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Participation in non-formal education in risk society

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ABSTRACT

The participation of adults in lifelong learning in the CZ has undergone significant development in the last few years, with the percentage of adults participating in non-formal education (NFE) has risen dramatically. Within this empirical context, this study conceptualises and interconnects the theory of Ulrich Beck's risk society with the main trends in contemporary NFE. Based on a secondary analysis of data from the Czech Adult Education Surveys of 2011 and 2016, we test two complementary theses derived from Beck's theory. Firstly, we explore the relevance of Beck's industrial automation thesis: Does automation play an important role in the prevalence of job-oriented NFE? Secondly, we focus on Beck's individualisation thesis: Do adults in the CZ tend to individualise more in their participation in NFE during the last decade? We found that Czech adult education system exhibits a significant level of individualisation that is not based on the classical class categories, but instead on integration into the job market as well as to a lesser extent on the ownership of cultural capital. Subsequently, individualisation is driven by market forces and dictated by company policy. According to the available data, industrial automation has only an indirect effect on participation in job-oriented NFE.

KEYWORDS: Risk society, individualisation, automation production, nonformal education, job-oriented education, participation in lifelong learning

Introduction

The majority of the latest theoretical approaches (**Blossfeld et al., 2014; Boeren, 2016, 2017; Desjardins & Rubenson, 2013; Green, 2006; Riddell et al., 2012; Roosmaa & Saar, 2010; Rubenson & Desjardins, 2009; Saar & Rais, 2017, 2017; Saar et al., 2014, 2013**) which deal with the issue of adult participation in non-formal education (NFE) are based implicitly or explicitly on the assumptions of the theoretical concept of dual structure and behaviour formulated in the mid-1980s by **Anthony Giddens (1984)**.

Based on this approach, theoretical conceptions emphasise that the individual's decision-making regarding participation/non-participation in further education and training is the result of both personal motivation and disposition barriers as well as structural/institutional conditions, most often the welfare-state regime, the openness/closeness of the educational system, the structure of the labour market, and/or the skill-production regime in which the individual is involved.

Institutional conditions in this case can create not only opportunities for a higher participation rate of adults in education and training, as can be seen for example, in Scandinavia (**Desjardins & Rubenson, 2013; Rubenson, 2018; Rubenson & Desjardins, 2009**), but they can also create obstacles to such activities, as evidenced by numerous examples from Southern and Eastern Europe (**Riddell et al., 2012; Roosmaa & Saar, 2010, 2017; Saar & Rais, 2017**). According to some researchers (**Desjardins, 2017;**

Kondrup, 2015; Rubenson, 2018), the role of structuring institutions is influenced by individual dispositions and motivations by which the perception of the meaningfulness and effectiveness of lifelong learning and development has evolved.

Despite their value for understanding the underlying mechanisms of participation/non-participation of adults in continuing education and for identifying significant structural differences among some countries between 1990 and 2010, some of these approaches have come under criticism. A number of researchers (**Rees, 2013; Verdier, 2017, 2018**) assume the existence of indigenous, 'primordial,' institutional structures which in recent years have ceased to correspond to characteristics observed a mere ten or twenty years ago. In other words, many of these approaches tend to work with 'ideal types' of institutional structures, i.e. theoretical constructs or 'Platonic categories' (Taleb, 2011) rather than with real-life clusters of institutions that influence adult decision-making today. This situation is typical especially in post-communist European countries, which according to many authors (**Desjardins, 2017; Riddell et al., 2012; Roosmaa & Saar, 2017**) can hardly be included in any of the traditional models of the welfare state, production regime or adult education system.

The previous criticism is closely related to the second weakness of the prevailing theoretical concepts. The current approaches assume that the influence of institutions on the participation in NFE remains the same over time, whereas in reality institutional conditions within individual countries tend to continually evolve and transform in response to changes in their internal or external environment. This and other factors have created a situation in which the institutions of the welfare state, labour market and education system itself are becoming significantly 'hybridised' (**Verdier, 2017, 2018**); thus, the characteristics of systems come to diverge even more from their previous states. The deepening of critical social processes such as globalisation and industrial automation along with the related responses of participants in adult learning seem to intensify, rather than diminish, this hybridisation.

We believe that one possible response to both critical viewpoints which also represents a potentially stimulating complement to the existing theoretical models may be the much broader employment of the concept that **Ulrik Beck (1992, 2009)** terms risk society.

Two strong arguments can be assumed in terms of the broader application of the risk society model in the field of adult participation/non-participation in NFE. First, Beck places much more emphasis not on the institutional structures themselves and their ideal-typical features, but on the developmental aspects of late modern societies. In this regard, Beck's conception more closely focuses on diachronic analysis and comparison than on the structural aspects of institutions and their synchronous dimensions, the latter of which continues to dominate comparative analyses of continuing education, a contention put forward by **Marcella Milana (2018, p. 427)**.

Secondly, Beck's theoretical approach emphasises that institutions of traditional modernity, closely related to adult education and training - such as the welfare state, class, formal education, the labour market and career trajectories - have been undergoing significant changes regarding characteristic features and these features' impacts on individuals, i.e. on psycho-social disposition, motivation and life strategies.

