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**Macroeconomic conditions of pay in Polish economy in 1990-2007****Abstract**

*Remuneration is a crucial element of economic processes. What it means is that the processes of production, distribution, exchange and consumption are not possible without a well planned pay strategy.*

*There are many factors which influence salaries. The aim of this survey is to present salary stimulants of macroeconomic character. Those include GDP, inflation rate, unemployment rate, cost of work, protective package (unemployment benefit), efficiency, legislation protecting employees' rights and legislation regulating employment relations. Each of these macroeconomic issues determine the level of salaries to a different extent. While analysing relations between those stimulants we should not jump to wrong conclusions explaining salary levels.*

**1. Introduction**

Remuneration is a complex category both as an economic issue as well as socio-political one. This complexity results from the various functions it has. It may be treated as a source of income or as the price of work. Pay determines individual person's social status but it is also an element of the employer's expenses.

In academic research the terms remuneration and pay/salary/wage are treated differently. Socialists were the first to treat pay as income from work. The catholic social doctrine has also seen it in the same way. The latter doctrine formulates the term of just and fair pay related to the needs of workers and their families, to workers' individual efficiency and the company's results as well as

benefits for the community. It may be seen that this idea of salary includes not only economic aspects but also social aspects.

In Labour Code and other law regulations only the term remuneration is used. Pay was the term used earlier but it had a much narrower meaning than remuneration. Remuneration is defined as all the monetary payments received by the employee in return for the services provided under the employment contract. Nowadays Polish Labour Code states that remuneration should be calculated based on the type of work performed and the necessary qualifications as well as the quantity and quality of the performed work<sup>4</sup>. Remuneration is paid for work executed (unless otherwise specified by the regulations). The Code regulates legal aspects of pay. It defines the right to remuneration, protects it, states sickness benefit, severance pay etc. However, not all the payments into the employee's account can be treated as remuneration.

In the following study the terms of remuneration and wage/salary/pay will be used interchangeably. For the purpose of this paper all these notions are identical. It would only make sense to differentiate between wage/salary/pay and remuneration if our aim was surveying any given legal and administrative aspect.

For many years in most economies the level of nominal wage has been rising. There are many factors affecting it. Each factor may produce a different impact on the level of salaries and its change.

The object of this paper is to present macroeconomic factors affecting salaries in Poland in 1990-2007 while showing their dynamics and the degree of determination. For the purpose of this survey the factors stimulating salaries are assumed to be: GDP, inflation rate, unemployment rate, labour force, cost of work, protective packet (unemployment benefit), efficiency, legislation protecting the rights of workers and regulating employment relations. The statistical data used in the present paper is calculated as average for any given year.

The structure of the present paper is as follows. Opinions and thoughts concerning the degree to which pay is determined by certain chosen factors are preceded by statistical analysis of average wage in Poland. The next step is the statistical and economic analysis of factors influencing salaries. The last part contains conclusions concerning the main reasons, mostly macroeconomic, which have impact on remuneration in Poland during the selected years.

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<sup>4</sup> Labour Code, art.78

## 2. Average pay in Poland

Pay is a perfect way to verify the state of economy. Improvement of business prospects is reflected by the higher level of salaries. It is quite obvious that this mechanism works with some delay. Firstly, the good economic situation is reflected by the increased aggregate demand. This stimulates production to rise, which in turn results in higher levels of employment.

The analysis presented below is based on the level of average gross pay in Poland in a given year. It is defined in literature as pay per employee. It includes individual remuneration, dividend and payment from balance surplus, financial awards from the company funds, fees. This pay includes monetary payment as well as the value of material benefits or their equivalents for which the employee is eligible once work has been executed (GUS 2008).

The increase in salaries is the result of a better situation in the labour market (better bargaining position for the workers) and good financial situation of companies. At the same time there is a decrease in the differences in pay and prices. Until recent times what limited the salary „appetite” in Poland was the unemployment. However, nowadays about three fourths of companies appear to have problems with finding new employees<sup>5</sup>.

The average wage in Poland is diversified. Particular branches of industry show deviation of the average pay from the statistical average pay calculated for the whole economy. Those differences result from the fact that each sector has its characteristic features. Although all companies are subject to the same legislation, the demand and supply of work in any given branch causes the salaries to diversify.

The diversification of salaries does not depend on the socio-economical system. It is the result of the fact that remuneration is the equivalent of work executed. Since jobs differ from one another in respect not only to their content and working conditions but also to effects which depend on workers' qualifications, remuneration for the work executed must also be diversified. In the European Union countries the rule of equal pay is in force. This rule is reflected in our Labour Code as well (art. 18 3b). This fact is related to the rule

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<sup>5</sup> Firma opiniotwórcza Sedlak & Sedlak, Raport dotyczący sytuacji w polskich przedsiębiorstwach, Warszawa 2007.

concerning non-discrimination of workers by unfavourable pay and unfair diversification of pay.

Some specialists of labour law maintain that if the content and conditions of work are the same, remuneration should also be the same regardless of the localization of the place of work. Such reasoning is too simplified due to the fact that remuneration as the cost of work also depends on the company's and the worker's effects. That is why there is no country whose legislation guarantees its workers equal pay in any workplace. The rule of equal pay applies only to minimum wage.

