Determinants of Individual Wages in the Slovak Republic[1]

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Abstract

The wage development is an important part of society. The release of wage developments in Slovakia resulted in a significant income differentiation, which found its reflection in the quality of life of inhabitants. After the initial causes of the increase in wage differentiation due to transformation the attention has focus on an exploration of new factors that affect the wage assessment of an individual. The aim of this paper is captured by the wage equations several determinants affecting the level of wages in the Slovak Republic. In this paper analysis of wage determinants is based on data from the survey Information system on labor cost, which is realized by the company Trexima Bratislava.

Keywords: *wage, determinants of wages, gender, region, education, occupation, age*

JEL Classification: J31, J39, I39

Introduction

This study is aimed at contributing to the recognition of the processes which have occurred over the last decade of the formation of wages in the Slovak Republic. This relatively short period has been accompanied by changes in remuneration due to the economic crisis. Entirely new wage mechanisms have been introduced and wages are beginning to be influenced and formed by new

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mechanisms. Their share in wage formation is changing due to a number of exogenous and endogenous factors. This study consequently attempts to contribute to our knowledge of wage determinants in the Slovak economy.

1. Theoretical Approaches and Practical Examples of Wage Determinants

There are numerous ways of explaining why people are paid different wages. Certain theories place an emphasis on personal characteristics as the principal wage determinants. These are reflected in the so-called commonly applied Mincer's wage functions (Mincer, 1974), based on the human capital theory. Other theories emphasise differences in job characteristics such as, for example, the job competition theory. These theories are combined by applying the allocation theory which indicates that people can be characterised according to their abilities, while job positions can be characterised by a certain difficulty. Thus, there can be comparative benefits in hiring individuals for certain jobs which are used in cases when an efficient labour market exists. The segmented and discrimination labour market theories emphasise that both supply and demand should also be taken into account to explain differences in wages. When considering various approaches in foreign literature in this area, the statement that wages are commonly determined by personal characteristics, job characteristics, institutional and market characteristics is evident and meaningful. What is the extent, however, of which wage differences are explained by particular characteristics?

Wages of individuals can also differ because employees differ. Each employee enters the labour market with unique capabilities, qualities and knowledge, generally said, with a different human capital. Each person chooses his or her own way of gaining human capital and this particular human capital is consequently offered on the labour market. Thus, certain people achieve many years of education whereas others prefer to earn money sooner. The former have the expectation that after their studies they will find better paid jobs as compensation for their investment into education. Does this model of human capital apply for the age-earnings profile? This is investigated by Mincer's type of wage function which is based on the standard theory of human capital. An employee's wage is determined by their quality; this means that the employee has obtained education, general work experience and specific work experience gained in a company, as well as certain other qualities independent from education or experience. According to this theory, an employee's wage is determined by the rate of human capital returns. Hundreds of studies have indicated that the Mincer wage function provides a sufficient description of an individual's income profile

in terms of education and experience even in countries with different institutional structures. Nevertheless, the proportion of education and experience in explaining wage differentiation differs among countries in a range of from 30% to 50%. Exogenous as well as endogenous economic factors are no doubt significant determinants of wages as well, although they only marginally assist in completing the wage profile of employees.

Wage disparities according to branches in a standard competitive labour market can occur due to compensation of differences in job properties directly influencing a worker's utility, or due to differences in the labour force quality. Shifts in supply and demand among branches, or short-term immobility of workers, can cause the aforesaid differences in wages as well. Thus, the theory can also explain the fact that workers receive compensation in their wages for worsened or hazardous working environments, for example, in mines, and the like. Thus, inter-branch differences in labour conditions are a logical explanation for wage disparities among branches for workers of the same qualifications (see Krueger and Summers, 1988).

A range of articles have been published in both Slovakia and the Czech Republic amongst other things due to the fact that the source of data in both countries is quite similar and the fact that they had a shared economy up until the year 1993.

Flanagan (1994) has compared the influence of education on the wages of employees (a log of a monthly wage) before the revolution (1988) and after the revolution (1991). Flanagan determined there was a strong positive relationship between education (measured as the influence of any further year of education on wages) and wages for men (0.0344) and women (0.054) which existed before the revolution as well. In 1991, the coefficient was higher for men, 0.049, and almost the same for women, 0.053. The only statistically important change is the education return growth for men when Flanagan divided education into formal groups and tested the variables. In addition, he concluded that a positive education return even existed during the period of the central planned economy, however, much less so than in market economies. The significance of experience, however, has fallen.

