LABOUR MARKET FEATURE OF ADAPTATION AND CREATIVITY

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Abstract

Four countries, namely Visegrad V4, were analysed in details and 21 European countries as well. The proxy for adaptation and creativity was taken the dataset from Eurostat on methods of seeking job and methods of supporting creativity. As results are of illustrative character the macroeconomic policies focused on two industries and the creativity in that field of business are discussed and linked to narration of figures. Data were analysed by help of the principal component analysis, where the difference between the paper and the chemical industry is noticeable. It creates a limited picture of the European Union that is formed around idea of unification of the European culture and values that are preserved as heritage on one hand. On the other hand, new values and culture of mixing nation and collaboration among nations is being enhanced. The Visegrad countries should have better assumptions for collaboration.

Key words: : labour market, region, adaptation, creativity

JEL Code: R23, R12, P26

Introduction

Creativity is the ability to create and use knowledge. An imperative for business to survive is to stay innovative and creative. It can be a complement to any business, it is not necessarily a main focus. Such a byproduct in the form of a recipe or formula for chemical materials or prototypes of tools is sometimes a trade secret. In the Central Europe region or the Visegrad countries, the results on methods used to incourage the creativity and innovations may be different from other countries. At the same time job search method can be seen as a contributing factor to creativity and innovation which is the hypothesis (or concept, idea) evolved (sketched) here and this is also why it was discussed. It is in line with the hypothesis by (Wang et al., 2022) that claims the proactive behavoir leads to creative performance.

This allows the paper to start with a short data analysis with descriptive character. A review of the literature together with data analysis leads to a discussion of the results and offers

partial recommendations as a conclusion related to economic activities in the region of Hungary, Poland, Czechia, and Slovakia.

1 Brief overview of the literature

Comparative advantage, the authors (Cai & Stoyanov, 2016) constructed industry-level measures of intensities in various age-dependent skills that influence comparative advantage. Apart from other methodological issues, the authors were addressing endogeneity of the median age with weighted average of importance of that skill across occupations within an industry. They also did the extension on education and health care in age-related cognitive development, which influences their results in biased estimates of beta coefficients. Both factors: health care and education help to remediate the effect of population ageing on the effective stock of cognitive skills and physical abilities.

The time dependent on employment or the transition from unemployment to employment for an individual 'i' in a certain group of skills 'g' and the shift in month 't' was presented by (Hudomiet, 2014). Later, the Maortensen an Pissarides (MP) type search and matching model with endogenous job creration & job destruction as the modelling framework was introduced. The author concludes that the on-the-job training he refers to and uses this one for his calculations are able to explain the uneemploymet gap. This way, it is possible to point out on business cycles that are short when the gap is easy to be “patched”.

The innovation environment of organisations should have an evidence-based information system of all ideas. These are later clustered to ideas used immediately and ideas that are stored for later. Bariers of creativity are badhabits less perseverance, conformism and so forth. (Špaček & Červený, 2020) The entire book of authors explains creative methods in innovation processes. In further, we focus on methods of how to improve creativity and, in this way, adaptability.

We assume here that the job search method can be in relation with creativity in the company. Broad insight comes from an analysis that was previously done on the data (2006-2008) from EU-LFS (European Union – Labour force survey) by Bachmann and Baumgarten (2013). They identified the formal and informal serach channels. We learn which factors are positively correlated, it is three groups: (1) “Ads”, (2) “Asking friends, relatives, and trade unions”, (3) “Contacting private employment agencyto find work”, “Taking test, interview, or examination”. The Central and Eastern European countries where apart form Slovakia, more prone to use direct methods (ibid.). Concerning the age: the results are clearly stating that young job seekers (15-24 years) are using personal networks with the highest likelihood. However the

study does not reflect the category other. This paper tries to start a new discussion linked with the one mentioned.

This brief literature review is opening for analysing datasets for four countries. The proxy for adaptation and creativity was taken from the Eurostat data set on methods of finding work and methods of supporting creativity. As the results are of illustrative character, the macroeconomic policies of creativity in business are discussed and linked to narration of figures. It creates a limited picture of the European Union that is formed around the idea of unification of the European culture and values that are preserved as heritage on the one hand. On the other hand, new values and culture of mixing nation and collaboration among nations are being enhanced. The Visegrad countries should have better assumptions for collaboration.

2 The close-up for methods

The Community Innovation Survey monitors business innovation progress (OECD / Eurostat, 2018) was used. Two sets of data were filtered. First set of data on methods stimulating creativity and second on job seeking.