**Table 1. Average gross pay in Poland in 1990-2007(in PLN)**

<b>Years</b>	<b>nominal wage* (in PLN)</b>	<b>dynamics** of nominal wage</b>	<b>real wage*** (in PLN)</b>	<b>dynamics of real wage</b>
1990	102,9	-	77,5	-
1991	175,6	70,6	103,3	34,0
1992	289,7	65,0	203,5	97,0
1993	390,4	34,8	290,1	42,6
1994	525,0	34,5	401,7	38,5
1995	690,9	31,6	540,6	34,6
1996	874,3	26,5	729,2	34,9
1997	1065,8	21,9	953,3	30,7
1998	1232,7	15,7	1127,8	18,3
1999	1697,1	37,7	1581,6	40,2
2000	1893,7	11,6	1720,0	8,7
2001	2045,1	8,0	1938,5	12,7
2002	2097,8	2,6	2058,7	6,2
2003	2201,5	4,9	2184,0	6,1
2004	2465,2	12,0	2381,8	9,1
2005	2360,6	-4,2	2312,1	-2,9
2006	2476,9	4,9	2452,4	6,1
2007	2869,7	15,9	2770,0	13,0

\*nominal values are equal to current values

\*\*dynamics is calculated on the basis of previous year=100, i.e. chain dynamics

\*\*\*real value is nominal value verified by average increase in prices in a given, according to CPI index

Source: Statistical Yearbook, Chapter: Remuneration, GUS, Warszawa 1990-2008.

If minimum pay was taken as the starting point for analysis, it could be assumed that every year its value was higher. Only two years (1992 and 2005) had negative characteristics of the rate of change. Despite the change in the political system, remuneration was subject to marketisation since the very beginning of the transition period, when Poland was departing from the centrally controlled economy. The situation in 2005 was the result of the bad situation in the labour market (growing unemployment rate, decreasing level of employment) and general recession in economy.

It is a fact that the dynamics of nominal pay is diversified. In 1993 dynamics was 70,6%, while in 1993 – 34,8%. The lowest level of pay increase was observed in 2002, which was 2,6% up on the previous year.

When verifying salaries by the average increase in the level of prices we find that in the majority of years analysed in the survey the dynamics of real pay was higher than that of nominal pay except for 2000, 2004 and 2007. In those years the level of inflation was different. Years characterised by higher rate of increase in nominal rather than real pay were also characterised by relatively high inflation rate.

Pay in the public sector was increasing, though more slowly. The nominal wage increase in the public sector is caused by the increase of prices in economy, whereas the higher rate of increase in salaries in the private sector is the result of improved efficiency.

The state has limited possibility of influencing the pay in the private sector. However, the lack of specialists in certain areas forces companies to raise salaries if they want to gain new or keep their old employees. Nevertheless, it is well known that a rise in pay for one group of workers leads to pressure from other groups. A quick increase in salaries in any branch influences other branches. A pay rise is a very desirable phenomenon as it leads to improvement in the general standard of life of the people. But the salaries must increase in accordance with the rate of economic development. If, however, earnings grow faster than the labour efficiency and productivity, it may result in pressure to raise prices. Then workers start to demand even more energetically further pay rises, which would compensate for the growing cost of living. This is how the pay-price spiral winds (Kwiatkowski 2001). This situation occurred in many countries, especially those where the public sector is quite extended, those who govern the state agreed to satisfy the public sector workers expectations concerning wages. Stopping the spiral is not easy, resulting in lowering the standard of life of those who first gained the pay rise. The increase in salaries is often the effect of excessive role of trade unions which try to protect the workers using all possible methods but at the same time forget the unemployed.

Fast economic growth will lead to increase in pay even higher than today. We may assume that in the sector of companies it will not ruin the companies' ability to develop and their competitive edge in the foreign markets. Whereas the increase in pay in the public sector will not be the outcome of social conflicts regardless of economic calculus which should determine all economic activities.

### **3. Statistical analysis of determinants conditioning**

A survey of economical theories enables us to categorise the factors determining remuneration into several groups. The first group are the factors of a microeconomic character which include qualifications of employees and job seeking persons, intensity and length of time spent on job seeking, employees ambitions and expectations; contacts with employers. Most of these factors are qualitative and hard to measure. Moreover they can influence the level of remuneration in two ways. Relatively high number of people who are searching for a job may result in the lowering of the level of pay in the market. On the other hand, however, high pay expectations may lead to the increase in the number of job seekers.

The second group of factors stimulating pay are related to the effect of remuneration strategy of a company. They also have a microeconomic character but they should be looked at from the point of view of the employer. This group comprises of company strategy, training system, company organisational structure, level of difficulty of the job in question. The majority of the values can be measured and may be used as a basis for comparison, though proper analysis demands doing qualitative research.

The next group of macroeconomic factors concerns the internal and external environment and measure the level of economic development. These include the level of production (gross domestic product GDP), rate of unemployment, human resources (number of working and non-working persons), costs of work, protective packet (unemployment benefit), efficiency, legislation protecting workers and regulating employment relationship. A large number of these factors may be simultaneously a variable determining pay as well as the value explained by the level of pay.