Chase (1998) in his research has examined the differences in the wage structure amongst the centrally planned and transforming Czech Republic and Slovakia and has researched the wage return from education and experience within the framework of these regimes. Mincer's traditional function of earnings was employed for the analysis. The education return was relatively low during the Communist era, 2.5%, only to grow up until the year 1993 to approximately 5% with the significance of experience decreasing during this period. Despite the

fact that women had larger returns from education than men, the returns for men grew more within the framework of the change in the regime. The change in the earnings structure was significantly more apparent in the Czech Republic as compared with Slovakia.

The results of the studies by Jurajda (2000) indicate that education of all types was rewarded significantly more in the year 1998 than was the case in the first years of transformation with the coefficient for university education being approximately 0.80% in comparison with primary school for employees of both genders in the year 1998. Experience in contrast with education did not become significantly more valuable. Ownership had a significant influence on wages since companies owned by foreigners paid significantly higher wages even when taking into account work characteristics. The gap between them and other types of ownership consequently gradually lessened.

The article by Večerník (2001) was focused on the the differentiation of wages and identifying its various factors in the years 1988, 1992 and 1996. The Mincer wage functions were used in order to measure education and experience returns. A regressive analysis from the years 1988 and 1996 demonstrated significant changes in the wage structure where the importance of gender and age decreased and the overall contribution of demographic characteristics, that is gender and age together. For an explanation, the differentiation between wages decreased from 40% to 17%. The importance of education in contrast grew from 11% to 20%. Over a relatively short period education consequently became the most important factor for differentiation. The level of the influence of experience on higher wages stagnated.

A study by Gottvald (2002) which examined wage determinants in the Czech Republic and Slovakia with a focus on changes in wage evaluation over the period 1996 – 2000 was an important contribution to the literature. The function of Mincer's type outlined the personal characteristics of education, age representing experience, gender, number of worked hours and work load. Institutional variables were also examined, however, with these being the kind of ownership, industrial branch, the region and the qualification characteristics of the work positions and the company structural and exogenic variables in terms of work productivity, profit, number of employees, average level of unemployment in the region and the average gross hourly wage in the region. The results indicate that the level of achieved education and the performing of a specific vocation serves to explain a third of all of the differences in wages and that profession has more importance for the formation of wages of individuals than the amount of education. The wages of employees with university education, however, was almost 50% higher on average as compared with those with only a primary

education, for example, in the year 2000. When using the number of years of education this brought employees on average approximately 4.5% higher wages each year. Gender was also an important factor for differentiation of wages, with men having approximately 20 – 30% higher wages than women. The results of the model of institutional variables thus indicate that increased productivity by 1% in the year 1996 increased wages by 0.081% and by 0.104% in contrast to the year 1999. When analysing profit it was determined that companies ranking among the most profitable groups paid their employees from 10% to 25% more than companies which were not making a profit.

Jurajda in his article (2003) estimated the wage remuneration of education on the basis of the expanded Mincer wage function. This was initially in connection with the education of employees along with potential experience and their quadrates with a range of company characteristics added later such as the region, the industrial branch, the kind of ownership and the size of the company. The results indicate that the hourly wage of employees with a primary education or with a vocational education was on average on the level of approximately 67% of the hourly wage of employees with a secondary school education. The obtaining of a university education led to wage levels of almost twice the amount than with employees with a secondary school education.

Barošová (2003) reached the conclusion in her analyses that wage differences between men and women tend to decrease when women work in the "male" and poorer paid sector and increase when women work in the "female sector". She points out that this reality does not have a simple, linear explanation but that a combination of more factors has to be taken into account, these being the wages which require unequal remuneration of men and women for the same work and work for the same values. An internal horizontal segregation of sectors exists and a vertical gender segregation.

A study by Basu, Estrin and Švejnar (2004) which made use of collections of data on the level of large companies in the Czech Republic, Slovakia, Poland and Hungary in order to demonstrate that the wage behaviour of companies after the transition to a market system changed dramatically could also serve as an example. Estimates indicated that incomes began to change dramatically in connection with company performance in all of the monitored countries. The effect of ownership on wages in contrast was not seen and a significant relationship between wages and the local level of unemployment was also not found with the exception of Slovakia. It was determined that state companies in both the Czech Republic and Slovakia provided employees with a smaller percentage of profit than with other companies and that private companies paid higher wages immediately after the beginning of the transformation, and that this effect later faded.

