

WORK FLEXIBILITY IN DEVELOPED COUNTRIES: ECONOMIC CONTEXT AND POLICY IMPLICATIONS

Peter Pisar, Jan Hunady, Erika Ľapinová*

Abstract

The work flexibility is considered as an integral part of the modernization of the labour market and also as an effective solution of the current problems at the labour market. The paper is therefore focussed on this problem in terms of the working time organization, as well as selected forms of employment in developed countries. We pay an attention to theoretical issues and practical application of work flexibility. Applying the methods of spatial comparison and cluster analysis, we identify the key differences and similarities in labour flexibility among selected countries. There are rather significant differences between groups of countries. The results of panel data regression largely indicate that higher flexibility on the labour market could have positive impact on the reduction of unemployment in the future, especially when taking into account the two years lag.

Keywords: work flexibility, part-time work, temporary work, comparative analysis, economic policy context, cluster analysis, panel data

JEL Classification: J20, J60, J80

1. Introduction

In the context of rapid changes in the economy and constantly changing situation on the national labour market, global debate about the need of labour market flexibility is ongoing. It is specifically focussing on the differences between emerging and developed countries. In the article we aim to highlight the importance of positive forms of flexibility of employment forms and working time organization, as significant socio-economic innovation with macro- and microeconomic impacts. The aim of this paper is also to provide information on the current status, opportunities and assumptions to increase positive flexibility of work which consists of employment forms and forms of working time organisation. These are forms of quantitative flexibility. Another form of job flexibility is

* Peter Pisár, Faculty of Economics, Matej Bel University in Banská Bystrica, Slovakia (peter.pisar@umb.sk);

Ján Huňady, Faculty of Economics, Matej Bel University in Banská Bystrica, Slovakia (jan.hunady@umb.sk);

Erika Ľapinová, Faculty of Economics, Matej Bel University in Banská Bystrica, Slovakia (erika.lapinova@umb.sk).

This work has been supported by the Slovak Research and Development Agency under the Contract No. APVV-15-0322. Authors would like to thank anonymous reviewers for their valuable suggestions and comments to improve the quality of the paper.

a qualitative flexibility (Goudswaard, Dhondt, Vergeer, Oeij, 2012; see also Formankova, Krizkova 2015). Another aspect of flexibility is “positive” *versus* “negative” flexibility – the first is a mutually beneficial, the second is enforced by the employer, through which the part of the business risk is transferred to the employee. In this paper we pay attention to the flexibility of employment and working time in developed countries, with specific data on their two most common forms, which are temporary work and part-time work.

In Section 2 we pay attention to work flexibility in the broadest sense as well as its potential opportunities and risks in a broad economic context. Then, in Section 3 we analyse the two most common forms of flexibility of work in practice – which are employment forms and working time flexibility, we compare the current situation and developments in selected developed countries. We use methods of spatial and temporal comparison on the basis of Eurostat and the OECD database. Through cluster analysis of selected indicators of flexibility in employment and working hours also we classify the country into groups. Subsequently, in Section 4, we examine the potential impact of flexibility in employment and working hours on unemployment by regression analysis of panel data. In this part of the paper we use regression models with fixed effects. In the final part we synthesize the achievements and specify the proposal of policy recommendations for greater flexibility of work and we propose some steps to support implementation and evaluation of the implementation of positive flexibility of work and working time tools.

2. Labour Market Flexibility in the Broadest Concept and Its Form: Macroeconomic Context

Nickell (1997) distinguishes three aspects of labour market flexibility: employment protection, labour standards and labour policy.

Labour market flexibility by Eamets (2004) means employment protection regulation. It includes employees’ protection against dismissals, limitations on the use of temporary forms of employment, regulation of working hours, but in a broader sense also health and safety, protection of employees in less favourable conditions.

Under flexibility we understand not only employer’s restriction to dismiss workers, but also legal validity, working condition, employees’ security and benefits differentiation by another types of working contracts and another forms of work organization: fixed-term contracts; temporary work agencies, overtimes, shift, weekend and night work, part time work act. (Di Tella, MacCulloch, 2005).

The most common interpretation of labour market flexibility is connected with labour market regulations and institutions (Siebert, 1997; Berthold and Fehn, 1996; Jackmann, Layard, Nickell, 1996; Lazear, 1990; Monastiriotis, 2004).

Monastiriotis (2004, pp. 43–44) distinguished between market deregulation and market flexibility. Under regulation he understands: employment protection, labour standards, minimum wages, welfare system, training and unionism. Monastiriotis identifies possible impact of some types of regulation on unemployment in short-run by the following types of regulations: labour standards, minimum wages, welfare system and unionism. In the long-run it is only employment protection.

Table 1 | Static versus Dynamic Efficiency of Different Types of Regulation

Impact Type of regulation	Short-run (static efficiency)	Long-run (dynamic efficiency)
Employment protection	– Lagged employment adjustment – Reduction in profits – Stabilisation of wages and consumption	– Incentive to internal flexibility – Reduced employment – Stimulation of technical change
Labour standards	– Increased unit labour costs / lower profits – Possible unemployment – Reduced productivity	– Higher job satisfaction / fewer accidents – Increased efficiency – Increased productivity
Minimum wages	– Reduced inequalities – Exclusion of workers of low productivity – Possible unemployment	– Work intensification – Labour saving tech. change – Upgrading of skills and product quality
Welfare system	– Reduced inequalities – Increased unit labour costs – Possible unemployment	– Increased labour mobility – Ingredient for social peace
Training	– Extra costs for firms – Possible shifts of labour demand	– Higher wage incomes – More occupational mobility – Skill driven tech. change
Unionism	– Reduced inequalities – Less wage flexibility – Harmful to “outsiders” – Possible unemployment	– Increased productivity – Possible elimination of the impact of wages upon employment

Source: Monastiriotis (2004).

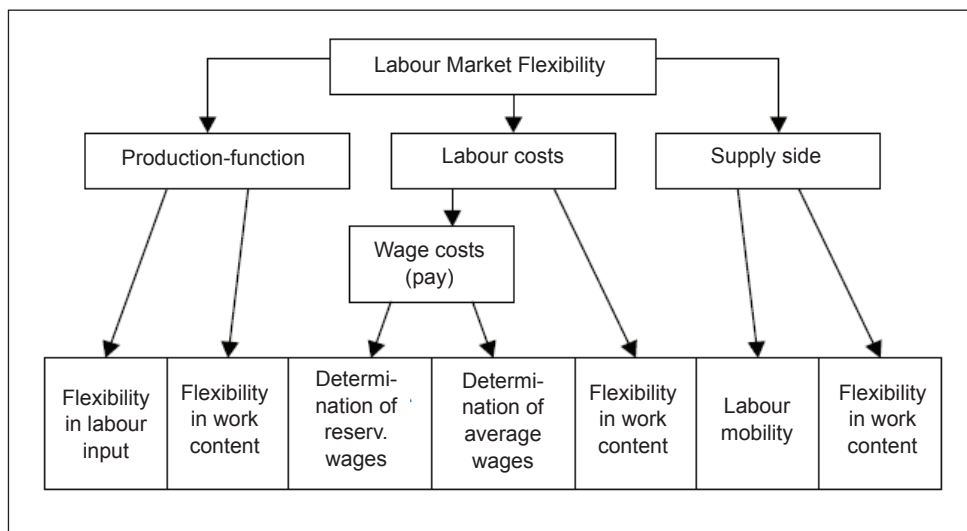
We differentiate between functional and numerical type of flexibility, every of them has external and internal form. Numerical flexibility refers to a condition where firms can easily find the necessary quantities and qualities of labour to adjust to any business cycle shifts. Internal numerical flexibility refers to the workforce already employed by the firm and to the adjustability of their working hours (short shifts, overtime) working time (weekly hours, variable shifts), leaves and holidays. External numerical flexibility refers to the ease with which a firm can adjust its labour input, presumably by temporarily employing additional workers.