In the following part of this paper we shall be focusing our attention on the macroeconomic factors only, with stimulants assumed to be egzogenic variables (descriptive variables) in respect to gross real average pay in the national economy. In terms of mathematics it may be presented in the following way:

$$\frac{w}{p} = f(Y; \pi; b; P; K_p; Z_b; L; \frac{w}{p_{\min}})$$

where:

$\frac{w}{p}$  – average real pay

Y – gross domestic production (GDP)

$\pi$  - rate of inflation

b – rate of unemployment

P – number of workers

$K_p$  - cost of work per one employed person

$Z_b$  - value of unemployment benefit

L- labour efficiency

$\frac{w}{p_{\min}}$  - value of minimum pay

For the purpose of the present analysis we assume that there is no relation between the variables influencing pay in Polish economy in 1990-2007. Such assumption will result in determining more adequately the reasons of correlation existing between average pay and variables mentioned above.

Production is the process of transforming productive factors into goods and services. This is the measure of total activity of the public sector as well as private sector (Sztaba 2007). The measure of final production in the given year is among others GDP – gross domestic.

**Table 2. Dynamics of real GDP and real average pay in Poland in 1990-2007**

Years	Dynamics of real GDP	dynamics of real wage
1990	-	-
1991	-7,0	34,0
1992	1,5	97,0
1993	43,4	42,6
1994	39,1	38,5
1995	63,9	34,6
1996	22,6	34,9
1997	30,6	30,7
1998	19,9	18,3
1999	13,3	40,2
2000	17,9	8,7
2001	9,2	12,7
2002	7,3	6,2
2003	5,4	6,1
2004	6,6	9,1
2005	8,1	-2,9
2006	9,0	6,1
2007	3,1	13,0

\*\* dynamics is calculated on the basis of previous year=100, i.e. chain dynamics

\*\*\* real value is nominal value verified by average increase in prices in a given, according to CPI index

Source: Own calculations based on Statistical Yearbook, GUS, Warszawa 1990-2008.

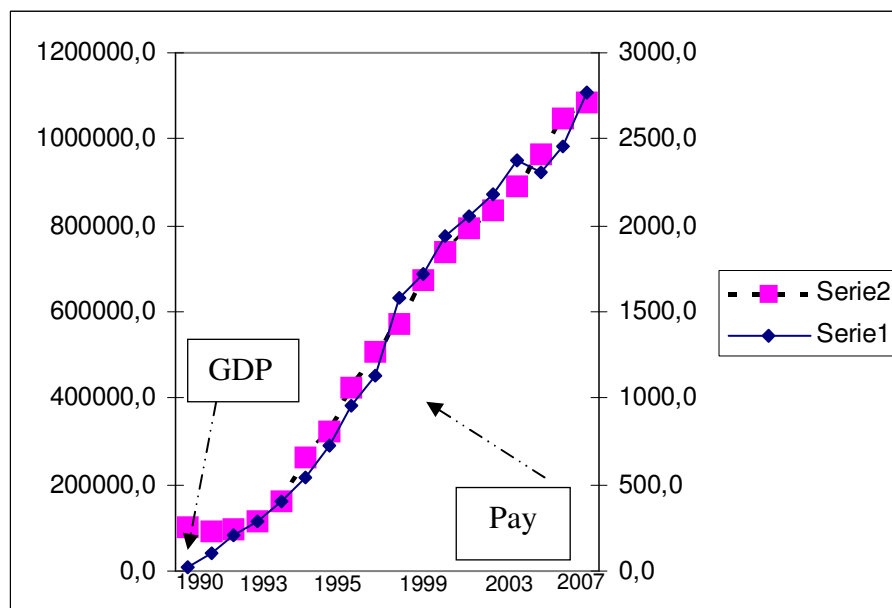
In 1990-2007 in Poland changes in the rate of increase of real GDP and real pay were at a similar level. This is a proof that these variables are highly correlated. Increase in aggregate demand causes higher level of production. Increase in production means the need for labour is also higher (demand for labour). This in turn is related to offers of higher salary stimulating taking up or changing a job.

Only the year 2005 is characterised by slightly different changes, namely GDP increased 8,1% on the previous year, while real pay decreased by 2,9% in comparison with 2004. It was the time of economic stagnation in Poland. In such



situation entrepreneurs seeing the growing amounts of goods in stock adopt the cost lowering strategy. The easiest way to start this process is to lower the wages ( or partial “freezing” of wages). Thus the reduction in wages causes decrease in the level of production in the following years ( 2007 – dynamics of real GDP is 3,1%).

**Chart 1. Real GDP (in millions PLN) versus real average pay in Poland (in PLN) in 1990-2007**



Source: Own calculations based on Statistical Yearbooks, GUS, Warszawa 1990-2008.