Another study by Eriksson (2005) examined the influence of company characteristics in particular on the level of wages of management employees in the Czech Republic and in Slovakia over the period 1997 – 2000. It was determined that private (as well as foreign) companies paid their directors and additional managing employees higher compensation than in companies where profit is not a motivating factor and that a university education amongst managers, in contrast to other levels of education, was of value in the form of a higher salary to the amount of 27.6% in the year 1998 and 26.8% in the year 2000. The size of the company also had a strong effect on the level and the changes in remuneration of management employees wherein a growth in the number of employees by 1% resulted in approximately 3% higher wages amongst management employees. In the case of general directors this actually amounted to more than 10%. Estimates indicate that poor performance of companies led to the greater probability of replacement of the director.

The work of Flabbi, Paternostro and Tiongson (2007) tested the increase in returns from education with the transition to the market environment in eight transition economies. The dependent variable in the regression consisted of monthly earnings and the explanatory variable number of years of school attendance along with the vector of additional control elements. Evidence regarding the slowly growing trends of returns from education during the period of transformation was manifested from the analysis. The returns for an additional year of education were 3.6% in the year 1994 and 6.6% in the year 2002. There exists, however, marked differences in particular countries which have not changed dramatically over recent years with the results in all probability having been stimulated by institutional and structural factors. The Czech Republic and Slovakia ranked, according to the findings, amongst the countries with the lowest returns.

Filadelfiová et al. (2007) states in a conference proceeding that gender differences in remuneration stem from two basic types of independent variables: variables corresponding with human capital (personal characteristics) and variables corresponding to employment and the sector (work characteristics). She identified gender segregation according to sector and employment and undervaluing or insufficient appreciation of working women as the main reasons for differences in remuneration of men and women. While the overall European average for gender gaps in remuneration over the period 1997 – 2006 recorded a decreasing trend, the gender wage difference in Slovakia increased from 21.5% in the year 1997 to almost 27% in the year 2006. The gap in remuneration grows with age, education and the length of experience. While within the EU part of the gender gap in remuneration is caused by the fact that many of the women as well as men work part time, this factor plays a minimum role in Slovakia.

Michálek (2007) in his article depicted the space dimension and differentiation of selected characteristics (the branch, the class of employment, age, education, legal form, ownership) which determine regional wage inequality and which influence most significantly the amount of wages and consequently the living standard of the inhabitants of the analysed regions. He focused on eight regions in Slovakia with a varying economic and social level of development and on the basis of a comparison of the obtained results which confirm the apparent dichotomy of wages in the Bratislava region and the other seven regions. Over the observed period of the years 2005 and 2006, six regions had lower averages of wages than the national average. On the basis of a decomposition of selected characteristics and a consequent comparison of the regions, it was determined that seven regions demonstrated the highest wage inequalities based on the class of employment. Two important factors were demonstrated in Slovakia on the basis of the analysis: the importance of regional wage differentiation and its ongoing deepening.

A study by Verhoeven, Dessens and Jansen (2008) tested trends in factors which influenced income in post-communist societies from the year 1991 up to 2002. The results indicate a growing trend involving the influence of the number of years of education on the income of individuals in all five countries with this tendency being similar in the Czech Republic, Slovakia and Poland. The effects of years of experience on income did not reveal a growing trend.

Eriksson, Pytliková and Warzynski (2009) in their articles examined the development of wages over the years 1998 – 2006. The analysis arose from smaller samples gathered from companies in the private sector. The estimates indicate a slightly growing trend of returns from university education and experience (for experience from 1.9% up to 2.5%), while the gap between men and women decreased. The difference between employees with secondary school education and those without any or with only primary education decreased over time, partially due to significant increases to the minimum wage during the given period. Another important factor has been the increase in the allocation of university educated people into the most productive companies.

Pauhofová (2010) in a paper in a conference proceeding has analysed income stratification in Slovakia wherein the loss of the middle class can be seen as of the year 2005 and the growth in the percentage of inhabitants in the lower income belts. The results of the financial crisis over the years 2008 – 2009 has amounted to the most dramatic movement within the income interval up to EUR 500 where the percentage of people in this income belt has increased at the expense of the income belt from EUR 500 up to EUR 1,000. The developments caused by the crisis analysed over the two years have created space for fixing

a high percentage of the Slovak population at an income level of up to EUR 500, with ongoing significant regional differences not only on the level of regions but also amongst districts.