Internal functional flexibility refers to the ability of companies to improve their operating efficiency by reorganising the methods of production and labour content (multiskilling, decreases in job demarcations, increased employee involvement) in order to keep pace with changing demand conditions or technological needs (Monastiriotis, 2004).

External functional flexibility refers to the ability of firms to externalise some parts of their production (vertical disintegration) and possibly diversify their production, mainly through sub-contracting.

From a technical (or “economic-theory”) perspective, labour market flexibility can be understood as the extent to which market forces are allowed to operate freely in three broad domains. These domains can be labelled as “production function flexibility”, “labour costs flexibility” and “supply-side flexibility”. Alternatively, one can regard these three domains as “institutional flexibility”, “wage flexibility” and “individual flexibility” (Monastiriotis, 2004). Each of these domains consists of smaller sub-domains, as illustrated in Figure 1.

Figure 1 | Technical Decomposition of Labour Market Flexibility



Source: Monastiriotis (2004).

One group of elements includes non-standard employment arrangements that allow a firm to employ workers, while simultaneously avoiding a permanent commitment and the non-wage costs that such a commitment might entail. Elements included in this category of “flexible employment” are part-time work, temporary placements (fixed-term contracts or contracts over a fixed task), seasonal work, sub-contracting and casual employment (irregular or occasional work). These non-standard employment arrangements are also connect with elements related to the “casualization of employment”, with the deregulation of dismissal protection (job security). Such elements make the permanency of a job less secure and dismissals less costly. Consequently, the labour input becomes cheaper (lower non-wage costs), and therefore more responsive to demand and general economic conditions.

Another group includes what we could attach to the labour-input and internal numerical flexibility categories. This group, characterised by the ILO as “working-time flexibility”, includes flexibility in overtime, working hours and working time, shift-work and work on weekends. Such elements of flexibility represent the ability of firms to adjust their labour inputs upwards or downwards without any additional costs and unilateral changes in firm’s behaviour.

Flexible work should now be taken as the necessity, as a tool to achieve many economic and social objectives. Flexibility or rigidity on the contrary should be seen in the broad macroeconomic and macro-social context on the one hand, in the micro and micro social on the other hand. Flexibility of labour and labour market is not only issue related to the labour market and labour force in the most narrow, one-dimensional sense (see also Nemec, 1997).

There is a significant perspective of flexible forms of employment - particularly in countries currently using them rarely – and it is related to issues of both labour shortages (aging population) and of high unemployment (especially among risk groups in the labour market). For employers or organizations demanding workforce is flexibility a tool for adapting production to macroeconomic development and to requirements and to development of demand for production or services. We can consider it in terms of the requirements of the labour demand- or supply-side of labour market - labour force. According to synergy vs. conflict of these interests we talk about the positive and negative flexibility, while in the case of the second mentioned employers transfer to employees some part of business risk, to share it. Flexibility is also a tool for improving the quality of work, adaptability and motivation of the workforce or a tool for socially responsible behaviour towards external and internal stakeholders.

The issue of labour market flexibility has significantly broader and more complex macroeconomic, micro-economic, micro-social and macro-social dimensions. Between flexibility and macroeconomic and microeconomic environment there exist correlations. The flexibility of the workforce is affected by macroeconomic, social, political factors (institutional and structural nature) and retroactively it affects those (Cazes, Nesporova, 2003).

On a broad macro level, it is necessary to mention the problems associated with the issues of employment, labour market, productivity and economic performance. There are different, often conflicting views, the relationship/causal relationship between the flexibility of the labour market and unemployment and economic growth. They are based often on different assumptions (different/partial forms of flexibility, not comparable data sources, and often there are taken into account some partial aspects of flexibility). In following part of section we bring references to some of the empirical researches of labour market flexibility – unemployment nexus home and abroad.

It is important to note that the issue of flexibility and improved economic performance is not purely quantitative, but mostly related to the specific combination of labour market arrangements, which can lead to better or worse social and economic outcomes. It follows that this issue cannot be studied in isolation from its socio-economic environment, as the economic benefits of flexibility are not universal but rather place- and context-specific.

Bernal-Verdugo, Furceri and Guillaume (2012) analysed the relationship between market flexibility and unemployment. They used panel data of 97 countries from 1985 to 2008. The results confirmed positive impact of flexibility on unemployment reduction. Authors took into account different forms of flexibility (hiring and firing regulations, hiring costs). They used composite indicator of labour market flexibility, taking into account

complex nature of labour market regulation. Their findings indicate (after controlling of macroeconomic and demographic variables) that increased flexibility (flexibility of labour market institution and regulation) has significant negative impact on the level and dynamic of unemployment change too. Among different flexibility indicators they found hiring and firing regulations and hiring costs as more significant (with strongest effects).

Di Tella and MacCulloch (2005) realised empirical research about impact of labour market flexibility on employment. They used panel data set on hiring and firing restrictions for 21 OECD countries for the years 1984–1990. They conclude positive impact of labour market flexibility (flexibility of hiring and firing restrictions) on employment rate and rate of participation in the labour force. The estimated effects were larger in the female than in the male labour market. Comparable results reached also Bertola (1990), Lazear (1990) or OECD research (1990). Bertola (1990) found that job security legislation does not bias labour demand towards lower average employment at given wages in a simple dynamic economy. The intuition is that a firm subject to a positive shock will hire fewer workers than otherwise, but that firms subject to a negative shock will be less prone to firing. Thus employment fluctuations are dampened, but average employment may be unchanged.

Lazear points out a number of limitations in data used in such analysis. By Lazear countries differ in the degree of enforcement of formal laws, and that other, perhaps informal, aspects maybe more important than the written laws. Lazear points out that “for the most part, rules change once or twice during the period *per* country, so much of the mileage is cross-sectional rather than time-series” (Lazear, 1990).

Ghak Zribi *et al.* (2014) mentioned no existing consensus about flexibility – unemployment nexus not in theory, nor at empirical level. Authors used unbalanced panel data set over the period 2000–2010.