As for the first one the unites were either numbers or the rates, the later one was presented. The former one was used for the Principal Component analysis (PCA). The analysis was done with help of R software and its packages (Kassambaran & Mundt, 2020, 2020; R Core Team, 2021).

Particularly interesting are methods of innovation that are statistically measured in the following groups:

- brainstorming,
- financial and non financial stimulation of new ideas,
- training employees on how to develop new ideas or, meaning that it is paid or subsidised by company
- Multidisciplinary or cross/functional work teams,
- Job rotation of staff (European Commission, 2014)

The Innovation data were accessible for year 2010 and for 102 categories of NACE (revision 2), out of which we have focused only on 2, i.e. (1) Manufacture of paper and pulp products", (2) "Manufacture of chemicals and chemical products". The selection criterion was on industries: paper and chemical industry that are considered to be industries with higher demand on energy consumption. Again total data were for 21 countries that was used for the

PCA and this paper emphasased only the V4 countries details. The data are further distinguished for:

- "Innovative enterprises (including enterprises with abandoned/suspended or on-going innovation activities), such companies did report at least one innovation within the observation period,
- Non-innovative enterprises, means that it does not reported any innovation during the observation period.

There exists possibility to separate the data according to the number of employees in the company. However, there is no data structure according to age of employees.

As for the second data set: also data on job seeking were filtered for year 2010 only. Deep analysis was done by Bachmann and Baumgarten (2013) mentioned afore and emphasisesd here again.

2.1 The creativity observed in two industries

Companies can reinforce creative behaviour in various ways. It is conditions that are framed into methods that companies are supporting in their business. In Table 1 and 2 there are only innovative entreprises that are evaluating their methods, whereas the table 3 and 4 has responses of non-innovative entreprises. we compare the total population in different years and changes between them that are not substantial. In the Paper and pulp industry it is the Fianncial incentives (0.3357) that is the most preferred method of stimulating creativity in Czechia, but in Hungary and Poland it is brainstorming (0.3818 and 0.3536) and in Slovakia it is Job rotation of staff (0.569).

Tab. 1: Methods of stimulating creativity in V4 countries (rates) only for one Industry Paper and pulp products – innovative business

Successful methods stimulating creativity in innovative business	Czechia	Hungary	Poland	Slovakia
Brainstorming sessions	0,2955	0,3818	0,3536	0,3462
Financial incentives for employees to develop new ideas	0,3357	0,2182	0,3094	0,1154
Job rotation of staff	0,0255	0,0727	0,1657	0,5769
Multidisciplinary or cross-functional work teams	0,1583	0,2364	0,1878	0,1923
Non-financial incentives for employees	0,1857	0,1273	0,1989	0,0385
Training employees on how to develop new ideas or creativity	0,1047	0,1818	0,2873	0,0769

Source (European Commission, 2014).

In the chemicals and chemical product industry it is the most preferred method of stimulating creativity in Czechia is now the brainstormins sessins (0.3553), followed by financial incentives (0.3496). Hungary and Poland (0.2410 and 0.4153, respectively) are relying on brainstorming sessions as well. Slovakia (0.2857) is applying the multidisciplinary or cross-functional work teams.

Tab. 2: Methods of stimulating creativity in V4 countries (rates) only for one Industry Manufacture of chemicals and chemical product – innovative business

Successful methods stimulating creativity in non-innovative business	Czechia	Hungary	Poland	Slovakia
Brainstorming sessions	0.3553	0.2410	0.4153	0.0714
Financial incentives for employees to develop new ideas	0.3496	0.0843	0.3056	0.1429
Job rotation of staff	0.0391	0.0602	0.1728	0.0357
Multidisciplinary or cross-functional work teams	0.2818	0.1325	0.2924	0.2857
Non-financial incentives for employees	0.2410	0.1325	0.1960	0.0357
Training employees on how to develop new ideas or creativity	0.1064	0.0571	0.0873	0.000

Source (European Commission, 2014).

Tables 3 and 4 shows the stimulating creativity methods of the non-innovative business, which allows us for comparison with tables 1 and 2 and its results of innovative business. As it was already proven (Botrić & Božić, 2015) the Financial incentives are less important for creative tasks. In the presented figures we notice that it holds especially in Slovakia and Hungary.

Comparing the innovative companies with the noninnovative ones we use Tables 3 and 4. Again, focussing on Paper and pulp industry it is similar to Czechia applying the brainstorming and Slovakia applying the multidisciplinary work teams. These two are different from Hungary and Poland that are a little similar, i.e. relying on financial incentives.