2. Data and Model

Calculations with the OLS standard cross-section human capital earning functions were used in order to obtain the determinants of individual pay and the evolution of their structure, the dependent variable is ln *of an average hourly wage* in the model.

$$\ln w_i = W\left(Q/L,\, X,\, Z\right)\ i = 1 \ldots N$$

where

L – the vector of personnel and additional determinants linked to personnel, these being:
- education controlled by levels through 10 dummy variables (primary education and no education being an omitted category),
- occupation controlled by 10 dummy variables (unqualified jobs being an omitted category),
- experience expressed by age in years,
  - gender (male being an omitted category),
    - dummies for part-time (less than 36 hours per week) and full time jobs (full time being an omitted category);

X – the vector of institutional variables, these being:
- dummy variables for 19 industries (branches, agriculture being an omitted category),
- dummy variables for 8 regions (Bratislava being an omitted category);

Z – the vector of structural variables and exogenous variables which determine the formation of wages in companies, these being:
- the number of employees which includes 8 dummy variables for categories of companies based on the number of employees (the smallest firms up to 9 employees being an omitted category).

2.1. Problems and Hypotheses

1. *What determinants play a key role in forming wages? Is it true that the rate of returns from education increasing and that the theory of human capital is gaining more and more ground?*

2. In contrast, the rate of returns for experience was high during the period of communism, since the principle of seniority in remuneration was thoroughly rooted. We are aware that the rate of returns for experience decreased immediately

over the first few years of transition. *Does experience continue to play a smaller role in determination of wages, or has its importance stopped decreasing?*

3. Wages are determined not only by personal characteristics, but also by job characteristics. Personal characteristics represent the labour market supply while job characteristics represent demand. Every occupation has its difficulties and requires a certain education, responsibilities as well as skills and abilities, which can be called required skills. *What is the importance of a particular occupation as a wage determinant in the structure of other determinants and in relation to personal characteristics? What is the connection between the education level and occupation in Slovakia?*

4. *What is the importance of other personal characteristics and what role do they play in wage determination? What are the differences between wages with men and women?*

5. *Is it valid to say that the wages of employees are higher in larger companies than in smaller ones? If it is valid, and many studies have confirmed this, how can the differences be explained?*

6. Economic development, the emergence of new companies, foreign investment, innovation, new technologies, etc. *Did this process shift the labour demand towards more educated workers? Did the process change the wage structure due to the changed structure according to branches and regions?*

Our article contributes to the debate on a comprehensive analysis of the determinants of wage in the Slovak Republic for the years 2006 and 2011. A similar detail analysis was done recently for the second half of ’90 and is useful to see how the development of the economy and its structure affected the formation of wages and development of differentiation of wages in Slovakia.

2.2. Data and Characteristics of the Employed Data File for Slovakia

If interested in a complete and detailed data description, it can be found in the Statistical yearbook tables of Trexima Bratislava which is available at <www.trexima.sk>.

The basic collection of the company Trexima Bratislava consists of all of the economic bodies in Slovakia which have been active up to January 1, 2012 and which employ at least one employee and were in the area of economics. The target group was primarily selected on the basis of a stratification of a random selection without repetition. The main criteria for the stratification were: the economic activities according to NACE, the territorial placement in the regions based on the seat of the unit and the number of employees in the unit. The selection was carried out amongst two spheres at once: the non-business and the business. The selected sample contained all together 7,346 administered units

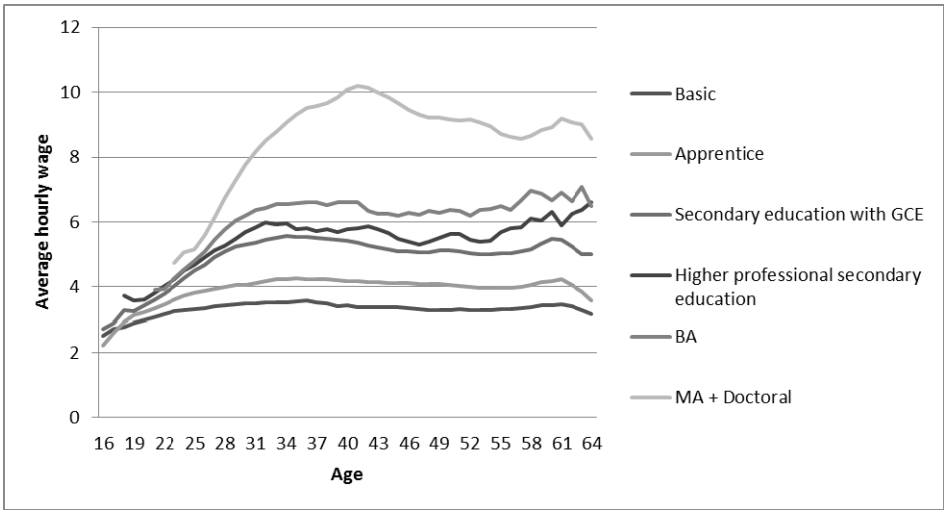
and initial data was provided by 7,004 administered units which represents a 95.34% growth in returns. The percentage of employment in the collection out of the overall number of employed in Slovakia amounted to 45.09%.