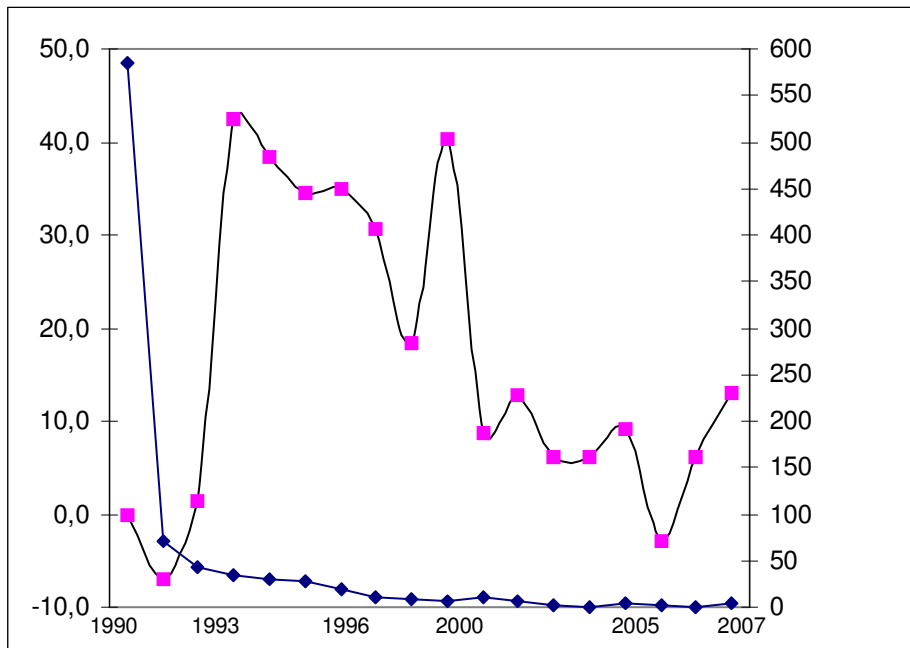
The graph (Chart 1) illustrates the thesis that the level of pay is determined to a high degree by the real GDP. Some small differences may be the result of changes in the income tax regulations. Changes in tax rates, tax allowances and tax-free amount influence the studied variables to various extent.

Another macroeconomic factor determining pay is inflation which is defined as gradual fall in the value of (Sztaba 2007) as a result of growing prices. Inflation may be observed as long-term increase of the average prices of a given market basket of goods and services. In fact, the consumer market inflation differs from the inflation in the supplier market and their impact on the economic situation is slightly different (Kwiatkowski 2006).

The growing level of prices in the economy is the reason of power of trade unions. The strong lobby soon notices that the effect of inflation is lower

buying power of earnings. The same salary can buy less goods and services on the market. That is why, in such situation, one of the demands of trade unions is gaining a pay rise using pressure. For some people employed in the civil service and the public sector the pay rise is guaranteed by the Finance Act (wage indexation on the basis of inflation rate at least once a year).

**Chart 2. Dynamics of real wage and inflation rate in Poland in 1990-2007**



Source: Developed using graph creator on the basis of own calculations based on Statistical Yearbooks, GUS, Warszawa 1990-2008.

Inflation in Poland at the beginning of period studied was fluctuating. The following years, however, were characterised by slower and slower pace of price increase. Yet the phenomenon of deflation has never occurred (decrease in prices on the previous year). The dynamics of the real wage in relation to inflation is differentiated. When inflation is considered we can talk about the decreasing tendency, but for real wage dynamics there is no evidence to support for a thesis like this.

In Polish economy privatisation process results in the growing area of private sector activity. This means that the increase in pay is mostly due to higher efficiency of labour (human resources productivity) and not the effect of administrative regulations concerning employment relationship. Another factor

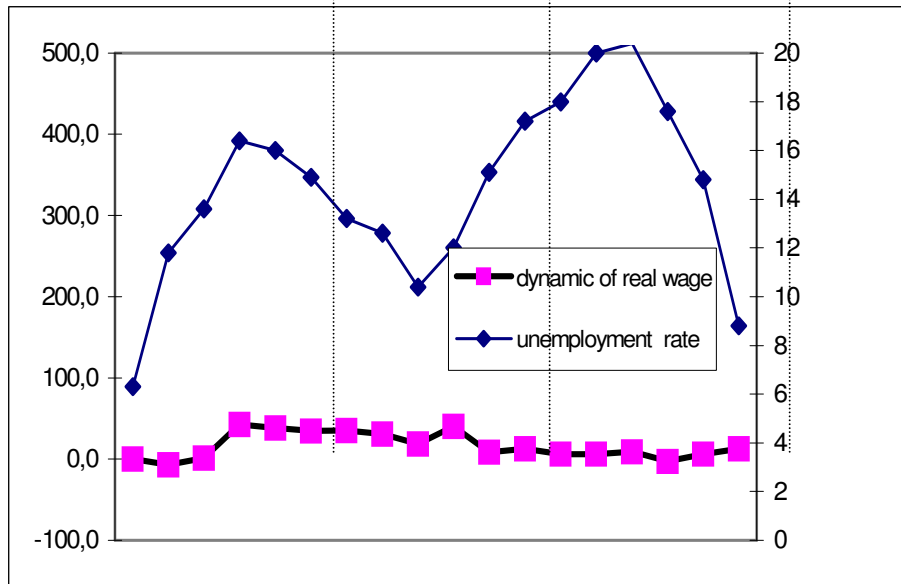
determining remuneration in national economy is unemployment rate. Most often unemployment rate is defined as the ratio of persons who are unemployed and the number of people in the labour force (number of workers in a given population) (Kwiatkowska 2007). High unemployment rate is a signal for employers to lower or at least “freeze” wages. This enables generating more profit in the company taking advantage of the worsening situation in the labour market. Decreasing unemployment rate causes the market mechanism to raise wages, because companies have difficulties in finding workers.

