p)^t - 1}{p}$	$E_t = e \times 12 \times \frac{(1+p)^t - 1}{p}$
Continuous capitalization	$K_t = k \times 12 \times \frac{e^{pt} - 1}{p}$	$E_t = e \times 12 \times \frac{e^{pt} - 1}{p}$

Source: own compilation based on [Oliwkiewicz 2016, p. 484].

where: $H_t(T, p)$ – value of human capital, K_t – capitalized costs of living, E_t – capitalized education costs, $Q(T)$ – factor determining the increase of human capital as a result of professional work performed for the period T , T – number of years of professional work, k – monthly necessary costs of living, e – monthly necessary costs of education, t – number of years of capitalization of necessary costs of upkeep or professional education.

The relationship between qualifications and pay was noted in the studies of A. Suleman, F. Suleman and E. Reis [2016]. The authors’ research shows that the salary depends to the greatest extent on the employee’s qualifications. This discovery coincides closely with the given model of human capital [Kozioł, Mikos 2019, p. 7].

According to the human capital measurement model, for an 18-year-old person in Poland who intends to take up employment, the cost of living is taken into account when calculating the initial capital. The essential value of the cost of living can be objectively determined based on current socio-economic conditions. The real extent of the costs concerned depends on the skills of the person in subject. Costs are defined as expenditure within the limits of indispensable consumption that leads to achievement of the set goal [Burzym 2004]. In this study, the cost of living was based on the size of the subsistence level category, published annually by the Institute of Labour and Social Affairs. The subsistence level is a category covering the amount of household maintenance costs set at a low level, but sufficient to reproduce vital functions, have and raise children, and maintain bonds with society [Kurowski 2002]. It should be noted here that these costs should be calculated as the cost of living for one person in a model four-person family.

The period of capitalization of expenditure on upkeep and education is a socially crucial period of preparation for professional work. Its length determines the current education system as well as planned education. In Poland, compulsory education lasts up to 18 years of age (so-called compulsory education), therefore 18 years is the

minimum period of the capitalization of living costs. The human capital undergoes dissipation, so it should be actively protected against impairment. In order to preserve human capital, expenditure must be capitalized using the economic constant of potential growth equal to $p = 8\%$.

3. Fair pay model

According to the concept of an alternative model of human capital presented in this study, work is the transfer of human capital to work objects. Therefore, remuneration for work should be treated as the cash equivalent for an employee for providing human capital. The rules of paying for human capital depend on the nature of capital. The wage model must therefore recognize the environmental impacts of changes in the value of capital, as well as its natural ability to grow. Impacts that occur in the general capital model are included in the pay model based on human capital measurement. The initial value of human capital is influenced by the forces of nature, which cause its gradual loss of value. In order to preserve the value of human capital, wages must compensate for the natural losses of this capital [Dobija 2002a].

The employee's human capital decreases as a result of effort related to the work performed, as well as in connection with the passing of time. Salary is the compensation for this loss of human capital. The amount of remuneration should result from the application of the economic constant of potential growth. The empirical studies to date [Dobija 2002a; Cieślak 2006; Koziół 2010; Kurek 2011; Renkas 2014; Oliwkiewicz 2018] confirm that this constant is about 8% per year.

In the general capital model, categories that present active and potential activities, can be found. It should be noted that the variable s represents the active forces of nature, and the variable m the active actions in the form of capital inflow as a result of work, which can balance the dispersion of capital. Another variable from the model is the constant p , which is a symbol of potential forces. The constant p determines the natural potential that can ensure the increase of initial capital only if the condition that the level of scattering s is leveled by the action m . If s is equal to m , then the increase in human capital occurs at the rate of $p = 8\%$. In fact, in some cases m may be greater than s (e.g. due to specialist and professional education) the rate of human capital growth will be faster than $p = 8\%$. Certainly, the opposite situation may also occur, when m does not balance s and in such situations the rate of capital increase is lower than $p = 8\%$, and this leads the individual to 'destruction'. Hence the pay that balances the employee's human capital flow can be determined using the mean value E :

$$W = E(s \times H) = E(s)H = p \times H, \quad (5)$$

where: W – basic salary, p – economic constant of potential growth, H – value of employee's human capital.