2.3. Results from the Data Analysis

The wages of employees with a primary education in Slovakia experience a short growth up to 30 years of age only to stop increasing with the curve becoming flat. There is only a slight growth with age for skilled workers. For workers with a secondary education the growth with the age trend is more distinct with significant growth shortly before retirement. The initial wage growth is steep and the workers achieve their maximum when they are approximately 40 – 45 years old with the university level of education. There is a major difference between the wages of employees with university education on the first level, a bachelor's degree and university education involving a master's or doctoral degree, and this in the level of wages. The distance between the wage curve of university education of the 2nd and 3rd level and other educational groups including the bachelor's degree is significant and the corridor, in which other educational groups occur, is narrow although there is a tendency towards extension.

G r a p h 1

Wage-age Profile in Slovakia, 2011



Source: Trexima Bratislava.

The supply side is represented by the achieved wage level and the demand side by the job being performed, thus the formal (dummy) variables were included in the model. The theoretical literature analysis demonstrated that certain jobs

will achieve a high correlation (the multicolinearity test confirmed its fairly high rate, but still within statistically insignificant limits)[2] with certain variables for education. The table show that all the variables are statistically significant. Separate regressions revealed a s*ignificant and definite finding, that the performed occupation is more important for individual wage determination than their educational level.* The level of achieved education explains a quarter of all differences in wages but the level of occupation performance explains a third of all differences in wages. Workers are not allocated to the occupations randomly. People with a higher education and more skilled workers are with greater probability allocated to the occupations requiring higher knowledge and skills and will consequently have a greater chance of being rewarded with a higher wage. The importance of the performed vocation grows over time as well as the differentiation in wages based on occupation wherein the importance of the achieved education also grows although the differentiation in wages based on education decreases.

Wages increase in all occupational groups to the reference group, ie. unqualified and unskilled labourers, but not at the same pace. Wages are growing fastest in the first two occupational groups (ISCO 1, 2), but also for Clerks and Craft and related trade workers (ISCO 4, 7). This increase is caused by the faster growth of wages in specialized occupations generally due to greater demand for these professionals as changing the structure of Slovak economy. The rapidly growing number of university graduates slows the growth and differentiation of wages according to education and this is especially true for workers with a bachelor's degree.

Gender is a significant factor for wage differentiation. Men received wages approximately 23.9 – 22.4% higher than women over the years 2006 to 2011. The wages for men were approximately 25.5% higher than those for women in 2000 (Gottvald, 2002). This process of equalising the differences in wages might be a result of the fight against all forms of discrimination on the labour market. Certain wage differences are without doubt partly caused by wage, professional and other forms of discrimination.

Age may be considered an intermediary index for length of experience. The wage – age mechanism is somewhat significant for wage determination. This is not the case for the public and non-profit sectors where the wage – age mechanism is embedded in the wage tariffs and has a more important role (the results of that

[2] Multicollinearity tests, VIF characteristics, the only variables causing multicollinearity are dummy variables created from the categorical variable firm size category – "poc_kat". These dummy variables far exceeded the tolerance limit VIF > 10 (10.33 to 76.47). Due to the occurrence of multicollinearity between the dummy variables such dependence is not essentially a problem. The real incidence of such multicollinearity is common statistical practice (see. no. 3 spot in the contribution of P. Allison about multikolinearity <http://www.statisticalhorizons.com/multicollinearity>.

analysis are not included in this paper in detail). Their impact on wage determination is extremely stable and oscillated around 0.46% in the 2006 – 2011 period, thus with a one year increase in the worker's age his or her wage will increase by 0.46% on average, while its impact was 2.9% in 2000. Thus the results of the empirical analysis are confirmed, the importance of age for wage determination is decreasing and a slightly more significant influence persists, only in the public sector, and particularly in the case of higher educated workers.