The subject of this study is not (and cannot be) to formulate a coherent theory based solely on Beck's work which would explain in detail all aspects of adult participation in NFE. After all, as **Ellen Boeren (2016, 2017)** conclusively demonstrates, this would only be possible on a multidisciplinary and therefore multi-theoretical basis. Our ambition here is much limited: (1) firstly, we would like to place into theoretical relation two of the key global trends that can be traced in the past decade in regards to NFE participation along with a trio of key transformation processes that according to Beck (**Beck et al., 2003; see also Beck, 2009**) have transformed the institutional environment of contemporary

societies and thereby influence participation in the dominant form of NFE. We believe that emphasising these transformation processes and their influence on participation/non-participation in NFE can befittingly complement the existing structurally oriented approaches with a developmental/diachronic dimension. (2) Following this, anchored to an empirical basis we intend to apply two of Beck's theses derived from the transformation processes of risk society to adult participation in NFE and its predominant forms in the Czech Republic.

Transformation processes of the risk society and trends in NFE

Although more than three decades have passed since Ulrich Beck (1992) first formulated his conception in 1985, many of its central theses continue to influence research studies. For current Euro-American societies, the processes of individualisation and the weakening of the relevance of nation-states as central organisational units of the social environment have only increased; complicating matters is the developing automation of industrial production which has developed slowly since the 1980s.

Following Beck (**Beck et al., 2003**; see also **Sorensen & Christiansen, 2013**), we argue that these pivotal processes in societies of the first quarter of the 21st century have significantly accelerated and transformed the conditions of participation in NFE. For this reason, we will look further at how the processes of: (1) globalisation; (2) industrial production automation; and (3) intensified individualisation affect participation in NFE and work-related NFE. The relevance of these processes in adult learning is not only due to the broad recognition of Ulrik Beck's work, but also because these processes are considered by many researchers to be the leading causes of the current transformation of adult education, development and training around the world (**Riddell et al., 2012**).

According to the data from past worldwide surveys into adult participation in lifelong learning (IALS 1994-98, PIAAC 2010-2012 and Adult Education Survey 2007, 2011 and 2016), two key trends that characterise NFE in various countries can be traced over the past two decades (**Desjardins, 2015, 2017; Rubenson, 2018**). First of all, NFE is strongly oriented towards job-oriented education and training. Secondly, an increase in the overall rate of participation of adults in NFE has taken place, especially in those countries that once had little or only moderate adult involvement in NFE until 2000 (usually less than 30% of the adult population's participation in the last year prior to the survey).

We believe that both of these trends can be explained by the increased influence of the three transformation processes described by Beck which we illustrate schematically in **Figure 1** as well as describe the mechanisms of their impacts. The two basic premises that we have empirically tested can be deduced from the mechanism.

Globalisation

According to **Ulrik Beck (2002)**, globalisation is a multilayered process of erosion of the influence of nation-states on structuring social events within their borders. This process is due to a continuous increase in the power of international corporations, as the key players in the economy, and supranational political (e.g. the EU) and non-profit organisations (such as UNESCO, OECD), which are increasingly competing with national states in shaping policies.

The rise of international corporations has led to a higher degree of instability of national economies along with a shift of economic competition to the global level, two factors which weaken the

forementioned regulatory role of the state in economic processes as well as escalate competition among enterprises in the international arena. The power of multinational political and nonprofit organisations, i.e. their ability to influence the goals and instruments of government policies, is ever-increasing.

As a result, globalisation leads to a weakening of state protective measures and the deconstruction of the welfare state, thereby increasing labour flexibility and deepening individualisation. At the same time, the state is no longer the sole player in the formulation of lifelong learning policy (Milana et al., 2016). Last but not least, increased competition in global markets is forcing companies to adapt to the international competitive environment and trends that determine it.

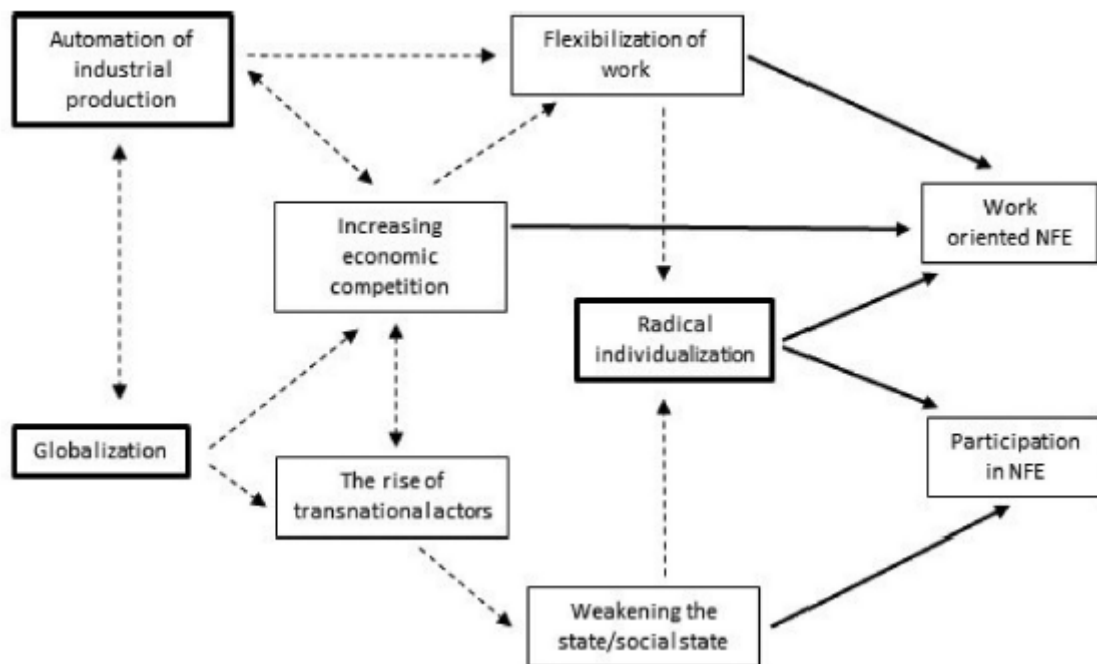


Figure 1. Relationships between the transformation processes of the risk society and global trends in NFE.

