THE EFFECT OF THE MINIMUM WAGE ON THE COMPETITIVENESS OF ECONOMY INTRODUCTION

Anna Krajewska, University of Lodz, Poland, Institute of Economics

Piotr Krajewski, University of Lodz, Poland, Institute of Economics

Katarzyna Piłat, University of Lodz, Poland, Institute of Economics

ABSTRACT

The costs of labour are an important factor affecting competitiveness of economy seen both at the macro- and microeconomic levels. One of the constraints which must be taken into account while examining the costs of labour are existing institutional arrangements, including the level of minimum wage and its relation to average wage.

The neo-classical theory assumes that increase in minimum wage leads to a number of adverse consequences in the economy: increased wages, fall in employment, inflation, and increase in public expenditure. This paper presents the results of empirical studies conducted in various research centres on the influence of minimum wage on the situation in the labour market. Based on the analysis of statistical data on Poland and other European Union countries an attempt is made to determine the impact of minimum wage on the economy.
The main purpose of this paper is to demonstrate that minimum wage affects not only economic aspects of the economy but also plays an important social function and counteracts excessive increase in income disparities. The following data will be used in the paper: variation of statutory minimum wages, minimum wages expressed in purchasing power standards, minimum wage level in relation to average gross and net monthly earnings, an attempt will be made to find correlation between these data and the rate of unemployment, inflation, GDP growth in Poland and the regional level of poverty.

The research can be treated as a contribution to the debate on the direction of changes in minimum wage (increase or decrease minimum wage, differentiate minimum wage across regions and young people or maintain uniform level in the country)

INTRODUCTION

During the economic slowdown the high level of unemployment is one of the fundamental macroeconomic problems. Therefore, it is particularly important to assess the impact of various solutions used in the labour market on the level of unemployment. It is often pointed out that in order to improve the situation on the labour market and increase the competitiveness of the economy it would be advisable to lower the minimum wage, taxes on labour, and unemployment benefits. Reduction in the minimum wage may in fact increase the demand for labour. However, lowering of taxes on wages and unemployment benefits

translates into a decrease in the income replacement ratio, i.e. in the relation of income while being unemployed to income from labour and, consequently may lead to an increase in labour supply. The paper begins with a brief historical overview and shows the essence of the minimum wage in the mainstream economics literature. Then, the authors outline the main conclusions of the study on the impact of the minimum wage on the labour market and income differentiation. Another part of the paper contains statistics on the evolution of the minimum wage and its relation to the average wage in the European Union. The authors made an attempt to assess the impact of the minimum wage on the development of unemployment in the EU by using an econometric model. The final part of the paper contains statistics on the Polish economy. The statistics demonstrate that the minimum wage does not harm the economy, i.e., it does not affect the growth of unemployment and inflation.

HISTORICAL CONTEXT

The minimum wage is the lowest remuneration which employers may legally pay to employees in full-time employment. Therefore, this is not a market category resulting from the demand and supply of labour but a conscious government's decision violating the rules of the labour market. Back in 1778 Adam Smith pointed out that that even "the lowest species of common labourers must everywhere earn at least double their own maintenance, in order that, one with another, they may be enabled to bring up two children" (Smith, 1954). This is an attempt to oppose the selfish tendencies of novice industrialists, well captured by Nina Assordobraj who studied the beginnings of the development of the working class and cited the following statement said by a beginning capitalist…"only the low pay can make the worker work regularly (…) A worker is the more lazy the cheaper is the food and the higher is the wage. The proper operation of a manufactory depends on a cheap worker whose pay is enough only for the necessary food and clothing."(Frieske, 2005).

The minimum wage has quite a long history. It was first introduced in New Zealand in 1894, and two years later in the state of Victoria, Australia (Budnikowski, 2009). This means that some 120 years ago the lowest wage was established for a legally employed worker doing simple tasks. Great Britain was the next country which introduced minimum wage in 1909. Much of the credit goes to Winston Churchill, the then Minister of Trade, who held that "It is a national evil that any class of Her Majesty's subjects should receive less than a living wage in return for their utmost exertions… where you have what we call sweated trades, you have no organisation, no parity of bargaining, the good employer is undercut by the bad and the bad by the worst; the worker, whose whole livelihood depends upon the industry, is undersold by the worker who only takes up the trade as a second string… where these conditions prevail you have not a condition of progress, but a condition of progressive degeneration."(Sloman, 2001). Therefore, the state was to define the minimum wage rates which should be respected by employers in order to reduce competition among employers aimed at reducing costs through reductions in wages, harmful for employees. Wage Councils were established in the UK. They were independent bodies which established fair minimum wage applicable to particular professions. In 1993 the Government abolished the Wage Councils and ceased to define the statutory minimum wage but in 1999 the institution was reactivated.

In the U.S., the minimum wage was introduced in Massachusetts in 1912 and in 1913 it was in force in 15 states although it related only to women and children (Mała encyklopedia ekonomiczna, 1962). From 1938 it came into force around the country. When signing the

minimum wage law President Franklin Roosevelt said, "Except perhaps for the Social Security Act, it is the most far-reaching, far-sighted program for the benefit of workers ever adopted here or in any other country.", (Kamerschen, 1999). The law established the first nationwide minimum wage rate at 25 cents per hour. Over the following years the rate rose, in 1981 it rose to US$3.35 per hour. Regan administration found that the statutory minimum wage rate led to increase in employment, inflation, and bankruptcies and for several years (to 1988) froze the rate even though the purchasing power of wages has declined during this period by 27%. The Chairman of the U.S. Senate Committee on Labor and Human Resources, Edward M. Kennedy, engaged in a struggle for indexation of the minimum wage and stressed that the low, unchanged for years the minimum rate does not provide the full-time workers with resources to meet the basic needs of their families, while enabling the most ruthless and unscrupulous companies to exploit workers. Senator Kennedy believed that the minimum wage rate should be raised to US$4.65 per hour, and in addition, to avoid similar "errors" in the future, the minimum wage should be restored to half the average national wage. The minimum wage in the U.S. is different in different states. The official federal rate is US$7.25 while in four states it is less (US$6.25) and in 20 states more, (the highest in District of Columbia, US$8.25). President Obama's proposal is to increase the minimum wage up to US$ 9–9.5 per hour.