T a b l e 1

Wage Differences by Occupation and Education

VARIABLES	2011	2010	2006
	Dep.Var: log (hourly wage)		
Legislators, managers	0.8292 (0.0023)	0.8216 (0.0023)	0.7854 (0.0028)
Scientists and other professionals	0.4852 (0.0020)	0.4628 (0.0021)	0.4415 (0.0024)
Technicians	0.3857 (0.0017)	0.3740 (0.0017)	0.3796 (0.0020)
Clerks	0.2252 (0.0020)	0.2059 (0.0020)	0.1968 (0.0022)
Service workers and shop and market sales workers	0.1803 (0.0018)	0.1946 (0.0018)	0.0546 (0.0023)
Skilled agricultural workers	0.1589 (0.0051)	0.1579 (0.0051)	0.1646 (0.0054)
Craft and related trade workers	0.1655 (0.0017)	0.1518 (0.0017)	0.1405 (0.0019)
Plant and machine operators and assemblers	0.1548 (0.0016)	0.1480 (0.0016)	0.1675 (0.0018)
Apprentices	0.0954 (0.0018)	0.0899 (0.0017)	0.0934 (0.0018)
Secondary without GCE	0.0809 (0.0021)	0.0755 (0.0021)	0.0903 (0.0023)
Apprentice with GCE	0.1922 (0.0019)	0.1950 (0.0019)	0.1642 (0.0021)
Secondary with GCE – general	0.2014 (0.0023)	0.1999 (0.0023)	0.1671 (0.0026)
Secondary with GCE – professional	0.2183 (0.0019)	0.2076 (0.0019)	0.2073 (0.0020)
Higher post-secondary school	0.3088 (0.0037)	0.3222 (0.0036)	0.2728 (0.0038)
Tertiary – 1st level	0.3118 (0.0029)	0.3158 (0.0029)	0.3227 (0.0045)
Tertiary – 2st level	0.4354 (0.0021)	0.4265 (0.0021)	0.4404 (0.0024)
Tertiary – 3st level	0.4828 (0.0039)	0.4657 (0.0040)	0.5581 (0.0060)
Constant	0.7901 (0.0069)	0.7846 (0.0071)	0.6185 (0.0084)
No. of observations	947 948	917 174	671 889
Adj. R2	0.5363	0.5410	0.5234

Notes: Dependent Variable: ln (average annual hourly wage). P < 0.01.

Source: Trexima Bratislava.

Full-time jobs (at least 36 hours per week) bring workers a wage 'bonus' of approximately 13.2% in 2011 and 17.6% in 2006. In a number of companies employees working part-time do not receive (have no right to it according to the regulations for bonuses) certain components of the wage which full-time workers receive, the reason being that they do not participate fully in the outcome for which the bonuses are paid. A certain kind of discrimination can be hidden behind this mechanism as is the case for women working part-time, or in the case of two jobs or parallel jobs. This kind of discrimination, if it exists, is difficult to investigate. It is particularly interesting that the situation was the opposite in 2000 wherein full-time workers received about a 13% lower average wage than part-time workers. Here a surprising finding can serve as an explanation that amongst the part-time workers men prevailed, such as for example the part-time worker proportion of 75% for men in 2000. Thus the effect of full-time versus part-time jobs will result in an overbalance with the effect of men 'wage favouritism'. This raises a new question as to why men are primarily in the part-time job category. A significant role here may be played by the high unemployment rate in Slovakia in 2000 which forced workers to work part-time so as to not lose their jobs completely.

T a b l e 2

Wage Inequalities by Gender, Working Time and Age

VARIABLES:	**2011**	**2010**	**2006**
	Dep.Var: log (hourly wage)		
Female	–0.2243 (0.0008)	–0.2318 (0.0008)	–0.2389 (0.0010)
Short time employment	–0.1321 (0.0016)	–0.1314 (0.0016)	–0.1763 (0.0020)
Age	0.0048 (0.0000)	0.0044 (0.0000)	0.0047 (0.0000)
Adj. R2	0.5363	0.5410	0.5234

Notes: Dependent Variable: ln (average annual hourly wage). $P < 0.01$.

Source: Trexima Bratislava.