Industrial production automation

According to Beck (2000, 2003, 2005), the production automation process in the form of the widespread expansion of microelectronic and ICT production systems not only significantly increases production and services rationalisation, but also fundamentally transforms the nature of wage labour. Like globalisation, this erodes the security of national and welfare states, while automation breaks down the system of lifelong full employment and disrupts the ability of labour market to maintain long-term low unemployment.

As a result, a working life within the labour market, which gives an individual a significant part of his or her social status, becomes one of the main areas of insecurity and risk, with the situation transformed into a so-called 'risk régime' (Beck, 2000, p. 67). The consequences of automation are, according to Beck (2003, 2005), quite extreme. In part, they result in a higher degree of labour flexibility (the introduction of temporary employment and part-time work), as the expansion of new technologies reduces the overall need for a workforce, with these factors partly resulting in the individualisation of careers. In this respect, responsibility for both career and unemployment is shifted from the social and educational system to the individual, who is required to be able to adapt to labour market fluctuations. At the same time, automation brings a whole new form of work associated with

the digitisation of production and services that those in the risk régime have to cope with. Similarly, another major consequence is a disruption of the link between formal education and qualifications as well as between work and career, as the effects of automation lead to a rapid transformation and instability of the qualifications for which the formal education system had once been designed to prepare individuals.

All these effects have significant consequences for the field of lifelong learning, especially NFE, as the role of lifelong learning as an individual tool to cope with the effects of production automation is increasing. The pressure increases on the economic sector to retrain persons, although much of this training is outdated, i.e. workers are being trained in segments that will in fact cease to exist. The development of training in those segments of the industry in which production methods have transformed significantly, with a higher degree of robotisation and the use of ICT technologies, lags behind.

These forms of demands and social practices come to the fore in the increased role of job-oriented NFE. This is true both for companies seeking to adapt to the competitive environment of the global 'digital capitalism' (Beck, 2005) and are thus forced to invest more resources in educating their workers, as well as for individuals who have to cope with the uncertainties that flexible work brings to their lives. On the basis of these precepts, we have formulated a theoretical assumption which we then link with the selected empirical indicators:

Assumption No. 1: NFE in the Czech Republic is predominantly focused on job-oriented NFE due to increasing industrial automation.

Radicalised individualisation

Mainly due to the work flexibility and the welfare state weakening, both of the previously mentioned processes create a broader foundation for deepening the process of individualisation that fundamentally changes the position of adults in the risk society.

Beck sees radical individualisation as a radicalisation of an individual's responsibility for his own destiny: 'Biographies are removed from the traditional precepts and certainties, from the external control and the general moral laws, and are based on decision-making, and are assigned as a task for each individual' (Beck & Beck-Gernsheim, 1995, p. 5, see also Beck, 1992, p. 135; Beck & Beck-Gernsheim, 2002, p. 4).

According to Mythen (2004, p. 128), individualisation is then to be understood as constituted by 'a rise in lifestyle choice, fragmentation of cultural experience, proliferation of social risks, greater personal responsibility and accountability, the undermining of class identities, social dis-embedding, and development of diverse and reflexive life paths.'

Following this, we can say that in the relationship to lifelong learning, individuals become fully responsible for their further education and development, which is meant to serve as a life strategy for adapting to changes in the risk society. In this regard, they are much more atomised and independent of their class identities, family, and other social factors that may influence them (Beck, 1992, p. 91).

Given the high degree of work flexibility and the weakening role of the welfare state, the integration of an adult into an unstable and risk-producing labour market becomes a key factor influencing participation in NFE. The validity of traditional explanatory categories of 'pre-risk societies,' such as parents' education, social class, or the highest educational attainment of the person - i.e. economic

and cultural capital - should lose efficacy in explaining variations in NFE participation. In connection with these conclusions, we then formulate the second theoretical assumption derived from Beck's concept:

Assumption No. 2: Adults in the Czech Republic have become more individualised in their participation in NFE in the past decade due to their increasing individual responsibility for their own education along with the weakening role of economic and cultural capital.

Methodology

The sample and the analysis procedure

Our survey is mainly based on a secondary analysis of the data from the Adult Education Surveys 2011 (N = 10 190) and 2016 (N = 12 272) for the Czech Republic. In addition to these data, we have used other available secondary data on the dynamics of the development of NFE in the Czech Republic to better illustrate developmental trends. These data come from the surveys AES 2007, PIAAC 2013, and IALS 1994-98 as well as from the results of sub-surveys by Czech researchers (**Kalenda, 2015; Rabuřicová & Rabuřic, 2008**). We propose that a combination of these secondary data makes it possible to create the most detailed picture possible of NFE changes in the past two decades in relation to both of Beck's theses tested (see **Tables 1 and 3**).