The minimum wage was sanctioned by the International Labour Organisation in 1928. The ILO explained that the statutory minimum wage was introduced in order to:
1) Reduce the over-exploitation of workers, especially the uneducated, without professional qualifications
2) Ensure an adequate standard of living of people performing the simplest works, the fight against poverty
3) Eliminate certain forms of unfair competition in the labour market (such as discrimination against women, minors, foreigners), (Konwencje, 1996).

The amount of the minimum wage and its relation to the average wage is the result of collective bargaining involving the Government. The minimum wage can be determined by law or as a result of negotiations. It can be set per hour, per week, or monthly. Individual countries are free to shape the amount and coverage of the minimum wage. In most countries, the nation-wide Act on the minimum wage is in force. In some countries the amount of minimum wage is set by collective bargaining assuming certain differentiation of the amount across budget, profession, and region or employee wage. There are also countries in which negotiations are conducted in a decentralized manner at the level of individual companies.

THE MINIMUM WAGE IN THE THEORY OF ECONOMICS

Classical and neoclassical economics assume that market labour is perfect, i.e., neither companies nor employees can affect the wage level. Wage level and employment size depend on the relation between labour demand and labour supply. The demand for labour curve, as in the case of goods, is downward sloping. Increasing the wages decreases labour demand since it leads to increase in production costs. The supply of labour curve is upward sloping. The higher the salary the greater the number of people willing to work. The point where the demand and supply curves intersect determines the level of wages (W_{market}), at which the labour market is in equilibrium (E_{market}), i.e., there is neither shortage nor surplus of workers on the labour market. Minimum wage set by law (W_{min}) is higher than the market wage.

However, increasing the wages decreases the demand for labour (to E_1 in Figure 1) while the number of people willing to work increases (to E_2). Workers who are employed are gaining because their salaries are rising. At the same time, however, unemployment appears on the market, representing the difference between the demand for labour and the supply of labour (section E_1 E_2).

Figure. 1. Minimum wage on the competitive labour market
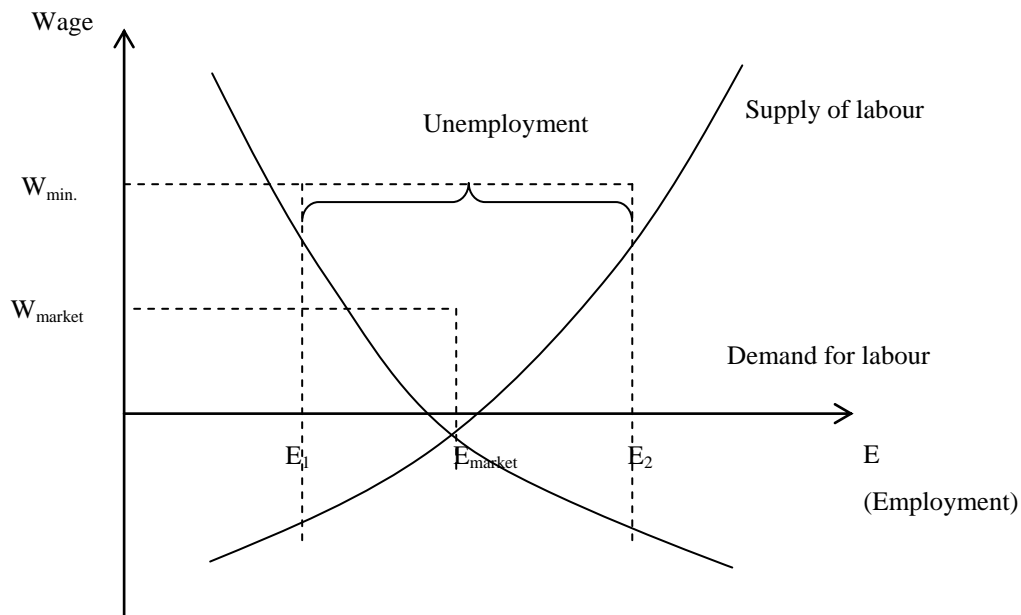
Source: Based on: D. Begg, S. Fischer, R. Dornbusch, (1993).

The neoclassical theory assumes that employers and employees do not have full information about the labour market. In such conditions increasing minimum wage prolongs the period of unemployment because the unemployed do not information about different wages in companies resulting from different entrepreneurship.

But the question arises; does the act on minimum wage always lead to increase in unemployment? Figure 1 shows that this will happen because the minimum wage, which is higher than the market wage, leads to a fall in demand for labour. It should be recognized that the labour market is not always fully competitive. Monopsony is an opposition to such market, i.e., it is a situation where a labour market is controlled by an employer who is dominant on the local market, such as steel plant, automobile factory in the city, in which there is no other industry. It may turn out, then, that minimum wage may have a positive effect on the employment.

In a competitive labour market wage is independent of manufacturer. Companies face a horizontal supply curve, which means that they can employ at the current price as many employees as they need. On the other hand, monopsonists face the upward sloping supply of labour curve which means that the more workers they want to employ the more they have to pay them. The increase in wage necessary to attract new employees means that (if companies do not discriminate their employees), they should also increase wages of those already

employed. The cost of hiring an additional worker is therefore higher than the level of wages of those already employed, hence, in Figure 2 the marginal cost of labour curve lies above the labour supply curve. A monopsony maximizing profit will increase employment till the marginal cost of labour equals the value of the marginal product of labour, which is at the same time the demand for labour curve. In a monopsony wage stands at W_{monops} and is lower than employment E_{comp} and wage (W_{comp}) in the competitive labour market. However, if the government sets the minimum wage at a level determined by the point of intersection of marginal cost curve and demand on labour curve this will not reduce the number of workers employed by the monopsony. However, if the government sets the minimum wage at the level that would be attained in a competitive labour market (W_{comp}) this would even increase the number of employed. With wage at the level of W_{comp} (which no longer depends on by how many workers more are employed) because profit maximizing companies increase employment till the moment when demand for labour equals the supply of labour.