OECD has attempted to link the degree to which countries have followed their prescriptions for labour market deregulation with the extent to which structural unemployment (the NAIRU) has declined (see for example, OECD, 1999). Research showed that there is no meaningful relationship between labour market deregulation and shifts in the NAIRU. It is also worth noting that a leading paper by OECD economists found that nearly all of the change in structural unemployment rates between 1990 and 1995 was accounted for by country-specific effects, not by “institutional factors” (Elmeskov *et al.*, 1998).

Blanchard and Wolfers (2000) found that the combination of macroeconomic shocks from the 1960s to the 1990s with the rigidity in the labour markets in some countries helps to explain both the general increase in the unemployment over the last three decades and the variation across countries. They conclude by noting that institutions are becoming more “employment-friendly”. Blanchard and Jimeno (1995) explained reasons of structural unemployment and its persistence also with labour market rules and institutions.

According to Nickell (1997) finding that “European unemployment is high because European labour markets are rigid” is too vague and probably misleading. Many labour market institutions that conventionally come under the heading of rigidities have no observable impact on unemployment. Labour market rigidities that do not appear to have serious implications for average levels of unemployment include according Nickell the following:

“1) strict employment protection legislation and general legislation on labour market standards; 2) generous levels of unemployment benefit, so long as these are accompanied by pressure on the unemployed to take jobs by, for example, fixing the duration of benefit and providing resources to raise the ability/willingness of the unemployed to take jobs; and 3) high levels of unionization and union coverage, so long as they are offset by high levels of coordination in wage bargaining, particularly among employers”.

Flexibility (particularly external flexibility – the flexibility of conditions of employment and dismissal, which expresses the degree of adaptability of labour input (number of employees) to the conditions in the external environment) itself does not in accordance to Bellan and Olsovska (2012) affect the development of total employment and unemployment. More important than the actual increase of external flexibility is to approximate external flexibility among staff in standard and non-standard forms of employment, thus balancing the level of employment protection between these forms of employment. Otherwise due to high external flexibility differentiation between different forms of employment – there exists a danger of segmentation of the labour market, and ultimately these it results in reduction of labour market dynamics and in growth of long-term unemployment.

In our paper we examine the potential impact of labour flexibility (through the using of shorter working hours) to reduce the unemployment rate in the time periods in the future, in relation to comparative research of European countries dedicated to the extent of implementation of flexible working (Lapinova and Pisar, 2015).

In the macro-level perspective the flexibility becomes increasingly necessary as a tool to address the economic consequences of demographic change (aging population, declining fertility). From the domestic literature, the issue of promoting equality of opportunity at the labour market as a theoretical-application space for equal opportunities in the sphere of professional life is more addressed in the scientific monograph of Pisar *et al.* (2008). Flexibility is an instrument of equal opportunities policy not only in the labour market, instrument of gender equality policy, quality of life (not just working-life) and of other public policies. On the microeconomic level we distinguish between demand for and supply of flexible work, structural and institutional context (legislation, policies, social security systems, support for employment, labour market policy *etc.*). Last but not least – values, social norms, ambitions, preferences (both at work and in the private sphere of family and individual) are other important non-economic factors that determine the level and structure of flexibility and *vice versa* (Brozova and Stroukal, 2015; Korony and Lapinova, 2014; Lapinova, 2013).

We must take into account the structural (macroeconomic development, economic performance, employment) and institutional factors (state family policy, state social policy, public services, voluntary sector), which affect the attitudes and motivation on both sides of the labour market in relation to issues of positive flexibilisation.

On the one hand, there is a strong demand to make labour markets, employment and work organisation more flexible. At the same time, an equally strong demand exists for providing security to employees – especially vulnerable groups – and for preserving social cohesion in our societies. Policy-makers, legislators, trade unions and employers' organisations have a strong need for new theory-inspired policy models and concepts that

promise to reconcile these goals of enhancing both flexibility and security. Wilthagen and Tros (2004) discuss the new policy concept of ‘flexicurity’ in view of the emerging flexibility-security nexus currently faced by the European Union, national governments, sectors of industry, individual companies and workers and their representatives (LO – Danish Confederation of Trade Unions, 2008).

With methodology for the monitoring and evaluating of flexicurity policies in the member states in the context of the Lisbon strategy deal, among others, Muffels, Wilthagen, Chung and Dekker (2010).

3. Flexibilisation of Labour in Selected Developed Countries – Comparative Research and Clusters Analysis

In the following section we document the results of a comparative research implemented by us in European countries focussed on the degree of application of flexible working. In this research we used data from the Eurostat Labour Force Survey as well as data from the systematization of selected research results in European countries dedicated to the extent of implementation of flexible working (Lapinova and Pisar, 2015).

To analyse the degree of flexibility we use two indicators – the first is the percentage of workers employed part-time in the total number of employees. This is the most common form of flexible organization of working time. The second indicator by which we measure and compare European countries in terms of the degree of flexibility is the percentage of workers temporary employed as a percentage of the total number of employees. Temporary employment is one of the most common forms of flexible working contracts between employer and employee.

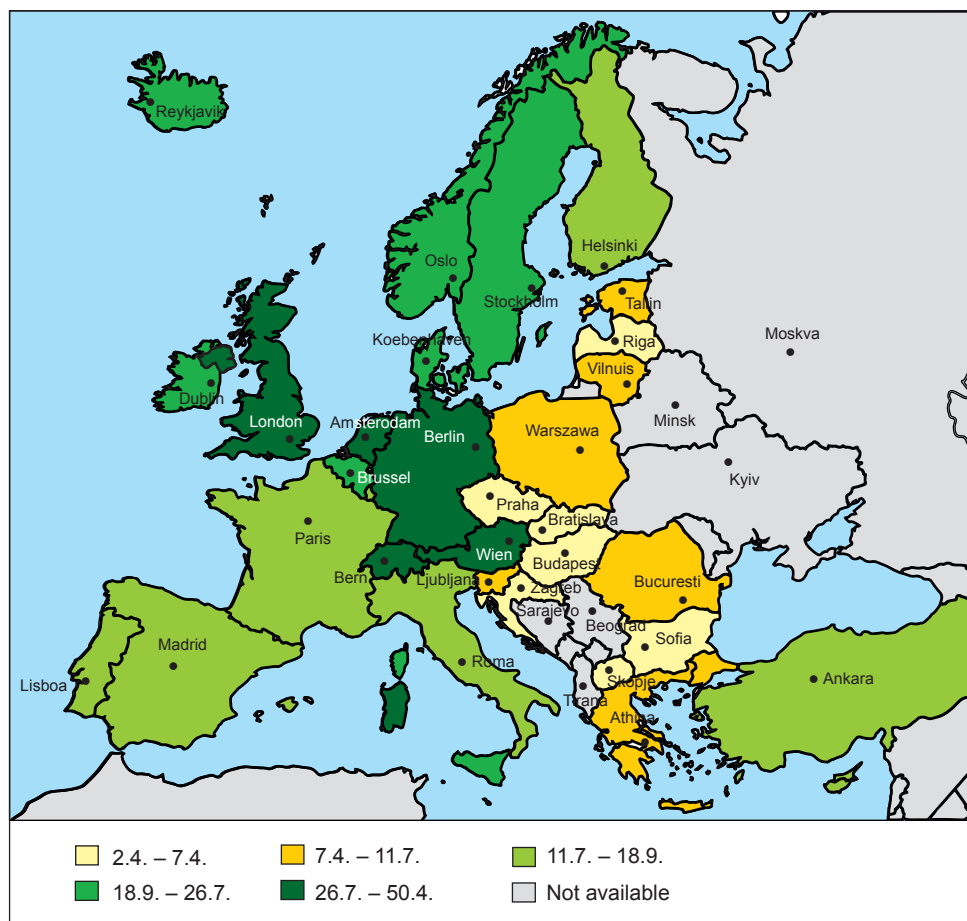
In Figure 2 there are countries divided into five zones according to the degree of flexibility (in this case, part-time employees as a share of the total number of employees). Countries of Western and Northern Europe are in the highest range, followed by Southern European countries. The lowest level of flexibility reached countries of Central and South-eastern Europe.