Pay as a product of labour market function may be determined by the number of unemployed people. Unemployment is a social phenomenon which consists in the fact that some people able to work who declare willingness to start working cannot find employment for various. The term unemployed means a person who is not employed, is not a proprietor of a company or doing any paid work, but is healthy and ready to enter a job (either full-time or part-) (Kwiatkowski 2001). The unemployed work force is compatible with the term unemployment rate. However, only unemployment rate is a measure of the category of unemployment.

Unfavourable situation in the labour market (with higher number of the unemployed) may stimulate employers to postpone decisions of pay rise. It is perhaps worth mentioning that the opposite situation may also occur. Lack of symptoms of pay rise may lead some employees to resign from the job and search for a new job.

Due to the cyclical changes in unemployment rate we may distinguish three periods in the studied years.

The first period is 1990-1993. Dynamics of earnings was characterised by big changes. Unemployment rate had a tendency to decrease. This was the beginning of the period of economic transformation which began the market processes in using productive factors.

**Chart 3. Unemployment rate (%) and dynamics of real pay in Poland**

Source: Own compilation based on Employment and Remuneration in National Economy, GUS, Warszawa 1990-2008.

The second period falls on years 1994 – 1998. Certain moderation can be seen as far as the average wage is concerned. Wages did not change significantly. Unemployment rate was decreasing. The economy was at the stage of revival.

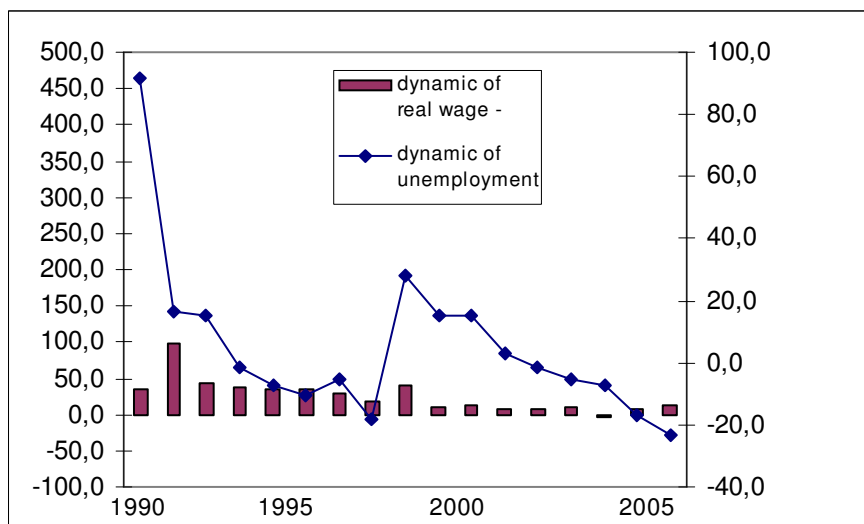
Next period is years 1999 – 2004. Unemployment rate increases and in the year 2004 it is record high (20,4%). Wages change only a little. Only in the year 2000 wages decrease on the previous year. This could be the symptom of recession in the economy cycle.

Last period it's years 2005 – 2007. Market allocation of production factors (mainly human factor) was the priority as a result of Poland's joining the EU. This process was helped by the migrations between the newly open European markets. The rate of wage changes was higher and the unemployment rate decreased.

The number of unemployed persons in the years studied was characterised by higher fluctuations than the change of wage in the years 1990 – 2007. This is the result of differences between the factors determining the number of unemployed persons and the stimulant of wages. Increase of wages in production sector could mainly result from the increase of efficiency and improvement of indexes related to the firms profitability.

In the long period the rate of change of the number of unemployed people decreases. The last years of the analysis( from 2005 ) are even characterized by the negative rate of change. It means that in 2006 the number of unemployed people decreased. This cannot be said about wages in this period. Differences in wages dynamics can also relate to different wages strategy in any specific economy sector (Borkowska 2004). Diversity in formulating wage strategies can lead to the situation where changes in the number of unemployed people would not be the most important factor determining wages.

**Chart 4. Dynamics of number of unemployed people and real wage in Poland in 1990-2007 (in %)**



Source: The own study based on data from Statistical Yearbook of Poland, GUS (Central Statistical Office of Poland), Warsaw 1990-2008.

Diversity in dynamics was the result of changing situation on the labour market despite the growing trend in wages. The year-to-year increase of average level of wages does not mean that the rate of change was similar. Sometimes deviations were substantial.

The number of workers conditions formation of wages in Poland. The structure of Polish economy changes all the time. Those changes imply the changes in quantity and number of workers. This number (of working people) is an important evidence of the economical growth (Borkowska 2004).

By working people I mean the employees, owners of businesses and their helping families, agents, homeworkers, members of agricultural co-operatives (GUS 2007).

**Table 3. Number of workers (in thousands of people) and real wage in Poland**

<b>Years</b>	<b>Number of workers</b>	<b>dynamics of number of workers</b>	<b>real wage*** (in PLN)</b>	<b>dynamics of real wage</b>
1990	16484	-	77,5	-
1991	15772	-4,3	103,3	-7,0
1992	15356	-2,6	203,5	1,5
1993	15117	-1,6	290,1	42,6
1994	15281	1,1	401,7	38,5
1995	15485	1,3	540,6	34,6
1996	15841	2,3	729,2	34,9
1997	16294	2,9	953,3	30,7
1998	16267	-0,2	1127,8	18,3
1999	16008	-1,6	1581,6	40,2
2000	15488	-3,2	1720,0	8,7
2001	14995	-3,2	1938,5	12,7
2002	14923	-0,5	2058,7	6,2
2003	12640	-15,3	2184,0	6,1
2004	12720	0,6	2381,8	9,1
2005	12890	1,3	2312,1	-2,9
2006	13220	2,6	2452,4	6,1
2007	13802	4,4	2770,0	13,0

Source: Employment and earnings in national economy, GUS (Central Statistical Office of Poland), Warsaw 1990-2008. Economic activity of Polish population, GUS, Warsaw 1990-2008.