Figure 2. Minimum wage in the competitive labour market
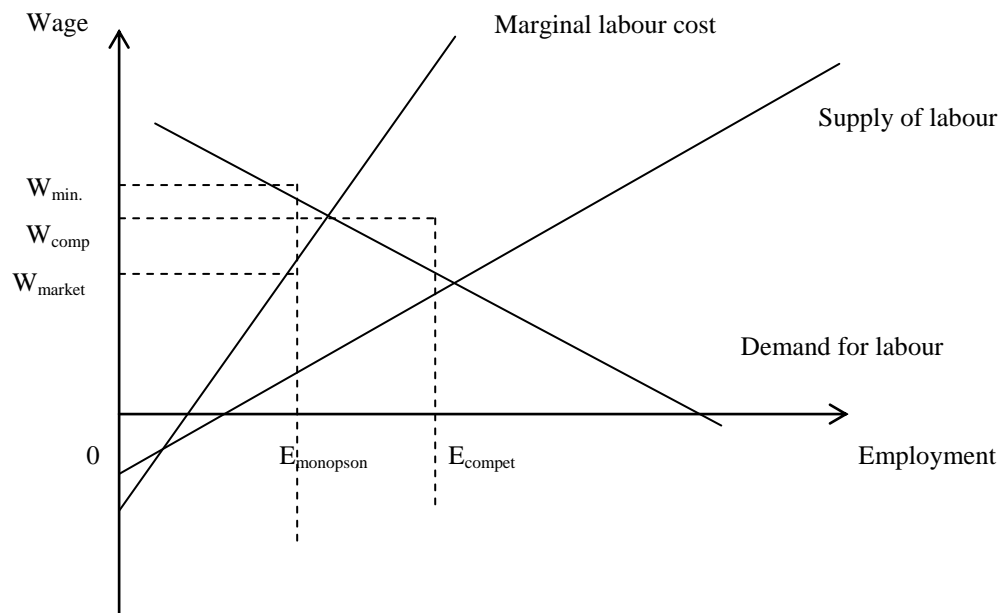
Source: Based on D. R. Kamerschen, R. B. McKenzie, C. Nardelli, (1999).

According to Keynes, an increase in the minimum wage does not harm the economy and does not lead to an increase in unemployment. Workers who are getting minimum wage generally have a high propensity to consume. The increase in their remuneration will increase total aggregate demand and therefore will also increase employment.

The minimum wage: A review of empirical studies

One of the main reasons why a minimum wage was introduced was to reduce poverty. A review of the research on the subject, conducted mainly in the U.S. (Burkhauser et al., 1996; Mishel et al, 1995), made by Stanisława Borkowska, shows that: "Aside from the differences in the results, the studies confirm that a large part of the increase in a minimum wage is not aptly addressed and does not contribute to the reduction of poverty. The point is that mainly

the young people receive the minimum wage and their income is not usually the main source of household income (Borkowska, 2005).

Opponents of the law on the minimum wage stress also its adverse social and monetary effects. The increase in the minimum wage makes employers look for a possibility to reduce non-wage components of labour costs. The opponents cite studies conducted in the U.S. The studies were a response to a proposal submitted in the 1980' in Congress to significantly increase the federal minimum wage. The studies suggest that raising the minimum wage is coupled with reduction of training programs (Hashimoto, 1982; Leighton and Mincer, 1981), abandonment of annual bonuses and bonuses for shift work (Wessels, 1980), reduction of social benefits, deterioration of working conditions, reduction of paid leave, and paid sick leave (Alpert, 1983). After analysing the results of various studies Walter Wessels believes that any increase in the minimum wage rate by $ 1 leads to a loss of 20 cents by an employee. He also notes that "The increase in the minimum wage should have resulted in the decrease in voluntary dismissals, but that did not happen. The number of dismissals grows, which means that the employee benefits are reduced in response to an increase in the minimum wage"(Wessels, 1999).

These observations are confirmed by the statistics collected in 2007 by the U.S. Department of Labor (Roth, 2007) which show that:
1) A mere 2.2% of total employment received the minimum wage ($5.85 an hour or about $11,500 per year).
2) Most minimum wage earners were young: more than half (51.2%) of minimum wage workers were between 16 and 24 years old another 21.2% were between 25 and 34.
3) Most minimum wage earners (about two-thirds) worked in food service. Many of these people received supplemental income in the form of tips, which the government did not track.
4) Most minimum wage earners never attended college.
5) Part-time workers are five times more likely to be paid the Federal minimum wage than full-time workers.

The minimum wage draws most criticism regarding its influence on the labour market. The minimum wage results in the fall in demand on labour and increase in unemployment. The extent of unemployment depends on the elasticity of demand for labour –the more elastic the demand curve for labour, the bigger the unemployment. So says the theory, but also the results of many empirical studies, and this affects especially young and low-skilled people. One of the first American studies on this subject demonstrates that an increase in the minimum wage from $1.25 in 1966 to $1.6 in 1972 increased unemployment among teenagers by 3.8% (Ragan, 1977). The negative impact of the minimum wage on unemployment was also confirmed by later studies (Neumark, Wascher, 1997 and 2007; Gunderson, 2005), and OECD reports. Empirical studies on the impact of the minimum wage on the unemployment rate are not, however, unambiguous (Brown, Gilroy, Kohen 1982; Addison, Blackburn, 1999). This may be due to the fact that a mere 1.4% of employees received the Federal minimum wage in the U.S. in 2005.

The Low Pay Commission set up in the UK in order to monitor the effects of the National Minimum Wage has not observed its negative effects. In 2005, the increase in the minimum wage did not have adverse impacts on inflation or employment and in fact the Commission

recommended to uprate the minimum wage even above the growth in the average earnings. A survey conducted among U.K. entrepreneurs in 2004 shows that almost 90% of respondents indicated that the increase in the minimum wage of no importance. In 2005, only 1.8% of all employees received the minimum wage. It is estimated that the re-introduction of the minimum wage in the UK in 1999 had the positive impact on the decrease in Gini coefficient and closing the gender pay gap (Low Pay Commission Report, 2005).

Also studies conducted in Poland assess the impact of the minimum wage on labour market in different ways. The econometric studies conducted by Bogdan Suchecki (1999) covering the years 1990 to 1997 show that the increase in the minimum wage by 10% led to a decline in employment of less than 1% (about 0.76%), but in the case of young workers (15-24 years of age) the same increase in the minimum wage led to a decline in employment of 4.6%. The studies also showed a strong relationship between the increase in the ratio of the minimum wage to the average wage, and the increase in the youth unemployment rate. The increase in this ratio by 1 percentage point is accompanied by a 0.61% increase in the unemployment rate in this group of workers. The findings of another study (Majchrowska and Żółkiewski, 2012) were similar and in addition pointed to the impact of the increase in the minimum wage on the increase in unemployment among low-skilled workers (Kurowska, 2008 and Wojciechowski, 2008).