From cross-sectional comparison in Figure 2 it is shown that the degree of flexibility (in this case part-time work according to Eurostat data from 2014) is the highest in the Netherlands, Germany, Austria, Luxembourg, Switzerland and the UK, followed by France and countries of Northern and Southern Europe. Central and South Eastern Europe has the lowest rate of job flexibility measured in this case as percentage of part-time employees.

Another type of indicator by which we measure and compare European countries in terms of the degree of flexibility is the percentage of temporary staff¹ of the total number of employees. This is one of the most common forms of flexible employment relationship between employer and employee.

¹ Fixed-term work – is work with the termination on the basis of objective criteria as a specific date, task completion, return of an employee temporarily replaced. Typical examples of fixed-term work are seasonal work, employment agencies or specific contract of training.

Figure 2 | The Share of Workers Employed Part-Time in European Countries (2014)

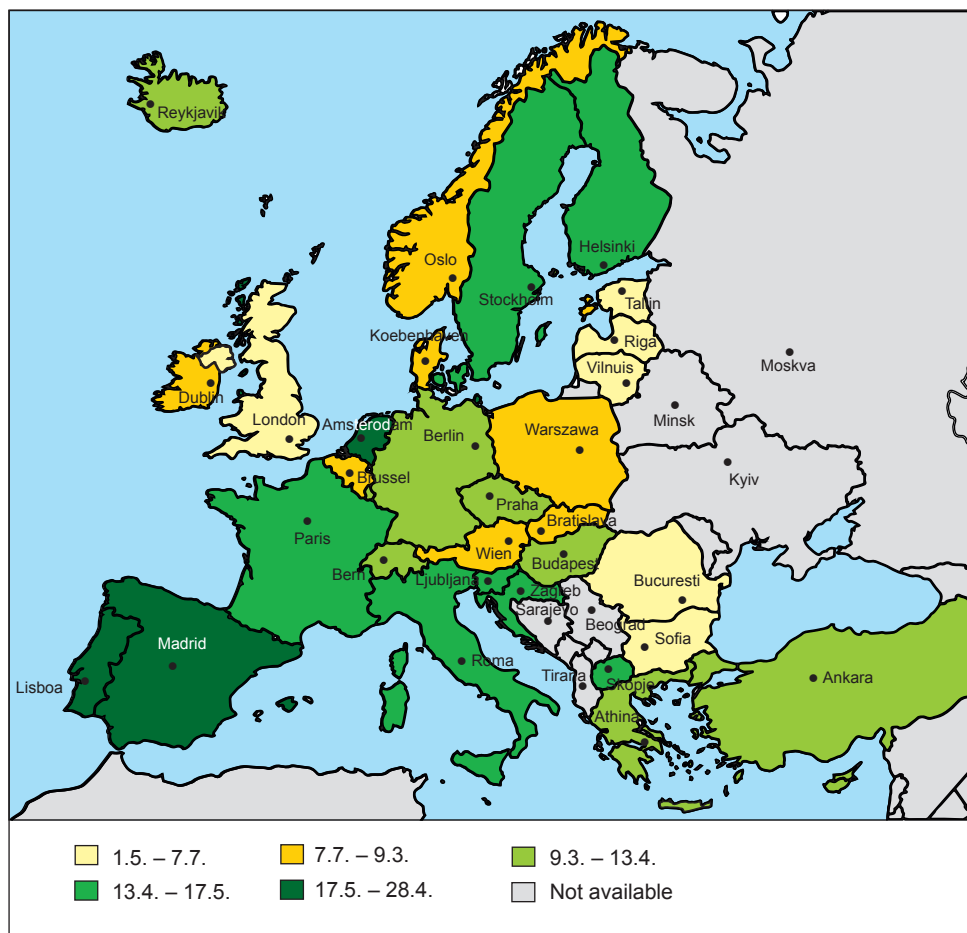


Source: Eurostat, Labour Force Survey.

The second map (Figure 3) shows the range of flexibility in Europe in terms of the proportion of temporary employment. Here dominate Southern European countries. Norway, the Great Britain and Northern Ireland are at the end of the ranking (they reach lower levels of employment for a fixed term, even in comparison with countries of central and with some countries of South Eastern Europe).

Poland and the Netherlands and the Southern European countries Spain and Portugal according to the latest data from 2014 employed the highest percentage of temporary employees. Northern European countries – Sweden and Finland, as well as France, Italy and Slovenia. Germany, Luxembourg, the Czech Republic, Switzerland and Hungary are in the middle range. Followed by countries Belgium, Norway, Ireland, Slovakia and Austria with flexibility in the zone from 5.2 to 7.9% of temporary employment. Into the lowest zone we include the Great Britain, Romania and Bulgaria.

Figure 3 | The Share of Temporary Employees (2014)



Source: Eurostat, Labour Force Survey.

In our ranking of countries according to the share of temporary staff dominated countries of Southern and Northern Europe. The European average value is 15% share in 2014.

Based on monitoring indicators of flexibility we decided to implement the classification of individual countries. The sample of countries in this case is determined by availability of data of the three parameters used. We have grouped countries into clusters based on similar job flexibility, expressed through three indicators, respectively three dimensions. The first indicator is the proportion of temporary staff, the second is the proportion of part-time employees share and the third is the intensity of temporary forms of employment regulations. Individual indicators are further characterized in Table 2.

The variables were standardized by transforming to the Z-score. When classifying countries we used hierarchical clustering through Ward's method of aggregation and simple Euclidean distances have been used for calculation of the distance. Graphical output of realized cluster analysis is dendrogram, which is shown in Figure 4. Based on the results of aggregation we can say that flexibility of work measured by three indicators in Slovakia is similar to that in the Czech Republic, Hungary and Latvia. Based on available data, we can also say that flexibility of work in these four countries is low.