Striving for growth at the right rate is one of the important features of capital. If this rate is not reached, capital, as previously mentioned, is dispersed and its value decreases. Maintaining an adequate capital value requires measures to compensate for capital losses. The ability of capital to create value can be demonstrated by using the internal rate of return equation. This equation can be used for human capital as a source of annual remuneration in the following form [Dobija 2003]:

$$H(T)(1 + r) = W + H(T + 1), \quad (6)$$

where: r – internal rate of return, W – remuneration.

Based on Formula (6), a formula for fair remuneration can be derived:

$$W = H(T) \times r - H(0) \times [Q(T + 1) - Q(T)], \quad (7)$$

so:

$$W = H(T) \times r - \Delta D(T). \quad (8)$$

This formula presents the remuneration in the form of percentage on capital $H(T) \times r$, as well as a reducing component, because the employee by doing work gains new professional experience. As S. Sunder [Sunder 1997] writes, the capital from experience gained is used by an employee during work, but its size is not reduced. The previous research of predecessors proved that the rate of payment of human capital r is equal to the economic constant of potential growth p . Therefore, the equation of fair wages is as follows:

$$W = p \times H(T), \quad (9)$$

and ensures that the present value of the pay stream is equal to the initial value of human capital. With the remuneration calculated in accordance with the human capital measurement model, the value of capital is not reduced [Kozioł 2010].

4. Capital from experience and the amount of fair remuneration – a case study

The last stage in the development of human capital is its increase as a result of acquired work experience in the work process [Dobija (ed.) 2010]. According to S. Sunder, capital from experience is used at work, but it is not consumed. On the contrary, the majority of this capital is obtained as a by-product of the work performed. Only a small part of this capital can be obtained outside of work, e.g. through MBA studies. Experienced managers with very large human capital resources receive much higher payment – the difference between earnings of a novice and those with a university degree is rather small [Sunder 1997].

Intangible resources are the success of modern organizations, so one of the most important tasks of the organization is the skillful and reliable valuation of the

resources at its disposal and their fair remuneration. Human capital belongs to such resources. As W. I. Hudson [Hudson 1993] wrote, the value of intellectual capital depends on four factors: genetic conditions, education, experience as well as the presented life attitude. As mentioned earlier, human capital consists of three parts: capitalized living costs (K), capitalized education costs (E) and capital from experience (D). Referring to the description by W. I. Hudson, it can be stated that genetic conditions are capitalized cost of living (K), and therefore this part of human capital is characterized by the universality and lack of influence on the innovation or competitiveness of the organization. As for the other components of human capital (capitalized costs of education and experience), they have a significant impact on modern processes in business units, in particular capital from experience is individual and represents personal abilities. The process of creating intellectual capital is primarily the development of employee's abilities and knowledge during professional education and while gaining professional experience. Capital from experience is created as a side value of work, is not consumed and continues to grow. It depends primarily on the life skills and attitudes that the employee presents as well as on the personnel policy in the organization. The experience factor $Q(T, w)$, or the rate of increase in human capital during work, is expressed by the function of years [Dobija 2002a]:

$$Q(T) = 1 - T^{\frac{\ln(1-w)}{\ln 2}}, \quad (10)$$

where: w – learning coefficient, T – years of professional work.

Increasing capital from experience during work can be discussed based on the concept of the learning curve. The roots of the learning curve can be found in the American industry in the 1920s [Ossowski 2006]. Based on measurements it has been proved that the production of a second aircraft requires 20% less work time compared to the first, the production of the fourth aircraft consumes 20% less work time compared to the second, and the production of the tenth 20% less than the fifth. It was concluded that the effect of doubling the production every time is a certain decrease in the working time of direct employees. In this particular example, the reduction is 20%. Therefore, it can be stated that due to intellectual skills, there is a phenomenon of a decrease in the time of performing given activities. A noticeable intensification of this phenomenon appears at the initial stage of professional work. During this period, the employee has reserves for improving performance of activities that have not yet been used.