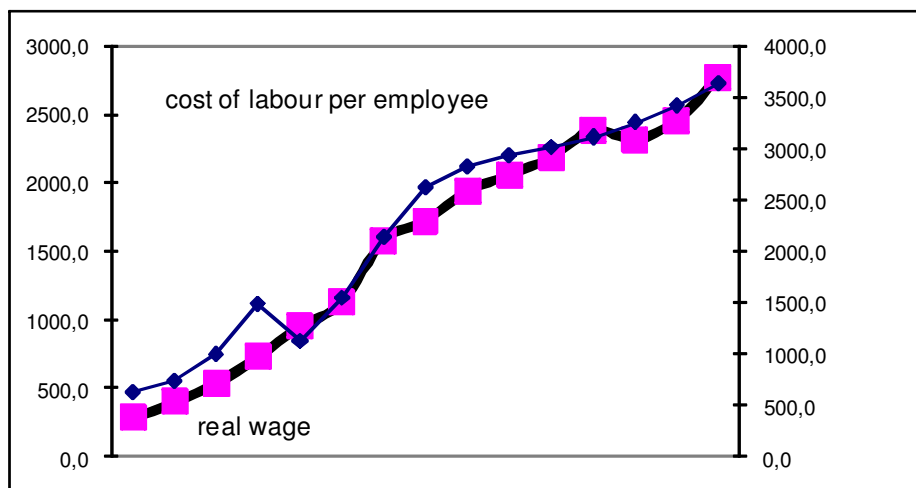
Analysing the number of workers in Poland in years 1990-2007 we observe sine-like breakdown in dynamics of this phenomenon. In the period 1990-1993 the number of workers decreased. In years 1994- 1997 the rate of

change was positive. From year 1998 to 2003 we observe again adverse changes in the phenomenon we analyse. The last period, years 2004-2007, is characterised by the increase of the number of employees.

Fluctuations in the number of workers may mean that this has not significant impact on the wages in national economy. In addition, despite the different rate of wage changes, it is difficult to find the constant relation between both variables. The available labour force is very important for the functioning of the economy but this does not mean it has significant influence over the range and level of wages.

The cost of labour (per one worker) is an important macroeconomic factor, influencing the level of wages in Poland. Cost of labour equals all expenses, incurred by organisation for the personnel employment and development. It means that it is more than strictly defined cost, in form of material resources and services, spent on human work (Krajewska 2007).

**Chart 5. Cost of labour\* versus the level of real wage in Poland in 1990-2007 (in PLN)**



\* Data are related to the period 1993-2007. In years 1990-1992 GUS did not publish such a data.

Source: Statistical Yearbooks, GUS, Warszawa 1993-2007.

Wages as well as the costs of labour demonstrate growing tendency. Chart 5 allows for the conclusion that wage is strongly related to the cost of labour. The high level of correlation justifies the thesis that cost of labour depends on the wages. In this study we assume that the wage are treated as a quantity determined by cost of labour. The growing cost of labour should result in the

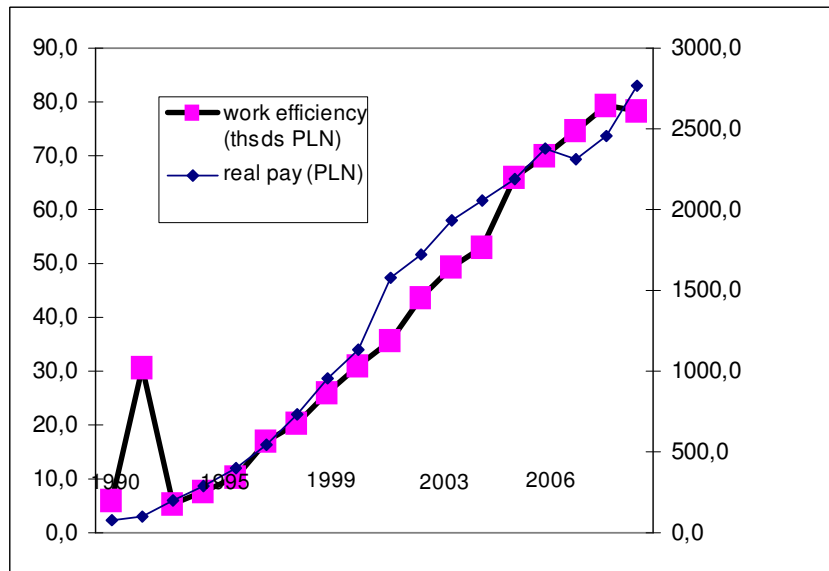
lower rate of wages growth. The lack of such dependence may indicate that there are other factors, which to the greater degree influence the level of wages.