Different assessment of the minimum wage emerges from a survey conducted in 94 companies representing different sizes and different forms of ownership. The majority of respondents believed that the minimum wage changes have no effect on employment. This also applies to employment of high school and university graduates (Borkowska, 2001). Much the same conclusion can be derived from studies by Zofia Jacukowicz (2007). They show that there is no alternative: low wages or unemployment. There was no correlation between the amount of the minimum wage and the ratio between the minimum wage to the average wage and the averages situation on the labour market in Poland.

The minimum wage in Poland and other countries of the European Union

Currently, the statutory minimum wage is in force in 20 of the 27 European Union countries. In five countries (Austria, Denmark, Finland, Sweden, and Italy), the minimum wage is set at the enterprise level through negotiations between the social partners. In the other two countries of the EU (Germany and Cyprus), the minimum wage is determined separately for individual groups.

The minimum wage denominated in euro is strongly correlated with the level of economic development and GDP per capita. The minimum wage is the highest in Luxembourg, (EUR 1,874 in 2013), and the lowest in Bulgaria and Romania (respectively EUR 158 and EUR 157). Poland (with EUR 377) ranks 12th among the 20 of the EU's 27 members which have national minimum wages. Comparing the level of the minimum wage in 2000 and 2013 (Table 1), it is clear that the differences between the minimum wage in the richest EU countries and Poland have decreased. In 2000, the minimum wage in Poland was 7.3 times lower than in Luxembourg, and in 2013 it was only nearly five times lower. These relations look different when we compare changes in the minimum wage in Poland with countries of Central and Eastern Europe. During the period under study the minimum wage increase rate was in all these countries higher than in Poland. In 2000, in Bulgaria and Romania, the

minimum wage denominated in EUR accounted for only 20% of minimum wage in Poland and in 2013 it rose to 42%.

Table 1. The minimum wage in the European Union in 2000 and 2013

Country	2000			2013			2000 = 100
	Place	In EUR	Poland = 100	Place	In EUR	Poland = 100	
Luxembourg	1	1221	731	1	1874	497	153.5
Netherlands	2	1111	665	3	1469	390	132.2
Belgium	3	1096	656	2	1502	398	137.0
France	4	1083	649	5	1430	379	132.0
Ireland	5	944	565	4	1462	388	154.9
Great Britain	6	936	560	6	1264	335	135.0
Greece	7	540	323	7	863	229	159.8
Malta	8	509	305	10	697	185	136.9
Spain	9	496	297	9	753	200	151.8
Slovenia	10	372	228	8	784	208	210.8
Portugal	11	371	222	11	556	150	152.6
Poland	12	167	100	12	377	100	225.7
Czech Republic	13	126	75	16	312	83	247.6
Lithuania	14	112	67	17	289	77	258.0
Hungary	15	98	59	13	340	90	346.9
Slovakia	16	94	56	14	338	90	359.6
Estonia	17	89	53	15	320	85	359.6
Latvia	18	87	52	18	287	76	329.9
Bulgaria	19	38	23	19	158	42	415.8
Romania	20	34	20	20	157	42	416.8

Based on Eurostat.

Taking into account purchasing power parity the differences in the level of the minimum wage in the EU countries have diminished (Table 2). In Luxembourg, the minimum wage is four times higher than in Poland. The gap between Poland and new Member States is smaller when expressed in purchasing power parity.

Table 2. The minimum wage in the European Union in 2000 and 2013 in EUR by purchasing power parity

Country	2000 r.			2013 r.			2000 = 100
	Place	**PPS**	**Poland = 100**	**Place**	**PPS**	**Poland = 100**	
Luxembourg	1	1203	398	1	1524	233	126.7
Netherlands	2	1110	368	2	1358	208	122.3
Belgium	3	1074	356	3	1353	207	126.0
France	4	1023	339	4	1298	198	126.9
Ireland	5	822	272	5	1257	192	152.9
Great Britain	6	809	268	6	1153	176	142.5
Malta	7	708	234	8	895	137	126.4
Greece	8	637	211	10	715	109	112.2
Spain	9	583	193	9	775	119	132.9
Slovenia	10	511	169	7	913	140	178.7
Portugal	11	447	148	12	650	99	145.4
Poland	12	302	100	11	654	100	216.6
Czech Republic	13	263	87	17	425	65	161.6
Lithuania	14	221	73	15	440	67	199.1
Slovakia	15	212	70	14	467	71	220.3
Hungary	16	199	69	13	545	83	273.9
Estonia	17	156	52	18	411	63	274.0
Latvia	18	152	50	16	440	67	199.1
Bulgaria	19	99	33	19	321	49	324.2
Romania	20	83	27	20	274	42	330.1

Based on Eurostat.

The International Labour Organization has adopted, that the minimum wage should represent 50% of the average wage (Convention No. 137 of 1970). This level of the minimum wage was also entered in the European Social Charter. The most similar relations among the EU countries can be found in France (48% in 2011, 49% in certain years) and Slovenia (47%). He lowest relationship between the minimum and average wage persist in Estonia (32%) and Romania (33%), although during the last 12 years (2000–2011) the minimum wages grew in these countries at the fastest rate (from 20% in Romania and 26% in Estonia). It is also worth noting that just before the current crisis (between 2005 and 2007), the relationship between the minimum wage and the average levels declined in many EU countries, which was dictated by the pressure to increase the competitiveness of the economy and reduce labour costs. However, when the crisis started in almost all EU countries, the relation between the minimum wage and average wage has begun to increase (Table 3). These tendencies become more visible when we take median into account.