Figure 1 is a diagram of the learning curve for various learning parameters: $w = 0.05$, $w = 0.06$, $w = 0.07$, $w = 0.1$. The learning parameter has an impact on the increase of experience. For example, if it equals 0.06, it means that an employee will do the same job 6% easier, cheaper and quicker in the following year. In all the four cases presented in Figure 1, a strong upward trend is noticeable in the first years of gaining professional experience, which over time slows down, which confirms the

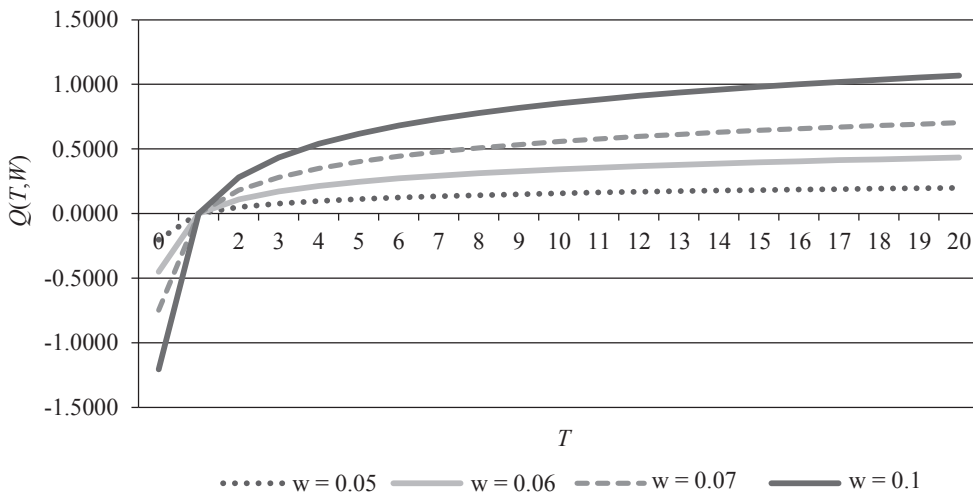


Fig. 1. Learning curve

Source: own compilation.

thesis that over the years the share of experience factor in the value of human capital decreases.

The transformation of the basic model of measuring human capital means that it can be presented in an additive form:

$$H(T) = K + E + D(T) \tag{11}$$

and then a formula can be set for calculating capital value from the employee’s $D(T)$ experience:

$$D(T) = H(T) - (K + E). \tag{12}$$

When analyzing the impact of capital from experience on the value of an employee’s human capital, an employee with a master’s degree was taken into account. Individual values of human capital were calculated for him/her: capital from living costs (current costs for 2019; capitalization period of 24 years), capital from professional education (capitalization period of five years) as well as the experience factor and capital from experience for 20 years of work ($w = 0.06$). Table 2 shows how the experience factor and the value of human capital and capital from experience change during the first 20 years of professional work. To emphasize the significant changes in the first year of work, it was presented broken down into months.

On the basis of data in Table 2, Figure 2 was drawn up showing changes occurring in the values of human capital and capital from experience in subsequent years of work.

Table 2. The value of human capital and capital from experience of an employee with higher education during 20 years of professional work

Months/ years of professional work	Experience factor	Experience factor change	Capital from experience (PLN)	Human capital (PLN)
<i>T</i>	<i>Q(T,w)</i>	$\Delta Q(T,w)$	<i>D(T)</i>	<i>H(T)</i>
(1/12)	-0.2485	-	-196921.36	595538.37
(2/12)	-0.1735	0.0750	-137487.6	654972.13
(3/12)	-0.1318	0.0417	-104434.35	688025.38
(4/12)	-0.1031	0.0287	-81694.39	710765.34
(5/12)	-0.0813	0.0218	-64433.997	728025.73
(6/12)	-0.0639	0.0175	-50601.622	741858.11
(7/12)	-0.0493	0.0145	-39080.085	753379.64
(8/12)	-0.0369	0.0124	-29215.533	763244.20
(9/12)	-0.0260	0.0108	-20622.054	771837.68
(10/12)	-0.0164	0.0096	-13010.769	779448.96
(11/12)	-0.0078	0.0086	-6178.895	786280.84
1	0.0000	0.0078	0	792459.73
1 and 1/12	0.0071	0.0071	5622.536	798082.27
2	0.0600	0.0600	47564.448	840024.18
3	0.0934	0.0334	74053.195	866512.93
4	0.1164	0.0230	92274.017	884733.75
5	0.1339	0.0174	106088.33	898548.06
6	0.1479	0.0140	117172.88	909632.61
7	0.1595	0.0116	126404.95	918864.68
8	0.1695	0.0100	134300.06	926759.79
9	0.1782	0.0087	141186.32	933646.05
10	0.1859	0.0077	147285.22	939744.95
11	0.1928	0.0069	152753.12	945212.85
12	0.1990	0.0062	157704.46	950164.19
13	0.2047	0.0057	162225.39	954685.12
14	0.2100	0.0052	166382.41	958842.14
15	0.2148	0.0049	170227.86	962687.59
16	0.2193	0.0045	173803.65	966263.38
17	0.2235	0.0042	177143.86	969603.59
18	0.2275	0.0040	180276.59	972736.32
19	0.2312	0.0037	183225.21	975684.94
20	0.2347	0.0035	186009.42	978469.15