Only the respondents who indicated they were working (full-time or part-time) during the investigation were included in the analysis of Beck's assumption of industrial automation, as only in this case was more detailed data on their integration into the labour market available. In 2011, the sample included 6,121 people with an average age of 42 (SD = 11), and in 2016, 7,662 persons with an average age of 44 (SD = 11).

Control variables

For the empirical testing of the first assumption, the control variable was 'reasons for participation in the respondent's main form of education' (1 = personal-related reason, 2 = job-related reason for participation in NFE). The indicators of the effect of industrial automation include:

- Payment for NFE (1 = employer or prospective employer, 2 = public service, 3 = other public institutions, 4 = household member or relative). Based on Beck's conception, we assume that the proportion of those who pay for training should have increased, as employers would be more motivated to pay for job-oriented training in order for their firms to handle the impacts of automation rapidly and effectively.
- Labour market integration in the form of work status (1 = employees, 2 = self-employed, 3 = family workers). In relation to this variable, we assume that, due to the reimbursement by employers, the proportion of employees with job-oriented training would have increased compared to other forms of employment;
- The size of the enterprise (1 = up to 49 employees, 2 = 50 to 249 employees; 3 = over 250 employees). In the case of this variable, we assume that there would be an increase in importance of the category of medium-sized companies, a set which includes most industrial enterprises in the Czech Republic that have been exposed to automation to the greatest degree (**NEF, 2017**);

- The economic activity of the enterprise (1 = primary sector, 2 = secondary sector, 3 = tertiary sector). Here we believe that the growth of the secondary sector, which is the main hub for the expansion of microelectronic and robot-based production systems, was to be expected, while the tertiary sector's impact would decline;
- Occupation status (1 = 'white collars', 9 = 'blue collars'). As for this variable, we assume that there would be an increase of blue-collar workers (both the qualified and unqualified ones) declaring job-oriented training, as these professions are most affected by automation.

We tested the individualisation thesis through the following variables: the dependent variable of the respondent's participation in NFE in the past 12 months (1 = participation, 2 = non-participation), and the independent variables consisting of:

- The indicator of the economic capital of the respondent in the form of household income, which is divided into five quintiles, where the first quintile represents the lowest income group, while the fifth quintile represents the highest. We assume that with the growing individualisation the economic capital should have less influence on explaining NFE participation.
- Next are indicators of cultural capital in the form of: (a) father (male guardian) - the highest education achieved, (b) mother (female guardian) - the highest education, and (c) the highest education of the respondent (1 = at least secondary school (ISCED 2 and 3a, b), 2 = upper secondary (ISCED 3 c), 3 = tertiary (ISCED 5, 6). If Beck's individualisation thesis is valid, we should observe the diminishing importance of cultural capital to explain adult participation in further education and training, both at the level of inherited cultural capital (father/mother - the highest education) as well as acquired cultural capital.
- The working status of the person (1 = Full time; 2 = Part-Time; 3 = Unemployed, 4 = Student, 5 = Retired, 6 = House-person). In this respect, we assume that integration into the labour market is crucial for the further education of an individual. Here, the impact of working status should grow

Results

Assumption No. 1 - industrial automation thesis

In the case of the first of Beck's assumptions, we can see in Table 1 that the job-orientation of NFE has traditionally held a strong position in the Czech Republic. As early as the 1990s, more than 70% of adults declared that they participated in NFE primarily for the reason of employment, with the proportion of those stating this reason in the past decades rising to nearly 90% of all participants. At the same time, the percentage of adults whose participation in NFE is paid for by employers increased to 82% in 2016.

As part of the follow-up analysis, we then focused on the extent to which particular industrial automation indicators affect inclination of NFE towards job orientation. The basic overview related to the main educational activity is shown in **Table 2**.

The table shows that in 2016, as compared to 2011, a higher percentage of employees (+4 p.p.) participated in the NFE primarily due to work reasons. Job-related participation in the largest companies (over 250 employees) fell by 7 p.p., while in medium-sized business it grew. In the primary and secondary sectors, a slight increase is shown in job-oriented participation, while in the tertiary sector there is a slight decrease (- 5 p.p.). The share of the job-oriented NFE paid for by employers

increased significantly in the given period (+33 p.p.). Job-oriented participation increased in the case of respondents falling into the category of blue-collar workers (+5 p.p.).

Assumption No 2 - 'individualisation thesis'

In the empirical testing of the second assumption, we first carried out a descriptive analysis including theory-relevant variables, the results of which are shown in **Table 3**. Here it is possible to observe both the overall increase in adult participation in NFE in the Czech Republic and the overall growth in the number of persons paying for their own education and training.

As for the model testing of the individualisation thesis, 10,190 respondents were included in the 2011 analysis, out of which 3,156 were NFE participants (31%), while in 2016 it was 12,272 respondents, out of which 4,523 were NFE participants (37%). We did not use any weighing in this analysis. Most respondents (64% in both years) indicated they only participated in one NFE activity, so we approached the situation using a logistic regression model that reflects only two categories of dependent variables, namely participation/non-participation.