Table 3. Minimum relative average wages of full-time workers (mean)

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Belgium	0.46	0.45	0.45	0.45	0.44	0.44	0.43	0.43	0.44	0.44	0.43	0.43
Czech Republic	0.38	0.37	0.36	0.36	0.36	0.36	0.36	0.36	0.37	0.38	0.39	0.40
Estonia	0.26	0.27	0.28	0.30	0.32	0.31	0.29	0.28	0.32	0.34	0.34	0.32
France	0.45	0.46	0.46	0.47	0.47	0.48	0.49	0.48	0.48	0.49	0.48	0.48
Greece	0.37	0.36	0.36	0.34	0.32	0.32	0.31	0.31	0.33	0.33	0.33	0.35
Hungary	0.28	0.39	0.43	0.37	0.36	0.36	0.36	0.35	0.35	0.35	0.35	0.36
Ireland	0.59	0.44	0.43	0.43	0.45	0.46	0.44	0.45	0.44	0.43	0.44	0.44
Latvia	0.31	0.34	0.32	0.33	0.35	0.31	0.27	0.27	0.30	0.39	0.40	0.43
Lithuania	0.36	0.36	0.36	0.36	0.38	0.37	0.34	0.32	0.32	0.38	0.37	0.36
Luxemburg	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.33	0.34	0.34	0.35
Netherlands	0.45	0.44	0.45	0.44	0.43	0.42	0.42	0.41	0.41	0.41	0.42	0.42
Poland	0.33	0.34	0.34	0.35	0.35	0.34	0.33	0.31	0.34	0.37	0.36	0.36
Portugal	0.35	0.35	0.36	0.36	0.37	0.37	0.35	0.36	0.36	0.37	0.39	0.39
Romania	0.20	0.29	0.29	0.34	0.33	0.31	0.29	0.26	0.30	0.32	0.31	0.33
Slovakia	0.34	0.35	0.34	0.36	0.35	0.35	0.35	0.35	0.34	0.36	0.36	0.36
Slovenia	.	.	.	.	.	0.43	0.43	0.42	0.41	0.40	0.46	0.47
Spain	0.34	0.34	0.33	0.33	0.33	0.35	0.35	0.36	0.35	0.35	0.35	0.35
Great Britain	0.34	0.33	0.35	0.35	0.36	0.37	0.37	0.38	0.38	0.38	0.38	0.38

Source: OECD. Stat Extracts

Table 4. Minimum relative average wages of full-time workers (median)

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Belgium	0.53	0.52	0.52	0.51	0.51	0.51	0.50	0.50	0.51	0.52	0.51	0.50
Czech	0.32	0.35	0.37	0.37	0.38	0.39	0.40	0.38	0.36	0.36	0.35	0.36
Estonia	0.33	0.33	0.35	0.38	0.40	0.38	0.36	0.34	0.39	0.41	0.41	0.39
France	0.56	0.58	0.58	0.58	0.59	0.60	0.61	0.60	0.60	0.61	0.60	0.60
Greece	0.47	0.46	0.46	0.45	0.44	0.45	0.45	0.46	0.48	0.48	0.49	0.51
Hungary	0.37	0.51	0.57	0.48	0.48	0.48	0.49	0.48	0.48	0.48	0.47	0.50
Ireland	0.68	0.52	0.51	0.51	0.53	0.54	0.52	0.53	0.52	0.50	0.48	0.48
Latvia	0.42	0.46	0.43	0.44	0.48	0.41	0.37	0.36	0.41	0.52	0.54	0.57
Lithuania	0.47	0.46	0.46	0.46	0.48	0.47	0.42	0.40	0.39	0.44	0.45	0.48
Luxemburg	0.41	0.42	0.41	0.42	0.41	0.42	0.41	0.41	0.41	0.41	0.41	0.42
Netherlands	0.51	0.50	0.50	0.50	0.49	0.48	0.47	0.47	0.47	0.47	0.47	0.47
Poland	0.40	0.42	0.42	0.43	0.42	0.41	0.41	0.39	0.42	0.45	0.45	0.45
Portugal	0.49	0.49	0.51	0.51	0.52	0.53	0.51	0.51	0.52	0.54	0.57	0.57
Romania	0.28	0.42	0.42	0.49	0.47	0.45	0.42	0.38	0.42	0.46	0.45	0.48
Slovakia	0.42	0.43	0.42	0.45	0.44	0.43	0.45	0.44	0.43	0.45	0.46	0.46
Slovenia	.	.	.	.	.	0.51	0.51	0.50	0.49	0.49	0.57	0.58
Spain	0.43	0.43	0.42	0.41	0.42	0.44	0.44	0.46	0.44	0.44	0.44	0.44
Great Britain	0.41	0.40	0.43	0.42	0.43	0.45	0.45	0.47	0.46	0.46	0.46	0.47

Source: OECD. Stat Extracts

The impact of the minimum wage on the unemployment rate: The panel analysis

In this section, we have tried to estimate the impact of the minimum wage and the income replacement ratio on the evolution of unemployment in the European Union. In the first place, we present the potential mechanisms of the impact of the minimum wage and the income replacement ratio on the labour market. Then, we examine the evolution of these indicators in Poland compared to other European Union countries and we verify the hypothesis that the value of the minimum wage or the income replacement ratio affects the development of unemployment, including the unemployment rate among people under 25 years of age. Empirical analysis was carried out for the European Union based on panel data from the years 1999 to 2012.

The value of the minimum wage affects mainly the demand-side of the market. The high minimum wage may in particular increase unemployment among people with lower qualifications. This effect may be accompanied by an increase in labour demand for higher-skilled employees or may decrease the overall level of demand for labour.

The income replacement ratio is defined as the ratio of income from various sources of state aid in the situation of job loss, to the income from labour. The income replacement ratio may affect the supply side of the labour market, affecting the motivation to work, or stop working (Strzelecka, 1998). If a sum of all unemployment benefits is only slightly lower than the net pay then a person who receives these benefits may have a little incentive to work. Consequently a high replacement ratio may lead to the so-called unemployment trap.

A potential impact of state regulatory actions concerning the minimum wage and replacement ratio on the development of unemployment has been verified on the basis of an econometric model.

The ratio of the minimum wage to the average wage (Eurostat data) in a particular country was adopted as the variable determining the impact of the minimum wage on the labour market. The income replacement ratio was defined in accordance with Eurostat methodology as a ratio of unemployment benefits paid in the event of becoming unemployed to net wage in the case of a person without children earning two-thirds of an average wage.
Moreover, since there is a correlation between the economic situation and the level of unemployment (see e.g. Martin, 1993; Czyżewski, Łapińska-Sobczak, 2001; Kwiatkowski, Kucharski, Tokarski, 2002), apart from variables related to the state policy, the demand gap was adopted as a variable explaining the development of unemployment rate. The paper is based on estimates of demand gap used by the OECD (2012).