Source: own compilation.

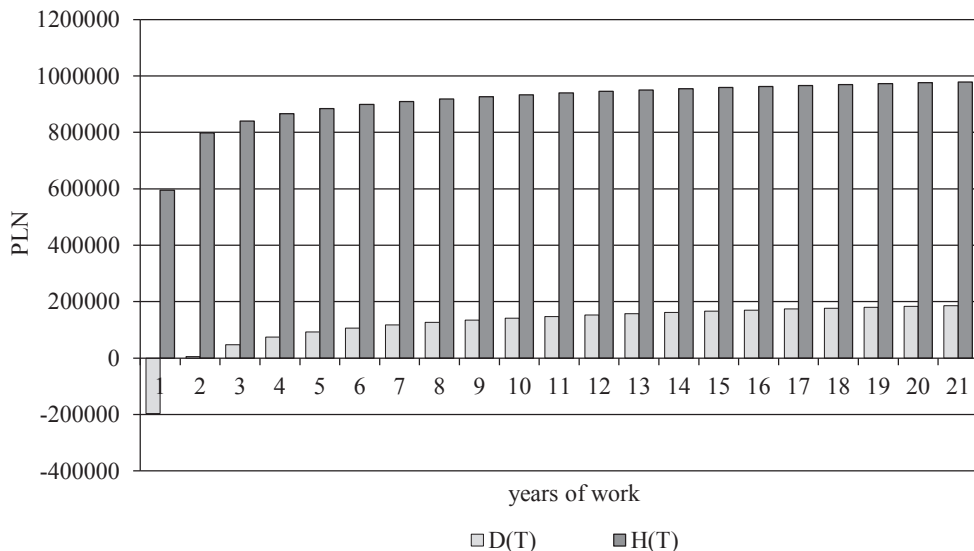


Fig. 2. The value of human capital $H(T)$ and capital from experience $D(T)$ in the first twenty years of work

Source: own compilation.

When analyzing the impact of professional experience on the amount of human capital, it should be clearly stated that along with the subsequent year of work (and in the first year, along with the next month) done, the value of human capital increases. The largest increase can be observed in the first five years of work, and continues, however its size becomes smaller and smaller. The negative value of capital from experience in the first year of the employee's work is an interesting result. This is because employees who start work gain experience thanks to their employer. During the first year, the negative values of the experience factor decrease to reach 0 after the first year of work and become positive after the 13th month of work. Therefore, since the value of human capital increases with its subsequent year of work, its fair remuneration should also be increased.

According to the human capital measurement model and the above analysis, the employee's fair remuneration at the beginning of his/her career path should be reduced by approximately 25%. Only when performing work in the first year does the employee acquire experience, which over time should be reflected in the amount of remuneration.

The next stage of the analysis was determining the value of human capital and all its components and the fair remuneration for an employee with basic education (Table 3), as well as for an employee with a master's degree (Table 4) in the first five years of professional work.