Bratislava, as the capital city of Slovakia, has the highest wages. Surprising, however, is the fact that differences between Bratislava and the rest of Slovakia are decreasing. As late as the year 2006, wages in the Prešov region were lower on average by 31.1%, however, this had decreased to only 26.7% by the year 2011. This tendency is also valid for additional regions and it can be stated that the differences between the other regions and Bratislava decreased by approximately 5% over the given period. The rapid economic growth in Slovakia over these years along with foreign investment throughout Slovakia have led to the creation of new, better paid work outside of Bratislava as well, where there is a qualified but also less expensive labour force.

T a b l e 3

Wage Differences by Region

Region:	2011	2010	2006
	Dep.Var: log (hourly wage)		
Trnava region	–0.1278 (0.0014)	–0.1454 (0.0014)	–0.1759 (0.0017)
Trenčín region	–0.2011 (0.0013)	–0.2088 (0.0014)	–0.2411 (0.0016)
Nitra region	–0.2218 (0.0013)	–0.2172 (0.0014)	–0.2519 (0.0016)
Žilina region	–0.1735 (0.0013)	–0.1806 (0.0013)	–0.2144 (0.0016)
Banská Bystrica region	–0.2381 (0.0014)	–0.2390 (0.0014)	–0.2549 (0.0017)
Prešov region	–0.2673 (0.0014)	–0.2789 (0.0014)	–0.3112 (0.0016)
Košice region	–0.1654 (0.0013)	–0.1685 (0.0013)	–0.1272 (0.0015)

Notes: Dependent Variable: ln (average annual hourly wage). $P < 0.01$.

Source: Trexima Bratislava.

The highest wages are paid in branch D – suppliers of electricity, gas and water and this by more than 36.5% higher than in agricultural and forestry, followed by branch J – information and communication with 30.2% and K – financial and insurance activities with higher wages by 24.5% in the year 2011. In contrast, the lowest wages were paid in S – other activities and when we ignore administrative and support services in branch N with 16% lower wages than in agriculture and in the branch R – art, entertainment and recreation with 15.5% lower wages. There is an apparent connection visible here upon the allocation of better paid professions with higher education or the opposite. The year 2006 with its results is only partially comparable and this in terms of the influence of the use of the older rougher NACE classification (14 branches). The basis proportions in terms of the differences in wages are nevertheless preserved.

The general public accepts the fact that workers in large companies have higher wages. A number of these factual reasons are logical and are apparent in reality while others are controversial. Larger companies employ higher qualified and a higher level of workers and this reality is related to their ability to pay higher wages to their employees. Companies pay effective wages and ensure a higher limited benefit and productivity from their work. Most of the larger companies have higher occupation differentiation; they maintain their own research and development, etc. Consequently, they have a higher proportion of these professions and wage differentiation. In contrast, they pay higher wages to avoid conflict with trade unions while small companies refuse to establish trade

unions but offer superior working conditions as their vertical management structure is closer to the demands and requirements of the common employee. Here the first symptoms of controversial tendencies are already apparent. One of the explanations might be that larger companies tend to be older and higher wages are paid to the workers who have been working there for a long period of time. Therefore the links between the size of the company, its age and the seniority principle can be linked here.

T a b l e 4

Wage Differences by NACE

NACE	2011	2010	2006
	Dep.Var: log (hourly wage)		
A Plant and machine operators and assemblers	0.1548 (0.0016)	0.1480 (0.0016)	0.1675 (0.0018)
B Mining	0.1932 (0.0050)	0.2303 (0.0050)	0.1534 (0.0050)
C Manufacturing	0.1609 (0.0027)	0.1683 (0.0027)	0.2230 (0.0028)
D Electricity, gas and water supply	0.3649 (0.0038)	0.3944 (0.0037)	0.2982 (0.0034)
E Waste removal	0.0922 (0.0036)	0.1371 (0.0036)	–
F Construction	0.0597 (0.0033)	0.0745 (0.0032)	0.0645 (0.0034)
G Repairs, trade	0.0176 (0.0029)	0.0179 (0.0029)	0.1005 (0.0032)
H Transport and logistics	0.0298 (0.0028)	0.0399 (0.0028)	0.1259 (0.0030)
I Hotels and restaurants	–0.0757 (0.0048)	–0.0613 (0.0048)	0.0293 (0.0050)
J Information and communication	0.3016 (0.0034)	0.3019 (0.0035)	–
K Financial intermediation	0.2453 (0.0034)	0.2463 (0.0035)	0.3744 (0.0043)
L Real estate	0.0586 (0.0059)	0.1049 (0.0059)	
M Professional, RD activities	0.0541 (0.0034)	0.1336 (0.0036)	0.1211 (0.0032)
N Administrative services	–0.1605 (0.0032)	–0.1551 (0.0032)	–
O Public services, defence and social insurance	0.0522 (0.0028)	0.1489 (0.0028)	–0.0243 (0.0031)
P Education	–0.1433 (0.0030)	–0.0889 (0.0030)	–0.0817 (0.0034)
Q Health care	–0.0243 (0.0029)	0.0177 (0.0029)	–0.0181 (0.0031)
R Arts, entertainment, recreation	–0.1549 (0.0041)	–0.0737 (0.0042)	–
S Other services	–0.4301 (0.0049)	–0.4356 (0.0049)	–0.1483 (0.0035)