9,679 respondents (95%) were included in the 2011 model (Chi-square = 2067,256; df = 16; Sig <0.0005), with the remainder excluded due to missing values. Without the application of the model, we are able to correctly classify 69% of cases, and with the model's application 73%, i.e. an improvement of 4 p.p. Pseudo-indicators of the explained variance range between 19% (Cox & Snell R Square) and 27% (Nagelkerke R Square).

Table 1. Reasons for participation in NFE and support by employers (source: IALS, 2000; PIAAC, 2012; AES, 2007; AES, 2011,2016).

| Years | IALS 1997 | AES 2007 | AES 2011 | PIAAC 2012 | AES 2016 | Diff. 1997–2016 |
|---|--------------|-------------|-------------|---------------|-------------|--------------------|
| Mainly job-related reasons for participation in NFE | 72% | 84% | 86% | 85% | 89% | +17 p.p. |
| Mainly personal/non-job-related reasons in NFE | 28% | 16% | 14% | 15% | 11% | –17 p.p. |
| Percentage of all participants in NFE supported by employer. ** | 67% | N.A.* | 71% | 80% | 82% | +15 p.p. |

Data referring to declared NFE activity of adults (24 to 65 years). *Data for the Czech Republic are not available. Job-oriented and non-job-oriented education together.

Table 2. Job-related participation in NFE in CZ in 2011-2016 (source AES, 2011, 2016; our own calculation).

| | | 2011 | | 2016 | | Diff. (p.p.) |
|--|---|-------|---------------|-------|---------------|-----------------|
| | | Count | Column N % | Count | Column N % | |
| Payment: for job-oriented NFE | Employer or prospective employer | 2254 | 66.1% | 3472 | 99% | 33 |
| | Public services | 2254 | 2.1% | 3472 | 0% | –2 |
| | Other public institutions | 2254 | 2.4% | 3472 | 0% | –2 |
| | Household member or Relative | 2254 | 0.3% | 3472 | 0% | 0 |
| Professional status | Self-employed or Domestic worker | 332 | 14.7% | 385 | –4% | –4 |
| | Employee | 1922 | 85.3% | 3087 | 4% | 4 |
| Size of the enterprise/organisation | Up to 49 | 1008 | 52.1% | 1649 | 2% | 2 |
| | 50–250 | 578 | 29.9% | 1046 | 5% | 5 |
| | Over 250 | 349 | 18.0% | 335 | –7% | –7 |
| Economic activity of the enterprise/ organisation | Primary | 77 | 3.4% | 141 | 1% | 1 |
| | Secondary | 731 | 32.4% | 1283 | 5% | 5 |
| | Tertiary | 1446 | 64.2% | 2047 | –5% | –5 |
| Occupation | Other | 1649 | 73.2% | 2368 | –5% | –5 |
| | Workers' occupations (the original categories 7, 8, 9) | 605 | 26.8% | 1104 | 5% | 5 |

Table 3. Participation in NFE in the CR and individual payment for NFE (source: IALS, 2000; Rabušicová & Rabušic, 2008; Kalenda, 2015b; AES 2007; AES, 2011, 2016).

| Years | IALS 1997 | Rabušicová & Rabušic 2005 | AES 2007 | AES 2011 | Kalenda 2015 | AES 2016 | Diff. 1997–2016 |
|---|--------------|------------------------------|-------------|-------------|-----------------|-------------|--------------------|
| Overall participation in NFE | 27% | 35% | 35% | 35% | 33% | 45% | + 18 p.p |
| Percentage of participants or their relatives that paid for NFE | 7% | N.A. | 3% | 8% | 10% | 12% | + 5 p.p. |
| Estimated number of adults participated in NFE in thousands* | 783 | 1050 | 1053 | 1057 | 1 019 | 1 395 | + 612 |
| Estimated number of adults or their relatives that paid for NFE in thousands* | 55 | N.A. | 31 | 85 | 102 | 167 | + 112 |

*The data refer to the declared NFE activities of adults (24 to 65 years of age) in the past 12 months with the exception of Rabušicová and Rabušic (2008) and Kalenda (2015) who used data for adults between 18 to 64 years of age. *Our own calculation according to the percentage of adults aged from 24 to 65 according to CZSB.*

The model in **Table 4** shows that household income did not have a significant impact on NFE participation. The chances of participation increased slightly with the growing income, but not significantly. People from the highest income category had a 1.7 times higher chance of participating in NFE compared to people from the lowest income category.

As far as parents' education is concerned, it seems not to have had a major impact on participation in NFE. More importantly, the education attained by the respondents themselves seems to be much more important, as the chances of participating in NFE increased with the higher educational attainment (with college graduates 3.5 times more likely to have participated than individuals only attaining lower secondary education).

What did have a fundamental impact on participation in NFE is work status. Full-time workers had a significantly higher chance to participate in NFE than did respondents in other categories (1.4 times greater than those working part time, but up to 8.5 times more than retirees).

Table 5 contains results from the 2016 model (Chi-square = 2757,515; df = 16; Sig <0.0005), which included 12,108 respondents (99%). The remainder was eliminated due to missing values. Without the application of the model, we are able to correctly classify 63% of cases, and with the model's application 71%, i.e. an improvement of 8 p.p. Pseudo-indicators of the explained variance range between 19% (Cox & Snell R Square) and 28% (Nagelkerke R Square).