Table 3. The minimum fair wage in the first five years of work of an employee with basic education

	$T = 0$	$T = 1$	$T = 2$	$T = 3$	$T = 4$	$T = 5$
Monthly minimum costs of living (PLN)	840	857	874	891	909	927
Capitalized living costs (PLN)*	405 808	414 020	422 233	430 446	439 142	447 838
Experience factor*	-0.2485	0	0.06	0.0943	0.1164	0.1339
Personal human capital $H(T)$ (PLN)	304 965	414 020	447 567	471 037	490 258	507 804
Annual labour costs $H(T) \times 0.08$ (PLN)	24 397	33 122	35 805	37 683	39 221	40 624
Monthly labor costs (PLN)	2 033	2 760	2 984	3 140	3 268	3 385
Gross salary ($/1,2061$) (PLN)	1 686	2 288	2 474	2 604	2 710	2 807

* Living costs are capitalized for 18 years; learning factor $w = 0.06$; living costs were assumed to increase by 2% per year.

Source: own compilation.

At this stage of the study, data on minimum living costs as the social minimum per one member in a family of four in 2018 was used. It is recommended they should have been reduced by approximately 10% to fit into the limits of necessary consumption. As part of earlier research, it was found that the average monthly cost of professional education is PLN 800, and the learning rate w , as previously mentioned, was set at 0.06. It was also assumed that the cost of living and professional education costs increase by 2% per year.

Table 4. The minimum fair wage in the first five years of work of an employee with a university degree

	$T = 0$	$T = 1$	$T = 2$	$T = 3$	$T = 4$	$T = 5$
Monthly minimum costs of living (PLN)	840	857	874	891	909	927
Capitalized living costs (PLN)*	733 441	748 284	763 128	777 971	793 688	809 404
Monthly costs of professional education (PLN)	800	816	832	849	865	883
Capitalized costs of professional education (PLN)* (E)	59 019	60 199	61 380	62 634	63 814	65 142
$(K+E)$ (PLN)	792 460	808 483	824 508	840 605	857 502	874 546
Experience factor*	-0,2485	0	0,06	0,0943	0,1164	0,1339
Personal Human capital $H(T)$ (PLN)	595 534	808 483	873 978	919 874	957 315	991 648
Annual labour costs $H(T) \times 0,08$ (PLN)	47 643	64 679	69 918	73 590	76 585	79 332
Monthly labour costs (PLN)	3 970	5 390	5 827	6 133	6 382	6 611
Gross salary ($/1,2061$) (PLN)	3 291	4 469	4 831	5 085	5 291	5 481

* Living costs are capitalized for a period of 24 years; the costs of professional education are capitalized for a period of 5 years; learning factor $w = 0.06$; it was assumed that the cost of living and professional education increases by 2% per year.

Source: own compilation.

5. Conclusion

Analyzing the data contained in Tables 3 and 4, one can notice a strong relationship between the size of remuneration and acquired knowledge and experience. Regardless of the level of education, after working the following year, the value of capital from experience and consequently, the value of human capital increases. Therefore, fair remuneration should also increase. The ability to calculate capital from experience and education can be treated as an instrument that will precisely determine the amount of remuneration and will adequately compensate the capital made available to the employer.

The research results confirm, prompted in other scientific works by many authors, the possibility of using the concept of human capital in solving important social problems such as fair remuneration and minimum wage. Nowadays, when various professional groups are struggling for fair remuneration for their work, this study may help to resolve misunderstandings related to calculating the fair remuneration of employees at various levels with different education and different professional experience.