The high dynamics of wages increases an inflation pressure from two points of view. The demand, fostered additionally by consumption credits, increases. More affluent consumers are ready to pay higher prices for goods. On the other side the costs of labour grow and producers have to raise the prices in order to keep profits at the same level. Now we do not feel the increase of inflation. Firstly, cheaper foreign goods and services are coming to Poland, secondly, Polish workers are more effective, which balances the higher wages. Quicker growth of efficiency results in increase of wages without inflation.

Experts assume that there is correlation between efficiency and the average level of wages so we cannot dismiss that stimulant in this study. Efficiency is a measure how well resources are used in order to maximise the production of goods and services. It affects an enterprise, a household, and an economy. Efficiency can be counted as a ratio of the output to the number of employees. It depends on qualifications and experience of workforce, condition of machines, good organisation and the system of remuneration.

Comparatively big increases of real wages during the analysed period resulted from the application of the indexation of wages in state owned sector on the basis of quickly growing price indicators of goods and services (Kwiatkowska 2007). The work efficiency along with the increase in employment is the main stimuli of economic growth. The increase of efficiency leads usually to the higher life level of the whole society. For the sake of this analysis the efficiency is depicted as quotient of GDP and the number of employees. It allows for calculation of average efficiency of employee in national economy.



**Chart 6. Change of work efficiency and real pay in Poland in 1990-2007**

Source: Own calculations based on Statistical Yearbook of Poland, GUS, Warsaw 1990-2008, and [www.eurostat.pl](http://www.eurostat.pl).

The graphic illustration of studied variables justifies the above-formulated statement about dependence between the work efficiency and wages. In most years the rates of change of those quantities were almost identical. Only in years 2000-2007 we notice some differences. Those deviations may result from the higher rate of changes in the area of production level or changes in the structure of employment. However, in the long term, the level of wages is to great extent determined by the work efficiency. In sectors, where a motivational system of wages is implemented higher efficiency results usually in higher wages. Motivational systems of wages induce workers to improve their own efficiency.

According to some experts the existence of the system of social protection influences the wages. The unemployment benefits constitute the most important form of social protection shield.

Changes of the average gross wage affect the unemployment benefits. Smaller difference between the unemployment benefits and the wages incline workers to contemplating the very sense of getting a job. Comparatively high unemployment benefits lessen the efforts for getting an income as a result of work. Lower monetary equivalent for unemployed motivates them to be more active in their efforts to get a new job. Whether the unemployment benefit is too

high is decided by the level of compensation - the ratio of the unemployment benefit to wages (Milewski 2003).

Value of unemployment benefit is differentiated and depends on the length of employment and the length of other periods, which affect the right to unemployment benefit<sup>6</sup>.

**Table 4. Basic unemployment benefits versus average wage in Poland**

Years	real wage (in PLN)	dynamics of wage	Unemployment benefits (in PLN)	dynamics of benefits	compensation Rate
1990	77,5	-	Nd. *	-	-
1991	103,3	34,0	Nd.	-	-
1992	203,5	97,0	Nd	-	-
1993	290,1	42,6	Nd	-	-
1994	401,7	38,5	Nd	-	-
1995	540,6	34,6	Nd	-	-
1996	729,2	34,9	297,5	-	0,41
1997	953,3	30,7	325,2	9,3	0,34
1998	1127,8	18,3	378,2	16,3	0,34
1999	1581,6	40,2	402,6	6,5	0,25
2000	1720,0	8,7	434,9	8,0	0,25
2001	1938,5	12,7	461,9	6,2	0,24
2002	2058,7	6,2	498,2	7,9	0,24
2003	2184,0	6,1	503,2	1,0	0,23
2004	2381,8	9,1	504,2	0,2	0,21
2005	2312,1	-2,9	521,9	3,5	0,23
2006	2452,4	6,1	532,9	2,1	0,22
2007	2770,0	13,0	538,3	1,0	0,19

\* Nd means that there are no data regarding the amount of unemployment benefit in years 1990-1995.

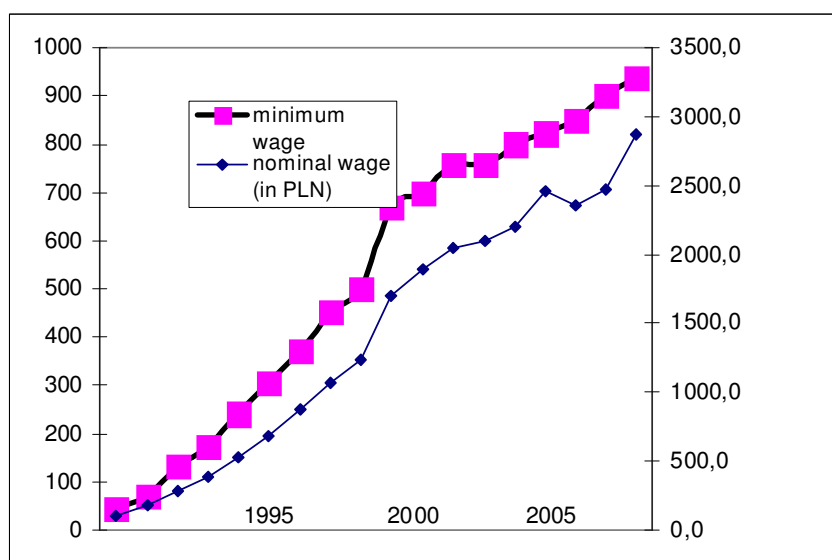
Source: Statistical Yearbook of Poland, GUS; Minister of Labour and Social Politics announcements concerning the value of unemployment benefit, Monitor Polski 1995-2007.