Table 4. Logistic regression model for 2011.

| | B | S.E. | Wald | df | Sig. | Exp(B) | Collinearity Statistics | |
|---|--------|-------|---------|----|-------|--------|-------------------------|-------|
| | | | | | | | Tolerance | VIF |
| Household income Q1 (lowest) | | | 43,544 | 4 | 0.000 | | | |
| Household income Q2 | 0.082 | 0.092 | 0.795 | 1 | 0.372 | 1.085 | 0.543 | 1.840 |
| Household income Q3 | 0.192 | 0.090 | 4.495 | 1 | 0.034 | 1.211 | 0.522 | 1.914 |
| Household income Q4 | 0.222 | 0.090 | 6.055 | 1 | 0.014 | 1.249 | 0.502 | 1.993 |
| Household income Q5 | 0.518 | 0.093 | 31,023 | 1 | 0.000 | 1.678 | 0.459 | 2.178 |
| Father: Lower secondary at most | | | 15,935 | 2 | 0.000 | | | |
| Father: Upper secondary | 0.341 | 0.088 | 14,978 | 1 | 0.000 | 1.407 | 0.506 | 1.975 |
| Father: Tertiary | 0.408 | 0.120 | 11,489 | 1 | 0.001 | 1.504 | 0.478 | 2.090 |
| Mother: Lower secondary at most | | | 10,241 | 2 | 0.006 | | | |
| Mother: Upper secondary | 0.227 | 0.072 | 9,824 | 1 | 0.002 | 1.255 | 0.561 | 1.781 |
| Mother: Tertiary | 0.142 | 0.126 | 1,286 | 1 | 0.257 | 1.153 | 0.603 | 1.657 |
| Lower secondary at most | | | 317,176 | 2 | 0.000 | | | |
| Upper secondary | 0.770 | 0.057 | 180,180 | 1 | 0.000 | 2.161 | 0.786 | 1.272 |
| Tertiary | 1.257 | 0.075 | 279,444 | 1 | 0.000 | 3.513 | 0.673 | 1.487 |
| Full time | | | 617,798 | 6 | 0.000 | | | |
| Part time | -0.354 | 0.161 | 4,835 | 1 | 0.028 | 0.702 | 0.983 | 1.017 |
| Unemployed | -0.687 | 0.129 | 28,602 | 1 | 0.000 | 0.503 | 0.904 | 1.106 |
| Pupil, student further training, unpaid work experience | -0.661 | 0.098 | 45,472 | 1 | 0.000 | 0.516 | 0.883 | 1.133 |
| In retirement or early retirement or having given up business | -2.136 | 0.100 | 453,030 | 1 | 0.000 | 0.118 | 0.771 | 1.298 |
| Permanently disabled or other inactive persons | -1.910 | 0.222 | 74,023 | 1 | 0.000 | 0.148 | 0.943 | 1.060 |
| Domestic worker | -1.538 | 0.141 | 119,826 | 1 | 0.000 | 0.215 | 0.950 | 1.053 |
| Constant | -1.551 | 0.100 | 238,203 | 1 | 0.000 | 0.212 | | |

Table 5. Logistic regression model for 2016.

| | B | S.E. | Wald | df | Sig. | Exp(B) | Collinearity Statistics | |
|---|--------|-------|-----------|----|-------|--------|-------------------------|-------|
| | | | | | | | Tolerance | VIF |
| Household income Q1 (lowest) | | | 65,322 | 4 | 0.000 | | | |
| Household income Q2 | 0.085 | 0.067 | 1,583 | 1 | 0.208 | 1.089 | 0.660 | 1.516 |
| Household income Q3 | 0.201 | 0.066 | 9,286 | 1 | 0.002 | 1.222 | 0.656 | 1.524 |
| Household income Q4 | 0.313 | 0.066 | 22,319 | 1 | 0.000 | 1.367 | 0.623 | 1.605 |
| Household income Q5 | 0.551 | 0.074 | 55,134 | 1 | 0.000 | 1.735 | 0.630 | 1.588 |
| Father: Lower secondary at most | | | 8,784 | 2 | 0.012 | | | |
| Father: Upper secondary | 0.212 | 0.083 | 6,452 | 1 | 0.011 | 1.236 | 0.471 | 2.123 |
| Father: Tertiary | 0.321 | 0.111 | 8,382 | 1 | 0.004 | 1.378 | 0.437 | 2.291 |
| Mother: Lower secondary at most | | | 4,025 | 2 | 0.134 | | | |
| Mother: Upper secondary | 0.077 | 0.062 | 1,541 | 1 | 0.214 | 1.081 | 0.589 | 1.698 |
| Mother: Tertiary | 0.223 | 0.112 | 3,968 | 1 | 0.046 | 1.250 | 0.639 | 1.565 |
| Lower secondary at most | | | 282,282 | 2 | 0.000 | | | |
| Upper secondary | 0.625 | 0.049 | 165,361 | 1 | 0.000 | 1.869 | 0.802 | 1.248 |
| Tertiary | 0.993 | 0.065 | 235,984 | 1 | 0.000 | 2.699 | 0.681 | 1.469 |
| Full time | | | 1,096,910 | 6 | 0.000 | | | |
| Part time | -0.568 | 0.113 | 25,178 | 1 | 0.000 | 0.566 | 0.975 | 1.025 |
| Unemployed | -1.149 | 0.134 | 73,406 | 1 | 0.000 | 0.317 | 0.941 | 1.063 |
| Pupil, student, further training, unpaid work experience | -0.952 | 0.095 | 100,252 | 1 | 0.000 | 0.386 | 0.901 | 1.110 |
| In retirement or early retirement or having given up business | -2.255 | 0.081 | 777,653 | 1 | 0.000 | 0.105 | 0.771 | 1.298 |
| Permanently disabled or other inactive persons | -2.186 | 0.178 | 151,705 | 1 | 0.000 | 0.112 | 0.935 | 1.070 |
| Domestic worker | -1.630 | 0.119 | 188,418 | 1 | 0.000 | 0.196 | 0.949 | 1.054 |
| Constant | -0.878 | 0.085 | 106,971 | 1 | 0.000 | 0.416 | | |