The total unemployment rate (Eurostat data) is the dependent variable in the model.

Model parameters were estimated based on panel data from the years 1999-2012 for the countries of the European Union. Usually, a Fixed Effects Model (FEM), or a Random Effects Model (REM) is most frequently used in panel analysis (see Hayashi, 2000; Hsiao, 2003; Krajewski, Mackiewicz, 2007). As indicated, e.g. by Kennedy, the use of a Fixed Effects Model ignores completely the differentiation of cross-sectional variation. Cross-sectional effects are essential in our model and therefore the use of a Fixed Effects Model seems to be in this case unjustified. For this reason it was decided to use a Random Effects

Model which consists in conducting estimation with generalized least squares method which makes it possible to differentiate variance of the random variable across different countries (see Krajewski, Mackiewicz, 2006).

It was assumed in the model (due to the hysteresis effect in the labour market) that unemployment rate depends on the level of unemployment in the previous period. As a result, the model takes the following form:

$$u_{t,i} = \alpha_0 + \alpha_1 u_{t-1,i} + \alpha_2 \frac{w_{t,i}^{\min}}{\overline{w}_{t,i}} + \alpha_3 \frac{ub_{t,i}}{nw_{t,i}} + \alpha_4 \tilde{y}_{t,i} + \xi_{t,i} \ ,$$

where:

$u_{t,i}$ -the unemployment rate in the t year in the i country,

$\dfrac{w_{t,i}^{\min}}{\overline{w}_{t,i}}$ - ratio of the minimum wage to the average wage in the t year in the i country,

$\dfrac{ub_{t,i}}{nw_{t,i}}$ - ratio of unemployment benefits paid to the net pay in the t year in the i country,

$\tilde{y}_{t,i}$ - the demand gap in the t year in the i country,

$\xi_{t,i}$ - random variable,

$\alpha_0, \alpha_1, \alpha_2, \alpha_3, \alpha_4$ - model parameters.

Based on the estimation of the model parameters the following estimates were obtained:[1]

$$u_{t,i} = \underset{(1,542)}{1,799} + \underset{(28,692)}{0,849 \, u_{t-1,i}} - \underset{(-0,499)}{0,010} \frac{w_{t,i}^{\min}}{\overline{w}_{t,i}} + \underset{(0,147)}{0,001} \frac{ub_{t,i}}{nw_{t,i}} - \underset{(-5,579)}{0,232 \, \tilde{y}_{t,i}} \ , \quad R^2 = 0,864$$

The estimates show that the demand gap has statistically significant impact on the development of the unemployment rate in the European Union. The increase in the demand gap by 1 percentage point is on the average associated with an about 0.2 percentage point decrease in unemployment rate. Furthermore, the results indicate that unemployment has a strong hysteresis. At the same time the estimates show that neither the minimum wage nor the income replacement ratio does not in a statistically significant way affect the development of the unemployment rate.[2] Therefore there is no reason to reject the hypothesis that the formation of the minimum wage and the income replacement ratio do not affect the development of the unemployment rate.

The high level of the minimum wage or income replacement rate may primarily affect the development of unemployment for those earning less, less skilled, and therefore has greater impact on young people, under 25 years of age. In order to verify whether the minimum wage or income replacement ratio affects the unemployment rate for people under 25 the parameters of the following equation were estimated:

---

[1] The values of Student's t-tests are given in parentheses.
[2] At all standard levels of significance (i.e. 10%, 5%, and 1%).

$$u_{t,i}^{<25} = \beta_0 + \beta_1 u_{t,i}^{<25} + \beta_2 \frac{w_{t,i}^{min}}{\overline{w}_{t,i}} + \beta_3 \frac{ub_{t,i}}{nw_{t,i}} + \beta_4 \tilde{y}_{t,i} + \zeta_{t,i} \ ,$$

where:

$u_{t,i}^{<25}$ - the unemployment rate for people under 25 in the t year in the i country, (Eurostat data),

$\zeta_{t,i}$ - random variable,

$\beta_0, \beta_1, \beta_2, \beta_3, \beta_4$ - model parameters.

Therefore, the above equation is the same as equation (1), while the overall unemployment rate was replaced with the unemployment rate for people under 25. As before, a Random Effects Model was applied.

The results of estimation are as follows:

$$u_{t,i}^{<25} = \underset{(2,082)}{5,168} + \underset{(25,706)}{0,840 u_{t,i}^{<25}} - \underset{(-0,437)}{0,019} \frac{w_{t,i}^{min}}{\overline{w}_{t,i}} - \underset{(-0,465)}{0,009} \frac{ub_{t,i}}{nw_{t,i}} - \underset{(-5,267)}{0,470 \tilde{y}_{t,i}} \ , \ R^2 = 0,834$$

The results for the unemployed under 25 are similar to the results for all unemployed. There is also a strong hysteresis effect in the group of young people. Economic fluctuations affect unemployment rate among people under 25 even stronger than in the case of overall unemployment rate. The strong response of the explanatory variable to the changes in demand gap results from the fact that during economic slowdown the employers may in the first place dismiss low-skilled people.

From the point of view of the objectives of this paper the most import ant are the results obtained for parameters β_2 and β_3. As in the case of equation (1), no statistically significant relationship was found between the minimum wage or income replacement ratio, and the development of unemployment rate.

The aim of the study was to test the hypothesis that the minimum wage or income replacement ratio affects the development of unemployment, including the unemployment rate among people under 25. The empirical analysis was performed for the European Union based on the panel data from the years 1999–2012. Based on the estimates it was found that there was no reason to reject the hypothesis that the minimum wage and income replacement ratio do not affect the development of the unemployment rate. What is particularly interesting, the estimates do not indicate that the minimum wage nor income replacement ratio can adversely affect the unemployment rate among people under 25, while both the theoretical premises and many studies have shown that the negative impact of the minimum wage and income replacement ratio on the unemployment among young people should be particularly relevant.