Notes: Dependent Variable: ln (average annual hourly wage). $P < 0.01$.

Source: Trexima Bratislava.

T a b l e 5

Wage Inequalities by Size of Company

Size of the company:	2011	2010	2006
	Dep.Var: log (hourly wage)		
10 – 19 employees	0.0776 (0.0070)	0.0788 (0.0073)	0.0921 (0.0086)
20 – 49	0.1506 (0.0061)	0.1302 (0.0063)	0.1016 (0.0077)
50 – 99	0.1852 (0.0060)	0.1814 (0.0063)	0.1399 (0.0076)
100 – 249	0.2043 (0.0059)	0.1894 (0.0062)	0.1372 (0.0074)
250 – 499	0.2044 (0.0059)	0.2002 (0.0062)	0.1462 (0.0074)
500 – 999	0.2551 (0.0059)	0.2282 (0.0062)	0.1753 (0.0074)
1000 and more	0.3235 (0.0059)	0.3246 (0.0062)	0.3171 (0.0074)

Notes: Dependent Variable: ln (average annual hourly wage). $P < 0.01$.

Source: Trexima Bratislava.

The size of the organisation or the company was observed from the size of a group from 10 to 19 employees up to the largest group of more than 1000 employees. The results confirmed our assumptions. Wages are almost one third higher in the largest companies as compared with the smallest companies and this in all of the monitored years. It is apparent that the growth in average wages gradually grows with the size of the company although the difference between the largest companies and the lower group (companies with 500 to 999 employees) is the largest, in particular in the year 2006 when it was almost double.

Conclusions

The first generally valid conclusion for the Slovak Republic is that wages are formed in accordance with the principles of an advanced market economy. Functional legislative branches have been formed which react to the gradual economic development of the second part of the last decade.

This is apparent in the increase in the levels of wage compensation in relation to levels of education. Education is not, however, the leading determinant of wages, but instead the type of occupation involved. Top-level employees (group 1 in the ISCO 88) have almost 83% more than the wages of assistant employees and unqualified workers (group 9). The division of employees in terms of profession is, however, strongly influenced statistically by the level and type of education, with the indicators significantly in correlation. Both of these factors explain the majority of the differences in wages in Slovakia.

The inclusion of additional personal characteristics into the model increases the interpretative validity of our study to almost 54% of all the differences in the wages of individuals in Slovakia. A particularly important determinant of wages is gender. Although the differences are decreasing, they are nevertheless significant and still attain levels which are higher than the majority of the countries of the European Union. Age is not a particularly significant determinant of wages, although it can be considered as an indicator mediating the length of specialised work experience in wages. Empirical analyses demonstrate that the wage-age mechanism is more significant in the public and non-profit sectors, but not within the business sector. Nevertheless, a general decrease in the influence of age as well as the length of specialised work experience on the levels of wages is apparent.

The influence on wages of work on full-time or part-time work contracts is a distinct situation on the labour market. Full-time jobs (at least 36 hours per week) brought workers a wage 'bonus' of approximately 13.2% in 2011 and 17.6% in 2006. In many companies employees working part-time do not receive certain components of the wage which full-time workers receive, the reason being that they do not participate fully in the outcome for which the bonuses are paid.

The author's hypotheses assumed a significant influence on the part of certain institutional characteristics on the level of wages. The authors expected its influence to have decreased and reached the level normal in other European countries. The most significant factor is industry and it continues to be valid that the concentration of certain occupations in a definite industry leads to the formation of a defined scheme of wage division. The influence of other institutional factors is also particularly significant. Wages in Bratislava have differed from the remainder of the regions for a long period of time but are decreasing over time.

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