Tab. 3: Methods of stimulating creativity in V4 countries (rates) only for one Industry Paper and paper products – non-innovative business

Successful methods stimulating creativity in non-innovative business	Czechia	Hungary	Poland	Slovakia
Brainstorming sessions	0.0562	0.0556	0.0552	0.04
Financial incentives for employees to develop new ideas	0.0296	0.0741	0.0598	0.04
Job rotation of staff	0.0000	0.0093	0.0345	0.04
Multidisciplinary or cross-functional work teams	0.0296	0.0370	0.0276	0.14
Non-financial incentives for employees	0.0612	0.0370	0.0391	0.04
Training employees on how to develop new ideas or creativity	0.0000	0.0463	0.0529	0.10

Source (European Commission, 2014).

Concerning the Manufacture of chemicals an chemical product, it is the Financial incentives that is preferred method in all V4 countries.

Tab. 4: Methods of stimulating creativity in V4 countries (rates) only for one Industry Manufacture of chemicals and chemical product – non-innovative business

Successful methods stimulating creativity in non-innovative business	Czechia	Hungary	Poland	Slovakia
Brainstorming sessions	0.0582	0.0571	0.0783	0.0444
Financial incentives for employees to develop new ideas	0.0995	0.0857	0.0843	0.0889
Job rotation of staff	0.0000	0.0571	0.0422	0.0000
Multidisciplinary or cross-functional work teams	0.0789	0.0143	0.0361	0.0000
Non-financial incentives for employees	0.0582	0.0429	0.0331	0.0000
Training employees on how to develop new ideas or creativity	0.1064	0.0571	0.0873	0.000

Source (European Commission, 2014).

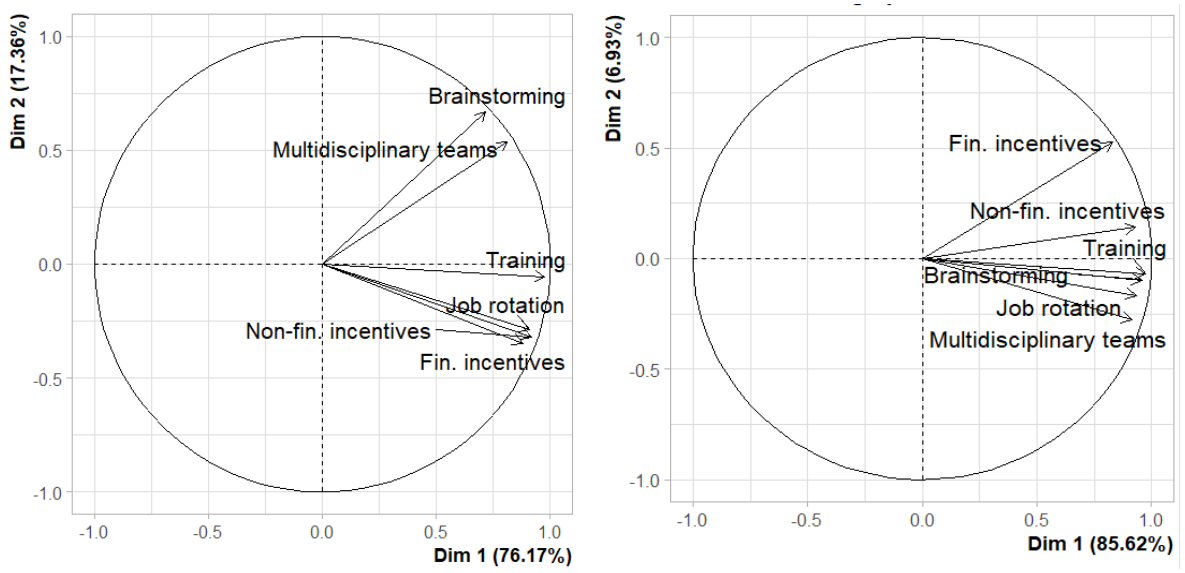
Creativity stimulating methods were examined by Sipos and Ionescu (2015), who examined the impact of methods used on the innovative performance in European Union countries measured by European Innovation Scorebored. The main finding could be considered that brainstorming has the strongest impact on obtaining high innovative performance (meaning that 30-80% of companies are either innovation leaders or followers that use the brainstorming method). This is in disagreement with the data provided in Table 4, where the prevailing method is financial incentives. It could mean that despite the fact that the greatest impact can be achieved by brainstorming sessions, it is not being used so often. That leads to the result that not all companies are efficient in harnessing all capacities of creativity. There exists a gap or potential that is not being used, as is noticeable in both industries (see Tables 3 and 4).

2.2 The creativity of two sectors in PCA analysis

For the PCA analysis, only companies with innovative approaches and all EU countries were considered. The screeplots are not presented, but they clearly support the idea of two factors only. Figure 1 illustrates two dimentions that were found in the analysis of normalised values of the above data, but in numbers (not in rates).