Bibliography

- Burzym E., 2004, *Koszty i straty a przepływ wartości w gospodarce i ich ujęcie w rachunkowości*, [in:] *Polska szkoła rachunkowości*, eds. M. Gmytrasiewicz, A. Karamańska, SGH, Warszawa.
- Cieślak I., 2006, *Rachunek kapitału ludzkiego jako podstawa zarządzania kosztami pracy w przedsiębiorstwie*, rozprawa doktorska, Warszawa.
- Dobjija M., 2002a, *Kapitał ludzki i intelektualny w aspekcie teorii rachunkowości*, *Przegląd Organizacji*, nr 1.
- Dobjija M., 2002b, *Struktura i koszt kapitału*, *Zeszyty Naukowe Akademii Ekonomicznej w Krakowie* nr 562, Kraków.
- Dobjija M., 2003, *Ewolucja koncepcji rachunkowości, kapitału i pieniądza*, [in:] *Historia współczesności i perspektywy rachunkowości w Polsce*, ed. S. Sojak, Uniwersytet Mikołaja Kopernika, Toruń, pp. 185-205.
- Dobjija D., 2003, *Pomiar i sprawozdawczość kapitału intelektualnego przedsiębiorstwa*, *Wyższa Szkoła Przedsiębiorczości i Zarządzania im. L. Koźmińskiego*, Warszawa.
- Dobjija M., 2007, *Abstract Nature of Capital and Money*, [in:] *New Developments in Banking and Finance*, ed. M.L. Cornwall, Nova Science Publishers Inc., New York, pp. 89-114.
- Dobjija M., 2009, *Teoria kapitału jako podstawa reformy systemu finansów publicznych*, *Nierówności Społeczne a Wzrost Gospodarczy*, no. 14, pp. 321-338.
- Dobjija M., 2012, *Tandem kapitału i pracy podstawą spójnej teorii i praktyki społeczno-ekonomicznej*, [in:] *Gospodarka Polski 1990-2011*, M.G. Woźniak (ed.), t. 3: *Droga do spójności społeczno-ekonomicznej*, Wydawnictwo Naukowe PWN, Warszawa, pp. 157-190.
- Dobjija M. (ed.), 2010, *Teoria pomiaru kapitału i zysku*, Uniwersytet Ekonomiczny, Kraków.
- Hudson W.I., 1993, *Intellectual Capital*, Willey and Sons, New York.
- Ijiri Y., 1995, *Segment statements and informativeness measures: Managing capital vs. managing resources*, *Accounting Horizons*, vol. 9, no. 3.

- Kozioł W., 2010, *Pomiar kapitału ludzkiego jako podstawa kształtowania relacji płac w organizacji*. rozprawa doktorska, Uniwersytet Ekonomiczny, Kraków.
- Kozioł W., 2011, *Rozwój rachunku kapitału ludzkiego*, [in:] *Kapitał ludzki w perspektywie ekonomicznej*, ed. M. Dobija, Uniwersytet Ekonomiczny w Krakowie, Kraków, pp. 47-81.
- Kozioł W., Mikos A., 2019, *The measurement of human capital as an alternative method of job evaluation for purposes of remuneration*, Central European Journal of Operations Research, pp. 1-11. DOI: 10.1007/s10100-019-00629-w.
- Kurek B., 2011, *Hipoteza deterministycznej premii za ryzyko*, Monografie: Prace Doktorskie, nr 10, Wydawnictwo Uniwersytetu Ekonomicznego, Kraków.
- Kurowski P., 2002, *Kosztyki minimum socjalnego i minimum egzystencji – dotychczasowe podejście*, Instytut Pracy i Spraw Socjalnych, Warszawa.
- Oliwkiewicz B., 2016, *Wynagrodzenie godziwe absolwenta studiów wyższych w Polsce w aspekcie modelu kapitału ludzkiego*, Nierówności Społeczne a Wzrost Gospodarczy, issue 47(3), pp. 481-491.
- Oliwkiewicz B., 2018, *Minimalna płaca godziwa jedną z determinant rozwoju przedsiębiorstwa*, [in:] *Wybrane zagadnienia zarządzania rozwojem organizacji*, ed. D. Fatuła, Kraków, pp. 59-76.
- Oliwkiewicz B., 2019, *Historia polskiej płacy minimalnej na gruncie teorii pomiaru kapitału ludzkiego i godziwych wynagrodzeń*, NSaWG, no. 57(1), pp. 420-431.
- Ossowski M.M., 2006, *Jak w praktyce korzystać z krzywej uczenia się*, Controlling i Rachunkowość Zarządcza, 2.
- Renkas J., 2014, *Teoria pomiaru kapitału ludzkiego jako podstawa analizy wynagrodzeń w gospodarce Ukrainy*, rozprawa doktorska, Uniwersytet Ekonomiczny, Kraków.
- Suleman A., Suleman F., Reis E., 2016, *Fuzzy approach to discrete data reduction: an application in economics for assessing the skill premium*, Journal of Business Economics and Management, no. 17(3), pp. 414-429.
- Sunder S., 1997, *Theory of Accounting and Control*, South-Western Publ., Cincinnati.