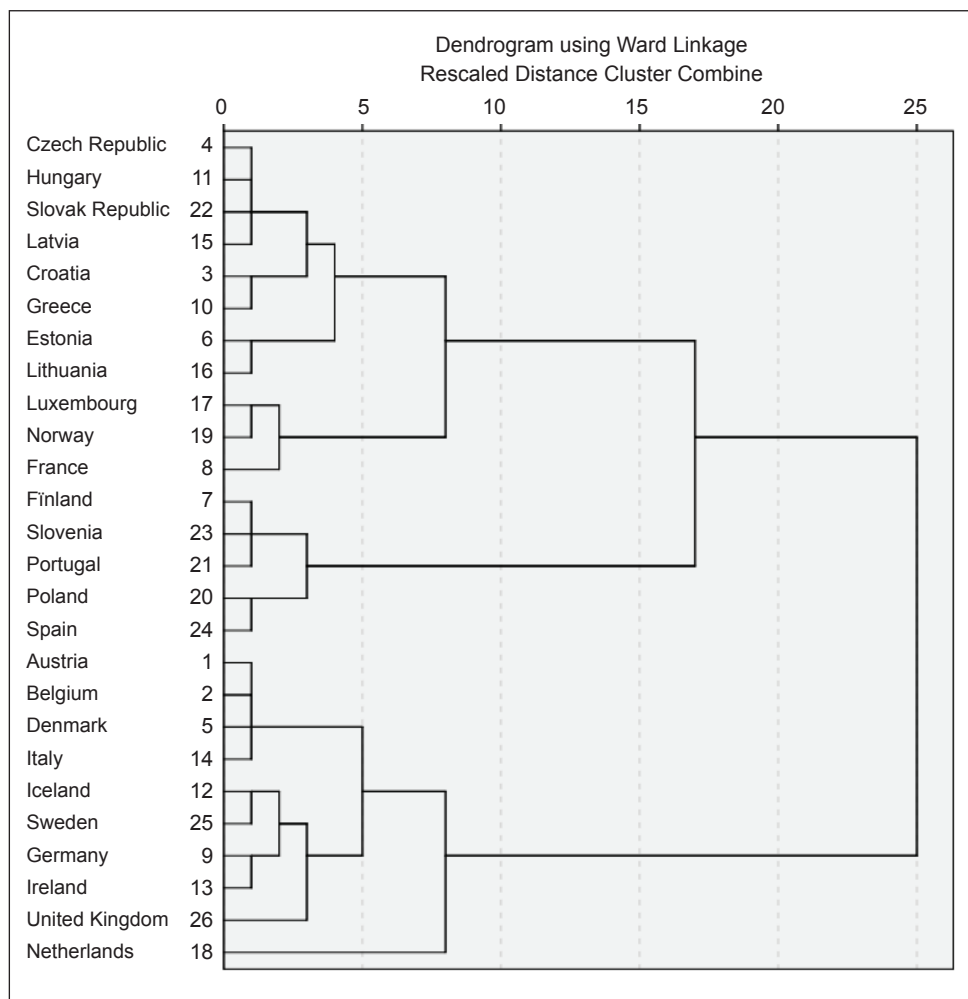
Table 2 | Description of Data Used in Cluster Analysis

Indicator	Source	Transformation
The share of temporary employees (%)	OECD (2015). Available on: https://data.oecd.org/emp/temporary-employment.htm	The average in the years 2011–2013. Standardization through Z-score.
The share of part-time employees (%)	OECD (2015). Available on: https://data.oecd.org/emp/part-time-employment-rate.htm	The average in the years 2011–2013. Standardization through Z-score.
Regulation of temporary forms of employment in 2013 – Evaluation on a scale from 0 to 6 (0 = least restrictions; 6 = most restrictions)	OECD/IDB Employment Protection Database. Available on: http://www.oecd.org/employment/emp/oecdindicatorsofemploymentprotection.htm	Year 2014 or 2013 depending on availability. Standardization through Z-score

Source: Authors.

Furthermore, the similarity is relatively high for example between Austria, Belgium, Denmark and Italy as well as between Estonia and Lithuania or between Island, Sweden, Germany and Ireland. Relatively independent element is the Netherlands, where the flexibility of work is probably the highest of all countries. According to the results, we may say that there are at least three major groups of countries with respect to the work flexibility. This may be the reflection on different historical, cultural and political environment. This appears to be very similar for example in the Czech Republic Slovakia and Hungary, The results are further discussed in the conclusions and policy implications section.

Figure 4 | Result of Cluster Analysis of European Countries according to Labour Market Flexibility – Dendrogram



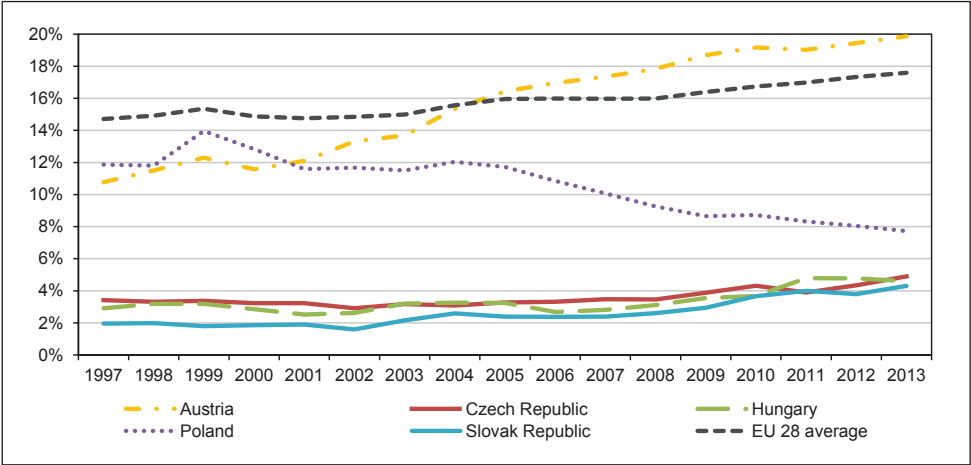
Source: Own calculation.

4. Estimation of Impact of Work Flexibility on Unemployment – Regression Analysis

In this section we will examine the potential impact of work flexibility on unemployment in the country, using regression analysis based on panel data collected. We also assume that increased work flexibility can be fully reflected with a delay of several years. Therefore, we apply the impact of independent variables with several years' delays in the regression models. We have expressed flexibility of work in this case by measuring variable proportion of part-time employees out of the total number of employees.

Share of part-time employees in selected countries of Central Europe can be seen in Figure 5. All the V4 countries (the Czech Republic, Hungary, Poland, and Slovakia) in this indicator are lagging behind the EU average and despite the fact that this indicator grew in three of these countries (the Czech Republic, Hungary and Slovakia) in the researched period. In contrary the share of part-time workers in Austria has reached above EU-average values since the year 2005.

Figure 5 | The Share of Part-Time Workers (% of total employees)



Source: Authors.

Description of the variables used in the regression models is given in Table 3.