The impact of the minimum wage on Polish economy

The minimum wage in Poland is low. In 2013 it is only € 377 and accounts for 36% of the average wage. So it is no surprise that the unions have been seeking for several years to raise it to 50% of the average wage, but they encountered strong resistance from the government

and employers. The liberal model of economic policy implemented in Poland clearly favours businesses. This is reflected in the reduction of taxes, more and more elastic labour market, low unemployment benefits which are paid for ever shorter time, reduced range of social benefits, tolerance for the large informal sector which makes it possible for employers to evade taxes and employ workers on unfavourable conditions. The attitude of the government, politicians, employers, the media, and many scientists towards the minimum wage is unfavourable.

These are the most often raised arguments of the opponents of the minimum wage, however, not supported by statistics:

1) Raising the minimum wage leads to an increase in unemployment. It should have been taken into account that there is no consensus in this regard, both in theory and research findings. Statistics on Poland show that unemployment is to the most extent correlated with economic fluctuations. The unemployment rate, especially among youth began to fall after Poland's accession to the European Union due to mass economic migrations of young Poles, mainly to the UK and Ireland. However, the global crisis has significantly slowed down this trend (Table 5).

2) Increase in the minimum wage leads to an increase in the average wage in the economy, which in turn produces inflationary wage-price spiral. Such a situation would arise if a wage growth rate was higher than productivity growth rate. Statistics show that GDP and productivity expressed in current prices grew faster than wages. Assuming that 2000 = 100, in 2012 these categories were as follows (Statistical Yearbook 2011, Statistical Bulletin, 2013):
Gross average wage – 186.0
Minimum wages – 214.3
GDP at current prices – 220.4
Labour productivity measured as GDP per 1 employee - 238.0.

3) The minimum wage and its rate of growth are often the basis both for the indexation of wages in the public sector and certain social benefits, such as unemployment benefits and certain industry-related benefits which results in increase in the fixed budget expenditure, unjustified by economic criteria (Wyżnikiewicz, 2012). These fears have not been confirmed neither by the social policy conducted in Poland nor by statistics. The statistics show that the budget expenditure for social purposes in Poland is systematically decreasing, and it also appears to be at a much lower than in other EU countries. In 2010 the budget expenditure for social purposes accounted for 17% of GDP against 21.6 of GDP in EU-27 (General Government Expenditure by Function, COFOG, and Eurostat).

4) The high minimum wage, considered to be too high by businesses, especially in the conditions of high unemployment and large grey economy, leads to a common practice of paying employees money under the table which furthermore aggravates the grey zone. Employees instead of being employed under the contract of employment work based on the so-called "Junk contracts", (the same duties as under the contract of employment but no rights). The fact that this is happening in Poland on a large scale is not a result of the lack of minimum wage law but because the legal system is weak and inefficient and tax system tolerates such activities, as well as because of the high unemployment, especially among young people and the poor social security system, which forces people to agree on the terms and conditions set by the employer.

5) The minimum wage threatens the existence of businesses; especially micro-businesses which operate on the verge of profitability and raising the minimum wage can lead to bankruptcy. This argument was used both by Michael Howard, the British Employment Secretary, who in 1992 pushed through the abolition of the minimum wage bill, saying, "There can be no conceivable justification for a policy which would, on its own, wreak our economy and devastate job prospects"(Sloman, 2001) and by contemporary Polish economists and even social policy scientists. For example, Bohdan Wyźnikiewicz (2012) believes that the increase in the minimum wage deteriorates conditions for operation of micro-enterprises, especially in small towns, where companies are unable to ensure the minimum wages for low-skilled workers. On the other hand Stanisława Golinowska believes that the minimum wage accounting for 40% of the average wage is relatively too high because "So defined, the minimum wage is a significant barrier to the development of small businesses where most jobs are created." (Golinowska, 2005).

Table 5. GDP growth rate, unemployment rate and the minimum wage

Year	Unemployment rate		The minimum wage in relation to:		GDP growth rate
	Total	Among people under 25	Average wage	Median	
2000	16.1	35.1	0.33	0.40	4.2
2001	18.3	39.5	0.34	0.42	1.1
2002	20.0	42.5	0.34	0.42	1.3
2003	19.8	41.9	0.35	0.43	3.6
2004	19.1	39.6	0.35	0.42	5.3
2005	17.9	36.9	0.34	0.41	3.5
2006	13.9	29.8	0.33	0.41	6.2
2007	9.6	21.6	0.31	0.39	6.8
2008	7.1	17.2	0.34	0.42	5.1
2009	8.1	20.6	0.37	0.45	1.6
2010	9.7	23.7	0.36	0.45	3.9
2011	9.7	25.8	0.36	0.45	4.3
2012	10.1	26.5	.	.	2.0

Source: Eurostat.

It is one-sided and overly simplistic reasoning, which does not coincide well with statistics, which demonstrate that contrary to appearances, businesses are doing very well. This is evidenced by:

1) High profitability of the corporate sector, even in the global crisis. In 2009, the gross profitability rate was 4.9% and a net rate 4.1% and in 2010 these rates even improved to respectively 5.2% and 4.4% (Statistical Yearbook, 2011). The last two years were also favourable in this respect, the gross profitability rate was 5.4% in 2011 and 4.2% in 2012 (Statistical Bulletin, 2013).

2) The decreasing share of employment–related costs in GDP in favour of other factors of production – from 40.2% in 2000 to 37.2% in 2010 as against 56.1% in Denmark and 53.6% in Sweden (Statistical Yearbook, 2011). At the same time, however, the investment growth rate is lower than the growth of GDP. Assuming that the year 2000=100 these figures were in 2010 (at current prices) as follows: GDP - 190.1; investment outlays) - 163.2, of which public investment - 204.0, and private investment - 141.0 (Statistical Yearbook, 2011).In 2011 GDP was 211.1, and investment outlays respectively: 182.7 and 236.1 – public investment, 154.3 private investment (Statistical Bulletin, 2013). Thus, high corporate profits are not fully allocated to the development and creation of new jobs.

This information shows that there reigns in Poland (among businessmen) the logic of cutting labour costs. There is a need for reflection – is it possible to live and think about starting a family with a minimum gross wage of PLN 1600 (€ 377)? One should also think about the economic cost of the decreasing share of labour costs in GDP in favour of other factors of production. And the argument that raising the minimum wage threatens the existence of many small, non-competitive companies can be answered with the words of the general chairman of the Polish Trade Unions and the Vice-President of the Trilateral Commission: "Entrepreneurs who are not able to pay decent wages to employees, should withdraw from business" (Guz, 2011).