<sup>6</sup> Promotion of employment / institutions of labour market Act, Dz. U. nr. 99/2004 z dn. 20 kwietnia 2004. When the employment period is: less than 5 years – UB equals 80% of basic UB (now **430,70 PLN**); 5 to 20 years (but less than 20 years) – UB equals the UB basic amount (100%) (now **538,30 PLN**); no less than 20 years – UB equals 120 % of basic UB (now **646 PLN**).

The correlation with the average wages can be seen despite the lack of data, related to the amount of average unemployment benefit in years 1990-1995. The rate of change of unemployment benefit is lower than dynamics of wages. For the most of studied years the rate of unemployment benefit change (in %) , calculated by year-to-year method, does not depart much from the inflation rate. It means that the amount of unemployment benefit has the same purchasing power in years 1996-2007. The compensation rate (unemployment benefit divided by real gross wages) becomes smaller yearly. In the year 1996 this quantity was 41%. In years 1999-2006 this index was in the range 21% to 25%, but in 2007 its amount was 19%. Decreasing rate of compensation motivates unemployed to looking for work. This trend assures workers of the necessity of undertaking or maintaining the job.

Next factor, resulting from macroeconomic (conditioning), is the institution of minimum wage. This is a minimum wage that can be paid to the worker, employed full time under contract of employment (Dz.U.nr 171 poz.1209 2005). This wage is usually decreed by the State. The interpretation of this definition allows us to maintain that this is an amount stated by the law and the worker has the right to protest in court in case his rights in this matter are not observed. Representatives of Government, Trade Unions and Employers (the body called Tripartite Commission) fix minimum wages on the specific level in all country.

**Chart 7. Minimum wages versus average earnings in Poland in 1990-2007**



Source: Monitor Polski 1990-2007; Rocznik Statystyczny, GUS, Warszawa 1990-2008.

The very fact of specifying minimum wage in legislation attests to the idea that correlation between the minimum and average wage exists. The level of the average wage is one of the basic quantities affecting minimum wage. The graph shows that observed variables change at a similar rate. It is possible to say the average wage is a function of minimum wage.

Relatively high minimum wage may induce the employers to limit creating new jobs. Such a situation worsens the functioning of the labour market. It affects adversely conditioning of the quantities, existing in the labour market. Differences between the work supply and demand can lead to reduction of minimum wage.

The opinion exists that the institution of minimum wage in Poland propels the “inflation spiral”. The increase in minimum wage raises the cost of company functioning. Higher costs result in higher prices of goods and services. This situation activates the role of trade unions. Trade unions demands, even when only partially satisfied, cause the rise of the average wage in national economy.

#### **4. Summary**

The level of wages is one of the essential determinants of the evaluation of the state of economy. Some countries use the administrative system of shaping the level of wages (e.g. collective agreements, minimum wages) others allow for the independent market mechanisms.

The level of nominal wages in Poland, despite the relatively high rate of growth, it is not leading in Europe. Important are the quantities that determine the growth of wages. These can include microeconomic, institutional and macroeconomic factors.

The goal of this study was to analyse macroeconomic factors. It has shown that the values which determine wages do so to a different extent.

**Table 5. Determination of wage by macroeconomic factors in Poland in 1990-2007**

Descriptive Variable	Determination Coefficient
global product (GDP)	0,98
cost of work per employee	0,97
work efficiency	0,97
amount of unemployment benefits	0,96
level of minimum wage	0,90
Number of employees	0,54
inflation rate	0,19
Unemployment rate	0,13

The Person's determination coefficient implies that there is linear relationship between the variables and that its level describes to what degree the specific variable is determined by describing variable. It is calculated according to formula:

$$r_{xy} = \frac{\sum_{i=1}^n (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_{i=1}^n (x_i - \bar{x})^2 \sum_{i=1}^n (y_i - \bar{y})^2}}$$

Source: Own calculations, using the Pearson's determination coefficient.

The group of macroeconomic values, determining the level of wages, can be divided into three sub-groups. First – the most important values which explain the conditioning of wages. (coefficient > 0,9). They are: the level of production in the economy; cost of work per one worker ; level of unemployment benefit and minimum wages. Those variables determine the shaping of wages in Poland in the years 1990-2007 in more than 90%.

Second group – conditions that influence the studied variable in moderate degree. This includes the number of workers. The level of this coefficient means, that the number of workers determines 54% of wages.

Third group – values that describe the studied value to a small degree. Those are: the inflation level (determination coefficient =19%) and the rate of unemployment (13%). Those relationships may indicate that pay is the result of a certain situation on the labour market and is not the decisive value, determining the direction of changes on this market.

The analysis shows that in the Polish economy there existed the growing trend of wage increase. Since there is a declining trend of inflation level the trend of changes of real wages should not surpass that one of the efficiency.

Because of agreed assumption the results of this analysis could be a little distorted. If we had not assumed that there is no correlation between the exogenous variables it would have resulted in different hierarchy of determination level. Nevertheless, the aim of economic analysis is not only to look for conclusions but also to depict the problem and to excite discussion.

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