Table 3 | The Description of Variables Used in Regression Models

Variable	Description	Source
Unemployment	Harmonized unemployment rate (% of total workforce). Indicator is seasonally adjusted. As unemployed people in this indicator are considered people of working age who are out of work, they are able to work and take certain steps to find work.	OECD (2015). Available on: https://data.oecd.org/unemp/harmonised-unemployment-rate-hur.htm
Part-time	The share of part-time workers (% of total employees)	OECD (2015). Available on: https://data.oecd.org/emp/part-time-employment-rate.htm
GDP per capita	GDP <i>per capita</i> in USD at constant prices (in the year 2010), taking into account purchasing power parity	OECD (2015). Available on: https://stats.oecd.org/Index.aspx?DataSetCode=PDB_LV

Source: Authors.

The data used were obtained from the OECD database. Variables have the character of panel data for 31 OECD countries in the time period from the year 2000 to 2013. It is a panel-balanced with a database that consists of 434 observations. All variables were tested for stationarity through panel test stationarity. The test results are listed in Appendix. The results quite clearly confirm our assumption of non-stationary variables. Models with variables at their levels seem have spurious-regression problem, therefore we decided to use the first differences of variables which are already stationary. In examining the expected causal relationships we used a panel regression with fixed effects, which is in line with the results of Hausman test. Moreover, the share of part-time workers is used in all models as the independent variable. Since there can be assumed lagged effects of greater flexibility in the labour market on unemployment, this variable input in model is delayed by one, two and three years. Variable *GDP per capita* was used mainly as a control variable, which allows taking into account the impact of the economic cycle in the model, which in this case is particularly important. The results of the final regression models are shown in Table 4 and Table 5. For all models were used White's robust standard errors for the appearance and partly heteroscedasticity autocorrelation. A possible problem presents the existence of potential reverse causality, which in our case is quite likely. In the models we have used for this reason variables delayed a couple years, which would largely correct the problem. Firstly, we used the whole sample in regression models, in the second phase we divided the sample into two groups of countries based on the *GDP per capita*.

As can be seen in Table 4, when using whole sample, if the variable part-time work has not been delayed or has been delayed for only one period, results indicate that the effect of this variable is positive. However, the variable is in this case statistically significant only at 10% significance level. Increase of flexibility of work may therefore be reflected to some extent in increasing unemployment in the short term. On the other hand, if we take into account the impact of work flexibility delayed by two to three periods, the situation has changed. A more flexible work operates in that case to reduce unemployment. In case of two years delay this variable is significant at the 5% significance level. The impact of *GDP per capita* on unemployment seems to be negative as expected. It means that it contributes to reducing unemployment. Also in this case it is rational to assume that the impact of GDP on unemployment is also delayed. For this reason, as well as to check robustness, we have lagged *GDP per capita* by one year in several models.

Despite using the sample of developed countries the differences between less developed and more developed countries could be still significant. Thus we decide to divide these countries into two groups and use it separately in order to get more homogenous panels. We divide the countries according the *GDP per capita*. The threshold has been set into to point where the gap in the *GDP per capita* is the most significant. The group of less developed countries contains these eight countries: the Czech Republic, Estonia, Greece, Hungary, Poland, Portugal, the Slovak Republic and Slovenia. All other countries have been included into the group of economically more developed countries. The results of the regression models with two separate panels are summarized in Table 5.

Table 4 | Results of Panel Regressions with the Change in Unemployment Rate as Dependent Variable

Dependent Variable: Unemployment (Regression 1) and Δ Unemployment (Regressions 2–5)					
Independent Variables	(1)	(2)	(3)	(4)	(5)
Part-time	13.20* (6.31)	–	–	–	–
Δ Part-time	–	0.19* (1.87)	–	–	–
Δ Part-time (lag = 1 year)	–	–	–0.107 (–0.989)	–	–
Δ Part-time (lags = 2 years)	–	–	–	–0.235** (–2.76)	–
Δ Part-time (lags = 3 years)	–	–	–	–	–0.16* (–1.95)
GDP per capita	–0.0005*** (–5.26)	–0.0006*** (–11.68)	–	–	–
GDP per capita (lag = 1 year)	–	–	–0.0005** (–2.59)	–0.0004** (–2.52)	–0.0004** (–2.51)
R²	0.74	0.42	0.26	0.28	0.27
Akaike's information criterion	4.36	2.89	3.20	3.25	3.35
Durbin-Watson statistic	0.57	1.49	1.55	1.62	1.62
F-statistic (H0: the model is not significant)	35.21***	9.21***	3.64***	3.65***	3.31***
Number of observations	434	403	372	341	310

Notes: The symbols * / ** / *** represent statistical significance at a confidence level of 10% / 5% / 1%. Robust estimates of standard errors have been used in all models; Symbol Δ represents the first difference of the variable. Based on the results of Hausman test cross-section regression with fixed effect has been used in all models.

Source: Own calculation.

In all the models listed in Table 4, the lagged effect of variable capturing the share of part-time employment is negative. This probably means that flexible work reduces unemployment with delaying two or three years. This relationship is important in most models at the 5% significance level. The difference between two groups of countries is rather small. However, the negative effect of part time employment on unemployment seems to be more significant in the sample of less developed countries. All models are statistically significant based on the F- statistics. Impact of GDP on unemployment is statistically highly significant and intense, which confirms the wisdom of the inclusion of the control variables in the models listed.

Table 5 | Results of Panel Regression Using Lagged GDP *per capita* Independent Variable

Dependent Variable: Δ Unemployment						
Independent Variables	(1) More developed countries	(2) More developed countries	(3) More developed countries	(4) Less developed countries	(5) Less developed countries	(6) Less developed countries
Δ Part-time (lags = 1 years)	-0.052 (-0.73)	–	–	-0.23 (-0.71)	–	–
Δ Part-time (lags = 2 years)	–	-0.164** (-2.19)	–	–	-0.62** (-2.26)	–
Δ Part-time (lags = 3 years)	–	–	-0.157* (-1.81)	–	–	-0.64** (-2.33)
Δ GDP <i>per capita</i> (lag = 1 year)	-0.0003*** (-2.17)	-0.0002* (-1.96)	0.0002** (-1.99)	-0.001*** (-4.42)	-0.001*** (-3.81)	-0.001*** (-4.22)
R ²	0.19	0.20	0.22	0.46	0.49	0.48
Akaike's information criterion	3.10	2.84	–	3.71	3.73	3.84
Durbin-Watson statistic	1.60	1.66	1.70	1.63	1.78	1.79
F-statistic (H0: the model is not significant)	2.43***	2.41***	2.39***	8.00**	8.27***	7.31***
Number of observations	252 (12x21)	231 (11x21)	210 (10x21)	96 (12x8)	88 (11x8)	80 (10x8)

Notes: The symbols * / ** / *** represent statistical significance at a confidence level of 10% / 5% / 1%. Robust estimates of standard errors have been used in all models; Symbol Δ represents the first difference of the variable. Based on the results of Hausman test cross-section regression with fixed effect has been used in all models.