If we focus on individual variables, a similar interpretation can generally be put forth, as in the case of the 2011 model. However, we consider the comparison of the created models to be of greater interest, see **Table 6**.

If we focus on household income, based on the odds ratios we can conclude that in this case a slight change is indicated in all the coefficients, demonstrating a stagnation of their influence.

Table 6. Comparison of selected model characteristics in 2011 and 2016.

| | 2011 | | 2016 | |
|--|-------|--------|-------|--------|
| | Sig. | Exp(B) | Sig. | Exp(B) |
| Household income Q1 (lowest) | 0.000 | | 0.000 | |
| Household income Q2 | 0.372 | 1.085 | 0.208 | 1.089 |
| Household income Q3 | 0.034 | 1.211 | 0.002 | 1.222 |
| Household income Q4 | 0.014 | 1.249 | 0.000 | 1.367 |
| Household income Q5 | 0.000 | 1.678 | 0.000 | 1.735 |
| Father: Lower secondary at most | 0.000 | | 0.012 | |
| Father: Upper secondary | 0.000 | 1.407 | 0.011 | 1.236 |
| Father: Tertiary | 0.001 | 1.504 | 0.004 | 1.378 |
| Mother: Secondary at most | 0.006 | | 0.134 | |
| Mother: Upper secondary | 0.002 | 1.255 | 0.214 | 1.081 |
| Mother: Tertiary | 0.257 | 1.153 | 0.046 | 1.250 |
| Lower secondary at most | 0.000 | | 0.000 | |
| Upper secondary | 0.000 | 2.161 | 0.000 | 1.869 |
| Tertiary | 0.000 | 3.513 | 0.000 | 2.699 |
| Full time | 0.000 | | 0.000 | |
| Part time | 0.028 | 0.702 | 0.000 | 0.566 |
| Unemployed | 0.000 | 0.503 | 0.000 | 0.317 |
| Pupil, student, further training, unpaid work experience | 0.000 | 0.516 | 0.000 | 0.386 |
| In retirement or early retirement or giving up business | 0.000 | 0.118 | 0.000 | 0.105 |
| Permanently disabled or other inactive persons | 0.000 | 0.148 | 0.000 | 0.112 |
| Domestic worker | 0.000 | 0.215 | 0.000 | 0.196 |
| Constant | 0.000 | 0.212 | 0.000 | 0.416 |

From the point of view of parents' education, in the majority of the monitored categories a decrease in their importance can be noted. Furthermore, the reduction in influence is particularly apparent in the case of the respondents' attained education (in 2011, a graduate had a 3.5 times greater chance of participating in NFE compared to a person with the lowest education attainment, while in 2016 the chance was only 2.7 times higher). A more fundamental role was played by work status, the influence of which increased. Full-time workers had a higher chance of participating in NFE in 2016 compared to all other categories listed.

Discussion

As to the first of Beck's theses ('Industrial Automation Thesis') we can note a significant deepening of NFE towards job-orientation in the Czech Republic; however, the available automation indicators do not satisfactorily indicate that the prevailing job-orientation is the result of industrial automation alone. However, in most of the sectoral and occupational indicators used there was an increase in the participation of adults in job-oriented education by 5% compared to other categories that saw stagnation or decline. Nevertheless, we are not convinced that this growth is high enough to support the unequivocal conclusion that job-orientation in NFE in the Czech Republic is only a result of the development of education in the labour market, which, as must be kept in mind, is greatly affected by industrial automation (NEF, 2017).

Based on our findings, we believe that a much more fundamental role is played in this case by another, indirect, impact of industrial automation, namely the employers' overall approach to NFE, as they increasingly pay for the employees' participation in NFE (see **Tables 1** and **2** in particular). This trend is the result of two mutually reinforcing phenomena that are typical of the current Czech Republic. On the one hand, there is a closed labour market and an intense competition of businesses in global markets and, on the other, disposable financial capital is widely available. As a result of low unemployment, minimal migration and ageing workforce, the closed labour market does not foster increases in productivity and competitiveness in any other manner than by training and retraining the workforce. Financial capital, a substantial amount of which companies had generated during the economic boom in 2011-2016, allows for the training and development of workers to the extent that had not been possible before due to the lack of resources.

The theoretical assumption of the influence of industrial automation on the job-orientation of NFE is thus manifested more directly, i.e. by an emphasis on flexibility, lean management, and investment in human resources on the part of employers, rather than by comprehensive retraining and training of workers in the industrial sector.