From Figure 1 it is noticeable that training and brainstorming in the chemical industry are in the same group of methods together with the job rotation and multidispilinary teams.

Fig. 1: Comparison of dimantions between two sectors - PCA graphs of variables



(A)

Paper and pulp industry

(B)

Chemical and chemical products industry

Source: own processing, based on data from (European Commission, 2014)
Note: The graphs are using abbreviated names of the methods for supporting creativity. The whole labels are to be found in tables 1, 2,3,4.

This is not the case for the Paper and pulp industry, hwere brai storming is separate togheter with multidispilinary teams in the first group and in the second group there is the traing, job rotation and all incentives. Loadings explaining the variance are refered to in table 5. The two components are achieving the cumulative proportions almost 95%, precisely 0.935 and 0.925 for paper and chemical industry respectively.

Tab. 5: Components for the two industries examined (first two digits of standardized loadigns)

Successful methods stimulating creativity in non-innovative business	Paper and pulp		Chemicla and chemical products	
	Component 1	Component 2	Component 1	Component 2
Brainstorming sessions	0.36	0.66	0.42	0.15
Financial incentives for employees to develop new ideas	0.4	-0.34	0.35	-0.8
Job rotation of staff	0.44	-0.31	0.42	0.22
Multidisciplinary or cross-functional work teams	0.38	0.49	0.41	0.45
Non-financial incentives for employees	0.37	-0.29	0.39	-0.25
Training employees on how to develop new ideas or creativity	0.46	-0.07	0.44	0.07

Source own, author´s calculation.

3 Discussion on creativity and job seeking

It is understood that the sitimulation of creativity is distinguished for two industries whereas the methods of job seeking is not. This very fact makes this paper very preliminary trial of the idea which concept was sketched here. As we already refered to Bachmann and Baumgarten (2013), the principal component analysis gave results on all EU countries. Table 5 provides data on differences in method of seeking job between the V4 countries. Prevailing method is to ask fiends, relatives, trade unions, then contacting public employment service and third ranking method is study job advertisements. Only in Czechia there is higher percentage in the method labelled other, which is either a mistake or there could be a special reason for it. This reason is perhaps selfemployment and being creative in seeking for job. The geometric mean of those percentages could be provided or the least square fit (Burns, 1929).

Tab. 5: Methods used for seeking work- Percentage of unemployed who declared having used a given method

Methods	Czechia	Hungary	Poland	Slovakia
Contact public employment service	86,9	77,4	68,9	80,6
Contact private employment agency	18,2	31,9	7,6	4
Apply to employers directly	81,1	74	60,5	35,5
Ask friends, relatives, trade unions	89,4	87,6	78,1	70,6
Publish or answer job advertisements	36,1	50,1	38	19,2
Study job advertisements	83,2	88,8	76,6	58,4
Take test, interview, examination	38,3	7	15,7	5
Look for land, premises, equipment	0,9	1	2,4	0,8
Look for licenses, permits, financial resources	0,7	1,1	2,5	0,7
Other	37,7	7,6	2,1	0

Source: (Eurostat, 2023).

Job seeking could be conditioned by the rate of adaptation and creativity. Furthermore, the "choice of job-search strategy by a jobless worker is simultaneuously a choice of wage-offer distriubitons" (Osberg, 1993, p. 352). This could be rephrased job-search strategy choice can be a choice of company that is more prone towards creativity.

Multilevel outcomes of creativity (Lua et al., 2024) include consumer dissatisfaction about the creative behavoiour of companys` employees and the potential idea thefts from creative workers to mention but a few. Continuing with relatively new approach to work as gig workers (Wu & Huang, 2024).

Conclusion

The paper discussed underlying statistics for the regional context of economic activities reflected in the macroeconomic decisions. We can suggest also a new hypothesis that young people are not so frequently open for brainstorming for the reason of being a freshman in a company. As such data are rather of microeconomic character it could be shifted form hypothesis to recommendation for companies to watch more closely for methods of creativity stimualation for all emplyees. For instance, the creativity of establishing a company for people to pretened they are working (France 24 English, 2025).

Education shall include some courses focused on using skills or courses for “relaxed” users in order to retain the skills longer (Hanushek et al., 2025). In general, creativity is part of the talent and skill a whereas the job seeking is a combination of the skill and luck that contributes to success (Michael J. Mauboussin, 2009). Thus reversion to the mean will appear more in the data describing job seeking, therefore one would need more data to assure about any conclusions and that is the limitation of the paper.

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