Source: Own calculation.

5. Conclusions and Policy Implications

The reason for establishing new forms of employment should be not only an increase the flexibility of the Labour Code, as well as the attractiveness for employers (more flexible conditions and reductions in labour costs for employees particularly in times of high unemployment and the economic crisis), the acquisition of skills, experience.

Based on the results of cluster analysis, we can say that the work flexibility in Slovakia is very similar to the Czech Republic, Hungary and Latvia. These countries are among those with the lowest labour flexibility. On the other hand, states such as the UK, Ireland and especially the Netherlands achieved a high level of work flexibility.

To support a favourable development of positive work flexibility, particularly in Central and Eastern Europe, which are characterized by low rates of its use, it requires knowledge and reasoning of macroeconomic, political and institutional factors that affect the nature of flexible working taken into account the multidisciplinary nature of the problem. And *vice versa*, knowing and taking into account the positive impact (in terms of preferences and needs of employees) of flexibility is important for effective public policies in the aforementioned areas. For the above reasons, it is necessary to deal with the flexibility to explore the nature, extent, causes and effects.

The results of our empirical research using regression analysis show that the increase in work flexibility could help reduce unemployment. However, this effect is active with a delay of approximately two years. This finding also has a number of implications for implementation of policy of greater flexibility in the labour market. Based on the results, we can assume that the introduction of measures to increase the flexibility of work in a particular period of work may result in a temporary increase in unemployment during this period. But this effect is statistically less significant. On the other hand, that amendment very likely causes a decline in unemployment in the second and possibly the third year after the introduction of these measures.

Applying the methods of spatial comparison and cluster analysis, we identify the key differences and similarities in labour flexibility among selected countries. There are rather significant differences especially between most of the new and original EU members. The results of panel data regression largely indicate that higher flexibility on the labour market could have positive impact on the reduction of unemployment in the future, especially when taking into account the two years lag. Thus, we paid considerable attention to the labour market policy settings and possible steps that could be beneficial for greater flexibility at labour market. The potential differences between more developed and less developed countries in the sample are not very significant.

In this paper we present the processes of flexibilisation and the resulting situation on the example of two models. The complexity of entities and relationships that are contained in these models allow not only evaluate, but also to review and upgrade existing strategies and policies supporting greater flexibility. It facilitates the process of identifying of assumptions and potential of national policy measures to support of greater flexibility, and it should be noted that the universally applicable model of policy measures to foster positive work flexibility in European countries does not exist.

Starting the wider use of different forms of flexible working time arrangements and flexible forms of employment requires not only a legislative basis, but also initiatives of employers and employees in this area (the bottom-up approach). This assumes that information about this issue can encourage both employers and employees in Central and Eastern Europe by presenting examples of positive practice, because they lack not only the information, but also the motivation of employers to offer flexible forms of work and by employees/workers to engage in matters of flexible working.

Appendix

Results of the Panel Test Stationarity of Variables

	Null hypothesis: variable is no stationary				
	LLC test	Breitung	IPS test	ADF test	PP test
Part-time (intercept)	-2.00**	–	2.42	46.08	46.56
Part-time (intercept and trend)	-5.51***	-0.68	-1.05	69.93	86.27**
Δ Part-time (intercept)	-14.85***	–	-10.79***	220.78***	284.08***
Δ Part-time (intercept and trend)	-13.74***	-5.39***	-7.71***	165.20***	269.17***
Unemployment (intercept)	-2.36***	–	-1.15	74.86	41.17
Unemployment (intercept and trend)	-4.63***	-0.03	-1.31	79.62	31.52
Δ Unemployment (intercept)	-10.95***	–	-6.73***	150.12***	131.32***
Δ Unemployment (intercept and trend)	-10.25***	-5.89***	-3.16***	95.72***	9.52***
GDP per capita (intercept)	-3.25***	–	0.59	51.58	59.01
GDP per capita (intercept and trend)	-2.79***	0.82	2.10	39.81	39.37
Δ GDP per capita (intercept)	-11.31***	–	-6.42***	142.38***	154.62***
Δ GDP per capita (intercept and trend)	-11.18***	-8.59***	-3.64***	100.29***	145.23***

Note: The sign ** / *** represent statistical significance at a significance level of 5% and 1%.

Source: Own calculation.

References

- Bellán, P., Olšovka, A. (2012). *Flexibilné formy zamestnania v rámci EÚ - možnosti a riziká ich uplatnenia v Slovenskej republike. Správa z riešenia výskumnej úlohy VÚ č. 2157. / Flexible Forms of Employment in the EU - Opportunities and Risks for Their Application in the Slovak Republic*. Report of Research Project No. 2157. Bratislava: Institute for Labour and Family Research, 2010. 118 p. [Retrieved 2014-04-18]. Available at: http://www.sspr.gov.sk/IVPR/images/IVPR/vyskum/2012/Bellán/2157_olšovska_bellán.pdf
- Bernal-Verdugo, L. E., Furceri, D., Guillaume, D. (2012). *Labor Market Flexibility and Unemployment: New Empirical Evidence of Static and Dynamic Effects*. IMF Working Paper WP/12/64. International Monetary Fund. 28 p. [Retrieved 2017-04-18]. Available at: http://adapt.it/adapt-indice-a-z/wp-content/uploads/2015/01/bernal_verdugo_furceri_guillaume_labour_market_flexibility_2013_64.pdf, <https://doi.org/10.5089/9781463938413.001>