To sum up - I think that raising the minimum wage up to 50% of the average wage is not dangerous for the Polish economy and will not weaken its competitiveness.

REFERENCES

1. Addison J.T., M.L. Blackburn (1999), *Minimum Wages and Poverty*, Industrial Relations Review, vol. 52 (3)
2. Alpert, T., (1983), *The Effects of Minimum Wage on the Fringe Benefits to Restaurant workers*, Lehigh University, Bethlehem, Pa.
3. Borkowska, S., *Płaca minimalna a ograniczanie ubóstwa*, [in:] *Polityka społeczna. Wybrane problemy*, IPiSS, Warsaw 2005
4. Borkowska, S.,(2001), (Ed.), *Koszty pracy a rynek pracy*, IPiSS, Warsaw, (in Polish)
5. Brown, C., Gilroy, C., Kohen, A., (1982), "The Effect of the Minimum Wage on Employment and Unemployment", Journal of Economic Literature, no 20
6. Budnikowski, T., Bezrobocie wyzwaniem współczesności, Instytut Zachodni, Poznań 2009
7. Burkhauser, R., Couch, K. A., Wittenburg, B. C., *"Who Gets What" from Minimum Wage*, Hikes: Re-Estimation of Card and Krueger's Distributional Analysis in Myth and Measurement, The New Economic of the Minimum Wage, "Industrial and Labour Relations Review", 1996, Vol. 49, No. 3
8. Frieske, K. W., *O mankamentach propozycji Davida Hume'a i Stanisławy Golinowskiej*,[The shortcomings of the proposal by David Hume and Stanisława Golinowska] [in:] Polityka społeczna. Wybrane problemy. Wybór artykułów z lat 1999-2005, IPiSS, Warsaw 2005
9. Golinowska, S., *O przyczynach bezrobocia i polityce jej zwalczania. Głos w debacie*, [in:] *Polityka społeczna. Wybrane problemy*, IPiSS, Warsaw 2005

10. Gunderson, m., (2005), *Minimum Wages in Canada: Theory, Evidence and Policy*, Ottawa, Fair Labour Standards Review Commission

11. Guz, J., (2011), "Płaćcie nam godziwie", *Gazeta Wyborcza*, (19 August)

12. Hashimoto, M., (1982), "Minimum Wage Effect on Training on the Job", *American Economic Review,* December

13. Jacukowicz, Z. (2007), „Analiza minimalnego wynagrodzenia za pracę (Analysis of minimum remuneration for work)"Studia i Monografie, IPiSS, Warsaw, (in Polish)

14. Kamerschen, D. R., McKenzie, R. B., Nardelli, C., *Ekonomia*, Fundacja gospodarcza NSZZ „Solidarność", Gdańsk 1999

15. *Konwencje i Zalecenia Międzynarodowej Organizacji Pracy 1919-1994*, Wydawnictwo Naukowe PWN, Warsaw 1996.

16. Kurowska, A., (2008), "Skąd się bierze bieda?", Zeszyty FOR, no. 5, (in Polish) Wojciechowski, W. , (2008), Co robić aby więcej Polaków pracowało? Raport FOR i Izby Gospodarczej Towarzystw emerytalnych, Warsaw, (in Polish)

17. Leighton, L., and J. Mincer, (1981) "Effects of Minimum Wages on Human Capital Formation", [in:] Rottenberg, S., (ed), *The Economics of Legal Minimum Wages*, American Enterprise Institute, Washington D.C.

18. *Low Pay Commission Report* (2005), National Minimum Wage, http://www.lowpay.gov.uk/lowpay/report/pdf/dti-min_wage.pdf

19. Majchrowska, A., and Z. Żółkiewski (2012), „The Impact of |Minimum Wages on Employment in Poland", Investigaciones Regionales, Section Articles

20. *Mała encyklopedia ekonomiczna*, PWE Warsaw 1962

21. Mishel, R. H., Bernstein, J., Rassel, E. *Who Wins with a Higher Minimum Wage*, Economic Policy Institute Briefing Paper, Washington D.C. 1995

22. Neumark, D. and Wascher, W., (1997), „Do Minimum Wages Fight Poverty?, Working paper, National Bureau of Economic Research, No. 6127

23. Neumark, D. and Wascher, W., (2007), "Minimum wages and Employment", IZA Discussion Paper, No. 2570, Bonn

24. OECD (2012), *Economic Outlook*, Issue 2, Deceber

25. Ragan, J. F., (1977), "Minimum Wages and the Youth Labor Market", *Review of Economics and Statistics*, No 59, May

26. Rocheteau, G., Tasci, M., *The Minimum Wage and the Labor Market*, Federal Reserve Bank of Cleveland, Cleveland 2007

27. Roth, J. D., (2007), *Who Earns Minimum Wage? A Statistical Profile, "Get Rich Slowly", Personal Finance That Makes Cents,* http://www.getrichslowly.org/blog/2007/10/09/who-earns-the-minimum-wage/

28. Sloman, J., *Podstawy ekonomii*, PWE, Warsaw 2001

29. Smith, A., *Badania nad naturą i przyczynami bogactwa narodów*,[An Inquiry Into the Nature and Causes of the Wealth of Nations], PWN, Warsaw1954

30. *Statistical Bulletin*, (2013) Central Statistical Office, Warsaw

31. *Statistical Yearbook of the Republic of Poland* (2011), Central Statistical Office, Warsaw

32. Suchecki, B., (1999), "Narzędzia kształtowania dochodu godziwego w Polsce", [Policies for decent income in Poland], [in:] S. Borkowska [Ed.], *Wynagrodzenia godziwe. Koncepcje i pomiar*, IPiSS, Warsaw, (in Polish)

33. Wessels, W., (1980), *Minimum Wages: Fringe Benefits and Working Conditions*, American Enterprise Institute, Washington D.C.

34. Wessels, W., (1999), Wpływ płac minimalnych na świadczenia pracowników, [in:] Kamerschen, D. R., McKenzie, R. B., Nardelli, C., *Ekonomia*, Fundacja gospodarcza NSZZ „Solidarność", Gdańsk

35. Wyźnikiewicz, B., *Wzrost minimalnego wynagrodzenia jest szkodliwy dla gospodarki*, „Gazeta Wyborcza", 6.12.2012.