Subsequently, if we look at the second of the Beck's thesis ('Individualisation Thesis'), we can see that individual financial responsibility for NFE has increased significantly over the past two decades (see **Table 3**). The number of those who pay for NFE participation themselves has more than tripled since the 1990s. At the same time, the role of economic and cultural capital as hereditary social categories has also weakened as a factor explaining NFE participation, and the importance of integrating individuals into the labour market has increased to a much greater degree.

While shortly after 2000, a college graduate had a six to seven times higher chance of being educated compared to individuals with lower education (**Rabušicová & Rabušic, 2008**), in 2016 this chance was less than three times higher. According to our analysis, economic capital does not have such a fundamental influence on the NFE participation. Therefore, Beck's (1992, 2002) emphasis on reducing the explanatory validity of inherited socio-economic categories, at least in relation to NFE in the Czech Republic, seems to be valid. However, this does not mean that inequalities are disappearing with this decline in adult education. On the contrary, we should add that the inequalities in education have only decreased, and do not play as prominent a role as some authors have indicated (**Baert et al., 2006**). At the same time, new inequalities arose in their place that are not based on class categories, but primarily on integration into the labour market.

In this regard, our results are in line with the findings of other studies (**Cincinnati et al., 2016**), which in recent years have highlighted the weak or mediated influence of the inherited categories of cultural capital to explain participation in continuing education.

Generally, our empirical findings are largely in line with the tested theoretical concept of **Ulrich Beck (1992, 2000, 2002, 2009, 2003)**. Our paper mainly demonstrates empirical support for the increasing role of individualisation as a pivotal force transforming NFE, while the development of industrial automation (through the available indicators from the surveys of AES in 2011 and 2016) does not fully explain the dominant job-orientation of NFE in the Czech Republic. On the basis of the available data, we believe that it is probably the result of the employers' increasing involvement in the financial coverage of NFE, and their adapting its focus to their needs, i.e. competitiveness and adaptability in competitive global markets. This is because more than 60% of large and 35% of medium-sized enterprises in the Czech Republic have a foreign majority owner (**SR-ČR, 2017**). In other words, rather than the result of the direct automation of industrial enterprises and the transformation of labour in

the workers' sectors, the focus of the NFE towards job-orientation is the result of significant neoliberalisation and globalisation of the domestic economy driven by market demands.

It is these processes, together with the process of individualisation that are one of the main causes of the hybridisation of the local institutional matrix structuring NFE. The system of adult education in the Czech Republic was originally formed in the 1990s as part of a reorganisation from the communist, state-run economy and education systems into those of a dependent market economy (Nolke & Vligenthart, 2009) with a strong and highly structured formal youth-centred education system, weak demands for skill-formation by the labour market, and the formal role of the welfare state as an institution to minimise barriers to further education. In such an environment, for a long time this system did not have a strong demand for participation in NFE or for strong social welfare institutions that would remove barriers to participation in NFE as well as increase the possibilities for further education.

Due to the combination of the transformation processes of the risk society, our analyses show that within this system of adult education there has been a significant increase of participation in NFE as well as its completely dominant job-orientation. These are results that should not be so apparent in the Czech Republic (see Rees, 2013; Rubenson & Desjardins, 2009; Saar & Rais, 2017), but the Czech system has undergone very intense neo-liberalisation, which has broadened access to NFE while at the same time has excluded parts of social groups from participating even more than before. This process has also reduced the social function of NFE to one purpose - to increase the competitiveness of human resources for the purposes of the global economy. As a result, NFE accentuating social cohesion, a civil society and other forms of interest development has virtually disappeared.

The limitation of the present article

Similarly to all secondary data studies, a clear limitation of our results is the fact that variables from both 2011 and 2016 AES surveys do not possess sufficient indicators to allow for a more direct testing of Beck's assumptions, especially of the first thesis we used. Furthermore, the 2011 and 2016 data are not part of a single longitudinal study, i.e. the same respondents were not surveyed in both studies, but for each year information was available only from separate representative selections.

The conclusion

The presented paper sought to establish a relationship among a number of the developmental tendencies of the risk society and the main trends in NFE, and subsequently to empirically test Beck's theoretical framework as a suitable starting model for explaining certain developmental patterns in the area of further education and training (a diachronic dimension). Our survey model seems to offer a good theoretical apparatus in the form of the measurement and evaluation of several partial social mechanisms (Demeulenaere, 2011) that can be applied to understand the changes in adult education systems that have occurred in recent years. We have found that Beck's concept is a stimulating and beneficial complement to the existing institutional-oriented theories of adult participation in lifelong learning. At the same time, the article shows possible gaps in the conceptualisation and measurement of the industrial automation mechanism itself as well as the factors projected to support the dominating job-orientation of NFE.

We believe that in further research, the effects of individualisation and industrial automation on participation in the NFE would also be worth monitoring as well as its predominant orientation in other

countries with an emphasis on comparisons, including the different development regimes of various countries. Such an approach would make it possible to better understand the interaction between the institutional heritage of individual countries (endogenous factors) and their transformation by exogenous transformation forces such as globalisation or the flexibility of work. These evaluative and potentially prescriptive findings can help national economies as well as individual firms to cope with a number of the pitfalls that the use of the existing theoretical approaches brings (see **Rees, 2013; Verdier, 2018**). Similarly, we have determined that greater attention should be devoted to strategies and tactics that individual actors themselves choose through lifelong learning in order to cope with the various aspects of the 'risk régime' during the multiple stages of their work life-cycle. Such research will provide into the impact the transformations have on individuals.

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