- Berthold, N., Fehn, R. (1996). The Positive Economics of Unemployment and Labor Market Inflexibility. *KYKLOS*, 49(4), 583–613, <https://doi.org/10.1111/j.1467-6435.1996.tb02075.x>
- Bertola, G. (1990). Job Security, Employment and Wages. *European Economic Review*, 34(4), 851–879, [https://doi.org/10.1016/0014-2921\(90\)90066-8](https://doi.org/10.1016/0014-2921(90)90066-8)
- Bertola, G., Rogerson, R. (1997). Institutions and Labor Reallocation. *European Economic Review*, 41(6), 1147–1171, [https://doi.org/10.1016/s0014-2921\(96\)00048-7](https://doi.org/10.1016/s0014-2921(96)00048-7)
- Blanchard, O., Jimeno, J. F. (1995). Structural Unemployment: Spain versus Portugal. *American Economic Review Papers and Proceedings*, 85(2), 212–218.
- Blanchard, O., Wolfers, J. (2000). The Role of Shocks and Institutions in the Rise of European Unemployment: The Aggregate Evidence. *The Economic Journal*, 110(462), 1–33, <https://doi.org/10.1111/1468-0297.00518>
- Brozova, D., Stroukal, D. (2015). Teorie preferencí a kariéra žen na českém trhu práce./ Theory of preferences and career of women in the Czech Labor Market. *Politická ekonomie*, 63(3), 382–399, <https://doi.org/10.18267/j.polek.1009>
- Cazes, S., Nesporova, A. (2003). *Employment Protection Legislation (EPL) and its effects on Labour Market Performance*. International Labour Office: High-Level Tripartite Conference on Social Dialogue Malta, Valetta, 28 February - 1 March 2003. [Retrieved 2014-05-18]. Available at: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.544.8906&rep=rep1&type=pdf>
- Di Tella, R., Macculloch, R. (2005). The Consequences of Labor Market Flexibility: Panel Evidence Based on Survey Data. *European Economic Review*, 49(5), 1225–1259, <https://doi.org/10.1016/j.euroecorev.2003.11.002>
- Eamets, R., Masso, J. (2004). *Labour Market Flexibility and Employment Protection. Regulation in the Baltic States*. IZA. Discussion Paper No. 1147. [Retrieved 2017-03-25]. Available at: <http://ftp.iza.org/dp1147.pdf>
- Elmeskov, J., Martin J., Scarpetta, S. (1998). Key Lessons for Labor Market Reforms: Evidence from OECD Countries Experience. *Swedish Economic Policy Review*, 5(2), 205–252.
- Eurostat (2014). *Persons Employed Part-Time – Total. 2013*. [Retrieved 2014-03-18]. Available at: <http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&plugin=1&language=en&pcode=tps00159>
- Eurostat (2014). *Employees with a Contract of Limited Duration (Annual Average)*. [Retrieved 2014-03-18]. Available at: <http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&plugin=1&language=en&pcode=tps00073>
- Eurostat (2015). *Employed Persons Working in the Evenings as a Percentage of the Total Employment, by Sex, Age and Professional Status. 2014*. [Retrieved 2015-03-18]. Available at: <http://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do>
- Eurostat (2015). *Europe 2020 Headline Indicators- 2014*. [Retrieved 2015-03-28]. Available at: http://epp.eurostat.ec.europa.eu/portal/page/portal/europe_2020_indicators/headline_indicators
- Formánková, L., Křížková, A. (2015). Flexibility Trap – the Effects of Flexible Working on the Position of Female Professionals and Managers within a Corporate Environment. *Gender in Management: An International Journal*, 30(3), 225–238. <http://doi.org/10.1108/GM-03-2014-0027>
- Ghak Zribi, T. El., Temmi, H., Zrelli, N. (2014). Can Labor Market Flexibility Affect Unemployment? A Panel Data Analysis. *Journal of Human Resources Management and Labor Studies*, 2(1), 17–40. New York: American Research Institute for Policy Development, 2014. [Retrieved 2017-04-01]. Available at: http://aripd.org/journals/jhrmls/Vol_2_No_1_March_2014/2.pdf

- Goudswaard, A., Dhondt, S., Vergeer, R., Oeij, P. et al. (2012). *Organisation of Working Time: Implications for Productivity and Working Conditions. Overview Report*. Dublin: European Foundation for the Improvement of Living and Working Conditions. [Retrieved 2016-04-01]. Available at: <http://www.eurofound.europa.eu/publications/report/2012/working-conditions/organisation-of-working-time-implications-for-productivity-and-working-conditions-overview-report>
- Jackman, R., Layard, R., Nickell, S. (1996). *Combating Unemployment: Is Flexibility Enough?* [online]. London School of Economics and Political Science, Centre for Economic Performance, London Discussion Paper No. 293. [Retrieved 2017-04-29]. Available at: http://eprints.lse.ac.uk/2214/1/Combating_Unemployment_Is_Flexibility_Enough.pdf
- Korony, S., Lapinova, E. (2014). Economic Aspects of Working Time Flexibility in Slovakia. *Journal of Applied Economic Sciences*, 9(4), 660–672.
- Lapinova, E. (2013). Flexibilisation of Work and Preferences and Needs of Slovak Parents in This Area. Paper presented at 7th International Days of Statistics and Economics. Conference Proceedings. Prague. pp. 758–767.
- Lapinova, E., Písar, P. (2015). *Working Time and Working Contracts Flexibility in Slovakia and in Europe - Inter-country Comparison*. In: *The 9th International Days of Statistics and Economics*. Conference proceedings. Eds.: Tomáš Lösnér, Tomáš Pavelka. Prague: Melandrium. pp. 962–974 [Retrieved 2015-10-29]. Available at: http://msed.vse.cz/msed_2015/article/201-Lapinova-Erika-paper.pdf
- Lazear, E. P. (1990). Job Security Provisions and Employment. [online]. *Quarterly Journal of Economics*, 105(3), 699–726, <https://doi.org/10.2307/2937895>
- LO - The Danish Confederation of Trade Unions (2008). *The European Discussion on the Danish Labour Market: FLEXICURITY*. Copenhagen: LO [Retrieved 2014-03-31]. Available at: http://www.lo.dk/English%20version/~/_media/LO/English/FinalFlexicurity.ashx
- Monastiriotis, V. (2004). *Labour Market Flexibility and Regional Economic Performance in the UK, 1979 – 1998*. London: London School of Economics and Political Sciences. 389 p. [Retrieved 2017-03-31]. Available at: http://etheses.lse.ac.uk/834/1/Monastiriotis_Labour_market_flexibility_and_regional_economic_performance.pdf
- Muffels, R., Wilthagen, T., Chung, H., Dekker, R. (2010). *Towards a Methodology to Monitor and Analyse Flexicurity (FLC) and Work-Life Balance (WLB) Policies in the Member States of the EU*. Reflect Research Paper 11/003. Tilburg. 92p. [Retrieved 2017-05-10]. Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1962623, <https://doi.org/10.2139/ssrn.1962623>
- Nemec, J. (1997). *Štát a trh, vybrané problémy verejnej mikroekonomickej/State and Market, Selected Problems of Public Microeconomics*. Nitra: End. ISBN 80-967847-0-6.
- Nickell, S. (1997). Unemployment and Labour Market Rigidities: Europe versus North America. *Journal of Economic Perspectives*, 11(3), 55–74 [Retrieved 2017-05-10]. Available at: <http://web.pdx.edu/~ito/NickellJEP1997.pdf>, <https://doi.org/10.1257/jep.11.3.55>
- OECD (2015). *OECD. Stat – OECD Database*. [Retrieved 2015-10-2]. Available at: <http://stats.oecd.org/>
- Písar, P. et al. (2008). *Rovnosť príležitostí na trhu práce/ Equal Opportunities in the Labour Market*. Banská Bystrica: Regional European Information Centre Banská Bystrica and Science and Research Matej Bel University. ISBN 978-80-8083-434-0.
- Siebert, H. (1997). Labor Market Rigidities: At the Root of Unemployment in Europe. *Journal of Economic Perspectives*, 11(3), 37–54, <https://doi.org/10.1257/jep.11.3.37>
- Wilthagen, T., Tros, F. (2004). The Concept of 'Flexicurity': a New Approach to Regulating Employment in the Labour Market. *TRANSFER – European Review of Labour and Research*, 10(2), 166–186, <https://doi.org/10.1177/102425890401000204>